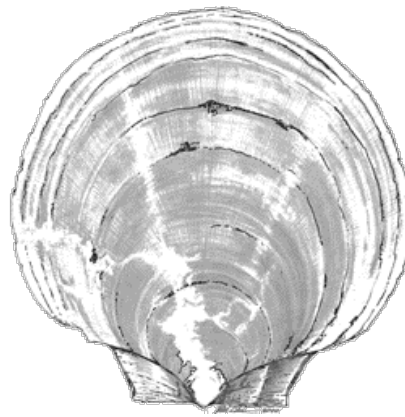


Atlantic Sea Scallop Fishery Management Plan

DRAFT Amendment 21

Including a Draft Environmental Assessment



June 12, 2020

Prepared by the
New England Fishery Management Council
in consultation with the
National Marine Fisheries Service



1.0 EXECUTIVE SUMMARY

To be completed after the approval of Amendment 21 for public hearings.

2.0 TABLE OF CONTENTS

2.1 TABLES

Table 1 - Description of each element of the ACL flowchart when NGOM biomass is added through Action 2, Alternative 2, Section 4.1.2.....	19
Table 2 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 1.	23
Table 3 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 2.	25
Table 4 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 3.	26
Table 5 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 4.	28
Table 6 – Example of the amount of compensation that would be available to an LAGC IFQ vessel carrying an observer based on trip length under the options in Section 4.7. Examples are based on the FY2019 daily compensation rate of 250 pounds.	44
Table 7 - 2017 Atlantic sea scallop stock status.	54
Table 8 - Mean biomass estimates of individual areas of the Gulf of Maine from 2012, 2016, and 2019 ME DMR/UMaine surveys. Estimates (metric tons) are for animals greater the 75mm and assume a dredge efficiency of 0.4.	56
Table 9 – Approximate area (square miles) of parts of the NGOM that have recently been surveyed and have been or are likely to be fished relative to SAMS area boundaries of proposed FY2020 access areas on Georges Bank and in the Mid-Atlantic.	58
Table 10 – Status of non-target species known to be caught in scallop fishing gear, updated with assessment results through 2018.	60
Table 11 – Comparison of recent flatfish sub-ACLs, scallop bycatch projections, and realized catch, with 2019 projections. Values are shown in mt.	61
Table 12 – Protected species that may occur in the affected environment of the sea scallop fishery.....	62
Table 13 - Average annual estimated interactions of hard-shelled (unidentified and loggerhead species pooled) and loggerhead turtles in the Mid-Atlantic scallop dredge fishery before and after chain mats were required on dredges (CV and 95% Confidence Interval).	67
Table 14. Scallop fishery OFL, ABC/ACL, APL and landings values (lbs).	77
Table 15. Scallop permit categories, qualifying criteria, harvest limits and allocation types.....	79
Table 16 - Number of active and CPH scallop IFQ permits (IFQ only and Combination) permits by year and zero allocation permits that were in CPH for a year from 2008 to 2019. Data are from the GARFO permit and moratorium databases.	80
Table 17 - Number of Northern Gulf of Maine (NGOM) and Incidental General Category scallop permits issued and in CPH by year from 2008 to 2019. Data are from the GARFO permit and moratorium databases.	80
Table 18 – Limited Access Scallop permit categories, description, and number of permits issues in 2019.	81
Table 19 – Summary of LAGC conversions and switches between FY 2008 and FY 2019.	82
Table 20 - Number of Scallop LAGC Cat. A (IFQ) MRIs with zero base allocation.....	82
Table 21 - Number of active LA and LAGC (Cat A & B) in Northern Gulf of Maine Management Area by scallop fishing year.	83
Table 22 - Number of unique LAGC permits/vessels that have participated in the NGOM.	84

Table 23 - Trips per vessel, total trips, and average catch per trip for LAGC (Cat A & B) from 2010 - 2019.	85
Table 24 – Number of LAGC vessels with multiple sailings per day in the NGOM Management Area, and the total number of times this occurred.....	86
Table 25 - 2017 Participation in the NGOM fishery by permit type.	87
Table 26 - Number of LAGC B/C permits issued in 2019 by homeport state.....	88
Table 27 - Unique LAGC permits by home port state and fishing year for the Northern Gulf of Maine... 88	
Table 28 - Number of LAGC trips by home port state and fishing year for the Northern Gulf of Maine.. 89	
Table 29 - Summary of landings from within the NGOM area (VTR data from 2000-2006).....	90
Table 30 - Estimated Total Scallop Landings from the NGOM management area by LA and LAGC vessels from 2010 - 2019.	90
Table 31 - Comparison of LAGC landings vs. LAGC NGOM TAC, 2008 - 2019. Values in pounds.	91
Table 32 - Total landings from NGOM management area as a proportion of total fishery landings.	93
Table 33 - Number of ports with landings from directed LAGC trip in the NGOM management area, by year.....	95
Table 34 - List of landing ports from VTRs on NGOM declared trips by LAGC vessels from 2010 - 2019 in Maine, Massachusetts, and New Hampshire.	95
Table 35 - Scallop revenue from directed LAGC Cat. B trips in the NGOM, including percentage of total revenue from scallop fishing in NGOM from active LAGC B vessels.	97
Table 36 – Annual LAGC IFQ allocation, landings, and the percent of allocated pounds that were landed from FY2012-FY2017.	99
Table 37 – The number of active LAGC IFQ-only permits and the total number of LAGC IFQ-only permits from FY2010 to FY2018.....	101
Table 38 – The proportion of LAGC IFQ trips taken each year by trip type from FY2010 to FY2016. The percent of access area (AA) trips shown are only for years where trips were allocated to that area.	102
Table 39 – The percent of allocated access area trips taken by LAGC IFQ vessels from FY2010 to FY2016. Data used in the table also includes RSA compensation trips.	103
Table 40. Average hours spent fishing (‘haul’) and average hours of steam time to fishing grounds (‘steam’) on observed LAGC IFQ trips from FY2010 to FY2017. Averages are shown by trip type (open trips and access area trips). FY2017 data is reported through December 30, 2017.	104
Table 41. Average GRT, HP, and length for active LAGC IFQ vessels from FY2010 to FY2016.	108
Table 42 – Active LA with IFQ vessels, annual allocations, scallop landings, and the proportion of allocation landed from fishing year 2012 to 2018. Activity and landings are from the LAGC IFQ fishery (i.e. not LA fishery).	117
Table 43 – Distribution of combined scallop landings by LA vessels with IFQ from the LAGC IFQ fishery and distinct permits from FY2010 to FY2018 by state/port landed. Combined landings and distinct permits are shown in bold by landed state. States/ports with landings from less than three vessels have been combined or removed to comply with confidentiality standards.....	118
Table 44 – The median and average percentage of scallop revenue (dealer dollar) for LA vessels with IFQ from the limited access fishery and the LAGC IFQ fishery by year, fishing year 2009 through 2018. ...	120
Table 45 - Number of vessels with LAGC IFQ permits, active in other fisheries, that did not land scallops, by scallop fishing year (2010 - 2019). Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.....	120
Table 46 - Total permit holdings of black sea bass, summer flounder, scup, and squid permits by LAGC IFQ permit holders (active and inactive) from 2010 - 2019. Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.	121
Table 47 -Total active LAGC IFQ permits that also had landings in the black sea bass, summer flounder, scup, and squid fisheries (active permits) from 2010 – 2019. Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.	122
Table 48. Limited Access landings relative to ACT and fishery-wide landings, FY 2011-2017	122
Table 49. LAGC IFQ landings relative to IFQ ACL and fishery-wide landings, FY 2011-2017.	122
Table 50. LAGC IFQ active vessels and landings (excluding LA vessels with IFQ permits).....	123

Table 51. LAGC Incidental Landings relative to target and fishery-wide landings, FY 2011-2017.....	123
Table 52 - Atlantic Sea Scallop landings, revenue, average prices (2009 - 2018).....	124
Table 53. Scallop Research Set-Aside awards for survey coverage in the NGOM management area by year. Awards are allocated in scallop pounds ("Compensation Pounds). Estimated funds are equal to the pounds awarded multiplied by the common price.	126
Table 54. Fishing revenue in top sea scallop ports, calendar years 2010-2017.	129
Table 55. Scallop fishing community engagement and reliance indicators, 2013-2017 average.	129
Table 56. Primary and secondary ports in the sea scallop fishery.	130
Table 57. Top five species landed by value in Cutler ME, 2019	131
Table 58. Top five species landed by value in Beals ME, 2019	132
Table 59. Top five species landed by value in Portland ME, 2019	132
Table 60. Top five species landed by value in New Hampshire, 2019.....	133
Table 61. Top five species landed by value in Gloucester MA, 2019	133
Table 62. Number of scallop vessels (permits) in Gloucester, 2019	134
Table 63. Top five species landed by value in Provincetown, 2019.....	134
Table 64. Number of scallop vessels (permits) in Provincetown, 2019.....	134
Table 65. Top five species landed by value in Chatham MA, 2019	135
Table 66. Top five species landed by value in Fairhaven MA, 2019.....	136
Table 67. Number of scallop vessels (permits) in Fairhaven, 2019.....	136
Table 68. Top five species landed by value in New Bedford MA, 2019.....	136
Table 69. Number of scallop vessels (permits) in New Bedford, 2019	137
Table 70. Number of scallop vessels (permits) in Point Judith, 2019.....	138
Table 71. Top five species landed by value in Stonington, 2019	138
Table 72. Number of scallop vessels (permits) in Stonington, 2019	139
Table 73. Top five species landed by value in Point Pleasant/Point Pleasant Beach, 2019.....	139
Table 74. Number of scallop vessels (permits) in Point Pleasant/Point Pleasant Beach, 2019	140
Table 75. Top five species landed by value in Barnegat Light/Long Beach, 2019	140
Table 76. Number of scallop vessels (permits) in Barnegat Light, 2019.....	141
Table 77. Top five species landed by value in Wildwood, 2019	141
Table 78. Number of scallop vessels (permits) in Wildwood, 2019.....	141
Table 79. Top five species landed by value in Cape May, 2019	142
Table 80. Number of scallop vessels (permits) in Cape May, 2019	142
Table 81. Top five species landed by value in Hampton and Seaford, 2019.....	143
Table 82. Number of scallop vessels (permits) in Hampton and Seaford (combined), 2019	143
Table 83. Top five species landed by value in Newport News, 2019.....	144
Table 84. Number of scallop vessels (permits) in Newport News, 2019.....	144
Table 85. Terms used to summarize impacts on VECs	146
Table 86 – Comparison of NGOM season length at 200,000 pound and 1 million pound NGOM set-aside under varying levels of participation (active vessels, trips per week)	152
Table 87 - Comparison of NGOM Set-Aside Triggers and Allocation Splits	187
Table 88 - Economic impact of NGOM Allocation in Alternative 2 Option 1-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips at various trip limits)	197
Table 89 - Economic impact of NGOM Allocation in Alternative 2 Option 2-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips).....	199
Table 90 - Economic impact of NGOM TAC in Alternative 2 Option 3-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips).....	200
Table 91 - Economic impact of NGOM TAC in Alternative 2 Option 4-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips).....	202
Table 92 - NGOM TAC allocation for NGOM (set-aside) and NGOM (APL) by Alternative 2 Options	205

Table 93 - Comparison of NGOM (set-aside) and NGOM (APL) revenue (in 2018\$) by Options in Alternative 2.....	206
Table 94 - Comparison of Revenue per boat of NGOM Set-Aside and NGOM (APL) in 2018 dollars. .	207
Table 95 - Comparison of NGOM (set-aside) revenue per boat (in 2018\$) by Alternative 4.2.2 Options and fleet size.	208
Table 96 - Comparison of NGOM Set-Aside total trips per boat per total trips for Alternative 4.2.2 Options.....	209
Table 97 - Comparison of NGOM (APL)* trips for LA and LAGC IFQ boats across Options in Alternative2.....	210
Table 98. Revenues from scallop and other species by the LGC (A/B) fleet operating in the NGOM in FY2018.	213
Table 99. Scallop and non-scallop landings (pounds), revenues and prices (in Nominal dollars) in the IFQ fishery (FY2010-FY2017)	221
Table 100. Scallop and non-scallop landings (pounds), revenues and prices (in 2019 dollars) in the IFQ fishery (FY2010-FY2017)	221
Table 101. Distribution of scallop landings, trip days, and LPUEs in open, access, and ALL areas (FY2010-2017).	222
The percent change in trip costs, trip length, lease prices, and LPUE associated with the 600-pound possession limit relative to other trip limit alternatives by area are presented in Table 102.	223
Table 103. Trip characteristics of an IFQ vessel in a 600 pounds. possession limit by Area (costs and price in 2019\$)	223
Table 104. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with 600 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	224
Table 105. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 600 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	224
LPUE in access areas is 24% higher compared to open areas. LPUE under the 800-pound possession limit is estimated at 717 pounds per day for access areas, but 576 pounds in open areas. The differences in LPUE across areas suggests that potential benefits of increasing possession limit would largely be realized in access areas (Table 114). The percent change in trip cost, trip length, lease price, and LPUE under an 800-pound possession limit is compared to the other possession limit alternatives by area in	
Table 106.	225
Table 107. Economic characteristics of different trip possession limits for an IFQ vessel (n=1) in open, access, and ALL areas (trip costs and lease prices in 2019 dollars)	226
Table 108. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with 800 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	226
Table 109. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with the 800 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	227
Table 110. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 800 pounds trip possession limit in access and 600 pounds trip limit in open areas (economic values in 2019 dollars)	228
Table 111. Economic characteristics of 1200 pounds possession limits for an IFQ vessel (n=1) in open, access, and ALL areas (trip costs and lease prices in 2019 dollars)	230
Table 112. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with 1200 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	230
Table 113. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 1200 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	231

Table 114. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 1200 pounds trip possession limit in access and 600 pounds trip limit in open areas (economic values in 2019 dollars)	232
Table 115. Ranking of IFQ fleet level net revenues in ALL area (in 2019\$) by alternative in Action 7 .	233
Table 116. Differences in IFQ fleet level net revenues in ALL area (in 2019\$) between alternatives, i.e., ROW minus COLUMN.	233
Table 117. Economic impact of IFQ possession limits in terms of normalized economic value (i.e., net revenue per DAS) and percent change of it from 600 pounds trip limit by area.	234
Table 118. Economic characteristics of different IFQ trip possession limits in open, access, and ALL areas (trip costs and lease prices in 2019 dollars)	235
Table 119. Estimated Economic Impact for the IFQ Fleet (n=96) that an individual vessel lands 30,000 pounds scallop annually with different trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)	236
Table 120. Economic Impact at IFQ Fleet level (that represent 100% landings) of Different Possession Limits by Area (in 2019\$) along with normalized economic values.	237
Table 121. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with different trip possession limit in open, access, and ALL areas (economic values in 2019 dollars).....	238
Table 122. Percent change in trip cost, trip length, lease price, and LPUE in a possession limit compared to 600 pounds trip limits in a management area.	239
Table 123. Percent change in IFQ fleet level efforts, net revenue, crew share and owner profit in a possession limit compared to 600 pounds possession limit for a scallop management area.	239
Table 124. Total lease-in pounds and scallop landings by active vessel (FY2010-FY2017)	240
Table 125. Summary of per pound lease prices (in 2019\$) by possession limit and area.	241
Table 126. Summary of lease proportion, annual lease amount, and annual lease cost and lease prices (in 2019\$) for an IFQ vessel by possession limit and area.....	241
Table 127. Financial Impact (in 2019\$) of leased IFQ quotas to an IFQ vessel (n=1) under different leased to landing ratios by area and possession limits	244
Table 128. Percent change (compared to 600 pounds limit) in financial impact (in 2019\$) of leased IFQ quotas to an IFQ vessel (n=1) under different leased to landing ratios by area and possession limits.	245
Table 129. Financial Impacts with Lease Costs at IFQ Fleet Level (values in 2019\$) by lease proportions, area and possession limit alternatives	246
Table 130. Summary of Financial Impacts with Lease Costs at IFQ Fleet Level (sub-total values in 2019\$) by possession limit alternatives and area (includes vessels with no leases).	247
Table 131. Summary of Financial Impacts with Lease Costs at IFQ Fleet Level (sub-total values in 2019\$) by lease proportions, area and possession limit alternatives (EXCLUDES vessels with no leases)	248
Table 132 – Example distributions between RSA and the commercial fishery under the four options at different NGOM Allocation levels.	259

2.2 FIGURES

Figure 1 - Example of scallop legal limits (OFL, ABC, ACL) under No Action. The NGOM ACL, specified as a TAC, would continue to be included in the OFL with state waters catch.	16
Figure 2 - Example of scallop legal limits (OFL, ABC, ACL) with the Northern Gulf of Maine incorporated into estimates of the OFL and ABC (Alternative 2, 4.1.2).	18
Figure 3 - Schematic of how the NGOM Allocation would be distributed if the allocation is below the specified trigger, using a NGOM set-aside approach.	22
Figure 4 – Schematic of how the NGOM Allocation would be distributed if the allocation is above the specified trigger, using a NGOM set-aside approach.	22

Figure 5 – Allocations for the NGOM Set-Aside, LA, and LAGC using a 1-million-pound trigger and 5% for the NGOM set-aside and 95% for the NGOM APL above the APL, under a range of allocations to the NGOM management area.	23
Figure 6 - Example of the NGOM Set-Aside, LA, and LAGC IFQ allocations under Option 3 - Two Tier Approach splitting the pounds above 600,000 pound NGOM set-aside trigger.	25
Figure 7 - Allocations for the NGOM Set-Aside, LA, and LAGC using a 500,000-pound trigger and 5% for the NGOM set-aside and 95% for the NGOM APL above the APL, under a range of allocations to the NGOM management area.	27
Figure 8 - Example of the NGOM Set-Aside, LA, and LAGC IFQ allocations under Option 4 - Two Tier Approach splitting the pounds above 200,000 pound NGOM set-aside trigger.	29
Figure 9 - Comparison of NGOM Set-Aside Options trigger options at different allocation levels in the NGOM with additional examples.	30
Figure 10 - Comparison of the NGOM Set-Aside as a percentage of the NGOM Allocation for Options 1 - 4.	31
Figure 11 – Schematic where observer set-aside pounds (see red circle) would come from if the NGOM set-aside approach is used, and the NGOM is accounted for as part of the OFL only.	33
Figure 12 - Schematic highlighting where research set-aside pounds (see red circle) would come from if the NGOM Set-Aside approach is used.	34
Figure 13 - Scallop Dredge Exemption Areas as of February 14, 2020. Restrictions on maximum dredge width in Options 2 and 3 would be within the green area, which is the GOM Scallop Dredge Exemption Area.	39
Figure 14 - Whole stock estimates of biomass by region from SARC 65. The biomass target B_{MSY} is the black dotted line, and the overfished biomass threshold $B_{MSY}/2$ is the red dashed line.	53
Figure 15 - Fully recruited annual fishing mortality rate for scallop from 1975 - 2017.	54
Figure 16 – Mean monthly meat weight anomalies on Georges Bank (left) and Mid-Atlantic (right) open areas from modeled predictions (Source: SARC 65, Appendix II, p.195).	55
Figure 17 – Observed location of turtle interactions in bottom tending gears in the Northeast Region (2009-2018).	69
Figure 18 - Number of active LAGC A (IFQ) and LAGC B (NGOM) in with declared trips Northern Gulf of Maine management area by fishing year. (Source: GARFO APSD).	83
Figure 19 - Total number of years active in the NGOM since 2010 by LAGC permit type (Cat A & Cat B).	84
Figure 20 - Boxplot of total trip per active vessel in the NGOM by fishing year.	85
Figure 21 - Range of trips per week, per vessel for fishing years 2010-2019 in the Northern Gulf of Maine. Weeks included were only those when the Northern Gulf of Maine was open.	86
Figure 22 - Sea Scallop landings in Maine from state and federal waters from 1950 - 2019. Accessed on 3/20/2020 at https://www.maine.gov/dmr/commercial-fishing/landings/documents/scallop.graph.pdf	92
Figure 23 - Comparison of landings from NGOM management area by LAGC A (IFQ) and LAGC B (NGOM) vessels.	93
Figure 24 - Landings in NGOM Management area by LAGC and LA vessels from FY 2010 – FY 2019, including potential RSA removals in 2018 & 2019.	94
Figure 25 - The monthly proportion of cumulative annual NGOM scallop landings (FY2010-FY2016) vs. monthly proportion of cumulative annual Maine lobster landings (FY2010-FY2015) (ME DMR). NGOM landings are ordered by homeported state of active vessels.	96
Figure 26 – Total revenue from directed NGOM scallop trips compared to other species and scallops landed outside of federal waters in NGOM. Vessels included fished at least one NGOM trip. (Source: NOAA/GARFO/APSD July 23, 2019)	98
Figure 27 – The number of LAGC IFQ trips binned by pounds landed (bin size = 100 lbs) from FY2010-FY2018. NGOM and research trips are not included.	99

Figure 28 – The proportion of trips landed per state by trip size from FY2012-FY2018. Trips are binned by 100 lb. increments and do not include NGOM or research trips. States are listed in descending order from left (most trips landed) to right (least trips landed).	100
Figure 29 – The number of LAGC vessels binned by number of trips taken from FY2010 to FY2017 (bin size = 10 trips; FY2017 data reported through May 30, 2017). Note that the y-axis starts at 4.	101
Figure 30. The average trip length (days) of LAGC IFQ vessels fishing open trips and trips in Nantucket Lightship AA, Delmarva AA, Elephant Trunk AA, Hudson Canyon AA, Mid-Atlantic AA, and Closed Area I AA from FY2010 to FY2016. The dashed red line shows the annual combined average trip length.	103
Figure 31. The number of active LAGC IFQ vessels by month in FY2010 to FY2018.	105
Figure 32. The number of LAGC IFQ trips taken by month from FY2010 to FY2018.	106
Figure 33 – LAGC IFQ scallop landings by month from FY2010 to FY2018.	106
Figure 34. Categorized landings by active LAGC IFQ vessels from FY2010 to FY2018.	107
Figure 35. Categorized revenue by active LAGC IFQ vessels from FY2010 to FY2018.	108
Figure 36. The number of active LAGC IFQ vessels by length group.	109
Figure 37. The distribution of scallop landings by vessel length group.	110
Figure 38. The distribution of allocated quota to active LAGC IFQ vessels by vessel size group.	111
Figure 39. Average fuel price (USD per gallon of diesel) from observed LA and LAGC IFQ trips between March 2007 and February 2020.	112
Figure 40. LAGC IFQ effort (VMS days fished) by 10 nm zones from shore (FY2007-FY2017).	113
Figure 41. LA effort (VMS days fished) by 10 nm zones from shore (FY2007-FY2017).	113
Figure 42 – Cumulative distribution of the percent of quota holdings for active (red) and CPH (blue) LAGC IFQ permits for FY2019 (FW30). The orange vertical line represents the 2.5% maximum quota accumulation cap for LAGC IFQ permits/vessels. Data source: FW30 allocation web spreadsheet (GARFO).	114
Figure 43 – Distribution of LAGC IFQ permits by percentage holdings of the FW30 LAGC IFQ allocation (FY2020) by permit activity status. The orange vertical line represents the 2.5% maximum quota accumulation cap for LAGC IFQ permits/vessels. Data source: FW30 allocation web spreadsheet (GARFO).	115
Figure 44 – Distribution of LAGC IFQ permits by percentage holdings of the FW30 LAGC IFQ allocation (FY2020). The orange vertical line represents the 2.5% maximum quota accumulation cap for LAGC IFQ permits/vessels. Data source: FW30 allocation web spreadsheet (GARFO).	116
Figure 45 – Distribution of annual scallop revenues (dealer dollar) for LA vessels with IFQ by fishery component (i.e. LA, LAGC), fishing year 2009 to 2018.	119
Figure 46 – Pounds landed by scallop IFQ vessels in the scallop, black sea bass, fluke, scup, and squid (lolligo and ilex are combined) from 2010 – 2019. Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.	121
Figure 47 - NOGM Set-Aside allocations at increasing NGOM Allocations.	211
Figure 48 - NGOM APL allocations at increasing at increasing NGOM Allocations.	211
Figure 49 - NGOM Set-Aside Revenue at increasing NGOM Allocations for Options 1-4 in Alternative 4.2.2.	212
Figure 50 - NGOM APL Revenues at increasing NGOM Allocations for Options 1-4 in Alternative 4.2.2.	212
Figure 51 - NGOM Set-Aside Revenues per boat (n=40) at increasing NGOM Allocations for Options 1-4 in Alternative 4.2.2.	213

2.3 MAPS

Map 1 – The Georges Bank SAMS areas used for FY2020 projections in FW32.	51
Map 2 – The 2019 Mid-Atlantic SAMS areas used for FY2020 projections in FW32.	52

Map 3 – The Northern Gulf of Maine Management Area relative to groundfish closures, habitat management areas, and the Stellwagen Bank National Marine Sanctuary.	56
Map 4 – Approximate size comparison of recently surveyed scallop fishing areas of the NGOM relative to proposed access areas on Georges Bank for FY2020. Note that square mileage of GB access areas are measured based on SAMS area boundaries to more accurately reflect “scallop bottom”.	57
Map 5 - Area of the Northern Gulf of Maine management unit in square miles and square kilometers.	58
Map 6 – Major physiographic features of the Gulf of Maine relative to the territorial waters boundary of the US and Canada (EEZ, red dotted line).	72
Map 7 – Sedimentary features of the Gulf of Maine. Source: Fishing Effects Model, NEFMC 2019.	73
Map 8 – Sedimentary features of Stellwagen Bank. Source: U.S. Geological Survey (Map 22 from Omnibus Habitat Amendment 2).	75
Map 9 – Percent habitat disturbance, scallop dredge. May 2017. Source: Fishing Effects Model.	76

2.4 ACRONYMS

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
AIM	An Index Method of Analysis
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountability Measure
ANPR	Advanced Notice of Proposed Rulemaking
AP	Advisory Panel
APA	Administrative Procedures Act
APL	Annual Projected Landings
ASMFC	Atlantic States Marine Fisheries Commission
B _{MSY}	Biomass that would allow for catches equal to Maximum Sustainable Yield when fished at the overfishing threshold (FMSY)
BiOp, BO	Biological Opinion, a result of a review of potential effects of a fishery on Protected Resource species
CAI	Closed Area I
CAII	Closed Area II
CEQ	Council on Environmental Quality
CPUE	Catch per unit of effort
d/K	Discard to kept catch ratio
DAM	Dynamic Area Management
DAS	Day(s)-at-sea
DFO	Department of Fisheries and Oceans (Canada)
DMF	Division of Marine Fisheries (Massachusetts)
DMR	Department of Marine Resources (Maine)
DPWG	Data Poor Working Group
DSEIS	Draft Supplemental Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
F	Fishing mortality rate

FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FW	Framework
FY	Fishing year
GARFO	Greater Atlantic Regional Fisheries Office
GARM	Groundfish Assessment Review Meeting
GB	Georges Bank
GIS	Geographic Information System
GOM	Gulf of Maine
GRT	Gross registered tons/tonnage
HAPC	Habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
IFM	Industry-funded monitoring
IFQ	Individual fishing quota
ITQ	Individual transferable quota
IVR	Interactive voice response reporting system
IWC	International Whaling Commission
LOA	Letter of authorization
MA	Mid-Atlantic
MAFAC	Marine Fisheries Advisory Committee
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MPA	Marine protected area
MRI	Moratorium Right Identifier
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
NEAMAP	Northeast Area Monitoring and Assessment Program
NEFMC	New England Fishery Management Council
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NLS-N	Nantucket Lightship North
NLS-S-deep	Nantucket Lightship South Deep
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OBDBS	Observer database system
OLE	Office for Law Enforcement (NMFS)
OY	Optimum yield
PBR	Potential Biological Removal
PDT	Plan Development Team
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RMA	Regulated Mesh Area
RPA	Reasonable and Prudent Alternatives
SA	Statistical Area
SAFE	Stock Assessment and Fishery Evaluation
SAP	Special Access Program
SARC	Stock Assessment Review Committee
SAS	Stock Assessment Subcommittee
SAW	Stock Assessment Workshop

SBNMS	Stellwagen Bank National Marine Sanctuary
SIA	Social Impact Assessment
SNE	Southern New England
SNE/MA	Southern New England-Mid-Atlantic
SSB	Spawning stock biomass
SSC	Scientific and Statistical Committee
TAL	Total allowable landings
TED	Turtle excluder device
TEWG	Technical Expert Working Group
TMS	Ten minute square
TRAC	Transboundary Resources Assessment Committee
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VMS	Vessel monitoring system
VEC	Valued ecosystem component
VPA	Virtual population analysis
VTR	Vessel trip report
WGOM	Western Gulf of Maine
YPR	Yield per recruit

3.0 BACKGROUND AND PURPOSE

3.1 BACKGROUND

To be completed.

3.2 PURPOSE AND NEED

The need for this action is to promote conservation of the scallop resource in the Northern Gulf of Maine Management area and to manage total removals from the area by all fishery components. Another need is to expand flexibility in the LAGC IFQ fishery to reduce impacts of potential decreases in ex-vessel price and increases in operating costs.

The purpose for this action is to consider adjusting the management of the Northern Gulf of Maine to allow for more controlled access by the LA and LAGC components and increase monitoring in ways that support a growing directed scallop fishery in federal waters. Another purpose is to consider adjusting the LAGC IFQ program to support overall economic performance while allowing for continued participation in the General Category fishery at varying levels.

3.3 VISION FOR LAGC COMPONENT

In Amendment 21, the Council is reaffirming the Amendment 11 vision statement for the Limited Access General Category component as:

“a fleet made up of relatively small vessels, with possession limits to maintain the historical character of this fleet and provide opportunities to various participants including vessels from smaller coastal communities.”

3.4 GOALS AND OBJECTIVES

The goals and objectives of the Atlantic Sea Scallop FMP remain as described in earlier actions. Amendment 21 includes specific goals and objectives for the management of the scallop fishery and resource in the Northern Gulf of Maine Management Area, and for the LAGC IFQ component.

3.4.1 Northern Gulf of Maine Management

1. Support a growing directed scallop fishery in federal waters in the NGOM.
2. Allow for orderly access to the scallop resource in this area by the LAGC and LA components.
3. Establishing mechanisms to set allowable catches and accurately monitor catch and bycatch from the NGOM.

3.4.2 LAGC IFQ Measures

1. Improve overall economic performance of the LAGC IFQ component.
2. Allow for continued participation in the General Category fishery at varying levels.

3.5 NEPA AND PUBLIC SCOPING

3.5.1 Notice of Intent

NMFS published a Notice of Intent (NOI) on March 1, 2019 to announce its intent to develop Amendment 21 and prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) to analyze the impacts of the proposed management alternatives. The announcement stated that Amendment 21 would “consider measures related to the Northern Gulf of Maine Scallop Management Area, Limited Access General Category individual fishing quota possession limits, and the ability of Limited Access vessels with Limited Access General Category individual fishing quota permits to transfer quota to Limited Access General Category individual fishing quota-only vessels.” The scoping period extended from February 28, 2019 to April 3, 2019 and included ten scoping hearings. Based on the range of alternatives developed for this action, the Council has developed an EA to analyze the impacts.

3.5.2 Scoping Comments

Through the 81 comments (i.e., 57 oral and 24 written), 73 people gave input (duplicates removed) on Amendment 21. The 72 commenters represented multiple stakeholder types, but were primarily active in the scallop fishery. All written comments and summaries of hearings, as well as a complete summary of scoping comments, are provided at www.nefmc.org.

3.6 DEFINITIONS

The following definitions define terms used in this action.

ACL Flowchart: Annual Catch Limit flowchart. The schematic used to describe relationship between legal limits in the scallop fishery, such as the overfishing limit (OFL), acceptable biological catch (ABC), annual catch limit (ACL), and annual catch target (ACT). In the scallop FMP, the $OFL > ABC = ACL > ACT$. The ACL flowchart is not used to develop days-at-sea (DAS) allocations for the LA component, or allocations for spatial management. The values in the flowchart represent an upper-bound that annual projected landings ($APL \leq ACL$) developed through spatial management should not exceed.

APL: Annual Projected Landings. Fishery allocations set by the Council through the application of spatial management. The APL is the combination of landings from access areas and open areas of the fishery. The APL is calculated using survey data with a forward projection model (SAMS), and applying target F rates to spatially explicit areas of the resource (SAMS areas). The APL is reduced by LAGC incidental catch, the observer set-aside, and the research set-aside. Currently, the APL for the scallop fishery is based on exploitable biomass in areas that are surveyed and open to the fishery on Georges Bank and the Mid-Atlantic. The APL is allocated to the Limited Access (94.5%) and Limited Access General Category IFQ (5.5%) components. The NGOM set-aside is outside of the APL, and the APL is not reduced by this value.

NGOM APL: Northern Gulf of Maine Annual Projected Landings. The NGOM APL are defined as pounds that would be added to the LA and LAGC IFQ allocations. The NGOM APL would be split 94.5% for the LA component, and 5.5% for the LAGC IFQ component. The Council will develop measures to govern how the NGOM APL can be harvested.

NGOM Allocation: This is the description of the total allocation associated with the Northern Gulf of Maine management area that is available for directed fishing, supporting research and monitoring costs. When the area is accounted for “outside” of the ABC and ACL flowchart, this is specified as the NGOM TAC. The NGOM TAC would serve as an ACL for this area. The NGOM Allocation will be developed

by Council's scallop PDT and approved by the Council. If survey data is available, the NGOM Allocation will be set using a projection method developed by the scallop PDT.

NGOM Set-Aside: Northern Gulf of Maine Set-Aside. A portion of the NGOM TAC that can be available to support research and for harvest by LAGC Category (IFQ) A and LAGC Category B (NGOM) vessels. The trip limit for LAGC A and LAGC B vessels fishing the NGOM set-aside would be set at 200 pounds. The Council will establish measures to govern how the NGOM set-aside can be harvested.

NGOM Monitoring Set-Aside: Northern Gulf of Maine monitoring Set-Aside. A portion of the NGOM TAC that would be available to offset the cost of monitoring in the scallop fishery if the Council does not move the NGOM into the ACL flowchart. This monitoring set-aside would be added to the fishery-wide observer set-aside (1% of ABC). Any observer compensation awarded to vessels fishing in federal waters of the NGOM management area would come out of the fishery-wide observer set-aside.

Set-Aside Trigger: A value (in pounds) specified by the Council to separate allocations to NGOM set-aside, and to other components of the scallop fishery. Below the trigger, 100% of the NGOM Allocation would contribute to the NGOM set-aside. Above the trigger, the NGOM Allocation will be allocated to other components, such as the NGOM APL.

4.0 ALTERNATIVES UNDER CONSIDERATION

The Council is considering a range of adjustment to the management of scallop fishing in the Northern Gulf of Maine management area, along with increases to the LAGC IFQ trip limit, and allowing LA vessels with IFQ to transfer their quota to LAGC IFQ only vessels.

Northern Gulf of Maine Management Area: For clarity, the Council is not considering changes to the 200-pound trip limit for LAGC vessels fishing the share of the allocation that is available to LAGC NGOM (Category B) vessels. The Council is not considering changing the boundaries of this management unit that were established in Amendment 11.

4.1 ACTION 1 – NORTHERN GULF OF MAINE CATCH LIMITS

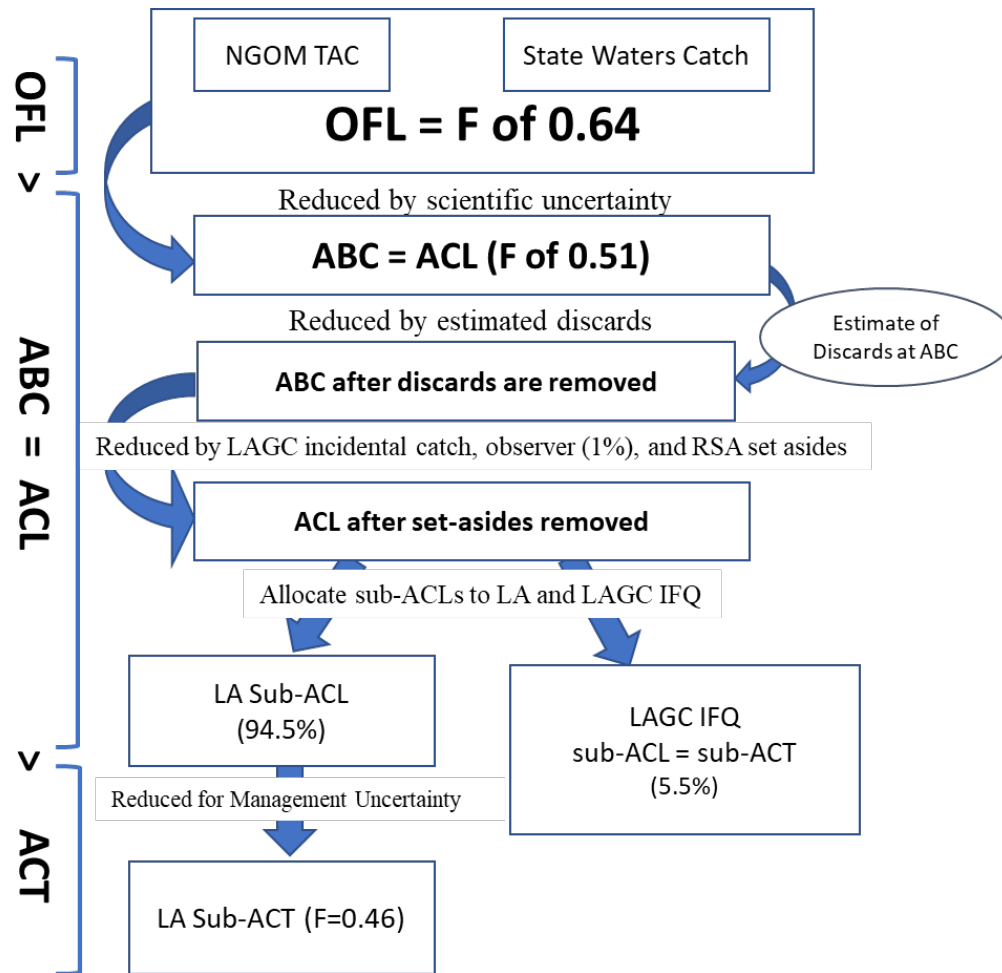
Action 1 considers how the scallop biomass in the Northern Gulf of Maine should be accounted for in the legal limits of the fishery (OFL, ABC, ACL). Since the Council uses a separate process to set specifications for the Northern Gulf of Maine, the preferred alternative in Action 1 will not limit what the Council can choose as preferred other sections of Amendment 21.

4.1.1 Alternative 1: No Action

There would be no change to how scallops within the Northern Gulf of Maine are accounted for within the fishery's legal limits, and the ACL flowchart (Figure 1). The Northern Gulf of Maine ACL would continue to be specified as TAC that is only included in the OFL, along with state waters catch estimates. Consistent with current practice, the amount of the NGOM TAC that is included in the OFL would be set equal to the allocation to the area set through a specifications package or framework adjustment. This approach keeps the NGOM ACL/TAC outside of the process used to estimate the fishery-wide OFL and ABC (outside the ACL flowchart).

Rationale: National Standard 1 guidelines allow for flexibility in limited circumstances that may not fit standard approaches for establishing ACL mechanisms in FMPs. The Northern Gulf of Maine is considered to be data poor relative to Georges Bank and the Mid-Atlantic. The Gulf of Maine, and the NGOM management unit, have not been regularly surveyed for scallops. The NGOM is outside the areas covered by the stock assessment models (Georges Bank and the Mid-Atlantic). The reference points that are used to determine the OFL and ABC for this stock are based on the stock-recruit relationships on Georges Bank and the Mid-Atlantic. It may be appropriate to include the NGOM area into the legal limits of the fishery when additional biological data is available for animals in this part of the resource.

Figure 1 - Example of scallop legal limits (OFL, ABC, ACL) under No Action. The NGOM ACL, specified as a TAC, would continue to be included in the OFL with state waters catch.



4.1.2 Alternative 2: Account for the Northern Gulf of Maine as part of the Acceptable Biological Catch and Annual Catch Limits.

Alternative 2 would account for the scallop biomass in the Northern Gulf of Maine as part of the legal limits in the fishery by adding biomass from the area into calculations of the overfishing limit (OFL) and acceptable biological catch (ABC). Alternative 2 would move the accounting of the Northern Gulf of Maine ACL from only within the OFL into the OFL and ABC/ACL for the entire fishery (Figure 2). By including exploitable scallop biomass from the NGOM as part of the scallop OFL and ABC, the ACL and sub-ACLs for the LA and LAGC IFQ, and the LA ACT would increase.

In the past (i.e., under No Action), the NGOM ACL was set equal to a TAC for the area, which was available for harvest. In Alternative 2, the NGOM ACL would be set consistent with how the rest of the scallop fishery is managed, at the catch level equal to the fishing mortality rate (F) that has a 75-percent probability of remaining below the F associated with the OFL. The Council would set specifications for the NGOM through future specifications actions, with an upper limit of the NGOM ACL. Accountability measures for the NGOM are described in Action 2 and would be a pound-for-pound payback of overages by individual fishery components.

Including the NGOM in the calculation of the ABC would negate the need set-aside pounds from the NGOM to offset the cost of monitoring (See Action 3) because this area would be included in the fishery-wide observer set aside, which is calculated at 1% of the ABC.

The Council would use the following approach to include the NGOM into legal limits and the ACL flowchart:

1. Exploitable biomass from surveyed areas of the NGOM would be estimated.
2. The contribution to the OFL would be calculated at the F rate equal to the estimate of F_{MSY} for Georges Bank from the most recent research or management track assessment, unless direct estimates of F_{MSY} for the Gulf of Maine are available.
3. Combining OFL values from areas on Georges Bank/Mid Atlantic and the Northern Gulf of Maine could be done in a single model (i.e., add the NGOM to the SAMS model), or as separate calculations. The method would, in part, be determined by the available data.

The Council develops fishery allocations (annual projected landings) through a separate specifications process. Incorporating the NGOM into the ACL flowchart would have no impact on LA DAS, or any other fishery allocation that is part of the APL.

Rationale: Including the NGOM in the OFL and ABC would allow the fishery's legal limits to grow with biomass and allocations in the NGOM. This is particularly important for the LA and LAGC components, since it would create a mechanism to increase the LAGC IFQ and LA ACTs by accounting for biomass in the NGOM.

While there are data gaps for modeling scallop populations in the NGOM, such as estimates of long-term recruitment, these estimates are not needed for setting the OFL and ABC. The F_{MSY} estimates for Georges Bank are a reasonable approximation to use in this process while additional data is collected.

Since the accountability measure for this area is a pound-for-pound payback of any overage over the annual fishery allocation (i.e. not the NGOM ACL (see Action 2)), accounting for these scallops using the GB F_{MSY} value as a proxy would not undermine conservation measures for this part of the resource.

Incorporating the biomass from the NGOM into the ACL flowchart would increase the number of pounds that are available for the fishery's observer set-aside program and would negate the need for the NGOM Allocation to be reduced to offset the cost of observers.

Figure 2 - Example of scallop legal limits (OFL, ABC, ACL) with the Northern Gulf of Maine incorporated into estimates of the OFL and ABC (Alternative 2, 4.1.2).

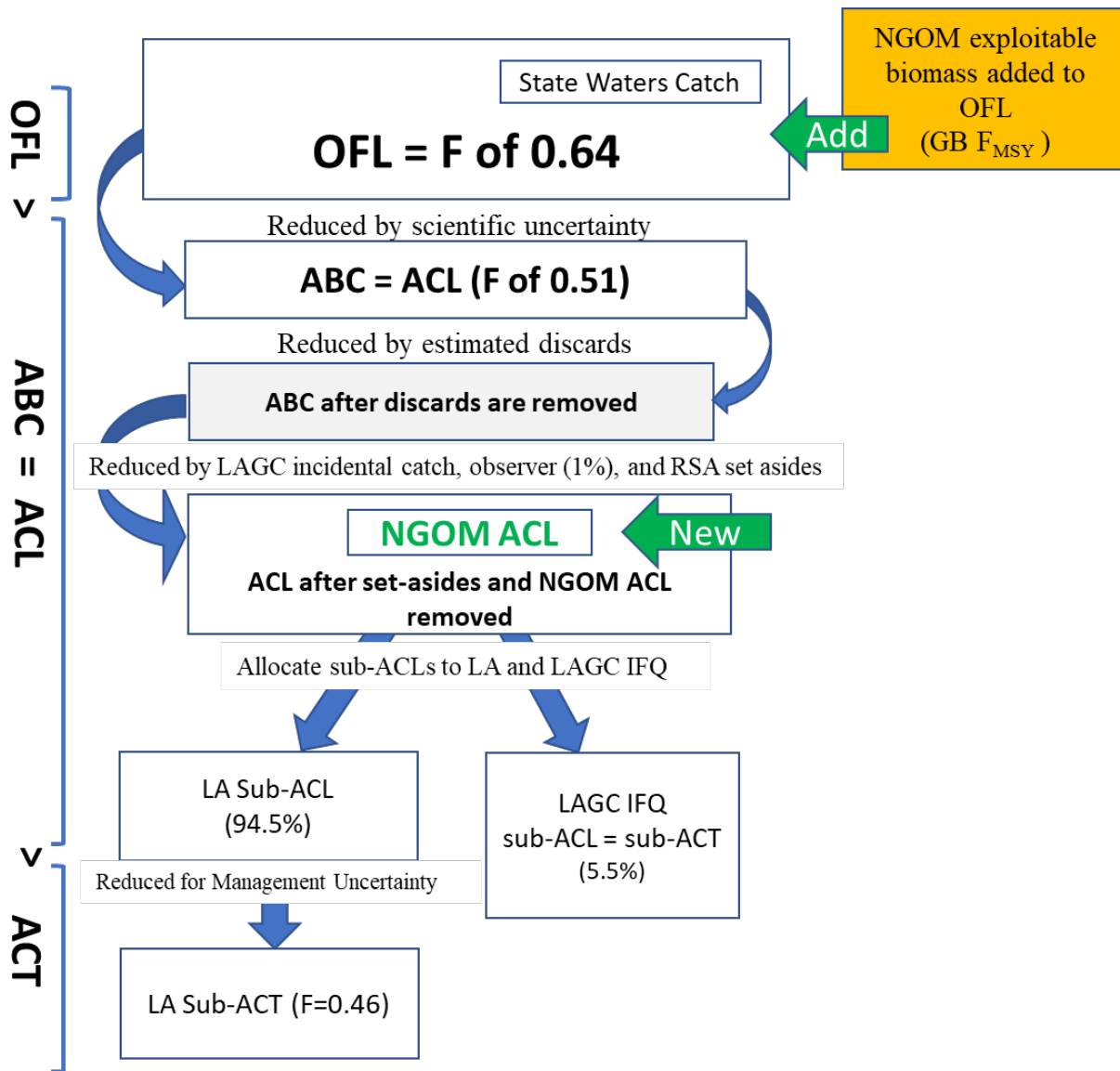


Table 1 - Description of each element of the ACL flowchart when NGOM biomass is added through Action 2, Alternative 2, Section 4.1.2.

	ACL Flowchart	
ACL Flowchart	OFL	Contribute $F=GB F_{MSY}$ of NGOM exploitable biomass to OFL calculation for GB and the Mid-Atlantic.
	ABC/ACL (discards removed)	ABC set at the catch level that has an associated F that has a 75-percent probability of remaining below the F associated with OFL. This would now include biomass from the NGOM.
	Incidental Catch	Estimated by the Council during review of final year end data.
	RSA	1.25 million lbs, plus X (% or lbs) of the NGOM set-aside (1.25 mil + X NGOM RSA)
	Observer set-aside	1% of the fishery wide-ABC, now including scallops in the NGOM. There would be not reduction of the NGOM Allocation in Alternative 4.3.2, Action 2 if the NGOM is added into the flowchart.
	ACL for fishery, including NGOM ACL	ABC (exploitable biomass from all areas) minus: NGOM ACL, observer set-aside, RSA, incidental catch limits.
	Limited Access sub-ACL	94.5% of the ACL
	Limited Access sub-ACT	LA sub-ACL fished at $F=0.46$
	LAGC sub-ACL	5.5% of ACL

4.2 ACTION 2 – NORTHERN GULF OF MAINE ALLOCATIONS

Action 2 addresses how the allocations to the Northern Gulf of Maine (NGOM Allocation) would be shared between a set-aside for directed Limited Access General Category fishing in the management unit, and Limited Access and Limited Access General Category IFQ vessels. In 2018 (through Framework 29), temporary measures were set for the NGOM, and included splitting the TAC between LAGC and LA components, and the LA share was dedicated to research compensation fishing. No Action (Alternative 1) would not preserve this arrangement.

There are two key decision points imbedded within each Option associated with Alternative 2:

1. At what level of exploitable biomass in open areas of the NGOM (i.e., the trigger) should the NGOM allocation be allocated to the LA and LAGC IFQ as NGOM APL.
2. How should the allocation above the trigger be shared between the NGOM Set-Aside and the LA and LAGC IFQ components.

Allocations for each fishing year would be specified through a separate specifications package or framework adjustment.

4.2.1 Alternative 1: No Action

Under Alternative 1, allocations to the Northern Gulf of Maine management area would follow the approach established in 2008 through Amendment 11.

In this approach, a catch limit would not be set for the Limited Access component when fishing inside the management area. Instead, LA vessels could operate inside and outside the NGOM management unit when fishing under days-at-sea (DAS) management.

An ACL specified as a TAC would be set for the LAGC component fishing in the NGOM management area. When the NGOM TAC is caught, the area would close to all scallop vessels (including LA vessels).

The Northern Gulf of Maine management unit would be managed as follows:

1. LAGC IFQ catch applied against NGOM TAC and individual IFQ
2. LAGC Incidental catch is not applied against TAC, 40 lb possession limit
3. Landings from federally permitted LAGC NGOM vessels fishing exclusively in state waters are not deducted from the NGOM TAC.
4. LA catch is not applied against the NGOM TAC, vessels would operate under DAS management
5. Once TAC is reached, NGOM is shut down to all federally permitted vessels
6. NGOM landings would not be included in annual projected landings (APL) used to set overall allocations for LA and LAGC IFQ components

If estimates of exploitable biomass are available for parts of the Northern Gulf of Maine Management Unit, they could be used to develop an allocation for the LAGC in this area. If estimates of biomass in the area are not available or suitable for setting catch limits, the Council could consider setting an allocation based on other available data, such as, but not limited to, historic catch.

With respect to accountability measures (AMs), any overage of the NGOM hard-TAC would be subject to a pound-for-pound payback in a subsequent fishing year after an overage is determined. If reliable data information is available to calculate an overage (Year 1), NMFS may implement this AM in the following fishing year (Year 2) through the rulemaking process for updated fishery specifications. If reliable data is not available in time for the start of the following fishing year, then the AM would be implemented two years after the overage occurred (Year 3). There would be no area specific accountability measures for the LA component associated with removals from the NGOM.

Rationale: This suite of measures would continue what was adopted by the Council in Amendment 11 when the NGOM management area was created.

4.2.2 Alternative 2: Create Northern Gulf of Maine set-aside to support research and a directed LAGC fishery, share additional NGOM Allocation between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ).

If the Council selects Alternative 2 as preferred, it can only select one trigger value and sharing arrangement (Options 1 – 4 below).

Alternative 2 would set an overall landings limit for the NGOM management area for all permit categories, which would be known as the NGOM Allocation. The NGOM Allocation would be reduced and added to the RSA set-aside if the Council selects Alternative 2 in Action 4.

Alternative 2 would create a NGOM set-aside that would support a directed LAGC fishery in the NGOM management area. The NGOM set-aside would be equal to the NGOM allocation up to a trigger (see

Options 1 – 4). When the NGOM allocation is set at a level above the trigger, the pounds above the trigger would be shared between the NGOM set-aside and NGOM APL. The NGOM APL would then be added to the overall APL to increase allocations for the LA and LAGC IFQ. The approach used in Alternative 2 is like how the NGOM has been managed through recent framework actions (FW29, FW30, FW32). The Council developed several options for sharing the NGOM allocation.

Alternative 2 would allow the size of the NGOM Set-Aside to increase if the NGOM Allocation is larger than the ‘trigger’. Options 1 and 3 would split allocation over the trigger as 5% for the NGOM Set-Aside and 95% for the NGOM APL. In options 2 and 4, the allocation over the trigger would be split 25% for the NGOM Set-Aside and 75% for the NGOM APL up to 3 million pounds, then 5% for the NGOM Set-Aside and 95% for the NGOM APL for all allocated pounds over 3 million.

If NGOM survey data is available, the NGOM TAC would be developed using a projection method to estimate exploitable biomass in upcoming fishing years. The NGOM allocation would be set by applying an F rate ranging from $F=0.15$ to $F=0.25$ to exploitable biomass in open areas of the NGOM, as specified by the Council.

If the NGOM Allocation exceeds the trigger and pounds are allocated to the LA and LAGC IFQ components through the NGOM APL, the Council would determine the methods of how the NGOM APL could be harvested in a subsequent specifications package or framework adjustment.

As with No Action, the trip limit for LAGC vessels fishing the NGOM Set-Aside (NGOM and IFQ) would be 200 pounds. Also like No Action, landings from LAGC IFQ vessels fishing the NGOM set-aside would be deducted from their IFQ as well as from the NGOM set-aside. LAGC vessels with incidental catch permits (LAGC Category C) would be permitted land up to 40 pounds per day while fishing on non-scallop trips in the NGOM if the area is open to LAGC vessels. Scallop landings by incidental permits would not count against the NGOM Set-Aside. Incidental catch from the area would be tracked as part of the final year-end catch accounting.

With respect to accountability measures (AMs), any overage of NGOM Set-Aside and NGOM APL allocations fished inside the NGOM management area would be subject to a pound for pound payback in a subsequent fishing year after an overage is determined. If reliable data information is available to calculate an overage (Year 1), NMFS may implement these AMs in the following fishing year (Year 2) through the rulemaking process for updated fishery specifications. If reliable data is not available in time for the start of the following fishing year, then the AM would be implemented two years after the overage occurred (Year 3).

For catch accounting purposes, landings from the NGOM would be included in the review of year-end catch data.

Rationale: This approach would also promote resource conservation by setting limits on total removals from the NGOM and implementing accountability measures for all permit categories fishing in the area. The NGOM Set-Aside approach, combined with options to grow the size of this set-aside with increasing biomass would preserve and support a directed LAGC fishery in federal waters in the NGOM, and distribute allocations to all permit types as the biomass in the area grows. Alternative 2 would allow for vessel level allocations to the LA and LAGC IFQ, while setting aside pounds for LAGC NGOM permits to access on a first-come, first-serve basis. The set-aside approach would promote conservation in the management unit by setting a landings limit for all components of the fishery.

Figure 3 - Schematic of how the NGOM Allocation would be distributed if the allocation is below the specified trigger, using a NGOM set-aside approach.

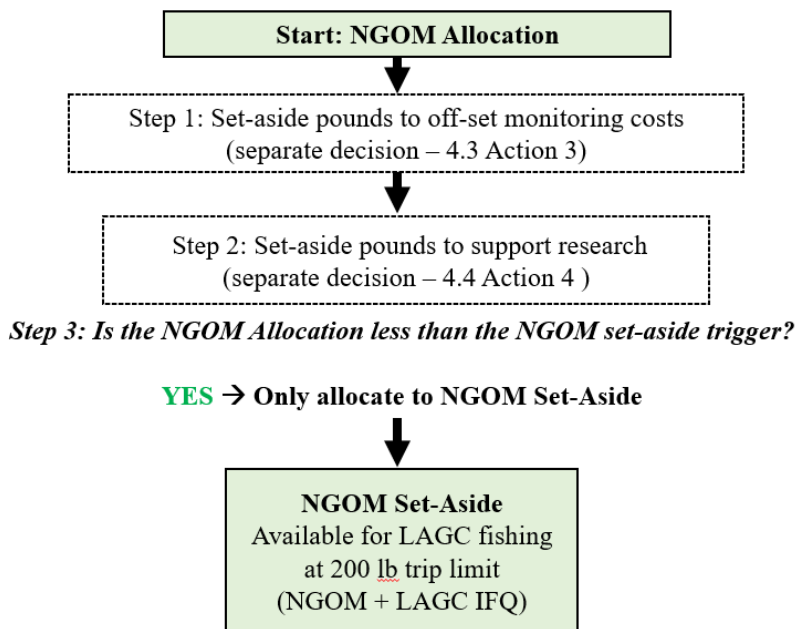
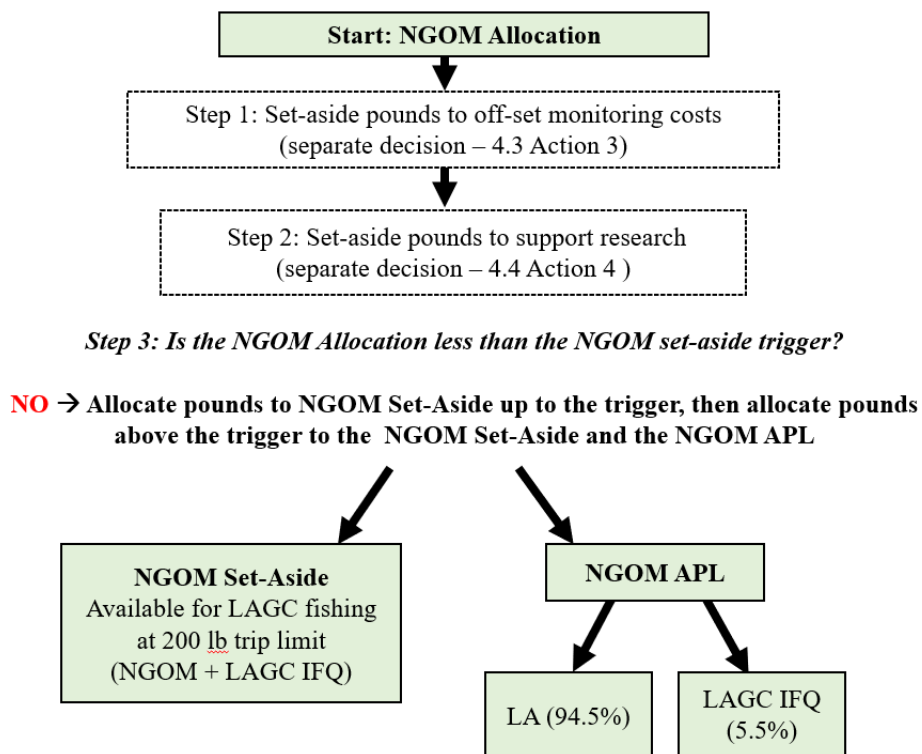


Figure 4 – Schematic of how the NGOM Allocation would be distributed if the allocation is above the specified trigger, using a NGOM set-aside approach.



