



New England Fishery Management Council

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Eric Reid, *Chair* | Thomas A. Nies, *Executive Director*

MEMORANDUM

DATE: August 18, 2022
TO: Scientific and Statistical Committee
CC: Groundfish Committee
FROM: Groundfish Plan Development Team
SUBJECT: **Additional Relevant Information for Georges Bank Cod Fishing Year 2023 and 2024 Specifications**

1. Overview

On August 25, the Scientific and Statistical Committee (SSC) meets to discuss Georges Bank cod. The Groundfish Plan Development Team (PDT) met by webinar on July 11, July 25, and August 15 to discuss additional relevant information to provide since the SSC's recommendations for GB cod in 2021 and therefore updates the PDT's memo from October 2021.¹

Framework Adjustment 63 set GB cod the FY2022 OFL and ABC as:

OFL (mt)	ABC (mt)
unknown	754

Appendices

This memorandum includes 2 appendices

- Appendix I - Excerpt from Framework Adjustment 63 (FW63), Impacts on Human Communities
- Appendix II – Letter from GARFO to NEFMC re 2021 Stock Status GOM and GB cod, February 16, 2022

2. Information reviewed included:

Information the PDT reviewed included the 2021 stock assessment and peer review report, SSC reports, PDT reports, Transboundary Resource Assessment Committee (TRAC) reports, Atlantic cod stock structure reports, survey information, catch information, and economic information.

¹ See: https://s3.us-east-1.amazonaws.com/nefmc.org/10_211022-GF-PDT-memo-to-SSC-re-FY2022-FY2024-Cod-OFLs_ABCs_with_Appendices.pdf

3. Overview of Stock Status and Rebuilding Plan

Based on the 2021 stock assessment, GB cod is overfished with overfishing status unknown². GB cod is under a rebuilding plan with a rebuild date of 2026 (Table 1). However, NOAA Fisheries determined the stock is overfished and overfishing is occurring (see Appendix II) which is unchanged from its previous determination.

Table 1. Summary of rebuilding status for GB cod stocks on the most recent assessment in 2021.

Groundfish Stock	Rebuilding Plan Start of the Current Plan	Planned Rebuilding Date	Years Remaining in Plan, starting with FY2022	Total ACLs exceeded within past three completed FYs? If yes, identify the FYs.	Has the original rebuilding F been achieved? Or is this unknown? <i>Indicate the current F estimate relative to F rebuild at the start of the plan.</i>	What is current SSB estimate relative to SSBMSY? Or is this unknown?
Georges Bank cod	5/1/2004	2026	5	No	Unknown	Unknown

4. Atlantic Cod Stock Structure

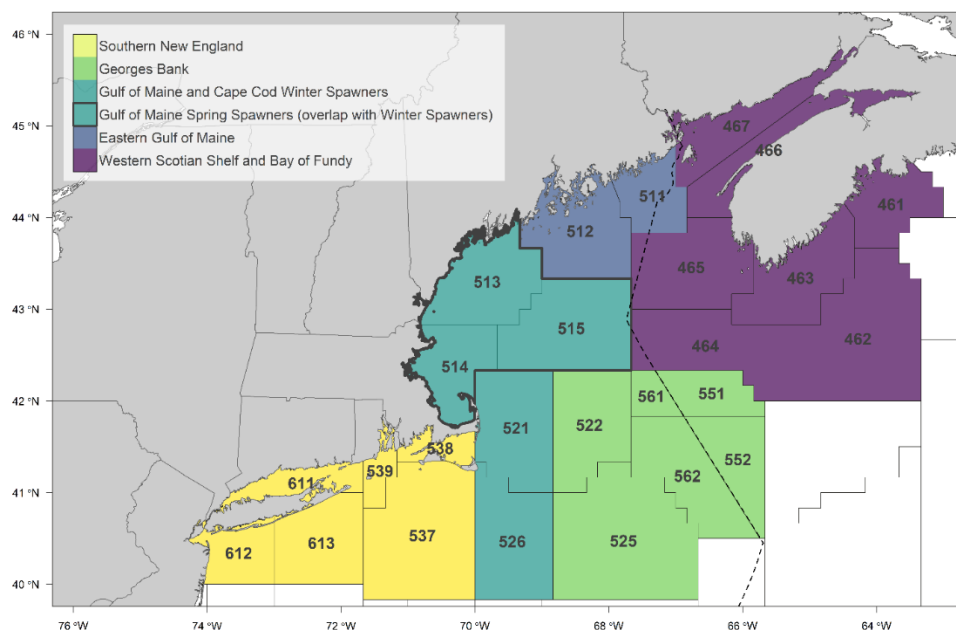
The Atlantic Cod Stock Structure Working Group determined five distinct biological stocks in the United States, instead of the two that are currently managed (Figure 1)³. A sub-panel of the SSC reviewed the work. This led to a re-thinking of the current science and management approaches to the fishery and a series of Council and NEFSC-sponsored workshops covering data/assessment prospects and management⁴. The Atlantic Cod Research Track Working Group is including discussions of stock structure when addressing the research track Terms of Reference, and the research track assessment review is currently planned for Spring 2023. At the February 2022 Council meeting, the Council voted to add ‘*a transition plan for Atlantic cod management from the current two management units up to five units*’ as a multi-year groundfish priority.

² According to the assessment report, the stock’s status could not be “quantitatively determined due to a lack of biological reference points associated with the PlanBsmooth approach.” This is the model currently used to gauge the status of this stock. However, assessment scientists recommended the stock be designated as overfished “due to poor stock condition.” The overfishing status is unknown.

³ Summary available at: https://seagrant.unh.edu/sites/default/files/media/pdfs/R20/Cod-Population/2021/draft_tmchap9_syn_acsswg_mar2021.pdf

⁴ Cod stock structure workshop material available at: <https://seagrant.unh.edu/2021-atlantic-cod-stock-workshops>

Figure 1. Stock Structure for Atlantic cod proposed by the Atlantic Cod Stock Structure Working Group.



5. 2022 Transboundary Resources Assessment Report for Eastern Georges Bank Cod

The Transboundary Resources Assessment Committee (TRAC) met in July 2022 to assess the Eastern Georges Bank (EGB) cod stock and set catch advice for 2023. The TRAC Status Report (TSR) was not available in time for the PDT’s meeting.

Two principles are incorporated in the sharing formula for EGB cod: 1) historical utilization based on reported landings during 1967 through 1994; and 2) spatial-temporal changes in resource distributions determined from the DFO and USA National Marine Fisheries Service (NMFS) survey results that are updated annually. From 2010 onward, utilization has accounted for 10% and distribution for 90% of the allocation. Allocation shares for each country are applied to the total allowable catches (TACs) recommended by the Transboundary Management Guidance Committee (TMGC) and Steering Committee (SC). The past three years are summarized in Table 2.

Table 2. EGB Cod allocation share percentages between the United States and Canada and resulting TACs based on TMGC/SC recommendations.

	2020		2021		2022	
	Percentage	Quota (mt)	Percentage	Quota (mt)	Percentage	Quota (mt)
United States	29%	188.5	30%	190.5	28%	160
Canada	71%	461.5	70%	444.5	72%	411
Total		650		635		571

6. Survey Information

The PDT provides updated information on survey indices for GB cod from the fall and spring NMFS bottom-trawl surveys. Figure 2 shows the abundance and biomass from the two surveys from 1968-2022. There has been a slight increase in the spring survey biomass value from 2021

to 2022 (2.2052 kg/tow to 2.6966 kg/tow) and from the 2019 to 2021 fall survey (1.725 kg/tow to 1.7896 kg/tow) (Table 3). Figure 3 and Figure 4 show the numbers at length for the NMFS surveys from 2016-2022.

Southern New England (SNE) cod survey indices and a map of the survey strata used are also provided (Figure 5 and Figure 6), however these survey strata are not used in the GB cod assessment. Catches from SNE are attributed to GB cod. SNE cod may potentially be split out as a separate stock under a new Atlantic cod stock structure.

Figure 2. GB cod abundance (number/tow) and biomass (kg/tow) trends in the NMFS fall bottom-trawl survey (top panels) and NMFS spring bottom-trawl survey (bottom panels).

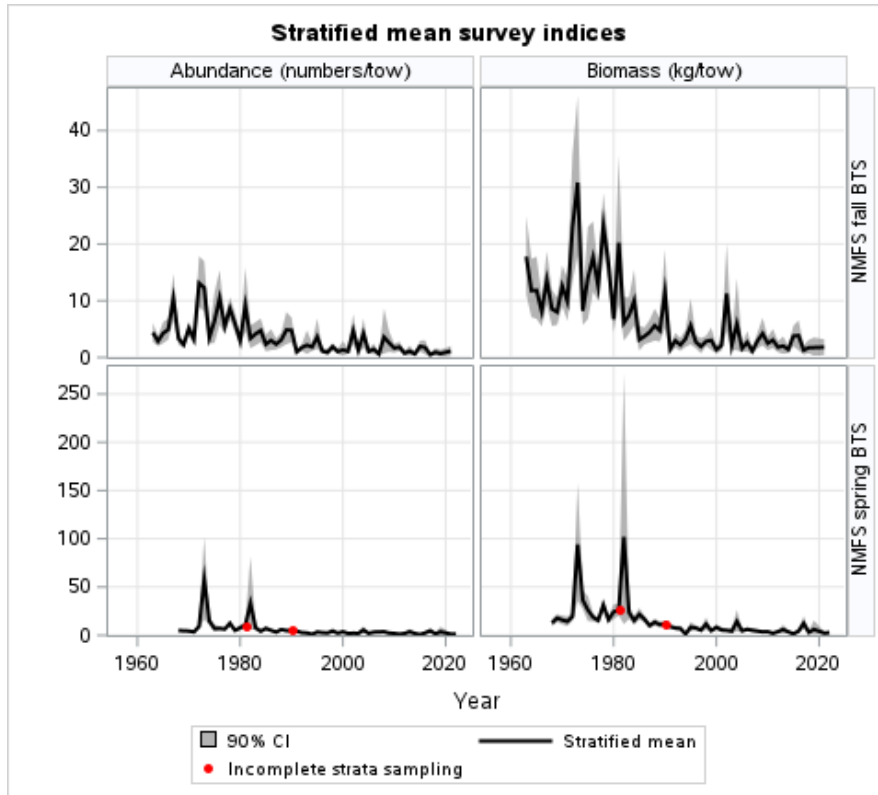


Table 3. GB cod biomass (kg/tow) trends in the NMFS spring bottom-trawl survey and NMFS spring bottom-trawl survey (2013-2022)

NMFS Survey	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spring BTS	5.8647	3.5196	1.4858	4.2183	12.3237	2.9447	6.0064	*	2.2052	2.6966
Fall BTS	2.0122	1.3712	3.7573	3.8386	1.2575	1.7074	1.725	*	1.7896	*

*Survey indices not available.

Figure 3. GB cod stratified mean numbers at length from the NMFS fall bottom trawl survey

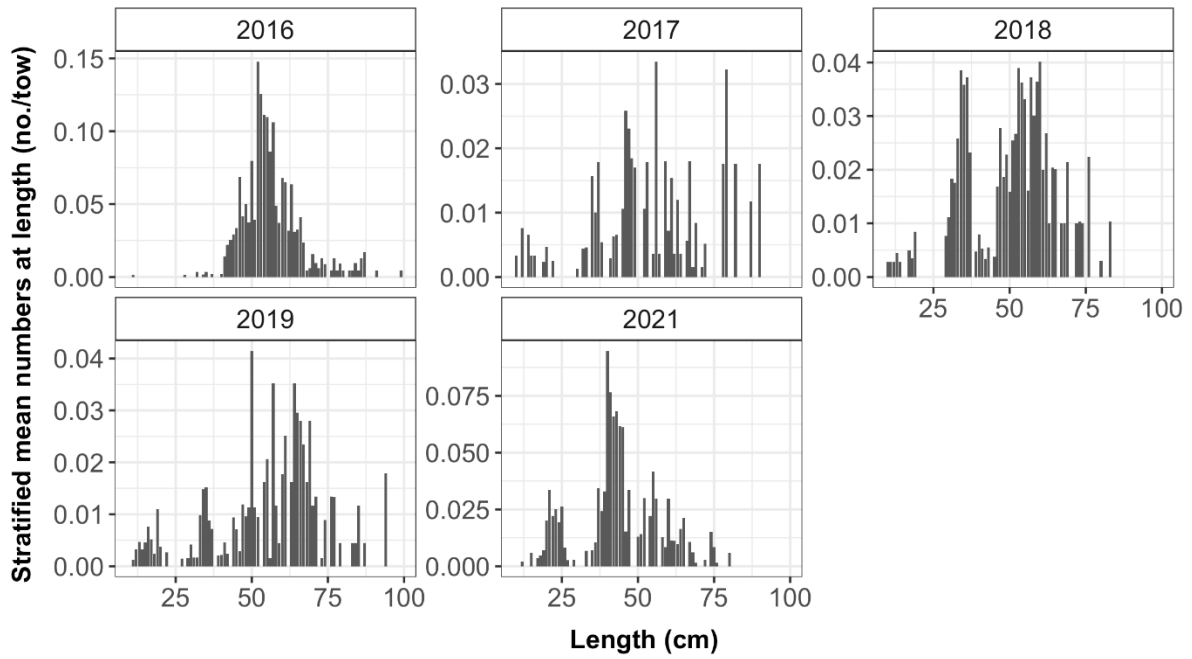


Figure 4. GB cod stratified mean numbers at length from the NMFS spring bottom trawl survey

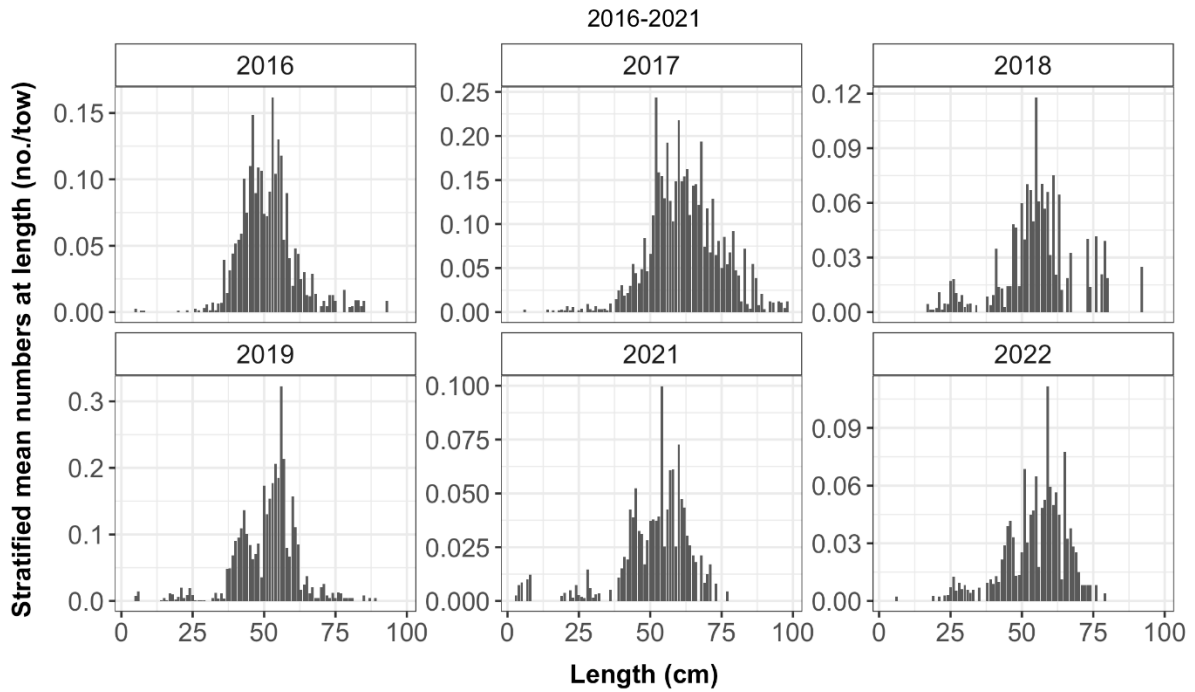
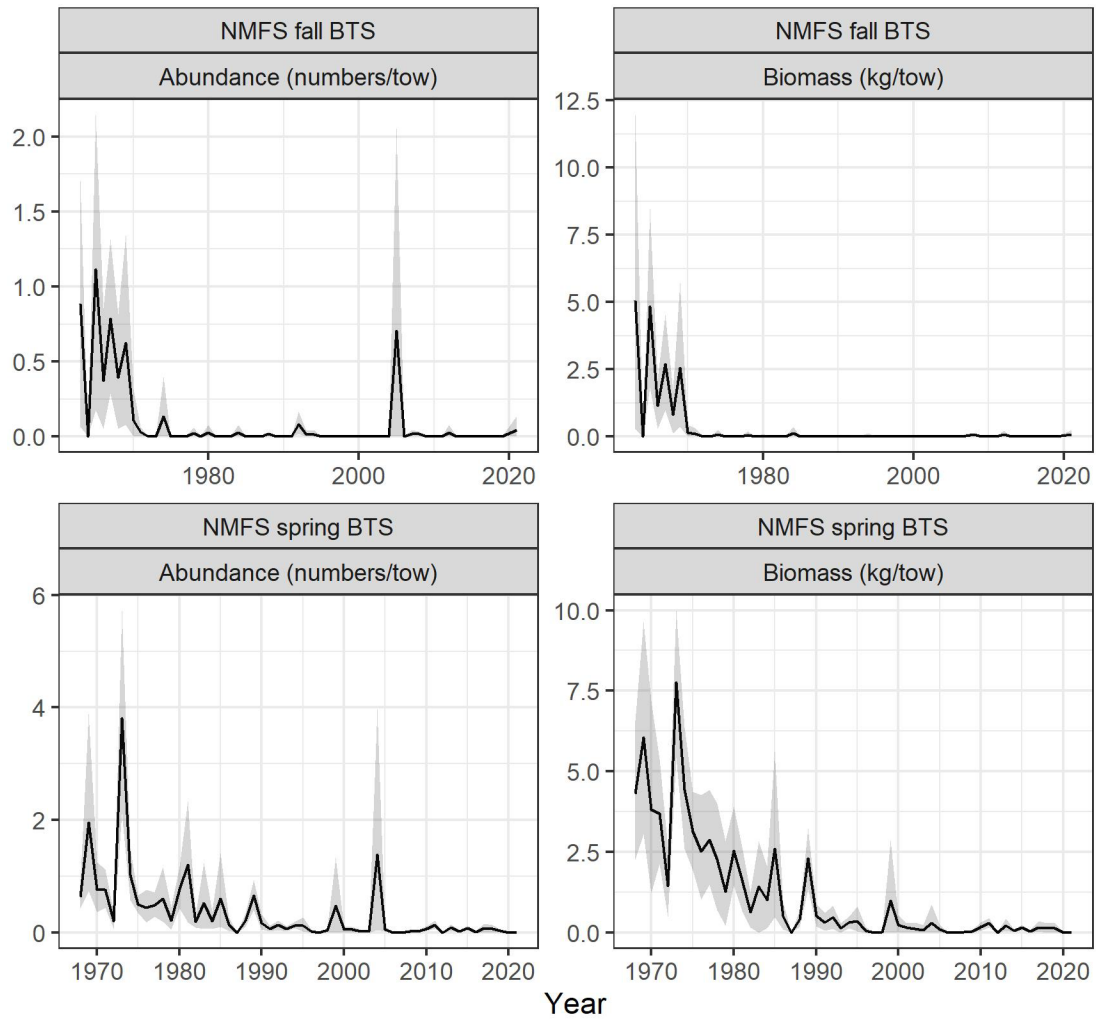