4.2.2.1 Option 1: NGOM set-aside trigger of 1 million pounds. Pounds over the trigger would be split 5% for the NGOM set-aside and 95% for the NGOM APL.

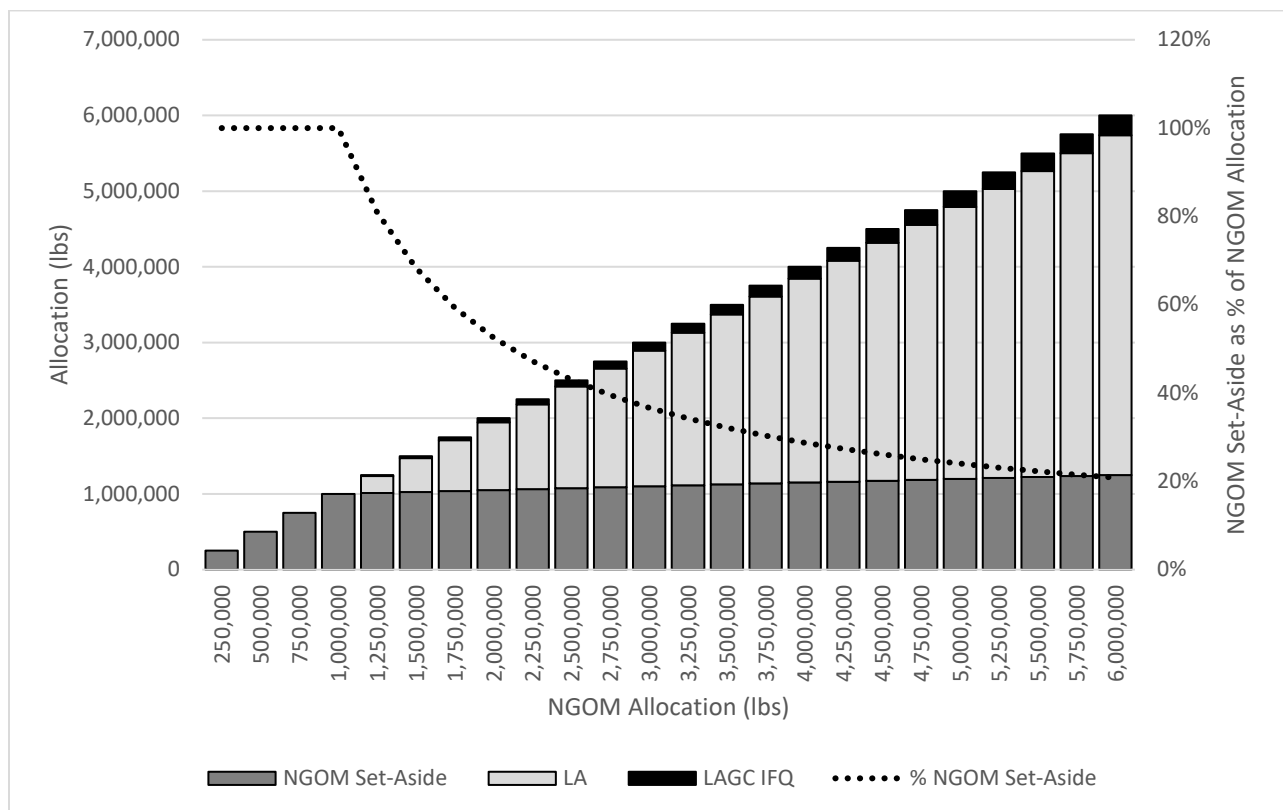
The NGOM set-aside trigger would be set at 1 million pounds. At or below this value, the NGOM allocation would be allocated as NGOM Set-Aside. Over this value, the NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside.

Option 1 would increase the size of the NGOM set-aside and NGOM APL if the NGOM TAC is determined to be above the trigger of 1 million pounds. For all allocation over this trigger, 5% would go to the NGOM set-aside, and 95% would go to the NGOM APL. To calculate the final NGOM set-aside when the NGOM TAC is larger than the trigger, pounds up to the trigger would be added to the 5% share of pounds over the trigger.

Table 2 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 1.

	<i>Poundage Range</i>	<i>Sharing Plan</i>
Set-Aside Trigger	1,000,000 pounds	n/a (all pounds up to 1 million go to the NGOM set-aside)
Tier 1	Greater than 1,000,000 pounds	5% for NGOM set-aside 95% for NGOM APL

Figure 5 – Allocations for the NGOM Set-Aside, LA, and LAGC using a 1-million-pound trigger and 5% for the NGOM set-aside and 95% for the NGOM APL above the APL, under a range of allocations to the NGOM management area.



Rationale: Using a 1-million-pound trigger to determine the NGOM Set-Aside would support a growing directed fishery in the NGOM area and addresses the Council's vision of continued participation in the General Category fishery at varying levels as stated in Amendment 11.

The largest allocation for the NGOM management area since 2008 was a 350,000-pound TAC in fishing year 2020, of which 210,000 pounds were allocated to the LAGC for fishing at 200 pounds per day. Using a trigger value that is above 210,000 pounds (i.e., the largest LAGC TAC for the NGOM since the area was created) could be expected to result in additional fishing opportunities for the LAGC NGOM and IFQ vessels fishing at 200 pounds per day if the biomass in this area grows. There are a total of 427 LAGC B/C permits that could fish in the NGOM management area. In 2019, 110 NGOM permits were issued, and 41 vessels (NGOM and IFQ) landed scallops from the area. A 1-million-pound trigger could support additional participation in the NGOM fishery by LAGC vessels while allowing current active participants to increase their landings from the area.

Since the LAGC allocation in the area has been harvested in about a month in recent years, setting a trigger value above recent allocation levels has the potential to lengthen the season for LAGC vessels and expand opportunities across more of the fishing year.

When the allocation to the NGOM is over this trigger, 5% would go to the NGOM set-aside, and 95% would go to the NGOM APL. This is intended to support access to the scallop resource in the area by Limited Access, Limited Access General Category IFQ, and Limited Access General Category NGOM vessels. Allocating 95% of the allocation over the trigger to the NGOM APL would quickly increase the share for the LA and LAGC IFQ as the exploitable biomass in the area grows. This option would add to the existing allocations for the LA and LAGC IFQ that come from Georges Bank and the Mid-Atlantic.

4.2.2.2 Option 2: NGOM Set-Aside Trigger of 600,000 pounds. Pounds over the trigger would be split 25% for the NGOM set-aside and 75% for the NGOM APL up to 3 million pounds, then 5% for the NGOM set-aside and 95% for the NGOM APL.

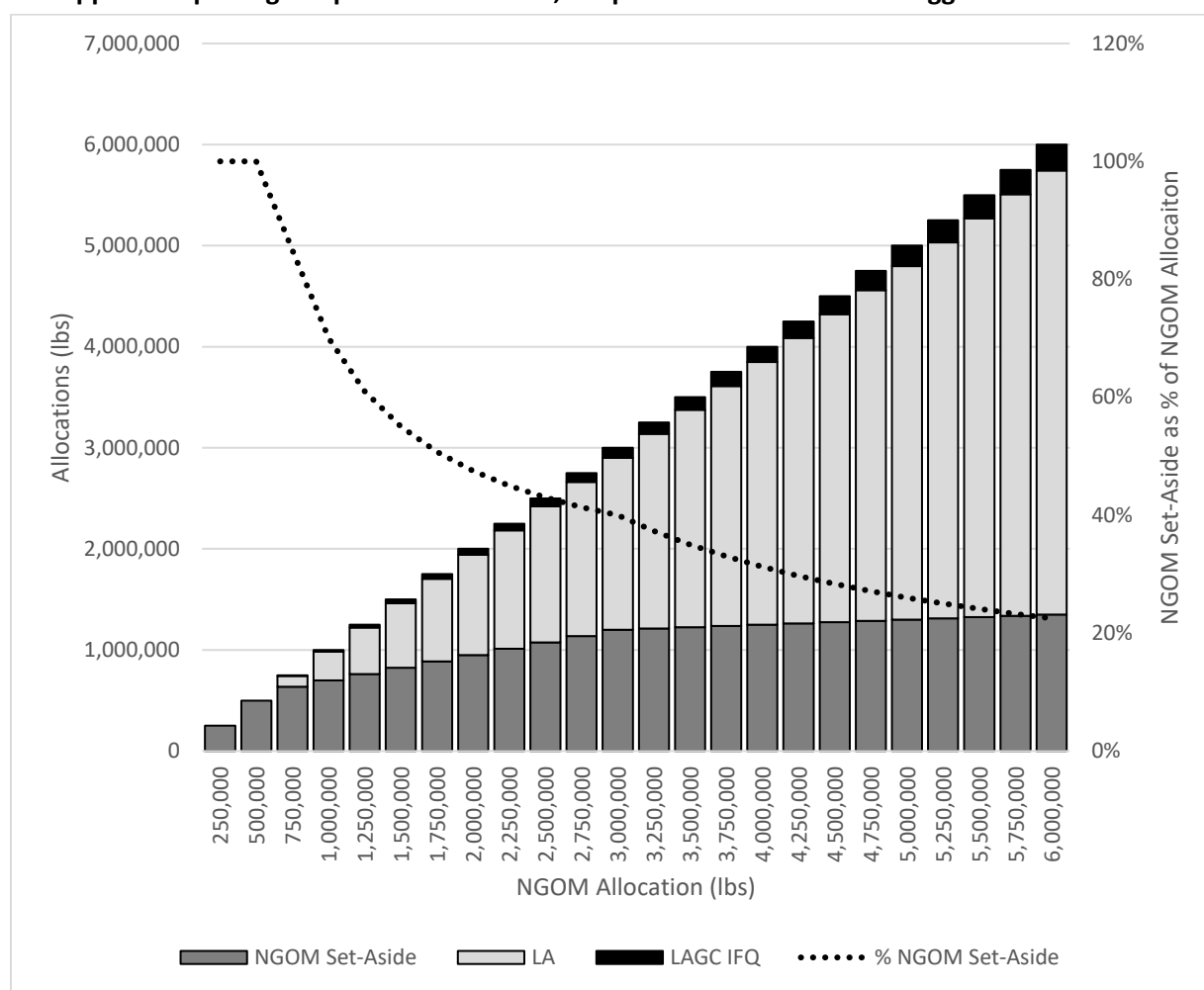
The NGOM set-aside trigger would be set at 600,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM set-aside. Over this value, the remaining NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside.

Alternative 2, Option 2 would increase the size of the NGOM set-aside if the NGOM allocation is determined to be above the following trigger values (i.e., tiers): in Tier 1, 25% of the NGOM TAC would be allocated to the NGOM set-aside and 75% would be allocated to the NGOM APL. In Tier 2, 5% of the NGOM TAC would be allocated to the NGOM set-aside, and 95% would be allocated to the NGOM APL. To calculate the final NGOM set-aside when the NGOM TAC is larger than the trigger, pounds up to the trigger would be added to the NGOM set-aside shares from Tier 1 and Tier 2.

Table 3 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 2.

	Poundage Range	Sharing Plan
Set-Aside Trigger	600,000 pounds	All pounds up to 600,000 go to the NGOM set-aside
Tier 1	600,001 pounds up to 3,000,000 pounds	25% for NGOM set-aside 75% for NGOM APL
Tier 2	Greater than 3,000,001 pounds	5% for NGOM set-aside 95% for NGOM APL

Figure 6 - Example of the NGOM Set-Aside, LA, and LAGC IFQ allocations under Option 3 - Two Tier Approach splitting the pounds above 600,000 pound NGOM set-aside trigger.



Rationale: Using a 600,000-pound trigger NGOM set-aside would support a growing directed General Category fishery in the area and addresses the Council’s vision of continued participation in the General Category fishery at varying levels as stated in Amendment 11. As a two-tier NGOM Set-Aside growth option, Option 3 would result in the largest share of the NGOM allocation for the NGOM Set-Aside in instances when the overall area allocation is more than 2.5 million pounds.

Using a trigger value that is above 210,000 pounds (i.e., the largest LAGC TAC for the NGOM since the area was created) could be expected to result in additional fishing opportunities for the LAGC NGOM and IFQ vessels fishing at 200 pounds per day if the biomass in this area grows. There are a total of 427 LAGC B/C permits that could fish in the NGOM management area. In 2019, 110 NGOM permits were issued, and 41 vessels (NGOM and IFQ) landed scallops from the area. A 600,000-pound trigger could support additional participation in the NGOM fishery by LAGC vessels while allowing current active participants to increase their landings from the area.

Since the LAGC allocation in the area has been harvested in about a month in recent years, setting a trigger value above recent allocation levels has the potential to lengthen the season for LAGC vessels and expand opportunities across more of the fishing year.

The two-tier option allows the size of the NGOM set-aside to grow at different rates, while metering in access for other components of the fishery. When the allocation to the NGOM is over the Tier 1 trigger, 25% would go to the NGOM set-aside and 75% would go to the NGOM APL. When the allocation to the NGOM is over the Tier 2 trigger, 5% would go to the NGOM set-aside, and 95% would go to the NGOM APL. This is intended to support access to the scallop resource in the area by Limited Access, Limited Access General Category IFQ, and Limited Access General Category NGOM vessels. Allocating 95% of the allocation over the Tier 2 trigger to the NGOM APL would quickly increase the share for the LA and LAGC IFQ as the exploitable biomass in the area grows. This option would add to the existing allocations for the LA and LAGC IFQ that come from Georges Bank and the Mid-Atlantic.

4.2.2.3 Option 3: NGOM Set-Aside Trigger of 500,000 pounds. Pounds over the trigger would be split 5% for the NGOM set-aside and 95% for the NGOM APL.

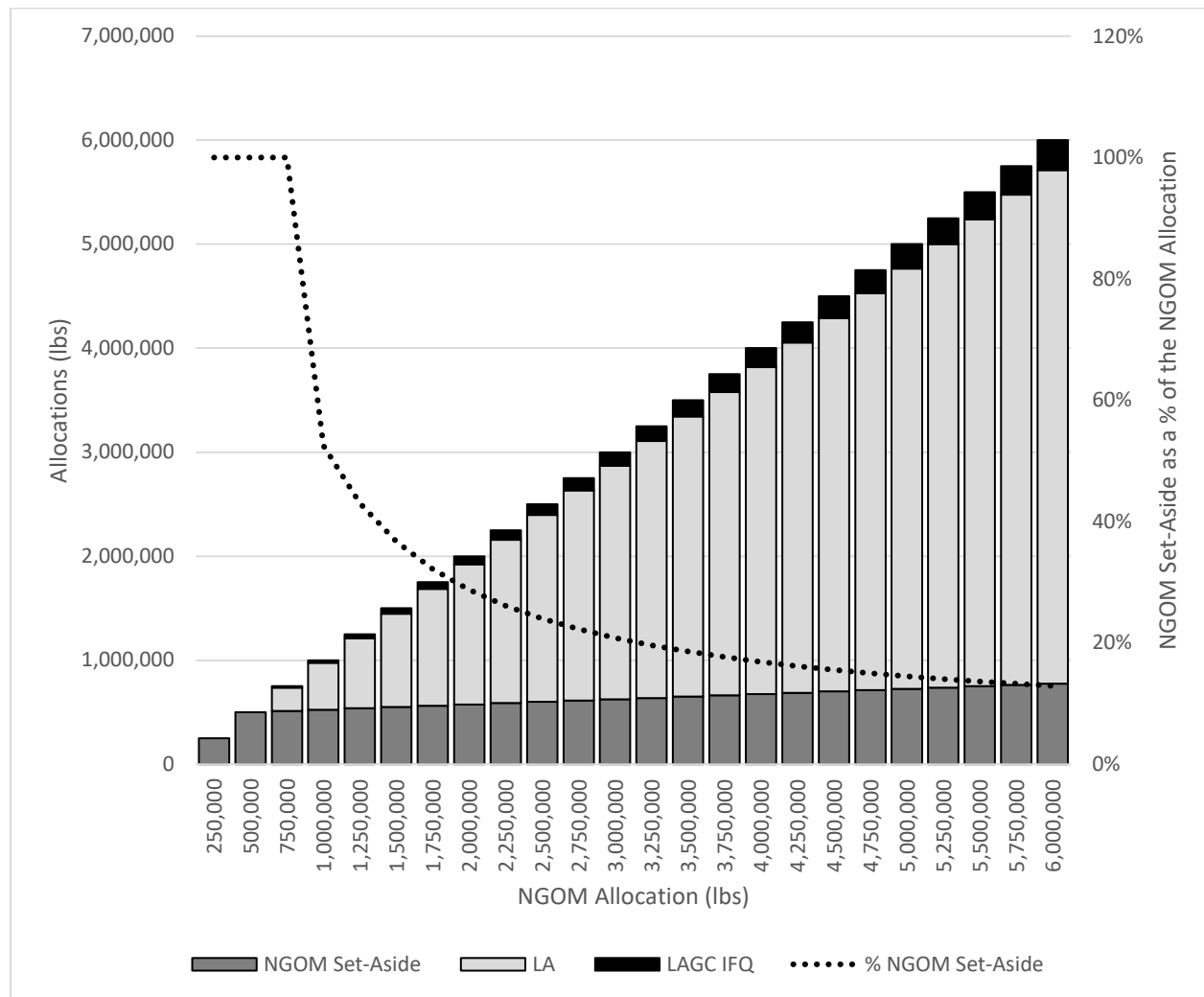
The NGOM set-aside trigger would be set at 500,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM set-aside. Over this value, the remaining NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside.

Alternative 2, Option 3, would increase the size of the NGOM set-aside if the NGOM allocation is determined to be above the trigger value of 500,000 pounds. For all allocation over the trigger, 5% would go to the NGOM set-aside, and 95% would go to the NGOM APL. To calculate the final NGOM set-aside when the NGOM TAC is larger than the trigger, pounds up to the trigger would be added to the 5% share of pounds over the trigger.

Table 4 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 3.

	<i>Poundage Range</i>	<i>Sharing Plan</i>
Set-Aside Trigger	500,000 pounds	n/a (all pounds up to 500,000 go to the NGOM set-aside)
Tier 1	Greater than 500,000 pounds	5% for NGOM set-aside 95% for NGOM APL

Figure 7 -Allocations for the NGOM Set-Aside, LA, and LAGC using a 500,000-pound trigger and 5% for the NGOM set-aside and 95% for the NGOM APL above the APL, under a range of allocations to the NGOM management area.



Rationale: Using a 500,000-pound trigger for the NGOM set-aside would support growing fishing opportunities for all permit categories in the area and addresses the Council’s vision of continued participation in the General Category fishery at varying levels as stated in Amendment 11.

The largest allocation for the NGOM management area since 2008 was a 350,000-pound TAC in fishing year 2020, of which, 210,000 pounds were allocated to the LAGC for fishing at 200 pounds per day. Using a trigger value that is above 210,000 pounds (i.e., the largest LAGC TAC for the NGOM since the area was created) could be expected to result in additional fishing opportunities for the LAGC NGOM and IFQ vessels fishing at 200 pounds per day if the biomass in this area grows. There are a total of 427 LAGC B/C permits that could fish in the NGOM management area. In 2019, 110 NGOM permits were issued, and 41 vessels (NGOM and IFQ) landed scallops from the area. A 500,000-pound trigger could support additional participation in the NGOM fishery by LAGC vessels while allowing current active participants to increase their landings from the area.

Since the LAGC allocation in the area has been harvested in about a month in recent years, setting a trigger value above recent allocation levels has the potential to lengthen the season for LAGC vessels and expand opportunities across more of the fishing year.

When the allocation to the NGOM is over this trigger, 5% would go to the NGOM set-aside, and 95% would go to the NGOM APL. This is intended to support access to the scallop resource in the area by Limited Access, Limited Access General Category IFQ, and Limited Access General Category NGOM vessels. Allocating 95% of the allocation over the trigger to the NGOM APL would quickly increase the share for the LA and LAGC IFQ as the exploitable biomass in the area grows. This option would add to the existing allocations for the LA and LAGC IFQ that come from Georges Bank and the Mid-Atlantic.

4.2.2.4 Option 4: Set-aside trigger of 200,000 pounds. Pounds over the trigger would be split 25% for the NGOM set-aside and 75% for the NGOM APL up to 3 million pounds, then 5% for the NGOM set-aside and 95% for the NGOM APL.

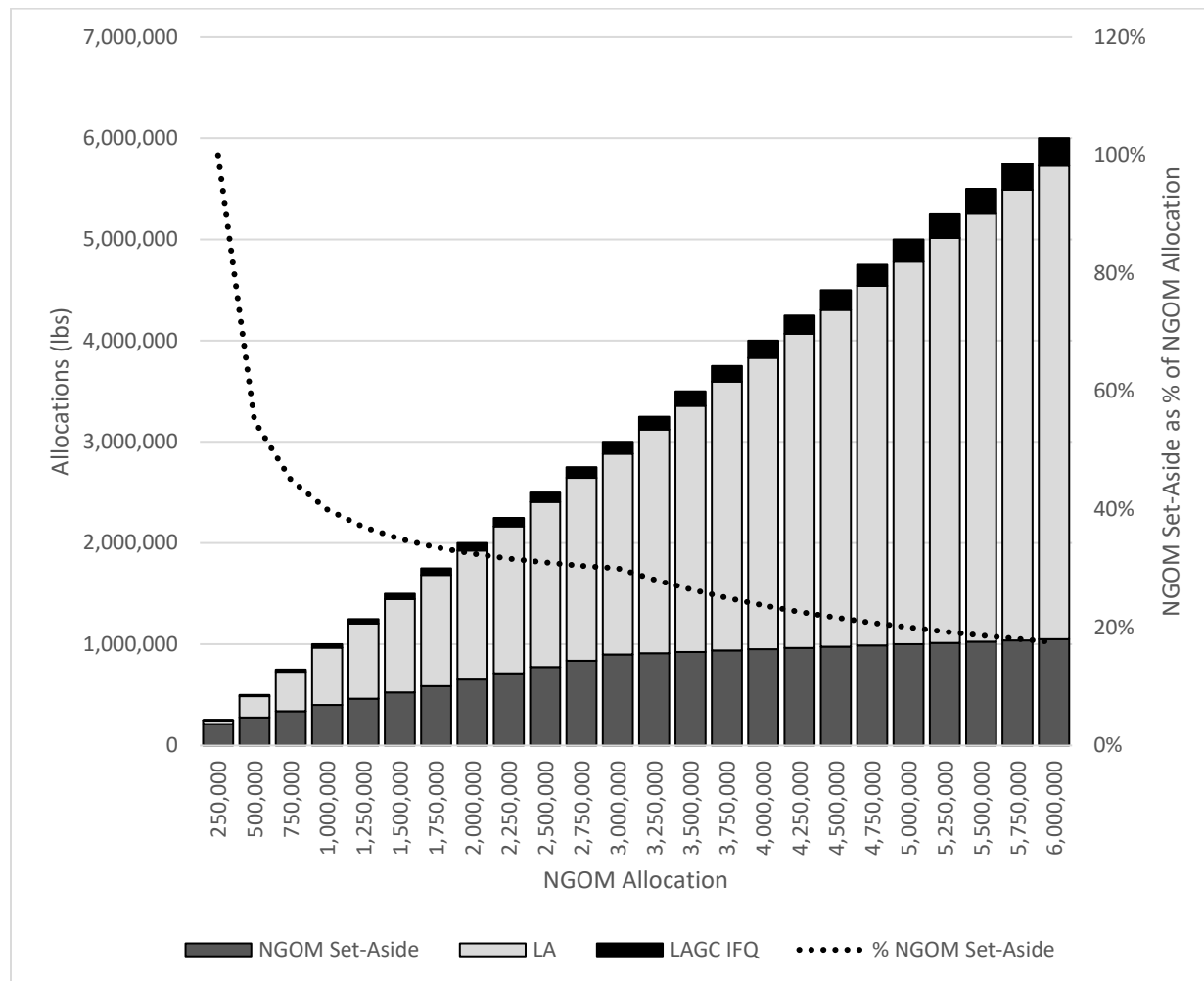
The NGOM set-aside trigger would be set at 200,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM set-aside. Over this value, the remaining NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside.

Alternative 2, Option 4 would increase the size of the NGOM set-aside if the NGOM TAC is determined to be above the trigger values of the following tiers: in Tier 1, 25% of the NGOM allocation above the trigger would be allocated to the NGOM set-aside and 75% would be allocated to the NGOM APL. In Tier 2, 5% of the NGOM allocation above the trigger would be allocated to the NGOM set-aside, and 95% would be allocated to the NGOM APL. To calculate the final NGOM set-aside when the NGOM allocation is larger than the trigger, pounds up to the trigger would be added to the NGOM set-aside shares from Tier 1 and Tier 2.

Table 5 - NGOM Allocation sharing plan for NGOM set-aside and NGOM APL for Alternative 2, Option 4.

	<i>Poundage Range</i>	<i>Sharing Plan</i>
Set-Aside Trigger	200,000 pounds	All pounds up to 300,000 go to the NGOM set-aside
Tier 1	200,001 pounds up to 3,000,000 pounds	25% for NGOM set-aside 75% for NGOM APL
Tier 2	Greater than 3,000,001 pounds	5% for NGOM set-aside 95% for NGOM APL

Figure 8 - Example of the NGOM Set-Aside, LA, and LAGC IFQ allocations under Option 4 - Two Tier Approach splitting the pounds above 200,000 pound NGOM set-aside trigger.



Rationale: A 200,000-pound trigger option would facilitate NGOM access for all permit categories earlier than any other option in Alternative 2. The 200,000-pound trigger is reflective of the most recent allocation to support LAGC fishing in the NGOM area (FY 2020 – 210,000 lbs). Combining the 200,000-pound trigger with an allocation formula of 25% to the NGOM set-aside and 75% to the NGOM APL would allow growth for all components starting at a lower level of exploitable biomass compared to other sharing options under Alternative 2.

The largest allocation for the NGOM management area since 2008 was a 350,000-pound overall TAC in fishing year 2020, of which, 210,000 pounds were allocated as the LAGC TAC. The 200,000-pound trigger option would facilitate NGOM access for all permit categories earlier than any other options in Alternative 2, and is within the range of allocations that have been made to this management area since the area was established in A11.

Using a trigger value that is above 210,000 pounds (i.e., the largest LAGC TAC for the NGOM since the area was created) could be expected to result in additional fishing opportunities for the LAGC NGOM and IFQ vessels fishing at 200 pounds per day if the biomass in this area grows. There are a total of 427 LAGC B/C permits that could fish in the NGOM management area. In 2019, 110 NGOM permits were issued, and 41 vessels (NGOM and IFQ) landed scallops from the area. A 200,000 pound trigger could

support some additional participation in the NGOM fishery by LAGC vessels, though this may impact the ability of current active participants to maintain or increase their landings from the area.

The two-tier option allows the size of the NGOM Set-Aside to grow at different rates, while metering in access for other components of the fishery. The 200,000-pound trigger NGOM set-aside would support a growing directed General Category fishery in the area when combined with the two tiered approach to increase the size of the NGOM set-aside. This option would add to the existing allocations for the LA and LAGC IFQ that come from Georges Bank and the Mid-Atlantic.

4.2.2.5 Comparison of Options in Alternative 2.

The following figures are included in the body of the alternatives to allow the public to draw comparison between each for the allocation options for the NGOM that have been proposed in Amendment 21.

Figure 9 - Comparison of NGOM Set-Aside Options trigger options at different allocation levels in the NGOM with additional examples.

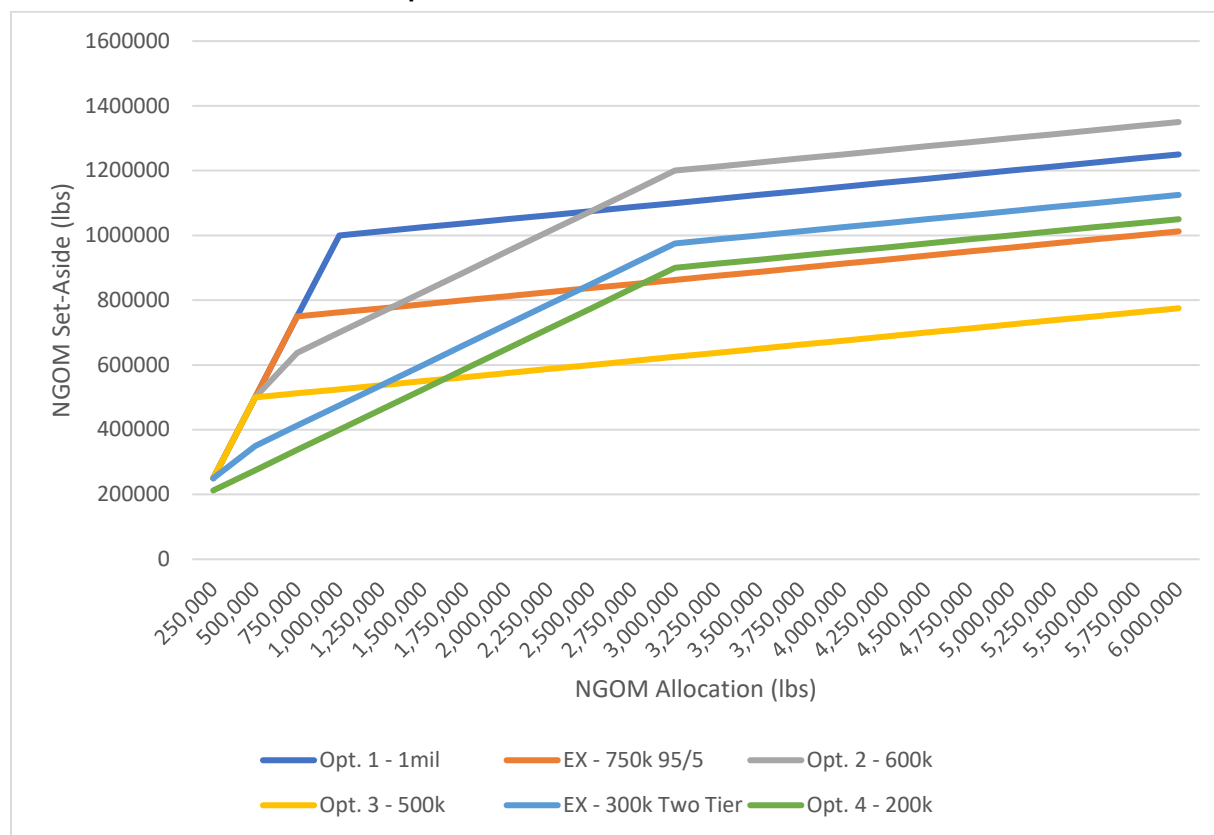
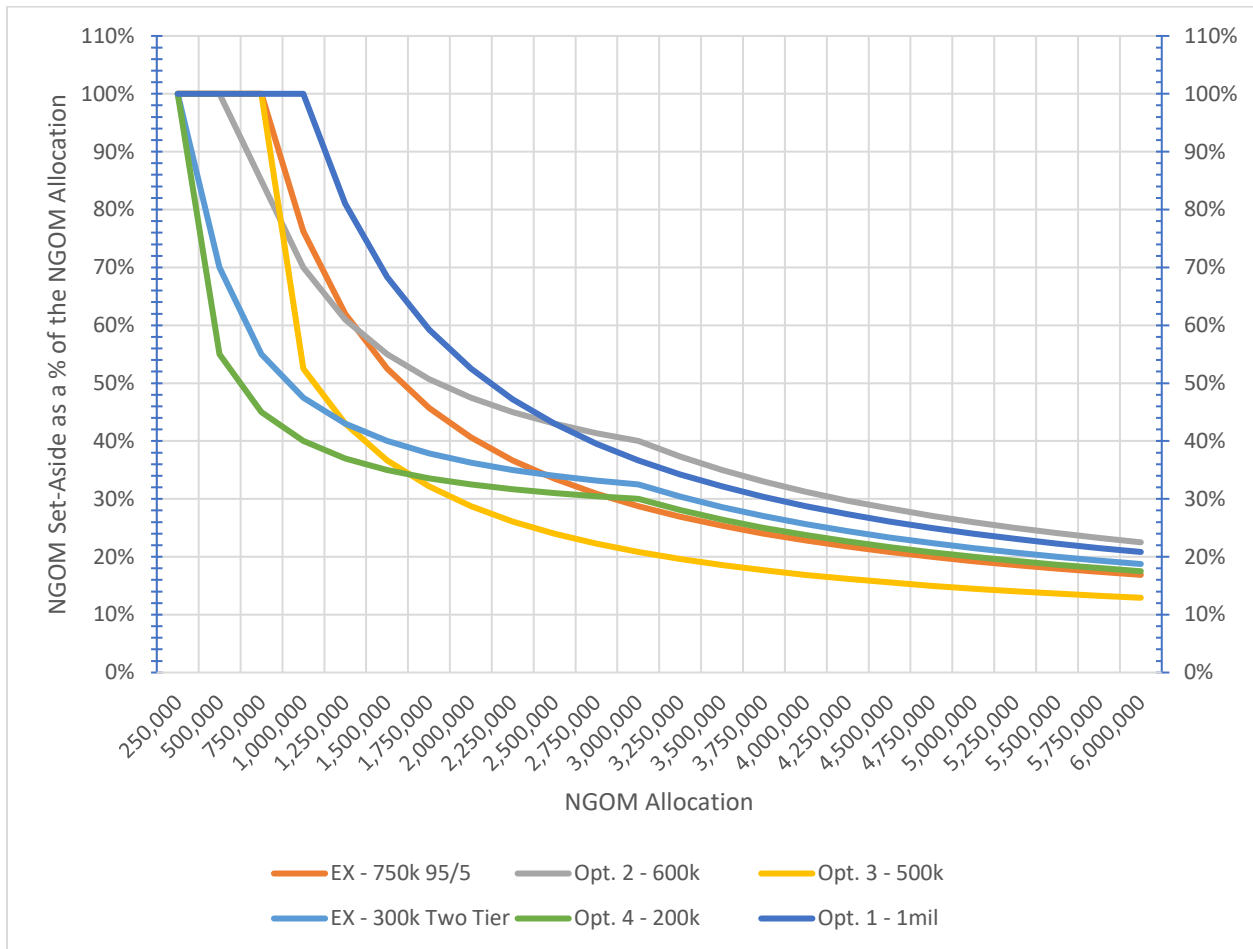


Figure 10 - Comparison of the NGOM Set-Aside as a percentage of the NGOM Allocation for Options 1 - 4.



4.3 ACTION 3 – MONITORING DIRECTED SCALLOP FISHING IN THE NORTHERN GULF OF MAINE MANAGEMENT AREA

The Council is considering a range of options in Amendment 21 that would facilitate monitoring of the LAGC component in the Northern Gulf of Maine management area.

4.3.1 Alternative 1 – No Action

There would be no change to the scallop industry funded observer program, and no observer call-in requirement for LAGC Category A and B vessels fishing for scallops in federal waters in the NGOM management area.

4.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM Allocation to off-set monitoring costs.

Alternative 2 would expand the observer call-in requirement to all scallop vessels operating in the NGOM, including LAGC Category B vessels. This expansion of the call-in requirement would facilitate observer coverage in the NGOM management area.

Alternative 2 would set-aside 2% of the NGOM Allocation to off-set monitoring costs for vessels fishing in this area. The 2% would be deducted from the NGOM Allocation before the allocations to research, the NGOM Set-Aside, and the NGOM APL are calculated. These pounds (NGOM monitoring set-aside) would be deducted directly from the NGOM Allocation, as shown the red circle in Figure 11. These pounds come out of the NGOM allocation before a determination of whether the allocation is greater than the set-aside trigger so that the pounds could be used to support monitoring of all permit categories that have access to the NGOM management area. The Figure 11 schematic assumes that the NGOM Allocation is accounted for as an addition to the OFL, but not part of the ABC (Action 1 – Alternative 1, No Action). The NGOM monitoring set-aside would be added to the fishery-wide observer set-aside that is calculated as 1% of the ABC.

If scallop biomass in the NGOM became part of the calculation of the fishery wide ABC and ACL, pounds from the NGOM management area would contribute to the fishery wide observer set-aside, which is calculated at 1% of the ABC. In this scenario, there would be no deduction of the pounds to offset monitoring cost from the NGOM Allocation.

The scallop industry funded observer program would be expanded to cover directed scallop trips in federal waters in the NGOM management area. This expanded program would utilize the cumulative pounds of the NGOM monitoring set-aside and the observer set-aside to support observer coverage in the scallop fishery. All compensation pounds for all observed trip would come out of the same pool, and NOAA Fisheries would administer one scallop IFO program.

Observer coverage levels for the NGOM management area would be set to, at a minimum, meet SBRM requirements.

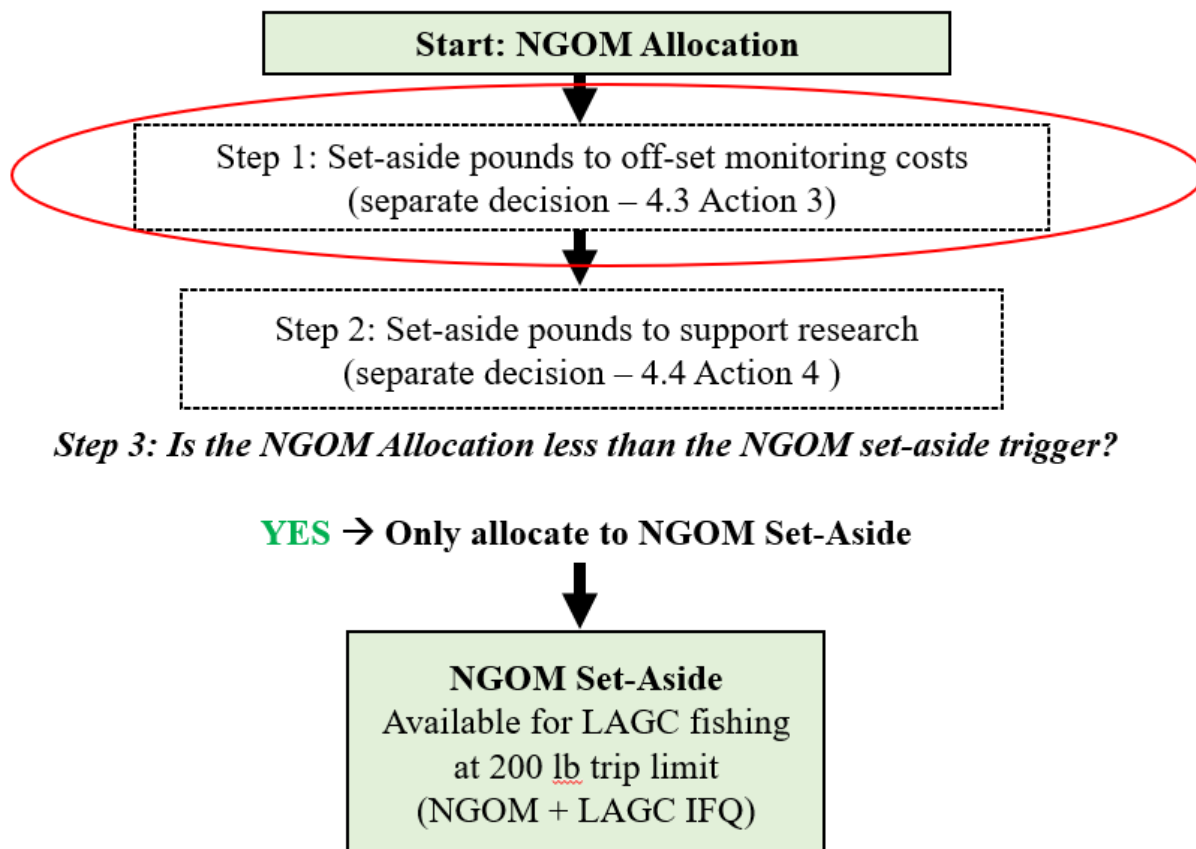
The amount of daily compensation available for LAGC trips in the NGOM may vary from the daily compensation rate for LAGC IFQ vessels that have a higher trip limit. Vessels selected to carry an observer would be able to land the full amount of the daily compensation rate in addition to the NGOM trip limit. For example, if the daily compensation rate is set at 100 pounds, vessels with observers would be able to land 300 pounds that trip.

Rationale: Expanding the observer call-in requirement to the NGOM management area would facilitate the deployment of observers on directed scallop trips in federal waters.

A 2% set-aside (NGOM monitoring set-aside) from the NGOM allocation would be provide a pool of allocation to off-set the cost carrying a monitor. Adding pounds to the fishery-wide observer set-aside would allow for simpler program administration if the NGOM remains outside of the ACL flowchart.

Allowing vessels to land the daily observer compensation rate in addition to the trip limit is consistent with existing regulations for LA and LAGC IFQ vessels when those vessels carry observers.

Figure 11 – Schematic where observer set-aside pounds (see red circle) would come from if the NGOM set-aside approach is used, and the NGOM is accounted for as part of the OFL only.



4.3.3 Alternative 3 - Monitor directed scallop fishing in the NGOM with observers from the NEFOP program.

Alternative 3 would recommend that NMFS utilize the existing NEFOP program to observer directed scallop trips in federal waters in the Northern Gulf of Maine management area. This would expand the number of observer programs being used to monitor the scallop fishery (NEFOP for the NGOM and Scallop IFO for the rest of the fishery).

Alternative 3 would expand the observer call-in requirement to all scallop vessels operating in the NGOM, including LAGC category B vessels., This expansion of the call-in requirement which would facilitate observer coverage in the NGOM management area.

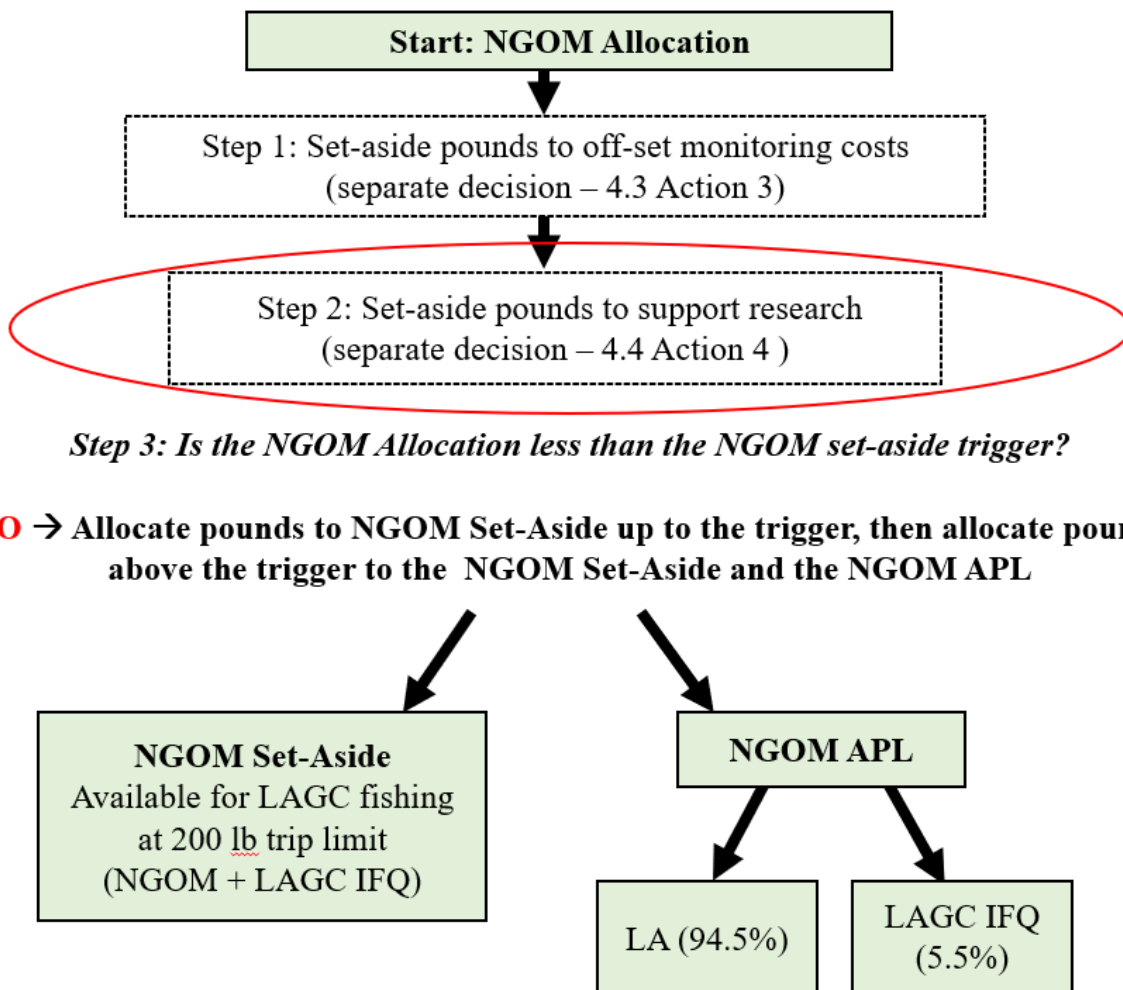
The scallop IFO program funds monitoring of the scallop fishery to meet SBRM requirements. Alternative 3 would use resources from the NEFOP program to cover monitoring costs of LAGC vessels in the NGOM management unit. As the NEFOP program is federally funded, additional pounds would not be set-aside to offset the cost of observers in the NGOM area.

Rationale: Utilizing an existing observer program to facilitate observer coverage on directed scallop trips in the NGOM management area would directly address the lack of monitoring in this area.

4.4 ACTION 4 – SUPPORT SCALLOP RESEARCH USING SCALLOPS FROM THE NGOM

Action 4 considers whether a portion of the NGOM set-aside should be added to the 1.25-million-pound Scallop RSA and(or) made available for RSA compensation fishing. Figure 12 shows where the research pounds would be accounted for within the NGOM allocation.

Figure 12 - Schematic highlighting where research set-aside pounds (see red circle) would come from if the NGOM Set-Aside approach is used.



4.4.1 Alternative 1 – No Action

There would be no change to the scallop RSA program. The Council could recommend that the NGOM be available to support compensation fishing, but removals would not be accounted for in the NGOM allocation.

4.4.2 Alternative 2 - Allocate a portion of the NGOM Allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing.

Alternative 2 would allocate a portion of the NGOM Allocation to support RSA compensation fishing in the NGOM management area and increase the overall number of pounds available for the scallop RSA program. The total amount of RSA available would be the sum of the NGOM research set-aside and the existing 1.25 million pound set-aside.

Alternative 2 would allot a portion of the NGOM Allocation to support RSA compensation fishing in the NGOM. This allotment would be administered as a separate set-aside within the NGOM Allocation (see Figure 12). Any vessels that are awarded NGOM RSA compensation would be required to declare into the area and fish exclusively within the management unit. Compensation fishing in the NGOM management area could be done to provide support to any research project awarded through the Scallop RSA. However, projects focusing on research in the NGOM would have the first opportunity to fish compensation pounds in the NGOM. This process would be administered by NOAA Fisheries.

Alternative 2 would not mandate that the research set-aside be utilized, it would create an option for vessels to do compensation fishing in the area and increase the total poundage available through the Scallop RSA.

Rationale: Using a portion of the NGOM Allocation to increase size of the overall Scallop RSA program would allow for the funding of additional scallop related research and provide opportunities for vessels to complete compensation fishing within the NGOM management unit.

4.4.2.1 Option 1 – Allocate 5% of the NGOM Allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Option 1 would allocate 5% of the NGOM Allocation as a research TAC to increase the overall Scallop RSA and support RSA compensation fishing in the management area.

Rationale: Scallop recruitment is highly variable in the NGOM management area. However, there is a need to continue annual surveys, if possible, to determine exploitable biomass using the best available science. During occasions of high biomass, using a percentage of the NGOM allocation to increase the RSA could benefit the overall resource by allocating more pounds to research.

4.4.2.2 Option 2 – Allocate 10% of the NGOM Allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Option 2 would allocate 10% of the NGOM Allocation as a research TAC to increase the overall Scallop RSA and support RSA compensation fishing in the management area.

Rationale: Scallop recruitment is highly variable in the NGOM management area. However, there is a need to continue annual surveys, if possible, to determine exploitable biomass using the best available science. During occasions of high biomass, using a percentage of the NGOM allocation to increase the RSA could benefit the overall resource by allocating more pounds to research.

4.4.2.3 Option 3 – Allocate 15% of the NGOM Allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Option 3 would allocate 15% of the NGOM Allocation to as a research TAC to increase the overall Scallop RSA and support RSA compensation fishing in the management area.

Rationale: Scallop recruitment is highly variable in the NGOM management area. However, there is a need to continue annual surveys, if possible, to determine exploitable biomass using the best available science. During occasions of high biomass, using a percentage of the NGOM allocation to increase the RSA could benefit the overall resource by allocating more pounds to research.

4.4.2.4 Option 4 – Allocate first 50,000 pounds of NGOM Set-Aside as a research TAC that would increase the overall RSA to 1.3 million pounds

Option 4 would allocate the first 50,000 pounds of the NGOM set-aside to as a research TAC. The overall RSA would be increased by 50,000 pounds. Compensation fishing in the management area could occur up to the research TAC.

Rationale: 50,000 pounds is 4% of the 1.25 million pound scallop RSA. This value is likely large enough to cover the pounds needed to support a survey in the area, and the corresponding compensation fishing. For example, while the RSA compensation pounds awarded to recent surveys of the Gulf of Maine / Northern Gulf of Maine management area have varied widely, a review of all surveys in the NGOM suggests that annual optical and dredge surveys can be completed with around 50,000 pounds.

Increasing the RSA set-aside by a fixed amount could provide some stability for program administration.

Since 50,000 pounds is a relatively small proportion of the current RSA, increasing the set-aside by this amount may have limited biological implications if the pounds can be fished in any area open to compensation fishing. This would maintain some of the flexibility of the RSA program, while increasing the pounds available to support research.

4.5 ACTION 5 – NORTHERN GULF OF MAINE FISHING SEASON

The Council developed a range of alternatives that address how the directed scallop fishery in the Northern Gulf of Maine can be prosecuted. The Council can select multiple Alternatives in this section as preferred.

Alternatives 4.5.2 (Alternative 2) and 4.5.3 (Alternative 3) would apply solely to the harvest available to the LAGC NGOM permitted vessels.

If the Council selects Alternative 2 as preferred in Action 2 (Allocate to a NGOM Set-Aside and NGOM APL), the Council would determine how the LA and LAGC IFQ could harvest their share of the NGOM Allocation in a subsequent specifications package or framework adjustment.

4.5.1 Alternative 1 – No Action

There would be no changes to measures governing how vessels can fish allocations in the NGOM. The NGOM management area would remain open year-round, unless an allocation is reached, and the area closes to a particular component. There would be no limits on the number of days that a vessel could land their trip in a calendar week, and there would be no restrictions on multiple sailings per day.

4.5.2 Alternative 2 - Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area

Under Alternative 2, LAGC vessels would be prohibited from landing scallops more than five (5) times per calendar week (Monday – Sunday) from declared scallop trips in the Northern Gulf of Maine Management area.

This measure would not apply to allocations to the NGOM APL (for the LA and LAGC IFQ).

Rationale: Capping the total number of landings per week could slow the utilization of the NGOM set-aside and extend the fishing season.

4.5.3 Alternative 3 – Limit vessels to one sailing per day

LAGC vessels would be prohibited from sailing multiple times on one calendar day.

This measure would not apply to allocations to the NGOM APL (for the LA and LAGC IFQ).

Rationale: Data from recent FY shows that some vessels have sailed multiple times in a 24 hour window. Allowing vessels to only sail once per day may slow down the utilization of the NGOM Set-Aside, and create fishing opportunities later in the year.

4.5.4 Alternative 4 – Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually.

Alternative 4 would annually establish a seasonal closure of the NGOM management area, beginning at 12:00 am on September 1, and ending at 11:59 pm on November 31.

The seasonal closure would apply to all scallop fishing in federal waters in the NGOM management area, including RSA compensation fishing.

Rationale: Landing over this three-month period have been relatively low when the NGOM fishery is open. This seasonal closure may also help to support a winter fishery in the NGOM, and could be at time

when scallops are spawning. The three-month closure would reduce removals from the area during a time when meat yields are low. This and other closures in the NGOM could be adjusted through a future framework or specifications action.

4.6 ACTION 6 -CUMULATIVE MAXIMUM DREDGE WIDTH THAT CAN BE FISHED IN THE NORTHERN GULF OF MAINE MANAGEMENT AREA.

4.6.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the Gulf of Maine dredge exemption program, and no additional restrictions on the combined maximum dredge width that could be fished in the NGOM. All limited access general category vessels and Limited Access vessels participating in the small dredge program would be able to fish a maximum combined dredge width of 10.5 feet in the Northern Gulf of Maine management area. Full-Time Limited Access vessels fishing in the NGOM would be able to fish a maximum combined dredge width of 31 feet, as specified in regulation.

4.6.2 Alternative 2 – Limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft

Alternative 2 would limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area. The combined maximum dredge width could not exceed 10.5 ft (3.2 m), measured at the widest point in the bail of the dredges.

Currently, 10.5 ft (3.2 m) is the maximum cumulative dredge width that can be fished by all limited access general category vessels and Limited Access vessels participating in the small dredge program in the Northern Gulf of Maine management area.

Alternative 2 would reduce the combined maximum dredge width that Full Time Limited Access vessels can fish in the area from 31' to 10.5' (3.2 m).

Rationale: Reducing the cumulative maximum dredge width for Full-Time limited access vessels would reduce the LPUE of these vessels, and thereby slow the rate of harvest when vessels are operating in the management area.

4.6.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

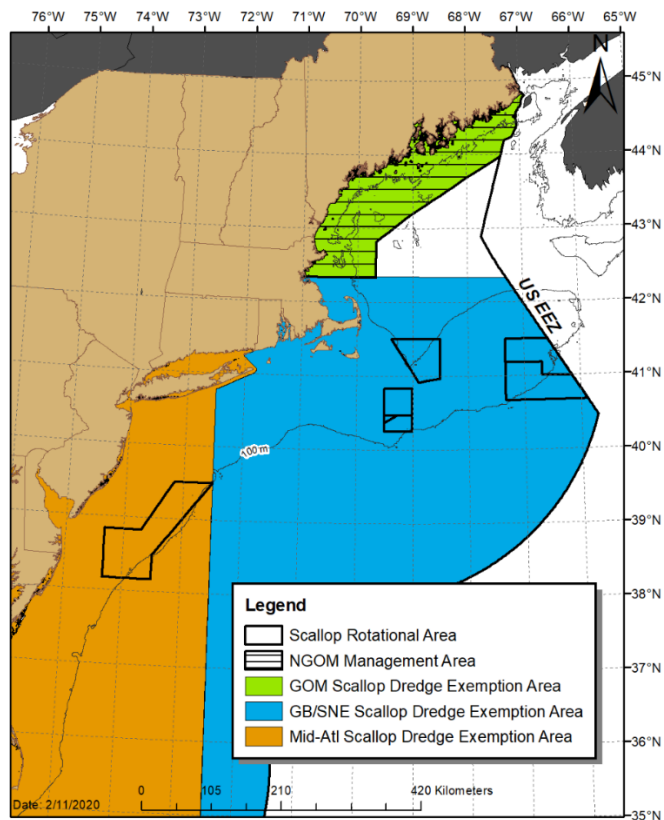
Alternative 3 would limit the combined dredge width of full-time limited access scallop vessels operating in the Northern Gulf of Maine management area. The combined maximum dredge width could not exceed 15.5 ft, measured at the widest point in the bail of the dredges.

All limited access general category vessels and Limited Access vessels participating in the small dredge program would be able to fish a maximum combined dredge width of 10.5 feet in the Northern Gulf of Maine management area.

Rationale: Reducing the cumulative maximum dredge width for Full-Time limited access vessels would reduce the LPUE of these vessels, and thereby slow the rate of harvest when vessels are operating in the

management area. Allowing up to 15.5 ft of cumulative dredge with would allow vessels that currently own dredges larger than 10.5 feet to use existing gear and not have to purchase new equipment.

Figure 13 - Scallop Dredge Exemption Areas as of February 14, 2020. Restrictions on maximum dredge width in Options 2 and 3 would be within the green area, which is the GOM Scallop Dredge Exemption Area.



4.7 ACTION 7 - INCREASE THE LAGC IFQ POSSESSION LIMIT

Alternatives 2-4 in this section would not change other aspects of LAGC IFQ component management (i.e., no changes to allocation structure, rotational management, capacity restrictions, observer compensation rate, etc.).

4.7.1 Alternative 1 – No Action

This alternative would maintain the current LAGC IFQ possession limit of 600 pounds for open and access area trips.

Rationale: The original 400-pound possession limit was increased to 600 pounds in 2011 (Amendment 15) to account for increased operating costs while maintaining the small, dayboat nature of the LAGC IFQ component.

4.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Alternative 2 would increase the LAGC IFQ possession limit to 800 pounds at the level specified in Option 1 and Option 2.

4.7.2.1 Option 1—Increase the LAGC IFQ possession limit to 800 pounds per trip for open and access area trips

This alternative would increase the LAGC IFQ possession limit to 800 pounds for both open and access area trips. This alternative only considers the possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

Rationale: The LAGC IFQ component has been subject to a consistent possession limit for open and access area trips since the program's inception through Amendment 11 (2008). The original 400-pound possession limit was increased in 2011 (Amendment 15) to 600 pounds as a response to industry concerns that the 400-pound limit was not economically feasible due to increased operating costs. The Council is considering increasing the LAGC IFQ possession limit through this action following a request from industry members that are concerned with the economic viability of the current 600-pound limit.

Fishing in areas with higher catch rates and larger scallops is desirable because less tow time is needed harvest a trip limit. For LAGC IFQ vessels that elect to do so, this means transiting farther offshore to fish in open area or access areas with higher landings per unit of effort and improved meat yield. Targeting parts of the scallop resource farther offshore leads to increased trip costs due to higher fuel expenses associated with longer steam times. Increasing the possession limit would reduce the overall number of trips and combined steam time needed to harvest quota, thereby reducing trip costs (i.e. fuel) and operating expenses (i.e. vessel maintenance) relative to the current 600-pound limit. Increasing the possession limit would offer LAGC IFQ vessels more flexibility in deciding where and when to fish, which could potentially improve safety in this component of the fishery.

4.7.2.2 Option 2—Increase the LAGC IFQ possession limit to 800 pounds per trip for only access area trips

This alternative would increase the LAGC IFQ possession limit to 800 pounds for access area trips and maintain the 600-pound possession limit for open trips. This alternative only considers the access area possession limit and does not propose any changes to how the LAGC IFQ component is administered or

managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

Rationale: The LAGC IFQ component has been subject to a possession limit since the program's inception through Amendment 11 (2008). The original 400-pound possession limit was increased in 2011 (Amendment 15) to 600 pounds as a response to industry concerns that the 400-pound limit was not economically feasible due to increased costs. Interest in increasing the 600-pound trip limit through this action is based on the continued increase of operating expenses, which are principally driven by fuel costs associated with longer steam times. For LAGC IFQ vessels that elect to do so, transiting farther offshore to fish access areas with higher landings per unit of effort and improved meat yield leads to increased trip costs due to higher fuel expenses associated with longer steam times. Increasing the access area possession limit would reduce the overall number of trips and combined steam time needed to harvest quota from offshore access areas, thereby reducing overall trip costs (i.e. fuel) and operating expenses (i.e. vessel maintenance) relative to the current 600-pound limit. Increasing the access area possession limit could offer LAGC IFQ vessels more flexibility with regard to timing access area trips around weather conditions, which could potentially improve safety in this component of the fishery.

4.7.3 Alternative 3—Increase the LAGC IFQ possession limit to 1,200 pounds per trip

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips (Option 1) or for access area trips only (Option 2).

4.7.3.1 Option 1—Increase the LAGC IFQ possession limit to 1,200 pounds per trip for open and access area trips

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips. This Alternative only considers the possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

Rationale: The LAGC IFQ component has been subject to a consistent possession limit for open and access area trips since the program's inception through Amendment 11 (2008). The original 400-pound possession limit was increased in 2011 (Amendment 15) to 600 pounds as a response to industry concerns that the 400-pound limit was not economically feasible due to increased operating costs. The Council is considering increasing the LAGC IFQ possession limit through this action following a request from industry members that are concerned with the economic viability of the current 600-pound limit.

Fishing in areas with higher catch rates and larger scallops is desirable because less tow time is needed harvest a trip limit. For LAGC IFQ vessels that elect to do so, this means transiting farther offshore to fish in open area or access areas with higher landings per unit of effort and improved meat yield. Targeting parts of the scallop resource farther offshore leads to increased trip costs due to higher fuel expenses associated with longer steam times. Increasing the possession limit would reduce the overall number of trips and combined steam time needed to harvest quota, thereby reducing trip costs (i.e. fuel) and operating expenses (i.e. vessel maintenance) relative to the current 600-pound limit. Increasing the possession limit would offer LAGC IFQ vessels more flexibility in deciding where and when to fish, which could potentially improve safety in this component of the fishery.

4.7.3.2 Option 2—Increase the LAGC IFQ possession limit to 1,200 pounds per trip for only access area trips

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for access area trips and maintain the 600-pound possession limit for open trips. This alternative only considers the access area possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

Rationale: The LAGC IFQ component has been subject to a possession limit since the program's inception through Amendment 11 (2008). The original 400-pound possession limit was increased in 2011 (Amendment 15) to 600 pounds as a response to industry concerns that the 400-pound limit was not economically feasible due to increased costs. Interest in increasing the 600-pound trip limit through this action is based on the continued increase of operating expenses, which are principally driven by fuel costs associated with longer steam times. For LAGC IFQ vessels that elect to do so, transiting farther offshore to fish access areas with higher landings per unit of effort and improved meat yield leads to increased trip costs due to higher fuel expenses associated with longer steam times. Increasing the access area possession limit would reduce the overall number of trips and combined steam time needed to harvest quota from offshore access areas, thereby reducing overall trip costs (i.e. fuel) and operating expenses (i.e. vessel maintenance) relative to the current 600-pound limit. Increasing the access area possession limit could offer LAGC IFQ vessels more flexibility with regard to timing access area trips around weather conditions, which could potentially improve safety in this component of the fishery

4.8 ACTION 8 - INCREASE THE AMOUNT OF OBSERVER COMPENSATION AVAILABLE FOR LAGC IFQ VESSELS

Action 7 considers adjust the amount of observer compensation that LAGC IFQ vessels are eligible to receive when carry an observer. Alternatives 2 and Alternative 3 would allow for additional compensation for observed IFQ trips to account for potentially longer trip times should the Council elect to increase the LAGC IFQ possession limit through this action. Table 6 provides an example of the level of compensation that would be available under each option depending on the length of an observed trip (using the FY2019 daily compensation rate of 250 pounds).

4.8.1 Alternative 1 – No Action

Under this option there would be no adjustment to the current regulations dictating compensation to LAGC IFQ vessels when carrying an observer on board. This means that LAGC IFQ vessels selected to carry an observer would be compensated for one 24-hour day, regardless of the length of the trip. The compensation rate would continue to be determined by NOAA fisheries, taking into account the amount of pounds available in the observer set-aside (1% of ABC), anticipated trip costs, and other aspects related to expected fishing behavior.

Rationale: Maintaining the current amount of compensation that observed trips are eligible to receive would continue the level of observer set-aside utilization in the LAGC IFQ fishery consistent with recent years. The Council could select this option if they do not increase the LAGC IFQ possession limit through this action. Target observer coverage would be expected to be achieved regardless of whether the Council increases the possession limit and trip times increase in the LAGC IFQ fishery.

4.8.2 Alternative 2 – Prorate daily compensation rate in 12-hour increments for observed LAGC IFQ trips longer than one day

This alternative would make LAGC IFQ vessels eligible for additional compensation when carrying an observer on board and fishing trips longer than one day (24 hours). The daily compensation rate, as determined by NOAA fisheries, would be prorated at 12-hour increments for trips exceeding 24 hours. The amount of compensation a vessel could receive on one trip would be capped at two days (48 hours) and vessels fishing longer than 48 hours would not receive additional compensation pounds. For example, if an LAGC IFQ vessel with an observer departs on July 1 at 10 PM and lands on July 3 at 1 AM, the length of the trip would equal 27 hours, or 1 day and 3 hours. In this example, the LAGC IFQ vessel would be eligible for 1 day plus 12 hours of compensation pounds from the industry-funded observer set-aside.

LAGC IFQ vessels would be able to harvest the trip limit and the daily compensation rate on a trip, or would be able to harvest any unfished compensation on a subsequent trip while adhering to the commercial possession limit. For example, vessels carrying an observer have a 850 pound trip limit in FY 2019.

Rationale: Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip will reduce the risk of observer bias in the LAGC IFQ fishery. This is true in the current fishery that has a 600-pound trip limit and would hold true in the future if the Council elects to increase the possession limit through this action, which could result in longer trips. Currently, LAGC IFQ vessels are allowed one day of compensation for carrying an observer regardless of the length of a trip but are required to assume the cost of having the observer on board even when a trip exceeds the one day limit. Prorating additional compensation in 12 hour increments over one 24-hour day and capping the amount of compensation that could be allocated on a single trip would make the level of compensation to a vessel more accurate with regard to the cost of carrying an observer on board for the full length of a trip and reduce the incentive for vessels to fish longer trips for the purpose of receiving additional compensation. Relieving vessels of the additional cost burden for trips of over one day will reduce the likelihood that fishing behavior will be different for observed trips versus unobserved trips.

4.8.3 Alternative 3 – Allow a second day of compensation for trips over 24 hours

This alternative would make LAGC IFQ vessels eligible for an additional day of compensation when carrying an observer on board and fishing trips longer than one day (24 hours). This means that LAGC IFQ vessels selected to carry an observer would be compensated for a maximum of two days should trip length exceed one 24-hour day and any trips that exceed two days would not receive any additional compensation regardless of trip length. The compensation rate would continue to be determined by NOAA fisheries, taking into account the amount of pounds available in the observer set-aside (1% of ABC), anticipated trip costs, and other aspects related to expected fishing behavior. The daily compensation rate would be determined by NOAA fisheries.

Rationale: Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip will reduce the risk of observer bias in the LAGC IFQ fishery. This is true in the current fishery that has a 600-pound trip limit and would hold true in the future if the Council elects to increase the possession limit through this action, which could result in longer trips. Currently, LAGC IFQ vessels are allowed one day of compensation for carrying an observer regardless of the length of a trip but are required to assume the cost of having the observer on board even when a trip exceeds the one-day limit. Allowing for an additional day of compensation for trips greater than one 24-hour day and capping the amount of compensation that could be allocated on a single trip would help offset the cost of carrying an

observer on board for trips that are greater than one day. Offsetting the cost burden of carrying an observer on trips of over one day could reduce the likelihood that fishing behavior will be different for observed trips versus unobserved trips (e.g., fishing shorter trips than typical to avoid additional cost of having an observer on board for more than one 24-hour day).

Table 6 – Example of the amount of compensation that would be available to an LAGC IFQ vessel carrying an observer based on trip length under the options in Section 4.7. Examples are based on the FY2019 daily compensation rate of 250 pounds.

4.7 Option	Example (using FY2019 daily compensation rate of 250 pounds)		
	Trip length ≤ 24 hours	Trip length 24 hours ≤ 36 hours	Trip length > 36 hours
Alternative 1 - No Action	250 pounds	250 pounds	250 pounds
Alternative 2 - Prorate compensation over 1 day in 12-hour increments	250 pounds	375 pounds	500 pounds
Alternative 3 - Allow second day of compensation	250 pounds	500 pounds	500 pounds

4.9 ACTION 9 - ONE-WAY TRANSFER OF QUOTA FROM LA WITH IFQ TO LAGC IFQ-ONLY

Amendment 11 allocated IFQ to Limited Access vessels that held a general category permit and met the same qualification criteria selected for the LAGC program. The LAGC IFQ share available to the Limited Access qualifiers was up to a total of 0.5% of the annual projected landings for the fishery and each qualifying vessel received an individual share based on their historical contribution to general category landings. These vessels with both LA and LAGC IFQ permits were allowed participate in the general category fishery (i.e. outside of a scallop DAS/access area trip), under the same management measures that apply to the LAGC IFQ fishery (i.e. trip limits, gear restrictions). A key difference between LA/LAGC IFQ vessels and the LAGC IFQ-only fleet is that LA/LAGC IFQ vessels were prohibited from transferring quota in or out. The Council's rationale for this approach was that limited access vessels that had enough general category landings to qualify for quota should be permitted to fish under general category rules because these limited access vessels depended on revenue generated through general category fishing. The Council identified 0.5% as the allocation for the LA component with LAGC IFQ history because that value was close to what historical landings had been by LA vessels in years preceding Amendment 11 and did not represent a large amount of the total catch. Furthermore, the Council felt that an allocation of 0.5% to these vessels would not have substantial impacts on other limited access and general category vessels.

Amendment 15 allowed LAGC IFQ permit holders to permanently transfer some or all of their quota allocation to another LAGC IFQ permit holder while retaining the permit itself. During development of Amendment 15, the Council considered an option that would have included LA/LAGC IFQ permit holders in this allowance; however, the Council opted against this option because it would change the overall 5% and 0.5% allocations specified in Amendment 11. For example, the 5% allocation would be

expected to increase if an LA/LAGC IFQ vessel permanently transferred quota to an LAGC IFQ-only vessel. An increase in the 5% allocation would have implications on quota accumulation caps that apply to LAGC IFQ-only permit holders (i.e. 5% maximum for owners, 2.5% maximum for individual vessels).

4.9.1 Alternative 1—No Action

There would be no change to the current prohibition on quota transfers by Limited Access vessels with IFQ.

Rationale: This alternative is consistent with the Council's rationale from Amendment 15, in that allowing permanent transfers would change the overall 5% (i.e. LAGC IFQ) and 0.5% (i.e. LA with IFQ) allocations specified in Amendment 11. For example, the 5% allocation would be expected to increase if an LA/LAGC IFQ vessel permanently transferred quota to an LAGC IFQ-only vessel. An increase in the 5% allocation would have implications on quota accumulation caps that apply to LAGC IFQ-only permit holders (i.e. 5% maximum for owners, 2.5% maximum for individual vessels).

4.9.2 Alternative 2—Allow temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Alternative 2 would allow temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only permits and would maintain the existing prohibition on transferring quota in to LA vessels with IFQ.

Alternative 2 would not change how quota is allocated to LAGC IFQ-only and LA with IFQ permits; for example, the LAGC IFQ-only component would be allocated 5% of the APL and LA vessels with IFQ would be allocated 0.5% of the APL based on the contribution factor associated with either permit type.

Under Alternative 2, quota accumulation caps would remain consistent with the limits established through Amendment 15 for LAGC IFQ-only permits, regardless of any additional quota that may become available through one-way, temporary transfers from LA vessels with IFQ. This means that an individual LAGC IFQ permit cannot hold more than 2.5% of the pounds allocated to the LAGC IFQ component in a year and that an ownership entity can hold no more than 5% of the pounds allocated to the LAGC IFQ component in a year.

Rationale: Allowing one-way, temporary transfers from LA vessels with IFQ to LAGC IFQ-only permits would increase the overall level of quota available to LAGC IFQ-only vessels. Allowing temporary quota transfers from LA with IFQ to IFQ-only would not require changes to how allocations are estimated and distributed among LAGC IFQ-only and LA vessels with IFQ because quota would only be able to move temporarily (i.e. annually). Increasing the pool of quota that would be available to the LAGC IFQ-only fishery through temporary transfers could increase the level of participation for vessels currently in the fishery or potentially lead to more participation in terms of active vessels. Increasing potential harvest for existing participants and/or supporting additional vessels in the IFQ fishery would be expected to improve the overall performance of this component of the fishery. Allowing temporary transfers only would mean that LA vessels with IFQ would have the choice to lease out some or all of their quota on an annual basis, depending on what level of participation in the LAGC IFQ fishery makes the most sense for their business.

4.9.2.1 Option 1 – No change to the pool of quota that LAGC IFQ accumulation caps apply to, 5% of APL

Under Option 1, temporary one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery

(i.e. 2.5% per permit, 5% per owner). In other words, quota accumulation caps would continue to be set based on the LAGC IFQ-only share of annual quota allocations (i.e. 5% of APL). This option does not account for the potentially increased pool of quota that may be available to LAGC IFQ-only permits through one-way temporary transfers from LA vessels with IFQ.

Rationale: This option would be consistent with the LAGC IFQ quota accumulation caps set by the Council through Amendment 11 and later adjusted through Amendment 15. Maintaining the existing quota caps at 5% of the APL would mean that additional LAGC IFQ that may become available from the LA component would be dispersed to businesses that are operating below the quota cap. This may support more participation in the LAGC fishery. This option would mean that vessels or owners that are at the quota accumulation cap for a permit or ownership entity would not be able to transfer in additional quota that may become available to the LAGC IFQ-only fishery through one-way transfers from LA vessels with IFQ.

4.9.2.2 Option 2 – Increase pool of quota LAGC IFQ accumulation caps apply to 5.5% of APL

Under Sub-Option 2, temporary one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. This option would not change the percentages associated with quota accumulation caps (i.e. 2.5% per permit, 5% per owner); however, quota caps would apply to annual allocations of IFQ as a whole (i.e. 5.5% of APL) instead of to allocations to the LAGC IFQ-only component (5% of APL).

Rationale: Increasing the existing quota cap to 5.5% of the APL would increase the potential IFQ holdings of an entity in this fishery and allow entities that have reached the quota cap to expand their businesses. This option would also align existing quota accumulation caps with the quota pool that would be available to the LAGC IFQ-only component through temporary transfers under Alternative 2. This would create consistency between quota caps and the pool of quota that caps apply to, thereby reducing the complexity associated with administering one-way quota transfers between LA with IFQ and LAGC IFQ entities.

4.9.3 Alternative 3—Allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Alternative 3 would allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only permits and would maintain the existing prohibition on transferring in quota to LA vessels with IFQ.

Alternative 3 would modify how contribution factors are estimated to account for any permanent transfer of quota that may occur from LA vessels with IFQ to LAGC IFQ-only permits. Annual LAGC IFQ allocations are determined by the contribution factor of individual LAGC IFQ permits. A vessel's contribution factor is calculated based on its general category scallop fishing history during the qualification period (March 1, 2000 to November 1, 2004) and accounts for a vessel's best year (in terms of total scallop landings) and an index multiplier correlated with the number of years a vessel was active during the qualification period. The contribution factor of each LAGC IFQ permit is then translated to a percentage (i.e. individual contribution factor divided by the sum of contribution factors across the entire LAGC IFQ fleet), and vessels/permits receive that percentage of the fleetwide quota allocation to the LAGC IFQ component in a given year. At present, this system is used to allocate to the LAGC IFQ-only and LA with IFQ separately; for example, allocations associated with contribution percentages of LAGC IFQ-only permits are based on the 5% of the APL, and allocations associated with contribution percentages of LA with IFQ vessels are based on 0.5% of the APL. This alternative would require that

LAGC IFQ-only and LA vessels with IFQ share a common denominator to account for permanent movement between the two sub-components of the IFQ fleet. Modifying the denominator used to calculate allocations would not change the level of allocation for a given permit, but instead would consider contribution percentages relative to 5.5% of the APL as a whole instead of among two distinct pools of quota (i.e. 5.5% and 0.5%).

Rationale: Allowing one-way, permanent and temporary transfers from LA vessels with IFQ to LAGC IFQ-only permits would increase the overall level of quota available to LAGC IFQ-only vessels. Increasing the pool of quota that would be available to the LAGC IFQ-only fishery through temporary or permanent transfers from LA vessels with IFQ could increase the level of participation for vessels currently in the fishery or potentially lead to more participation in terms of active vessels. Increasing potential harvest for existing participants and(or) supporting additional vessels in the IFQ fishery would be expected to improve the overall performance of this component of the fishery. Allowing temporary transfers only would mean that LA vessels with IFQ would have the choice to lease out some or all of their quota on an annual basis, depending on what level of participation in the LAGC IFQ fishery makes the most sense for their business. Similarly, any quota that is permanently transferred to the LAGC IFQ-only fishery would remain in the LAGC IFQ-only component in perpetuity, thereby increasing the opportunity for participants in the future.

4.9.3.1 Option 1 – No change to the pool of quota that LAGC IFQ accumulation caps apply to, 5% of APL

Under Sub-Option 1, temporary and permanent one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). In other words, quota accumulation caps would continue to be set based on the LAGC IFQ-only share of annual quota allocations (i.e. 5% of APL), regardless of any additional quota that is permanently or temporarily transferred in to the LAGC IFQ-only component from LA vessels with IFQ. This option does not account for the potentially increased pool of quota that may be available to LAGC IFQ-only permits through one-way temporary transfers from LA vessels with IFQ.

Rationale: This option would be consistent with the LAGC IFQ quota accumulation caps set by the Council through Amendment 11 and later adjusted through Amendment 15. Maintaining the existing quota caps at 5% of the APL would mean that additional LAGC IFQ that may become available from the LA component would be dispersed to businesses that are operating below the quota cap. This may support more participation in the LAGC fishery. This option would mean that vessels or owners that are at the quota accumulation cap for a permit or ownership entity would not be able to transfer in additional quota that may become available to the LAGC IFQ-only fishery through one-way transfers from LA vessels with IFQ.

4.9.3.2 Option 2 – Increase the pool of quota that LAGC IFQ accumulation caps apply to 5.5% of APL

Under Sub-Option 2, temporary and permanent one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. This option would not change the percentages associated with quota accumulation caps (i.e. 2.5% per permit, 5% per owner); however, quota caps would consider annual allocations of IFQ as a whole (i.e. 5.5% of APL) instead of to allocations to the LAGC IFQ-only component (5% of APL).

Rationale: Increasing the existing quota cap to 5.5% of the APL would increase the potential IFQ holdings of an entity in this fishery and allow entities that have reached the quota cap to expand their businesses. This option would align existing quota accumulation caps with the quota pool that would be available to the LAGC IFQ-only component through temporary or permanent transfers under Alternative 3. This would create consistency between quota caps and the pool of quota which the caps apply to, thereby reducing the complexity associated with administering quota transfers between LA with IFQ and LAGC IFQ entities.

4.10 ACTION 10 – SPECIFICATIONS AND FRAMEWORK ADJUSTMENT PROCESS

4.10.1 Alternative 1 – No Action

There would be no change to the list of measures that can be addressed through the framework adjustment process.

4.10.2 Alternative 2 – Expand the list of measures that can be addressed through specifications and/or framework adjustments

Through Alternative 2, the Council would identify a list of specific issues that may be addressed through future specifications actions or framework adjustments. If the Council selects Alternative 2 as preferred, the existing scallop regulations may not need to be expanded to address concepts that the Council would like to adjust through a specifications package or a framework adjustment in the future.

The following list identifies existing management measures that can be adjusted through a framework process (noted by regulatory number). Future changes to the Scallop FMP that were discussed during the development of Amendment 21 are noted as letters under the existing authority under Section 648.55(f) of Atlantic Sea Scallop regulations.

1. 648.55(f)(25) Set-asides for funding research;
 - a. Contribution of RSA percentage and /or assigned pounds from the NGOM allocation.
2. 648.55(f)(31) Modifications to provisions associated with observer set-asides; observer coverage; observer deployment; observer service provider; and/or the observer certification regulations;
 - a. Observer set-aside percentage from the NGOM Allocation
3. 648.55(f)(35) Adjustments to the Northern Gulf of Maine scallop fishery measures.
 - a. Partition the NGOM into multiple sub-areas with separate allocations.
 - b. Partition the NGOM Set-Aside is multiple seasons.
 - c. Modify the F rate used to set the NGOM Allocation.
 - d. Harvest methods of the NGOM APL by the IFQ and LA boats
4. 648.55(f)(38) Adjustments to aspects of ACL management, including accountability measures;
 - a. Modify how the NGOM is accounted for in the calculation of OFL, ABC, and ACLs.

The Council could develop options for electronic monitoring to replace at-sea monitors in a future framework based on existing language in the regulations:

- 648.55(f)(31) Modifications to provisions associated with observer set-asides; observer coverage; observer deployment; observer service provider; and/or the observer certification regulations;
- 648.11(g) *Industry-funded monitoring programs*. Fishery management plans (FMPs) managed by the New England Fishery Management Council (New England Council), including Atlantic Herring, Atlantic

Salmon, Atlantic Sea Scallops, Deep-Sea Red Crab, Northeast Multispecies, and Northeast Skate Complex, may include industry-funded monitoring programs (IFM) to supplement existing monitoring required by the Standard Bycatch Reporting Methodology (SBRM), Endangered Species Act, and the Marine Mammal Protection Act. IFM programs may use observers, monitors, including at-sea monitors and portside samplers, and electronic monitoring to meet specified IFM coverage targets. The ability to meet IFM coverage targets may be constrained by the availability of Federal funding to pay NMFS cost responsibilities associated with IFM.

Rationale: Identifying a list of changes that may be made to the FMP in subsequent specification packages or framework adjustments would give the Council flexibility to address specific issues without initiating an amendment to the FMP. In the past, there has been confusion about what changes could be made to the management of the NGOM. This list is intended to capture the range of issues that could be taken up in a later action and discussed during the development of A21, but is not intended to limit the range of issues that could be addressed under existing regulatory authority.

5.0 AFFECTED ENVIRONMENT

5.1 INTRODUCTION

The Affected Environment is described in this action based on valued ecosystem components (VECs), including: target species, non-target species, physical environment and Essential Fish Habitat (EFH), protected resources, and human communities. VECs represent the resources, areas and human communities that may be affected by the alternatives under consideration in this amendment. VECs are the focus, since they are the “place” where the impacts of management actions occur.

5.2 TARGET SPECIES

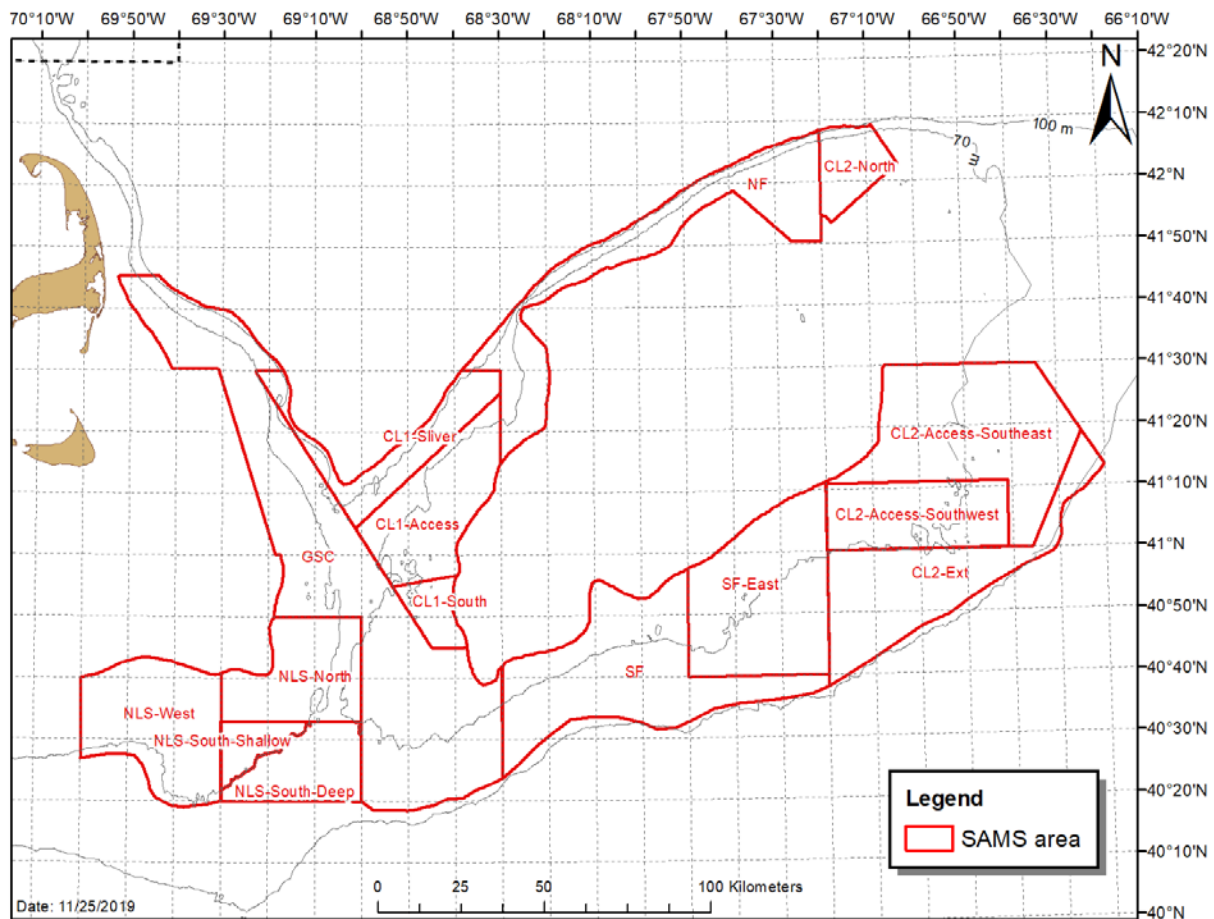
5.2.1 Atlantic Sea Scallops

The Atlantic sea scallop (*Placopecten magellanicus*) ranges Cape Hatteras to the Gulf of St. Lawrence. The Atlantic sea scallop fishery is primarily prosecuted in concentrated areas in and around Georges Bank and off the Mid-Atlantic coast, in waters extending from the near-coast out to the edge of the continental shelf. Atlantic sea scallops occur primarily in depths less than 110 meters on sand, gravel, shells, and cobble substrates (Hart & Chute 2004). While the majority of the Atlantic sea scallop resource is found on Georges Bank and in the Mid-Atlantic, sea scallops also occur in the Gulf of Maine (GOM) in both state and federal waters. The federal scallop resource in the GOM is managed by the New England Fishery Management Council and NOAA Fisheries.

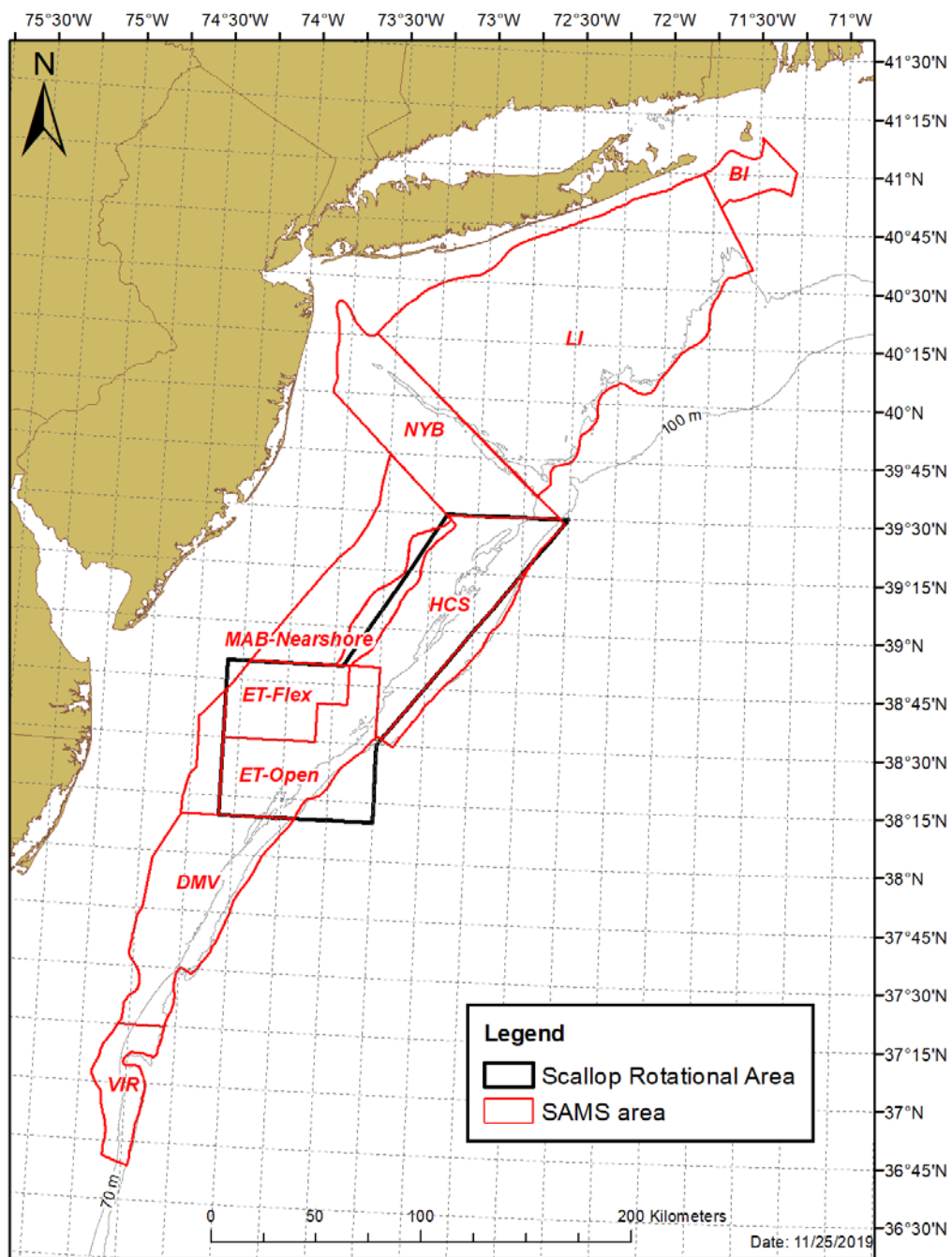
5.2.1.1 Scallop Area Management Simulator (SAMS) Areas

The SAMS (Scallop Area Management Simulator) model is used to project sea scallop abundance and landings as an aid to fishery managers since 1999 (SARC 65, Appendix 7). Forecasts are done using the SAMS model, which models the scallop fishery and population on a relatively fine scale, in order to help understand the effects of area management such as closing and reopening areas to fishing (NEFSC 2018). The SAMS model accounts for area specific scallop life history characteristics, such as growth, natural mortality recruitment, and shell height to meat weight relationships, and also accounts for mortality resulting from fishing operations (i.e. fishing mortality, incidental mortality, discard mortality). Area specific forecasts are estimated for sub-areas (i.e. SAMS areas) of Georges Bank and the Mid-Atlantic, the boundaries of which have changed over time to reflect changes in the scallop resource detected by annual surveys and(or) to account for changes in management boundaries. The spatial configuration of SAMS areas used in FW32 for FY2020 projections are shown in Map 1 for Georges Bank and Map 2 for the Mid-Atlantic region.

Map 1 – The Georges Bank SAMS areas used for FY2020 projections in FW32.



Map 2 – The 2019 Mid-Atlantic SAMS areas used for FY2020 projections in FW32.



5.2.2 Stock Status

The sea scallop resource had a benchmark assessment (SARC 65) in 2018 (NEFSC 2018). Therefore, all of the data and models used to assess the stock were reviewed. The summary of the benchmark assessment can be found at: <https://www.nefsc.noaa.gov/publications/crd/crd1808/>

Overfishing is occurring if F is above F_{MSY} , and the stock is considered overfished if biomass is less than $\frac{1}{2} B_{MSY}$. SARC 65 updated reference points and increased F_{MSY} to 0.64 and increased B_{MSY} to 116,766 mt ($\frac{1}{2} B_{MSY} = 58,383$ mt). SARC 65 concluded that the scallop stock is neither overfished nor did it experience overfishing in 2017 (i.e. the terminal year of the assessment).

Figure 14 - Whole stock estimates of biomass by region from SARC 65. The biomass target B_{MSY} is the black dotted line, and the overfished biomass threshold $B_{MSY}/2$ is the red dashed line.

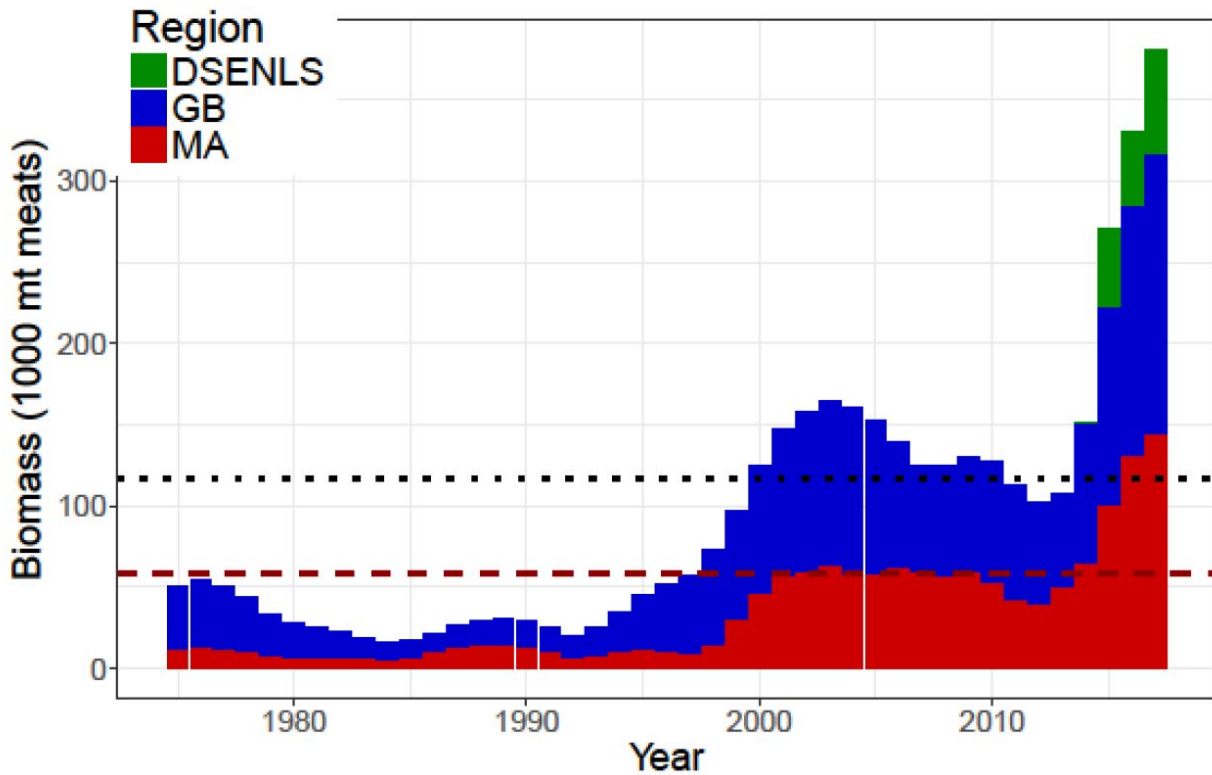


Figure 15 - Fully recruited annual fishing mortality rate for scallop from 1975 - 2017

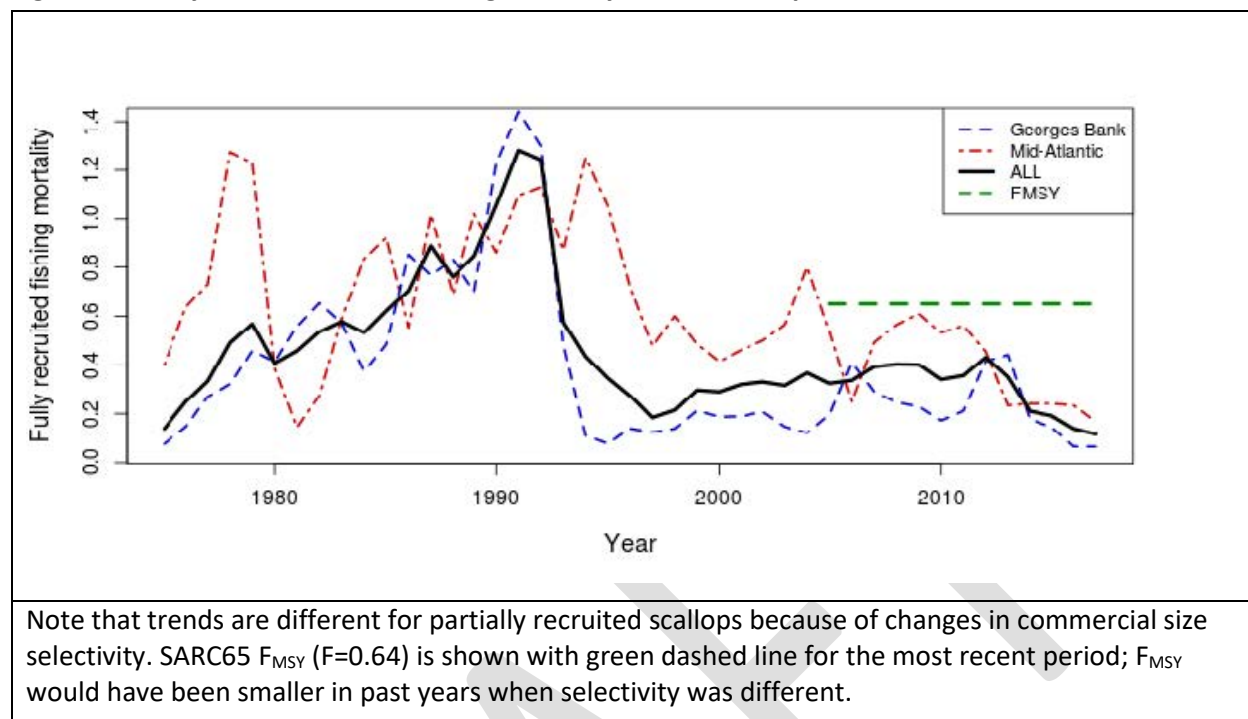


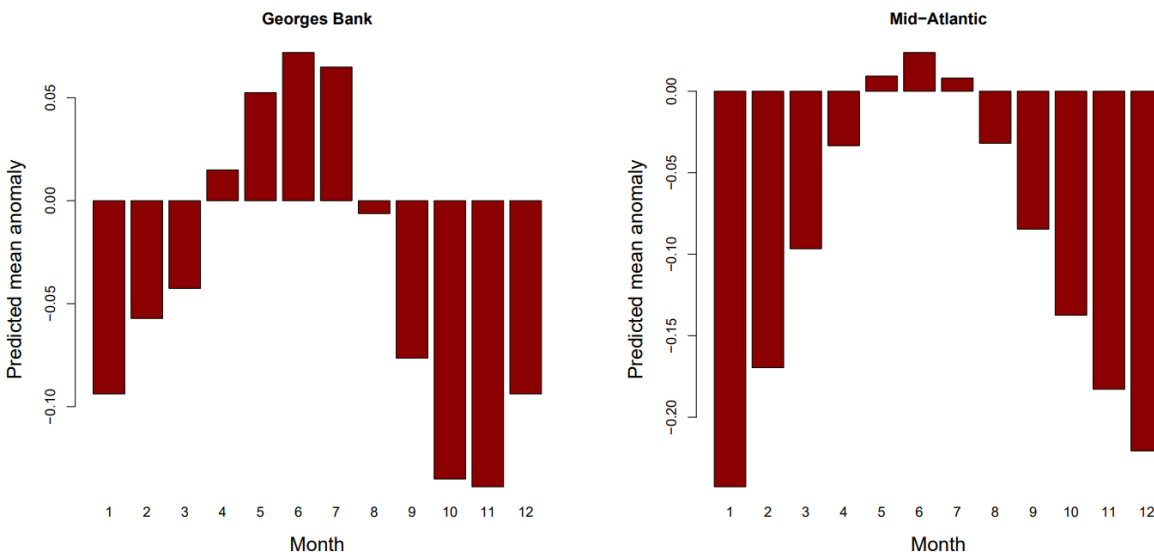
Table 7 - 2017 Atlantic sea scallop stock status.

	Total 2017 Estimate	Stock Status Reference Points
Biomass (in 1000 mt)	317	$\frac{1}{2} B_{MSY} = 58,383$
F	0.12 (SE of 0.01)	OFL = 0.64
In 2017, overfishing was not occurring, and the resource was not overfished.		

5.2.3 Scallop Meat Weight Anomalies

The most recent scallop stock assessment, SARC 65, included information on scallop meat weight anomalies for Georges Bank and the Mid-Atlantic regions using observer data collected on commercial trips (NEFSC 2018, Appendix II). Scallop meat weights vary seasonally. Mean monthly anomalies (model based) show the strong seasonal cycle, with meats varying by 20% or more in both Georges Bank and the Mid-Atlantic over an average year (Figure 16). Sea scallops typically lose up to 20% of their meat weight around the time that they spawn, and Mid-Atlantic scallops often have a strong spring spawn in April to early May. Seasonal meat weight anomalies were not calculated for the Gulf of Maine region as part of SARC 65. However, at this time data from Georges Bank can be used as a reasonable approximation for how meat weight varies seasonally in the Gulf of Maine.

Figure 16 – Mean monthly meat weight anomalies on Georges Bank (left) and Mid-Atlantic (right) open areas from modeled predictions (Source: SARC 65, Appendix II, p.195).



5.2.4 Northern Gulf of Maine

The most recent scallop stock assessment, SARC 65, included a term of reference directly related to the Gulf of Maine region (NEFSC 2018):

Summarize existing data, and characterize trends if possible, and define what data should be collected from the Gulf of Maine area to describe the condition of the resource. If possible, provide a basis for developing catch advice for this area.

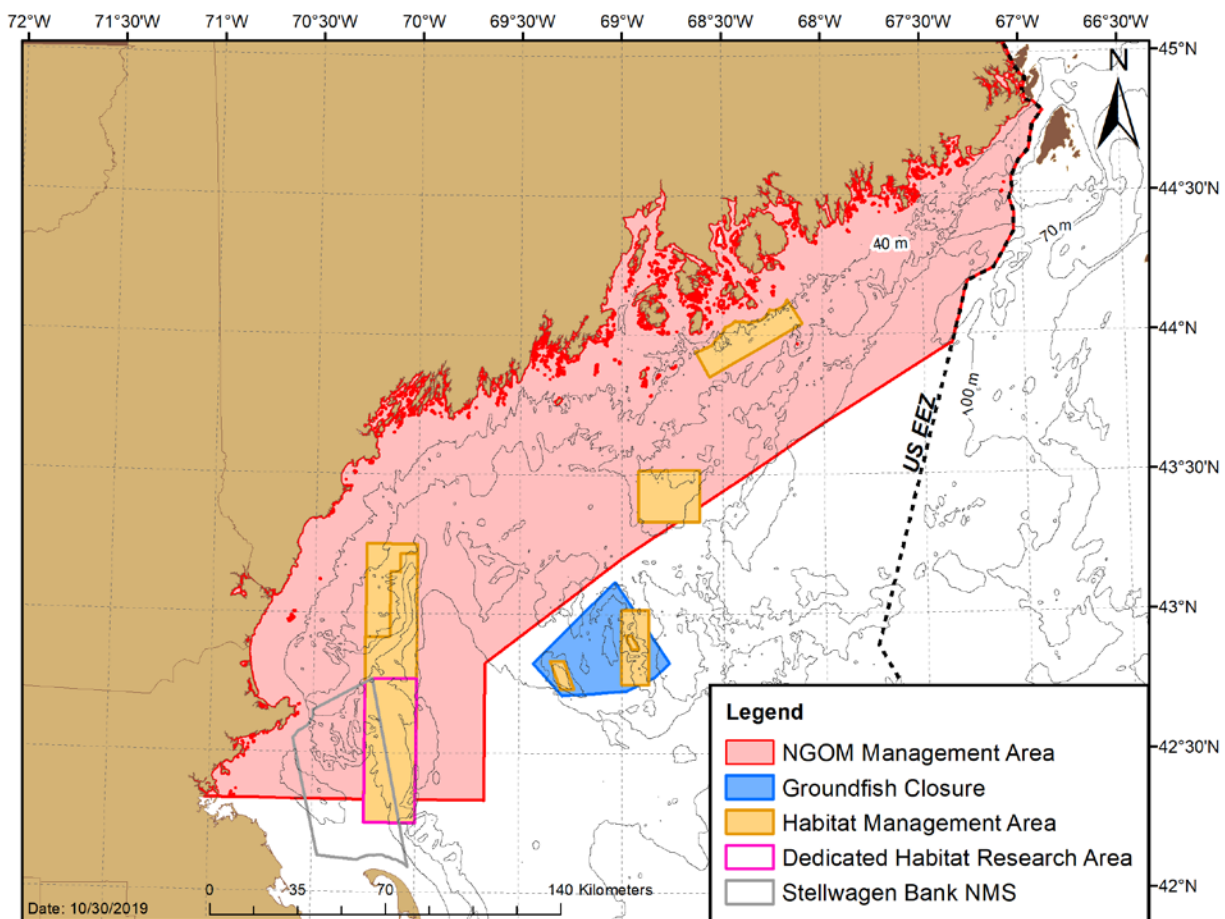
In addressing this term of reference, the stock assessment working group assembled an appendix that gave an overview of the scallop resource in the Gulf of Maine region, including findings from recent surveys conducted in this area, a description of scallop distribution based on historic trawl surveys, fishery effort data, and observer records. A complete summary of this information can be found in Appendix 3 of the [final SARC 65 assessment report](#) (pp. 197-236) (NEFSC 2018) .

The Northern Gulf of Maine Management Area is located north of 42° 20' N and delineated by the boundary of the Gulf of Maine Scallop Dredge Exemption Area (Map 3). Much like on Georges Bank and in the Mid-Atlantic, there are parts of the NGOM management area that support commercial densities of scallops; however, these areas are smaller (in terms of square mileage) than fishing grounds on Georges Bank and in the Mid-Atlantic. Map 4 and Table 9 are provided below as an approximate size comparison of recently surveyed areas in the NGOM that have been recently fished or are expected to be fished in the near future relative to access areas of Georges Bank that are anticipated to be fished in FY2020.

Table 8 - Mean biomass estimates of individual areas of the Gulf of Maine from 2012, 2016, and 2019 ME DMR/UMaine surveys. Estimates (metric tons) are for animals greater the 75mm and assume a dredge efficiency of 0.4.

Area	2012	2016	2019
Platts Bank	51	101	8
Ipswich Bay	72 (area > '16 or '19)	119	127
Machias Seal Island	59	228	286
Northern Stellwagen Bank	92 (area > '16 or '19)	1,681	579
Southern Jeffreys	Part of IB, NSB	230	671
Southern Stellwagen Bank (Outside NGOM area)	Not surveyed	Not surveyed	434
NGOM with Southern Stellwagen (GOM)	Not surveyed	Not surveyed	2,106
Total NGOM	274 mt (604,067 lbs)	2,360 (5,202,909 lbs)	1,672 (3,686,129 lbs)

Map 3 – The Northern Gulf of Maine Management Area relative to groundfish closures, habitat management areas, and the Stellwagen Bank National Marine Sanctuary.



Map 4 – Approximate size comparison of recently surveyed scallop fishing areas of the NGOM relative to proposed access areas on Georges Bank for FY2020. Note that square mileage of GB access areas are measured based on SAMS area boundaries to more accurately reflect “scallop bottom”.

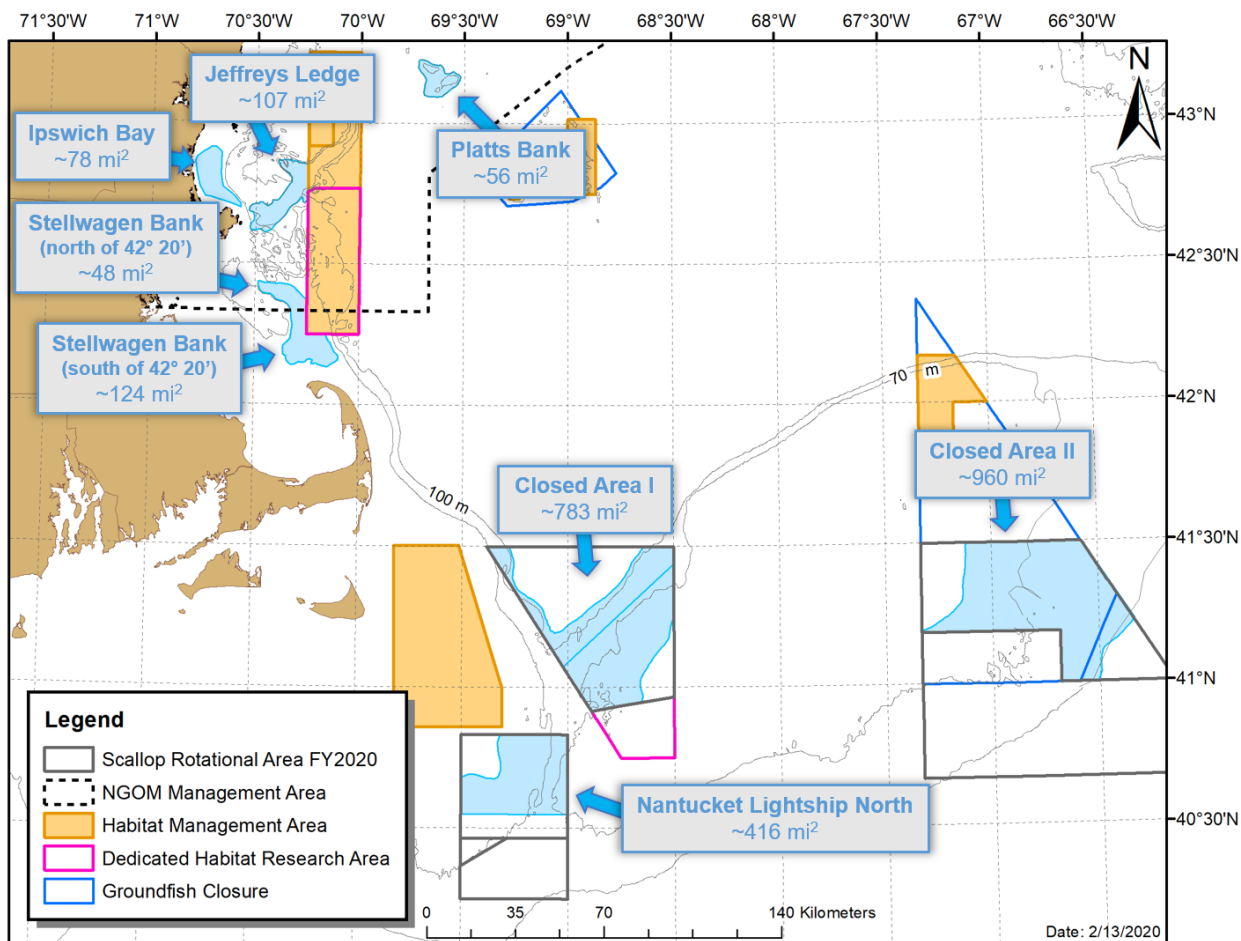
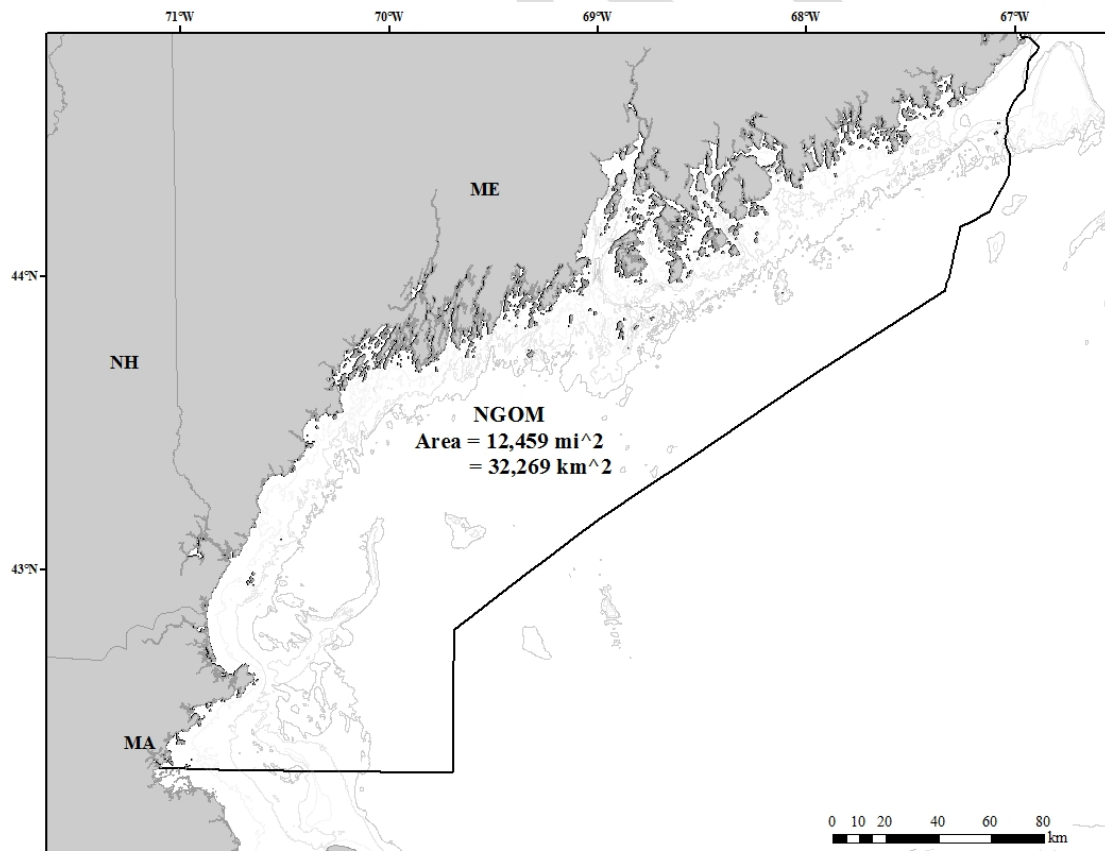


Table 9 – Approximate area (square miles) of parts of the NGOM that have recently been surveyed and have been or are likely to be fished relative to SAMS area boundaries of proposed FY2020 access areas on Georges Bank and in the Mid-Atlantic.

	area	mi ²
NGOM areas that have been or are likely to be fished	Stellwagen Bank (north of 42° 20)	48
	Stellwagen Bank (south of 42° 20)	124
	Ipswich Bay	78
	Jeffreys Ledge	107
	Platts Bank	56
FY2020 access area SAMS	NLS-North	416
	CL1-Sliver	313
	CL1-Access	471
	CL2-Access-Southeast	960
	NLS-South-Deep	282
	ET-Open	1,048
	ET-Flex	696
	HCS	1,518

Map 5 - Area of the Northern Gulf of Maine management unit in square miles and square kilometers.



5.3 NON-TARGET SPECIES

Non-target species (sometimes referred to as incidental catch or bycatch) include species caught by scallop gear that are both landed and not landed, including small scallops. There are several measures in place that were designed to reduce bycatch including gear modifications, limits on effort, seasonal restrictions etc. In general, rotational area management is designed to improve and maintain high scallop yield, while minimizing impacts on groundfish mortality and other finfish catches. Access programs may even reduce fishing mortality for some finfish species, because the total amount of fishing time in access areas is low compared with fishing time in open areas due to differences in LPUE. Incidental catch is sometimes higher in access areas compared to open areas, but in general total scallop landings are also usually higher in access areas.

Potential non-target species caught incidentally in the scallop fishery were identified in Amendment 15 and previous scallop framework actions based primarily on discard information from the 2009 SBRM report (NEFSC 2009) and various assessments such as GARM III and the Skates Data-poor Workshop. See Table 10 for the current status of these species, which has been updated based on assessment results summarized in the NEFSC operational Groundfish assessment through 2018 ([NEFSC 2019](#)), Skate FW3 (see [Section 6.1.2](#)), and Monkfish FW9 (see [Section 6.1.2](#)).

Table 10 – Status of non-target species known to be caught in scallop fishing gear, updated with assessment results through 2018.