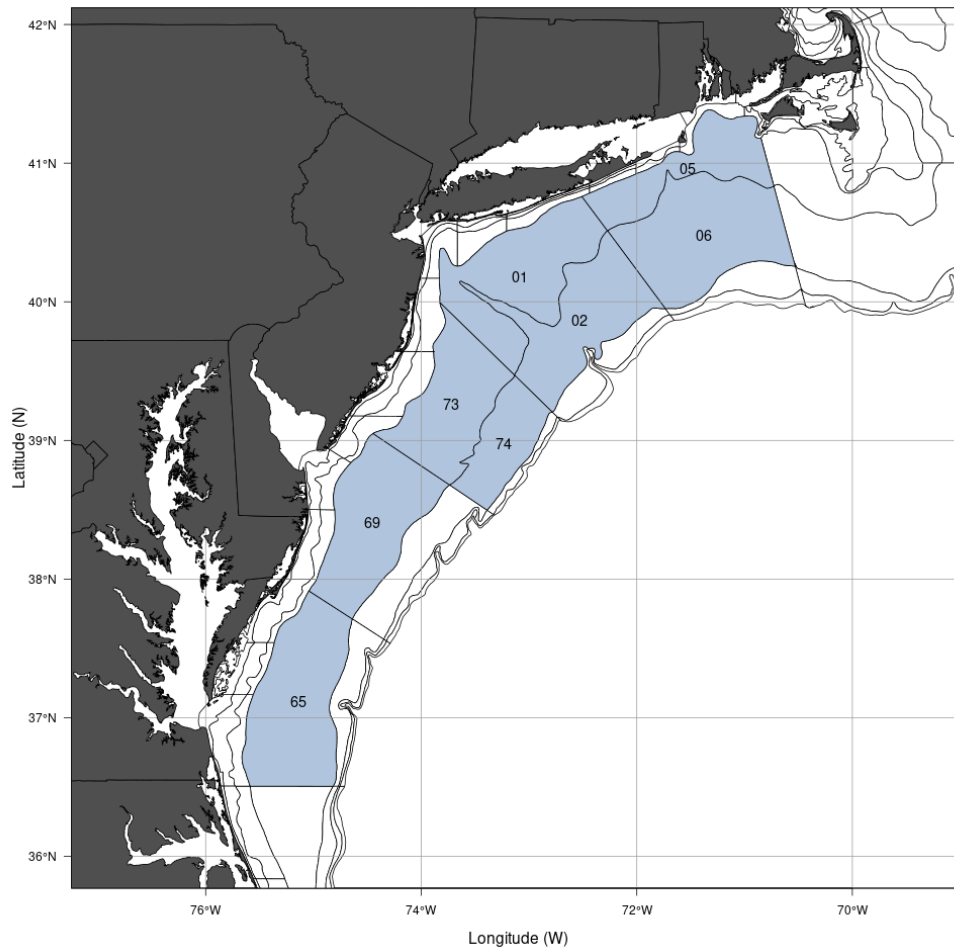
Figure 5. Northeast Fisheries Science Center (NEFSC) spring and fall bottom trawl survey abundance (numbers/tow) and biomass (kg/tow) indices for SNE cod. The shaded area represents the 90% confidence interval.



Source: 2022 Cod Research Track Working Group Meeting, June 24, 2022

Note: Spring survey did not begin until 1968.

Figure 6. Map of the Northeast Fisheries Science Center (NEFSC) bottom trawl survey strata used to construct NEFSC survey indices for SNE cod (shaded blue).



Source: 2022 Cod Research Track Working Group Meeting, June 24, 2022

7. Social and Economic Information

Commercial Fishery –

Table 4 is a summary of recent catches of GB cod by the US commercial (sectors and common pool combined) groundfish fishery, since FY2015. Table 5 provides in-season estimates for sector and common pool (combined) catch of EGB and GB (East and West combined) cod for FY 2022.

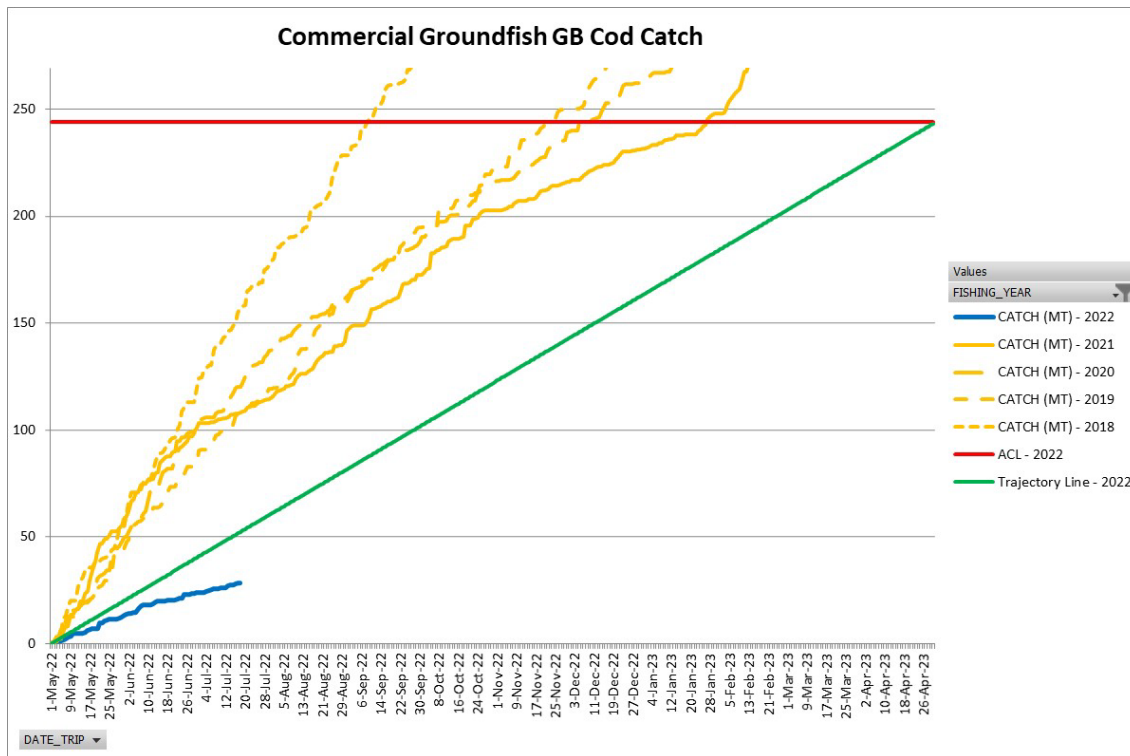
Table 6 summarizes landings and discards of GB cod in all fisheries compared to the commercial groundfish fishery for FY2019 and FY2020. Discards comprise a small portion of the total catch. The increase in state catch in 2020 is attributed to the increase in recreational angler effort during the COVID-19 pandemic.

Figure 7 shows groundfish commercial (sector and common pool) GB cod catches since FY2018 along with the FY2022 commercial ACL. Figure 8 shows the commercial catch from FY2017 – FY2021 with the FY2021 commercial ACL.

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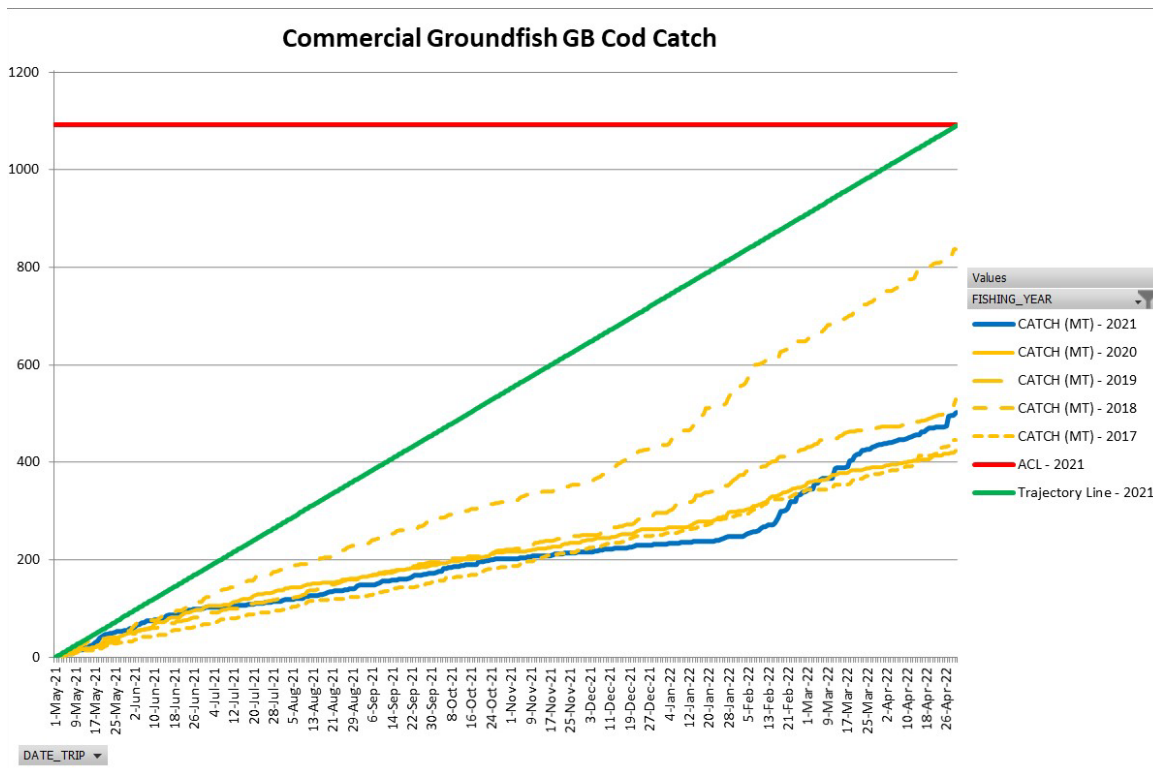
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Figure 7. In-season Utilization of GB cod by the commercial (sectors and common pool) groundfish fishery (FY2018 - 2022)



Note: FY2021 catch has not been finalized.

Figure 8. Utilization of GB cod by the commercial (sectors and common pool) groundfish fishery (FY2017 - 2021)



Note: FY2021 catch has not been finalized.

Table 4- Summary of recent catches (mt) of Georges Bank cod by the US commercial (sectors and common pool) groundfish fishery, FY2015-FY2020, preliminary FY2021, and in-season FY2022. Sources: FY2015 – FY2020 final year-end multispecies catch reports and catch monitoring, GARFO

Fishing Year	<i>Commercial Groundfish Fishery- Georges Bank Cod</i>				
	Sub-ACL	Landings	Discards	Catch	Percentage of sub-ACL
2015	1,787	1,608.5	28.3	1,636.8	91.6%
2016	608	571.9	24.6	596.6	98.1%
2017	531	432.8	13.1	446.0	84.0%
2018	1,360	833.2	4.7	837.9	61.6%
2019	1,568	524.5	7.9	532.4	34.0%
2020	1,073	417.4	7.8	425.3	39.6%
*2021	1,093.1	*463.6	*7.2	*470.8	*43.1%
**2022	243.9	**29.7	**2.7	**32.4	**13.3%

*Preliminary; **In-Season

Table 5. Sector and Common Pool Catch Monitoring for FY2022. Report run on August 15, 2022 for data reported through August 9, 2022.

Stock	Cumulative Kept (mt)	Cumulative Discard (mt)	Cumulative Catch (mt)	Sub-ACL* (mt)	Percent Caught
GB Cod East	1.2	0.1	1.2	160.0	0.8
GB Cod	29.7	2.7	32.4	243.9	13.3

Note: Does not include Sector Carryover or Overages. GB Cod includes GB Cod East.

Source: GARFO Monitoring Reports

Table 6. Summary of landings and discards for GB cod (FY 2019 and FY 2020).

	2019 (mt)				2020 (mt)			
	Groundfish Fishery	Other	State	2019 Total	Groundfish Fishery	Other	State	2020 Total
Landings	524.5	83.5	13.1	621.1	417.4	138.1	145.2	700.8
Discards	7.9	11.7	1.0	20.6	7.8	20.4	2.3	30.5
Total	532.4	95.2	14.1	641.7	425.3	158.5	147.5	731.2

Sources: FY2019 and FY2020 fishing year-end reports

Sectors –Appendix I compares predicted revenues and costs for the sector portion of the commercial groundfish fishery under different GB cod sub-ACLs. Predictions were made using the quota-change model (QCM)⁵. Table 7 shows a comparison of predicted revenues and costs for the sector portion of the commercial fishery under the GB cod sector sub-ACL set for FY2022 (233 mt) and a 1,045 mt sub-ACL (no action). Under a GB cod sector sub-ACL of 1,054 mt, predicted groundfish revenue for was \$55.1M, representing an increase of \$0.9M relative to

⁵ See section 6.5.1 in Appendix 2 for an explanation of the QCM methods.

the realized value in FY2020 and is \$3.2M more than the predicted revenue under a GB cod sub-ACL of 233 mt.

Table 7. Summary of realized FY2020 and predicted FY2021 and FY2022 revenues and costs for the sector portion of the commercial groundfish fishery; median values, nominal dollars

Option	Groundfish Gross Revenues	Total Gross Revenues	Operating Costs	Sector Cost	Quota Cost	Operating Profit	Days Absent
FY2020 Realized	54.2	72.9	11.4	2.2	2.4	59.7	11,435
FY2020 Prediction (FW59)	49.0	70.1	10.9	1.8	3.6	50.3	10,919
FY2021 Prediction (FY61)	46.3	64.1	10.9	1.8	3.6	47.7	9,942
FY 2022 Prediction, GB cod = 233 mt¹	51.9	73.3	10.9	1.8	2.7	59.4	11,448
FY2022 Prediction, GB cod = 1,045 mt²	55.1	75.7	12	1.9	3.0	59.7	11,838

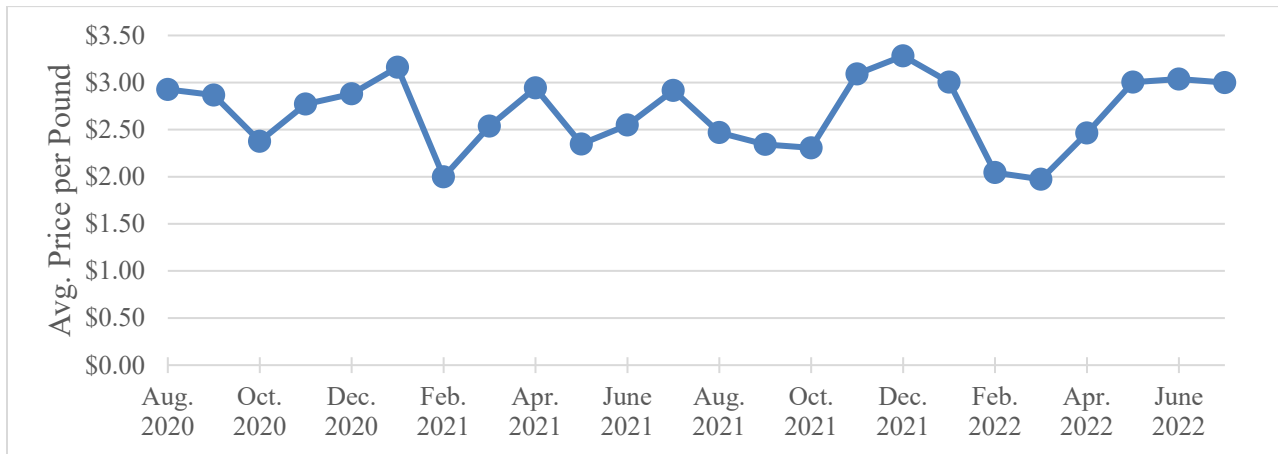
Source: Groundfish FW63

¹The sector sub-ACL implemented for FY2022

²Analyzed under the no-action alternative in FW63. The SSC minority report ramped-down approach proposed a sector sub-ACL of 1,054 mt for FY2022 and 904 mt for 2024.

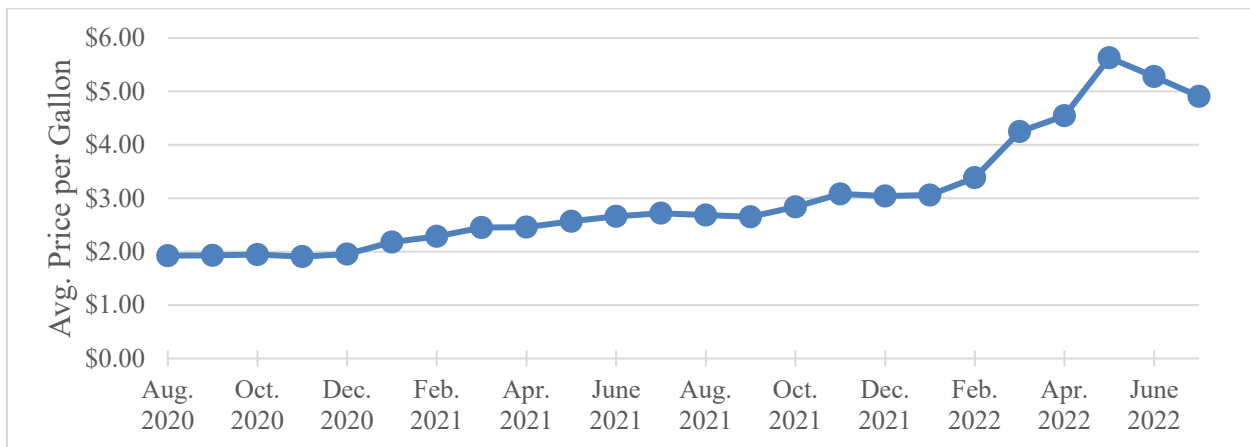
Operating costs have changed since the model was run for FW63. Figure 9 shows cod ex-vessel price across all cod stocks from August 2020 – June 2022. The highest average price in the time series occurred in December 2021 (\$3.28/lb.), and the lowest average price occurred in February 2020 (\$2.00/lb.). Substantial fuel price increases occurred from August 2020 to July 2022, with fuel prices hitting a high of \$5.63 per gallon in May 2022. The July 2022 price was \$4.91 per gallon (Figure 10). Lease prices have generally exhibited a downward trend since 2017, driven by relatively low utilization rates in the 2020 and 2021 fishing years (Figure 11). The substantial decrease in quota for FY2022 is expected to result in an increase in quota prices.