<i>Species or FMP</i>	<i>Stock</i>	<i>Overfished?</i>	<i>Overfishing?</i>
Summer flounder (fluke)	Mid-Atlantic Coast	No	No
Monkfish	GOM/Northern GB	No	No
Monkfish	Southern GB/MA	No	No
Northeast Skate Complex	Barndoor skate	No	No
Northeast Skate Complex	Clearnose skate	No	No
Northeast Skate Complex	Little skate	No	No
Northeast Skate Complex	Rosette skate	No	No
Northeast Skate Complex	Smooth skate	No	No
Northeast Skate Complex	Thorny skate	Yes	No
Northeast Skate Complex	Winter skate	No	No
Multispecies	*Windowpane - GOM/GB	Yes	Yes
Multispecies	*Windowpane - SNE/MA	No	No
Multispecies	Winter flounder - GB	Yes	No
Multispecies	Winter flounder - GOM	Unknown	No
Multispecies	Winter flounder - SNE/MA	Yes	No
Multispecies	Yellowtail flounder - CC/GOM	No	No
Multispecies	*Yellowtail flounder - GB	Unknown	Unknown
Multispecies	*Yellowtail flounder - SNE/MA	Yes	No
Atlantic Surfclam	Mid-Atlantic Coast	No	No
Ocean Quahog	Atlantic Coast	No	No
<p>* stock has scallop fishery sub-ACL.</p> <p>Updates available through NMFS's Status of U.S. Fisheries Quarterly Reports</p> <p>http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm</p>			

5.3.1 Bycatch Species with sub-ACL Allocations

The only bycatch species with sub-ACLs for the scallop fishery are in the Northeast Multispecies plan: Georges Bank yellowtail flounder (GB yellowtail), Southern New England/Mid-Atlantic yellowtail flounder (SNE/MA yellowtail), Southern windowpane flounder, and Northern windowpane flounder. Table 11 describes a summary of sub-ACLs, projected bycatch, and realized bycatch from the scallop fishery from FY2013 – FY2019, as well as projected catch and allocations for FY2020. Out year projected catch estimates can be uncertain because they are based on anticipated fishing behavior provided by SAMS model outputs; considering this, projections should be reviewed cautiously as past estimates have been both overestimated and underestimated relative to actual catch. A complete summary of all catch in the multispecies fishery can be found at:

<http://www.greateratlantic.fisheries.noaa.gov/aps/monitoring/nemultispecies.html>

Table 11 – Comparison of recent flatfish sub-ACLs, scallop bycatch projections, and realized catch, with 2019 projections. Values are shown in mt.

FY		GBYT	SNE/MA YT	SWP	NWP
2013	sub-ACL	41.5	43.6	183	
	Projected	85.3	66	N/A	
	Actual	37.5	48.6	129.1	
2014	sub-ACL	50.9	66	183	
	Projected	62.4 - 103.7	61.1 - 67.7	74.4	
	Actual	59	63	136	
2015	sub-ACL	38	66	183	n/a
	Projected	27.9 - 48.6	54	134	45 - 94
	Actual	29.8	34.6	210.6	114.6
2016	sub-ACL	42	32	209	n/a
	Projected	26.3	40.4	179.2	88.1
	Actual	2	10.8	84.4	n/a
2017	sub-ACL	32	34	209	36
	Projected	62.8 - 63.2	10.66 - 11.9	77.85 - 85.08	102.1 - 103.33
	Actual	52.6	4.3	143.9	44.1
2018	sub-ACL	33	5	158	18
	Projected	11.7	4.2	261.7	50.7
	Actual	12.7	2.6	157.1	22.3
2019	sub-ACL	17	15	158	18
	Projected	11.48	2.9	64.03	8.02
	Actual	N/A	N/A	N/A	N/A

5.4 PROTECTED SPECIES

The following protected species are found in the environment in which the sea scallop fishery is prosecuted. Several are listed under the Endangered Species Act of 1973 (ESA) as endangered or threatened, while others are identified as protected under the Marine Mammal Protection Act of 1972 (MMPA). An update and summary are in Table 12 to facilitate consideration of the species most likely to interact with the scallop fishery relative to the preferred alternative.

Table 12 – Protected species that may occur in the affected environment of the sea scallop fishery.

Species	Status	Potentially impacted by this action?
Cetaceans		
North Atlantic right whale (<i>Eubalaena glacialis</i>)	Endangered	No
Humpback whale, West Indies DPS (<i>Megaptera novaeangliae</i>)	Protected (MMPA)	No
Fin whale (<i>Balaenoptera physalus</i>)	Endangered	No
Sei whale (<i>Balaenoptera borealis</i>)	Endangered	No
Blue whale (<i>Balaenoptera musculus</i>)	Endangered	No
Sperm whale (<i>Physeter macrocephalus</i>)	Endangered	No
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected(MMPA)	No
Pilot whale (<i>Globicephala spp.</i>) ¹	Protected(MMPA)	No
Risso's dolphin (<i>Grampus griseus</i>)	Protected(MMPA)	No
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected(MMPA)	No
Short Beaked Common dolphin (<i>Delphinus delphis</i>)	Protected(MMPA)	No
Spotted dolphin (<i>Stenella frontalis</i>)	Protected(MMPA)	No
Striped dolphin (<i>Stenella coeruleoalba</i>)	Protected(MMPA)	No
Bottlenose dolphin (<i>Tursiops truncatus</i>) ²	Protected(MMPA)	No
Harbor porpoise (<i>Phocoena phocoena</i>)	Protected(MMPA)	No
Sea Turtles		
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered	Yes
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered	Yes
Green sea turtle, North Atlantic DPS (<i>Chelonia mydas</i>) (<i>Chelonia mydas</i>)	Threatened	Yes
Loggerhead sea turtle (<i>Caretta caretta</i>), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle (<i>Eretmochelys imbricate</i>)	Endangered	No
Fish		

Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered	No
Atlantic salmon (<i>Salmo salar</i>)	Endangered	No
Atlantic sturgeon (<i>Acipenser oxyrinchus</i>)		
<i>Gulf of Maine DPS</i>	Threatened	Yes
<i>New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS</i>	Endangered	Yes
Cusk (<i>Brosme brosme</i>)	Candidate	Yes
Pinnipeds		
Harbor seal (<i>Phoca vitulina</i>)	Protected(MMPA)	No
Gray seal (<i>Halichoerus grypus</i>)	Protected(MMPA)	No
Harp seal (<i>Phoca groenlandicus</i>)	Protected(MMPA)	No
Hooded seal (<i>Cystophora cristata</i>)	Protected(MMPA)	No
Critical Habitat		
North Atlantic Right Whale	Protected (ESA)	No
Northwest Atlantic Ocean DPS of Loggerhead Sea Turtle	Protected(ESA)	No
Notes:		
¹ There are 2 species of pilot whales: short finned (<i>G. melas melas</i>) and long finned (<i>G. macrorhynchus</i>). Due to the difficulties in identifying the species at sea, they are often just referred to as <i>Globicephala spp.</i>		
² This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins.		

In Table 12, note that cusk, a NMFS "candidate species" under the ESA, occur in the affected environment of the scallop fishery. Candidate species are those petitioned species that NMFS is actively considering for listing as endangered or threatened under the ESA and also include those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. Once a species is proposed for listing the conference provisions of the ESA apply (see 50 CFR 402.10); however, candidate species receive no substantive or procedural protection under the ESA. As a result, cusk will not be discussed further in this section. However, additional information on cusk can be found at: <https://www.fisheries.noaa.gov/endangered-species-conservation/candidate-species-under-endangered-species-act>.

5.4.1 Species and Critical Habitat Not Likely to be Impacted by the Alternatives Under Consideration

Based on available information, it has been determined that this action is not likely to impact any ESA listed or non-listed species of marine mammals (cetaceans or pinnipeds), shortnose sturgeon, or Atlantic salmon. Further, this action is not likely to adversely modify or destroy the Northwest Atlantic Ocean DPS of loggerhead sea turtle or North Atlantic right whale critical habitats. This determination has been

made because either the occurrence of the species is not known to overlap with the scallop fishery and/or there have never been documented interactions between the species and the scallop fishery (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>; NMFS NEFSC FSB 2019). In the case of critical habitat, this determination has been made because the scallop fishery will not impact the essential physical or biological features of North Atlantic right whale or loggerhead (Northwest Atlantic Ocean DPS) critical habitat, and therefore, will not result in the destruction or adverse modification of either species designated critical habitat (NMFS 2014; NMFS 2015a,b). For additional details on the rationale behind these conclusions, please see Section 4.3.1 of Framework 26 to the Scallop FMP (http://s3.amazonaws.com/nefmc.org/Final-FW26_submission_150217.pdf).

5.4.2 Species Potentially Impacted by the Alternatives Under Consideration

As noted in Table 12, ESA listed species of sea turtles and Atlantic sturgeon are the only protected species that occur in the affected environment of the scallop fishery and have the potential to be impacted by this fishery and the proposed Alternatives. To assist in making this determination, the 2012 Biological Opinion issued by NMFS on the operation of the scallop fishery was referenced (NMFS, 2012). The 2012 Opinion, which considered the best available information on ESA listed species and observed or documented ESA listed species interactions with gear types used to prosecute the scallop fishery (e.g., scallop dredge and bottom trawl), concluded that the scallop fishery, as authorized under the scallop FMP, may adversely affect, but was not likely to jeopardize the continued existence of the Northwest Atlantic Ocean distinct population segment (DPS) of loggerhead, leatherback, Kemp's ridley, and green sea turtles, as well as the five listed DPSs of Atlantic sturgeon. The Opinion included an incidental take statement authorizing the take of specific numbers of ESA listed species of sea turtles and Atlantic sturgeon. Reasonable and prudent measures and terms and conditions were also issued with the incidental take statement to minimize impacts of any incidental take.

Up until recently, the 2012 Opinion remained in effect; however, new information indicates that the scallop fleet exceeded the ITS trigger of a two-year average of 359,797 dredge hours for 2015-2016 and 2016-2017. This new information is different from that considered and analyzed in the 2012 Opinion and therefore, may reveal effects from this fishery that were not previously considered. As a result, per a February 19, 2020, memo issued by NMFS, the 2012 Opinion has been reinitiated. However, pursuant to the ESA 7(a)(2)/7(d) memo issued by NMFS on March 4, 2020, it has been determined that, for the consultation being reinitiated, allowing the scallop fishery to continue during the reinitiation period will not increase the likelihood of interactions with listed species of sea turtles or Atlantic sturgeon above the amount that would otherwise occur if consultation had not been reinitiated, because allowing the scallop fishery to continue does not entail making any changes to this fishery during the reinitiation period that would cause an increase in interactions with these listed species. Because of this, the continuation of the scallop fishery during the reinitiation period would not be likely to jeopardize the continued existence of any species of sea turtle or Atlantic sturgeon. Until replaced, the scallop FMP is currently covered by the March 4, 2020 memo.

To understand the potential risks these Alternatives pose to these listed species, it is necessary to consider (1) species occurrence in the affected environment of the fishery and how the fishery will overlap in time and space with this occurrence; and (2) records of protected species interaction with particular fishing gear types. In the sections below, information on sea turtle and Atlantic sturgeon occurrence in the affected environment of the scallop fishery, in addition to species interactions with scallop fishery gear, will be provided.

5.4.2.1 Sea Turtles

5.4.2.1.1 Occurrence and Distribution

During the development of Framework 26 to the Scallop FMP, the PDT used various sources of information to describe the occurrence and distribution of sea turtles in the affected environment of the scallop fishery. Below, the PDT provides a summary of the information provided in FW 26, with any updates since the issuance of the framework provided. For additional details on the sources of information used to develop this section, please refer to Section 4.3.2.1 of Framework 26. Further, additional background information on the range-wide status of affected sea turtles species, as well as a description and life history of each of these species, can be found in a number of published documents, including sea turtle status reviews and biological reports (Conant et al., 2009; Hirth, 1997; NMFS & USFWS, 1995, 2007a, 2007b, 2013, 2015; Seminoff et al., 2015; TEWG, 1998, 2000, 2007, 2009), and recovery plans for the loggerhead sea turtle (Northwest Atlantic DPS; NMFS & USFWS, 2008), leatherback sea turtle (NMFS & USFWS, 1992, 1998b), Kemp's ridley sea turtle (NMFS & USFWS, 2011), and green sea turtle (NMFS & USFWS, 1991, 1998a).

- **Hard-shelled sea turtles**

Distribution. In U.S. Northwest Atlantic waters, hard-shelled turtles commonly occur throughout the continental shelf from Florida to Cape Cod, MA, although their presence varies with the seasons due to changes in water temperature (J. Braun-McNeill, Epperly, Avens, Snover, & Taylor, 2008; Braun & Epperly, 1996; S. P. Epperly, Braun, & Chester, 1995; S. P. Epperly, Braun, Chester, et al., 1995; Mitchell, Kenney, Farak, & Campbell, 2003; Shoop & Kenney, 1992; TEWG, 2009). While hard-shelled turtles are most common south of Cape Cod, MA, loggerhead sea turtles are known to occur in the Gulf of Maine, feeding as far north as southern Canada. Loggerheads have been observed in waters with surface temperatures of 7°C to 30°C, but water temperatures $\geq 11^\circ\text{C}$ are most favorable (S. P. Epperly, Braun, Chester, et al., 1995; Shoop & Kenney, 1992). Sea turtle presence in U.S. Atlantic waters is also influenced by water depth. While hard-shelled turtles occur in waters from the beach to beyond the continental shelf, they are most commonly found in neritic waters of the inner continental shelf (Blumenthal et al., 2006; J Braun-McNeill & Epperly, 2004; Griffin et al., 2013; Hawkes et al., 2006; Hawkes et al., 2011; Mansfield, Saba, Keinath, & Mauick, 2009; McClellan & Read, 2007; Mitchell et al., 2003; Morreale & Standora, 2005).

Seasonality. Hard-shelled sea turtles occur year-round in waters off of, and south of, Cape Hatteras, North Carolina. As coastal water temperatures warm in the spring, loggerheads begin to migrate to inshore waters of the southeast United States and also move up the Atlantic Coast (J Braun-McNeill & Epperly, 2004; S. P. Epperly, Braun, & Chester, 1995; S. P. Epperly, Braun, Chester, et al., 1995; S. P. Epperly, Braun, & Veishlow, 1995; Griffin et al., 2013; Morreale & Standora, 2005), occurring in Virginia foraging areas as early as late April and on the most northern foraging grounds in the GOM in June (Shoop & Kenney, 1992). The trend is reversed in the fall as water temperatures cool. The large majority leave the GOM by September, but some remain in Mid-Atlantic and Northeast areas until late fall. By December, most sea turtles have migrated south to waters offshore of North Carolina, particularly south of Cape Hatteras, and further (S. P. Epperly, Braun, Chester, et al., 1995; Griffin et al., 2013; Hawkes et al., 2011; Shoop & Kenney, 1992). Based on this information, as well as review of observed sea turtle interactions with bottom tending gear in the affected environment of the scallop fishery (see Figure 23), hard-shelled sea turtles are most likely to be present in areas that overlap with the scallop fishery in the Mid-Atlantic between May and October and to a lesser extent, November and December (see Section 4.3.2.1 of Framework 26 for complete summary of information).

- **Leatherback sea turtles**

Leatherback sea turtles also engage in routine migrations between northern temperate and tropical waters (Dodge, Galuardi, Miller, & Lutcavage, 2014; M. James, Myers, & Ottenmeyer, 2005; M. C. James, Sherrill-Mix, Martin, & Myers, 2006; NMFS & USFWS, 1992). Leatherbacks, a pelagic species, are also known to use coastal waters of the U.S. continental shelf (Dodge et al., 2014; Eckert et al., 2006; M. James et al., 2005; Murphy, Murphy, Griffin, & Hope, 2006). Leatherbacks have a greater tolerance for colder water in comparison to hard-shelled sea turtles. They are also found in more northern waters (i.e., Gulf of Maine) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (Dodge et al., 2014; M. James et al., 2005; M. C. James et al., 2006).

5.4.2.1.2 Gear Interactions

As in Section 5.4.2.1.1, sea turtles are widely distributed in the waters of the Northwest Atlantic, although their presence varies with the seasons due to changes in water temperature (J Braun-McNeill & Epperly, 2004; J. Braun-McNeill et al., 2008; Braun & Epperly, 1996; Dodge et al., 2014; S. P. Epperly, Braun, & Chester, 1995; S. P. Epperly, Braun, Chester, et al., 1995; Griffin et al., 2013; M. James et al., 2005; M. C. James et al., 2006; Mitchell et al., 2003; Morreale & Standora, 2005; NMFS & USFWS, 1992; Shoop & Kenney, 1992; TEWG, 2009). As a result, sea turtles often occupy many of the same ocean areas utilized for commercial fishing and therefore, interactions with fishing gear is possible. In the sea scallop fishery, dredge and trawl gear are used to target scallops and are known to pose a risk to sea turtles (S. Epperly et al., 2002; Haas, LaCasella, LeRoux, Milliken, & Hayward, 2008; Henwood & Stuntz, 1987; Lutcavage, Plotkin, Witherington, Lutz, & Musick, 1997; Murray, 2011; NMFS, 2012; Sasso & Epperly, 2006; Warden, 2011a, 2011b).

Although sea turtle interactions with scallop trawl and dredge gear have been observed in the Gulf of Maine, Georges Bank, and the Mid-Atlantic, most of the observed interactions have occurred in the Mid-Atlantic (FSB, 2019). There is insufficient data available to conduct a robust model-based analysis to estimate sea turtle interactions with scallop trawl or dredge gear outside the Mid-Atlantic. As a result, the bycatch estimates and most of the discussion below are based on observed sea turtle interactions in scallop trawl and dredge gear in the Mid-Atlantic.

- **Sea Scallop Dredge Gear**

Kemp's ridley, green, loggerhead, and unknown sea turtle species have been documented interacting with sea scallop dredge gear; loggerhead sea turtles are the most commonly taken species (FSB, 2016, 2017, 2018; Murray, 2015a). Two regulations have been implemented to reduce serious injury and mortalities to sea turtles resulting from interactions with sea scallop dredges:

- (1) **Chain mat modified dredge** (71 FR 50361, August 25, 2006; 71 FR 66466, November 15, 2006; 73 FR 18984, April 8, 2008; 74 FR 20667, May 5, 2009; 76 FR 22119, April 21, 2015): Requires federally permitted scallop vessels fishing with dredge gear to modify their gear by adding an arrangement of horizontal and vertical chains (referred to as a "chain mat"). The purpose of the chain mat is to prevent captures in the dredge bag and injury and mortality that results from such capture. It should be noted, however, that although the chain mat is expected to reduce the impact of sea turtle takes in dredge gear, it does not eliminate the take of sea turtles; and

- (2) **Turtle Deflector Dredge** (77 FR 20728, April 6, 2012; 76 FR 22119, April 21, 2015): All limited access scallop vessels, as well as Limited Access General Category vessels with a dredge width of 10.5 feet or greater, must use a Turtle Deflector Dredge (TDD) to deflect sea turtles over the dredge frame and bag rather than under the cutting bar, so as to reduce sea turtle injuries due to contact with the dredge frame on the ocean bottom (including being crushed under the dredge frame).

As of May 2015, both gear modifications are now required in waters west of 71°W from May 1 through November 30 each year (76 FR 22119, April 21, 2015). It should be noted, although the chain mat and

TDD modifications are designed to reduce the serious injury and mortality to sea turtles interacting with dredge gear, it does not eliminate the take of sea turtles.

Using Northeast Fisheries Observer Program data, Murray (2011) assessed loggerhead and hard-shell turtle interactions in the Mid-Atlantic sea scallop fishery from 2001-2008. After the implementation of the chain-mat requirements, the average annual observable interactions of hard-shelled sea turtles and scallop dredge gear dropped to 20 turtles (95% CI=3-42; 3 adult equivalents; Table 13). Further, as stated by Murray (2011), “if the rate of observable interactions from dredges without chain mats had been applied to trips with chain mats, the estimated number of observable and inferred interactions of hard-shelled species after chain mats were implemented would have been 125 turtles per year (95% CI: 88–163; 22 adult equivalents¹; Table 13).” Most recently, Murray (2015a) estimated loggerhead interactions in the Mid-Atlantic scallop dredge fishery from 2009-2014. The average annual estimate of observable turtle interactions in scallop dredge gear was 11 loggerhead sea turtles per year (95% CI: 3-22; Murray, 2015a). When the observable interaction rate from dredges without chain mats, was applied to trips that used chain mats and TDDs, the estimated number of loggerhead interactions (observable and unobservable but quantifiable) was 22 loggerheads per year (95% CI: 4-67; Murray, 2015a). These 22 loggerheads equate to 2 adult equivalents per year, and 1-2 adult equivalent mortalities (Murray, 2015a).

Table 13 - Average annual estimated interactions of hard-shelled (unidentified and loggerhead species pooled) and loggerhead turtles in the Mid-Atlantic scallop dredge fishery before and after chain mats were required on dredges (CV and 95% Confidence Interval).

AE = adult equivalent estimated interactions. **A**= estimated interactions from dredges without chain mats; **B** = estimated observed interactions from dredges with or without chain mats; **C** = estimated observed and unobserved, quantifiable interactions from dredges without chain mats, to estimate the mat’s maximum conservation value (Source: Murray, 2011).

Time Period	Interactions		Interactions	
	Hard-shelled (including loggerheads)	A E	Loggerhead	A E
(A) 2001-25 Sept 2006	288 (0.14, 209-363)	49	218 (0.16, 149-282)	37
(B) 26 Sept 2006-2008	20 (0.48, 3-42)	3	19 (0.52, 2-41)	3
(C) 26 Sept 2006-2008	125 (0.15, 88-163)	22	95 (0.18, 63-130)	16

• Sea Scallop Trawl Gear

Green, Kemp’s ridley, leatherback, loggerhead, and unidentified sea turtles have been documented interacting with bottom trawl gear. However, estimates are available only for loggerhead sea turtles. Warden (2011a) estimated that from 2005-2008, the average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic² was 292 (CV=0.13, 95% CI=221-369), with an additional 61 loggerheads (CV=0.17, 95% CI=41-83) interacting with trawls, but being released through a Turtle Excluder Device.³

¹ Adult equivalence considers the reproductive value of the animal (Murray, 2013; Warden, 2011a), providing a “common currency” of expected reproductive output from the affected animals (Wallace, Heppell, Lewison, Kelez, & Crowder, 2008), and is an important metric for understanding population level impacts (Haas, 2010).

² Warden (2011a) defined the Mid-Atlantic as south of Cape Cod, Massachusetts, to approximately the North Carolina/South Carolina border.

³ Warden (2011a) and Murray (2013, 2015b) define the Mid-Atlantic slightly differently, but both include waters north to Massachusetts. See the respective papers for a more complete description of these areas.

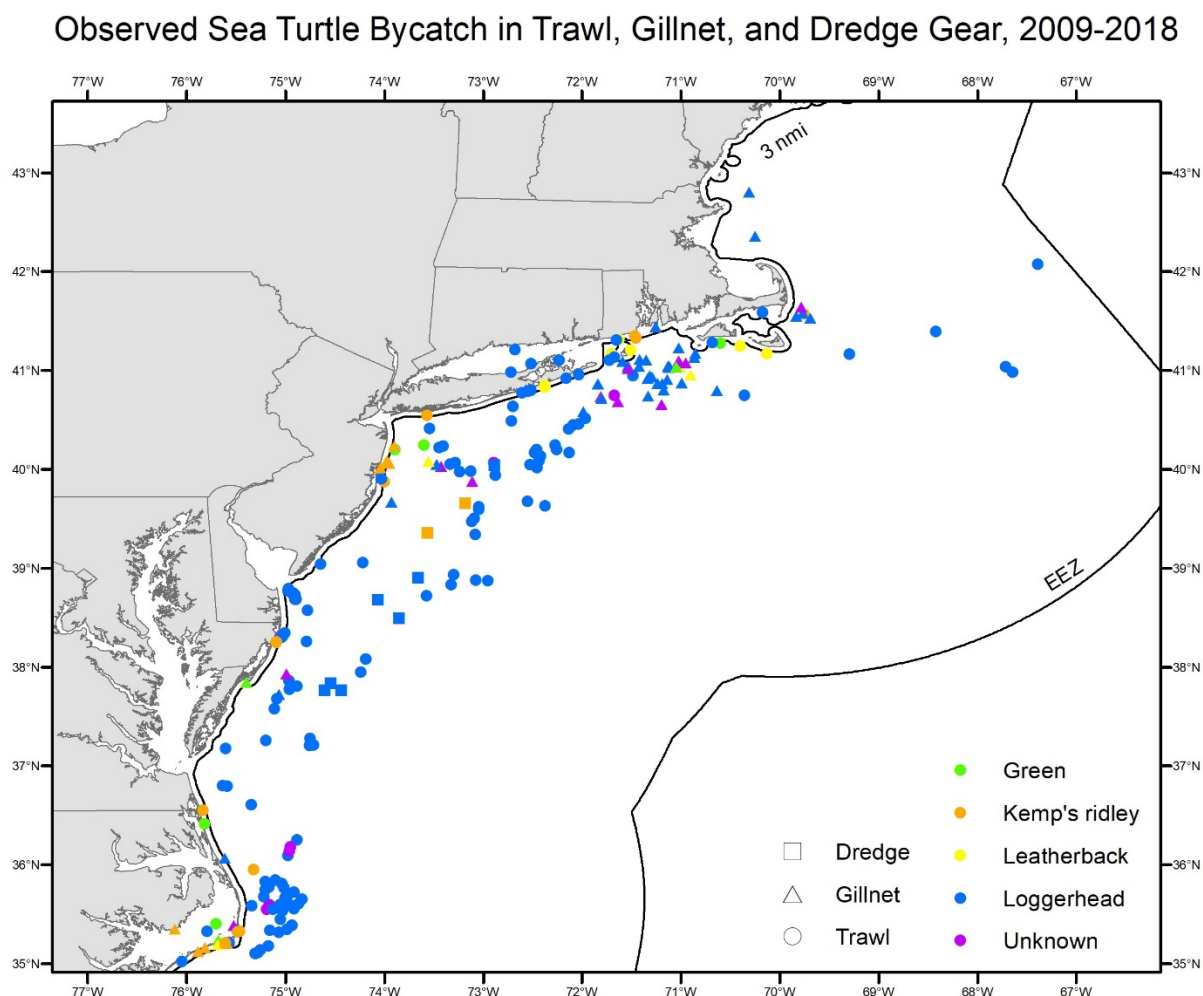
The 292 average annual observable loggerhead interactions equates to approximately 44 adult equivalent (Warden, 2011a). Most recently, Murray (2015b) estimated that from 2009-2013, the total average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic⁴ was 231 (CV=0.13, 95% CI=182-298; this equates to approximately 33 adult equivalents (Murray, 2015b). These latter estimates are a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated to be 616 sea turtles (CV=0.23, 95% CI over the nine-year period: 367-890). Based on data collected by observers for reported sea turtle captures in bottom otter trawl gear from 2005-2008, Warden (2011b), using species landed, also estimated total loggerhead interactions attributable to managed species. The estimated average annual bycatch of loggerhead sea turtles in bottom otter trawl gear for trips primarily landing scallops during 2005-2008 was 95 loggerheads (95% CI =60-140; Warden, 2011b). Murray (2015b) provided similar estimates of loggerhead interactions by managed fished species from 2009-2013. Specifically, an estimated average annual take of six loggerheads (95% CI=0-23) were attributed to the scallop fishery.

Summary of Observed Locations of Turtle Interactions with Scallop Dredge, Bottom Trawl, and Gillnet Gear

Figure 17 depicts the overall observed locations of sea turtle interactions with gillnet, bottom trawl (fish, scallop, and twin), and sea scallop dredge (bottom tending) gear in the Northeast Region from 2009-2018. For additional information on observed sea turtle bycatch in years preceding 2009, please see Section 4.3 of Framework 26 of the Scallop FMP.

⁴ Murray (2015a) defined the Mid-Atlantic as the boundaries of the Mid-Atlantic Ecological Production; roughly waters west of 71°W to the North Carolina/South Carolina border)

Figure 17 – Observed location of turtle interactions in bottom tending gears in the Northeast Region (2009-2018).



5.4.2.2 Atlantic Sturgeon

5.4.2.2.1 Atlantic Sturgeon Distribution

During the development of Framework 26 to the Scallop fishery, the PDT used various sources of information to describe the occurrence and distribution of Atlantic sturgeon DPSs in the affected environment of the scallop fishery. Below, the PDT provides a summary of the information provided in FW 26, with any updates (i.e., literature) since the issuance of the framework provided. For additional details on the information below please refer to Section 4.3.2.2.2 of Framework 26. Additional information on the biology, status, and range wide distribution of each distinct population segment of Atlantic sturgeon can be found in 77 FR 5880 and 77 FR 5914 (finalized February 6, 2012), as well as the Atlantic Sturgeon Status Review Team's (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT, 2007) and the Atlantic States Marine Fisheries Commission 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report (ASMFC, 2017).

The marine range of U.S. Atlantic sturgeon extends from Labrador, Canada, to Cape Canaveral, Florida. All five DPSs of Atlantic sturgeon have the potential to be located anywhere in this marine range

(ASMFC, 2017; ASSRT, 2007; Dadswell, 2006; Dadswell, Taubert, Squires, Marchette, & Buckley, 1984; Dovel & Berggren, 1983; Dunton et al., 2012; Dunton et al., 2015; Dunton, Jordaan, McKown, Conover, & Frisk, 2010; Erickson et al., 2011; Kynard, Horgan, Kieffer, & Seibel, 2000; Laney et al., 2007; O'Leary, Dunton, King, Frisk, & Chapman, 2014; Stein, Friedland, & Sutherland, 2004b; Waldman et al., 2013; Wirgin, Breece, et al., 2015; Wirgin, Maceda, Grunwald, & King, 2015; Wirgin et al., 2012). In fact, several genetic studies, have been conducted to address DPS distribution and composition in marine waters (Dunton et al., 2012; O'Leary et al., 2014; Waldman et al., 2013; Wirgin, Breece, et al., 2015; Wirgin, Maceda, et al., 2015; Wirgin et al., 2012). These studies show that Atlantic sturgeon from multiple DPSs can be found at any single location along the Northwest Atlantic coast, with the Mid-Atlantic locations consistently comprised of all five DPSs (Damon-Randall, Colligan, & Crocker, 2013; Dunton et al., 2012; O'Leary et al., 2014; Waldman et al., 2013; Wirgin, Breece, et al., 2015; Wirgin, Maceda, et al., 2015; Wirgin et al., 2012). Although additional studies are needed to further clarify the DPS distribution and composition in non-natal estuaries and coastal locations, these studies provide some initial insight on DPS distribution and co-occurrence in particular areas along the U.S. eastern seaboard.

Based on fishery independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Dunton et al., 2010; Erickson et al., 2011; Stein, Friedland, & Sutherland, 2004a; Stein et al., 2004b); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Collins & Smith, 1997; Dunton et al., 2010; Erickson et al., 2011; Stein et al., 2004a, 2004b; Timoshkin, 1968). Data from fishery-independent surveys and tagging and tracking studies also indicate that Atlantic sturgeon undertake seasonal movements along the coast (Dunton et al., 2010; Erickson et al., 2011). In general, analysis of fishery-independent survey data indicates a coastwide distribution of Atlantic sturgeon from the spring through the fall, with Atlantic sturgeon being more centrally located (e.g., Long Island to Delaware) during the summer months; and a more southerly (e.g., North Carolina, Virginia) distribution during the winter (Dunton et al., 2010; Erickson et al., 2011). Although studies such as Erickson et al. (2011) and Dunton et al. (2010) provide some indication that Atlantic sturgeon are undertaking seasonal movements horizontally and vertically along the U.S. eastern coastline, there is no evidence to date that all Atlantic sturgeon make these seasonal movements and therefore, may be present throughout the marine environment throughout the year.

5.4.2.2.2 Gear Interactions

According to the NMFS Biological Opinion on the sea scallop fishery issued on July 12, 2012, it was determined that some small level of bycatch may occur in the scallop fishery; however, the incidence rate is likely to be very low. Review of available observer data from 1989-2018 confirms this determination. No Atlantic sturgeon have been reported as caught in scallop bottom trawl gear where the haul target or trip target is scallop. However, NEFOP and ASM observer data have recorded one (1) Atlantic sturgeon interaction with scallop dredge gear targeting Atlantic sea scallops; this sturgeon was released alive (FSB, 2019).

5.5 PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT

The scallop resource and fishery in U.S. waters is distributed from Maine to North Carolina, encompassing three ecosystem production units: Gulf of Maine, Georges Bank, and the Mid-Atlantic Bight. The Council designates essential fish habitat (EFH) for scallops and other managed species throughout the range of the scallop fishery. The Council's EFH designations were updated via Omnibus Essential Fish Habitat Amendment 2 (OHA2), implemented in April 2018. Except for species that occur in water depths beyond those in which scallops occur, i.e. deep-sea red crab and offshore hake, these managed species occur within the geographic range of the scallop fishery and thus these habitats could be impacted by prosecution of the fishery. In addition to revised EFH designations, OHA2 also included area-based gear restrictions to minimize the impacts of fishing on fish habitats. These measures were

designed and implemented on a regional basis and include restrictions on scallop dredges and other types of fishing gears. Information about the amendment is available here:

<http://www.nefmc.org/library/omnibus-habitat-amendment-2>. The approved EFH designations are summarized in a document at this link, <https://www.nefmc.org/library/essential-fish-habitat-efh-information>; this page also includes a link to the NOAA EFH mapper which is an interactive viewer for EFH maps. The Council's habitat management areas can be viewed on the Northeast Ocean Data Portal, <https://www.northeastoceandata.org/>, under 'Commercial Fishing', 'Management Areas'.

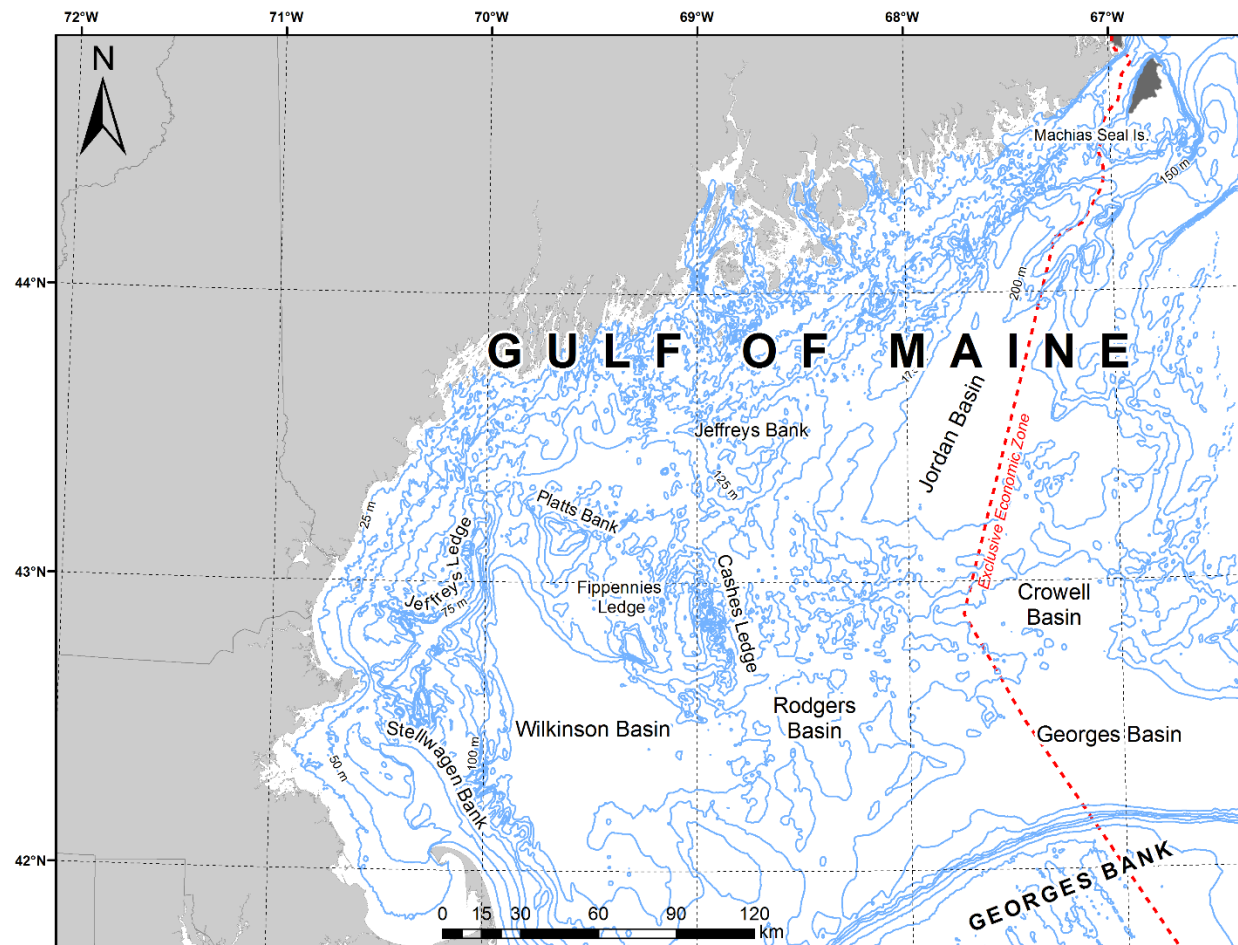
The remainder of this section focuses on the habitat characteristics of scallop fishing grounds in the Gulf of Maine, and their vulnerability to the effects of the scallop fishery. The Gulf of Maine is an enclosed coastal sea encompassing approximately 90,700 km², extending north of Cape Cod, east of Maine, and south and west of Nova Scotia. The Northeast Channel between Georges Bank and Browns Bank leads into Georges Basin, and is one of the primary avenues for exchange of water between the Gulf of Maine and the North Atlantic Ocean. Intense seasonal cycles of winter cooling and turnover, springtime freshwater run off, and summer warming influences oceanographic and biologic processes in the Gulf of Maine. Numerous factors (i.e. stratification, tidal mixing, warm/cold core Gulf Stream rings, internal waves) dictate water properties and circulation, which can vary significantly from year to year. This drastic variation in water properties will often shift habitat conditions, ultimately impacting productivity and success of resident marine species.

The Gulf of Maine is glacially derived and topographically complex, comprised of a system of deep basins, moraines, and rocky pinnacles. The Gulf of Maine's geologic features, when coupled with vertical variations in water properties, result in a great diversity of habitat types. This complex web of oceanographic processes promotes high productivity and supports a rich, diverse biological assemblage. There are twenty-one distinct basins separated by ridges, banks, and swells (Map 6). Depths in the basins exceed 250 m, with a maximum depth of 350 m in Georges Basin, just north of Georges Bank. While scallops can be found to approximately 180 m in the Gulf of Maine, the depth limit for scallop EFH is 110 m. Thus, sea scallops in the Gulf of Maine occur in shallower coastal regions and on offshore banks and ledges including Jeffreys Ledge, Stellwagen Bank, Platts Bank, and Fippennies Ledge.

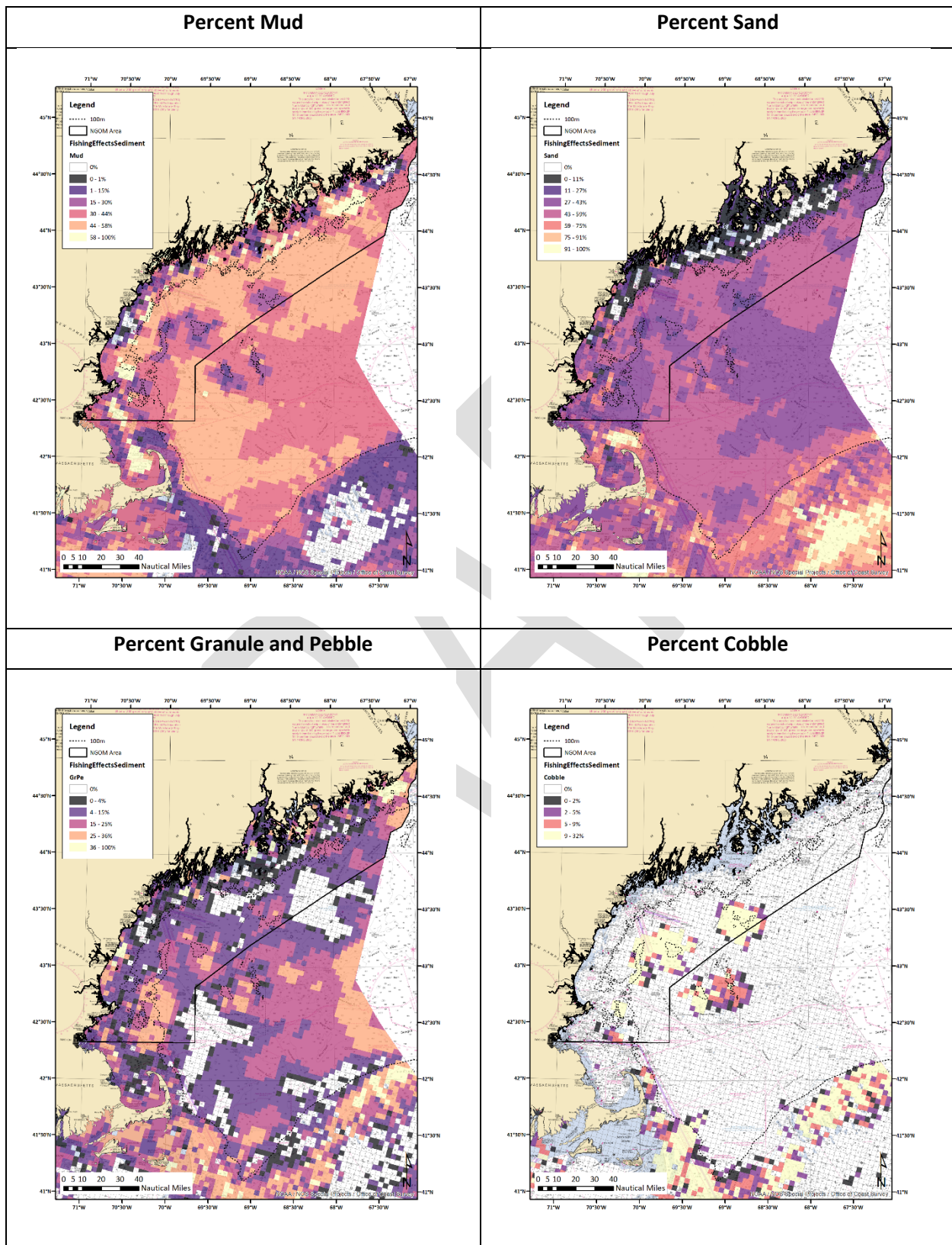
The deeper basins tend to have muddier sediments, which are not the preferred habitat for sea scallops, but the shallower banks and ledges tend to have more sand and gravel sediments, which are suitable for larval scallop settlement and tend to coincide with areas with higher water flow, important for feeding. A recent sediment mapping analysis developed for the Northeast Fishing Effects model indicates the percentage of mud, sand, granule/pebble, cobble, and boulder sediments within 5 km by 5 km grid cells (Map 7). Interactive versions of these maps are available on the Northeast Ocean Data Portal, under 'Habitat'. Mud sediments are common throughout the Gulf of Maine, but there are lower percentages of mud sediments and higher percentages of hard bottom (cobble and boulder/rock) in coastal areas and on shallower banks and ledges. In general, sediment data are low resolution in many parts of the Gulf of Maine (Data Density panel, Map 7). However, one feature that has been mapped in detail is Stellwagen Bank (Map 8). Stellwagen includes relatively shallow sand and gravel features that provide suitable habitat for scallops, and has been a very productive fishing ground in recent years.

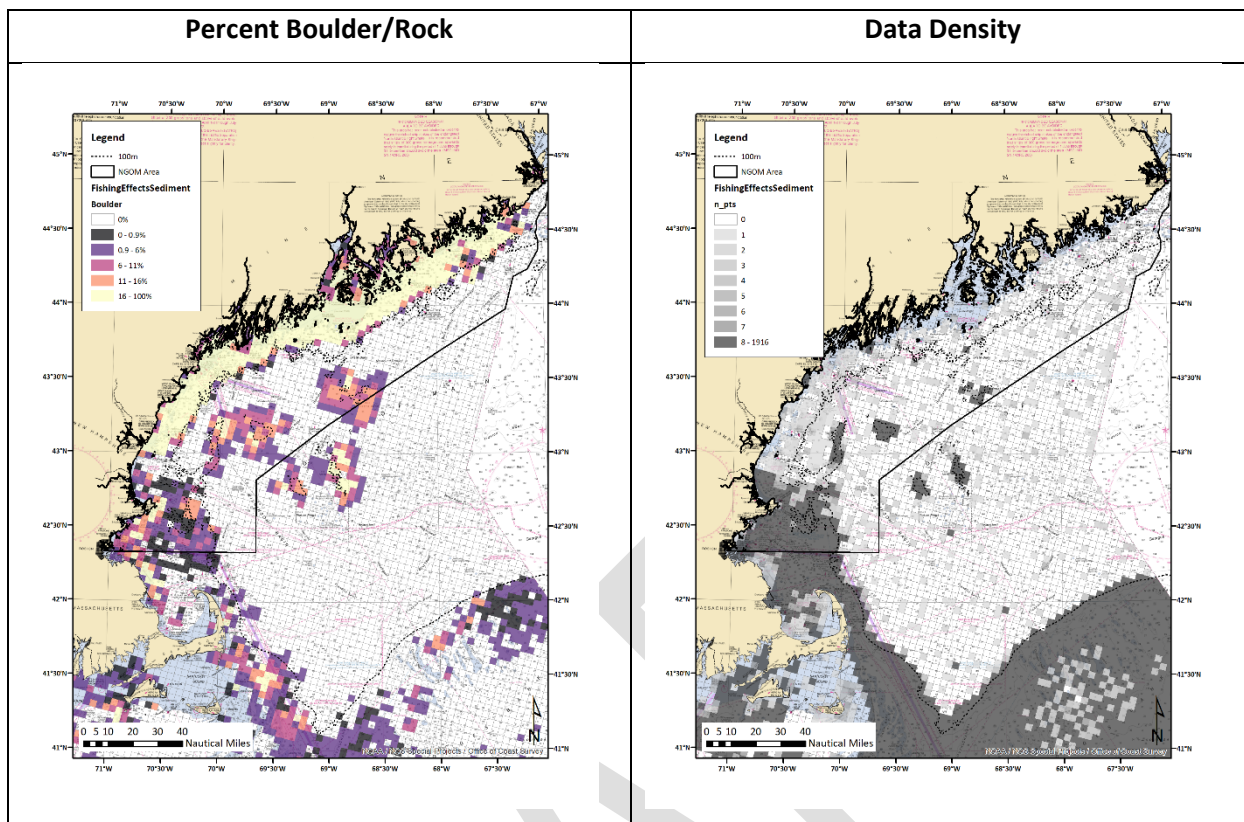
Seabed habitats are not uniformly vulnerable to the effects of fishing gear, and different gears have different magnitudes of effects. The Fishing Effects model indicates that the magnitude of habitat disturbance associated with scallop dredging activity is strongly related to the distribution of scallop fishing effort. Results from May 2017 are shown on Map 9, and additional months and years of data are available on the Northeast Ocean Data Portal. While habitat disturbance due to scallop fishing does occur in more heavily fished areas of the southwestern Gulf of Maine, in general the magnitude of fishing effects is low in the Gulf of Maine region relative to the fishery as a whole, given the relative amounts of fishing activity.

Map 6 – Major physiographic features of the Gulf of Maine relative to the territorial waters boundary of the US and Canada (EEZ, red dotted line).

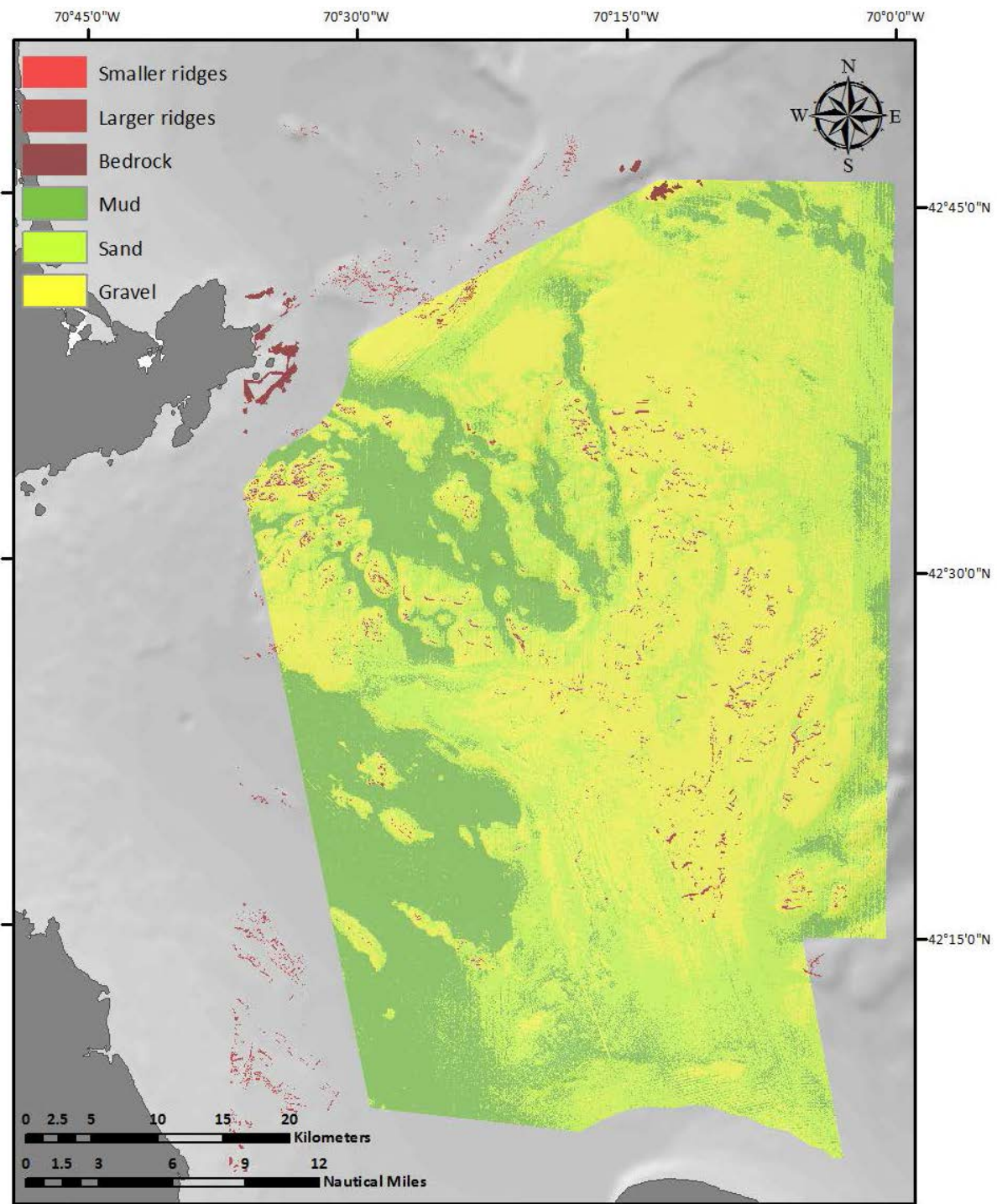


Map 7 – Sedimentary features of the Gulf of Maine. Source: Fishing Effects Model, NEFMC 2019.

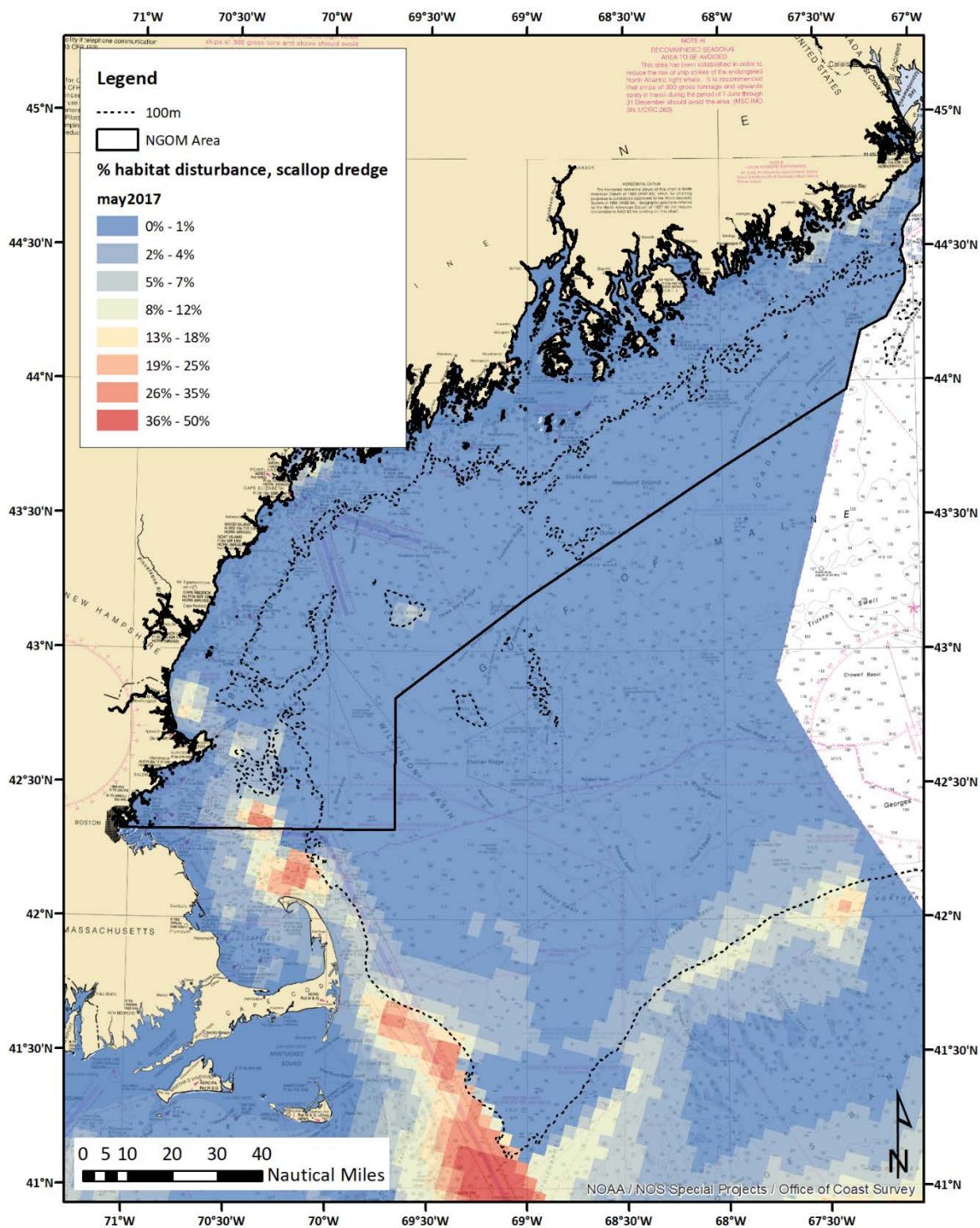




Map 8 – Sedimentary features of Stellwagen Bank. Source: U.S. Geological Survey (Map 22 from Omnibus Habitat Amendment 2).



Map 9 – Percent habitat disturbance, scallop dredge. May 2017. Source: Fishing Effects Model.



5.6 HUMAN COMMUNITIES

5.6.1 Introduction

Amendment 21 evaluates the effect management alternatives may have on the economy, way of life, and traditions of human communities. These social and economic impacts may be driven by changes in fishery flexibility, opportunity, stability, certainty, safety, and/or other factors. While social and economic impacts could be solely experienced by individuals, it is more likely that impacts would be experienced across communities, gear types, and/or vessel size classes.

Summarized here are the fisheries and human communities most likely to be impacted by the Alternatives under Consideration. Social, economic and fishery information herein helps describe the response of the fishery to past management actions and predicting how the Amendment 21 alternatives may affect human communities. Also, this section establishes a descriptive baseline to compare predicted and actual changes resulting from management.

MSFCMA Section 402(b), 16 U.S.C. 1881a(b) states that no information gathered in compliance with the Act can be disclosed, unless aggregated to a level that obfuscates the identity of individual submitters. The fishery data in this amendment are thus aggregated to at least three reporting units, to preserve confidentiality. Additional standards are applied to reporting the fishing activity of specific states or fishing communities. To report landings activity to a specific geographic location, the landings have been attributed to at least three fishing permit numbers and the landings must be sold to three dealer numbers. However, the dealers do not necessarily have to be in the same specific geographic location.

5.6.2 Specifications and Total Landings

OFL and ABC have generally increased since 2011 (Table 14), in part, due to the exceptional year classes of 2012 and 2013. During FY 2011-2018, scallop landings ranged from 32M to 58M pounds. Although total landings exceeded annual projected landings in three years since 2011, the fishery remained below the ABC/ACL.

Table 14. Scallop fishery OFL, ABC/ACL, APL and landings values (lbs).

FY	OFL (lbs)	ABC/ACL (lbs)	*Annual Projected Landings (lbs)	Total Landings (lbs)	Landings/APL (%)
2011	71,401,113	60,117,854	52,300,000	58,461,465	112%
2012	75,799,335	63,848,076	57,200,000	57,098,684	100%
2013	69,566,867	46,305,894	38,216,741	39,807,589	104%
2014	67,062,415	45,816,467	38,463,656	32,020,980	83%
2015	83,910,142	55,891,593	47,400,000	36,974,195	78%
2016	150,835,870	83,449,375	46,932,006	42,423,177	90%
2017	166,415,938	103,037,447	45,230,038	51,325,269	113%
2018	158,854,083	101,302,409	57,748,612**	58,100,342	100.6%
2019	161,865,597	125,670,103	59,985,576		
2020	130,482,794	110,120,732	49,318,135		
Source: year-end catch reports, updated July 2019.					
* APL after set-asides are removed					
**includes CAI carryover. '					
Note – 2020 values are preliminary					

5.6.3 Scallop Permits and Vessels

Scallop FMP was established in 1982. In 1994 (Amendment 4), a limited access program was created. Limited access vessels were assigned different DAS limits according to which permit category they qualified for: full-time, part-time or occasional. Amendment 4 also created the general category scallop permit for vessels that did not qualify for a limited access permit. Although originally created for an incidental catch of scallops in other fisheries, and for small-scale directed fisheries, the general category fishery and fleet evolved after its creation in 1994 (Table 15).

The general category scallop fishery was established as an “open access” fishery, any vessel that wanted to apply for a permit could; there were no specific qualifications to receive a general category permit. The main control on mortality for this component of the scallop fishery was a daily possession limit. Amendment 11, implemented in 2008, transitioned the general category component from an open access fishery to limited access. Vessels with at least 1,000 lbs. of landings history during a qualifying year (2000 – 2004) were eligible for an IFQ permit and “contribution factor” (allocation), while general category vessels that did not qualify for an IFQ permit were eligible for a Northern Gulf of Maine (NGOM) scallop permit, or an incidental catch permit.

Since 2008, all federal scallop permits have been limited access. A vessel can hold LA permits only, LAGC permits only, or a combination of LA and LAGC permits. There are multiple permit categories within LA and LAGC (Table 15, Table 18). For LAGC, there are three types: LAGC Category A permits which are IFQ permits; LAGC Category B permits which are restricted to fishing in the NGOM; and LAGC Category C permits which are incidental catch permits restricted to 40 pounds of scallop catch. Within the LAGC Category A permits there are two types: vessels that can transfer and lease quota and those that cannot (i.e., Limited Access scallop vessels that also qualified for a LAGC IFQ permit). Limited access scallop vessels can also qualify for the two other general category permits (NGOM and incidental catch).

The scallop fishery is primarily full-time, with a small number of part-time (PT) permits. There are no occasional (OC) permits left in the fishery since 2009, as these were converted to part-time small dredge (PT-SMD). LAGC IFQ vessels are allocated an overall 5.5% of the total projected annual scallop catch, and each permit has an individual contribution factor.

Table 16 describes the number of active and CPH scallop IFQ permits (IFQ only and Combination) permits by year and zero allocation permits that were in CPH for a year from 2008 to 2019.

Table 15. Scallop permit categories, qualifying criteria, harvest limits and allocation types.

Permit Type		Year Created	Action	Qualifying Criteria	Permit Category	Harvest Limits	Vessel level allocation?	Form of allocation
Limited Access^a		1994	Amend. 4	One trip with over 400 pounds in either 1988 or 1989, extended for new vessels under construction	Based on number of days used in 1990, or average of 1985-1990 days	94.5% of APL, after set-asides and incidental catch removed	Yes	DAS and access area trips
LA General Category	IFQ	2008	Amend. 11	Possess Open Access GC permit	1,000 pounds landings in a year (FY2000-2004), individual allocation based on best year indexed by # of years active in the fishery	5.5% of APL, after set-asides and incidental catch removed	Yes	IFQ pounds; set # AA trips at fleet level
	NGOM	2008	Amend. 11	Possess Open Access GC permit	No landings history required	Up to TAC for management area, not linked to annual projected landings estimate	No	Harvest in area until LAGC fleet reaches TAC
	Incidental	2008	Amend. 11	Possess Open Access GC permit	No landings history required	Deducted from APL before allocating to LA and LAGC IFQ	No	Harvest allowed until limit is reached
<p><i>Note:</i> There are multiple categories of LA permits (full-time/part-time, dredge/trawl, small/large dredge).</p> <p><i>Source:</i> IFQ Review Tables 1 and 2.</p>								

Table 16 - Number of active and CPH scallop IFQ permits (IFQ only and Combination) permits by year and zero allocation permits that were in CPH for a year from 2008 to 2019. Data are from the GARFO permit and moratorium databases.

Year	Active IFQ only	IFQ only Permits In CPH ¹	Total IFQ only (active and CPH)	Active Combo	Total IFQ, Combo, and CPH	IFQ only converted to NGOM	Canceled Permits ²	CPH with zero Allocation ³
2008	312	1	313	40	353	-	-	-
2009	304	28	332	40	372	1	1	-
2010	288	42	330	40	370	1	7	24
2011	248	74	322	40	362	0	6	43
2012	234	82	316	40	356	1	0	42
2013	226	89	315	40	355	1	1	48
2014	221	92	313	40	353	6	0	49
2015	217	90	307	40	347	0	1	44
2016	227	79	306	40	346	0	0	35
2017	222	84	306	40	346	2	0	35
2018	218	86	304	40	344	4	0	35
2019	212	88	300	40	340	2	0	38
2020	-	-	298	-	338	-	-	-
Total						18	16	

Source: NOAA/NMFS/GARFO/APSD, April 3, 2020. Data are from the GARFO permit and moratorium databases.

1. Permits in Confirmation of Permit History (CPH) are defined as permits that were in CPH for the entire fishing year. This column contains IFQ only permits because no combination (combo) IFQ permits have been in CPH for an entire year.
2. Canceled permits include any relinquishments, permit/IFQ merges (mostly in 2011), and qualification denials (from 2009 – 2010). From 2009 to 2019, 34 IFQ only permits were either canceled or converted to NGOM resulting in the current number of IFQ only permits (298).
3. Number of permits in CPH for the entire fishing year that did not have any IFQ allocation for the year

Table 17 - Number of Northern Gulf of Maine (NGOM) and Incidental General Category scallop permits issued and in CPH by year from 2008 to 2019. Data are from the GARFO permit and moratorium databases.

Year	Active NGOM	Active Incidental	CPH – NGOM and Incidental	Total ¹
2008	95	256	-	351
2009	126	300	7	433
2010	119	284	16	419
2011	108	277	34	419
2012	97	274	44	415
2013	100	262	49	411
2014	101	253	62	416
2015	98	252	72	422
2016	99	246	72	417
2017	101	241	79	421
2018	109	238	76	423
2019	110	236	79	425
2020	-	-	-	427

Source: NOAA/NMFS/GARFO/APSD, April 3, 2020. Data are from GARFO permit and moratorium databases.

1. The total number of permits does not reflect the number of permits that were cancelled at the start of each year due to non-renewal or relinquishment.

Table 18 – Limited Access Scallop permit categories, description, and number of permits issues in 2019.

Permit Category	Description	Permits issued
LA 2	Full-Time	250
LA 3	Part-Time	0
LA 4	Occasional	0
LA 5	Full-Time Small Dredge	54
LA 6	Part-Time Small Dredge	32
LA 7	Full-Time - Authorized to use trawl net	11
LA 8	Part-Time - Authorized to use trawl net	0
LA 9	Occasional - Authorized to use trawl net	0
Source: https://www.fisheries.noaa.gov/permit/atlantic-sea-scallop Accessed on 2/12/2020.		

5.6.3.1 Permit Movement Between LAGC Categories

Currently, LAGC B (NGOM) and LAGC C (Incidental) permit holders may move between these two permit categories annually, or mid-season when a permit is transferred to a new owner. LAGC A (IFQ) permit holders can make a one-time transition from IFQ to NGOM/Incidental.

As of May 21, 2019, there were a total of 425 NGOM/Incidental rights (LAGC Category B/C). At the end of the 2018 fishing year (March 31, 2019), there were 107 Category B (NGOM) and 237 Category C (Incidental) active permits (not in CPH). Summary of permit movement from 2009-2019 (11 years) is shown in Table 19.

- 17 permits converted from IFQ (A) to NGOM/Inc (B/C)
- 13 permits moved from Incidental to NGOM
- 4 moved from NGOM to incidental

The number of LAGC IFQ (A) permits that have zero allocation are shown in Table 20.

Table 19 – Summary of LAGC conversions and switches between FY 2008 and FY 2019.

Fishing Year	Conversion from A to B/C	From B to C Within a year	From C to B Within a year	From B to C Across Years	From C to B Across Years
2008	-	-	-	-	-
2009	0	0	0	0	3
2010	0	0	0	0	1
2011	1	0	0	0	0
2012	1	0	0	2	2
2013	2	0	0	0	0
2014	6	1	1	1	0
2015	0	0	2	0	0
2016	0	0	0	0	0
2017	3	0	0	0	1
2018	3	0	0	0	1
2019	1	0	1	0	1

Table 20 - Number of Scallop LAGC Cat. A (IFQ) MRIs with zero base allocation.

FY	MRI
2011	7
2012	5
2013	28
2014	46
2015	49
2016	66
2017	88
2018	87
2019	94

5.6.4 Trends in Northern Gulf of Maine Management Area

The following section includes information on trends in fishing activity, landings, the Northern Gulf of Maine Management Area.

5.6.4.1 Trends in Fishing Activity

Activity in the directed scallop fishery within the NGOM management area peaked in 2017, when over 100 vessels (LA and LAGC) were active in the area (Table 21). Participation by LAGC vessels in the NGOM management area has increased over time, peaking in 2019. Over this time period, the number of LAGC NGOM vessels has steadily increased while the number of LAGC IFQ vessels has remained fairly stable (Figure 18).

Table 21 - Number of active LA and LAGC (Cat A & B) in Northern Gulf of Maine Management Area by scallop fishing year.

Fishing Year	Total Vessels	LA Vessels	LAGC Vessels
2011	10	0	10
2012	10	0	10
2013	18	0	18
2014	25	0	25
2015	29	0	29
2016	51	13	38
2017	105	67	38
2018	40	0	40
2019	41	0	41

Figure 18 - Number of active LAGC A (IFQ) and LAGC B (NGOM) in with declared trips Northern Gulf of Maine management area by fishing year. (Source: GARFO APSD)

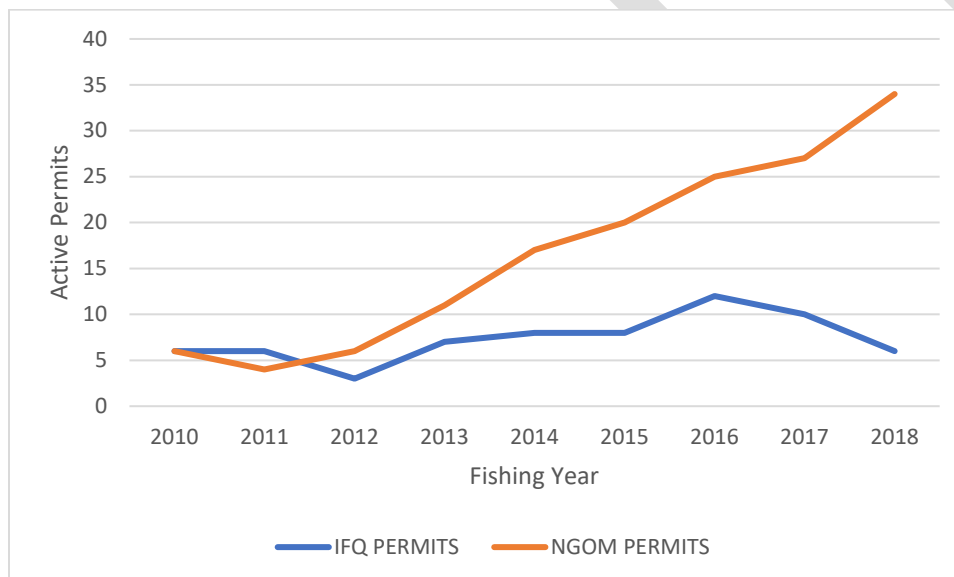


Table 22 - Number of unique LAGC permits/vessels that have participated in the NGOM.

	Unique Permits/Vessels
LAGC NGOM	62
LAGC IFQ	25
Total LAGC	84
Note: The total number of permits is greater than the sum of the unique IFQ and NGOM permits because IFQ permits can opt to permanently transfer to the NGOM category.	
Source: NOAA/GARFO/APSD January 17, 2020. Compiled using VMS declarations.	

Figure 19 - Total number of years active in the NGOM since 2010 by LAGC permit type (Cat A & Cat B).

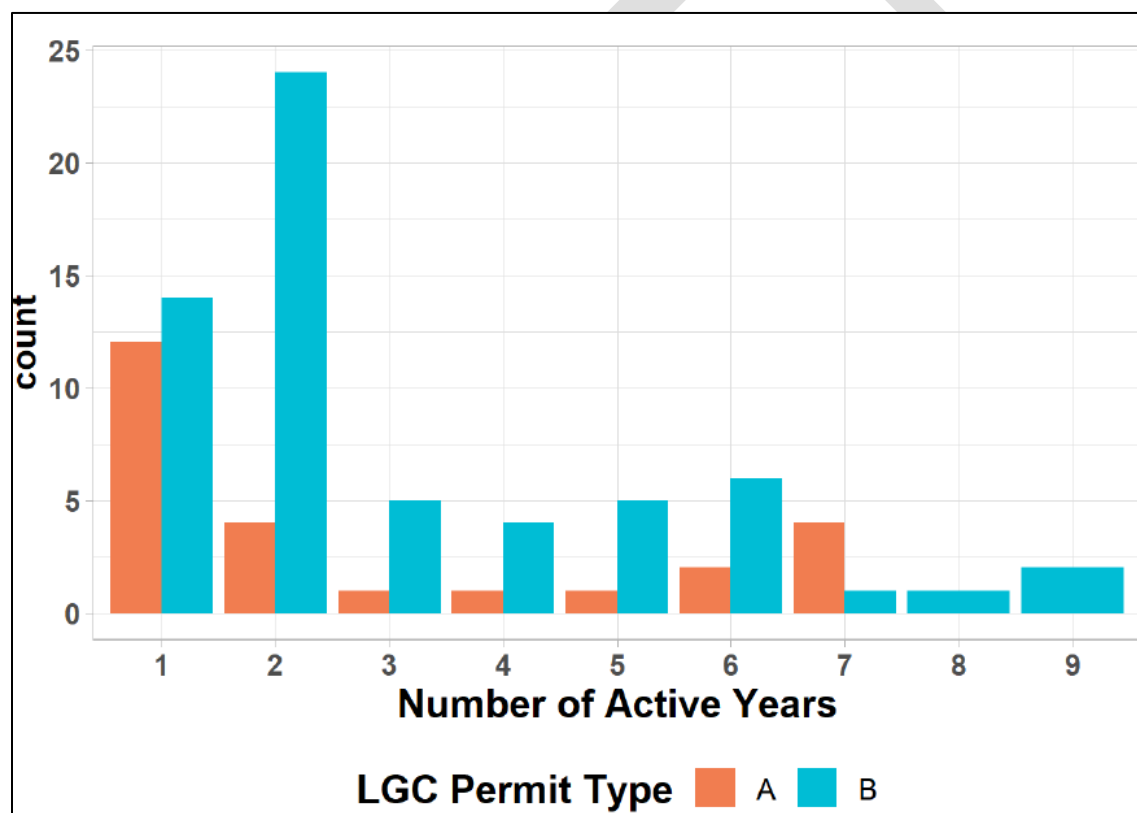


Table 23 - Trips per vessel, total trips, and average catch per trip for LAGC (Cat A & B) from 2010 - 2019.

Fishing year	Mean trips per vessel	Median trips	Max Trips per vessel	Active LAGC Vessels	Total Trips	Average Catch per trip (pounds)
2010	7	6	15	11	79	72
2011	10	4	37	10	95	62
2012	6	1	27	10	60	79
2013	26	22	101	18	477	102
2014	18	10	80	25	457	141
2015	23	16	87	29	668	118
2016	15	14	43	38	559	171
2017	7	7	18	38	278	197
2018	18	18	40	40	737	186
2019	16	16	24	41	650	191
Source: NOAA/GARFO/APSD July 23, 2019						

Figure 20 - Boxplot of total trip per active vessel in the NGOM by fishing year.

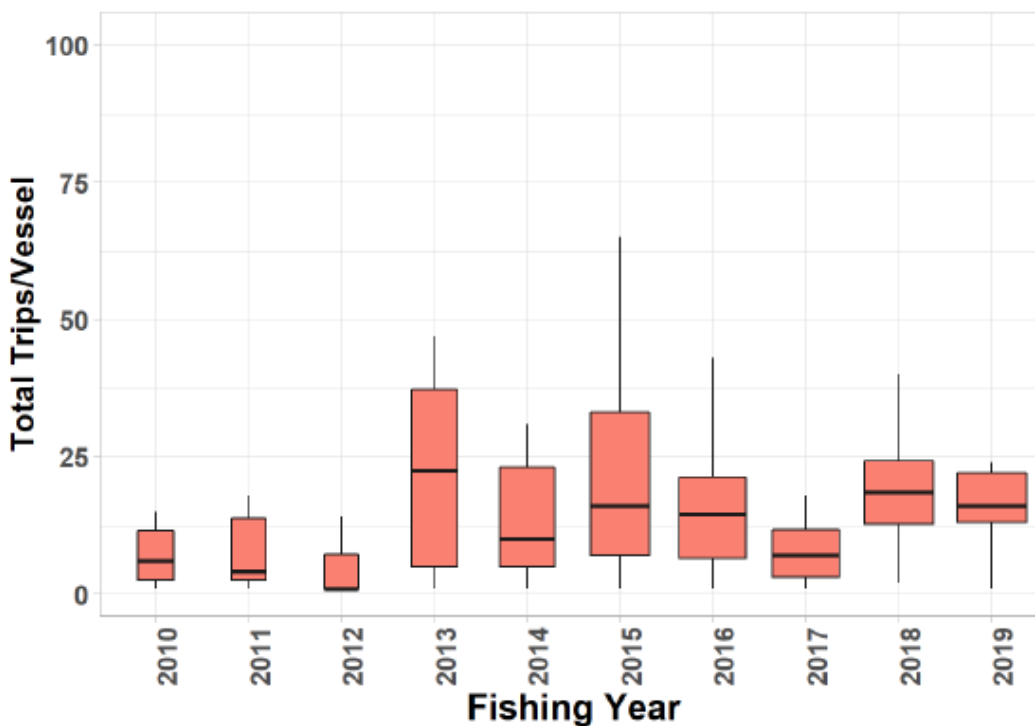


Figure 21 - Range of trips per week, per vessel for fishing years 2010-2019 in the Northern Gulf of Maine. Weeks included were only those when the Northern Gulf of Maine was open.

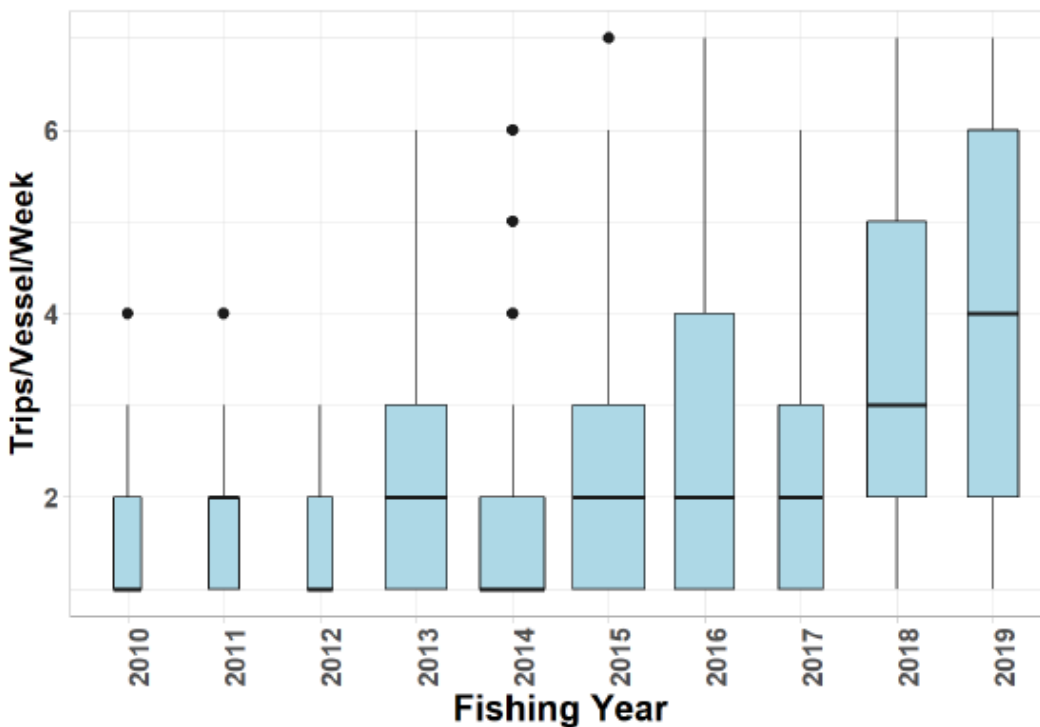


Table 24 – Number of LAGC vessels with multiple sailings per day in the NGOM Management Area, and the total number of times this occurred.

Fishing year	Vessels with more than 1 trip/day	Total number of occurrences
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	3	3
2015	1	1
2016	2	2
2017	4	4
2018	7	9
2019	6	13
Source: NOAA/GARFO/APSD		

Table 25 - 2017 Participation in the NGOM fishery by permit type.

Permit Category	Description	Active in NGOM in FY2017
LA 2	Full-Time	49
LA 5	Full-Time Small Dredge	15
LA 6	Part-Time Small Dredge	3
LAGC A	Individual Fishing Quota	10
LAGC B	Northern Gulf of Maine	28
Source: NOAA GARFO APSD		

5.6.4.1.1 Trends in LAGC Permit Holdings Fishing Activity in NGOM by Home Port State

Table 26 shows the number of Limited Access General Category B/C permits by vessels homeport state. This information suggests that vessels are homeported across the range of the scallop resource (North Carolina to Maine) would be able to access scallops in federal waters in the NGOM. The majority of LAGC activity in the NGOM management area is by vessels home ported in Maine, Massachusetts, and New Hampshire (Table 27). Participation by vessels home-ported in Maine in the NGOM fishery has increased substantially from 2011 through 2019 (<3 → 27). Participation by vessels home ported in New Hampshire has remained fairly constant (<3 – 6) over a 9 year period, while the number of vessels home ported in Massachusetts increased over this time from a low of 3 in 2012 to a high of 13 in 2019.

Table 26 - Number of LAGC B/C permits issued in 2019 by homeport state.

State	LAGC NGOM	LAGC Incidental	Total
MA	46	85	131
NJ	2	60	62
ME	42	2	44
NC	5	29	34
RI	2	30	32
NY		12	12
NH	8	2	10
PA		5	5
CT		4	4
VA		3	3
MD		1	1
Total	105	233	338

Table 27 - Unique LAGC permits by home port state and fishing year for the Northern Gulf of Maine.

Fishing Year	ME	NH	MA	NJ
2011	<3	4	4	
2012	4	<3	3	
2013	7	5	6	
2014	10	6	8	<3
2015	11	6	11	
2016	18	6	12	<3
2017	21	3	12	<3
2018	25	3	12	
2019	27	4	13	
Source: NOAA/GARFO/APSD January 17, 2020				

Table 28 - Number of LAGC trips by home port state and fishing year for the Northern Gulf of Maine.

Fishing Year	ME	NH	MA	NJ
2011	5	31	59	
2012	30	22	7	
2013	155	184	103	
2014	109	206	132	<3
2015	95	244	291	
2016	244	77	192	<3
2017	162	21	85	3
2018	527	28	179	
2019	495	60	171	
Source: NOAA/GARFO/APSD January 17, 2020				

5.6.4.2 Trends in Effort and Landings from NGOM Management Area

5.6.4.2.1 Initial Calculation of NGOM TAC in Amendment 11 and Framework 19

In Framework 19 the Council reviewed the NGOM alternative approved in Amendment 11. The intent of the NGOM TAC was that it be for fishing in federal waters only and landings by limited access (LA) vessels would not count toward the NGOM TAC during the fishing year. The Council approved a NGOM TAC of 70,000 pounds, which is equivalent to average landings from general category vessels from VTR reports in federal waters only.

The Council directed the PDT to develop an estimate for the hard-TAC based on the federal portion of the resource within the NGOM management area. VTR landings information is not very reliable for specific location information but can provide a general idea of fishing location over a longer period and for many vessels. At that time, the PDT reviewed total general category landings in the NGOM from VTR data for calendar year 2000-2006 (Table 29). Landings from state waters were removed, as well as landings from any EFH or Multispecies closed areas in the region since those areas will not be available soon. In addition, all trips over 1,200 pounds per trip were eliminated from the database. General category vessels are restricted to 400 pounds per trip, but 1,200 pounds was used as a cut off for analysis in Amendment 11 to be more inclusive because issues were raised about the data (i.e. multiple trips reported together). Most trips were below 1,200 pounds, but several trips in 2001 and 2002 were above that amount. The average landings from within the NGOM for this period were about 129,000 pounds. After landings from state waters and areas now closed to fishing are removed, the average landings were reduced to over 69,000 pounds. See Framework Adjustment 19 for further details.

Table 29 - Summary of landings from within the NGOM area (VTR data from 2000-2006)

Calendar Year	VTR landings from within the NGOM area	VTR landings from within state waters in the NGOM	VTR landings from within federal waters only in the NGOM area
2000	70,006	39,878	30,127
2001	144,224	84,842	59,382
2002	273,790	133,613	140,177
2003	174,370	89,882	84,488
2004	47,403	22,832	24,571
2005	76,934	17,568	59,366
2006	116,995	29,788	87,207
AVG	129,103	59,772	69,331

Table 30 describes the estimated landings from directed scallop fishing in the Northern Gulf of Maine Management Area. This number is estimated because prior to FY 2018, LA vessels could fish inside and outside of the NGOM management unit on a DAS trip. Figure 24 provide a more detailed breakdown of landings by permit category and includes the number of days the management area was open in each fishing year. Landings in the NGOM have generally increased since the area's inception, peaking in 2017 when both LA and LAGC vessels fished on an abundance of scallops on Stellwagen Bank.

Table 30 - Estimated Total Scallop Landings from the NGOM management area by LA and LAGC vessels from 2010 - 2019.

Fishing Year	Estimated Landings (lbs)
2010	8,639
2011	6,908
2012	7,440
2013	55,450
2014	57,842
2015	72,546
2016	381,600
2017	1,625,457
2018	133,882
2019	138,246

Table 31 - Comparison of LAGC landings vs. LAGC NGOM TAC, 2008 - 2019. Values in pounds.

FY	LAGC Landings	TAC	Percent of TAC used
2008	9,936	70,000	14%
2009	15,534	70,000	22%
2010	8,639	70,000	12%
2011	6,908	70,000	10%
2012	7,440	70,000	11%
2013	55,450	70,000	79%
2014	57,842	70,000	83%
2015	72,546	70,000	104%
2016	89,083	67,454	132%
2017	47,437	73,371	65%
2018	138,718	135,000	103%
2019	138,246*	137,500	101%

Source: Final Year End Landings Reports, Final Rules.

*Subject to change with final year end 2019 landings report.

Figure 22 - Sea Scallop landings in Maine from state and federal waters from 1950 - 2019. Accessed on 3/20/2020 at <https://www.maine.gov/dmr/commercial-fishing/landings/documents/scallop.graph.pdf>.

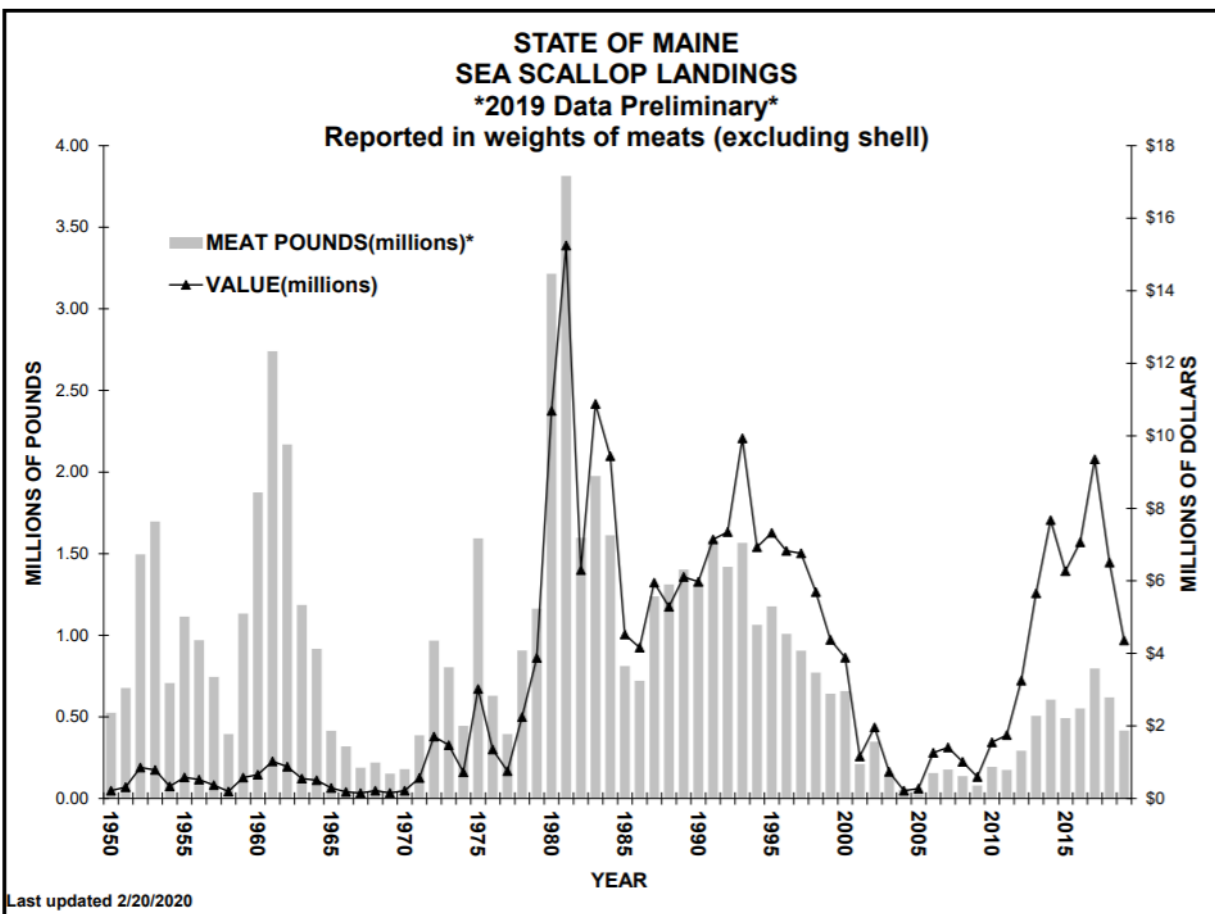


Table 32 - Total landings from NGOM management area as a proportion of total fishery landings.

Fishing Year	Total NGOM Landings	Total Fishery Landings	% of Total Landings
2011	6,908	58,461,465	0.01%
2012	7,440	57,098,684	0.01%
2013	55,450	39,807,589	0.14%
2014	57,842	32,020,980	0.18%
2015	72,546	36,974,195	0.20%
2016	381,600	42,423,177	0.90%
2017	1,625,457	51,325,269	3.17%
2018	133,882	58,100,342	0.23%
2019	138,246	TBD	TBD

Figure 23 - Comparison of landings from NGOM management area by LAGC A (IFQ) and LAGC B (NGOM) vessels.

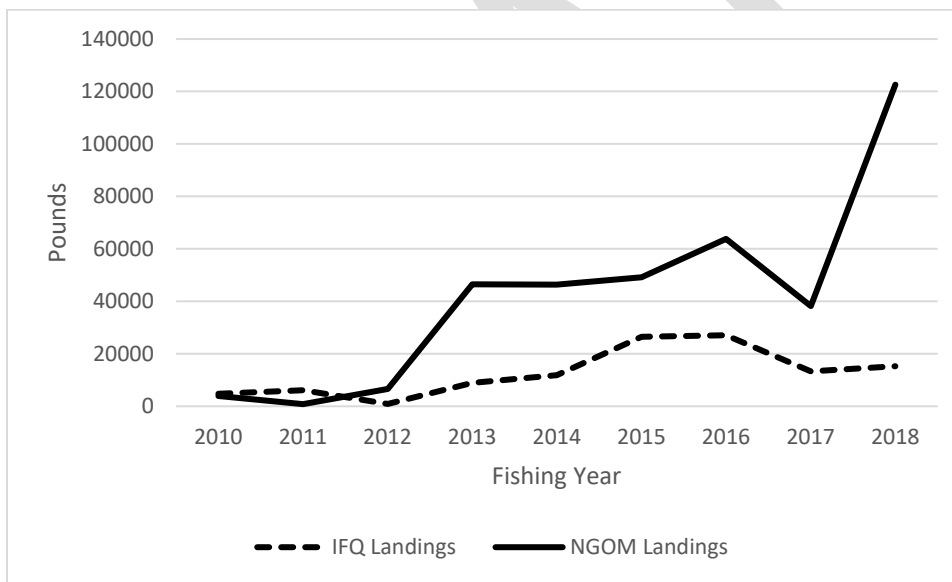
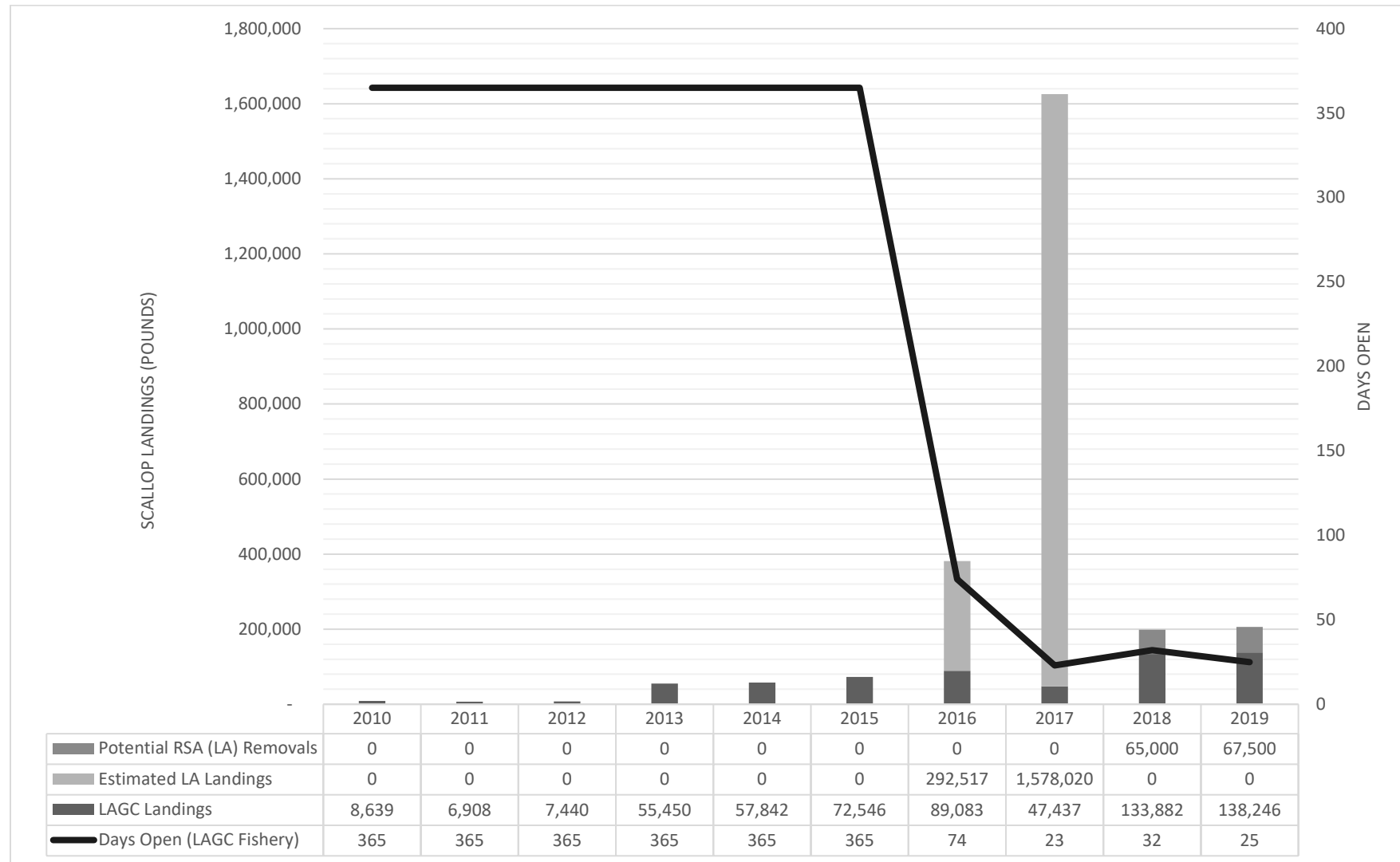


Figure 24 - Landings in NGOM Management area by LAGC and LA vessels from FY 2010 – FY 2019, including potential RSA removals in 2018 & 2019.



5.6.4.2.2 Trends in NGOM Landings by State/Port

Directed scallop activity in the NGOM has fluctuated with the size and availability of the resource. Since 2010, the number of landing ports of vessels on directed scallop trips in federal waters in the NGOM management area has increased (Table 33). Prior to the derby-style fishery that ensued in FY 2016 – FY 2019 (Figure 24), vessels homeported in Maine, Massachusetts, and New Hampshire worked in the area for the entire year (Figure 25). Vessels from Massachusetts and New Hampshire fished the majority of their trips in February, March, and April, which vessels homeported in Maine fished the majority of their trips in April and May.

Table 33 - Number of ports with landings from directed LAGC trip in the NGOM management area, by year.

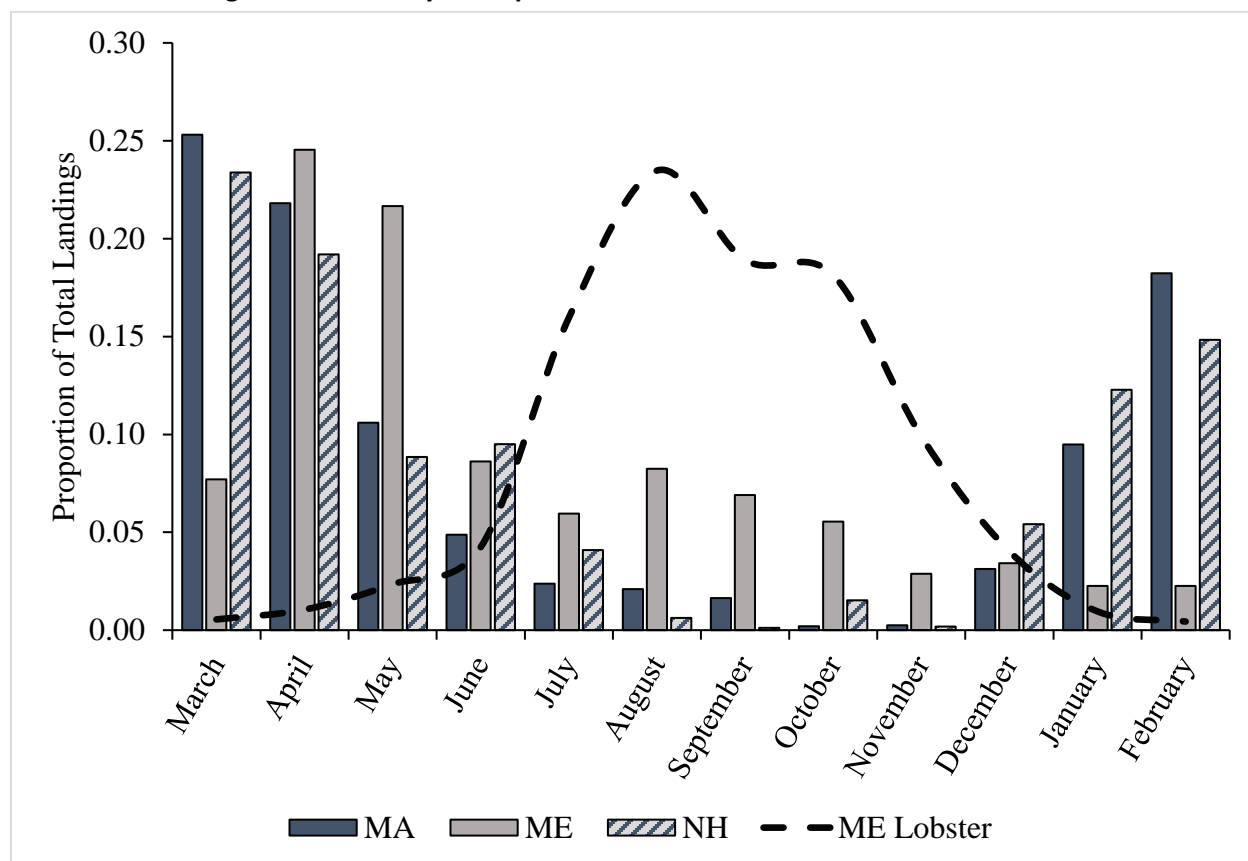
FY	Number of Landing Ports
2010	7
2011	7
2012	8
2013	12
2014	16
2015	18
2016	16
2017	19
2018	16
2019	15
Source: VTR and VMS declaration records.	

Table 34 - List of landing ports from VTRs on NGOM declared trips by LAGC vessels from 2010 - 2019 in Maine, Massachusetts, and New Hampshire.

MA	ME	NH
BEVERLY	ADDISON	HAMPTON
BOSTON	BASS HARBOR	NEW CASTLE
EASTHAM	BUCKS HARBOR	PORTSMOUTH
GLOUCESTER	CUTLER	RYE
HYANNIS	FREEPORT	SEABROOK
MARSHFIELD	FRIENDSHIP	
NEW BEDFORD	HARPSWELL	
NEWBURY	JONESPORT	
NEWBURYPORT	KITTERY	
PROVINCETOWN	LUBEC	
ROCKPORT	PORT CLYDE	
SALISBURY	PORTLAND	
SANDWICH	ROCKLAND	
SCITUATE	SORRENTO	

	SOUTHWEST HARBOR	
	SPRUCEHEAD	
	TENANTS HARBOR	
	YARMOUTH	

Figure 25 - The monthly proportion of cumulative annual NGOM scallop landings (FY2010-FY2016) vs. monthly proportion of cumulative annual Maine lobster landings (FY2010-FY2015) (ME DMR). NGOM landings are ordered by homeported state of active vessels.



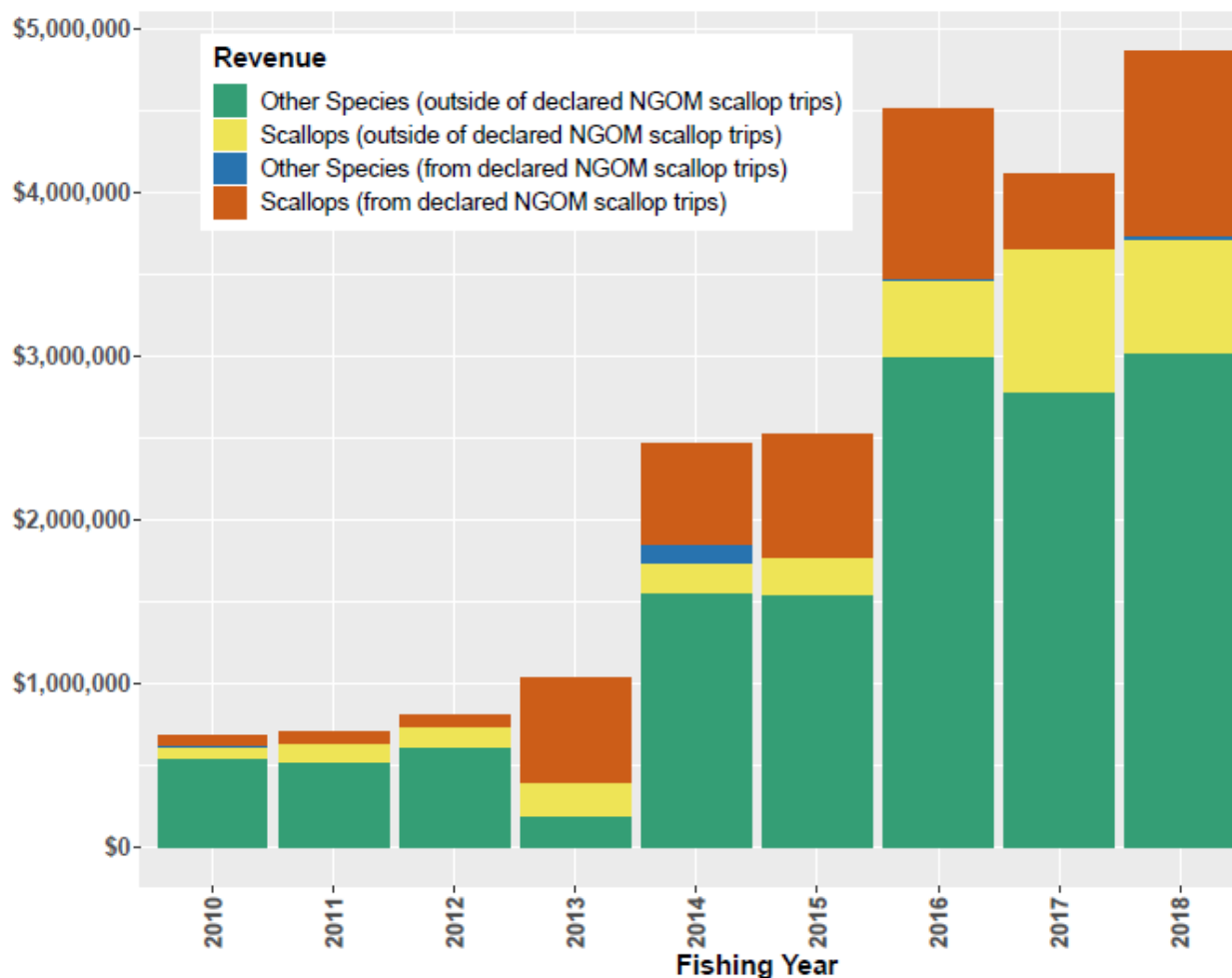
5.6.4.3 Trends in LAGC Category B Revenue from Northern Gulf of Maine

Scallop revenues for LAGC category B (NGOM) vessels have increased with landings over the last nine fishing years (Table 35). Over this time, the proportion of total revenue from active LAGC Category B vessels coming from the directed NGOM fishery increased from approximately 9% from 2010 – 2012 to around 25% from 2014 – 2018. In 2017, the NGOM season lasted 23 days, and the area was closed when NMFS predicted that the TAC was likely to be reached. The overall revenues from directed LAGC scallop fishing in the NGOM have increased due to full utilization of the LAGC TAC and larger allocations in the most recent fishing years. Another driver of higher revenues over this time is increased participation in the NGOM fishery. Since the revenues shown in Table 35 and Figure 26 include all vessels that were active in the NGOM in a given year, the total revenues will depend on the vessels and fisheries that the group of vessels participated in.

Table 35 - Scallop revenue from directed LAGC Cat. B trips in the NGOM, including percentage of total revenue from scallop fishing in NGOM from active LAGC B vessels.

	Scallop Revenue from NGOM scallop trips	Percentage of total revenue from NGOM scallops
2010	\$63,541	9.30%
2011	\$62,606	8.90%
2012	\$69,945	8.60%
2013	\$634,468	61.20%
2014	\$620,269	25.10%
2015	\$753,760	29.80%
2016	\$1,030,948	22.90%
2017	\$455,707	11.10%
2018	\$1,126,612	23.10%
Source: NOAA/GARFO/APSD July 23, 2019.		

Figure 26 – Total revenue from directed NGOM scallop trips compared to other species and scallops landed outside of federal waters in NGOM. Vessels included fished at least one NGOM trip.
(Source: NOAA/GARFO/APSD July 23, 2019)



5.6.5 Trends in LAGC IFQ Fishery

5.6.5.1 Annual Landings, Permit Activity, Landings Per Trip, Access Area Fishing

Though the allocation to the LAGC IFQ fleet has been variable since FY2012, fleetwide landings have generally followed the same pattern as allocations (Table 36). Landings by LAGC vessels have ranged from 86-99% of what was allocated between FY2012 and FY2016. As shown in Figure 27, pounds landed per LAGC trip have also remained relatively consistent over time period and consistent with the timing of management measures which changed the possession limit. For example, the transition of the possession limit from 400 lbs to 600 lbs was evident in the shift in mostly 400 lb. trips in FY2010 to mostly 600 lbs in FY2012. In recent years (i.e. FY2012 and on) the majority of LAGC trips reported landings in the 600 lb. range. While most trips have been in the 600 lb. range recently, the LAGC fishery has landed an array of trips at each level throughout the time series.

Table 36 – Annual LAGC IFQ allocation, landings, and the percent of allocated pounds that were landed from FY2012-FY2017.

FY	LAGC sub-ACL	LAGC landings	% of allocation landed
2012	3,095,450	2,755,566	89%
2013	2,227,142	2,212,446	99%
2014	2,202,859	2,039,714	93%
2015	2,700,663	2,324,577	86%
2016	4,067,529	3,518,787	87%
2017	2,261,943	2,047,065	91%
2018	2,805,500	2,355,596	84%

Figure 27 – The number of LAGC IFQ trips binned by pounds landed (bin size = 100 lbs) from FY2010-FY2018. NGOM and research trips are not included.

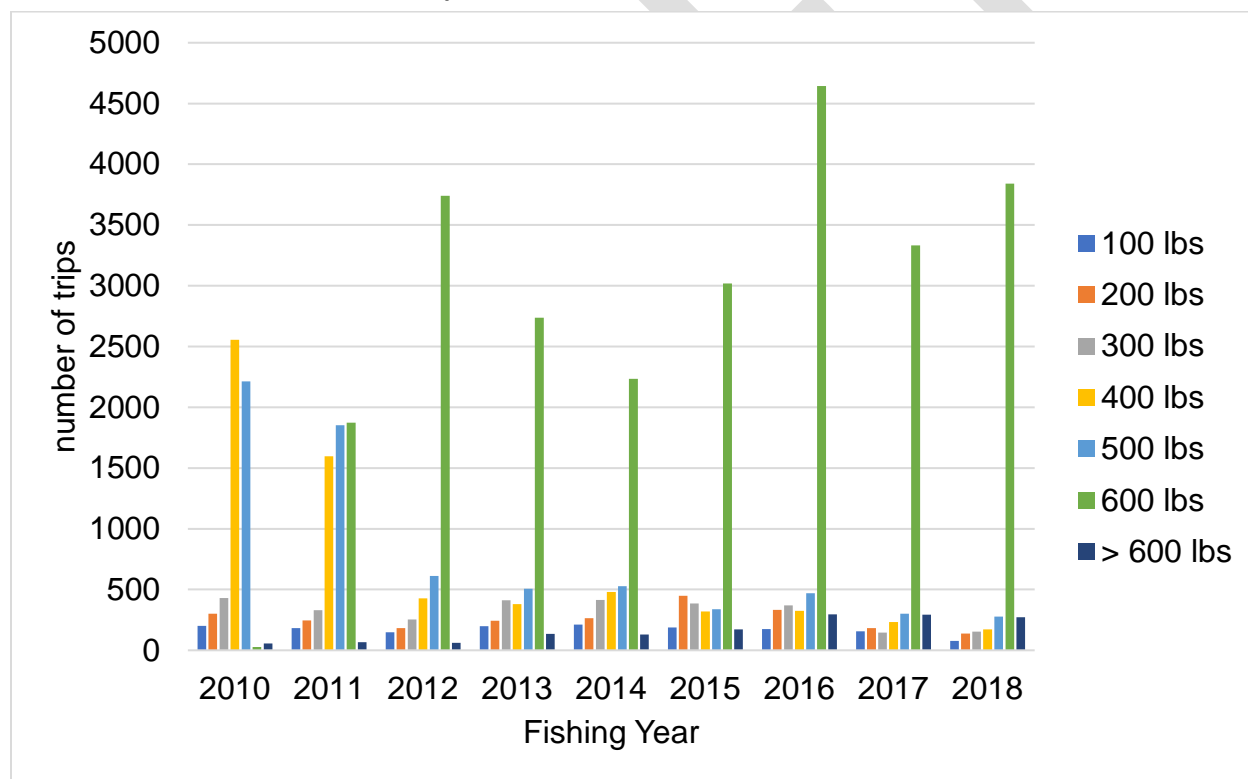


Figure 28 displays the proportion of trips landed per state by pounds landed (in 100 lb. increments); fishery data included were from FY2012 to FY2018 to be representative of the current possession limit. Pounds landed per trip appears to vary by state. For example, the two states with the most overall trips (i.e. NJ and MA) have mostly seen 600 lb. trips. States with fewer active vessels and trips landed have maintained a range of trip sizes, such as RI, where most trips have landed between 100 and 300 lbs. Overall, Figure 28 further suggests that LAGC vessels maintain a range of landings per trip, and that trends in trip sizes vary by state.

Figure 28 – The proportion of trips landed per state by trip size from FY2012-FY2018. Trips are binned by 100 lb. increments and do not include NGOM or research trips. States are listed in descending order from left (most trips landed) to right (least trips landed).

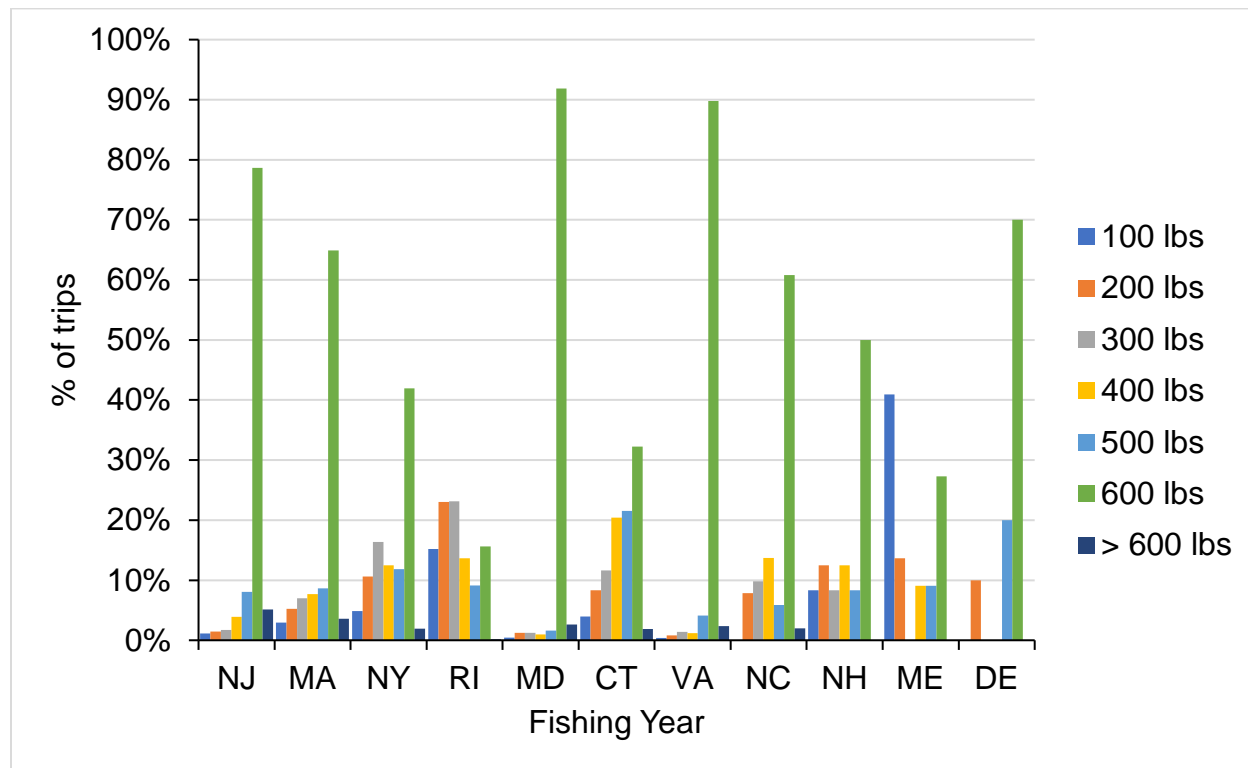


Table 37 summarizes the number of active LAGC IFQ-only permits and the total number of LAGC IFQ permits (excluding LA with IFQ vessels) from FY2010 to FY2018. The number of active vessels generally declined between FY2010 and FY2013, then increased at a similar rate from FY2014 to FY2016, then declined over FY2017 and FY2018.

Figure 29 is a histogram of the number LAGC vessels binned by the total number of trips taken in a year from FY2010 to FY2017. In terms of the number of trips per year, the level of participation by active LAGC vessels appears to vary in concert with the level of allocation (i.e. years with more pounds allocated generally see an increase in trips per vessel and vice versa). Most active vessels have generally taken ≤ 50 trips per year over the time series; however, participants appear to have become more active in in FY2015 and FY2016 compared to previous years.

Table 37 – The number of active LAGC IFQ-only permits and the total number of LAGC IFQ-only permits from FY2010 to FY2018.

FY	Active LAGC IFQ-only	Total LAGC IFQ-only
2010	150	330
2011	138	330
2012	123	318
2013	118	316
2014	131	316
2015	128	313
2016	141	314
2017	138	315
2018	132	314

Figure 29 – The number of LAGC vessels binned by number of trips taken from FY2010 to FY2017 (bin size = 10 trips; FY2017 data reported through May 30, 2017). Note that the y-axis starts at 4.

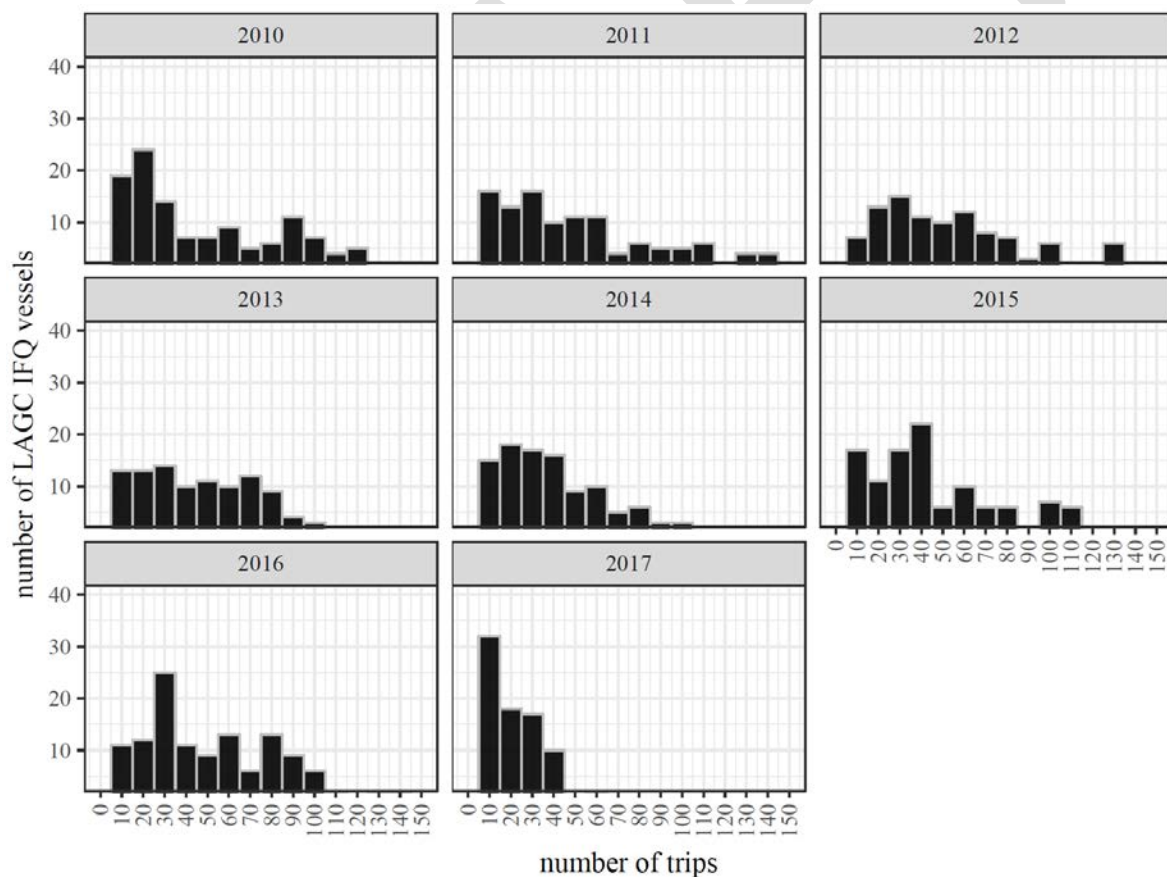


Figure 30 displays the average reported trip length (in days) for open and access area trips from FY2010 to FY2016. Table 40 shows the average hours spent fishing vs. transiting on observed open and access

area trips during the same period. Unsurprisingly, access area trips have generally been longer than open trips because access area fishing requires vessels to transit farther than when fishing open trips. In years that the quality of fishing in access areas was better than in open areas, the tradeoff of longer transit times to reach improved fishing conditions was worthwhile. For example, in FY2016, despite the NLS and MAAA being farther from port than available open bottom, vessels elected to fish there because the quality of fishing was much greater than in open bottom. Also, though average trip times were similar for open, NLS, and MAAA trips (Figure 30), the ratio of time spent fishing was notably less than the time spent transiting during trips to the NLS and MAAA compared to open trips, meaning vessels were willing to travel farther to fish in areas with high LPUE.