Figure 9. Average cod ex-vessel price (nominal dollars) by month from August 2020 through July 2022.



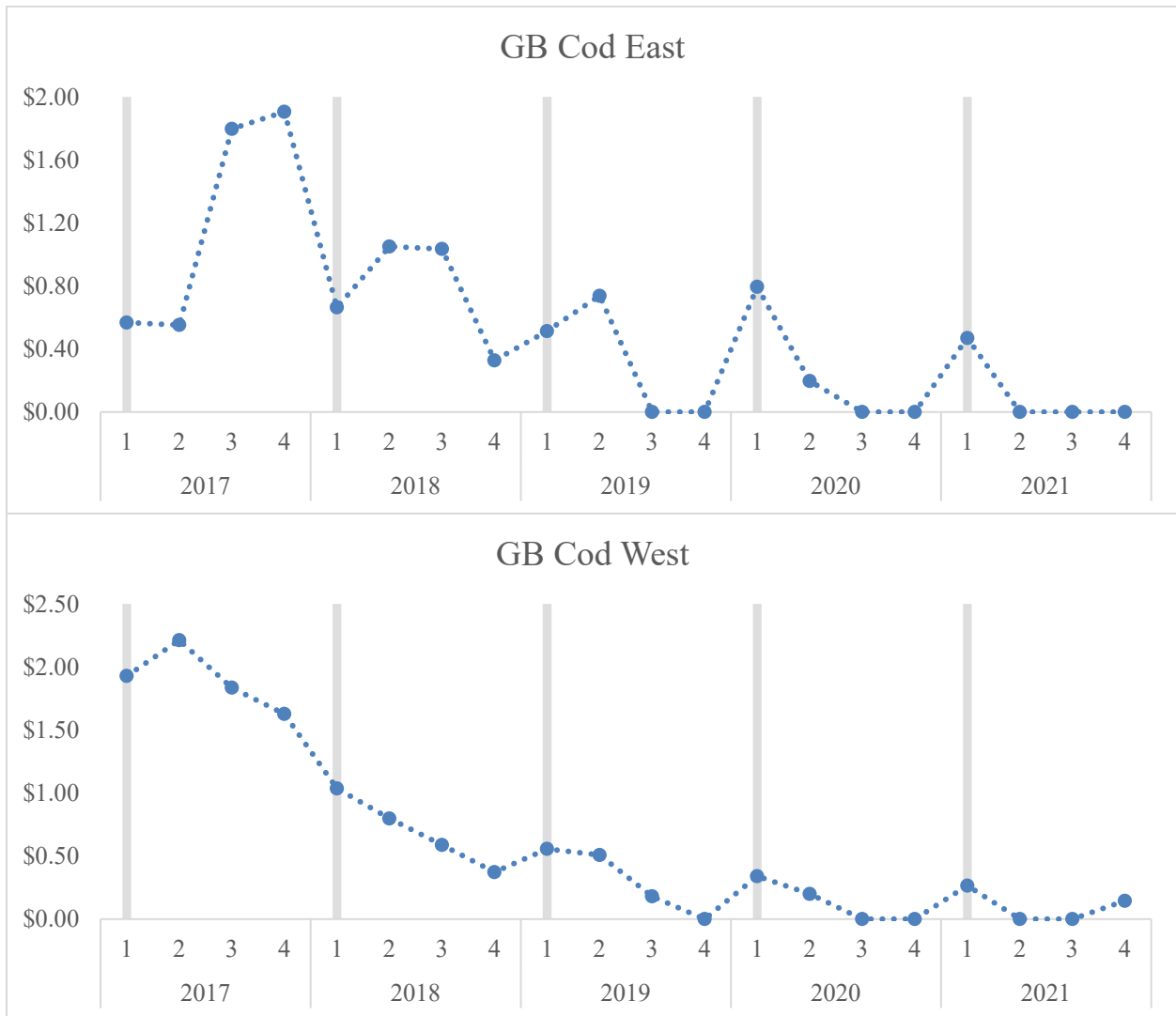
Source: Dealer data was used to calculate prices, which are across all cod stocks.

Figure 10. Average fuel cost per gallon (nominal dollars) by month from August 2020 through July 2022. Source: NEFOP and ASM Data



Note: At-sea observers in the NEFOP and ASM programs collect information from the captain on the number of gallons of fuel used and the price paid per gallon on all observed trips. The quantity and price were multiplied to calculate the total cost per trip. Trip costs were then aggregated by month and divided by the fuel quantity to derive monthly fuel prices.

Figure 11. ACE lease prices estimated for GB Cod East and GB Cod West for fishing years 2017-2021 using a hedonic price model. First quarter (May-July) lease prices are indicated by the vertical gray bars.



Note: ACE lease prices for GB Cod East and GB Cod West were estimated for fishing years 2017-2021 using a hedonic price model. Input data into the model is comprised of inter-sector ACE leases over the FY2017-2021 period.

Recreational Fishery – There was a decrease in recreational catch from FY2020 to preliminary FY2021, although the recreational catch target was likely exceeded (Table 8). The FY2021 catch target was 138 mt but was reduced to 75 mt for FY2022.

Table 8- Georges Bank cod recreational catch (mt), FY2015-FY2020. Sources: FY2015 – FY2020 final year-end multispecies catch reports, GARFO. Preliminary FY2021, NEFSC personal communication.

Fishing Year	<i>Recreational Fishery – Georges Bank Cod</i>					
	Federal Waters Recreational Catch	State Waters Recreational Catch	All Recreational Catch	Recreational Catch Target	Total US Catch	Recreational Portion of Total US Catch (Percent)
2015	132.1	33.0	165.1	n/a	1,835.4	9.0%
2016	419.7	57.8	477.5	n/a	1,125.5	42.4%
2017	50.1	2.8	52.9	n/a	522.5	10.1%
2018	31.6	5.5	37.1	138	887.3	4.2%
2019	88.9	11.0	99.9	138	641.7	15.6%
2020	152.6	141.8	294.4	138	731.2	40.3%
*2021			*236.0	138		
**2022				75		

*Preliminary

6.5 IMPACTS ON HUMAN COMMUNITIES- ECONOMICS

Introduction

Consideration of the economic impacts of the changes made in this framework is required pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1976. NEPA requires that before any federal agency may take “actions significantly affecting the quality of the human environment,” that agency must prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) that includes the integrated use of the social sciences (NEPA Section 102(2) (C)). The MSA stipulates that the social and economic impacts to all fishery stakeholders should be analyzed for each proposed fishery management measure to provide advice to the Council when making regulatory decisions (Magnuson-Stevens Section 1010627, 109-47).

The National Marine Fisheries Service (NMFS) provides guidelines to use when performing economic reviews of regulatory actions. The key dimensions for this analysis are expected changes in net benefits to fishery stakeholders, the distribution of benefits and costs within the industry, and changes in income and employment (NMFS 2007). Where possible, cumulative effects of regulations are identified and discussed. Non-economic social concerns are discussed in Section 6.6. The economic impacts presented here consist of both qualitative and quantitative analyses dependent on available data, resources, and the measurability of predicted outcomes. It is assumed throughout this analysis that changes in revenues would have downstream impacts on income levels and employment; however, these are only mentioned if directly quantifiable.

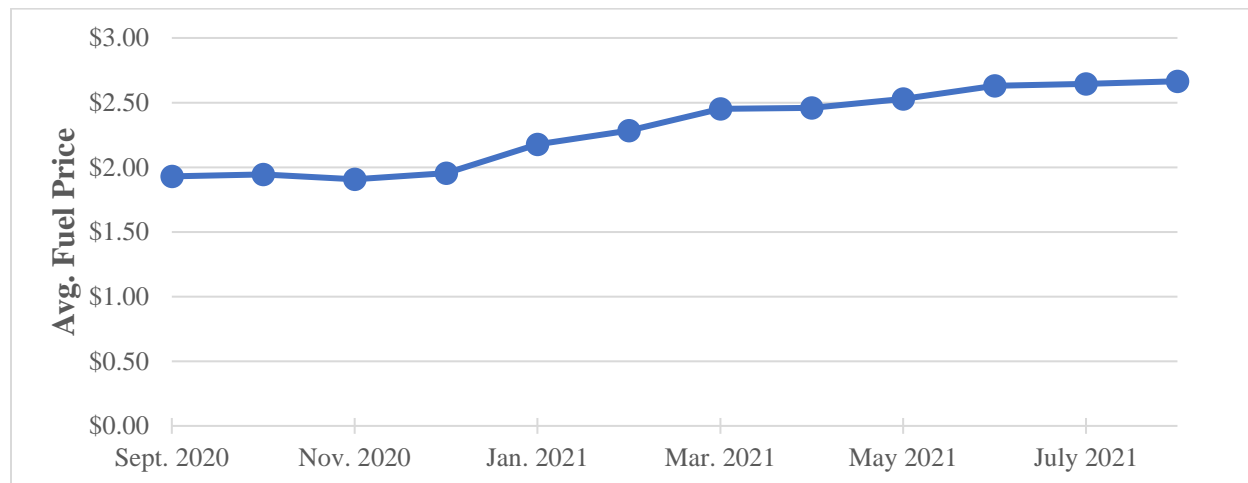
6.5.1 Action 1 – Specifications

Methods

The Quota Change Model (QCM) is used to analyze the impacts of each combination of measures on the sector portion of the groundfish fishery, which has comprised 99% of commercial groundfish revenues over the last five fishing years (see Table 21). The QCM is a Monte Carlo simulation model that selects from existing records the trips most likely to take place under new regulatory conditions. To do this, a large pool of actual trips is created from a reference data set. The composition of this pool is conditioned on each trip’s utilization of allocated Annual Catch Entitlement (ACE), under the assumption that the most likely trips to take place in the FY being analyzed are those fishing efficiently under the new sector sub-ACLs. The more efficiently a trip uses its ACE, the more likely that trip is to be drawn into the sample pool. ACE efficiency is determined by the ratio of ACE expended to net revenues on a trip, iterated over each of the 17 allocated stocks. Operating profits are calculated as gross revenues minus trip costs minus the opportunity cost of quota, where trip costs are estimated using observer data and quota opportunity costs are estimated from a model of inter-sector lease price and quantity data.

In previous management actions (FW59, FW61), the sample pool has been constructed from the most recent completed fishing year. A slight modification is used for this management action. Rather than utilizing trips from strictly FY2020 (May 2020 – April 2021), the sample pool uses trips from September 2020 – August 2021. This change was made with the assumption that more recent fishing activity would better represent behavior during FY2022, noting the early months of the Covid-19 pandemic in spring/summer 2020. Average fuel prices, for example, have increased substantially over the past year (Figure 36).

Figure 36- Monthly average fuel prices (nominal \$) during sample pool period. Data Source: NEFOP and ASM observers.



Once the sample pool is constructed, trips are pulled from the pool at random, summing the ACE expended for the 17 allocated stocks as each trip is drawn. When one stock’s ACE reaches the sector sub-ACL limit, no further trips from that broad stock area are selected. The model continues selecting trips until sector sub-ACLs are achieved for all three broad stock areas or, alternatively, if sub-ACLs are reached for one of the unit stocks. Because the fishery is modeled as a whole, allocations to individual sectors are not considered. Included in the Alternative 2 sector sub-ACLs is an assumption that GB cod quota will be transferred from the “east” (US/CA area) to the “west” allocations based on fishing activity over the last five fishing years, resulting in 87.5% of the quota belonging to the west area, and 12.5% belonging to the east.

This selection process forms a synthetic fishing year. A total of 500 synthetic years are constructed, and median values and confidence intervals are reported. By running simulations based on actual fishing trips, the model implicitly assumes that:

- stock conditions, fishing practices and harvest technologies existing during the data period are representative;
- trips are repeatable;
- demand for groundfish is constant, noting that fish prices do vary between the reference population and the sample population, but this variability is consistent with the underlying price/quantity relationship observed during the reference period;
- quota opportunity costs and operating costs are both constant;
- ACE flows seamlessly from lesser to lessee such that fishery-wide caps can be met without leaving ACE for constraining stocks stranded;
- At-Sea Monitoring (ASM) costs are fully subsidized; and
- the condition of a trip being observed has no explicit effect on its ability to be chosen into the selection pool.

These assumptions will surely not hold—fishermen will continue to develop their technology and fishing practices to increase their efficiency, market conditions will induce additional behavioral changes, and fishery stock conditions are highly dynamic.

The net effect of the constraints imposed by these assumptions is unclear. The selection algorithm draws mainly from efficient trips³⁰—if fishermen make relatively less efficient trips the model estimates will be biased high. Fishermen, however, are generally good at their job, and through a combination of technological improvement (gear rigging, equipment upgrades, etc.) or behavioral modifications, they are likely to improve on their ability to avoid constraining stocks. If fishermen are able to make these adjustments, the model predictions will be biased low. Furthermore, the model will under-predict true landings and/or revenues if stock conditions for non-constraining stocks improve, if demand for groundfish rises, or if fishing practices change and fishermen become more efficient at maximizing the value of their ACE. Conversely, the model will over-predict true landings and/or revenues if stock conditions of non-constraining stocks decline, markets deteriorate, or fishing costs increase. Importantly, the model will over-predict landings and revenues if stock conditions for constraining stocks improve and/or fishermen are unable to avoid the stock—in this circumstance, better than expected stock conditions could lead to worse than anticipated fishery performance. The opposite is also true—if a stock predicted to be constraining to the fishery becomes easier to avoid due to technological or behavioral modifications, the model will under-predict revenues.

The model is intended to capture fishery-wide behavioral changes with respect to groundfish sub-ACL changes, and groundfish catch is maximized by the constrained optimization algorithm. Catch of non-groundfish stocks on groundfish trips are captured in the model, but not explicitly modeled, such that constraints on other fisheries are not incorporated. As GB cod represents the largest sector sub-ACL change (decline) under Alternative 2, the catch composition on sample pool trips with at least 500 lbs. of GB cod catch is presented in Table 78. QCM predictions and realized fishery values in recent years are shown in Table 79. For FY2017- FY2019, the QCM over-predicted groundfish revenue and operating profit, while the model under-estimated both values for FY2020. The over-predictions can be explained in part by recent downward trends in groundfish ex-vessel prices (Figure 6 and Table 24). Since the sample pool for the QCM is typically constructed from data two years prior to the prediction year, revenues are over-predicted even if predicted and realized landings are close. While FY2020 continued the downward trend in prices, a substantial increase in groundfish landings (Table 21) led to an under-prediction in revenue. A decrease in quota costs also contributed to realized operating profit exceeding the predicted value for FY2020.

³⁰ Since the prediction for FY2015 (FW55), a parameter has been added to the QCM to select a small number of inefficient (often negative net revenue) groundfish trips. In general, model predictions of effort (trips and days absent) have been closer to realized effort since the addition of this parameter.

Table 78- Catch composition on groundfish trips during sample pool period (Sept. 2020 – Aug. 2021) in which at least 500 lbs. of GB cod was caught (landings+discards). A total of 487 of such trips occurred; catch from the entire trip (all sub-trips) is included.

Stock	Catch	% of Total
GB Haddock West	5,968,945	27.7%
Non-Groundfish Stocks	5,206,737	24.2%
Redfish	2,887,350	13.4%
Pollock	2,357,780	11.0%
GOM Haddock	916,681	4.3%
White Hake	834,103	3.9%
GB Haddock East	805,065	3.7%
GB Cod West	673,629	3.1%
Witch Flounder	592,621	2.8%
GB Winter Flounder	481,518	2.2%
Plaice	420,616	2.0%
SNE Winter Flounder	144,949	0.7%
GB Cod East	91,762	0.4%
Halibut	37,728	0.2%
GOM Cod	32,006	0.1%
Ocean Pout	31,323	0.1%
CC/GOM Yellowtail Flounder	22,835	0.1%
Other Groundfish Stocks	17,776	0.0%
Total	21,523,424	

Table 79- QCM predictions, FY2017-2021, 2020 dollars (millions).

	FY2017		FY2018		FY2019		FY2020		FY2021
	Predicted ³¹	Realized	Predicted ³²	Realized	Predicted ³³	Realized	Predicted ³⁴	Realized	Predicted ³⁵
Groundfish Revenue	54.9	47.6	62.2	50.4	56.4	48.2	49.6	54.2	46.3
Total Revenue	79.3	70.1	88.6	72.2	80.4	66.1	71.0	72.9	64.1
Operating Cost	14.6	14.0	16.5	13.2	15.1	11.0	12.7	11.4	10.9
Sector Cost	1.8	1.9	1.8	2.1	2.0	1.9	1.9	2.2	1.8
Quota Cost	7.7	10.1	12.7	5.7	7.7	3.6	5.5	2.4	3.6
Operating Profit	55.2	44.0	57.5	51.2	55.6	49.6	50.9	56.7	47.7

³¹ FW56, reference pool=FY2015-16 (full year FY2015, FY2016 through Nov. 2016) ; FY2017 prediction incorporating Sector NEFS IX stranded quota

³² FW57, reference pool=FY2016

³³ FW58, reference pool=FY2017

³⁴ FW59, reference pool=FY2018

³⁵ FW61, reference pool=FY2019

6.5.1.1 Alternative 1 - No Action

Impacts on the sector component of the commercial groundfish fishery

Under No Action, predicted groundfish revenue for FY2022 is \$55.1M, representing an increase of \$0.9M relative to the realized value in FY2020 (Table 80). Predicted total gross revenues from groundfish trips for FY2022 is \$75.5M, a \$2.6M increase relative to the FY2020 realized value.

At the stock-level (Table 81), white hake and GOM cod are predicted to be the most constraining groundfish stocks under No Action ACLs. Other stocks with high utilization rates include witch flounder, GB cod east, and GB winter flounder. The four stocks with the highest predicted ex-vessel value are GOM haddock, GB haddock west, pollock, and redfish; these stocks are predicted to have low to moderate rates of utilization. Importantly, the predicted catch for GB cod is 451mt (401mt west; 50mt east), far exceeding the sector sub-ACL under Alternative 2.

At the port-level (Table 82), many of the major groundfish ports have comparable predicted values for FY2022 to FY2020 and FY2021. Boston is predicted to be the top groundfish port (\$12.4M). Gloucester is predicted to be the second highest grossing port (\$12.0M), followed by New Bedford (\$9.0M), and Portland (\$4.4M).

By vessel length (Table 83), vessels >75' are predicted to generate ~50% of sector groundfish revenue (\$28.5M) in FY2022. Vessels in the 50 to <75' category are predicted to generate ~33% of sector groundfish revenue (\$17.7M), and vessels in the 30' to <50' category are predicted to generate ~17% of sector groundfish revenue (\$9.1M).

Table 80- Summary of realized FY2020 and predicted FY2021 and FY2022 revenues and costs for the sector portion of the commercial groundfish fishery; median values; nominal dollars.