The data also shows examples of when this tradeoff of distance and time vs. quality of fishing was not worth it, such as the Nantucket Lightship in FY2014, where average trip times were the longest of all trip types and vessels spent over 3.5 times more time fishing than transiting. Increased overall trip times and more time spent fishing as a result of low LPUE removed the incentive to fish the NLS in FY2014 and left roughly 99% of allocated NLS trips unfished that year (Table 38).

These annual trends broadly suggest the LAGC fishery adapts to changing resource conditions, and that vessels will elect to fish in areas with favorable fishing conditions regardless of distance from port.

Table 38 – The proportion of LAGC IFQ trips taken each year by trip type from FY2010 to FY2016. The percent of access area (AA) trips shown are only for years where trips were allocated to that area.

FY	CAI AA Trips Taken	NLS AA Trips Taken	DMV AA Trips Taken	ET AA Trips Taken	HC AA Trips Taken	MA AA Trips Taken	Open Trips Taken
2010		7.5%	10.5%	0.9%			81.1%
2011	0.7%		1.0%	0.2%	9.0%		89.1%
2012		0.6%	0.1%		2.1%		97.2%
2013		1.2%			0.2%		98.6%
2014		0.1%	8.4%		0.0%		91.5%
2015						38.3%	61.7%
2016		6.5%				28.0%	65.5%

Table 39 – The percent of allocated access area trips taken by LAGC IFQ vessels from FY2010 to FY2016. Data used in the table also includes RSA compensation trips.

	CAI AA	NLS AA	DMV AA	ET AA	HC AA	MA AA
FY	Trips Taken	Trips Taken	Trips Taken	Trips Taken	Trips Taken	Trips Taken
2010		69.5%	96.6%	4.3%		
2011	5.5%		11.8%	0.8%	103.9%	
2012		12.8%	1.7%		14.2%	
2013		31.1%			2.8%	
2014		1.2%	79.3%			
2015						101.5%
2016		100.0%				100.2%

Figure 30. The average trip length (days) of LAGC IFQ vessels fishing open trips and trips in Nantucket Lightship AA, Delmarva AA, Elephant Trunk AA, Hudson Canyon AA, Mid-Atlantic AA, and Closed Area I AA from FY2010 to FY2016. The dashed red line shows the annual combined average trip length.

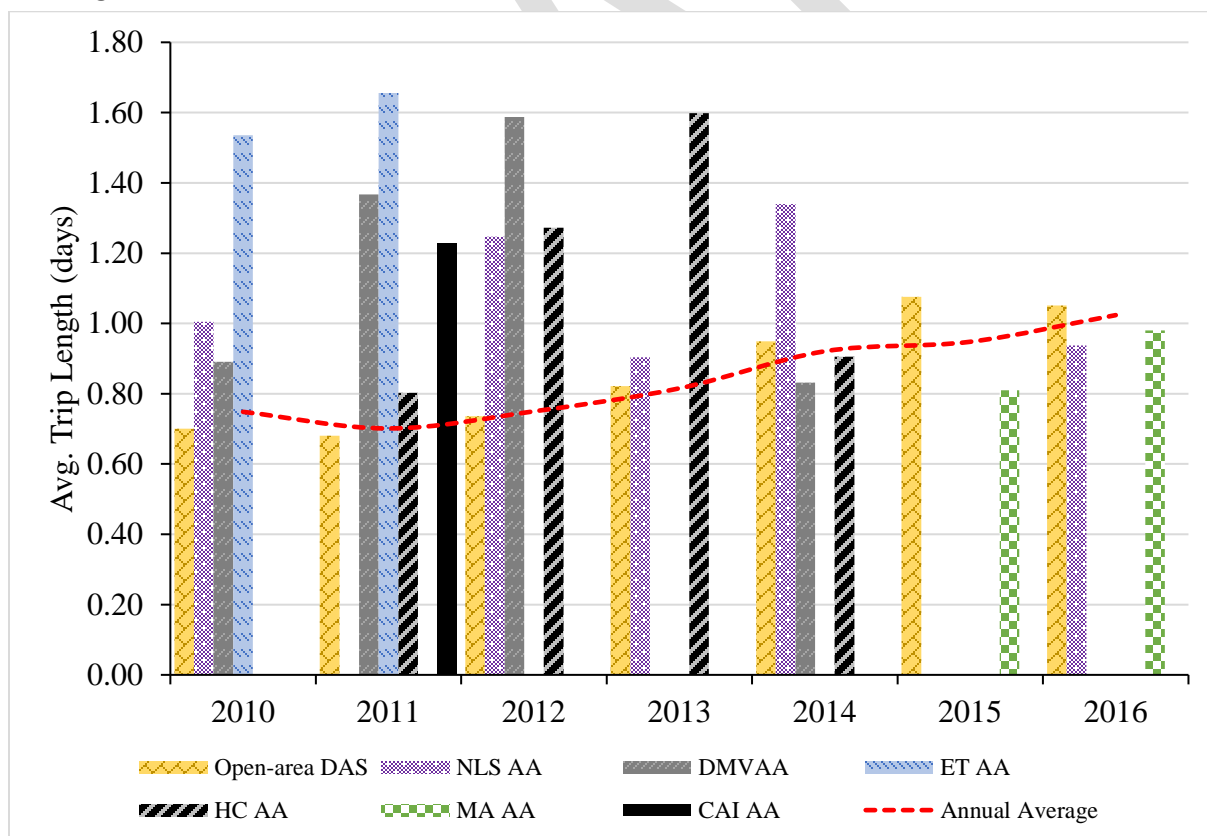


Table 40. Average hours spent fishing ('haul') and average hours of steam time to fishing grounds ('steam') on observed LAGC IFQ trips from FY2010 to FY2017. Averages are shown by trip type (open trips and access area trips). FY2017 data is reported through December 30, 2017.

FY	CAI		DMV		HC		MAAA		NL		Open	
	haul	steam	haul	steam	haul	steam	haul	steam	haul	steam	haul	steam
2010			5.6	7.2					6.5	10.0	6.9	3.0
2011	2.7	9.7	7.5	14.1	7.7	8.6					6.8	3.2
2012					7.2	5.2			4.4	12.6	8.0	3.2
2013									5.0	8.9	13.1	4.0
2014			7.7	6.3					29.8	8.3	15.6	3.9
2015							7.2	6.7			18.1	4.2
2016							10.5	7.6	3.0	9.5	15.9	5.1
2017							12.2	7.8	5.3	9.8	16.1	5.0

5.6.5.2 Seasonal Activity in LAGC IFQ Fishery

The number of active LAGC vessels has varied by month from FY2010 to FY2018, with the most vessels being active in the summer months (Figure 31). The number of vessels active per month but appears to be consistent from year to year (Figure 31). LAGC vessels fish year-round, although the majority of trips seem to be taken during the summer months (Figure 32). The trend in landings per month (Figure 33) is consistent with the seasonality of permit activity and trips per month; for example, scallop landings by LAGC IFQ vessels peak during the late spring and early summer months.

Figure 31. The number of active LAGC IFQ vessels by month in FY2010 to FY2018.

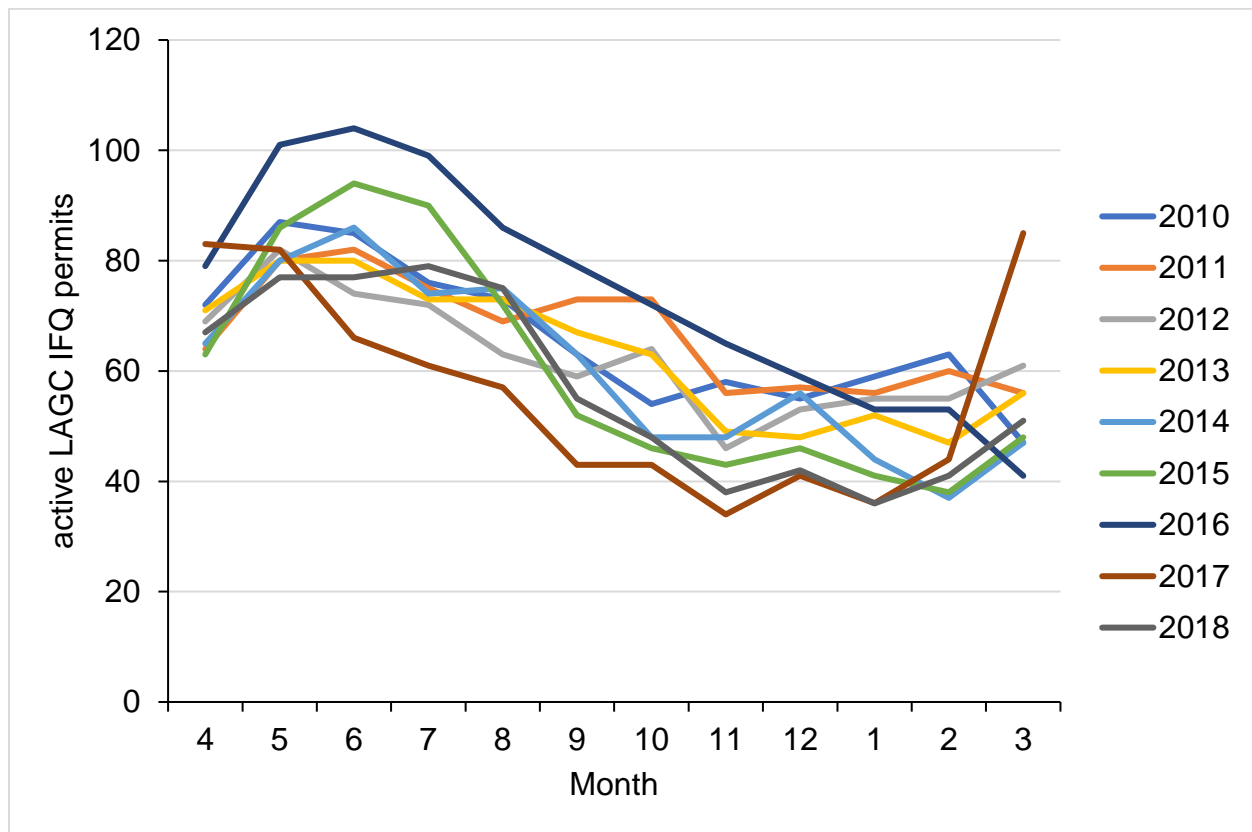


Figure 32. The number of LAGC IFQ trips taken by month from FY2010 to FY2018.

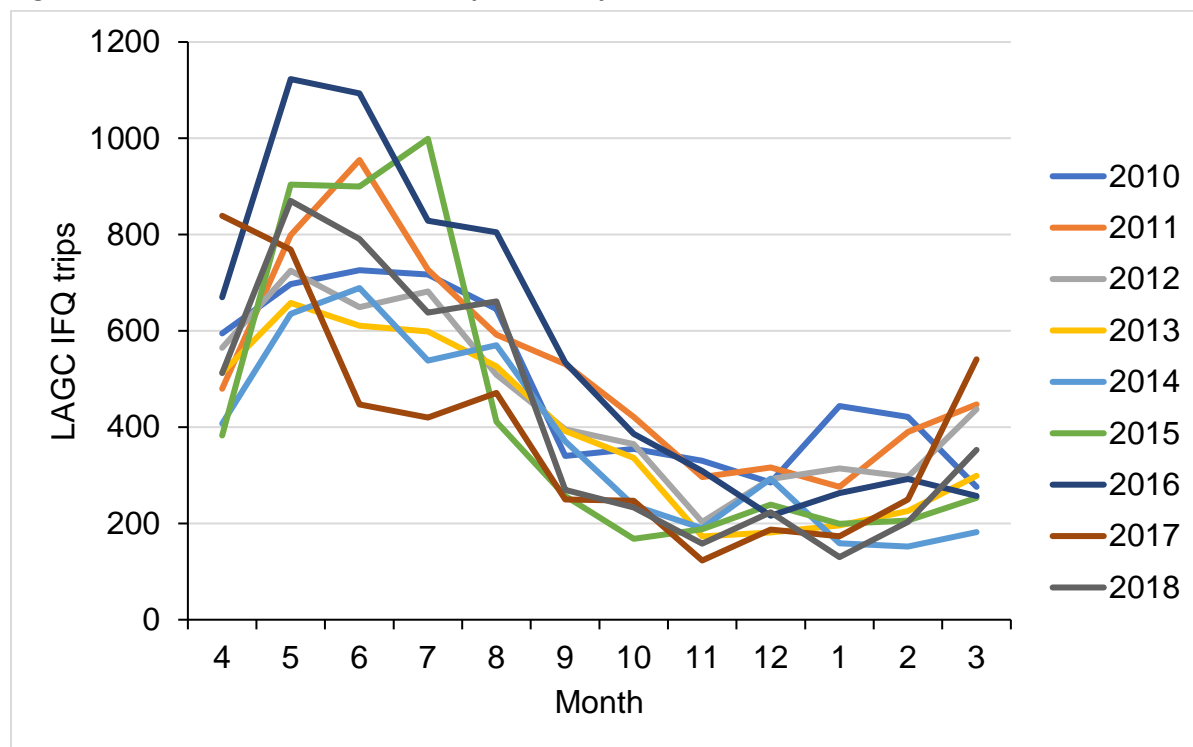
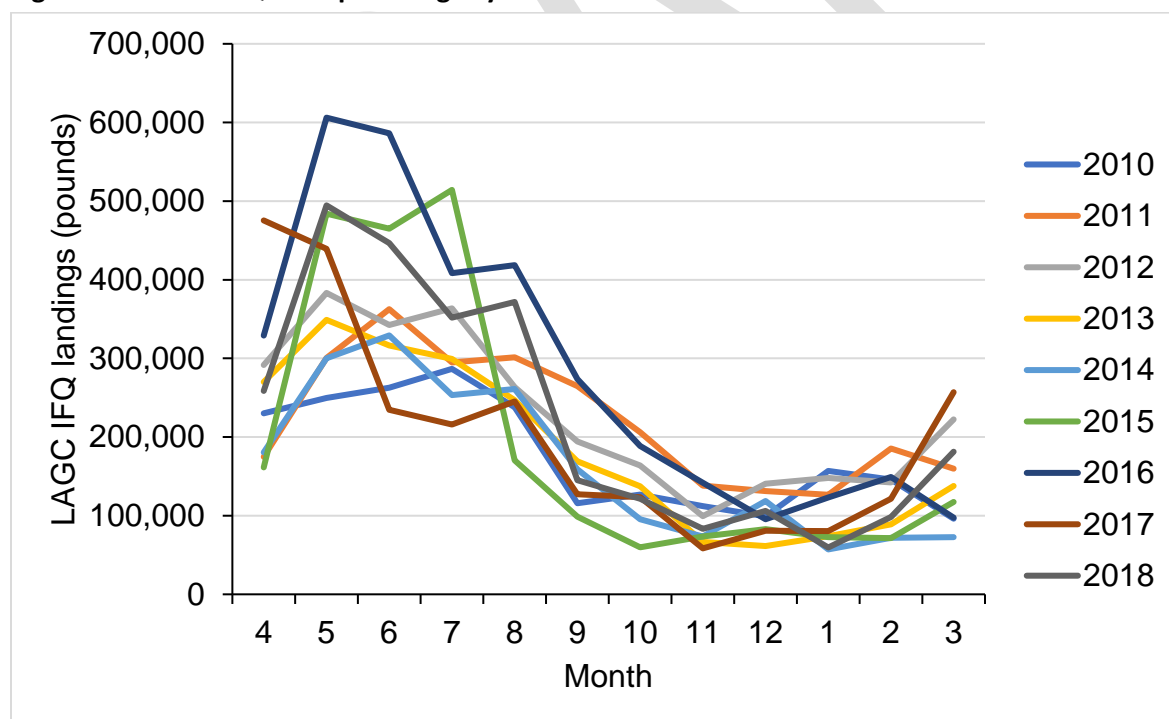


Figure 33 – LAGC IFQ scallop landings by month from FY2010 to FY2018.



5.6.5.3 LAGC IFQ Landings and Revenue From Other Fisheries

To better understand the reliance of LAGC IFQ vessels on the scallop fishery compared to other fisheries, annual landings and revenue of active vessels from FY2010 to FY2016 were categorized as follows:

1. Scallop landings/revenue from scallop trips
2. Non-scallop landings/revenue from non-scallop trips
3. Scallop landings/revenue from non-scallop trips
4. Non-scallop landings/revenue from scallop trips

Figure 34 shows categorized landings of active LAGC IFQ vessels from FY2010 to FY2018. The considerable difference in scallop landings from scallop trips and non-scallop landings from non-scallop trips is in part due to the difference in how scallops are landed compared to other species (i.e. shucked scallops are landed while many fish species are landed whole). Regardless, of this caveat, Figure 34 suggests that landings outside of the scallop fishery make up a substantial portion of total pounds landed by LAGC IFQ vessels in a given year. This figure also suggests that landings from other fisheries decreased over the FY2010 to FY2016 period but have shown an uptick in FY2017 and FY2018.

In FY2010, the value of the directed scallop fishery and value of other fisheries that LAGC IFQ vessels participate in were roughly the same (Figure 35). From FY2011 on, revenue from the scallop fishery generally increased, peaking in FY2016, while the revenue generated in other fisheries varied annually but remained relatively stable. In FY2016, revenue generated from the scallop fishery was almost three times greater than revenue from other fisheries that LAGC IFQ vessels participate in. Revenue from scallops landed on non-scallop trips has ranked third in value over the time series. Despite the substantially lower scallop landings compared to landings from other fisheries, Figure 35 suggests that revenue generated from the directed scallop fishery and from scallops landed in other fisheries makes up a much greater portion of overall revenue compared to other fisheries.

Figure 34. Categorized landings by active LAGC IFQ vessels from FY2010 to FY2018.

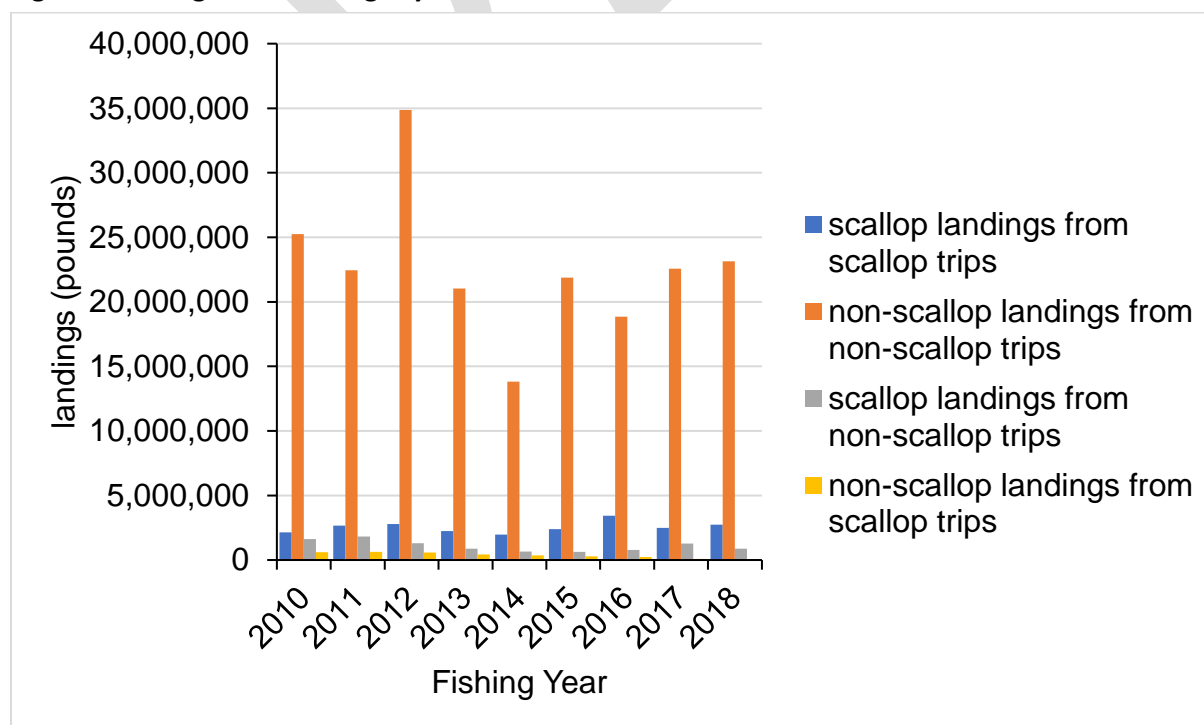
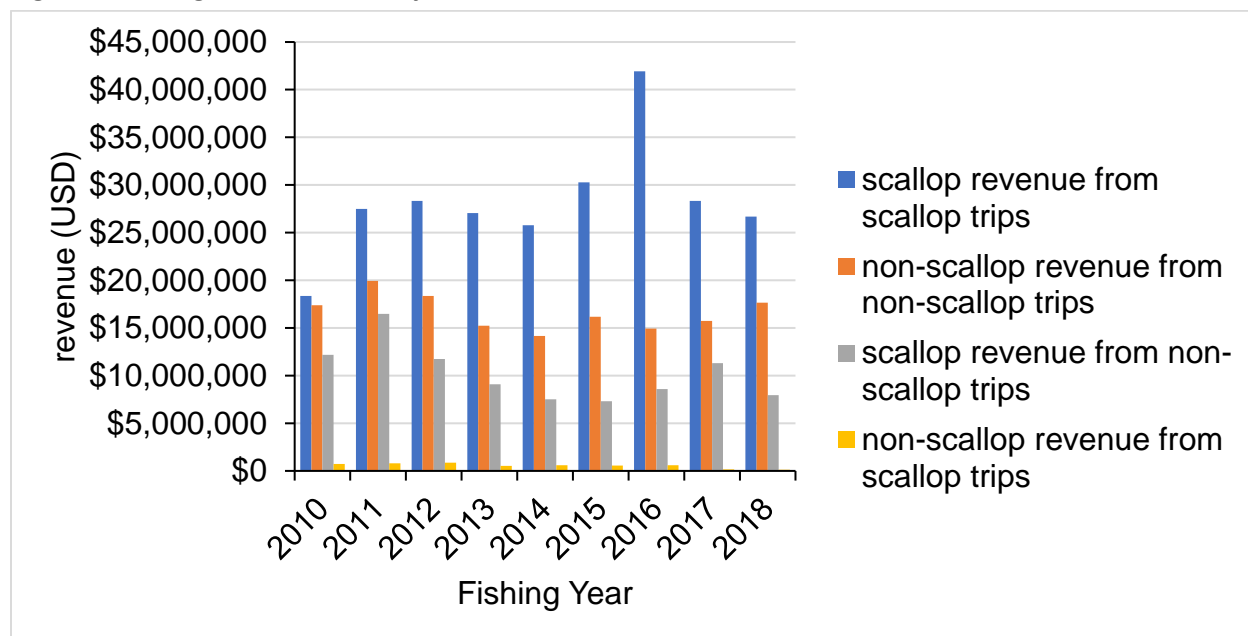


Figure 35. Categorized revenue by active LAGC IFQ vessels from FY2010 to FY2018.



5.6.5.4 LAGC IFQ Vessel Characteristics in Comparison to the LA Fleet

Characteristics of active LAGC IFQ vessels in terms of gross tons (GRT), horsepower (HP) and length are shown for FY2010-FY2016 in Table 41. Along with the number of active vessels in the fleet, the average HP, GRT, and vessel length of active LAGC IFQ vessels fluctuated annually from FY2010 to FY2016 (Table 41).

Table 41. Average GRT, HP, and length for active LAGC IFQ vessels from FY2010 to FY2016.

FY	GRT	HP	Length
2010	64	435	58
2011	62	437	56
2012	59	445	55
2013	57	437	55
2014	57	441	54
2015	54	436	53
2016	55	435	55

5.6.5.5 Distribution of Active Vessels, Landings, Quota Allocation by Vessel Size

One of the Council’s goals in establishing the LAGC IFQ program in Amendment 11 was to preserve the ability for vessels to participate in the fishery at different levels with the vision of a fleet “made up of relatively small vessels...”. In light of this goal, and to better understand trends in participation at different levels, the distribution of landings, quota, and revenues by active LAGC IFQ vessels is described in terms of vessel size groups (< 50 ft., 50 ft. to 74 ft., ≥ 75 ft.)

Figure 36 describes the number of active LAGC IFQ vessels by size group from FY2010 to FY2018. Over this time period, the number of active LAGC IFQ vessels < 50 ft. increased from 59 vessels in FY2010 to a high of 68 vessels in FY2016, then decreased in FY2017 and FY2018, being roughly equivalent to FY2010 numbers. The number of active vessels 50 ft. to 74 ft. decreased roughly over the time period considered, from 56 vessels in FY2010 to 42 vessels in FY2018 (25% decrease). The number of active vessels ≥ 75 ft. made up a relatively small portion of LAGC IFQ vessels through the time series, and numbers decreased roughly 45% from FY2010 to FY2018, from 16 vessels in FY2010 to 9 vessels in FY2018. The trend of increasing numbers of smaller vessels and decreasing numbers of larger vessels is consistent with the nature of the LAGC IFQ program, as possession limits on LAGC IFQ trips may incentivize participants to reduce trip costs (i.e. fuel) by operating a smaller vessel, with the goal of increasing net revenue.

The distribution of annual scallop landings by length group from FY2010 to FY2018 is shown in Figure 37. The distribution of landings by vessel size group were relatively consistent from FY2010 to FY2014; vessels < 50 ft. landed the majority of scallops (47-50%), vessels 50 ft. to 74 ft. landed the second most scallops (39-43%), and vessels ≥ 75 ft. landed the least (8-12%). The most pronounced shift in landings by vessel size group occurred between FY2014 and FY2015, where landings from vessels < 50 ft. decreased by 8%. From FY2015 to FY2017, vessels 50 ft. to 74 ft. landed the majority of scallops (47-50%) while vessels < 50 ft. landed between 41-42%. In FY2018, landings were roughly equivalent for vessels <50 ft and 50-74 ft (~46%) while larger vessels of 75 ft or greater landed an 8% minority.

Figure 36. The number of active LAGC IFQ vessels by length group.

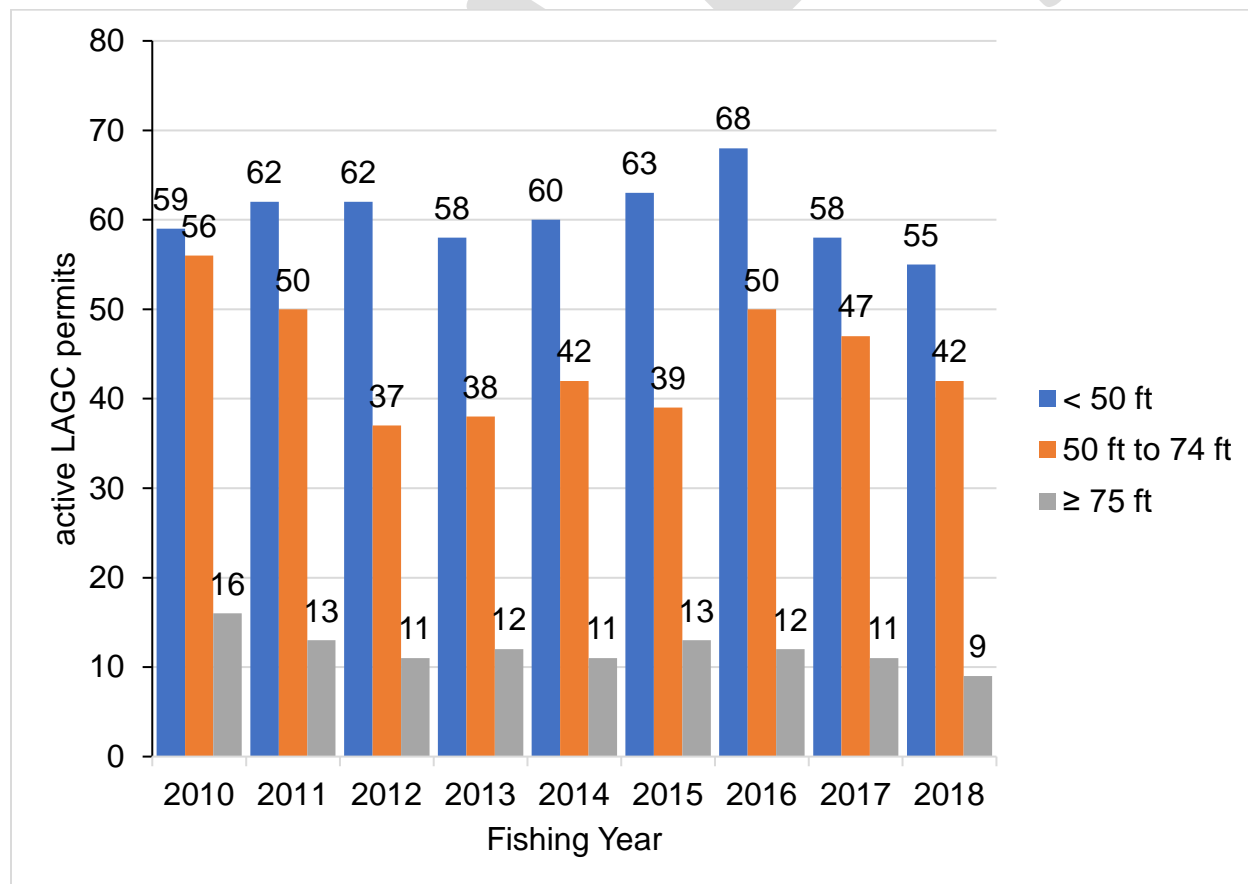
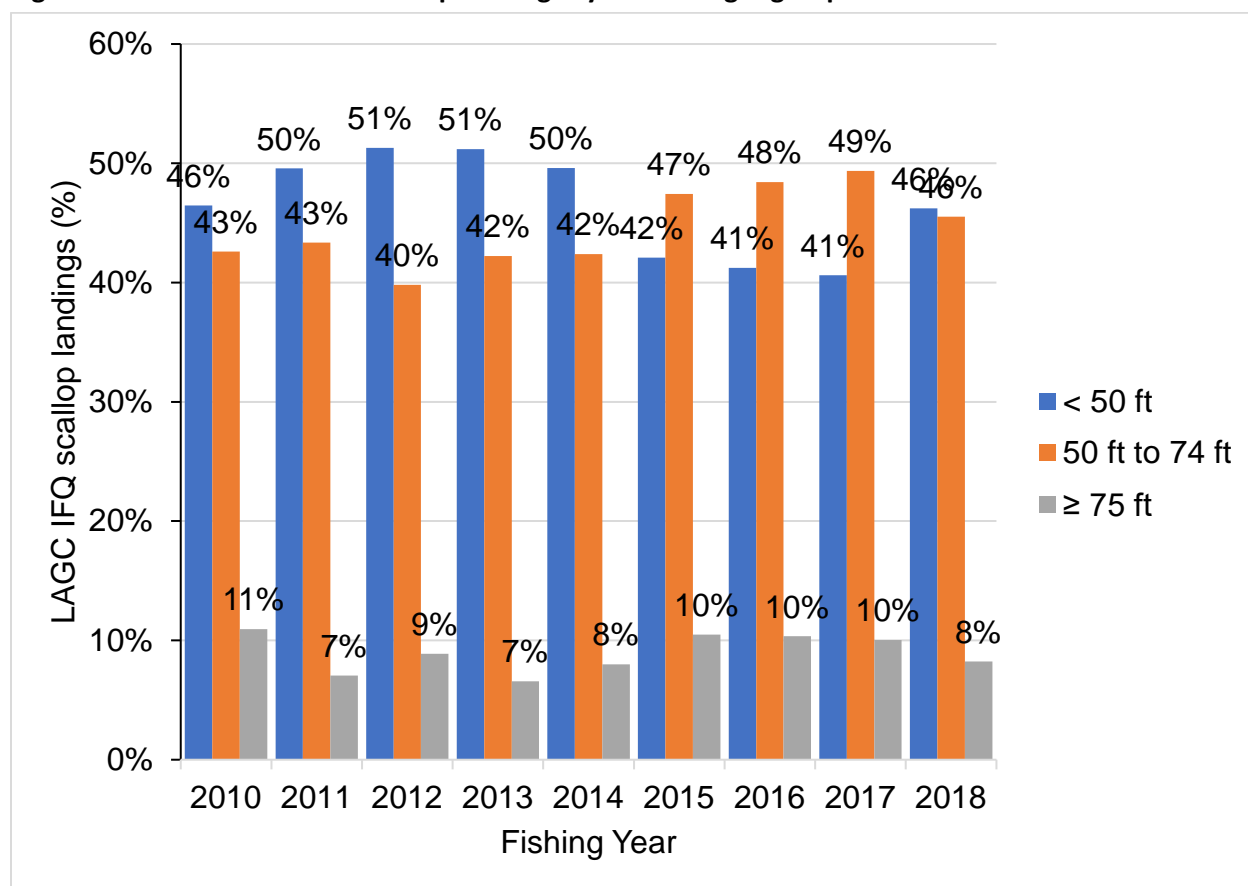
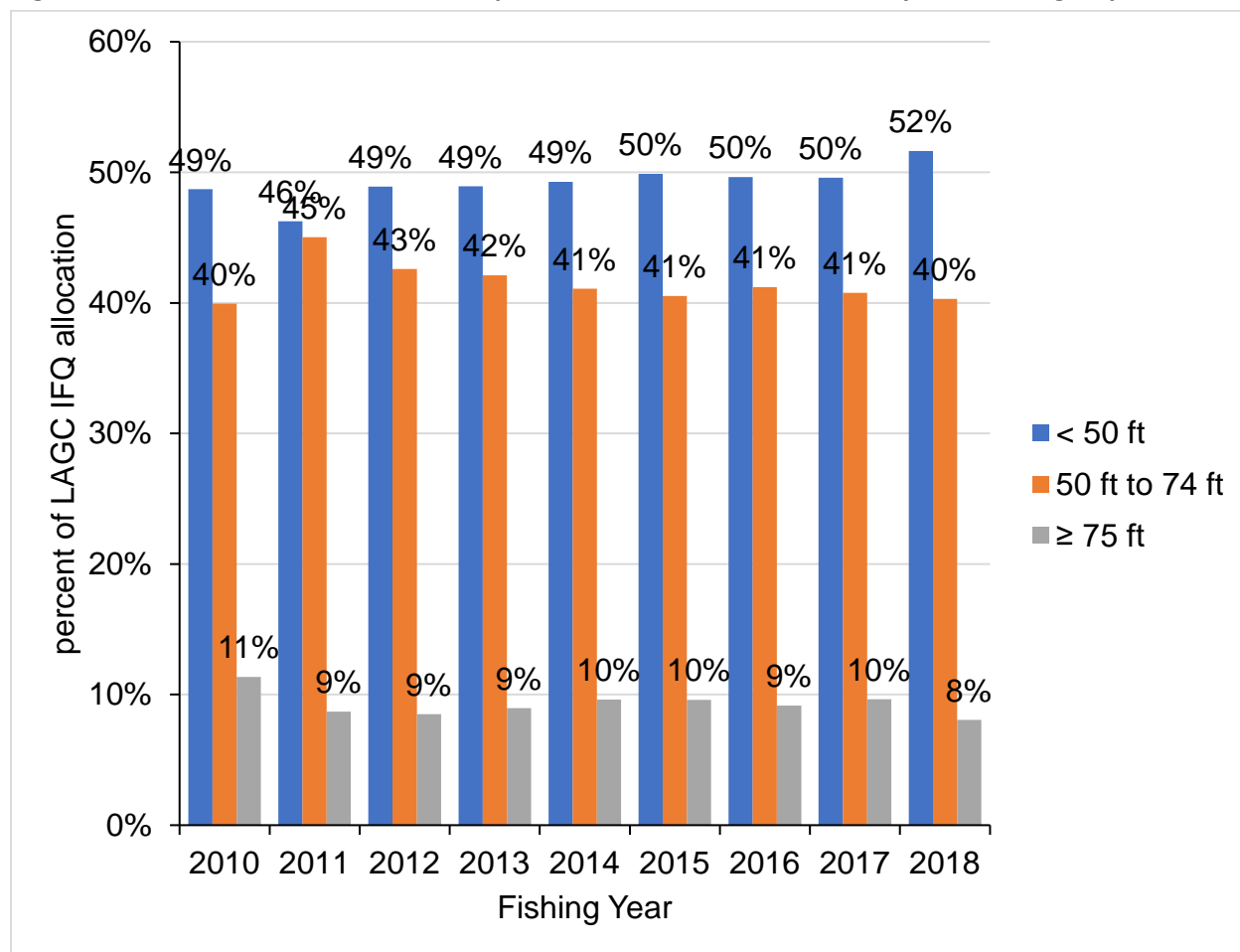


Figure 37. The distribution of scallop landings by vessel length group.



The distribution of allocated quota for active LAGC IFQ vessels by vessels size group from FY2010 to FY2018 is shown in Figure 38. The proportion of allocated quota from was relatively consistent from FY2010 to FY2018; vessels < 50 ft. held the greatest share of quota (between 46% and 52%), vessels 50 ft. to 74 ft. held the second most share of quota (between 40% and 45%), and vessels ≥ 75 ft. held the least share of quota (between 8% and 11%). The share of allocated quota for vessels < 50 ft. FY2017 was approximately 3% more than in FY2010, the same as FY2020 for vessels 50 ft. to 74 ft., while vessels ≥ 75 ft. held approximately 3% less.

Figure 38. The distribution of allocated quota to active LAGC IFQ vessels by vessel size group.



5.6.5.6 Fuel Prices

Fuel prices are a major factor when estimating trip costs. Increasing fuel prices were also part of the Council's rationale for raising the LAGC IFQ possession limit from 400 pounds to 600 pounds in 2011 (Amendment 15). Fuel prices (i.e. USD per gallon of diesel) are recorded by at-sea monitors before the start of observed trips.

Figure 39 shows average fuel price per month from March 2007 through February 2020, based on trip-level data from observed limited access and LAGC IFQ trips. Fuel prices fluctuated throughout this time period, with the highest average price being \$4.38 per gallon in June 2008 and the lowest average price being \$1.70 per gallon in February 2016. Since February 2016, average price appears have fluctuated monthly but overall has risen steadily to a most recent \$2.50 per gallon in February 2020.

Figure 39. Average fuel price (USD per gallon of diesel) from observed LA and LAGC IFQ trips between March 2007 and February 2020.



5.6.5.7 Distance of Fishing Effort from Shore

VMS data were used to estimate scallop fishery effort by 10 nautical mile (nm) zones from shore for the LAGC IFQ component (Figure 40) and the LA component (Figure 41) from FY2007 to FY2017. VMS data used were from all scallop trips (i.e. both open and access area) and effort is described in terms of total days fished for each component.

Since FY2010, LAGC IFQ vessels have primarily fished between 10 nm to 50 nm from shore except for FY2016 when considerably more effort was directed ≥ 60 nm from shore compared to other years. Overall effort in FY2016 was also considerably higher compared to other years from FY2010 to FY2017 which is likely a result of the increased LAGC IFQ allocation in FY2016. Most recently, FY2017 LAGC IFQ effort appeared to be evenly distributed between zones of 10 nm and 50 nm from shore.

Figure 40. LAGC IFQ effort (VMS days fished) by 10 nm zones from shore (FY2007-FY2017).

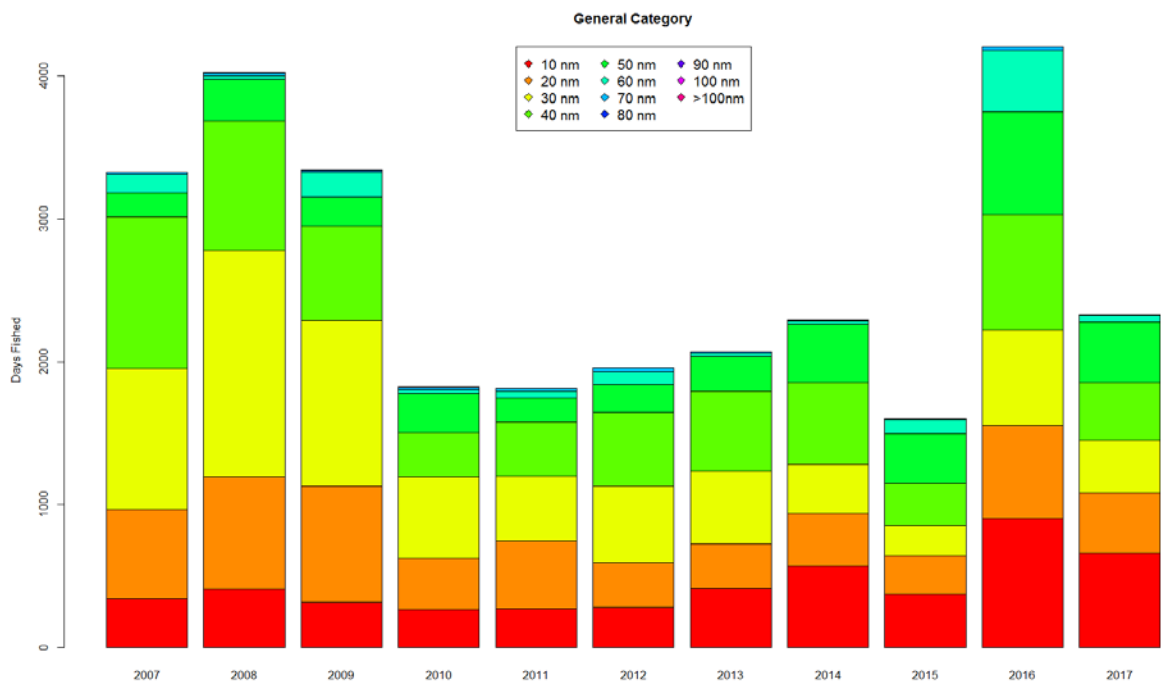
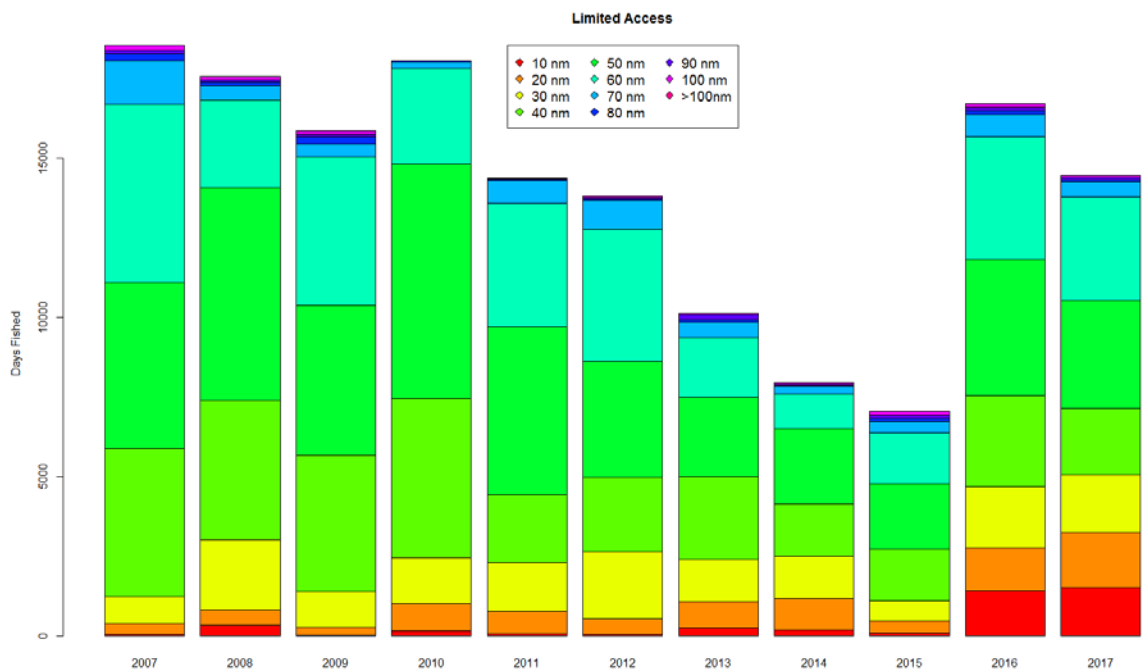


Figure 41. LA effort (VMS days fished) by 10 nm zones from shore (FY2007-FY2017).



5.6.5.8 Distribution of Quota Holdings in the LAGC IFQ-Only Fishery

Figure 42 describes the cumulative distribution of base quota allocations to active and CPH LAGC IFQ-only permits through FW30 (FY2019) in terms of percentage of the total LAGC IFQ-only allocation, relative to the 2.5% maximum quota accumulation cap that applies to LAGC IFQ-only vessels/permits. Figure 43 shows the same information in a histogram. Most permits (active and CPH) in the LAGC IFQ-only fishery are zero allocation permits and almost the entire pool of active permits was allocated less than 1.5% of the total allocation through FW30. The distribution of quota holdings was similar when comparing active permits and permits in CPH; however, the highest percentages of the total FW30 allocation were held by permits in CPH (i.e. holdings greater than 1.5% of total allocation).

Figure 42 – Cumulative distribution of the percent of quota holdings for active (red) and CPH (blue) LAGC IFQ permits for FY2019 (FW30). The orange vertical line represents the 2.5% maximum quota accumulation cap for LAGC IFQ permits/vessels. Data source: FW30 allocation web spreadsheet (GARFO).

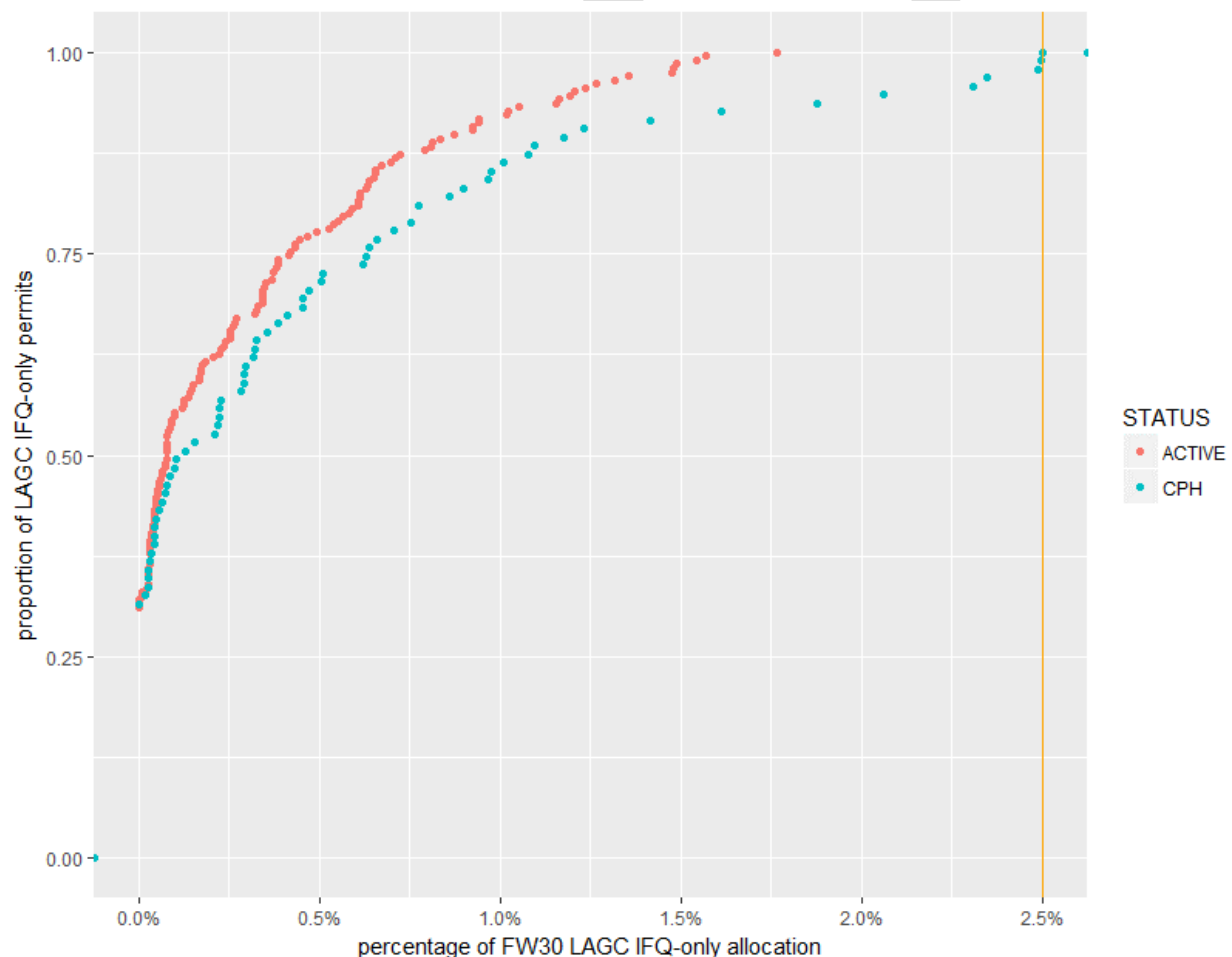


Figure 43 – Distribution of LAGC IFQ permits by percentage holdings of the FW30 LAGC IFQ allocation (FY2020) by permit activity status. The orange vertical line represents the 2.5% maximum quota accumulation cap for LAGC IFQ permits/vessels. Data source: FW30 allocation web spreadsheet (GARFO).

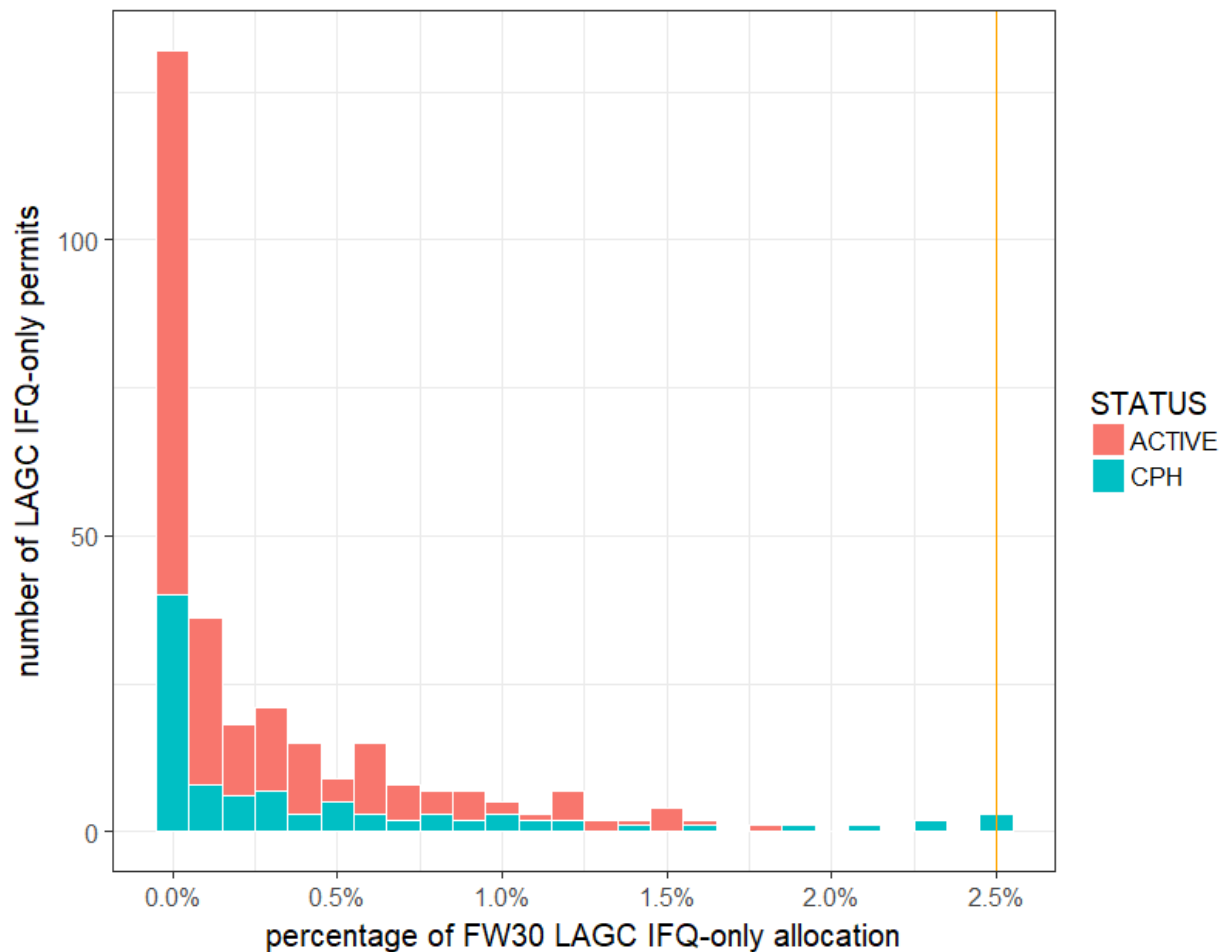
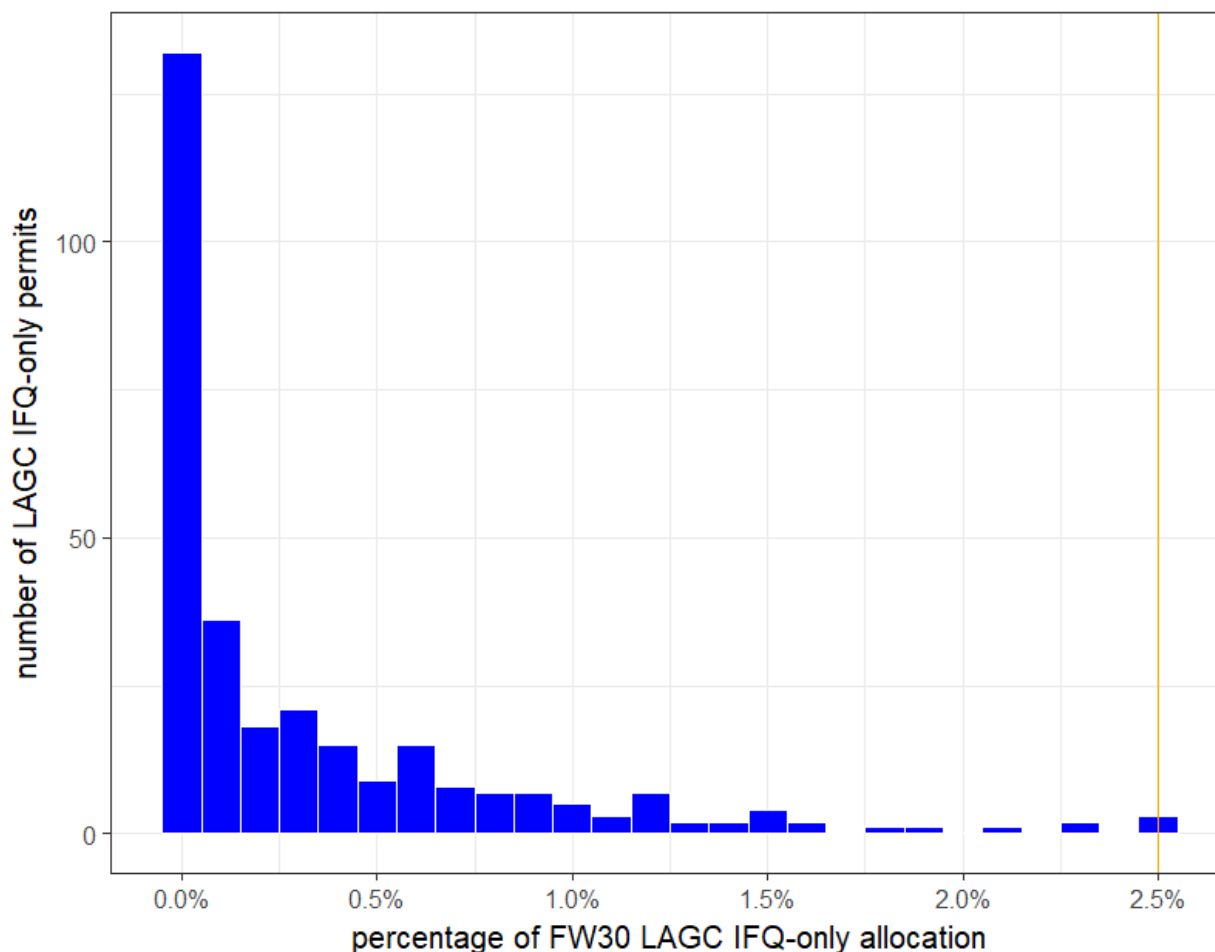


Figure 44 – Distribution of LAGC IFQ permits by percentage holdings of the FW30 LAGC IFQ allocation (FY2020). The orange vertical line represents the 2.5% maximum quota accumulation cap for LAGC IFQ permits/vessels. Data source: FW30 allocation web spreadsheet (GARFO).



5.6.5.9 LA with LAGC IFQ Fishing Activity

There are 40 vessels issued limited access permits that also qualified for the LAGC IFQ fishery. These vessels can participate in the limited access fishery (i.e. under DAS management in access areas that are allocated trips) as well as in the LAGC IFQ fishery to catch annual allocations of quota. Though allocations for the limited access fishery are the same as other vessels in the permit class, quota allocations vary by vessel depending on a vessel's contribution factor, which reflects the level of activity and scallop landings from the general category fishery during the qualifying period for the LAGC IFQ program. LA vessels with IFQ may operate in either the limited access fishery or LAGC IFQ fishery, but not on the same trip, and must adhere to the regulations of the fishery they are operating in on a given trip.