Option	Groundfish Gross Revenues	Total Gross Revenues	Operating Cost	Sector Cost	Quota Cost	Operating Profit	Days Absent
FY2020 Realized	54.2	72.9	11.4	2.2	2.4	56.7	11,435
FY2020 Prediction (FW59)	49.0	70.1	12.5	1.9	5.4	50.3	10,919
FY2021 Prediction (FW61)	46.3	64.1	10.9	1.8	3.6	47.7	9,942
FY2022 Prediction (Alt 1/No Action)	55.1	75.5	12.0	1.9	3.0	59.7	11,838
FY2022 Prediction (Alt 2; GB Cod=176mt)	47.9	67.5	9.8	1.7	2.5	55.0	10,593
FY2022 Prediction (Alt 2; GB Cod=262mt)	52.7	74.2	11.2	1.8	2.7	59.9	11,493
FY2022 Prediction (Alt 2; GB Cod=237mt)	52.5	74.1	11.0	1.8	2.7	59.9	11,506
FY2022 Prediction (Alt 2; GB Cod=233mt) (Preferred)	51.9	73.3	10.9	1.8	2.7	59.4	11,448

**Table 81- Alternative 1/No Action stock-level catch and revenue predictions with 5% and 95% confidence intervals, nominal dollars (millions).
Stocks are presented in order of FY2022 predicted ex-vessel value.**

Stock	Sub-ACL (mt)	Predicted Catch (mt)	Predicted Utilization	FY22 Predicted Revenue	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>	FY21 Predicted Revenue	FY20 Predicted Revenue	FY20 Realized Revenue
GOM Haddock	6,879	4,374	63.6%	11.9	<i>11.1</i>	<i>12.6</i>	7.7	6.1	9.7
GB Haddock West	70,575	3,275	4.6%	8.3	<i>7.4</i>	<i>9.9</i>	9	7.6	12.4
Pollock	13,988	2,761	19.7%	7.4	<i>6.9</i>	<i>7.9</i>	5.5	4.6	8.6
Redfish	9,421	5,456	57.9%	6.7	<i>5.9</i>	<i>7.5</i>	5.5	5.4	8.0
White Hake	1,994	1,984	99.5%	5.6	<i>5.5</i>	<i>5.7</i>	4	4	4.4
Witch Flounder	1,273	1,022	80.3%	3.8	<i>3.5</i>	<i>4.1</i>	2.7	2.9	3.0
American Plaice	2,542	786	30.9%	2.8	<i>2.6</i>	<i>3.2</i>	3	5	2.1
GB Winter Flounder	517	351	67.8%	2.0	<i>1.5</i>	<i>2.8</i>	1.9	3.6	1.3
GB Cod West	981	401	40.8%	1.8	<i>1.7</i>	<i>2.2</i>	2.4	3.5	1.7
GOM Cod	262	258	98.6%	1.4	<i>1.3</i>	<i>1.4</i>	1.5	1.4	1.2
GB Haddock East	2,195	404	18.4%	0.9	<i>0.7</i>	<i>1.2</i>	0.9	1.2	1.0
SNE/MA Winter Flounder	247	156	63.1%	0.8	<i>0.6</i>	<i>1.1</i>	0.9	1.7	0.4
CC/GOM Yellowtail Flounder	651	337	51.8%	0.6	<i>0.5</i>	<i>0.6</i>	0.3	0.4	0.3
GOM Winter Flounder	267	87	32.5%	0.4	<i>0.4</i>	<i>0.5</i>	0.3	0.5	0.3
GB Cod East	64	50	78.1%	0.2	<i>0.1</i>	<i>0.3</i>	0.2	0.6	0.2
SNE/MA Yellowtail Flounder	12	1	8.3%	0.0	<i>0.0</i>	<i>0.0</i>	0	0	0.0
GB Yellowtail Flounder	59	2	2.9%	0.0	<i>0.0</i>	<i>0.0</i>	0	0.1	0.0

Table 82- Alternative 1/No Action groundfish species revenue prediction by port, with 5% and 95% confidence intervals and average fish prices on groundfish trips, nominal dollars (millions).

State/Port	FY22 Prediction	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>	Avg. Price	FY21 Prediction	FY20 Prediction	FY20 Revenue
Massachusetts							
<i>Gloucester</i>	12.0	10.9	13.1	1.07	11.9	12.5	18.2
<i>Boston</i>	12.4	11.2	13.5	1.09	11.0	11.6	13.3
<i>New Bedford</i>	9.0	7.5	11.5	1.24	9.1	8	19.2
<i>Chatham</i>	0.2	0.2	0.3	1.58	0.4	0.5	0.1
<i>Other MA ports</i>	4.2	3.5	4.9	1.49	4.4	3.7	0.2
Maine							
<i>Portland</i>	4.4	3.7	5.2	0.98	3.8	7.4	1.6
<i>Other ME ports</i>	3.5	3.0	4.1	1.42	2.9	1.8	0.1
New Hampshire (all ports)	3.4	3.1	3.7	1.36	1.7	1.4	
Rhode Island							
<i>Point Judith</i>	1.8	1.4	2.2	1.34	0.7	1.2	0.2
<i>Other RI ports</i>	0	0	0.1	1.19	0.2	0.4	<0.01
Other Northeast	4.5	3.5	5.6	0.85	2.3	0.5	0.1

FY20 realized revenue reflects groundfish revenues by dealer location, while revenue predictions reflect revenues by home port.

Table 83- Alternative 1/No Action groundfish species revenue predictions by vessel size category, with 5% and 95% confidence intervals, nominal dollars (millions).

Vessel Length Category	FY22 Prediction	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>
75'+	28.5	26.3	31.5
50'to<75'	17.7	16.4	19.2
30'to<50'	9.1	8.5	9.6
<30'	0.0	0.0	0.0

Commercial Fishery - Common Pool

Alternative 1/No Action would likely have negative to neutral impacts on the common pool fishery relative to FY 2021 and low negative to neutral to positive impacts relative to Alternative 2.

The following changes from the non-sector FY2021 sub-ACL would go into place for FY2022 under No Action/Alternative 1: GB haddock would decrease by 45 mt, GOM haddock would decrease by 81 mt, redfish would decrease by 1.4 mt, and pollock would decrease by 46 mt. For Eastern GB cod and Eastern GB haddock, default specifications would be in effect from May 1, 2022, to July 31, 2022, and would equal 35% of the FY2021 catch limits. After July 31st, quotas would go to 0.

Recreational Groundfish Fishery

Impacts on the recreational groundfish fishery Alternative 1/No Action would be neutral relative to FY2021 (same as the 193 mt GOM cod sub-ACL) and Alternative 2 (only a 1 mt decline from the 193 mt GOM cod sub-ACL). The recreational sub-ACL for GOM haddock would decrease under No Action and Alternative 2 (from 5,295 mt in FY2021 to 3,634 mt in FY2022, as set in FW 61) but access to this stock is limited by incidental catch of GOM cod so the impact of this decrease is expected to be neutral.

Impacts on other fisheries

Atlantic Sea Scallop Fishery

Under Alternative 1/No Action, the following sub-ACLs would be allocated to the scallop fishery during FY2022: 12 mt of GB yellowtail flounder, 2 mt of SNE/MA yellowtail flounder, 129 mt of SNE/MA windowpane flounder, and 31 mt of GOM/GB windowpane flounder.

Under Alternative 1/No Action, the FY2022 sub-ACLs for SNE/MA yellowtail, GOM/GB windowpane flounder, and SNE/MA windowpane flounder would be unchanged from FY2021 levels. Alternative 1/No Action could have negative impacts to the scallop fishery relative to FY2021 since the sub-ACL for GOM/GB windowpane flounder would be less than the projected catch for FY2022 year (see Scallop PDT memo). Projected catch for GOM/GB windowpane flounder could be high enough to trigger the AM. Currently, the AMs for windowpane flounder stocks are triggered if either the sub-ACL is exceeded by over 50% or if the total ACL is exceeded. Under No Action, the total ACL would be 55 mt for GOM/GB windowpane flounder. If total catches across all fisheries are similar to FY2020, it is possible that the total ACL could be exceeded for GOM/GB windowpane flounder, since total catch has exceeded 55 mt in every year between FY2016 and FY2020 (Table 54). The GOM/GB windowpane sub-ACL was exceeded in FY2020 by 290%. As a result of this overage, the reactive large accountability measure for GOM/GB windowpane will be triggered for FY2022, meaning a gear restriction will be required for all fishing occurring in Closed Area II for the entirety of FY2022. FY2022 will be the first year that the modified gear is required on Georges Bank, and this is expected to reduce bycatch of GOM/GB windowpane flounder, along with GB yellowtail flounder, which may reduce the likelihood of the FY2022 GOM/GB windowpane flounder sub-ACL being exceeded, reducing potential negative impacts. Projected catch of SNE/MA yellowtail flounder and SNE/MA windowpane flounder is less likely to trigger the AM (less than 50% over the sub-ACL). Compared to Alternative 2, No Action/Alternative 1 would have a neutral impact on the scallop fishery since the sub-ACLs for SNE/MA yellowtail, GOM/GB windowpane flounder, and SNE/MA windowpane flounder would remain the same.

Under Alternative 1/No Action the sub-ACL for GB yellowtail flounder would be 7 mt less than under Alternative 2 (12 mt compared to 19 mt), potentially having negative economic impacts since FY2022 projected catch by the scallop fishery is estimated to be 15-19 mt (see Scallop PDT memo). However, this is not high enough to trigger an AM under the No Action sub-ACL (>50% of the sub-ACL). It is unlikely that the total ACL would be exceeded for this stock since total utilization of the ACL has been very low in recent years. Impacts on the scallop fishery are likely neutral, but possibly negative, for GB yellowtail flounder under No Action/Alternative 1 compared to Alternative 2.

Midwater trawl directed Atlantic herring fishery

Alternative 1/No Action would have neutral impacts on the midwater trawl herring fishery. Sub-ACLs for GB haddock and GOM haddock between FY2021 and FY2022 would decrease from 1,539 mt to 1,511 mt for GB haddock and decrease from 156 mt to 107 mt for GOM haddock. However, GB haddock catches by the herring fishery have been low in recent years - 0.2 mt in FY 2019 and 10 mt in FY 2020 due to lower herring ACLs (Table 58). If trends continue, decreases in the GB haddock sub-ACL are unlikely to confer negative economic impacts in FY2022 and beyond, either with respect to status quo or Alternative 2 sub-ACLs. Alternative 2 sub-ACLs for the MWT directed herring fishery would be slightly

higher for GB haddock (1,514 mt) and the same for GOM haddock but impacts of No Action/Alternative 1 relative to Alternative 2 are expected to be neutral due to low utilization by the MWT directed herring fishery. In FY 2019 and FY 2020 GOM haddock catch by the midwater trawl herring fishery was approximately 0.1 mt (Table 56). Unless effort shifts considerably, neutral economic impacts would be expected. Atlantic herring quotas for 2020 and 2021 were substantially lower than in prior years (NEFMC, Atlantic Herring FW6).

Small-mesh fisheries

Under Alternative 1/No Action the sub-ACL for GB yellowtail flounder for the small mesh fisheries (e.g., whiting and squid) would remain the same as FY2021 levels at 1.5 mt in FY2022. Under Alternative 2, the sub-ACL for FY2022 would increase to 2.3 mt. Economic impacts on the small mesh fishery are expected to be negative to neutral since catches in recent years have generally been low (0 mt in FY2019), though they were slightly higher in FY2020 at 1.8 mt (Table 56). If catches in FY2022 are the same as those in FY2020, the sub-ACL would be exceeded, triggering the AMs.

Large-mesh non-groundfish fisheries

The southern windowpane flounder “other fisheries” sub-component is used to evaluate when an AM could be triggered for large-mesh non-groundfish fisheries (e.g., summer flounder and scup trawl fisheries). Under Alternative 1/No Action, the other sub-component would remain at the FY2021 level of 177 mt in FY2022. The other sub-component for FY2022 under Alternative 2 would be the same as that under No Action. There would be neutral economic impacts of the sub-ACL under No Action/Alternative 1 compared to Alternative 2.

The AM for southern windowpane for large-mesh non-groundfish fisheries is implemented if the large-mesh non-groundfish fishery exceeds its sub-ACL (evaluated using the “other sub-component”), and if the total ACL is exceeded by more than the management uncertainty buffer (currently set at approximately 5%).

Based on recent catches (Table 90), the other sub-component of 177mt is likely to be exceeded. From FY2016-FY2020, annual catches of S. Windowpane by large-mesh non-groundfish fisheries ranged from 178.1 - 243.6mt.

The total ACL for S. Windowpane under No Action would be 371mt. Based on recent catches (Table 91) this number may be exceeded in FY2022. From FY2016-FY2020, total annual catches of S. Windowpane ranged from 335.6 - 454.7mt.

6.5.1.2 Alternative 2 – Revised Specifications (*Preferred Alternative*)

Comparison between FY2021 and proposed FY2022 commercial sub-ACLs, recreational sub-ACLs, and other fisheries sub-ACLs for groundfish are provide in Table 84 and Table 85.

Table 84- Comparison of commercial (sector and common pool) groundfish sub-ACLs (mt) for FY20201 and proposed FY2022, including the percent change between years. Proposed FY2022 sub-ACLs as indicated under Alternative 2/Revised Specifications and includes the Council’s proposal for the GB cod recreational catch target.

Commercial groundfish sub-ACL

		FY2021	Draft FY2022	% Change
Stock				
Allocated Stocks	GB Cod	1,093	244	-78%
	GOM Cod	270	270	0%
	GB Haddock	76,622	75,381	-2%
	GOM Haddock	10,281	7,056	-31%
	GB Yellowtail Flounder	64	97	52%
	SNE/MA Yellowtail Flounder	16	16	0%
	CC/GOM Yellowtail Flounder	692	692	0%
	American Plaice	2,682	2,630	-2%
	Witch Flounder	1,317	1,317	0%
	GB Winter Flounder	563	563	0%
	GOM Winter Flounder	281	281	0%
	SNE/MA Winter Flounder	288	288	0%
	Redfish	9,677	9,559	-1%
	White Hake	2,019	1,990	-1%
	Pollock	18,549	14,135	-24%
Non-allocated Stocks	GOM/GB Windowpane Flounder	108	108	0%
	SNE/MA Windowpane Flounder	43	43	0%
	Ocean Pout	50	50	0%
	Atlantic Halibut	73	73	0%
	Atlantic Wolffish	86	86	0%

Table 85- Comparison of other fisheries sub-ACLs (mt) for FY2021 and proposed FY2022, including the percent change between years. Proposed FY2022 sub-ACLs as indicated under Alternative 2/Revised Specifications.

Fishery	Stock	FY2021	Draft FY2022	% Change
Recreational Groundfish	GOM Cod	193	192	-1%
	GOM Haddock	5,295	3,634	-31%
Sea Scallop	GB Yellowtail Flounder	12	19	58%
	SNE/MA Yellowtail Flounder	2	2	0%
	GOM/GB Windowpane Flounder	31	31	0%
	SNE/MA Windowpane Flounder	129	129	0%
Midwater Trawl	GB Haddock	1,539	1,514	-2%
	GOM Haddock	156	107	-31%
Small-Mesh	GB Yellowtail Flounder	1.5	2.3	53%
Other Sub-components – Large-Mesh Non-Groundfish ¹	SNE/MA Windowpane Flounder	177	177	0%

¹The value for Other Sub-components for SNE/MA Windowpane Flounder includes the other sub-component value for Large-Mesh Non-Groundfish Trawl Fisheries.

Impacts of Alternative 2 ACLs on the sector component of the commercial groundfish fishery

Depending on the recreational catch target for GB cod, the sector sub-ACL will vary. The options can be found within Table 5. As mentioned in the methods above, the assumed quota allocation, based on sector activity in recent fishing years, is 87.5% for GB Cod West and 12.5% for GB Cod East.

Under Option 1 for the GB cod catch target, the FY2022 sector sub-ACL is 176mt. In this scenario, predicted groundfish revenue for FY2022 is \$47.9M, representing a \$6.3M (12%) decrease from the FY2020 realized value of \$54.2M, and a \$7.2M (13%) decrease relative to No Action (Table 80). Total predicted gross revenues from groundfish trips for FY2022 is \$67.5M. This represents a \$5.4M decrease from the FY2020 realized value (\$72.9M), and an \$8.0M decrease compared to No Action.

Under Option 4 (preferred alternative) for the GB cod catch target, the GB cod sector sub-ACL is 233mt. In this scenario, groundfish revenues are predicted to be \$4.0M higher than under a sub-ACL of 176mt. However, relative to No Action, groundfish revenues still decrease by \$3.2 million.

Operating profit predictions for FY2022 under the various GB cod sector sub-ACL scenarios are included in Table 80. Under a sub-ACL of 177mt, predicted operating profit is \$55.0M, representing a \$4.7M decrease relative to No Action. Under a sub-ACL of 233mt, predicted operating profit is \$59.4M, a slight reduction from the No Action prediction of \$59.7M. Importantly, the increasing trend in fuel prices (Figure 36) increases the likelihood of overestimation for all FY2022 predictions. Furthermore, predicted quota costs, are lower than both predicted and realized values from FY2017-2019 (Table 79). An increase in quota prices to pre-FY2020 levels could further lead to an overestimation of operating profits.

At the stock-level (Table 86 and Table 87), the most constraining stocks are predicted to be GOM cod, GB cod west, and white hake. The four stocks with highest predicted ex-vessel values are GOM haddock, pollock, GB haddock west, and redfish, though notably some of these stocks yield considerably less revenue relative to No Action. For example, GB haddock west revenue is \$6.9 million under a GB cod sector sub-ACL of 176mt, compared \$8.3 million under No Action. The more constraining GB cod quota limits access to certain groundfish stocks, such as GB haddock. Revenue from GB cod west also decreases from \$1.8 million under No Action to \$0.7 million, under the GB cod sub-ACL of 176mt. Under a sub-ACL of 233mt, these stock-level revenue decreases relative to No Action are lessened. For example, GB haddock west revenue is \$7.7 million and GB cod west revenue is \$1.0 million.

At the port-level (Table 88), Gloucester, Boston, and New Bedford all are predicted to experience groundfish revenue decreases of ~1.0M under a GB cod sub-ACL of 176mt relative to 233mt. Relative to No Action, New Bedford is even more negatively impacted, with groundfish revenue predicted to decrease by nearly \$2.6M (\$9.0M under No Action; \$6.4M under a 176mt sub-ACL). Under the preferred GB cod sub-ACL of 233mt, predicted groundfish revenue for New Bedford is \$7.6 million, \$1.4 million less than under No Action. Other major groundfish ports, such as Boston and Portland, also would be negatively impacted relative to No Action.

By vessel length (Table 89), larger vessels are predicted to be most substantially impacted by reductions in the GB cod sector sub-ACL. For example, under No Action, vessels in the 75'+ size class are predicted to generate \$28.5M in groundfish revenue; this number falls to \$23.2M under a 176mt GB cod sub-ACL. Negative impacts for larger vessels would still occur under a 233mt sub-ACL, but the magnitude of these impacts would be reduced. Smaller vessels, in the 30' to <50' size class are predicted to have a slight increase in revenues under Alternative 2 relative to No Action. A possible explanation would be a shift in quota towards smaller vessels as offshore trips become more constrained by GB cod. The 50' to <75' size class is predicted to be most positively impacted from a GB sector sub-ACL of 233mt, relative to a sub-ACL of 176mt.

Table 86- Alternative 2 (GB Cod sector sub-ACL of 176mt) stock-level catch and revenue predictions with 5% and 95% confidence intervals, nominal dollars (millions). Stocks are presented in order of FY2022 predicted ex-vessel value. Sub-ACLs for GB Cod East/West are based on proportion of catch over the last five fishing years.

Stock	Sub-ACL (mt)	Predicted Catch (mt)	Predicted Utilization	FY22 Prediction	<i>p</i> (5%) Revenue	<i>p</i> (95%) Revenue	FY21 Predicted Revenue	FY20 Predicted Revenue	FY20 Realized Revenue
GOM Haddock	6,879	4,285	62.3%	11.6	10.7	12.5	7.7	6.1	9.7
Pollock	13,988	2,569	18.4%	7.0	6.4	7.6	9.0	7.6	12.4
GB Haddock West	68,670	2,747	4.0%	6.9	6.3	7.6	5.5	4.6	8.6
Redfish	9,421	4,899	52.0%	6.0	5.2	6.7	5.5	5.4	8.0
White Hake	1,965	1,772	90.2%	5.1	4.7	5.5	4.0	4.0	4.4
Witch Flounder	1,273	831	65.3%	3.1	2.9	3.3	2.7	2.9	3.0
American Plaice	2,542	646	25.4%	2.3	2.2	2.5	3.0	5.0	2.1
GOM Cod	262	262	100.0%	1.4	1.4	1.4	1.9	3.6	1.3
GB Winter Flounder	517	155	29.9%	1.1	0.8	1.4	2.4	3.5	1.7
GB Cod West	154	150	97.6%	0.7	0.7	0.8	1.5	1.4	1.2
SNE/MA Winter Flounder	247	125	50.4%	0.7	0.5	0.9	0.9	1.7	0.4
GB Haddock East	6,409	285	4.4%	0.6	0.5	0.8	0.9	1.2	1.0
CC/GOM Yellowtail Flounder	651	343	52.6%	0.6	0.6	0.7	0.3	0.4	0.3
GOM Winter Flounder	267	87	32.4%	0.4	0.4	0.5	0.3	0.5	0.3
GB Cod East	22	14	64.8%	0.1	0.0	0.1	0.2	0.6	0.2
SNE/MA Yellowtail Flounder	12	1	7.6%	0.0	0.0	0.0	0.0	0.1	0.0
GB Yellowtail Flounder	89	1	1.2%	0.0	0.0	0.0	0.0	0.0	0.0

Table 87- Alternative 2 (GB Cod sector sub-ACL of 233mt) stock-level catch and revenue predictions with 5% and 95% confidence intervals, nominal dollars (millions). Stocks are presented in order of FY2022 predicted ex-vessel value. Sub-ACLs for GB Cod East/West are based on proportion of catch over the last five fishing years.

Stock	Sub-ACL (mt)	Predicted Catch (mt)	Predicted Utilization	FY22 Prediction	<i>p</i> (5%) Revenue	<i>p</i> (95%) Revenue	FY21 Predicted Revenue	FY20 Predicted Revenue	FY20 Realized Revenue
GOM Haddock	6,879	4,420	64.2%	12.0	11.2	12.7	7.7	6.1	9.7
GB Haddock West	68,670	3,001	4.4%	7.7	7.0	8.7	9.0	7.6	12.4
Pollock	13,988	2,644	18.9%	7.2	6.7	7.7	5.5	4.6	8.6
Redfish	9,421	5,267	55.9%	6.4	5.7	7.2	5.5	5.4	8.0
White Hake	1,965	1,906	97.0%	5.5	5.1	5.7	4.0	4.0	4.4
Witch Flounder	1,273	919	72.2%	3.4	3.2	3.6	2.7	2.9	3.0
American Plaice	2,542	719	28.3%	2.6	2.4	2.8	3.0	5.0	2.1
GB Winter Flounder	517	236	45.7%	1.5	1.1	2	2.4	3.5	1.7
GOM Cod	262	262	99.9%	1.4	1.4	1.4	1.9	3.6	1.3
GB Cod West	204	200	97.9%	1.0	0.9	1	1.5	1.4	1.2
GB Haddock East	6,409	381	6.0%	0.9	0.6	1.1	0.9	1.2	1.0
SNE/MA Winter Flounder	247	131	52.9%	0.7	0.4	0.9	0.9	1.7	0.4
CC/GOM Yellowtail Flounder	651	344	52.8%	0.6	0.6	0.7	0.3	0.4	0.3
GOM Winter Flounder	267	87	32.7%	0.4	0.4	0.5	0.3	0.5	0.3
GB Cod East	29	24	83.1%	0.1	0.1	0.1	0.2	0.6	0.2
SNE/MA Yellowtail Flounder	12	1	9.1%	0.0	0.0	0.0	0.0	0.1	0.0
GB Yellowtail Flounder	89	1	1.6%	0.0	0.0	0.0	0.0	0.0	0.0

Table 88- Alternative 2 groundfish species revenue prediction by port, with 5% and 95% confidence intervals and average fish prices on groundfish trips, nominal dollars.

State/Port	<u>GB Cod sub-ACL = 176mt</u>			<u>GB Cod sub-ACL = 233mt</u> <i>(Preferred Option)</i>		
	FY22 Prediction	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>	FY22 Prediction	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>
Massachusetts						
<i>Gloucester</i>	11.6	10.5	12.7	12.3	11.2	13.4
<i>Boston</i>	11	9.7	12.2	12.1	11.0	13.3
<i>New Bedford</i>	6.4	5.5	7.3	7.6	6.4	9.0
<i>Chatham</i>	0.1	0.1	0.1	0.1	0.1	0.1
<i>Other MA ports</i>	2.4	2.0	2.9	3.0	2.5	3.6
Maine						
<i>Portland</i>	4.0	3.3	4.7	3.8	3.1	4.4
<i>Other ME ports</i>	4.0	3.3	4.8	3.7	3.1	4.4
Rhode Island						
<i>Point Judith</i>	1.6	1.3	2.0	1.7	1.3	2.1
<i>Other RI ports</i>	0.0	0.0	0.0	0.0	0.0	0.0
New Hampshire	3.6	3.3	4.0	3.6	3.3	3.9
Other Northeast	3.3	2.3	4.3	4.0	3.0	5.0

Table 89- Alternative 2 groundfish species revenue prediction by size class, with 5% and 95% confidence intervals, nominal dollars (millions).

Vessel Length Category	<u>GB Cod sub-ACL = 176mt</u>			<u>GB Cod sub-ACL = 233mt</u> <i>(Preferred Option)</i>		
	FY22 Prediction	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>	FY22 Prediction	<i>p(5%) Revenue</i>	<i>p(95%) Revenue</i>
75'+	23.2	21.4	24.9	24.9	23.3	26.8
50'to<75'	15.3	14	16.6	17.5	16.2	18.8
30'to<50'	9.4	8.7	10.1	9.3	8.8	9.9
<30'	0.0	0.0	0.0	0.0	0.0	0.0

Commercial Fishery - Common Pool

Alternative 2 would have a range of negative, neutral, to low positive impacts on the common pool fishery relative to FY 2021 and negative, neutral, to low positive impacts relative to Alternative 1/No Action.

The following changes from the non-sector FY2021 sub-ACL would go into place for FY2022 under Alternative 2: GB cod sub-ACL would decrease by 36 to 40 mt depending on the option for a recreational GB cod catch target (decrease by 37 mt under the preferred option), GOM cod would decrease by 0.2 mt, GB haddock would decrease by 41 mt, GOM haddock would decrease by 81 mt, GB yellowtail flounder would increase by 2.7 mt, and pollock would decrease by 46 mt. All other stocks would remain the same as FY 2021. Under No Action/Alternative 1, for Eastern GB cod and Eastern GB haddock, default specifications would be in effect from May 1, 2022, to July 31, 2022, and would equal 35% of the FY2021 catch limits. After July 31st, quotas would go to 0.

In recent years, common pool catches of GB cod have been ~2-3 mt, though in FY2018 catches were around 6 mt (three-year average from FY2018-FY2020 of ~3.8 mt) (Table 42). The large decline in the FY2021 GB cod sub-ACL (48 mt) to that for FY2022 under Alternative 2 (8 to 12 mt depending on the option, ~11 mt under the preferred catch target option) is likely to have negative impacts on the common pool fishery, since catches could approach the sub-ACL. Common pool catches in the eastern GB area have been less than 0.1 mt in recent years (Table 44).

Impacts on the recreational groundfish fishery

Impacts on the recreational groundfish fishery Alternative 2 would be neutral relative to FY2021 (same as the 193 mt GOM cod sub-ACL) and Alternative 1/No Action (a 1mt decline from the 193 mt GOM cod sub-ACL). The recreational sub-ACL for GOM haddock would decrease under No Action and Alternative 2 (from 5,295 mt in FY2021 to 3,634 mt in FY2022) but access to this stock is limited by incidental catch of GOM cod so the impact of this decrease is expected to be neutral.

Impacts on other fisheries

Atlantic Sea Scallop Fishery

Under Alternative 2, the following sub-ACLs would be allocated to the scallop fishery during FY2022: 19 mt of GB yellowtail flounder, 2 mt of SNE/MA yellowtail flounder, 129 mt of SNE/MA windowpane flounder, and 31 mt of GOM/GB windowpane flounder.

Under Alternative 2, the FY2022 sub-ACL for SNE/MA yellowtail, GOM/GB windowpane flounder, and SNE/MA windowpane flounder would be unchanged from FY2021 levels conferring neutral economic impacts for the scallop fishery relative to FY2021, since the sub-ACL for GOM/GB windowpane flounder would be smaller than the projected catch for FY2022 year (see Scallop PDT memo). Projected catch for GOM/GB windowpane flounder could be high enough to trigger the AM (50% over the sub-ACL). Under Alternative 2, the total ACL would be 55 mt for GOM/GB windowpane flounder. If total catches across all fisheries are similar to FY2020, it is possible that the total ACL could be exceeded for GOM/GB windowpane flounder since total catch has exceeded 55 mt in every year between FY2016 and FY2020 (Table 54). The GOM/GB windowpane sub-ACL was exceeded in FY2020 by 290%. As a result of this overage, the reactive large accountability measure for GOM/GB windowpane will be triggered for FY2022, meaning a gear restriction will be required for all fishing occurring in Closed Area II for the entirety of FY2022. FY2022 will be the first year that the modified gear is required on Georges Bank, and this is expected to reduce bycatch of GOM/GB windowpane flounder, along with GB yellowtail flounder, which may reduce the likelihood of the FY2022 GOM/GB windowpane flounder sub-ACL being exceeded, reducing potential negative impacts. Projected catch of SNE/MA yellowtail flounder and SNE/MA windowpane flounder is less likely to trigger the AM (less than 50% over the sub-ACL).

Compared to No Action/Alternative 1, Alternative 2 would have a neutral impact on the scallop fishery since the sub-ACLs for SNE/MA yellowtail, GOM/GB windowpane flounder, and SNE/MA windowpane flounder would remain the same.

The sub-ACL for GB yellowtail flounder under Alternative 2 would increase by 58% relative to FY 2021 levels and compared to No Action/Alternative 1 (increasing from 12 mt to 19 mt), potentially having positive economic impacts since FY2022 projected catch by the scallop fishery is estimated to be 15-19 mt (see Scallop PDT memo). However, this is not high enough to trigger an AM under the No Action sub-ACL (>50% of the sub-ACL). It is unlikely that the total ACL would be exceeded for this stock since total utilization of the ACL has been very low in recent years. Overall economic impacts for the scallop fishery are neutral to positive for GB yellowtail flounder under Alternative 2 compared to No Action/Alternative 1.

Midwater trawl directed Atlantic herring fishery

The midwater trawl herring fishery will have negative changes in sub-ACL values. Under Alternative 2, the GB haddock sub-ACL is proposed to decrease by 2% between FY2021 and FY2022 (from 1,539 mt to 1,514 mt), and GOM haddock would decrease by 31% (from 156 mt to 107mt). Impacts are expected to be neutral both in respect to Alternative 1 (where quotas would also decrease for GB haddock and GOM haddock) and status quo given recent low catches of both haddock stocks, relative to the sub-ACLs. GB haddock catches by the herring fishery have been low in recent years - 0.2 mt in FY 2019 and 10 mt in FY 2020 due to lower herring ACLs (Table 64). If trends continue, decreases in the GB haddock sub-ACL are unlikely to confer negative economic impacts in FY2022 and beyond, either with respect to status quo or Alternative 2 sub-ACLs. In FY 2019 and FY 2020 GOM haddock catch by the midwater trawl herring fishery was approximately 0.1 mt (Table 63), so unless effort shifts considerably, neutral economic impacts would be expected. Atlantic herring quotas for 2020 and 2021 were substantially lower than in prior years (NEFMC, Atlantic Herring FW6).

Small-mesh fisheries

Under Alternative 2 the sub-ACL for GB yellowtail flounder for the small mesh fisheries (e.g., whiting and squid) would increase from FY 2021 levels, from 1.5 mt to 2.3 mt in FY 2022. This is expected to have neutral to positive economic impacts on the small mesh fishery since catches in recent years have been low (0 mt in FY2019), though they were slightly higher in FY2020 at 1.8 mt (Table 62). If effort in FY2022 remains similar to that in FY2020, this sub-ACL will potentially be less constraining for the fishery than that under No Action, as catches of 1.8 mt would exceed the No Action sub-ACL of 1.5 mt, triggering the AMs, but not the sub-ACL of 2.3 mt under Alternative 2. Overall economic impacts are expected to be neutral to positive both in respect to status quo and with respect to Alternative 1/No Action.

Large Mesh non-groundfish fisheries

The southern windowpane flounder “other fisheries” sub-component is used to evaluate when an AM could be triggered for large-mesh non-groundfish fisheries (e.g., summer flounder and scup trawl fisheries). Under Alternative 2, the other sub-component would remain at the FY 2021 levels of 177 mt in FY2022. The triggering of an AM implements gear-restricted areas (GRAs) to reduce incidental catch of windowpane flounder. If bycatch of southern windowpane flounder is low in FY2022, there would be neutral economic impacts of the sub-ACL under Alternative 2 compared to FY2021. However, if bycatch of southern windowpane flounder is in line with recent fishery performance, AMs may be triggered. Relative to No Action, impacts will be neutral, as the sub-ACL would be 177mt under either alternative.

The AM for southern windowpane for large-mesh non-groundfish fisheries is implemented if the large-mesh non-groundfish fishery exceeds its sub-ACL (evaluated using the “other sub-component”), and if

the total ACL is exceeded by more than the management uncertainty buffer (currently set at approximately 5%).

Based on recent catches (Table 90), the other sub-component of 177mt is likely to be exceeded. From FY2016-FY2020, annual catches of S. Windowpane by large-mesh non-groundfish fisheries ranged from 178.1 - 243.6mt.

The total ACL for S. Windowpane under No Action would be 371mt. Based on recent catches (Table 91), this number may be exceeded in FY2022. From FY2016-FY2020, total annual catches of S. Windowpane ranged from 335.6 - 454.7mt.

Table 90- SNE/MA windowpane flounder other sub-component limits and catch (mt) and utilization rates, fishing years 2016-2020.

FY	S. Windowpane sub-ACL	S. Windowpane "other" catch	Utilization
2016	249	178.1	71.5%
2017	249	201	80.7%
2018	218	205	94.0%
2019	218	243.6	111.7%
2020	196	211.5	107.9%

Table 91- SNE/MA windowpane flounder total ACLs and catch (mt) and utilization rates, fishing years 2016-2020.

FY	S. Windowpane total ACL	S. Windowpane total catch	Utilization
2016	599	417.2	69.7%
2017	599	440.9	73.6%
2018	457	454.7	99.5%
2019	457	350	76.6%
2020	412	335.6	81.5%

6.5.1.3 Alternative 3 - Recreational Catch Target for Georges Bank Cod (Preferred Alternative)

6.5.1.3.1 Option 1 – No Action

Option 1 would maintain the current recreational catch target for GB cod of 138mt for FY2022.

Impacts to the commercial groundfish fishery

Option 1/No Action is expected to have likely negative economic impacts on the commercial fishery, relative to Options 2-4, because this alternative will retain the previous recreational catch target for GB

cod which was based on the MRIP data in the 2017 stock assessment. Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years. A higher recreational catch target under Option 1/No Action, relative to Options 2-4, would result in a decreased commercial sub-ACL for GB cod for FY2022.

Impacts to the recreational groundfish fishery

Option 1/No Action is expected to have neutral to negative economic impacts on the recreational fishery, relative to Options 2-4, because this alternative will retain the recreational catch target for Georges Bank cod and management measures will attempt to constrain fishing effort within the target which is based on MRIP data in the 2017 stock assessment, while fishing effort in those years will be calculated using recalibrated estimates. Short term positive economic impacts would be incurred if management measures are less restrictive under Option 1/No Action compared to Options 2-4, as Options 2-4 may limit recreational fishing revenue and private angler welfare.

6.5.1.3.2 Option 2 - Revised Recreational GB Cod Catch Target Based on Recent Catches

Option 2 would revise current recreational catch target for GB cod to be 43 mt for FY2022.

Impacts to the commercial groundfish fishery

Option 2 is expected to have positive economic impacts on the commercial fishery, relative to Option 1/No Action, Option 3, and Option 4, because this alternative will decrease the recreational GB cod catch target to 43 mt, which was based on the MRIP data in the 2021 stock assessment. This change would result in a greater commercial fishery quota relative to No Action. Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years.

Impacts to the recreational groundfish fishery

Option 2 is expected to have negative economic impacts on the recreational fishery, relative to Option 1/No Action, Option 3, and Option 4, because this alternative will decrease the recreational catch target for Georges Bank cod and management measures will attempt to constrain fishing effort within the target, which is based on the MRIP data in the 2021 stock assessment. Negative economic impacts would be incurred if management measures are more restrictive under Option 2 compared with Option 1/No Action, as both for-hire fishery revenues and private angler welfare would be expected to decrease.

6.5.1.3.3 Option 3 - Revised Recreational GB Cod Catch Target Based on Recent Percentage of US Fisheries Catches

Option 3 would revise current recreational catch target for GB cod to be 71 mt for FY2022.

Impacts to the commercial groundfish fishery

Option 3 is expected to have positive economic impacts on the commercial fishery, relative to Option 1/No Action, negative economic impacts relative to Option 2, and neutral impacts relative to Option 4, because this alternative will decrease the recreational GB cod catch target to 71 mt, which was based on the MRIP data in the 2021 stock assessment. This change would result in a greater commercial fishery quota relative to No Action. Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years.