From FY2012-FY2018, the number of LA vessels with IFQ that were active in the LAGC IFQ fishery varied between 31 and 35 (Table 42). Most quota allocations to this component of the fishery (0.5% of APL) were landed during this time period, but on average approximately 7% of the total allocation was not fished. Though anywhere from 15% to 23% of LA vessels with IFQ were not active in the LAGC IFQ

fishery from FY2012 to FY2018, all 40 LA vessels with IFQ were active in the limited access fishery during this time period.

Table 42 – Active LA with IFQ vessels, annual allocations, scallop landings, and the proportion of allocation landed from fishing year 2012 to 2018. Activity and landings are from the LAGC IFQ fishery (i.e. not LA fishery).

FY	Active LA with IFQ Vessels	IFQ Allocation (0.5% of APL)	Scallop Landings (lbs)	% Allocation Landed
2012	34	309,550	275,728	89%
2013	31	222,714	202,669	91%
2014	33	220,286	212,888	97%
2015	35	271,168	236,599	87%
2016	34	405,650	379,375	94%
2017	31	227,076	235,110	104%
2018	31	279,987	249,838	89%

Table 43 describes the distribution of combined scallop landings by LA vessels with IFQ from the LAGC IFQ fishery for fishing years 2010 through 2018 by landing state and port. Though active LA with IFQ vessels landed in ports throughout the range of the fishery, New Jersey ports were the primary landing ports for LA vessels with IFQ, comprising 91% of total scallop landings by this component of the fishery by a total of 36 distinct permits. The vast majority of landings were attributed to Point Pleasant, Barnegat Light, and Cape May. Massachusetts had the second highest combined landings at roughly 7%, with a total of 19 distinct LA with IFQ vessels landings scallops there in FY2010 to FY2018.

Table 43 – Distribution of combined scallop landings by LA vessels with IFQ from the LAGC IFQ fishery and distinct permits from FY2010 to FY2018 by state/port landed. Combined landings and distinct permits are shown in bold by landed state. States/ports with landings from less than three vessels have been combined or removed to comply with confidentiality standards.

Landed State/Port	Distinct Permits	Scallops Landed (pounds)	Percent Landed
New Jersey	36	2,068,922	91.2%
POINT PLEASANT	17	1,089,679	48.0%
BARNEGAT	8	683,268	30.1%
CAPE MAY	22	160,035	7.1%
LONG BEACH	5	110,560	4.9%
Other NJ	3	25,380	1.1%
Massachusetts	19	161,781	7.1%
NEW BEDFORD/FAIRHAVEN	19	119,111	5.3%
NANTUCKET	3	11,968	0.5%
HYANNIS	3	11,231	0.5%
Other MA	3	19,471	0.9%
Virginia	8	22,395	1.0%
HAMPTON/NEWPORT NEWS	6	18,003	0.8%
CHINCOTEAGUE	3	4,392	0.2%
North Carolina	6	10,449	0.5%
Rhode Island	4	2,635	0.1%
New York	3	2,189	0.1%

Figure 45 shows the distribution of scallop revenue for LA vessels with IFQ from fishing in the limited access fishery relative to revenue from fishing in the LAGC IFQ fishery from FY2009 to FY2018. Scallop revenue from the limited access fishery makes up the vast majority of annual scallop revenue for LA vessels with IFQ. Median revenue from the LAGC IFQ fishery across FY2009 to FY2018 was about \$20,100 whereas median revenue from the limited access fishery was approximately \$1,131,000. On average, scallop revenue from the LAGC IFQ fishery ranged from about 5% to 10% of total scallop revenue annually (Table 44).

Figure 45 – Distribution of annual scallop revenues (dealer dollar) for LA vessels with IFQ by fishery component (i.e. LA, LAGC), fishing year 2009 to 2018.

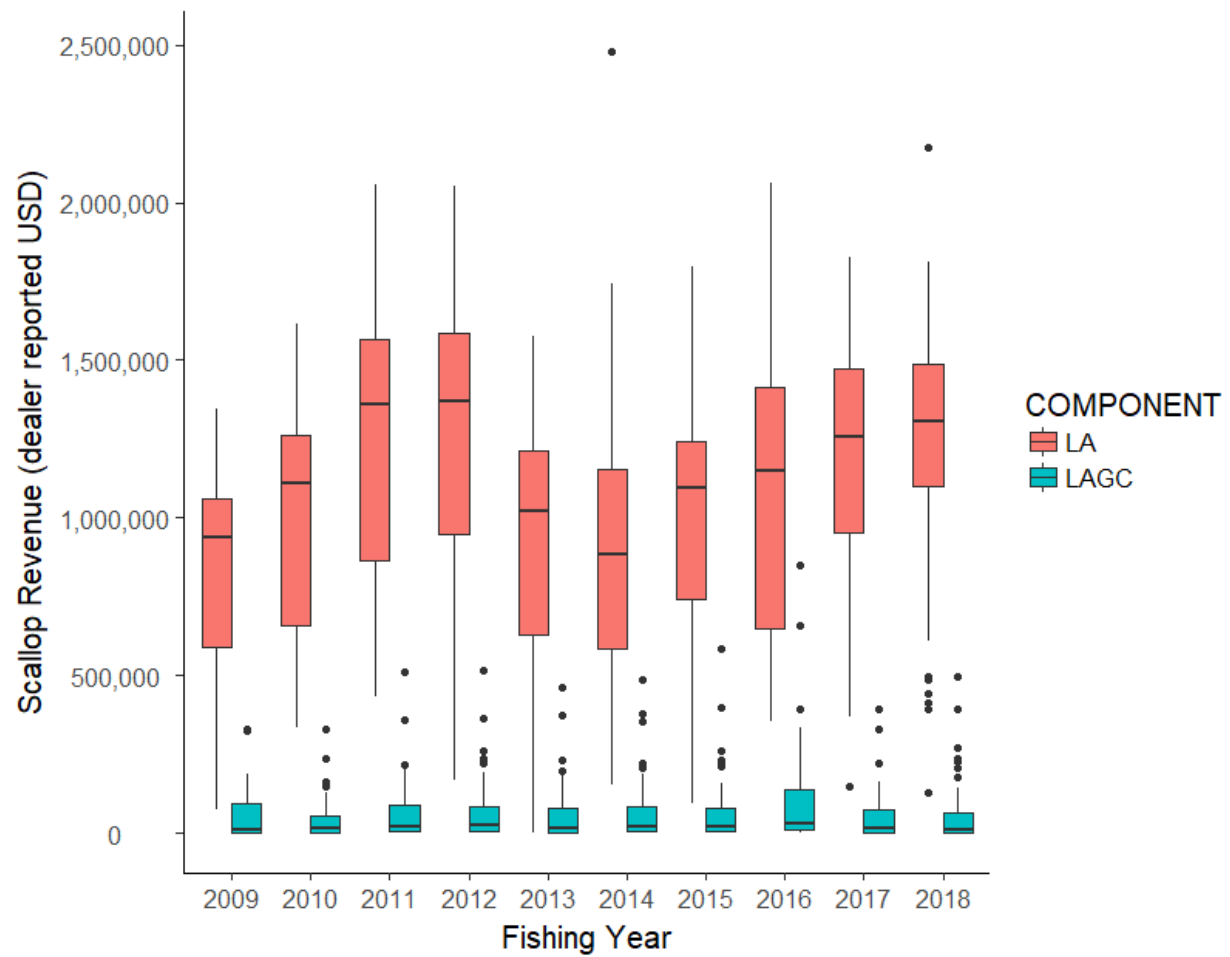


Table 44 – The median and average percentage of scallop revenue (dealer dollar) for LA vessels with IFQ from the limited access fishery and the LAGC IFQ fishery by year, fishing year 2009 through 2018.

FY	median LA revenue	median LAGC revenue	average LA revenue	average LAGC revenue
2009	98%	2%	91.2%	8.8%
2010	98%	2%	94.7%	5.3%
2011	98%	2%	93.6%	6.4%
2012	98%	2%	93.1%	6.9%
2013	98%	2%	90.5%	9.5%
2014	97%	3%	91.0%	9.0%
2015	98%	2%	91.7%	8.3%
2016	97%	3%	90.8%	9.2%
2017	99%	1%	93.6%	6.4%
2018	99%	1%	95.0%	5.0%

5.6.5.10 LAGC IFQ Permit Holdings and Activity in Other Fisheries

LAGC IFQ vessels participate in a range of fisheries at varying levels (Figure 46). Table 46 shows the total number of black sea bass, fluke, scup, and squid permits that are held by vessels with LAGC IFQ permits (active and inactive). Table 47 shows the number of active LAGC IFQ permits that fished for scallops and also landed other species in the same year, while Table 45 illustrates that there have been between 34 – 45 vessels that hold IFQ permits that were inactive in the scallop fishery, but active in other fisheries from 2010 – 2019.

Table 45 - Number of vessels with LAGC IFQ permits, active in other fisheries, that did not land scallops, by scallop fishing year (2010 - 2019). Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.

Fishing Year	No Scallops Landed
2010	35
2011	34
2012	45
2013	37
2014	35
2015	37
2016	34
2017	37
2018	41
2019	42

Figure 46 – Pounds landed by scallop IFQ vessels in the scallop, black sea bass, fluke, scup, and squid (lolligo and ilex are combined) from 2010 – 2019. Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.



Table 46 - Total permit holdings of black sea bass, summer flounder, scup, and squid permits by LAGC IFQ permit holders (active and inactive) from 2010 - 2019. Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BSB1	110	102	99	99	99	99	103	108	108	107
FLS1	171	166	154	153	150	155	160	160	158	155
SCP1	115	109	104	104	102	103	109	109	113	110
SMB	269	249	239	232	225	228	237	233	231	223

Table 47 -Total active LAGC IFQ permits that also had landings in the black sea bass, summer flounder, scup, and squid fisheries (active permits) from 2010 – 2019. Source: NOAA/NMFS/GARFO/APSD, May 28, 2020.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BSB	66	67	66	61	66	66	77	69	67	62
FLUKE	103	116	104	96	104	97	108	102	94	92
SCALLOP	145	149	139	138	148	147	155	151	139	115
SCUP	58	65	61	63	68	57	63	67	61	61
SQUID	70	67	70	71	79	70	69	65	73	59

5.6.6 Scallop Landings

Total scallop landings are described in Section 5.6.2.

5.6.6.1 LA Vessel Landings

Scallops are primarily landed by Limited Access vessels, or 89-95% between 2011-2017 (Table 48). LA landings have been below the ACT since 2014. In 2017, LA vessel landings were 49M pounds, a 24% increase from 2016 (37M).

Table 48. Limited Access landings relative to ACT and fishery-wide landings, FY 2011-2017

FY	LA - only			Total Landings (lbs)	% Total Landings
	LA ACT (lbs)	LA Landings (lbs)	Landings/ACT (%)		
2011	47,247,267	53,929,369	114%	58,461,465	92%
2012	51,910,044	52,274,515	101%	57,098,684	92%
2013	33,783,637	35,743,247	106%	39,807,589	90%
2014	34,319,360	28,544,694	83%	32,020,980	89%
2015	42,617,560	32,818,998	77%	36,974,195	89%
2016	40,322,555	36,821,068	91%	42,423,177	87%
2017	85,149,139	48,879,324	57%	51,325,269	95%
2018					

5.6.6.2 LAGC Vessel Landings

LAGC IFQ. Since the LAGC IFQ TAC is just 5.5% of total ACL, landings by the LAGC vessels are small relative to the total fishery, 5-8% in FY 2011-2017 (Table 49). LAGC IFQ landings have been below the ACL since 2011. In 2017, LAGC IFQ landings were 2.8M pounds, a 19% decrease from 2016 (3.5M lbs.). The landings by LAGC fishery (IFQ, NGOM and incidental permits) declined in 2017 to about 2.8M pounds compared to 3.5M pounds in 2016.

Table 49. LAGC IFQ landings relative to IFQ ACL and fishery-wide landings, FY 2011-2017.

FY	IFQ ACL (lbs)	IFQ Landings (lbs)	Landings/ACL (%)	Total Landings (lbs)	% Total Landings
2011	3,201,880	3,046,245	95%	58,461,465	5%
2012	3,405,000	3,331,284	98%	57,098,684	6%
2013	2,449,856	2,414,256	99%	39,807,589	6%
2014	2,423,145	2,089,589	86%	32,020,980	7%

2015	2,971,831	2,353,787	79%	36,974,195	6%
2016	4,473,180	3,483,689	78%	42,423,177	8%
2017	5,538,012	2,821,411	51%	51,325,269	5%
2018					

Beginning FY 2010, LAGC-IFQ vessels were allocated 5% of the estimated scallop catch resulting a decline in landings by the general category vessels. The NEFMC IFQ program review report details the trends of the IFQ fishery during 2010-2015 (NEFMC 2017). Table 50 presents the number of IFQ only permits and their scallop landings during 2009-2017. Compared to 2016, the landings by IFQ vessels decreased in 2017 from about 3.5M pounds to 2.6M pounds.

Table 50. LAGC IFQ active vessels and landings (excluding LA vessels with IFQ permits).

Fish Year	Permit (IFQ only)	Landings lbs.
2009	202	3,758,125
2010	143	2,170,666
2011	139	2,870,826
2012	118	2,869,312
2013	115	2,302,402
2014	126	2,103,751
2015	122	2,413,760
2016	135	3,493,383
2017	129	2,584,087

LAGC Incidental. Landings by the LAGC incidental vessels has been minor relative to the total fishery, 0.07-0.18% in FY 2011-2017 (Table 51). Incidental landings were above the landings target twice in FY 2011-2017. In 2017, LAGC incidental vessel landings were 18K pounds, a 76% decrease from 2016 (74K).

Table 51. LAGC Incidental Landings relative to target and fishery-wide landings, FY 2011-2017.

FY	Incidental Landings Target (lbs)	Actual Landings (lbs)	Landings/Target (%)	Total Landings (lbs)	% Total Landings
2011	50,000	38,700	77%	58,461,465	0.07%
2012	50,000	61,869	124%	57,098,684	0.11%
2013	50,000	47,337	95%	39,807,589	0.12%
2014	50,000	42,107	84%	32,020,980	0.13%
2015	50,000	29,395	59%	36,974,195	0.08%
2016	50,000	74,341	149%	42,423,177	0.18%
2017	50,000	18,383	37%	51,325,269	0.04%

5.6.6.3 Scallops Landings and Revenue

Table 52 - Atlantic Sea Scallop landings, revenue, average prices (2009 - 2018).

Fish Years	Landings (pounds)			Total Revenues		Price per pound
	LAGC	LA	Total landings	Nominal \$	Real (in 2018\$)	Real (in 2018\$)
2009	3,765,498	52,301,210	56,066,708	\$372,538,290	\$436,125,369	\$7.53
2010	2,176,421	53,502,413	55,678,834	\$453,655,482	\$522,945,801	\$9.23
2011	2,876,064	55,277,566	58,153,630	\$578,711,169	\$645,594,789	\$11.00
2012	2,897,587	53,222,797	56,120,384	\$552,769,693	\$605,244,381	\$10.64
2013	2,372,607	37,221,866	39,594,473	\$459,432,949	\$496,147,893	\$12.34
2014	2,177,549	29,713,331	31,890,880	\$401,510,760	\$427,639,536	\$13.21
2015	2,492,802	33,056,153	35,548,955	\$437,143,932	\$464,108,644	\$12.92
2016	3,611,174	37,358,052	40,969,226	\$493,734,421	\$516,458,599	\$12.44
2017	2,695,546	50,366,902	53,062,448	\$519,841,358	\$532,242,611	\$9.93
2018	3,033,859	56,764,998	59,798,857	\$552,118,162	\$552,118,162	\$9.19

5.6.7 Scallop Research Set-Aside Program

This action includes alternatives that would amend the Scallop Research Set-Aside (RSA) program, namely including a program specific to the Northern Gulf of Maine Area. RSA programs are unique to Federal fisheries in the Greater Atlantic Region. No Federal funds are provided to support the research. Instead, research funds are generated through the sale of set-aside allocations for quota managed or days-at-sea (DAS) managed fisheries. The NEFMC and MAFMC set aside quota or DAS, which is awarded through a competitive grant process managed by the NEFSC. Money generated by the sale of the awarded RSA quota or DAS fund the proposed research.

RSA priorities are established by the Councils. Solicitations for RSA proposals are posted at www.grants.gov, and distributed widely through Council and NMFS public relations channels. Incoming proposals are reviewed and ranked based on both technical merit and management relevance. With competitive grants awarded through this process, different entities will apply. Projects funded under an RSA allocation must enhance understanding of the fishery resource and/or contribute to the body of information which management decisions are made.

The combination of low prices and catch rates in the late 1990's prompted interest in developing an experimental fishery to survey scallops in closed portions of Georges Bank. The success of this program, both in the scientific objectives achieved and as a method of generating funding for research, led to the formal establishment of the Scallop Research Set-Aside program through Framework 11 to the Scallop FMP in 1999. One percent, about 95,000 pounds, of the sea scallop quota was set aside from the Nantucket Lightship Closed Area, Closed Area I, and the entire open area.

The Scallop RSA program has evolved since its creation in 1999. The set aside increased in 2004 from 1% to 2% of closed area allocations and open area days-at-sea (DAS; NEFMC 2004). In 2011, the RSA

program shifted to a multi-year process to be more in line with the specifications process and research projects could span two years if appropriate. Second, the RSA allocation was changed from 2% of allocations to a set poundage of 1.25 million lbs. Third, program structure was modified so that unused RSA pounds could be awarded projects to projects if there was an incorrect estimation of price-per-pound in the Federal Funding Opportunity. In addition, unused RSA allocation may be used to increase the scope of an awarded project. Finally, three measures were identified from which RSA projects could be exempt if identified in the proposal: crew restrictions, seasonal closures of access areas in the Mid-Atlantic to reduce impacts on sea turtles, and the requirement to return to port if fishing in more than one area (NEFMC 2010). The Council has supported increased public input of the RSA process through involvement of the Scallop Advisory Panel in setting research priorities and participating on management review panels if not involved in proposals.

5.6.7.1 RSA Grants Supporting Surveys of Northern Gulf of Maine

The Scallop RSA program has supported survey coverage in the NGOM management area periodically since 2008. Awards for survey coverage in the NGOM have varied over time in terms of survey methodology, research group, area coverage, and pounds awarded. Table 53 summarizes these awards by year, survey group, area coverage, and amount awarded in terms of compensation pounds and an estimate of funds the compensation pounds would result in (i.e. pounds X common price). Note that a total of ten NGOM surveys were awarded between 2008 and 2020, with awards totaling 551,173 pounds and estimated funds totaling \$4,902,901.

Table 53. Scallop Research Set-Aside awards for survey coverage in the NGOM management area by year. Awards are allocated in scallop pounds ("Compensation Pounds). Estimated funds are equal to the pounds awarded multiplied by the common price.

Funding Year	Survey Year	Organization	Areas Surveyed	Common Price	Compensation Pounds Awarded	Estimated Funds
2008	2009	ME DMR	Machias Seal Island, Mount Desert Rock, Platts Bank, No. Stellwagen Bank, Cape Ann (i.e. So. Jeffreys Ledge, Ipswich Bay)	\$7.55	70,000	\$539,000
2010	2010	SMAST	Jeffreys Ledge, Platts Bank, Fippennies Ledge, Cashes Ledge	\$7.55	102,676	\$775,206
2011	2012	ME DMR	Machias Seal Island, Mount Desert Rock, Platts Bank, Northeast of Cape Ann (i.e. So Jeffreys Ledge, Ipswich Bay), No. Stellwagen Bank	\$7.64	77,135	\$589,314
2014	2016	ME DMR	Machias Seal Island, Mount Desert Island, Platts Bank, Fippennies Ledge, Ipswich Bay, So. Jeffreys Ledge, No. Stellwagen Bank	\$10.50	53,192	\$558,515
2017	2017	SMAST	Stellwagen Bank	\$12.00	1,734	\$20,808
		CFF	Stellwagen Bank, So. Jeffreys Ledge	\$12.00	12,000	\$144,000
2018		SMAST	Platts Bank, Ipswich Bay, So. Jeffreys Ledge, No. Stellwagen Bank, So. Stellwagen Bank	\$10.50	48,922	\$513,680
2019	2019	ME DMR	Machias Seal Island, Platts Bank, Ipswich Bay, So. Jeffreys Ledge, No. Stellwagen Bank, So. Stellwagen Bank	\$9.50	35,258	\$334,950
2020	2020	SMAST	Platts Bank, Ipswich Bay, So. Jeffreys Ledge, No. Stellwagen Bank, So. Stellwagen Bank	\$9.50	131,834	\$1,252,423
		ME DMR	No. Stellwagen Bank, So. Stellwagen Bank	\$9.50	18,422	\$175,005
				Total	551,173	\$4,902,901

5.6.8 Fishing Communities

5.6.8.1 Introduction

There are over 200 communities that have been a homeport or landing port to one or more active sea scallop vessels since 2010. These ports occur throughout the coastal northeast and Mid-Atlantic, primarily from Massachusetts to Virginia. The level of activity in the sea scallop fishery has varied across time. This section identifies the communities for which sea scallops are particularly important. While the involvement of communities in the sea scallop fishery is described, individual vessel participation may vary.

Consideration of the socioeconomic impacts on these communities from proposed fishery regulations is required under NEPA and the MSFCMA. In particular, National Standard 8 of the MSFCMA stipulates that “conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities” (16 U.S.C. § 1851(a)(8)). A “fishing community” is defined in the MSFCMA, as “substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community” (16 U.S.C. § 1802(17)). Determining which fishing communities are “substantially” dependent on or engaged in a fishery can be difficult.

Although it is useful to narrow the focus to individual communities in the analysis of fishing dependence, there are several potential issues with data confidentiality. There are privacy concerns with presenting the data in such a way that proprietary information (landings, revenue, etc.) can be attributed to an individual vessel or a small group of vessels. This is particularly difficult when presenting information on small ports and communities that may only have a small number of vessels and data can easily be attributed to a vessel, dealer, or individual. The fishery data in this action are thus aggregated to at least three reporting units, to preserve confidentiality. To report landings activity to a specific geographic location (e.g., port, state), the landings must be attributed to at least three fishing permit numbers and the landings must be sold to at least three dealer numbers. However, the dealers do not necessarily have to be in the same specific geographic location.

5.6.8.2 Communities Identified

Communities dependent on the sea scallop resource are categorized into primary and secondary port groups. Because geographical shifts in the distribution of sea scallop fishing activity have occurred, the characterization of some ports as “primary” or “secondary” may not reflect their historical participation in and dependence on the fishery.

Primary Port Criteria. The sea scallop fishery primary ports are those that are substantially dependent on or engaged in the fishery, and which are likely to be the most impacted by the alternatives under consideration. The primary ports meet at least one of the following criteria:

- At least \$5M average annual revenue of sea scallops, 2010-2017 (Table 54);
- At least 50% of average annual fishing revenue was from sea scallops, 2010-2017 (with \$500K as a minimum scallop revenue);
- A top 10 port by percent of landings each year for either the limited access or the limited access general category scallop permit categories, fishing years 2013-2017.
- A ranking of high for engagement in or reliance on the scallop fishery on average in 2013-2017 according to the NMFS Community Vulnerability Indicators (Table 55).

Secondary Port Criteria. The sea scallop fishery secondary ports are those that may not be as engaged in or dependent on the fishery as the primary ports but are involved to a lesser extent. The secondary ports meet at least one of the following criteria:

- At least \$500K average annual revenue of sea scallops during 2010-2017.
- A ranking of medium-high for engagement in or reliance on the scallop fishery on average in 2013-2017 according to the NMFS Community Vulnerability Indicators.

Engagement in and reliance on the scallop fishery: The NMFS Community Vulnerability Indicators give a broader view of the degree of involvement of communities in fisheries than simply using pounds or revenue of landed fish (Jepson & Colburn 2013). The indicators portray the importance or level of dependence of commercial or recreational fishing to coastal communities and are used to help identify primary ports for the scallop fishery. The degree of engagement in or reliance on the scallop fishery is based on multiple sources of information, averaged over five-year time periods, using NMFS dealer and U.S. Census data.

- *The engagement index* incorporates the pounds and value of landed scallops, the number of Atlantic sea scallop commercial fishing permits with that community identified as the homeport, and the number of scallop dealers buying fish in that community.
- *The reliance index* is a per capita measure using the same data as the engagement index but divided by total population of the community.

Using a principal component and single solution factor analysis, each community receives a factor score, which is translated into a ranking of low, medium, medium-high, or high. A score of 1.0 or more places the community at 1 standard deviation above the mean (or average) and is considered highly engaged or reliant. Communities with negative scores (i.e., below the mean) have low engagement. More information about the indicators may be found at: <http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index>

The indicators reveal that there are over 200 communities that have a scallop fishery engagement and reliance index in the range of low to high in 2013-2017. Reported in Table 55 are the 13 communities that have a ranking of at least medium-high for either engagement or reliance.

Atlantic Sea Scallop Primary Ports. Based on these criteria, there are 14 primary ports and 9 secondary ports in the sea scallop fishery (Table 59); confidential ports have been combined with adjacent non-confidential ports). The primary ports comprise over 92% of total fishery revenue, during 2010-2017. Most of the fishery revenue is from landings in New Bedford. Arguably New Bedford and Fairhaven, Massachusetts, could be considered one fishing community, separated only by the Acushnet River. As Hampton/Seaford and Newport News, Virginia are all located in the Hampton Roads metropolitan area, they could also be considered one fishing community. In both cases, the communities are distinguished because reporting their fishing activity is permissible within data confidentiality standards. Scallop fishing activity occurs along a spectrum across ports, rather than in the neat categories of “primary,” “secondary” and “other.”

Because of the size and diversity of the sea scallop fishery, it is impractical to examine each secondary port individually. However, they are listed here to provide a broader scope of potential communities impacted by scallop management measures. There are about 175 other ports that have had more minor participation (>5%) in the fishery recently. Descriptions of the communities involved in the sea scallop fishery and all Northeast fishing communities are on the NEFSC website:

http://www.nefsc.noaa.gov/read/socialsci/community_profiles/. The Northeast Ocean Data Portal has interactive maps to help understand where dredge fisheries based in these ports have been active at sea over time: <https://www.northeastoceandata.org/>.

Table 54. Fishing revenue in top sea scallop ports, calendar years 2010-2017.

Port	Average revenue, 2010-2017		
	All fisheries	Sea scallops only	% sea scallops
New Bedford, MA	\$333.9M	\$265.6M	80%
Cape May, NJ	\$66.4M	\$53.8M	81%
Hampton/Seaford, VA	\$27.7M	\$23.5M	85%
Newport News, VA	\$26.2M	\$23.3M	89%
Barnegat Light/Long Beach, NJ	\$25.2M	\$19.4M	77%
Fairhaven, MA	\$17.3M	\$12.5M	73%
Pt. Pleasant/Pt. Pleasant Beach, NJ	\$25.4M	\$11.6M	46%
Narragansett/Pt. Judith, RI	\$42.1M	\$7.2M	17%
Stonington, CT	\$6.9M	\$4.8M	69%
Provincetown, MA	\$4.7M	\$2.2M	47%
Wildwood, NJ	\$4.6M	\$4.4M	96%
New London, CT	\$4.9M	\$2.2M	45%
Chatham, MA	\$10.8M	\$2.1M	19%
Atlantic City, NJ	\$19.2M	\$1.9M	10%
Gloucester, MA	\$45.2M	\$1.7M	4%
Harwichport/Barnstable, MA	\$3.3M	\$1.5M	45%
Montauk, NY	\$16.4M	\$1.3M	8%
Ocean City, MD	\$5.9M	\$0.9M	16%
Hampton Bays/Shinnecock, NY	\$6.4M	\$0.9M	14%
Sandwich, MA	\$4.0M	\$0.5M	14%
Total (n= about 200)	\$1,046.3M	\$460.4M	44%
<i>Note: Inflation adjusted to 2017 dollars. Source: NMFS dealer data, accessed October 2018.</i>			

Table 55. Scallop fishing community engagement and reliance indicators, 2013-2017 average.

State	Community	Engagement	Reliance
ME	Cutler	Low	Medium-High
	Beals	Low	Medium-High
MA	Gloucester	High	Low
	Chatham	Medium-High	High
	Provincetown	Medium-High	Medium-High
	New Bedford	High	Medium-High
RI	Narragansett/Pt. Judith	High	Medium
NY	Montauk	Medium-High	Medium
NJ	Point Pleasant	High	Medium
	Barnegat Light/Long Beach	High	High
	Cape May	High	High
VA	Newport News	High	Low
NC	Hobucken	Low	High
<i>Note: This list includes those communities that have a ranking of at least medium-high for engagement or reliance.</i>			
<i>Source: http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index.</i>			

Table 56. Primary and secondary ports in the sea scallop fishery.

State	Community	Average revenue, 2010-2017 ^a			Top 10 landing port, 2013-2017 ^b		Indicator		Primary/ Secondary
		>\$500K	>\$5M	≥50% scallops	LA	LAGC	Med-high	High	
ME	Cutler						√		Secondary
	Beals						√		Secondary
MA	Gloucester	√						√	Primary
	Sandwich	√							Secondary
	Provincetown	√				√	√		Primary
	Chatham	√						√	Primary
	Harwich/Harwichport/ Barnstable	√							Secondary
	Fairhaven	√	√	√					Primary
	New Bedford	√	√	√	√	√		√	Primary
RI	Narragansett/Pt. Judith	√	√		√			√	Primary
CT	Stonington	√	√	√	√				Primary
	New London	√							Secondary
NY	Montauk	√					√		Secondary
	Hampton Bays/Shinnecock	√							Secondary
NJ	Pt. Pleasant/Pt. Pleasant Beach	√	√		√	√		√	Primary
	Barnegat Light/Long Beach	√	√	√	√	√		√	Primary
	Atlantic City	√							Secondary
	Wildwood	√	√	√					Primary
	Cape May	√	√	√	√	√		√	Primary
MD	Ocean City	√							Secondary
VA	Hampton/Seaford	√	√	√	√				Primary
	Newport News	√	√	√				√	Primary
NJ	Hobucken							√	Primary

Notes: ^a Inflation adjusted to 2017 dollars. ^b A top 10 port by percent of landings each year for either the LA or LAGC permits, 2013-2017.

5.6.8.3 Port Descriptions

Described here are the fishing communities that are primary ports for the scallop fishery, ordered from north to south (Table 14). In addition, ports in Maine and New Hampshire are described, as they are important homeports or landing ports to vessels with Northern Gulf of Maine permits, and modifications to management in the NGOM area is being considered through this amendment. Information in this section is largely based on demographic data collected by the U.S. Census (as of 2017, the latest consistently available) and NMFS federal fishery data. Social indicators of fishing community engagement and reliance are as of 2016 and available at: <https://www.st.nmfs.noaa.gov/data-and-tools/social-indicators/>. Clay *et al.* (2007) has a detailed profile of each port, including important social and demographic information.

5.6.8.3.1 Maine Ports

Cutler

General: Cutler is a fishing community in Washington County, ME. In 2017, Cutler had an estimated population of 534, a 5% increase from the year 2010 (507). In 2017, 29% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Cutler; the poverty rate was 14%; and the population was 92% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Cutler in 2016 were medium-high and high, respectively. In 2019, Cutler was the homeport and primary landing port for 37 federal fishing permits (i.e., vessels). Total landings in Cutler were valued at \$5.8M, 0.9% of the state-wide total (\$673M), landed by 45 vessels and sold to seven dealers. American lobster (\$4.2M) was the highest valued species in Cutler, accounting for 86% of the total revenue, landed by 29 vessels and sold to 3 dealers (Table 57).

Scallop fishery: Cutler is a secondary port for the scallop fishery, with low and medium-high scallop fishing engagement and reliance indices on average in 2013-2017, respectively (Table 55). Scallop landings in 2019 are confidential.

Table 57. Top five species landed by value in Cutler ME, 2019

Species	Revenue (\$)	Vessels	Dealers
American lobster	\$4.5M	32	3
<i>Note:</i> Data are preliminary; data for four of the five top species landed are confidential. <i>Source:</i> NEFSC dealer data, accessed June 2020.			

Beals

General: Beals is a fishing community in Washington County, ME. In 2017, Beals had an estimated population of 405, a 20% decrease from the year 2010 (508). In 2017, 46% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Cutler; the poverty rate was 11%; and the population was 97% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Beals in 2016 were both high. In 2019, Beals was the homeport and primary landing port for 37 and 57 federal fishing permits (i.e., vessels), respectively. Total landings in Beals were valued at \$23M, 3% of the state-wide total (\$673M), landed by 164 vessels and sold to seven dealers. American lobster (\$22M) was the highest valued species in Beals, accounting for 97% of the total revenue, landed by 150 vessels and sold to 5 dealers (Table 58).

Scallop fishery: Beals is a secondary port for the scallop fishery, with low and medium-high scallop fishing engagement and reliance indices on average in 2013-2017, respectively (Table 55). Scallop landings in 2019 are confidential.

Table 58. Top five species landed by value in Beals ME, 2019

Species	Revenue (\$)	Vessels	Dealers
American lobster	\$22M	150	5
Rock crab	\$0.3M	104	3
<i>Note:</i> Data are preliminary; data for three of the five top species landed are confidential. <i>Source:</i> NEFSC dealer data, accessed June 2020.			

Portland

General: Portland is a fishing community in Cumberland County, ME. In 2017, Portland had an estimated population of 66,715, a 0.8% increase from the year 2010 (66,194). In 2017, 0.6% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Portland; the poverty rate was 18%; and the population was 81% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Portland in 2016 were high and low, respectively. In 2019, Portland was the homeport and primary landing port for 73 and 99 federal fishing permits (i.e., vessels), respectively. Total landings in Portland were valued at \$26M, 4% of the state-wide total (\$673M), landed by 198 vessels and sold to 39 dealers. American lobster (\$15M) was the highest valued species in Portland, accounting for 59% of the total revenue, landed by 107 vessels and sold to 21 dealers (Table 59).

Scallop fishery: Portland is a minor port for the scallop fishery, with medium and low scallop fishing engagement and reliance indices on average in 2013-2017, respectively. In 2019, there was \$0.12M in scallop landings revenue in Portland by 15 vessels and sold to 10 dealers.

Table 59. Top five species landed by value in Portland ME, 2019

Species	Revenue (\$)	Vessels	Dealers
American lobster	\$15M	108	12
Atlantic herring	\$3.4M	7	12
Menhaden	\$0.9M	18	6
Bluefin tuna	\$0.69M	41	3
<i>Note:</i> Data are preliminary; data for one of the five top species landed are confidential. <i>Source:</i> NEFSC dealer data, accessed June 2020.			

5.6.8.3.2 New Hampshire Ports

The principal ports of New Hampshire include Newington, Portsmouth, Rye, Hampton, and Seabrook, all in Rockingham County. The three largest, Portsmouth, Hampton and Seabrook had an estimated population in 2017 of 32,005, a 2% increase from the year 2010 (31,372). In 2017, 1% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in these three ports; the poverty rate was 5%; and the population was 93% white, non-Hispanic.

The commercial fishing engagement was high for Portsmouth in 2016 and medium-high for Hampton and Seabrook; reliance was low for all three ports. In 2019, these three ports were the homeport and primary landing port for 119 and 107 federal fishing permits (i.e., vessels), respectively. Total landings in these three ports were valued at \$11M, 28% of the state-wide total (\$40M). American lobster (\$36M) was the highest valued species in New Hampshire, accounting for 90% of the total revenue, landed by 100 vessels and sold to 25 dealers (Table 60).

Scallop fishery: New Hampshire ports are minor for the scallop fishery, though scallops was one of the top 5 species landed in the state in 2019 (Table 60). Portsmouth had medium and low scallop fishing engagement and reliance indices on average in 2013-2017, respectively; these indicators were all low for Hampton and Seabrook. In 2019, there was \$0.05M in scallop landings revenue in Portsmouth by 5 vessels and sold to 7 dealers. Scallop landings in 2019 are confidential for Hampton and Seabrook.

Table 60. Top five species landed by value in New Hampshire, 2019

Species	Revenue (\$)	Vessels	Dealers
American lobster	\$36M	100	25
Bluefin tuna	\$0.6M	34	8
Sea scallops	\$0.3M	7	9
<i>Note:</i> Data are preliminary; data for two of the five top species landed are confidential.			
<i>Source:</i> NEFSC dealer data, accessed June 2020.			

5.6.8.3.3 Massachusetts Ports

Gloucester

General: Gloucester is a fishing community in Essex County, MA. In 2017, Gloucester had an estimated population of 29,858, a 4% increase from the year 2010 (28,789). In 2017, 2% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Gloucester; the poverty rate was 9%; and the population was 95% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Gloucester in 2016 were high and medium, respectively. In 2019, Gloucester was the homeport and primary landing port for 201 and 212 federal fishing permits (i.e., vessels), respectively. Total landings in Gloucester were valued at \$56M, 8% of the state-wide total (\$680M). American lobster (\$22M) was the highest valued species in Gloucester, accounting for 39% of the total revenue, landed by 140 vessels and sold to 22 dealers (Table 61).

Table 61. Top five species landed by value in Gloucester MA, 2019

Species	Revenue (\$)	Vessels	Dealers
American lobster	\$22M	140	22
Haddock	\$8.1M	732	14
Acadian redfish	\$3.4M	53	21
Pollock	\$2.5M	54	14
Monkfish	\$2.4M	54	15
<i>Note:</i> Data are preliminary; data for one of the five top species landed are confidential.			
<i>Source:</i> NEFSC dealer data, accessed June 2020.			

Scallop fishery: Gloucester is a primary port for the scallop fishery, with an average revenue of \$1.7M/year from 2010-2017, 4% of total revenue in Gloucester during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were high and low, respectively (Table 55). In 2019, there was \$2.1M in scallop revenue landed in Gloucester by 49 vessels and sold to 24 dealers. In 2019, Gloucester was the registered homeport and primary landing port for 27 LAGC vessels; 37% are IFQ and 44% are NGOM vessels, and the remainder are incidental (Table 62). No LA vessels are based in Gloucester. For the vessels with Gloucester as a primary landing port, their registered homeports are primarily Gloucester, but also Hampton Falls and Seabrook, NH. For the vessels with Gloucester as a registered homeport, their primary landing ports are primarily Gloucester, but also Portland and South Bristol, ME and Salisbury, MA.

Table 62. Number of scallop vessels (permits) in Gloucester, 2019

Permit category	Homeport	Landing port
LAGC only	27	27
IFQ	10	10
NGOM	12	11
Incidental	5	5
Total	27	26
<i>Source: GARFO permit data, accessed July 2019.</i>		

Provincetown

General: Provincetown is a fishing community in Barnstable County, on Cape Cod, MA. In 2017, Provincetown had an estimated population of 2,952, a 0.3% increase from the year 2010 (2,942). In 2017, 1% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Provincetown; the poverty rate was 11%; and the population was 88% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Provincetown in 2016 were medium-high and medium, respectively. In 2019, Provincetown was the homeport and primary landing port for 18 and 20 federal fishing permits (i.e., vessels), respectively. Total landings in Provincetown were valued at \$7.7M, 1% of the state-wide total (\$680M). American lobster (\$3.7M) was the highest valued species, accounting for 48% of the total Provincetown revenue, landed by 27 vessels and sold to 8 dealers (Table 63).

Scallop fishery: Provincetown is a primary port for the scallop fishery, with an average revenue of \$2.2M/year from 2010-2017 (11th highest of all ports), 47% of total revenue in Provincetown during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were both medium-high (Table 55). For the LAGC vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, there was \$3.3M in scallop revenue, landed by 22 vessels and sold to 9 dealers and it was one of the top five species landed by value in Provincetown (Table 63). In 2019, Provincetown was the registered homeport and primary landing port for 8 scallop vessels, all of which are LAGC IFQ vessels (Table 64). These vessels all have Provincetown as their registered homeport and primary landing port. No LA vessels are based in Provincetown.

Table 63. Top five species landed by value in Provincetown, 2019

Species	Revenue (\$)	Vessels	Dealers
American lobster	\$3.7M	27	8
Sea scallop	\$3.3M	22	9
Bluefin tuna	\$0.34M	34	6
Menhaden	\$0.06M	4	3
<i>Note: Data are preliminary; data for one of the five top species landed are confidential.</i>			
<i>Source: NEFSC dealer data, accessed March 2020.</i>			

Table 64. Number of scallop vessels (permits) in Provincetown, 2019

Permit category	Homeport	Landing port
LAGC only	8	8
IFQ	8	8
Total	8	8
<i>Source: GARFO permit data, accessed July 2019.</i>		

Chatham

General: Chatham is a fishing community in Barnstable County, Massachusetts. In 2017, Chatham had an estimated population of 6,149, a 0.4% increase from the year 2010 (6,125). In 2017, 5% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Chatham; the poverty rate was 10%; and the population was 92% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Chatham in 2016 were both high. In 2019, Chatham was the homeport and primary landing port for 90 and 96 Federal fishing permits (i.e., vessels), respectively. Total landings in Chatham were valued at \$16M, 2% of the state-wide total (\$680M) landed by 162 vessels and sold to 36 dealers. American lobster (\$4.3M) was the highest valued species, accounting for 27% of the total Chatham revenue, landed by 40 vessels and sold to 14 dealers (Table 65). The Chatham Fish Pier is an active offloading facility in Chatham. The Cape Cod Community Supported Fishery is based in West Chatham.

Scallop fishery: Chatham is a primary port for the scallop fishery, with an average revenue of \$2.1M/year from 2010-2017 (13th highest of all ports), 19% of total revenue in Chatham during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were medium-high and high, respectively (Table 55). In 2019, there was \$2.3M in scallop revenue, landed by 19 vessels and sold to 11 dealers and it was the second highest species landed by value in Chatham (Table 65).

Table 65. Top five species landed by value in Chatham MA, 2019

Species	Nominal revenue (\$)	Vessels	Dealers
American lobster	\$4.3M	40	14
Sea scallops	\$2.3M	19	11
Big skate	\$2.0M	27	5
Spiny dogfish	\$1.3M	32	3
Softshell clam	\$0.8M	6	10
Source: NEFSC dealer data, accessed March 2020.			

Fairhaven

General: Fairhaven is a fishing community in Bristol County, Massachusetts. In 2017, Fairhaven had an estimated population of 16,027, a 1% increase from the year 2010 (15,873). In 2017, 1% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Fairhaven; the poverty rate was 9%; and the population was 89% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Fairhaven in 2016 were high and medium, respectively. In 2019, Fairhaven was the homeport and primary landing port for 29 and 33 federal fishing permits (i.e., vessels), respectively. Total landings in Fairhaven were valued at \$11M, 2% of the state-wide total (\$680M).

Scallop fishery: Fairhaven is a primary port for the scallop fishery, with an average revenue of \$13M/year from 2010-2017 (sixth highest of all ports), 73% of total revenue in Fairhaven during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were medium and low, respectively. In 2019, scallops (\$4.5M) was the highest valued species, accounting for 41% of the total Fairhaven revenue, landed by 17 vessels and sold to 6 dealers (Table 66). In 2019, Fairhaven was the registered homeport and primary landing port for 8 scallop vessels, all full-time LA vessels, one of which also has a NGOM permit (Table 67). For the vessels with Fairhaven as a homeport or primary landing port, their registered homeport and primary landing ports is primarily Fairhaven, but also New Bedford, MA.

Table 66. Top five species landed by value in Fairhaven MA, 2019

Species	Nominal revenue (\$)	Vessels	Dealers
Sea scallop	\$4.5M	17	6
Atlantic surfclam	\$4.3M	9	3
Whelk	\$0.47M	9	4
<i>Note:</i> Data are preliminary; data for two of the five top species landed are confidential.			
<i>Source:</i> NEFSC dealer data, accessed March 2020.			

Table 67. Number of scallop vessels (permits) in Fairhaven, 2019

Permit category	Homeport	Landing port
LAGC only	0	1
Incidental	0	1
LA only	7	7
Full time, large dredge	7	7
LA and NGOM combo	1	1
Total	8	8
<i>Source:</i> GARFO permit data, accessed July 2019.		

New Bedford

General: New Bedford is a fishing community in Bristol County, Massachusetts. In 2017, New Bedford had an estimated population of 95,125, a 0.06% increase from the year 2010 (95,072). In 2017, 2% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in New Bedford; the poverty rate was 23%; and the population was 64% white, non-Hispanic, 20% Hispanic or Latino, and 5% Black or African American alone (U.S. Census 2020).

The commercial fishing engagement and reliance indices for New Bedford in 2016 were high and medium, respectively. In 2019, New Bedford was the homeport and primary landing port for 243 and 262 federal fishing permits (i.e., vessels), respectively. Total landings in New Bedford were valued at \$451M, 66% of the state-wide total (\$680M), landed by 483 vessels and sold to 76 dealers.

Table 68. Top five species landed by value in New Bedford MA, 2019

Species	Nominal revenue (\$)	Vessels	Dealers
Sea scallop	\$379M	316	32
American lobster	\$13M	56	17
Atlantic surfclam	\$7.4M	16	6
Jonah crab	\$6.1M	26	8
<i>Note:</i> Data are preliminary; data for one of the five top species landed are confidential.			
<i>Source:</i> NEFSC dealer data, accessed March 2020.			

Scallop fishery: New Bedford is a primary port for the scallop fishery, with an average revenue of \$266M/year from 2010-2017 (highest of all ports), 80% of total revenue in New Bedford during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were high and medium-high, respectively (Table 55). For both the LA and LAGC vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, scallops (\$379M) was the highest valued species, accounting for 84% of the total New Bedford revenue, landed by 316 vessels and sold to 32 dealers (Table 68). In 2019, New Bedford was the registered homeport and primary landing port for 179 and 188 scallop vessels, respectively, about 24% LAGC only vessels, 32% LA-only vessels, and 43% LA and LAGC combo vessels (Table 69). For the vessels with New Bedford as a primary landing port, their

registered homeports are primarily New Bedford, but also Boston, Fairhaven, and Nantucket, MA; Atlantic City, Cape May, NJ; and New Bern, NC. For the vessels with New Bedford as a registered homeport, their primary landing ports are primarily New Bedford, but also Fairhaven.

Table 69. Number of scallop vessels (permits) in New Bedford, 2019

Permit category	Homeport	Landing port
LAGC only	42	46
IFQ	31	32
NGOM	2	2
Incidental	9	12
LA only	59	61
Full time, dredge	52	52
Full time, small dredge	7	7
Part time, small dredge	0	1
Full time, trawl		1
LA and IFQ combo	4	4
LA and NGOM combo	18	19
LA and incidental combo	56	58
Total	179	188
<i>Source: GARFO permit data, accessed July 2019.</i>		

5.6.8.3.4 Rhode Island Ports

Narragansett/Point Judith

General: Point Judith is a fishing community in the town of Narragansett, in Washington County, RI. In 2017, Narragansett had an estimated population of 15,601, a 2% decrease from the year 2010 (15,868). In 2017, 2% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Narragansett; the poverty rate was 18%; and the population was 94% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Narragansett/Point Judith in 2016 were high and medium, respectively. In 2019, Narragansett and Point Judith were the homeport and primary landing port for 138 and 153 Federal fishing permits (i.e., vessels), respectively. Total landings in Point Judith were valued at \$65M, 60% of the state-wide total (\$108M), landed by 238 vessels and sold to 51 dealers.

Scallop fishery: Point Judith is a primary port for the scallop fishery, with an average revenue of \$7.2M/year from 2010-2017 (eighth highest of all ports), 17% of total revenue in Point Judith during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were high and medium, respectively (Table 55). For the LA vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, scallops (\$20M) was the highest valued species, accounting for 31% of the total Point Judith revenue, landed by 49 vessels and sold to 15 dealers. In 2019, Point Judith was the registered homeport and primary landing port for 35 and 40 scallop vessels, respectively, about 94% LAGC only vessels and 6% LA and LAGC combo vessels (Table 70). No LA-only vessels are based in Point Judith. For the vessels with Point Judith as a primary landing port, their registered homeports are primarily Point Judith but also Boston and Scituate, MA; and Narragansett and Wakefield, RI. For the vessels with Point Judith as a registered homeport, their primary landing port is Point Judith.

Table 70. Number of scallop vessels (permits) in Point Judith, 2019

Permit category	Homeport	Landing port
LAGC only	33	38
IFQ	8	8
NGOM	0	1
Incidental	25	29
LA and NGOM combo	2	2
Total	35	40
<i>Source: GARFO permit data, accessed July 2019.</i>		

5.6.8.3.5 Connecticut Ports

Stonington

General: Stonington is a fishing community in New London County, CT. In 2017, Stonington had an estimated population of 18,483, a 0.3% decrease from the year 2010 (18,545). In 2017, 0.3% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Stonington; the poverty rate was 8%; and the population was 91% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Stonington in 2016 were high and low, respectively. In 2019, Stonington was the homeport and primary landing port for 14 and 19 federal fishing permits (i.e., vessels), respectively. Total landings in Stonington were valued at \$3.9M, 26% of the state-wide total (\$18M). Sea scallops (\$1.3M) was the highest valued species, accounting for 33% of the total Stonington revenue, landed by 13 vessels and sold to 6 dealers (Table 71).

Scallop fishery: Stonington is a primary port for the scallop fishery, with an average revenue of \$4.8M/year from 2010-2017 (ninth highest of all ports), 69% of total revenue in Stonington during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were medium and low, respectively. For the LA vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, there was \$0.86M in scallop revenue, landed by 10 vessels and sold to 4 dealers and it was one of the top five species landed by value in Stonington (Table 71). In 2019, Stonington was the registered homeport and primary landing port for 5 and 7 scallop vessels, respectively, about 43% LAGC only vessels, 29% LA only vessels, and 29% LA and LAGC combo vessels (Table 72). For the vessels with Stonington as a primary landing port, their registered homeports are primarily Stonington but also Mystic, CT and Montauk, NY. For the vessels with Stonington as a registered homeport, their primary landing port is Stonington.

Table 71. Top five species landed by value in Stonington, 2019

Species	Revenue (\$)	Vessels	Dealers
Loligo squid	\$1.3M	13	6
Sea scallop	\$0.86M	10	4
Summer flounder	\$0.51M	18	8
Scup	\$0.31M	19	7
<i>Note: Data are preliminary; data for one of the five top species landed are confidential.</i>			
<i>Source: NEFSC dealer data, accessed March 2020.</i>			

Table 72. Number of scallop vessels (permits) in Stonington, 2019

Permit category	Homeport	Landing port
LAGC only	1	3
IFQ	0	1
Incidental	1	2
LA only	2	2
Full time, dredge	1	1
Full time, small dredge	1	1
LA and IFQ combo	1	1
LA and incidental combo	1	1
Total	5	7

Source: GARFO permit data, accessed July 2019.

5.6.8.3.6 New Jersey Ports

Point Pleasant/Point Pleasant Beach

General: Point Pleasant and Point Pleasant Beach are two boroughs in Ocean County, NJ, but are considered one fishing community. Landings occur in Point Pleasant Beach, but fishermen usually attribute landings to Point Pleasant. In 2017, the two boroughs combined had an estimated population of 23,096, a 0.2% increase from the year 2010 (23,057). In 2017, 0.4% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Point Pleasant; the poverty rate was 5%; and the population was 93% white, non-Hispanic (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Point Pleasant in 2016 were both low. For Point Pleasant Beach, they were high and medium-high, respectively. In 2019, Point Pleasant/Point Pleasant Beach was the homeport and primary landing port for 64 and 72 federal fishing permits (i.e., vessels), respectively. Total landings in Point Pleasant/Point Pleasant Beach were valued at \$17M, 18% of the state-wide total (\$179M), landed by 88 vessels and sold to 31 dealers.

Scallop fishery: Point Pleasant/Point Pleasant Beach is a primary port for the scallop fishery, with an average revenue of \$12M/year from 2010-2017 (seventh highest of all ports), 46% of total revenue in Point Pleasant/Point Pleasant Beach during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were high and medium, respectively (Table 55). For both the LA and LAGC vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, scallops (\$10M) was the highest valued species, accounting for 33% of the total Point Pleasant revenue, landed by 33 vessels and sold to 12 dealers (Table 73). In 2019, Point Pleasant/Point Pleasant Beach was the registered homeport and primary landing port for 28 and 29 scallop vessels, respectively, about 69% LAGC only vessels, 10% LA only vessels and 17% LA and LAGC combo vessels (Table 74). For the vessels with Point Pleasant/Point Pleasant Beach as a primary landing port, their registered homeport is primarily Point Pleasant but also Belford, NJ. For the vessels with Point Pleasant/Point Pleasant Beach as a registered homeport, their primary landing port is Point Pleasant/Point Pleasant Beach.

Table 73. Top five species landed by value in Point Pleasant/Point Pleasant Beach, 2019

Species	Nominal revenue (\$)	Vessels	Dealers
Sea scallop	\$10M	33	12
Summer flounder	\$2.9M	48	15
Black seabass	\$1.6M	40	16

Note: Data are preliminary; data for two of the five top species landed are confidential.

Source: NEFSC dealer data, accessed March 2020.

Table 74. Number of scallop vessels (permits) in Point Pleasant/Point Pleasant Beach, 2019

Permit category	Homeport	Landing port
LAGC only	20	20
IFQ	16	16
NGOM	1	1
Incidental	3	4
LA only	3	3
Full time, dredge	2	2
Full time, small dredge	1	1
LA and IFQ combo	4	4
LA and incidental combo	1	1
Total	28	29
<i>Source: GARFO permit data, accessed July 2019.</i>		

Barnegat Light/Long Beach

General: Barnegat Light on Long Beach island is a fishing community in Ocean County, NJ. In 2017, Barnegat Light had an estimated population of 494, a 14% decrease from the year 2010 (574). In 2017, 5% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Barnegat Light; the poverty rate was 1%; and the population was 98% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Barnegat Light in 2016 were both high. In 2019, Barnegat Light was the homeport and primary landing port for 65 and 69 federal fishing permits (i.e., vessels), respectively. Total landings in Barnegat Light were valued at \$25M, 14% of the state-wide total (\$179M), landed by 55 vessels sold to 13 dealers.

Scallop fishery: Barnegat Light is a primary port for the scallop fishery, with an average revenue of \$19M/year from 2010-2017 (fifth highest of all ports), 77% of total revenue in Barnegat Light during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were both high (Table 55). For both the LA and LAGC vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, there was \$20M in scallop revenue, landed by 25 vessels and sold to 4 dealers and it was one of the top five species landed by value in Barnegat Light (Table 75). In 2019, Barnegat Light was the registered homeport and primary landing port for 30 and 31 scallop vessels, respectively, about 61% LAGC only vessels and 39% LA and LAGC combo vessels (Table 76). No LA-only vessels are based in Barnegat Light. For the vessels with Barnegat Light as a primary landing port, their registered homeports are primarily Barnegat Light but also Manahawkin, NJ and Philadelphia, PA. For the vessels with Barnegat Light as a registered homeport, their primary landing port is Barnegat Light but also Philadelphia, PA.

Table 75. Top five species landed by value in Barnegat Light/Long Beach, 2019

Species	Revenue (\$)	Vessels	Dealers
Sea scallop	\$20M	25	4
Monkfish	\$0.96M	41	7
Summer flounder	\$0.49M	18	4
<i>Note: Data are preliminary; data for one of the five top species landed are confidential.</i>			
<i>Source: NEFSC dealer data, accessed March 2020.</i>			

Table 76. Number of scallop vessels (permits) in Barnegat Light, 2019

Permit category	Homeport	Landing port
LAGC only	20	19
IFQ	18	17
Incidental	2	2
LA and IFQ combo	5	7
LA and incidental combo	5	5
Total	30	31
<i>Source: GARFO permit data, accessed July 2019.</i>		

Wildwood

General: Wildwood is a fishing community in Cape May County, NJ. In 2017, Wildwood had an estimated population of 5,136, a 4% decrease from the year 2010 (5,325). In 2017, 0.0% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Wildwood; the poverty rate was 28%; and the population was 66% white, non-Hispanic, 23% Hispanic or Latino, and 7% Black or African American alone.

The commercial fishing engagement and reliance indices for Wildwood in 2016 were both medium. In 2019, Wildwood was the homeport and primary landing port for 3 and 4 federal fishing permits (i.e., vessels), respectively. Total landings in Wildwood were valued at \$6.5M, 4% of the state-wide total (\$168M).

Table 77. Top five species landed by value in Wildwood, 2019

Species	Revenue (\$)	Vessels	Dealers
Sea scallop	\$6.2M	11	3
<i>Note: Data are preliminary; data for four of the five top species landed are confidential.</i>			
<i>Source: NEFSC dealer data, accessed March 2020.</i>			

Scallop fishery: Wildwood is a primary port for the scallop fishery, with an average revenue of \$4.4M/year from 2010-2017 (tenth highest of all ports), 96% of total revenue in Wildwood during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were both medium. In 2019, scallops (\$6.2M) was the highest valued species, accounting for 95% of the total Wildwood revenue, landed by 11 vessels and sold to 3 dealers (Table 77). In 2019, Wildwood was the registered homeport and primary landing port for 2 and 3 scallop vessels, respectively, one LAGC-only vessel and 2-3 LA and LAGC combo vessels (Table 78). No LA-only vessels are based in Wildwood. For the vessels with Wildwood as a primary landing port, their registered homeports are Wildwood and Philadelphia, PA. For the vessels with Wildwood as a registered homeport, their primary landing port is Wildwood.

Table 78. Number of scallop vessels (permits) in Wildwood, 2019

Permit category	Homeport	Landing port
LAGC only	1	1
IFQ	1	1
LA and IFQ combo	0	1
LA and incidental combo	1	1
Total	2	3
<i>Source: GARFO permit data, accessed July 2019.</i>		

Cape May

General: Cape May is a fishing community in Cape May County, NJ. In 2017, Cape May had an estimated population of 3,500, a 3% decrease from the year 2010 (3,607). In 2017, 0.3% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Cape May; the poverty rate was 9%; and the population was 79% white, non-Hispanic and 15% Hispanic or Latino (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Cape May in 2016 were both high. In 2019, Cape May was the homeport and primary landing port for 133 and 138 federal fishing permits (i.e., vessels), respectively (GARFO 2019). Total landings in Cape May were valued at \$82M, 46% of the state-wide total (\$179M), landed by 140 vessels and sold to 11 dealers.