Impacts to the recreational groundfish fishery

Option 3 is expected to have negative economic impacts on the recreational fishery, relative to Option 1/No Action, positive impacts relative to Option 2, and neutral impacts relative to Option 4, because this alternative will decrease the recreational catch target for Georges Bank cod and management measures will attempt to constrain fishing effort within the target, which is based on the MRIP data in the 2021 stock assessment. Negative economic impacts would be incurred if management measures are more restrictive under Option 3 compared with Option 1/No Action as both for-hire fishery revenues and private angler welfare would be expected to decrease.

6.5.1.3.4 Option 4 - Revised Recreational GB Cod Catch Target Based on a Reduction from Recent Catches (*Preferred Option*)

Option 4 would revise current recreational catch target for GB cod to be 75 mt for FY2022.

Impacts to the commercial groundfish fishery

Option 4 is expected to have positive economic impacts on the commercial fishery, relative to Option 1/No Action, negative economic impacts relative to Option 2, and neutral impacts relative to Option 3, because this alternative will decrease the recreational GB cod catch target to 71 mt, which was based on the MRIP data in the 2021 stock assessment. This change would result in a greater commercial fishery quota relative to No Action. Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years.

Impacts to the recreational groundfish fishery

Option 4 is expected to have negative economic impacts on the recreational fishery, relative to Option 1/No Action, positive impacts relative to Option 2, and neutral impacts relative to Option 3, because this alternative will decrease the recreational catch target for Georges Bank cod and management measures will attempt to constrain fishing effort within the target, which is based on the MRIP data in the 2021 stock assessment. Negative economic impacts would be incurred if management measures are more restrictive under Option 4 compared with Option 1/No Action as both for-hire fishery revenues and private angler welfare would be expected to decrease.

6.5.1.4 Alternative 4 - Changes to the Default Specifications Process (*Preferred Alternative*)

6.5.1.4.1 Option 1 – No Action

Impacts on the commercial groundfish fishery

Under Option 1/No Action, the current default specifications process applies to each groundfish stock or management unit that lacks a full year of specifications. For those that lack specifications, 35 percent of the prior year's OFL, ABC, and ACL is specified for the first three months (May 1 to July 31) of an upcoming fishing year. The default specifications may not exceed the anticipated ABCs for the upcoming fishing year. If the default specification does exceed the anticipated ABC, the default specification would be set equal to the ABC for the upcoming fishing year. The default specifications are replaced by new approved specifications upon rulemaking, and expire on July 31. Starting on August 1, fishing for stocks

without specifications in place would cease, along with fishing for other groundfish stocks that share the same broad stock area (BSA) as stocks with no specifications. Catches occurring while default specifications may be in place (after May 1 through final rulemaking) are counted against the updated ACL for the fishing year. Northeast groundfish sectors are not subject to the 20% holdback of the prior year's Sector ACE while default specifications are in place. Option 1/No Action allows the directed groundfish fishery to begin on-time if specifications are not in place for the start of the fishing year. A percentage of 35% of the prior year's ACL, not to exceed the next year's ABC, reflects a more precautionary approach to default specifications provisions than carrying forward 100% of the prior year's specifications (as is done in other FMPs), reflecting the variation in stock statuses within the multispecies complex. Reducing the allowable catch in the fishery by 65% builds in precaution to protect stocks whose stock status may have changed while allowing the fishing year to begin on time and accommodates fishing businesses that prosecute the fishery early in the fishing year. Default specifications of less than 100% also provide an incentive to maintain specifications timelines.

Although less than 100% of the anticipated fishing year's ACL would be available under default specifications, sectors would be expected to plan operations as if final specifications would be in place. However, fishing effort may potentially be lower under the default percentage of 35%, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default specifications would be in place (see Table 66). This is especially the case for the segment of the fishery operating on eastern Georges Bank (see Table 69). The common pool fishery would have lower trip limits under the default percentage of 35% and therefore fishing effort would be lower. Option 1, therefore, may have negative economic impacts. Option 1 is more conservative than Options 2-4 which all would have a default percentage of 75% and, therefore, is expected to have negative economic impacts when compared to Options 2-4.

Additionally, Option 1 has a shorter duration for default specifications than Options 2-4. Option 1 would have potentially moderate to highly negative economic impacts when compared to Options 2-4 if the shorter duration in Option 1 resulted in default specifications expiring and a reduction in fishing activity in certain BSAs. To date the July 31 default specifications deadline has not been missed, though it has been close in some years (see Table 65).

Even if default specifications do not expire, there may potentially be disruptions to the fishery from the deadline being approached in terms of disruptions to business planning and confusion over what the expiring specifications mean for fishery operations, which have direct and indirect negative economic impacts. This was observed particularly in FY2020 when default specifications were in place for several stocks including redfish, which as a unit stock would result in no directed fishing allowed in all BSAs if default specifications expired. In the weeks leading up to the default specifications deadline, sector managers noted questions from sector members about what would happen should the default specifications expire. For example, vessel operators asked if a trip were underway prior to July 31 whether the trip would be allowed to be completed after the deadline. These types of questions stem from economic impact concerns related to trip planning. Disruptions to the ACE leasing market are also possible, whether the default specifications do expire or the deadline is approached. However, the extent to which the current default specifications process has impacted ACE lease prices is difficult to assess. In those years in which default specifications were in place, there is the potential for quota scarcity with a 35% default ACL. However, first quarter quota prices may also be high because of anticipated quota scarcity later in the fishing year, after final quotas are implemented.

The no holdback provision has positive economic impacts for the sector fishery, as this allows the full amount of ACE under the default specifications to be available at the start of the fishing year.

Impacts on the recreational groundfish fishery

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore impacts on the recreational fishery are expected to be neutral.

Impacts on other fisheries

Impacts to other fisheries with groundfish sub-ACLs are possible should those stocks have default specifications. Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACLs for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such an event, and therefore impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, impacts to other fisheries with groundfish sub-ACLs would be negative. Since Option 1 has a lower default percentage and a shorter duration than Options 2-4, impacts on other fisheries would be slightly negative compared to Options 2-4.

6.5.1.4.2 Option 2 - 4 months duration, 75% of the previous year's specifications, no holdback provision, and 2-year US/CA TACs

Impacts on the commercial groundfish fishery

Under Option 2, the default specification percentage would be 75%, and the default specifications would be in place from May 1 to August 31. Although less than 100% of the anticipated fishing year's ACL would be available, sectors would be expected to plan operations as if final specifications would be in place. However, fishing effort may be slightly lower under the 75% default percentage in Option 2, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default specifications would be in place (see Table 66). This is especially the case for the segment of the fishery operating on eastern Georges Bank (see Table 69). The common pool fishery would have lower trip limits under the default percentage of 75% and therefore fishing effort would be lower. Economic impacts from Option 2, therefore, could potentially be slightly negative. However, impacts would be positive compared to Option 1 as the default percentage of 75% is more likely to allow the fishery to operate at the beginning of the fishing year than 35%. Since FY2018, five stocks have exceeded 75% ACL utilization over the entire fishing year at least once – GOM cod, witch flounder, white hake, Atlantic halibut, and southern windowpane flounder. Some of these stocks exceeded 75% utilization only once or twice since FY2018. GOM cod consistently exceeds 75%, and white hake to a lesser extent (see Table 66).

Option 2 has the same default percentage as Options 3 and 4, but the options differ in duration of default specifications. Option 2 has a shorter duration for default specifications than Options 3 and 4. Option 2

would have potentially slightly negative economic impacts when compared to Option 3 and moderately negative impacts compared to Option 4 if the shorter duration in Option 2 resulted in default specifications expiring and a reduction in fishing activity in certain BSAs. To date the July 31 default specifications deadline has not been missed, though it has been close in some years (see Table 65). The slightly longer duration of default specifications under Option 2 may also be more likely to avoid disruptions to the fishery seen as the default specifications deadline is approached (see above under Option 1/No Action).

This option would maintain the no holdback provision, which would have positive economic impacts for the sector fishery, as this allows the full amount of ACE under the default specifications to be available at the start of the fishing year.

This option would also establish two-year TACs for Eastern GB cod and Eastern GB haddock, such that the TAC set for Year 1 would be held for Year 2. The Year 2 TAC would be a default specification for the full year. Transboundary stocks/management units are managed through the US/CA Resource Sharing Understanding and the quotas are specified annually. Setting two-year TACs for Eastern GB cod and Eastern GB haddock would eliminate disruptions to the fishery from these two stocks consistently requiring default specifications, and from the quotas for these stocks going to zero when default specifications expire. This measure could have both direct economic impacts as well as help facilitate business planning for segments of the fishery that target these stocks, and is expected to have positive economic impacts compared to the current process of setting these TACs for only one year.

Impacts on the recreational groundfish fishery

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore impacts on the recreational fishery are expected to be neutral.

Impacts on other fisheries

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such an event, and therefore impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, impacts to other fisheries with groundfish sub-ACLs would be negative. The addition of one month to the current expiration date of default specifications slightly reduces the likelihood of having specifications for groundfish stocks expire. Since Option 2 has a higher default percentage and a slightly longer duration than Option 1, impacts on other fisheries would be positive compared to Option 1.

6.5.1.4.3 **Option 3 - 5 months duration, 75% of the previous year's specifications, no holdback provision, and 2-year US/CA TACs**

Impacts on the commercial groundfish fishery

Under Option 3, the default specification percentage would be 75%, and the default specifications would be in place from May 1 to September 30. Although less than 100% of the anticipated fishing year's ACL would be available, sectors would be expected to plan operation as if final specifications would be in place. However, fishing effort may be slightly lower under the 75% default percentage in Option 3, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default specifications would be in place (see Table 66). This is especially the case for the segment of the fishery operating on eastern Georges Bank (see Table 69). The common pool fishery would have lower trip limits under the default percentage of 75% and therefore fishing effort would be lower. Economic impacts from Option 3, therefore, could potentially be slightly negative. However, impacts would be positive compared to Option 1 as the 75% default percentage is more likely to allow the fishery to operate at the beginning of the fishing year than 35%. Since FY2018, five stocks have exceeded 75% ACL utilization over the entire fishing year at least once – GOM cod, witch flounder, white hake, halibut, and southern windowpane flounder. Some of these stocks exceeded 75% utilization only once or twice since FY2018. GOM cod consistently exceeds 75%, and white hake to a lesser extent (see Table 66).

Option 3 has the same default percentage as Options 2 and 4, but the options differ in duration of default specifications. Option 3 has a longer duration for default specifications than Option 2 and a shorter duration than Option 4. Option 3 would have potentially slightly positive economic impacts when compared to Option 2 if the shorter duration in Option 2 resulted in default specifications expiring and a reduction in fishing activity in certain BSAs, and slightly negative impacts compared to Option 4. To date the July 31 default specifications deadline has not been missed, though it has been close in some years (see Table 65).

Maintaining the no holdback provision would have positive economic impacts for the sector fishery, as this allows the full amount of ACE under the default specifications to be available at the start of the fishing year.

Setting two-year TACs for Eastern GB cod and Eastern GB haddock would eliminate disruptions to the fishery from these two stocks consistently requiring default specifications, and from the quotas for these stocks going to zero when default specifications expire. This measure could have both direct economic impacts as well as help facilitate business planning for segments of the fishery that target these stocks, and is expected to have positive economic impacts compared to the current process of setting these TACs for only one year.

Impacts on the recreational groundfish fishery

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would

still operate under the measures in place while under default specifications, and therefore impacts on the recreational fishery are expected to be neutral.

Impacts on other fisheries

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such an event, and therefore impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, impacts to other fisheries with groundfish sub-ACLs would be negative. The addition of two months to the current expiration date of default specifications moderately reduces the likelihood of having specifications for groundfish stocks expire. Since Option 3 has a higher default percentage and a longer duration than Option 1, impacts on other fisheries would be positive compared to Option 1.

6.5.1.4.4 Option 4 - 6 months duration, 75% of the previous year's specifications, no holdback provision, and 2-year US/CA TACs (Preferred Option)

Impacts on the commercial groundfish fishery

Under Option 4, the default specification percentage would be 75%, and the default specifications would be in place from May 1 to October 31. Although less than 100% of the anticipated fishing year's ACL would be available, sectors would be expected to plan operation as if final specifications would be in place. However, fishing effort may be slightly lower under the 75% default percentage in Option 4, particularly for stocks with a seasonal component (e.g., eastern Georges Bank management units of cod and haddock, Georges Bank winter flounder) in which most effort occurs early in the fishing year when default specifications would be in place (see Table 66). This is especially the case for the segment of the fishery operating on eastern Georges Bank (see Table 69). The common pool fishery would have lower trip limits under the default percentage of 75% and therefore fishing effort would be lower. Economic impacts from Option 4, therefore, could potentially be slightly negative. However, impacts would be positive compared to Option 1 as the 75% default percentage is more likely to allow the fishery to operate at the beginning of the fishing year than 35%. Since FY2018, five stocks have exceeded 75% ACL utilization over the entire fishing year at least once – GOM cod, witch flounder, white hake, halibut, and southern windowpane flounder. Some of these stocks exceeded 75% utilization only once or twice since FY2018. GOM cod consistently exceeds 75%, and white hake to a lesser extent (see Table 66).

Option 4 has the same default percentage as Options 2 and 3, but they differ in duration of default specifications. Option 4 has a longer duration for default specifications than Options 2 and 3 and would have potentially slightly positive economic impacts when compared to Options 2 and 3 if the shorter durations in Options 2 and 3 resulted in default specifications expiring and a reduction in fishing activity in certain BSAs. To date the July 31 default specifications deadline has not been missed, though it has been close in some years (see Table 65).

Maintaining the no holdback provision would have positive economic impacts for the sector fishery, as this allows the full amount of ACE under the default specifications to be available at the start of the fishing year.

Setting two-year TACs for Eastern GB cod and Eastern GB haddock would eliminate disruptions to the fishery from these two stocks consistently requiring default specifications, and from the quotas for these stocks going to zero when default specifications expire. This measure could have both direct economic impacts as well as help facilitate business planning for segments of the fishery that target these stocks, and is expected to have positive economic impacts compared to the current process of setting these TACs for only one year.

Impacts on the recreational groundfish fishery

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore impacts on the recreational fishery are expected to be neutral.

Impacts on other fisheries

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such an event, and therefore impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, impacts to other fisheries with groundfish sub-ACLs would be negative. The addition of three months to the current expiration date of default specifications greatly reduces the likelihood of having specifications for groundfish stocks expire. Since Option 4 has a higher default percentage and a longer duration than Option 1, impacts on other fisheries would be positive compared to Option 1.

6.5.2 Action 2 – Recreational Fishery Measures- Georges Bank Cod

6.5.2.1 Alternative 1 - No Action

Alternative 1/No Action 1 would maintain the current recreational management measures for GB cod.

Impacts to the commercial groundfish fishery

Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years. Alternative 1/No Action would have negative economic impacts on the commercial groundfish fishery compared with Alternative 2 or Alternative 3.

Impacts to the recreational groundfish fishery

Positive economic impacts would be incurred as management measures would be less restrictive under Alternative 1/No Action compared to Alternative 2 or Alternative 3, as Alternatives 2 and 3 may limit recreational fishing revenue and private angler welfare.

6.5.2.2 Alternative 2 –Temporary Administrative Measure to Allow the Regional Administrator Authority to Adjust the Recreational Measures for Georges Bank Cod (*Preferred Alternative*)

Alternative 2 would allow for adjustment of recreational management measures for GB cod by the Regional Administrator in consultation with the Council, for FY2023 and FY2024, to stay within the recreational GB cod catch target selected by the Council.

Impacts to the commercial groundfish fishery

Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years. Alternative 2 would have positive economic impacts on the commercial groundfish fishery compared with Alternative 1/No Action and uncertain impacts compared with Alternative 3.

Impacts to the recreational groundfish fishery

More restrictive measures would limit recreational fishing revenue and private angler benefits. Negative economic impacts would be incurred as management measures would be more restrictive under Alternative 2 compared with Alternative 1/No Action. The impacts of Alternative 2 relative to Alternative 3 are uncertain, as it is not known what measures ultimately may be adjusted by the Regional Administrator, if they choose to do so.

6.5.2.3 Alternative 3 - Recreational Measures for Georges Bank Cod (*Preferred Alternative*)

Under Alternative 3, recreational measures would be in place for FY2022 and remain in place until changed. The Council considered three different options.

Impacts to the commercial groundfish fishery

Unless recreational management measures are made considerably more constraining, incoming recreational catch data may easily exceed the catch target and possibly lead to overages in the fishery, which may directly affect commercial allocations in subsequent fishing years. Alternative 3 would have positive economic impacts on the commercial groundfish fishery compared with Alternative 1/No Action and uncertain impacts compared with Alternative 2. Option 2 would be expected to have the most positive economic impacts for the commercial groundfish fishery, followed by Option 1 (the Council's preferred option), and Option 3.

Impacts to the recreational groundfish fishery

More restrictive measure would limit recreational fishing revenue and private angler benefits. Negative short-term economic impacts would be incurred as management measures would be more restrictive under Alternative 3 compared with Alternative 1/No Action. The impacts of Alternative 3 relative to

Alternative 2 are uncertain, as it is not known what measures ultimately may be adjusted by the Regional Administrator, if they choose to do so. Economic impacts are expected to be the greatest under Option 2, followed by Option 1 (the Council's preferred option). Option 3 is expected to have the least negative impact of the three options. The main difference between these options in the closed season that would be in place followed by size restrictions.

6.6 IMPACTS ON HUMAN COMMUNITIES- SOCIAL

Introduction

National Standard 8 (NS8) requires the Council to consider the importance of fishery resources to affected communities and provide those communities with continuing access to fishery resources, but it does not allow the Council to compromise the conservation objectives of the management measures. FW59 provides an overview of type of social change.

Social Impact Factors. The social impact factors outlined below can be used to describe the Northeast multispecies (groundfish) fishery, its sociocultural and community context, and its participants. These factors or variables are considered relative to the management alternatives and used as a basis for comparison between alternatives. Use of these kinds of factors in social impact assessment is based on NMFS guidance (NMFS 2007a) and other texts (e.g., Burdge 1998). Longitudinal data describing these social factors region-wide and in comparable terms is limited. Qualitative discussion of the potential changes to the factors characterizes the likely direction and magnitude of the impacts.

The social impact factors fit into five categories:

1. *Size and Demographic Characteristics* of the fishery-related workforce residing in the area; these determine demographic, income, and employment effects in relation to the workforce as a whole, by community and region.
2. The *Attitudes, Beliefs, and Values* of fishermen, fishery-related workers, other stakeholders and their communities; these are central to understanding the behavior of fishermen on the fishing grounds and in their communities.
3. The *Social Structure and Organization*; that is, changes in the fishery's ability to provide necessary social support and services to families and communities, as well as effects on the community's social structure, politics, etc.
4. The *Non-Economic Social Aspects* of the fishery; these include lifestyle, health, and safety issues, and the non-consumptive and recreational uses of living marine resources and their habitats.
5. The *Historical Dependence on and Participation in* the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution, and rights (NMFS 2007a).

Data utilized to inform the social impact factors include the 2004-2020 Groundfish-Specific Commercial Engagement Indicators, the 2009-2018 Recreational Engagement Indicators, the 2012-2016 Community Social Vulnerability Indicators (CSVI), and results from both the 2012-13 and 2018-19 Socio-Economic Surveys of Hired Captains and Crew in New England and Mid-Atlantic Commercial Fisheries (Crew Survey). More information about these data can be found at <https://www.fisheries.noaa.gov/new-england-mid-atlantic/socioeconomics/northeast-socioeconomic-data-products>.

6.6.1 Action 1 – Specifications

6.6.1.1 Alternative 1 - No Action

Commercial Groundfish Fishery Social Impacts

Alternative 1/No Action is anticipated to have positive social impacts on the commercial groundfish fishery compared to the revised specifications under Alternative 2. According to results presented in the Economic Impacts section, groundfish revenue in FY2022 under Alternative 1/No Action is predicted to increase to \$55.1 million, which is an increase of \$0.9 million from FY2020. Additionally, predicted total gross revenue from all groundfish trips is \$75.5 million in FY2022, which is a \$2.6 million increase from realized gross revenues in FY2020. While many of the most highly engaged ports in commercial groundfish will see positive social impacts from increased revenues under Alternative 1/No Action compared to Alternative 2, Boston in particular is predicted to eclipse Gloucester as the highest earning groundfish port at \$12.4 million in FY22. Other places that may see positive social impacts include all New Hampshire ports at \$3.4 million, Portland, ME, at \$4.4 million, and Point Judith, RI, at \$1.8 million, all of which constitute increases in revenue over the FY20 and FY21 predicted outcomes. Boston, Portland, and Narragansett/Point Judith, RI, are among the top ten communities in average engagement in commercial groundfish activities over the period of 2004 to 2020, but still have relatively much less engagement than the top two ports, Gloucester and New Bedford (Figure 8). Given the predicted increases to revenues in these ports, Boston, Portland, and Point Judith may become more competitive as ports in the New England region for commercial groundfish activity and this could have cascading positive impacts on the *Size and Demographic Characteristics* of the fishery-related workforce and the *Historical Dependence and Participation* of these communities in the commercial groundfish fishery. While overall impacts of Alternative 1/No Action are expected to be positive compared to Alternative 2, there are likely negative social impacts in terms of the *Size and Demographic Characteristics* and *Historical Dependence on and Participation* of the commercial groundfish fishery due to reductions in fishing opportunity and resultant losses in employment and income in the Eastern Georges Bank management area. After July 31, 2020, ACLs would not be defined for EGB cod or haddock in the multispecies groundfish fishery. Without specification of these ACLs, catches would not be allocated to the groundfish fishery (sectors or common pool vessels) and targeted groundfish fishing activity would not occur for these stocks. Catches would not be eliminated because there would likely be incidental catches in other fisheries. This would likely precipitate a reduction in income for vessels and possible loss of employment opportunities for crew members typically employed on vessels that target those groundfish stocks.

Despite anticipated positive impacts related to predicted revenues, Alternative 1/No Action may also have negative impacts in terms of the *Attitudes, Beliefs, and Values* of all resource users because catch limits would be based on outdated information, which would not constitute the use of the best available scientific information to manage the fishery.

Recreational Groundfish Fishery

Recreational Fishery social impacts of Alternative 1/ No Action are expected to be neutral relative to Alternative 2. As the Economic Impacts section describes, recreational access to GOM haddock is already limited by incidental catch of GOM cod. Therefore, the impact of the decreases under the No Action alternative would likely be neutral. However, this may also depend upon the option that is selected under Alternative 3 for setting the recreational catch target of GB cod.

Atlantic Sea Scallop Fishery

Relative to Alternative 2, Alternative 1/ No Action is anticipated to have neutral to low negative social impacts on the scallop fishery because the scallop sub-ACLs for SNE/MA yellowtail flounder, northern windowpane flounder, and southern windowpane flounder will remain low across both No Action and Alternative 2, while the scallop sub-ACL for GB yellowtail flounder will be slightly lower under No Action than the revised specifications under Alternative 2.

Midwater trawl directed Atlantic herring fishery

Alternative 1/ No Action alternative is anticipated to have neutral social impacts on the herring fishery. Catches of haddock stocks by herring fishery vessels have been low in recent years and are trending downward. Reductions in GOM/GB haddock sub-ACLs would therefore not make a substantial difference to the herring fishery, especially on Georges Bank.

Small-mesh fisheries

Under Alternative 1/ No Action, the social impacts to the small-mesh fisheries are anticipated to be neutral given relatively low catches of GB yellowtail flounder in recent years, and as such these fisheries are unlikely to be constrained. Impacts could potentially be negative if catches remain the same as those in FY2020, as the sub-ACL under Alternative 1/No Action could potentially be exceeded, triggering the AMs.

Large-mesh non-groundfish fisheries

Under Alternative 1/No Action, social impacts on the large-mesh non-groundfish trawl (i.e., summer flounder and scup) fisheries are anticipated to be neutral given that the southern windowpane flounder other sub-component will remain the same in FY2022 and assuming catches of southern windowpane flounder are low in FY2022, and potentially negative because of the possibility of an AM being triggered and implemented in a future fishing year.

6.6.1.2 Alternative 2 – Revised Specifications (*Preferred Alternative*)

Commercial Groundfish Fishery Social Impacts

Under Alternative 2, the sub-ACLs would be revised for the commercial, recreational, and other fisheries for FY22. According to results presented in the Economic Impacts section, overall commercial groundfish revenues under Alternative 2 and the preferred option for the GB cod catch target are predicted to be \$51.9 million, which would be a \$2.3 million decrease from the FY2020 realized amount and a \$3.2 million decrease relative to the No Action alternative. Alternative 2 is anticipated to have negative social impacts on the sector component of the fishery relative to Alternative 1/No Action.

Port-level results revealed that revenues are predicted to decrease across the board for all major, highly engaged commercial groundfish ports, but the most impacted is predicted to be New Bedford, MA, which is predicted to see groundfish revenues decrease by up to \$1.4 million in FY2022, relative to No Action. The community of New Bedford is particularly at risk from substantial decreases in commercial groundfish revenues and accompanying loss of employment opportunities given the high poverty and moderately high vulnerabilities in housing, population composition and personal disruption (Table 34). Despite potential negative consequences at the port level, Alternative 2 may have positive impacts with respect to the *Attitudes, Beliefs, and Values* of all resource users relative to No Action/Alternative 1 because the catch limits would be revised based on the best available scientific information, which is also mandated by the Magnuson-Stevens Act (MSA).

Recreational Groundfish Fishery Social Impacts

Alternative 2 is expected to have neutral social impacts on the recreational fishery relative to Alternative 1/No Action. Access to GOM haddock for the recreational fishery is already limited by the incidental catch of GOM cod. From the preferred option under Alternative 3 to set the recreational catch target for GB cod there is likely to be even greater constraints placed on the recreational fishery.

Atlantic Sea Scallop Fishery

Social impacts of Alternative 2 relative to Alternative 1/No Action alternative for the scallop fishery are anticipated to be neutral to low positive given the slight increase in sub-ACL for GB yellowtail flounder under the revised specifications. The sub-ACLs for SNE/MA yellowtail flounder, northern windowpane flounder, and southern windowpane flounder will remain the same under Alternative 2.

Midwater trawl directed Atlantic herring fishery

The GB haddock sub-ACL will remain roughly the same in FY22 for the midwater trawl directed Atlantic herring fishery, and the GOM haddock sub-ACL will decrease. Therefore, the social impacts of Alternative 2 are anticipated to be neutral to the herring fishery because the midwater trawl vessels in this fishery had very little-to-no catch of these stocks in FY18 through FY20 and the limits on the catch of haddock under the revised specifications are not expected to be constrain the herring fishery.

Small-mesh fisheries

Similar to the midwater trawl herring fishery, the small-mesh fisheries (e.g., squid and whiting) are unlikely to see substantial impacts, either positive or negative, from Alternative 2 versus Alternative 1/No Action. If the low catches of GB yellowtail flounder continue into FY2022 then the impacts of Alternative 2 relative to No Action would likely be neutral. However, if catches remain at the same level as those in FY2020, the sub-ACL under No Action could potentially be exceeded, and so impacts of Alternative 2 would be positive relative to No Action.

Large Mesh non-groundfish fisheries

Alternative 2 is likely to have neutral social impacts on the other large mesh non-groundfish fisheries. Under Alternative 2, the other sub-component would remain at from 177 mt in FY2022. Assuming catches of southern windowpane flounder are low in FY2022, there would be neutral economic impacts of the sub-ACL remaining the same under Alternative 2. Therefore, the social impacts of Alternative 2 relative to Alternative 1/No Action could be neutral and potentially negative for the large mesh non-groundfish fisheries because of the possibility of an AM being triggered and implemented in a future fishing year.

6.6.1.3 Alternative 3 - Recreational Catch Target for Georges Bank Cod (Preferred Alternative)

6.6.1.3.1 Option 1 – No Action

Option 1/No Action would maintain the existing catch target for GB cod. This may have negligible to low positive social impacts, relative to Options 2-4, on human communities and stakeholders linked to the recreational fishery. Recreational fishery participants may undergo challenging business seasons as their cod catch target may become limiting over time, assuming the stock does not substantially rebound to levels that place it outside the categories of overfished and overfishing occurring.

On the other hand, Option 1/No Action may have negligible to low negative social impacts, relative to Options 2-4, on the commercial groundfish fishery relative to the *Attitudes, Beliefs, and Values of*

participants and community members. If the catch target successfully maintains catches at or below the target, the continuation of the cod catch target for the recreational fishery will instill faith in the process among commercial stakeholders and renew trust among these participants that management will continue to manage the stocks equitably across industries participating in the groundfish fishery. Negative social impacts may result if the catch target is seen as too high and reduces the ability of the commercial fishery to maximize revenues under the overall ACL. Additionally, No Action/Option 1 could have negative impacts on the *Attitudes, Beliefs, and Values* of all resource users, but particularly the commercial fishery, because it would be based on outdated information from the 2017 stock assessment, which uses old MRIP data.

6.6.1.3.2 Option 2 - Revised Recreational GB Cod Catch Target Based on Recent Catches

Option 2 would set the recreational catch target for Georges Bank cod for FY2022 based on recent catches. This target is based on the 3-year recent average of recreational catches (163mt) reduced by the percentage change in US ABC from FY2021 to FY2022 (73.8%). Under a 754 mt ABC, this option results in a GB cod recreational catch target of 43 mt. Option 2 is anticipated to have neutral to low negative social impacts on the recreational fishery due to the substantial decrease in the catch target and the accompanying limitations this may place on their business planning and practices over time. Narragansett/Point Judith, RI, is the only New England port that ranks consistently high in recreational fishing engagement over the period 2009-2018 (Figure 9), and could see substantial impacts from Option 2 due to the reduction in the GB cod catch target. However, Option 2 may have neutral to low positive social impacts on the commercial fishery because it could improve ability of commercial vessels to maximize revenues under the overall ACL with recreational catch limited based on the best available data. By using new MRIP data from the 2021 stock assessment, Option 2 could have positive impacts on the *Attitudes, Beliefs, and Values* of all resource users, but particularly the commercial fishery, because these measures would be based on the latest and best available scientific information.

6.6.1.3.3 Option 3 - Revised Recreational GB Cod Catch Target Based on Recent Percentage of US Fisheries Catches

Option 3 would set the recreational catch target for Georges Bank cod for FY2022 based on the recent percentage of US fisheries catches. This target is based on the 3-year recent average of recreational catches relative to US fisheries total catches (20.6%) applied to the proposed FY2022 US ABC (343mt). Under a 754 mt ABC, this option results in a GB cod recreational catch target of 71 mt. Similar to Option 2, Option 3 is anticipated to have neutral to low negative social impacts on the recreational fishery due to the substantial decrease in the catch target and the accompanying limitations this may place on their business planning and practices over time. Narragansett/Point Judith, RI, is the only New England port that ranks consistently high in recreational fishing engagement over the period 2009-2018 (Figure 9), and could see substantial impacts from Option 2 due to the reduction in the GB cod catch target. However, Option 2 may have neutral to low positive social impacts on the commercial fishery because it could improve ability of commercial vessels to maximize revenues under the overall ACL with recreational catch limited based on the best available data. By using new MRIP data from the 2021 stock assessment, Option 3 could have positive impacts on the *Attitudes, Beliefs, and Values* of all resource users, but particularly the commercial fishery, because these measures would be based on the latest and best available scientific information.

6.6.1.3.4 **Option 4 - Revised Recreational GB Cod Catch Target Based on a Reduction from Recent Catches (*Preferred Option*)**

Option 4 would set the recreational catch target for Georges Bank cod for FY2022 based on a reduction from recent catches. This option would set a GB cod recreational catch target of 75 mt. Similar to Option 2 and 3, Option 4 is anticipated to have neutral to low negative social impacts on the recreational fishery due to the substantial decrease in the catch target and the accompanying limitations this may place on their business planning and practices over time. Narragansett/Point Judith, RI, is the only New England port that ranks consistently high in recreational fishing engagement over the period 2009-2018 (Figure 9), and could see substantial impacts from Option 2 due to the reduction in the GB cod catch target. However, Option 4 may have neutral to low positive social impacts on the commercial fishery because it could improve ability of commercial vessels to maximize revenues under the overall ACL with recreational catch limited based on the best available data. By using new MRIP data from the 2021 stock assessment, Option 4 could have positive impacts on the *Attitudes, Beliefs, and Values* of all resource users, but particularly the commercial fishery, because these measures would be based on the latest and best available scientific information.

6.6.1.4 **Alternative 4 - Changes to the Default Specifications Process (*Preferred Alternative*)**

6.6.1.4.1 **Option 1 – No Action**

Commercial Groundfish Fishery Social Impacts

Under Option 1/No Action, the current default specifications process applies to each groundfish stock or management unit that lacks a full year of specifications. For those that lack specifications, 35 percent of the prior year's OFL, ABC, and ACL is specified for the first three months (May 1 to July 31) of an upcoming fishing year. The default specifications may not exceed the anticipated ABCs for the upcoming fishing year. If the default specification does exceed the anticipated ABC, the default specification would be set equal to the ABC for the upcoming fishing year. The default specifications are replaced by new approved specifications upon rulemaking, and expire on July 31. Starting on August 1, fishing for stocks without specifications in place would cease, along with fishing for other groundfish stocks that share the same broad stock area (BSA) as stocks with no specifications. Catches occurring while default specifications are in place (after May 1 through final rulemaking) are counted against the updated ACL for the fishing year. Northeast groundfish sectors are not subject to the 20% holdback of the prior year's Sector ACE while default specifications are in place.

If Option 1 is selected, the fishing year would be able to start on time if there is a delay in the annual specifications process, which would result in positive social impacts for the commercial groundfish fishery. The fishery would be allowed to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and Participation* in the fishery. Because most of the other federal fisheries in the Northeast have a default specifications percentage of 100%, having a default percentage of 35% may lead to perceptions of inequity between fishery participants, a slightly negative impact on the *Non-Economic Social Aspects* of fishing. Additionally, fishing effort may potentially be lower under the default percentage of 35%, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default

specifications are in place, which could have negative impacts in terms of the *Size and Demographic Characteristics* of the segment of the fishery that relies on fishing during those months.

Option 1 would also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management and the regulatory process, unless the annual specifications process became chronically delayed. Then, stakeholders may perceive that the default specifications process may be an excuse for delay in the assessment, management, and regulatory processes. Delays in the final Council decision, the submission of the framework to the Agency and the rulemaking for specifications actions have persisted in the past four out of five fishing years, though the July 31 deadline has not been missed to-date. These routine delays in the specifications actions may have negative impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management and the regulatory process.

Option 1/No Action is more conservative than Options 2-4 with a default percentage of 35% compared to 75%, and so Option 1 likely has negative impacts on the *Non-Economic Social Aspects* of fishing relative to Options 2-4. The duration of default specifications is the shortest compared to that under Options 2-4. This may result in more positive impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, as the options for longer default specifications durations may be viewed negatively as causing continued delays in the annual specifications process. However, the longer durations considered under Option 2-4 may be less likely to result in default specifications expiring, and so the shorter duration under Option 1/No Action may also have negative impacts for the fishermen and fishing communities that rely on fishing in those BSAs that would be closed to directed fishing once the default specifications expired.

Even if default specifications do not expire, there may potentially be disruptions to the fishery from the deadline being approached in terms of disruptions to business planning and confusion over what the expiring specifications mean for fishery operations, which also have negative impacts on the *Non-Economic Social Aspects* of fishing. This was observed particularly in FY2020 when default specifications were in place for several stocks including redfish, which as a unit stock would result in no directed fishing allowed in all BSAs if default specifications expired. In the weeks leading up the default specifications deadline, sector managers noted questions from sector members about what would happen should the default specifications expire. For example, vessel operators asked if a trip were underway prior to July 31 would the trip be allowed to be completed after the deadline. These questions stem from concerns about uncertainty for fishery operations and reflect negative impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management and the regulatory process.

The no holdback provision likely has positive impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, as otherwise not allowing the full amount of ACE to be available to fish under default specifications may be viewed as excessively punitive.

Recreational Groundfish Fishery Social Impacts

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore social impacts on the recreational fishery are expected to be neutral.

Other Fisheries Social Impacts

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea

scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such as event, and therefore social impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, social impacts to other fisheries with groundfish sub-ACLs would be negative. Since Option 1 has a lower default percentage and a shorter duration than Options 2-4, impacts on other fisheries would be slightly to moderately to highly negative compared to Options 2-4.

6.6.1.4.2 Option 2 - 4 months duration, 75% of the previous year's specifications, no holdback provision, and 2-year US/CA TACs

Commercial Groundfish Fishery Social Impacts

Under Option 2, the default specification percentage would be 75%, and the default specifications would be in place from May 1 to August 31. If Option 2 is selected, the fishing year would be able to start on time if there is a delay in the annual specifications process, which would result in positive social impacts for the commercial groundfish fishery. The fishery would be allowed to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and Participation* in the fishery. Because most of the other federal fisheries in the Northeast have a default specifications percentage of 100%, having a default percentage of 75% may improve perceptions of equity between fishery participants when compared to the current default percentage of 35%, a slightly positive impact on the *Non-Economic Social Aspects* of fishing. Additionally, fishing effort may potentially be slightly lower under the default percentage of 75%, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default specifications are in place, which could have slightly negative impacts in terms of the *Size and Demographic Characteristics* of the segment of the fishery that relies on fishing during those months.

Option 2 would also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, unless the annual specifications process became chronically delayed. Then, stakeholders may perceive that a default provision may be an excuse for delay in the assessment, management, and regulatory processes. Delays in the final Council decision, the submission of the framework to the Agency and the rulemaking for specifications actions have persisted in the past four out of five fishing years. Delays can be caused from the onset of the action too, such as changes to the measures to be included in the action. These routine delays in the specifications actions may have negative impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management. The addition of one month to the current expiration date of default specifications (September 1 vs. August 1) retains a timeline for rulemaking, allows the fishing year to begin on May 1 without interruption, and slightly reduces the likelihood of having specifications for groundfish stocks expire.

Option 2 offers more flexibility compared to Option 1/No Action with a default percentage of 75% compared to 35%, and so Option 2 likely has positive social impacts relative to Option 1/No Action. Option 3-4 also have a default percentage of 75% and so impacts would be neutral. Option 2 would add one month to the current default specifications timeline. This may result in improvements to the *Attitudes,*

Beliefs, and Values of fishermen and other stakeholders about management, as the additional month slightly reduces the likelihood of having specifications for groundfish stocks expire, and so social impacts for Option 2 may be slightly positive compared to Option 1, and slightly negative compared to Options 3 and 4. However, longer default specifications durations may be viewed negatively as causing continued delays in the annual specifications process, and so Option 2 may have slight negative impacts compared to Option 1.

Maintaining the no holdback provision likely has positive impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, as otherwise not allowing the full amount of ACE to be available to fish under default specifications may be viewed as excessively punitive.

This option would also establish two-year TACs for Eastern GB cod and Eastern GB haddock, such that the TAC set for Year 1 would be held for Year 2. The Year 2 TAC would be a default specification for the full year. Transboundary stocks/management units are managed through the US/CA Resource Sharing Understanding and the quotas are specified annually. With two-year TACs for these stocks the fishery would be allowed to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and Participation* in the fishery. This would likely also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management.

Recreational Groundfish Fishery Social Impacts

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore social impacts on the recreational fishery are expected to be neutral.

Other Fisheries Social Impacts

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such as event, and therefore social impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, social impacts to other fisheries with groundfish sub-ACLs would be negative. The addition of one month to the current expiration date of default specifications slightly reduces the likelihood of having specifications for groundfish stocks expire. Since Option 2 has a higher default percentage and a slightly longer duration than Option 1, impacts on other fisheries would be slightly positive.

6.6.1.4.3 Option 3 - 5 months duration, 75% of the previous year's specifications, no holdback provision, and 2-year US/CA TACs

Commercial Groundfish Fishery Social Impacts

Under Option 3, the default specification percentage would be 75%, and the default specifications would be in place from May 1 to September 30. If Option 3 is selected, the fishing year would be able to start on time if there is a delay in rule making, which would result in positive social impacts. The fishery would be allowed to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and Participation in* the fishery. Because most of the other federal fisheries in the Northeast have a default specifications percentage of 100%, having a default percentage of 75% may improve perceptions of equity between fishery participants, a slightly negative impact on the *Non-Economic Social Aspects* of fishing. Additionally, fishing effort may potentially be slightly lower under the default percentage of 75%, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default specifications are in place, which could have slightly negative impacts in terms of the *Size and Demographic Characteristics* of the segment of the fishery that relies on fishing during those months.

Option 3 would also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, unless the annual specifications process became chronically delayed. Then, stakeholders may perceive that a default provision may be an excuse for delay in the assessment, management, and regulatory processes. Delays in the final Council decision, the submission of the framework to the Agency and the rulemaking for specifications actions have persisted in the past four out of five fishing years. Delays can be caused from the onset of the action too, such as when changes or additions to the measures to be included in the action are made after initiation. These routine delays in the specifications actions may have negative impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management. The addition of two months to the current expiration date of default specifications (October 1st vs. August 1st) retains a timeline for rulemaking, allows the fishing year to begin on May 1st without interruption, and moderately reduces the likelihood of having specifications for groundfish stocks expire.

Option 3 offers more flexibility compared to Option 1/No Action with a default percentage of 75% compared to 35%, and so Option 3 likely has positive social impacts relative to Option 1. Options 2 and 4 also have a default percentage of 75% and so impacts would be neutral. Option 3 would add two months to the current default specifications timeline. This may result in improvements to the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, and as the additional month slightly reduces the likelihood of having specifications for groundfish stocks expire, and so social impacts for Option 3 may be slightly positive compared to Option 1 and Option 2, and slightly negative compared to Option 4. However, longer default specifications durations may be viewed negatively as causing continued delays in the annual specifications process, and so Option 3 may have slight negative impacts compared to Option 1 and Option 2.

Maintaining the no holdback provision likely has positive impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, as otherwise not allowing the full amount of ACE to be available to fish under default specifications may be viewed as excessively punitive.

Setting two-year TACs for Eastern GB cod and Eastern GB haddock would allow the segment of the fishery targeting these stocks to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and*

Participation in the fishery. This would likely also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management.

Recreational Groundfish Fishery Social Impacts

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore social impacts on the recreational fishery are expected to be neutral.

Other Fisheries Social Impacts

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e.g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such as event, and therefore social impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, social impacts to other fisheries with groundfish sub-ACLs would be negative. The addition of two months to the current expiration date of default specifications moderately reduces the likelihood of having specifications for groundfish stocks expire. Since Option 3 has a higher default percentage and a longer duration than Option 1, impacts on other fisheries would be positive.

6.6.1.4.4 Option 4 - 6 months duration, 75% of the previous year's specifications, no holdback provision, and 2-year US/CA TACs (Preferred Option)

Commercial Groundfish Fishery Social Impacts

Under Option 4, the default specification percentage would be 75%, and the default specifications would be in place from May 1 to October 31. If Option 4 is selected, the fishing year would be able to start on time if there is a delay in rule making, which would result in positive social impacts. The fishery would be allowed to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and Participation* in the fishery. Because most of the other federal fisheries in the Northeast have a default specifications percentage of 100%, having a default percentage of 75% may improve perceptions of equity between fishery participants, a slightly negative impact on the *Non-Economic Social Aspects* of fishing. Additionally, fishing effort may potentially be slightly lower under the default percentage of 75%, particularly for stocks with a seasonal component (e.g., eastern GB management units of cod and haddock, GB winter flounder) in which most effort occurs early in the fishing year when default specifications are in place, which could have slightly negative impacts in terms of the *Size and Demographic Characteristics* of the segment of the fishery that relies on fishing during those months.

Option 4 would also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, unless the annual specifications process became chronically delayed. Then, stakeholders may perceive that a default provision may be an excuse for delay in the assessment, management, and regulatory processes. Delays in the final Council decision, the submission of the framework to the

Agency and the rulemaking for specifications actions have persisted in the past four out of five fishing years. Delays can be caused from the onset of the action too, such as changes to the measures to be included in the action. These routine delays in the specifications actions may have negative impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management. The addition of three months to the current expiration date of default specifications (November 1st vs. August 1st) retains a timeline for rulemaking, allows the fishing year to begin on May 1st without interruption, and greatly reduces the likelihood of having specifications for groundfish stocks expire.

Option 4 offers more flexibility compared to Option 1/No Action with a default percentage of 75% compared to 35%, and so Option 4 likely has positive social impacts relative to Option 1. Options 2 and 3 also have a default percentage of 75% and so impacts would be neutral. Option 4 would add three months to the current default specifications timeline. This may result in improvements to the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, and as the addition of three months significantly reduces the likelihood of having specifications for groundfish stocks expire, and so social impacts for Option 4 may be positive compared to Option 1 and Options 2 and 3. However, longer default specifications durations may be viewed negatively as causing continued delays in the annual specifications process, and so Option 4 may have slight negative impacts compared to Option 1 and Options 2 and 3.

Maintaining the no holdback provision likely has positive impacts on the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management, as otherwise not allowing the full amount of ACE to be available to fish under default specifications may be viewed as excessively punitive.

Setting two-year TACs for Eastern GB cod and Eastern GB haddock would allow the segment of the fishery targeting these stocks to continue operations with less disruption, a positive impact in terms of the *Size and Demographic Characteristics* of the fishery, as well as the *Historical Dependence on and Participation* in the fishery. This would likely also improve the *Attitudes, Beliefs, and Values* of fishermen and other stakeholders about management.

Recreational Groundfish Fishery Social Impacts

Impacts to the recreational fishery are possible if either of the two stocks with recreational sub-ACLs, GOM cod and GOM haddock, were under default specifications. However, the recreational fishery would still operate under the measures in place while under default specifications, and therefore social impacts on the recreational fishery are expected to be neutral.

Other Fisheries Social Impacts

Other fisheries would receive less than 100% of the anticipated fishing year's sub-ACL under default specifications. This is not expected to negatively impact fisheries with AMs in a subsequent year (e. g., sea scallop fishery with sub-ACLs for yellowtail flounder and windowpane flounder stocks, small-mesh multispecies fishery with sub-ACL for yellowtail flounder). Fisheries with in-season AMs (i.e., MWT Atlantic herring fishery with sub-ACLs for haddock stocks) may be negatively impacted if the reduced sub-ACL leads to triggering an AM in-season. However, final specifications would be expected to be in place in time before such as event, and therefore social impacts are expected to be neutral. To date the July 31 default specifications deadline has not been missed, though it has been close in some years. Should the default specifications expire, social impacts to other fisheries with groundfish sub-ACLs would be negative. The addition of three months to the current expiration date of default specifications greatly reduces the likelihood of having specifications for groundfish stocks expire. Since Option 4 has a

higher default percentage and a longer duration than Option 1, impacts on other fisheries would be positive.

6.6.2 Action 2 Recreational Fishery Measures- Georges Bank Cod

6.6.2.1 Alternative 1 - No Action

No Action would maintain the current minimum fish size (21 inches) and the possession limit (10 legal sized per day) for GB cod for the recreational fishery (private, party, and charter). Council action would still be required to adjust measures as needed. No Action is anticipated to have positive social impacts on the *Size and Demographic Characteristics* of the recreational fishery relative to Alternatives 2 and 3, respectively. Changes to the allowable fish sizes and possession limits would lead to reduced opportunities to fish for businesses (party, charter, private vessels) in the recreational fishery if they continue to encounter GB cod that are outside of the legal limits. For the New England region, Narragansett/Point Judith, RI, has the highest level of engagement in recreational fishing activities and ranks among the top ten fishing ports for recreational activities in the entire Northeast (Figure 9). Charter, party, and private vessels operating out of Narragansett and Point Judith, RI, may experience particularly positive impacts of No Action with respect to rebuilding measures for GB cod. However, there may be negative social impacts in terms of the *Attitudes, Beliefs, and Values* of the commercial groundfish fishery if GB cod catch in the recreational fishery is perceived to be contributing to poor stock assessments or reduced opportunities to fish.

6.6.2.2 Alternative 2 – Temporary Administrative Measure to Allow the Regional Administrator Authority to Adjust the Recreational Measures for Georges Bank Cod (*Preferred Alternative*)

Alternative 2 would allow the Regional Administrator to adjust the recreational measures for GB cod, in consultation with the Council, for FY2023 and 2024 in order to stay below the catch target selected by the Council above. Relative to No Action, Alternative 2 is anticipated to have neutral to low negative social impacts on the recreational fishery, but possibly low positive social impacts on the commercial fishery. Allowing the RA to adjust measures as needed could reduce fishing opportunities for recreational vessels (party, charter, private), but may also improve perceptions among the commercial fishery that the GB cod stock is being managed sustainably and in an equitable manner for all resource users.

6.6.2.3 Alternative 3 - Recreational Measures for Georges Bank Cod (*Preferred Alternative*)

6.6.2.3.1 *Option 1* - Recreational measures to reduce mortality from recent catches (CY2018-CY2020) by 63% (*Preferred Option*)

Option 1 under Alternative 3 would set the minimum fish size for GB cod at 22 inches and the maximum size at 28 inches for recreational fishery (party, charter, private). Additionally, party, charter, and private vessels would be restricted to landing 5 legal sized GB cod per angler per day and would be prohibited from retaining GB cod altogether from May 1 to July 31. These recreational measures for GB cod would be in place for the start of FY2022 and would remain in place until changed.

Option 1 is anticipated to have negative social impacts relative to No Action/Alternative 1 on the recreational fishery, but possibly neutral to low positive impacts on the recreational fishery relative to Option 2 and neutral to low negative impacts relative to Option 3. Option 1 is a moderate approach between Options 2 and 3, which offer higher or lower reductions in recreational mortality by comparison. The changes to minimum and maximum fish size, along with reduced possession limits and no possession from May through July may have negative impacts on recreational businesses. For the New England region, Narragansett/Point Judith, RI, has the highest level of engagement in recreational fishing activities and ranks among the top ten fishing ports for recreational activities in the entire Northeast (Figure 9). Charter, party, and private vessels operating out of Narragansett and Point Judith, RI, may experience particularly negative impacts of these new rebuilding measures. There may be low positive social impacts on the commercial fishery if Option 1 helps to rebuild GB stock in an equitable manner for all resource users.

6.6.2.3.2 Option 2 - Recreational measures to reduce mortality from recent catches (CY2018-CY2020) by 65%

Option 2 under Alternative 3 would set the minimum fish size for GB cod at 22 inches and the maximum size at 28 inches for recreational fishery (party, charter, private). Additionally, party, charter, and private vessels would be restricted to landing 5 legal sized GB cod per angler per day and would be prohibited from retaining GB cod altogether from July 1 to August 31. These recreational measures for GB cod would be in place for the start of FY2022 and would remain in place until changed.

Option 2 is anticipated to have negative social impacts relative to No Action/Alternative 1 on the recreational fishery, and possibly neutral to low negative impacts on the recreational fishery relative to Option 1 and neutral to low negative impacts relative to Option 3. Option 2 is the most aggressive rebuilding approach in comparison to Options 1 and 3, which offer lower reductions in recreational mortality for the purposes of rebuilding the stock. The changes to minimum and maximum fish size, along with reduced possession limits and no possession from July through August may have negative impacts on recreational businesses. For the New England region, Narragansett/Point Judith, RI, has the highest level of engagement in recreational fishing activities and ranks among the top ten fishing ports for recreational activities in the entire Northeast (Figure 9). Charter, party, and private vessels operating out of Narragansett and Point Judith, RI, may experience particularly negative impacts of these new rebuilding measures. There may be positive social impacts on the commercial fishery if Option 2 helps to rebuild GB stock the most efficaciously, quickly, and in an equitable manner for all resource users.

6.6.2.3.3 Option 3 - Recreational measures to reduce mortality from recent catches (CY2018-CY2020) by 52%

Option 3 under Alternative 3 would set the minimum fish size for GB cod at 23 inches and the maximum size at 28 inches for recreational fishery (party, charter, private). Additionally, party, charter, and private vessels would be restricted to landing 5 legal sized GB cod per angler per day and would be prohibited from retaining GB cod altogether from March 1 to June 31. These recreational measures for GB cod would be in place for the start of FY2022 and would remain in place until changed.

Option 3 is anticipated to have negative social impacts relative to No Action/Alternative 1 on the recreational fishery, and possibly neutral impacts on the recreational fishery relative to Option 1 and Option 2. Option 3 is the least aggressive rebuilding approach in comparison to Options 1 and 2, which offer higher reductions in recreational mortality for the purposes of rebuilding the stock. The changes to

minimum and maximum fish size, along with reduced possession limits and no possession from March through June may have negative impacts on recreational businesses. Option 3 may have less of an impact than would Options 1 and 2 given the slightly larger minimum fish size and the placement of no possession restrictions in perhaps a less active period during the year for the fishery. For the New England region, Narragansett/Point Judith, RI, has the highest level of engagement in recreational fishing activities and ranks among the top ten fishing ports for recreational activities in the entire Northeast (Figure 9). Charter, party, and private vessels operating out of Narragansett and Point Judith, RI, may experience particularly negative impacts of these new rebuilding measures. There may be low positive social impacts on the commercial fishery if Option 3 helps to rebuild GB stock, but perhaps less of a positive impact if this Option is perceived to rebuild more slowly or not as effectively as Options 1 and 2.

Appendix #2



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

February 16, 2022

Eric Reid, Chairman
New England Fishery Management Council
50 Water Street, Mill 2
Newburyport, MA 01950

Dear Eric:

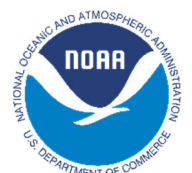
The Northeast Fisheries Science Center prepared a prepublication report for the 2021 stock assessment updates for the Gulf of Maine and Georges Bank cod stocks in October and September 2021, respectively. Based on the results of these assessments, NOAA's National Marine Fisheries Service (NMFS) updated the stock status of these stocks.

Stock status is unchanged for Gulf of Maine cod. The 2021 management track assessment, using data through 2019, used two age-structured (ASAP) models, both of which were accepted by the peer review. Both models indicate that the stock remains overfished. However, while one model (the "M-ramp model") estimates the fishing mortality (F) is slightly less than the F for maximum sustainable yield (F_{MSY}), the other (the "M=0.2 model") indicates that the F remains higher than F_{MSY} . There is no clear evidence that the M-ramp model only should be used as a basis to change the stock status, or that the M=0.2 model is not appropriate for informing stock status. Therefore, we have determined that the stock will retain its overfishing status.

Stock status is unchanged, but continues to be uncertain, for Georges Bank cod. The 2021 management track assessment used commercial fishery catch data through 2020 and updated research survey indices of abundance through spring 2021. The 2015 assessment for Georges Bank cod was not accepted as a basis for management; since then, the Plan B Smooth approach has been used to set catch advice for this stock. The assessment states that the Georges Bank cod biological reference points cannot be quantitatively estimated. The assessments recommended the stock be considered overfished due to poor stock condition and that the overfishing status be considered unknown. Based on NMFS' policy regarding changing a status from known to unknown, Georges Bank cod retains its overfishing status, consistent with the determination from the 2013 Georges Bank cod benchmark assessment.

Next steps

The Council is committed to addressing rebuilding for Gulf of Maine cod in 2022 in the next framework adjustment to the Northeast Multispecies Fishery Management Plan and plans on revisiting the possibility of a Georges Bank cod recreational allocation following the 2023 research track stock assessment for Atlantic cod. We will continue to provide advice and collaborate on the development and implementation of a revised rebuilding plan for Gulf of



Maine cod, as well as for Southern New England/Mid-Atlantic winter flounder, through our participation on the Groundfish Plan Development Team, the Groundfish Committee, and the Council.

If you have any questions about this guidance, or the development of rebuilding plans for these stocks, please contact Moira Kelly, Acting Assistant Regional Administrator for Fisheries for the Greater Atlantic Regional Fisheries Office, at (978) 281-9218.

Sincerely,



Michael Pentony
Regional Administrator

cc: Tom Nies, Executive Director, New England Fisheries Management Council
Dr. Jon Hare, Director, Northeast Fisheries Science Center
Jennifer M. Wallace, Acting Director, Office of Sustainable Fisheries