Table 79. Top five species landed by value in Cape May, 2019

Species	Revenue (\$)	Vessels	Dealers
Sea scallop	\$58M	140	11
Inshore longfin squid	\$9.2M	15	3
Loligo squid	\$5.3M	36	7
<i>Note:</i> Data are preliminary; data for three of the five top species landed are confidential.			
<i>Source:</i> NEFSC dealer data, accessed March 2020.			

Scallop fishery: Cape May is a primary port for the scallop fishery, with an average revenue of \$54M/year from 2010-2017 (second of all ports), 81% of total revenue in Cape May during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were both high (Table 55). For both the LA and LAGC vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, scallops (\$58M) was the highest valued species, accounting for 70% of the total Cape May revenue, landed by 140 vessels and sold to 11 dealers (Table 79). In 2019, Cape May was the registered homeport and primary landing port for 84 and 87 scallop vessels, respectively, 15% LAGC-only vessels, 39% LA-only vessels, and 40% LA and LAGC combo vessels (Table 80). For the vessels with Cape May as a primary landing port, their registered homeports are primarily Cape May but also Port Norris, NJ; Philadelphia, PA; Hampton, VA; and Aurora, NC. For the vessels with Cape May as a registered homeport, their primary landing port is primarily Cape May but also New Bedford, MA and Port Norris, NJ.

Table 80. Number of scallop vessels (permits) in Cape May, 2019

Permit category	Homeport	Landing port
LAGC only	12	13
IFQ	7	8
Incidental	5	5
LA only	35	34
Full time, dredge	21	21
Full time, small dredge	8	8
Part time, small dredge	3	2
Full time, trawl	3	3
LA and IFQ combo	12	13
LA and NGOM combo	1	1
LA and incidental combo	24	26
Total	84	87
<i>Source:</i> GARFO permit data, accessed July 2019.		

5.6.8.3.7 Virginia Ports

Hampton and Seaford

General: Hampton is a fishing community in the Hampton Roads metropolitan area of Virginia. Seaford is an unincorporated town in York County to the north of Hampton. Both communities are located on the Virginia Peninsula, along with Newport News. In 2017, Hampton had an estimated population of 136,255, a 0.9% decrease from the year 2010 (137,436); Seaford (postal area) had an estimated population of 3,562, a 3% decrease from the year 2010 (3,669). In 2017, 0.3% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Hampton (2% for Seaford); the poverty rate was 15% (3% for Seaford); and the population was 49% Black or African American alone, 39% white, non-Hispanic, and 5% Hispanic or Latino (91% white for Seaford; U.S. Census 2020). The commercial fishing engagement and reliance indices for Hampton are high and low in 2016, respectively. Indicators are not available for Seaford. In 2019, Hampton and Seaford were the homeport and primary landing port for 25 and 35 federal fishing permits (i.e., vessels), respectively. Total landings in Hampton and Seaford were valued at \$27M, 36% of the state-wide total (\$76M).

Scallop fishery: Hampton and Seaford (combined) is a primary port for the scallop fishery, with an average revenue of \$24M/year from 2010-2017 (third highest of all ports), 85% of total revenue in Hampton and Seaford during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were medium to low (Table 55). For LA vessels, it was a top ten landing port each year from 2013-2017 (Table 56). In 2019, scallops (\$21M) was the highest valued species, accounting for 78% of the total Hampton and Seaford revenue, landed by ~17 vessels and sold to ~4 dealers (Table 81). In 2019, Hampton and Seaford (combined) was the registered homeport and primary landing port for 21 and 28 scallop vessels, respectively, 7% LAGC-only vessels, 68% LA-only vessels, and 25% LA and LAGC combo vessels (Table 82). For the vessels with Hampton or Seaford as a primary landing port, their registered homeports are primarily Hampton; Seaford; and Wanchese, VA but also Norfolk, VA; and Beaufort, NC. For the vessels with Hampton or Seaford as a registered homeport, their primary landing port is primarily Hampton or Seaford but also Cape May, NJ and Richmond, VA.

Table 81. Top five species landed by value in Hampton and Seaford, 2019

Species	Revenue (\$)	Vessels	Dealers
Sea scallop	\$21M	~17	~4
Summer flounder	\$2.5M	~58	5
Black seabass	\$0.76M	32	6
Loligo squid	\$0.64M	39	4
<i>Note:</i> Data are preliminary; data for one of the five top species landed are confidential. <i>Source:</i> NEFSC dealer data, accessed March 2020.			

Table 82. Number of scallop vessels (permits) in Hampton and Seaford (combined), 2019

Permit category	Homeport	Landing port
LAGC only	1	2
IFQ	1	1
Incidental		1
LA only	18	19
Full time, dredge	16	19
Full time, trawl	2	0
LA and IFQ combo	1	2
LA and incidental combo	1	5
Total	21	28
<i>Source:</i> GARFO permit data, accessed July 2019.		

Newport News

General: Newport News is a fishing community in the Hampton Roads metropolitan area of Virginia. In 2017, Newport News had an estimated population of 180,775, a 0.03% increase from the year 2010 (180,719). In 2017, 0.3% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Newport News; the poverty rate was 16%; and the population was 44% white, non-Hispanic, 40% black or African American alone, and 9% Hispanic or Latino (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Newport News are high and low in 2016, respectively. In 2019, Newport News was the homeport and primary landing port for 25 and 34 federal fishing permits (i.e., vessels), respectively. Total landings in Newport News were valued at \$17M, 22% of the state-wide total (\$76M). Sea scallops (\$14M) was the highest valued species, accounting for 82% of the total Newport News revenue, landed by 43 vessels and sold to 6 dealers (Table 83).

Scallop fishery: Newport News is a primary port for the scallop fishery, with an average revenue of \$23M/year from 2010-2017 (fourth highest of all ports), 89% of total revenue in Newport News during that time (Table 54). Scallop fishing engagement and reliance indices on average in 2013-2017 were high and low, respectively (Table 55). In 2019, scallops (\$14M) was the highest valued species, accounting for 82% of the total Newport News revenue, landed by 43 vessels and sold to 6 dealers (Table 83).

In 2019, Newport News was the registered homeport and primary landing port for 22 and 31 scallop vessels, respectively, 5% LAGC-only vessels, 77% LA-only vessels, and 16% LA and LAGC combo vessels (Table 84). For the vessels with Newport News as a primary landing port, their registered homeport is primarily Newport News but also Norfolk, Poquoson, and Suffolk, VA; Lowland, NC; and Cape Canaveral and Key West, FL. For the vessels with Newport News as a registered homeport, their primary landing port is Newport News. From 1996-2015, dredge fishing by vessels with Newport News as a primary landing port primarily occurred in the Mid-Atlantic Exemption Area and in the Nantucket Lightship and Closed Area I and II Access Areas (NROC 2019).

Table 83. Top five species landed by value in Newport News, 2019

Species	Revenue (\$)	Vessels	Dealers
Sea scallop	\$14M	43	6
Summer flounder	\$1.9M	49	6
Black seabass	\$0.59M	17	5
<i>Note:</i> Data are preliminary; data for two of the five top species landed are confidential. <i>Source:</i> NEFSC dealer data, accessed March 2020.			

Table 84. Number of scallop vessels (permits) in Newport News, 2019

Permit category	Homeport	Landing port
LAGC only	1	2
IFQ	1	2
LA only	16	24
Full time, dredge	15	21
Full time, small dredge	0	2
Part time, small dredge	1	1
LA and IFQ combo	3	3
LA and incidental combo	2	2
Total	22	31
<i>Source:</i> GARFO permit data, accessed July 2019.		

5.6.8.3.8 North Carolina Ports

Hobucken

General: Hobucken is a fishing community in Pamlico County, NC. In 2017, Hobucken had an estimated population of 80, a 38% decrease from the year 2010 (129). In 2017, 0.0% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Hobucken; the poverty rate was 21%; and the population was 100% white, non-Hispanic, (U.S. Census 2020).

The commercial fishing engagement and reliance indices for Hobucken in 2016 were low. In 2019, Hobucken was the homeport and primary landing port for 1 federal fishing permits (i.e., vessel). In 2019, total landings in North Carolina were \$45M; landings in Hobucken are confidential.

Scallop fishery: Hobucken is a primary port for the scallop fishery. Scallop fishing engagement and reliance indices on average in 2013-2017 were low and high, respectively (Table 55).

6.0 ENVIRONMENTAL IMPACTS

6.1 INTRODUCTION

The impacts of the alternatives under consideration are evaluated herein relative to the valued ecosystem components (VECs) described in the Affected Environment (Section 5.0) and to each other.

6.1.1 Evaluation Criteria

This action evaluates the potential impacts using the criteria in Table 85.

Table 85. Terms used to summarize impacts on VECs

General Definitions				
VEC	Resource Condition	Direction of Impact		
		Positive (+)	Negative (-)	No Impact (0)
Target and Non-target Species	Overfished status defined by the MSA	Alternatives that would maintain or are projected to result in a stock status above an overfished condition*	Alternatives that would maintain or are projected to result in a stock status below an overfished condition*	Alternatives that do not impact stock / populations
ESA-listed Protected Species (endangered or threatened)	Populations at risk of extinction (endangered) or endangerment (threatened)	Alternatives that contain specific measures to ensure no interactions with protected species (i.e., no take)	Alternatives that result in interactions/take of listed resources, including actions that reduce interactions	Alternatives that do not impact ESA listed species
MMPA Protected Species (not also ESA listed)	Stock health may vary but populations remain impacted	Alternatives that will maintain takes below PBR and approaching the Zero Mortality Rate Goal	Alternatives that result in interactions with/take of marine mammals that could result in takes above PBR	Alternatives that do not impact marine mammals
Physical Environment / Habitat / EFH	Many habitats degraded from historical effort	Alternatives that improve the quality or quantity of habitat	Alternatives that degrade the quality, quantity or increase disturbance of habitat	Alternatives that do not impact habitat quality
Human Communities (Socioeconomic)	Highly variable but generally stable in recent years	Alternatives that increase revenue and social well-being of fishermen and/or communities	Alternatives that decrease revenue and social well-being of fishermen and/or communities	Alternatives that do not impact revenue and social well-being of fishermen and/or communities

	Magnitude of Impact	
A range of impact qualifiers is used to indicate any existing uncertainty	Negligible	To such a small degree to be indistinguishable from no impact
	Slight, as in slight positive or slight negative)	To a lesser degree / minor
	Moderately positive or negative	To an average degree (i.e., more than “slight”, but not “high”)
	High, as in high positive or high negative	To a substantial degree (not significant unless stated)
	Significant	Affecting the resource condition to a great degree, see 40 CFR 1508.27.
	Likely	Some degree of uncertainty associated with the impact
<p>*Actions that will substantially increase or decrease stock size, but do not change a stock status may have different impacts depending on the particular action and stock. Meaningful differences between alternatives may be illustrated by using another attribute aside from the MSA status, but this must be justified within the impact analysis.</p>		

6.2 IMPACTS ON ATLANTIC SEA SCALLOPS (BIOLOGICAL IMPACTS)

6.2.1 Action 1 – Northern Gulf of Maine Catch Limits

Action 1 considers how the scallop biomass in the Northern Gulf of Maine should be accounted for in the legal limits of the fishery (OFL, ABC, ACL). The Council uses a separate process to set specifications for the Northern Gulf of Maine.

6.2.1.1 Alternative 1 – No Action

There would be no change to how scallops within the Northern Gulf of Maine are accounted for within the fishery's legal limits, and the ACL flowchart (Figure 1). The annual allocation to the NGOM management area would continue to be included in the fishery-wide OFL with estimates of state waters catch. Continuing to include the NGOM ACL/TAC as part of the OFL would not be expected to have a direct impact on the scallop resource. Continuing to use this process would likely omit a portion of scallop biomass from estimates of the OFL and ABC because the legal values assigned to NGOM would be equal to the estimated catch. This could lead to an incomplete picture of the status of the scallop resource as a whole, and which could lead to negative impacts on the scallop resource, particularly if the spatial extent of the scallop resource shifts in response to climate change.

Relative to Alternative 2, Alternative 1 would likely have a low negative impact on the scallop resource.

6.2.1.2 Alternative 2 – Account for the Northern Gulf of Maine as part of the Acceptable Biological Catch and Annual Catch Limits

Alternative 2 would account for the scallop biomass in the Northern Gulf of Maine as part of the legal limits in the fishery by adding biomass from the area into calculations of the overfishing limit (OFL) and acceptable biological catch (ABC).

Including exploitable scallop biomass within the Northern Gulf of Maine would likely increase the estimates of the OFL and ABC because exploitable biomass in the management unit (from open and closed areas) would be considered in the calculation of the OFL and ABC.

This would likely result in an improved understanding of the status of the resource by accounting for all animals in the management area that are exploitable versus only the one the fishery plans to harvest (Alternative 1). This is particularly important if the spatial extent of the scallop resource shifts in response to climate change. Expanding the understanding of the scallop resource in the Gulf of Maine would afford managers a more complete picture of the stock status and could result in a positive impact on the resource as a whole.

Calculating the removals associated with a 75% probability of exceeding F_{MSY} would allow for an evaluation of the fishing mortality associated with the annual allocation and exploitable biomass in the area. This information would inform management decisions and could have a positive impact on the scallop population in this area.

Alternative 2 accounts for the NGOM ACL as part of the calculation of the overall ACL before distributing the sub-ACL for the LA and LAGC IFQ components (Figure 2). Since the fishery allocations for the LA and LAGC IFQ components are evaluated relative to their sub-ACLs and ACTs, Alternative 2 would be expected to accurately represent biomass in different parts of the resource (GOM vs. GB/MA).

Alternative 2 would likely have low positive impact relative to Alternative 1.

6.2.2 Action 2 – Northern Gulf of Maine Allocations

6.2.2.1 Alternative 1 – No Action

Under Alternative 1, allocations to the Northern Gulf of Maine management area would follow the approach the Council established in Amendment 11. An ACL specified as a hard-TAC would be set for the LAGC component fishing in the NGOM management area. When the NGOM hard-TAC is caught, the area would close to all scallop vessels (including LA vessels). LA catch would not be applied against the NGOM TAC, and limited access vessels would operate under DAS management as long as the LAGC NGOM TAC has not been caught.

Alternative 1 could have direct negative impacts on the scallop resource in the Northern Gulf of Maine management area. While the NGOM TAC for the LAGC would be set using either survey data or catch data from the area, removals from the area could exceed this value if LA vessels fish DAS in the NGOM, as they did in 2016 and 2017. Overall harvest that exceeds the LAGC TAC (ACL) could lead to direct negative impacts on the scallop resource within the management unit.

Under Alternative 1, catch accounting from the management unit for Limited Access DAS fishing would likely be difficult because Limited Access vessels would be able to fish inside and outside of the area on the same trip. There would be uncertainty around which scallops were landed in the NGOM management area.

Relative to Alternative 2, Alternative 1 could be expected to have negative impacts on the scallop resource in the Northern Gulf of Maine.

6.2.2.2 Alternative 2 – Create a Northern Gulf of Maine set-aside to support research and a directed LAGC fishery, share additional NGOM allocation between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ).

Alternative 2 would create NGOM Allocation that would serve as the limit for scallop removals from the management area. The NGOM Allocation would be distributed to multiple set-asides, and potentially as NGOM APL, depending on the level of exploitable biomass in the area.

Alternative 2 is likely to have direct positive impacts on the scallop resource in the Northern Gulf of Maine management area. Allocating the scallop resource to all limited access permit holders (LA and LAGC) promotes conservation by specifying a harvest from the management unit.

Relative to Alternative 1, Alternative 2 would have positive impacts on the scallop resource by specifying an overall NGOM allocation with accountability measures for all components of the fishery.

6.2.2.2.1 Options 1-4: NGOM set-aside triggers and allocation splits between the NGOM set-aside and the NGOM APL.

Options 1 – 4 specify a NGOM set-aside trigger, and the how the NGOM Allocation could be split between the NGOM Set-Aside and the NGOM APL after deductions to support to research and potentially monitoring (see Action 3). From a biological and resource perspective, the impacts of Options 1-4 are likely to be negligible because these measures focus on how the allocations would be distributed to different components of the fishery. All options would set-up a process for how the overall NGOM allocation would be distributed but would not specify how many scallops could be harvested in a given year. Selecting a trigger and sharing arrangement is not expected to have direct or indirect impacts on the scallop resource. The impacts of annual allocations on the scallop resource will be analyzed in subsequent actions that set those allocations

6.2.3 Action 3 – Monitoring Directed Scallop Fishing in the Northern Gulf of Maine Management Area.

6.2.3.1 Alternative 1 – No Action

Alternative 1 could be expected to have indirect low negative impacts on the scallop resource since there would be no mechanism to observe directed scallop trips in the NGOM management area. Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. This information can be used to model scallop populations and assess the status of the resource.

Relative to Alternatives 2 & 3, Alternative 1 could be expected to have low negative impact on the scallop resource.

6.2.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM TAC to off-set monitoring costs.

Alternative 2 could be expected to have a positive impact on the scallop resource in the Northern Gulf of Maine. Alternative 2 would add an observer call-in requirement and would then create a set-aside mechanism to offset program costs to vessels. The intention of the set-aside is that carrying an observer would be cost-neutral to the vessels, i.e. they would have additional pounds available to harvest and the revenue from this harvest would be equivalent to the rates paid to observers. Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. Shell height data is used to represent size-frequencies landed by the fishery and estimate fishery selectivity in the stock assessment model. Size frequencies from assessment model (CASA) are used in the forward projecting model (SAMS). Observer data has been used to estimate LPUE in the fishery, which is a factor in determining DAS allocations. Data from observed trips in the Northern Gulf of Maine could be used directly in modeling scallop populations in the Gulf of Maine and Northern Gulf of Maine management unit. This information could be used to set allocations at a level where harvest is projected to result in stock status is above an overfished condition.

Relative to Alternative 1, Alternative 2 could be expected to have a positive impact on the scallop resource. Relative to Alternative 3, Alternative 2 could be expected to have a negligible impact on the scallop resource, since Alternative 3 would also facilitate the collection of data by observers using a different program proposed in Alternative 3.

6.2.3.3 Alternative 3 – Monitor directed scallop fishing in the NGOM with observers from the NEFOP program

Alternative 3 could be expected to have a positive impact on the scallop resource in the Northern Gulf of Maine. Alternative 3 would add an observer call-in requirement but would provide observer coverage via the NEFOP, such that vessels would not pay a daily rate to the observers if selected to carry one. As noted in Alternative 2, observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. Shell height data is used to represent size-frequencies landed by the fishery and estimate fishery selectivity in the stock assessment model. Size frequencies from assessment model (CASA) are used in the forward projecting model (SAMS). Observer data has been used to estimate LPUE in the fishery, which is a factor in determining DAS allocations. Data from observed trips in the Northern Gulf of Maine could be used directly in modeling scallop populations in the Gulf of Maine and Northern Gulf of Maine

management unit. This information could be used to set allocations at a level where harvest is projected to result in stock status is above an overfished condition.

Relative to Alternative 1, Alternative 3 could be expected to have a positive impact on the scallop resource. Relative to Alternative 2, Alternative 3 could be expected to have a negligible impact on the scallop resource, since Alternative 3 would also facilitate the collection of data by observers using a different program proposed in Alternative 2.

6.2.4 Action 4 – Support Scallop Research using scalloping from the Northern Gulf of Maine

6.2.4.1 Alternative 1 – No Action

There would be no change to the scallop RSA program. Under the existing process, the Council could recommend that the NGOM be available to support compensation fishing, but compensation fishing within the area would not be accounted for in the NGOM Allocation.

No Action would likely have direct and low negative impact on the scallop resource in the Northern Gulf of Maine because removals from compensation fishing would be in addition to the allocation set for the area. This could result in realized F rates that are higher than target F rates.

Relative to Alternative 2, Alternative 1 could be expected to have a low negative impact on the scallop resource in the Northern Gulf of Maine.

6.2.4.2 Alternative 2 – Allocate a portion of the NGOM allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Alternative 2 would establish a process to set-aside a portion of the NGOM Allocation that would be used to increase the overall size of the Scallop RSA. Alternative 2 would likely have direct and low positive impact on the scallop resource in the Northern Gulf of Maine because removals from compensation fishing would be accounted for in the NGOM allocation set for the area.

Relative to Alternative 1, Alternative 2 would have positive impacts on the scallop resource by accounting for landings from all directed scallop fishing in the area.

6.2.4.2.1 Options 1-4: Allocate part of the NGOM allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Options 1-4 would establish a process to determine the size of the NGOM research set-aside. This process, in and of itself, is not expected to have direct or indirect impacts on the scallop resource. The impacts of annual allocations, and the subsequent size of the NGOM research set-aside, will be analyzed in subsequent actions that set those allocations. From a biological and resource perspective, these options are administrative measure because they set up a way to calculate how much of the NGOM Allocation would be set-aside for research and added to the overall scallop RSA.

For Options 1 – 3, using a percentage of the NGOM allocation would result in annual variation in the size of overall RSA and the amount of scallops that can be harvested in the area through compensation fishing. From a biological perspective, the size of the NGOM set-aside could have impacts on the scallop resource on Georges Bank and in the Mid-Atlantic if vessels opt to fish compensation pounds outside of the NGOM. For example, if the NGOM allocation is around 6 million pounds, the contribution to the overall RSA from Option 1 would be 300,000 pounds compared to 900,000 pounds if Option 3 is selected, while Option 4 would cap the RSA contribution from the NGOM at 50,000 pounds. Ultimately, the impacts of actual RSA allocations in the NGOM should be analyzed in future actions.

6.2.5 Action 5 – NGOM Fishing Season

Action 5 relates to the prosecution of the fishery and includes two alternatives to limit fishing activity and one seasonal closure during periods of lower yield. Action 5 includes several measures could have an impact on the scallop resource in the Northern Gulf of Maine. The biological impact of the Action 5 alternatives on the scallop resource is likely to vary with 1) the size of the NGOM set-aside, and 2) the combination of alternatives that are selected. Scallop meat weights vary seasonally and are generally larger in the spring and summer (see Section 5.2.3). Variation in meat size can impact realized fishing mortality rates on the scallop population. Examples of how the length of the season may vary depending on how many vessels are active in the fishery, the number of 200 pound landings per week, and the size of the NGOM set-aside are shown in Table 86.

The magnitude of impact on the resources is likely to vary depending on which alternatives are selected, but in general if a combination of Alternatives 2, 3, and 4 are selected, there could be more of an impact on the resource compared to only one of the options being selected.

The impact of all these measures will be accounted for and analyzed during the specification setting process for the NGOM in future actions.

Table 86 – Comparison of NGOM season length at 200,000 pound and 1 million pound NGOM set-aside under varying levels of participation (active vessels, trips per week)

200,000 pound NGOM set-aside scenario									
Active Vessels	40	40	40	110	110	110	425	425	425
Trips per vessel per week	7	5	3	7	5	3	7	5	3
NGOM set-aside (lbs)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Weeks open	3.6	5	8.3	1.4	2	3.3	0.33	0.47	0.78
Fishery closes week of:	15-Apr	29-Apr	20-May	8-Apr	8-Apr	15-Apr	1-Apr	1-Apr	1-Apr
With Seasonal Closure:	15-Apr	29-Apr	20-May	8-Apr	8-Apr	15-Apr	1-Apr	1-Apr	1-Apr
1 million pound NGOM set-aside scenario									
Active Vessels	40	40	40	110	110	110	425	425	425
Trips per vessel per week	7	5	3	7	5	3	7	5	3
NGOM set-aside (lbs)	1 mil.	1 mil.	1 mil.	1 mil.	1 mil.	1 mil.	1 mil.	1 mil.	1 mil.
Weeks open	17.9	25	41.7	6.5	9	15.2	1.7	2.35	4
Fishery closes week of:	22-Jul	16-Sep	6-Jan	6-May	27-May	8-Jul	8-Apr	15-Apr	22-Apr
With Seasonal Closure:	22-Jul	16-Dec	Year Round	6-May	27-May	8-Jul	8-Apr	15-Apr	22-Apr

6.2.5.1 Alternative 1 – No Action

No Action could be expected to have mixed impacts on the scallop resource in the Northern Gulf of Maine, depending on the timing of removals from the area. As shown in Table 86, the length of the fishing season for the NGOM set-aside is impacted by the number of participants, and the how often each vessels fishes. For example, from 2010 – 2015, the NGOM management area was open year round, while in more recent years (2017 – 2019), the season has lasted between 23 and 32 days.

Relative to Alternative 2 and Alternative 3, Alternative 1 could be expected to have a negligible impact on the scallop resource in the Northern Gulf of Maine as the expected impact of each of these options is mixed. Relative to Alternative 4, Alternative may have a low negative to negligible impact because Alternative 4 would close the NGOM management area at a time when meat weights are smaller.

6.2.5.2 Alternative 2 – Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area.

Limiting the number of sailings per week per vessel may extend the length of the season for LAGC vessels fishing in the NGOM. This could be expected to have a mixed impact on the scallop resource in the NGOM, depending on the timing of removals from the area. If the scallop season is extended to a time of year when seasonal meat weight is higher, there could be slight positive impacts on the resource since trip limits would be reached with fewer animals. If the season is extended so that fishing occurring when meat weight is lower, there could be slight negative impacts on the resource since there would be higher mortality to achieve trip limits.

6.2.5.3 Alternative 3 – Limit vessels to one sailing per day

Limiting the number of sailings per day may extend the length of the season. This could be expected to have a mixed impact on the scallop resource in the Northern Gulf of Maine, depending on the timing of removals from the area. If the scallop season is extended to a time of year when seasonal meat weight is higher, there could be slight positive impacts on the resource since trip limits would be reached with fewer animals. If the season is extended so that fishing occurring when meat weight is lower, there could be slight negative impacts on the resource since there would be higher mortality to achieve trip limits.

6.2.5.4 Alternative 4 – Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually.

A three-month closure of the NGOM management area would be at a time when meat yields in the area are expected to be declining (Figure 16). Shifting fishing effort out of October and November would likely have low positive impacts, particularly if scallop harvests occur during months when meat weights are near their highest.

In the event the NGOM set-aside has not been harvested by September 1, Alternative 4 could be expected to have low positive to negligible impacts on the scallop resource in the Northern Gulf of Maine relative to Alternatives 1 -3 because it would close the area at a time when scallop meat yields are expected to be declining.

6.2.6 Action 6 – Cumulative Maximum Dredge Width that can be fishing in the Norther Gulf of Maine Management Area

The following measures have been evaluative within the context of other actions the Council is considering in Amendment 21, unless otherwise noted. Based on the options under consideration in Action 2 (Section 4.2), directed scallop fishing in the NGOM management area would be done

exclusively with a 10.5' dredge unless the NGOM Allocation is above the specified NGOM set-aside trigger. Since many of the trigger options are above what historical allocations to the area have been, the scenario when LA vessels can fish the area would be when scallop biomass has expanded in the NGOM from recent levels. In general, higher biomass in the NGOM management area would be considered a positive for the scallop resource. How the LA component will fish in the NGOM management area will be determined in a future action. For example, the Council could consider allocating DAS, or access area trips to the area.

Discard and incidental mortality were estimated as a single term during the most recent stock assessment. These estimates were 0.11 and 0.06 of fully recruited fishing mortality on Georges Bank and the Mid-Atlantic, respectively. While incidental mortality is not estimated independently for different dredge widths, it is reasonable to assume incidental mortality for a 10.5' dredge should be 10.5/15 that of a 15' dredge. Therefore, the percentage of incidental mortality compared to landed mortality would likely be relative to both dredge widths.

6.2.6.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the Gulf of Maine dredge exemption program, and no additional restrictions on the combined maximum dredge width that could be fished in the NGOM. All limited access general category vessels and Limited Access vessels participating in the small dredge program would be able to fish a maximum combined dredge width of 10.5 feet in the Northern Gulf of Maine management area. Full-Time Limited Access vessels fishing in the NGOM would be able to fish a maximum combined dredge width of 31 feet, as specified in regulation.

From a scallop resource perspective, cumulative maximum dredge width would likely have negligible impacts. Relative to Alternatives 2 and 3, Alternative 1 could be expected to have negligible impact on the resource.

6.2.6.2 Alternative 2 - Limit the combined dredge width of all federal permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft

The rationale for restricting cumulative maximum dredge width is to slow the rate of harvest within the management unit. From a scallop resource and biological perspective, cumulative maximum dredge width would likely have negligible impacts. Relative to Alternatives 1 and 3, Alternative 2 could be expected to have negligible impact on the resource.

6.2.6.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

The rationale for restricting cumulative maximum dredge width is to slow the rate of harvest within the management unit. From a scallop resource and biological perspective, cumulative maximum dredge width would likely have negligible impacts. Relative to Alternatives 1 and 2, Alternative 3 could be expected to have negligible impact on the resource.

6.2.7 Action 7 – Increase the LAGC IFQ Possession Limit

The LAGC IFQ accounts for roughly 5.5% of scallop landings, and the LAGC IFQ share of the scallop resource is relatively small compared to the LA share. Trip limits, in and of themselves, would be expected to have negligible or slightly mixed impacts on the scallop resource. The size of the LAGC IFQ

trip limit would not be expected to impact the status of the scallop resource since estimated fishing mortality associated with LAGC IFQ removals would remain the same.

6.2.7.1 Alternative 1 – No Action

Under no action, the LAGC IFQ trip limit would remain at 600 pounds per trip. Vessels would continue to be able to fish their quota in 600 pound increments, but the impact on the scallop resource would continue to be evaluated relative to the fishery-wide (LA and LAGC IFQ) estimate of fishing mortality associated with the APL. Overall, Alternative 1, in and of itself, would be expected to have negligible impacts on the scallop resource. Relative to Alternatives 2 and 3, Alternative 1 could be expected to have negligible impacts on the scallop resource.

6.2.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Increasing the LAGC IFQ possession limit would likely have negligible impacts on the scallop resource because the overall fishing mortality from LAGC IFQ harvest would not substantially change compared to what could be expected under the 600-pound possession limit. The impact of LAGC IFQ fishing on the scallop resource would continue to be evaluated relative to the fishery-wide (LA and LAGC IFQ) estimate of fishing mortality associated with the APL. The LAGC IFQ component is allocated a small proportion of the APL (5.5%), and therefore represents a small overall proportion of fishing mortality on the scallop resource.

Increasing the possession limit reduces the number of trips required for a vessel to harvest its quota and increases the ‘catch potential’ for individual trips. The impacts of higher catch potential on the scallop resource are likely to be mixed (both positive and negative), and relatively negligible within the context of the overall scallop resource. It is possible that an increased possession limit could incentivize vessels to fish quota in open areas farther offshore with higher LPUE, meaning fishing pressure would be relieved on inshore aggregations of scallops that have typically been targeted by LAGC IFQ vessels. Under these circumstances, increasing the possession limit could have slightly positive impacts on the resource relative to Alternative 1. Conversely, higher trip limits could allow could facilitate a larger proportion of landings with the same number of trips at times of the year when meat yields are low (see Figure 16, Figure 32, and Figure 33). If this occurs, there could slightly negative impacts on the resource because realized fishing mortality would be higher than estimated fishing mortality. Overall, increasing the trip limit to 800 pounds, in and of itself, would be expected to have negligible impacts on the scallop resource. These arguments would apply to fishing in both access areas and open areas, which are under consideration in Options 1 and 2.

Relative to Alternatives 1 and 3, Alternative 2 could be expected to have negligible impacts on the scallop resource.

6.2.7.3 Alternative 3 – Increase the LAGC IFQ possession limit to 1,200 pounds

Increasing the LAGC IFQ possession limit would likely have negligible impacts on the scallop resource because the overall fishing mortality from LAGC IFQ harvest would not substantially change compared to what could be expected under the 600-pound possession limit. The LAGC IFQ component would continue to receive 5.5% of Annual Projected Landings. The impact of LAGC IFQ fishing on the scallop resource would continue to be evaluated relative to the fishery-wide (LA and LAGC IFQ) estimate of fishing mortality associated with the APL. The LAGC IFQ component is allocated a small proportion of the APL (5.5%), and therefore represents a small overall proportion of fishing mortality on the scallop resource.

Increasing the possession limit reduces the number of trips required for a vessel to harvest its quota and increases the ‘catch potential’ for individual trips. The impacts of higher catch potential on the scallop resource are likely to be mixed (both positive and negative), and relatively negligible within the context

of the overall scallop resource. It is possible that an increased possession limit could incentivize vessels to fish quota in open areas farther offshore with higher LPUE, meaning fishing pressure would be relieved on inshore aggregations of scallops that have typically been targeted by LAGC IFQ vessels. Under these circumstances, increasing the possession limit could have slightly positive impacts on the resource relative to Alternative 1. Conversely, higher trip limits could allow could facilitate a larger proportion of landings with the same number of trips at times of the year when meat yields are low (see Figure 16, Figure 32, and Figure 33). If this occurs, there could slightly negative impacts on the resource because realized fishing mortality would be higher than estimated fishing mortality. Overall, increasing the trip limit to 1200 pounds, in and of itself, would be expected to have negligible impacts on the scallop resource. These arguments would apply to fishing in both access areas and open areas, which are under consideration in Options 1 and 2.

Relative to Alternatives 1 and 2, Alternative 3 could be expected to have negligible impacts on the scallop resource.

6.2.8 Action 8 – Increase the Amount of Observer Compensation Available for LAGC IFQ vessels

6.2.8.1 Alternative 1 – No Action

Alternative 1 could be expected to have indirect low negative impacts on the scallop resource since there would be no mechanism to adjust the amount of observer compensation available for the LAGC IFQ component for trips that are longer than 24 hours. Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip is expected to reduce the risk of observer bias in the LAGC IFQ fishery. Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. If this data is biased, it may distort managers perception of the scallop resource.

Relative to Alternatives 2 & 3, Alternative 1 could be expected to have low negative impact on the scallop resource

6.2.8.2 Alternative 2 - Prorate daily compensation rate in 12-hour increments for observed LAGC IFQ trips longer than one day

Currently, LAGC IFQ vessels are allowed one day of compensation for carrying an observer regardless of the length of a trip but are required to assume the cost of having the observer on board even when a trip exceeds the one day limit. Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip is expected to reduce the risk of observer bias in the LAGC IFQ fishery.

Increasing the amount daily compensation that LAGC IFQ vessels can receive could be expected to decrease incentives to change fishing behavior when an observer is aboard. Therefore, Alternative 2 could be expected to have a slight positive impact on the scallop resource. Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. Shell height data is used to represent size-frequencies landed by the fishery and estimate fishery selectivity in the stock assessment model. Size frequencies from assessment model (CASA) are used in the forward projecting model (SAMS). Observer data has been used to estimate LPUE in the fishery, which is a factor in determining DAS allocations. This information is used to set allocations at a level where harvest is projected to result in stock status is above an overfished condition.

Relative to Alternative 1, Alternative 2 could be expected to have a slight positive impact on the scallop resource. Relative to Alternative 3, Alternative 2 could be expected to have a negligible impact on the scallop resource, since Alternative 3 would also increase the number of pounds available to cover the cost of carrying an observer on trips longer than one day.

6.2.8.3 Alternative 3 – Allow a second day of compensation for trips over 24 hours

Currently, LAGC IFQ vessels are allowed one day of compensation for carrying an observer regardless of the length of a trip but are required to assume the cost of having the observer on board even when a trip exceeds the one day limit. Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip is expected to reduce the risk of observer bias in the LAGC IFQ fishery.

Increasing the amount daily compensation that LAGC IFQ vessels can receive could be expected to decrease incentives to change fishing behavior when an observer is aboard. Therefore, Alternative 3 could be expected to have a slight positive impact on the scallop resource. Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. Shell height data is used to represent size-frequencies landed by the fishery and estimate fishery selectivity in the stock assessment model. Size frequencies from assessment model (CASA) are used in the forward projecting model (SAMS). Observer data has been used to estimate LPUE in the fishery, which is a factor in determining DAS allocations. This information is used to set allocations at a level where harvest is projected to result in stock status is above an overfished condition.

Relative to Alternative 1, Alternative 3 could be expected to have a slight positive impact on the scallop resource. Relative to Alternative 2, Alternative 3 could be expected to have a negligible impact on the scallop resource, since Alternative 2 would also increase the number of pounds available to cover the cost of carrying an observer on trips longer than one day.

6.2.9 Action 9 – One-way Transfer of Quota from LA with IFQ to LAGC IFQ only

There would be no change to the overall LAGC IFQ allocation, which would remain at 5.5% of the APL. Measures in Action 9 would not be expected to have direct impacts on the scallop resource because there would be no change in the overall allocation to this component.

6.2.9.1 Alternative 1 – No Action

Alternative 1 could be expected to have no direct impact on scallop resource. There would be no change to how quota holdings are structured for the LA with IFQ (0.5%) and the LAGC IFQ (5%). Estimated fishing mortality associated with LAGC IFQ removals would remain the same. Relative to Alternatives 2 and 3, Alternative 1 could be expected to have a negligible impact on the scallop resource.

6.2.9.2 Alternative 2 - Allow temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Allowing temporary transfer of from LA vessels with IFQ to LAGC IFQ-only vessels could be expected to have negligible impacts on scallop resource. While there may be changes in which vessels harvest the 5.5% of the APL, allocations for the IFQ component would remain the same. While this measure may lead to changes in the distribution of landings by IFQ permit holders, these differences would not be expected to have direct impacts on the scallop resource. For example, estimated fishing mortality

associated with LAGC IFQ removals would remain the same. Relative to Alternatives 1 and 3, Alternative 2 could be expected to have a negligible impact on the scallop resource.

6.2.9.2.1 Options 1 & 2 – Changes to quota accumulation caps up to 5.5% of the APL

These options address how much quota can be held by LAGC IFQ only permit holders and would not be expected to have a direct impact on the scallop resource. For sub-option 1, there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). For sub-option 2, the quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of IFQ (5.5% of the APL). Both scenarios would not be expected to have impacts on their own and relative to each other because estimated fishing mortality associated with LAGC IFQ removals would remain the same.

6.2.9.3 Alternative 3 - Allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Allowing permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only vessels could be expected to have negligible impacts on scallop resource. While there may be changes in which vessels harvest the 5.5% of the APL, allocations for the IFQ component would remain the same. While this measure may lead to changes in the distribution of landings by IFQ permit holders, these differences would not be expected to have direct impacts on the scallop resource. For example, estimated fishing mortality associated with LAGC IFQ removals would remain the same. Relative to Alternatives 1 and 2, Alternative 3 could be expected to have a negligible impact on the scallop resource.

6.2.9.3.1 Options 1 & 2 - Changes to quota accumulation caps up to 5.5% of the APL

These options address how much quota can be held by LAGC IFQ only permit holders and would not be expected to have a direct impact on the scallop resource. For sub-option 1, there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). For sub-option 2, the quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of IFQ (5.5% of the APL). Both scenarios would not be expected to have impacts on their own and relative to each other because estimated fishing mortality associated with LAGC IFQ removals would remain the same.

6.2.10 Action 10 - Specifications and Framework Adjustment Process

6.2.10.1 Alternative 1 – No Action

Alternative 1 would be expected to have no impact on the scallop resource because it would identify a list of specific issues that may be addressed through future specifications actions or framework adjustments. This measure would not, in and of itself, have any direct impacts on the scallop resource. Relative to Alternative 2, Alternative 1 could be expected to have negligible impacts.

6.2.10.2 Alternative 2 - Expand the list of measures that can be addressed through specifications and/or framework adjustments

Alternative 2 would be expected to have no impact on the scallop resource because it would identify a list of specific issues that may be addressed through future specifications actions or framework adjustments. This measure would not, in and of itself, have any direct impacts on the scallop resource. Relative to Alternative 1, Alternative 2 could be expected to have negligible impacts.

6.3 IMPACTS ON NON-TARGET SPECIES

The potential impacts of management measures considered in this action on non-target species are focused on the four flatfish stocks that the scallop fishery is allocated a sub-ACL for: Georges Bank (GB) yellowtail flounder, Southern New England/Mid Atlantic (SNE/MA) yellowtail flounder, Southern New England/Mid Atlantic (SNE/MA) windowpane flounder, and Georges Bank/Gulf of Maine (GB/GOM) windowpane flounder. If scallop fishery catches of these flatfish stocks exceed the sub-ACL, it may be subject to reactive accountability measures (AMs) in order to reduce bycatch in the future. The Scallop FMP also has many measures in place which aim to proactively mitigate bycatch of these flatfish stocks, such as the requirement for a minimum 10" twine top and maximum 7-row dredge apron, and a seasonal closure in Closed Area II access area to avoid GB yellowtail. Both the reactive AMs and proactive measures in place to mitigate bycatch of non-target species apply to vessels participating in the LAGC component.

Considering that the key issues being addressed through this action are focused on the NGOM Management Area and the LAGC IFQ fishery, it is worth noting how these parts of the fishery overlap with non-target stocks, the magnitude of interaction with non-target stocks relative to the scallop fishery as a whole, and how impacts will be assessed in the following section.

The NGOM fishery overlaps with only one of the four flatfish stocks that the scallop fishery is allocated sub-ACLs for, Georges Bank/Gulf of Maine windowpane flounder, though other non-target stocks do exist in this region, such as Cape Cod/Gulf of Maine (CC/GOM) yellowtail flounder and Gulf of Maine (GOM) winter flounder.

The LAGC IFQ harvest represents a small portion of overall landings, and contributes proportionally to bycatch of non-target species that is attributed to the scallop fishery as a whole. This is still expected to be the case if the possession limit were increased because the level of allocation and landings from the LAGC IFQ component will not change. As discussed below, impacts of increasing the possession limit on non-target flatfish stocks are expected to be minimal overall, and neutral relative what would be anticipated under the 600-pound trip limit; however, the Council will consider the LAGC IFQ possession limit when analyzing impacts to non-target species through future specifications actions.

6.3.1 Action 1 – Northern Gulf of Maine Catch Limits

Action 1 considers how the scallop biomass in the Northern Gulf of Maine should be accounted for in the legal limits of the fishery (OFL, ABC, ACL).

6.3.1.1.1 Alternative 1: No Action

There would be no change to how scallops within the Northern Gulf of Maine are accounted for within the fishery's legal limits, and the ACL flowchart (Figure 1). The impacts of Alternative 1 to non-target species would likely be indirect and negligible because the level of harvest and associated bycatch of non-target stocks would not be directly linked to the process for setting catch limits in the NGOM. Scallop fishery sub-ACLs for non-target stocks are determined independently of directed fishery catch limits and thus are not directly linked. This is the case for Alternative 2 as well, meaning the impacts of either alternative would be expected to be neutral to each other and negligible overall.

6.3.1.1.2 Alternative 2: Account for the Northern Gulf of Maine as part of the Acceptable Biological Catch and Annual Catch Limits.

Alternative 2 would account for the scallop biomass in the Northern Gulf of Maine as part of the legal limits in the fishery by adding biomass from the area into calculations of the overfishing limit (OFL) and acceptable biological catch (ABC). The impacts of Alternative 2 to non-target species would likely be

indirect and negligible because the level of harvest and associated bycatch of non-target stocks would not be directly linked to the process for setting legal catch limits in the NGOM. Scallop fishery sub-ACLs for non-target stocks are determined independently of directed fishery catch limits and thus are not directly linked. This is the case for Alternative 1 as well, meaning the impacts of either alternative would be expected to be neutral in comparison and negligible overall.

6.3.2 Action 2 – Northern Gulf of Maine Allocations

Action 2 addresses how the allocations to the Northern Gulf of Maine (NGOM Allocation) would be shared between a set-aside for directed Limited Access General Category fishing in the management unit, and Limited Access and Limited Access General Category IFQ vessels. Allocations for each fishing year would be specified through a separate specifications package or framework adjustment.

The key differences between Alternative 1 and Alternative 2 with regard to fishing behavior and potential impacts to non-target species is that the limited access component would be able to fish in the NGOM under DAS management until the LAGC TAC is harvested and the area closes to all scallop vessels under Alternative 1, whereas under Alternative 2, the limited access component would be able to fish in the NGOM under a specified allocation which would be determined in a later action.

6.3.2.1 Alternative 1: No Action

Under Alternative 1, allocations to the Northern Gulf of Maine management area would follow the approach the Council established in Amendment 11. An ACL specified as a hard-TAC would be set for the LAGC component fishing in the NGOM management area. When the NGOM hard-TAC is caught, the area would close to all scallop vessels (including LA vessels). LA catch would not be applied against the NGOM TAC, and limited access vessels would operate under DAS management as long as the LAGC NGOM TAC has not been caught.

Bycatch of non-target stocks that the scallop fishery has sub-ACLs for is considered by the Council during the development of annual specifications. This includes four stocks, of which, only the GB/GOM windowpane flounder stock overlaps with the NGOM management area. Projected bycatch of the non-target stocks is estimated through the specifications process and considers expected fishing effort (i.e. in terms of DAS and access area fishing by the limited access component) throughout the range of the SAMS model, which includes the primary fishing grounds of Georges Bank and the Mid-Atlantic. Under Alternative 1, DAS allocations to the LA component would continue to be based on the scallop resource of Georges Bank and the Mid-Atlantic, as would the bycatch projections for the four stocks the fishery is allocated sub-ACLs for. Considering that DAS allocations and bycatch projections are based on expected fishing effort outside of the NGOM, negative impacts to non-target stocks could arise due to the potential for unaccounted fishing effort and associated bycatch from LA vessels that elect to fish DAS in the NGOM. In this scenario, additional uncertainty could be introduced around the projections of scallop fishery bycatch of GOM/GB windowpane flounder, a stock which has continued to trend downward in terms of stock health. Additional uncertainty around scallop fishery bycatch of this stock could create challenges with the Council's decision making process around specifications, and the potential for greater than expected bycatch of this stock could further implicate its ability to rebound from an overfished status determination. Furthermore, considering that Alternative 2 would establish mechanisms for metering overall scallop fishery effort in the NGOM, it is likely that Alternative 1 could result in negative impacts to non-target species relative to Alternative 2.

6.3.2.2 Alternative 2: Create Northern Gulf of Maine set-aside to support research and a directed LAGC fishery, share additional NGOM TAC between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ).

Alternative 2 would create a NGOM set-aside that would support a directed LAGC fishery in the NGOM management area. The NGOM set-aside would be a portion of the NGOM allocation up to a trigger (see Options 1 – 4). When the NGOM allocation is set at a level above the trigger, the pounds above the trigger would be shared between the NGOM set-aside and NGOM APL. The NGOM set-aside would support directed LAGC fishing in the area and the NGOM APL would be added to the overall APL to increase allocations for the LA and LAGC IFQ. If the NGOM allocation exceeds the trigger and pounds are allocated to the LA and LAGC IFQ components through the NGOM APL, the Council would determine the methods of how the NGOM APL could be harvested in a subsequent specifications package or framework adjustment.

Alternative 2 is likely to have a positive impact on non-target species in the NGOM management area. Establishing a mechanism that sets allocations between the NGOM set-aside and NGOM APL will ensure the level of harvest and associated bycatch of non-target stocks from the NGOM is known for both the LA and LAGC components. Specifying the level of fishing effort for either component in the NGOM will promote conservative management of this part of the resource and would reduce uncertainty around the potential interactions of scallop vessels and non-target stocks, such as GOM/GB windowpane flounder. In light of Alternative 2 reducing uncertainty of potential effort by the LA component in the NGOM, the impacts of this alternative on non-target species would likely be positive relative to Alternative 1 (No Action).

6.3.2.2.1 Options 1 - 4: NGOM set-aside triggers and allocation splits between the NGOM set-aside and the NGOM APL

Options 1 – 4 specify a NGOM set-aside trigger, and the how the remaining NGOM allocation could be split between the NGOM set-aside and the NGOM APL. These measures focus on how NGOM allocations would be distributed to different components of the fishery in the future but would not specify the level of harvest in the NGOM in a given year. Selecting a trigger and allocation sharing arrangement is not expected to have direct or indirect impacts to non-target species because the level of harvest and associated bycatch of non-target stocks in the NGOM would be determined through future actions. Though there would likely be some impact to non-target species as a result of the allocation trigger and sharing arrangement established through this action, impacts would be analyzed in future actions that directly specify the level of harvest from the NGOM. Considering this, the impacts of Alternative 2 Options 1 – 4 on non-target species would be negligible in comparison to each other and negligible overall.

6.3.3 Action 3 – Monitoring Directed Scallop Fishing in the Northern Gulf of Maine Management Area

The Council is considering a range of options in Amendment 21 that would facilitate monitoring on the Northern Gulf of Maine management area. There is currently no mechanism in place to deploy at-sea monitors for LAGC vessels fishing in the NGOM (Alternative 1). Both Alternative 2 and Alternative 3 would establish a call-in requirement for observer coverage for LAGC vessels fishing in the NGOM, with the only difference being the existing program that would be used to support monitoring in the NGOM (i.e. scallop industry funded observer program versus NEFOP). None of the Alternatives in Action 3 would directly impact the level of harvest in the NGOM or associated bycatch of non-target species; however, some indirect impacts to non-target species could be expected if observer coverage is expanded

to this part of the resource and more fishery dependent data becomes available to characterize the level of interaction between the scallop fishery and non-target species when operating in the NGOM.

6.3.3.1 Alternative 1 – No Action

There would be no change to the scallop industry funded observer program, and no observer call-in requirement for LAGC Category A and B vessels fishing for scallops in federal waters in the NGOM management area. This alternative would not dictate the level of harvest from the NGOM or have direct impacts on the level of interaction with non-target species in this part of the resource; however, continuing the current state of no observer coverage for the LAGC component in the NGOM would lead to indirect negative impacts to non-target species as the level of interaction and bycatch of non-target species would continue to be highly uncertain. Without fishery dependent data such as catch records obtained by at-sea observers, addressing bycatch issues in the NGOM fishery will continue to be challenging. A lack of observer data to base bycatch projections and estimates on could result in inaccurate perceptions of interactions between the directed scallop fishery and non-target species. The uncertainty around bycatch of non-target species may impede the ability of managers to set harvest levels in the NGOM that do not contribute to overfishing of non-target stocks that overlap with this part of the scallop fishery. Considering this, Alternative 1 would most likely result in negative impacts to non-target species relative to Alternative 2 and Alternative 3.

6.3.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM TAC to off-set monitoring costs.

Alternative 2 would expand the observer call-in requirement to all scallop vessels operating in the NGOM, including LAGC Category B vessels. This expansion of the call-in requirement would facilitate observer coverage in the NGOM management area. Recording catch of non-target species through at-sea observer records is critical in understanding the level of bycatch that could be expected with scallop fishery effort throughout the range of the resource. Without this fishery dependent data stream, the level of interaction with non-target species and the scallop fishery in the NGOM management area would continue to be highly uncertain and create challenges with setting catch limits in this area through the Council's decision-making process. Establishing a monitoring program for the directed NGOM fishery would reduce the level of uncertainty around expected bycatch from scallop fishing in this area over the long term and would allow the Council to consider impacts of NGOM catch limits to non-target species in future actions. Alternative 2 would not directly impact the level of interaction between scallop fishing in the NGOM and non-target species and thus would not have a direct impact to non-target species; however, considering that observer data would be available to account for bycatch issues when setting catch limits in the NGOM, Alternative 2 would likely have indirect positive impacts to non-target species overall, and positive impacts in comparison to Alternative 1. Alternative 2 would be expected to have negligible impacts in comparison to Alternative 3 because both alternatives would facilitate monitoring in the NGOM management area.

6.3.3.3 Alternative 3 - Monitor directed scallop fishing in the NGOM with observers from the NEFOP program.

Alternative 3 would recommend that NMFS utilize the existing NEFOP program to observer directed scallop trips in federal waters in the Northern Gulf of Maine management area. This would expand the number of observer programs being used to monitor the scallop fishery. Recording catch of non-target species through at-sea observer records is critical in understanding the level of bycatch that could be expected with scallop fishery effort throughout the range of the resource. Without this fishery dependent

data stream, the level of interaction with non-target species and the scallop fishery in the NGOM management area would continue to be highly uncertain and create challenges with setting catch limits in this area through the Council's decision-making process. Establishing a monitoring program for the directed NGOM fishery would reduce the level of uncertainty around expected bycatch from scallop fishing in this area over the long term and would allow the Council to consider impacts of NGOM catch limits to non-target species in future actions. Alternative 3 would not directly impact the level of interaction between scallop fishing in the NGOM and non-target species and thus would not have a direct impact to non-target species; however, considering that observer data would be available to account for bycatch issues when setting catch limits in the NGOM, Alternative 3 would likely have indirect positive impacts to non-target species overall, and positive impacts in comparison to Alternative 1. Alternative 3 would be expected to have negligible impacts in comparison to Alternative 2 because both alternatives would facilitate monitoring in the NGOM management area.

6.3.4 Action 4 – Support Scallop Research using Scallops from the NGOM

Action 3 considers whether a portion of the NGOM set-aside should be added to the 1.25-million-pound Scallop RSA and/or made available for RSA compensation fishing. All alternatives in this section are administrative in nature and would not directly affect the level of interaction between the scallop fishery and non-target species or directly contribute to the overfished/overfishing status of any non-target species. Therefore, all alternatives in Action 4 are expected to have negligible direct impacts to non-target species overall as well as in comparison to each other.

There could be some indirect positive impacts to non-target species if the Scallop RSA program were to support research on reducing bycatch of non-target species in the future and the findings were integrated into management of the scallop fishery. In this scenario, bycatch reduction research through the Scallop RSA program that is integrated into management of the fishery and successfully reduces bycatch of non-target species could be accomplished through any of the alternatives in this section, meaning indirect impacts of Alternative 1, Alternative 2, and Alternative 3 could be positive overall, but negligible in comparison to each other.

6.3.5 Action 5 – NGOM Fishing Season

The Council developed a range of alternatives that address how the directed scallop fishery in the Northern Gulf of Maine can be prosecuted. The Council can select multiple Alternatives in this section as preferred.

6.3.5.1 Alternative 1 – No Action

There would be no changes to measures governing how vessels can fish allocations in the NGOM. The NGOM management area would remain open year-round, unless an allocation is reached, and the area closes to a particular component. There would be no limits on the number of days that a vessel could land their trip in a calendar week or limits on multiple sailings per day, and no seasonal closure of the NGOM between September and November.

Under the current resource conditions in the NGOM management area, the level of directed effort, scallop harvest, and associated bycatch of non-target species is minimal compared to what is estimated for the fishery as a whole. Under these conditions, direct impacts to non-target species without measures in place to limit the number of days a vessel could land in a week (i.e. Alternative 2) or limit multiple sailings per day (i.e. Alternative 3) would be negligible because the overall level of harvest and associated bycatch would be minimal and likely not implicate the overfishing/overfished status of non-target stocks in the NGOM.

There are alternatives in this action that would support potentially greater levels of harvest from the NGOM if and when biomass in this area increases substantially. The total level of scallop fishing and associated bycatch may increase under this scenario; however, even with no measures in place to restrict the number of trips per week (i.e. Alternative 2) or sailings per day (i.e. Alternative 3), direct impacts to non-target stocks would likely continue to be minimal. Regardless of whether the NGOM fishery is reflective of recent conditions or an upswing in biomass and overall effort occurs, the direct impacts of the fishery to non-target species would be analyzed in future actions and would account for any measures that would extend the NGOM fishing season that are implemented through this action.

There is very little information regarding the seasonal bycatch rate of non-target species, such as GOM/GB windowpane flounder, by the scallop fishery in the NGOM management area; however, observed seasonal discard to kept ratios for GOM/GB windowpane flounder in other parts of the resource suggest that bycatch of this stock tends to increase during the fall and winter months. Should this seasonal upswing in bycatch of GOM/GB windowpane flounder occur in the NGOM during the fall and winter months, a seasonal closure of the NGOM during this time period (i.e. Alternative 4) could reduce scallop fishery bycatch of this stock. It is not possible to quantify the magnitude of bycatch reduction that would result from such a closure in the future; however, considering that the GOM/GB windowpane stock has continued to trend down and acknowledging the potential that a seasonal closure in the NGOM could deter scallop fishery bycatch of this stock to some degree, it is possible that Alternative 1 (i.e. no seasonal closure) could have slight negative impact to this non-target stock relative to Alternative 4.

6.3.5.2 Alternative 2 - Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area

Under Alternative 2, LAGC vessels would be prohibited from landing scallops more than five (5) times per calendar week (Monday – Sunday) from declared scallop trips in the Northern Gulf of Maine Management area.

Limiting the number of trips that can be landed per week could extend the timing of scallop fishing in the NGOM to some degree, depending on the level of biomass, NGOM TAC, catch rates, and number of active vessels participating in the NGOM fishery. Under current conditions, the NGOM season is already relatively brief (i.e. roughly 1 month) and most vessels already fish 5 or fewer trips per week (Figure 21), meaning it is unlikely that Alternative 2 would noticeably extend the NGOM season. At greater levels of biomass and a higher LAGC TAC, the NGOM season could be longer than it has been in recent years; however, this would be the case aside from Alternative 2, though Alternative 2 could amplify the extended season at some level. In either scenario, the direct impacts of Alternative 2 to non-target species would be analyzed in future actions developed by the Council that set catch limits in the NGOM.

Bycatch of non-target stocks in the scallop fishery tends to vary seasonally. Though bycatch seasonality in the NGOM fishery is uncertain, it is possible that extending the NGOM season by limiting the number of landings per week could push effort into times of the year when bycatch rates of non-target species are elevated. Under this scenario, it is possible that scallop fishery bycatch in the NGOM could increase, but the magnitude of increased bycatch is difficult to quantify and it is also difficult to determine how or if such an increase would implicate the overfishing/overfished status of non-target stocks in the area. While there could be some impact to non-target species as a result of Alternative 2, the direct impacts would be analyzed in future specifications actions that are developed by the Council that set catch limits in the NGOM and which account for any measures implemented through this action that extend the NGOM season. Therefore, the overall impact of Alternative 2 to non-target species would be negligible.

Considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of extending the NGOM season to non-target species, the impacts of Alternative 2 are likely negligible in comparison to Alternative 1 and Alternative 3.

6.3.5.3 Alternative 3 – Limit vessels to one sailing per day

LAGC vessels would be prohibited from sailing multiple times on one calendar day.

Limiting the number of sailings per day could extend the timing of scallop fishing in the NGOM to some degree, depending on the level of biomass, NGOM TAC, catch rates, and number of active vessels participating in the NGOM fishery. Under current conditions, the NGOM season has been relatively brief (i.e. roughly 1 month) and roughly 20-30% of LAGC vessels sailed two trips in one day at least once during the season (Table 24), meaning it is unlikely that limiting the number of sailings per day could noticeably extend the season. At greater levels of biomass and a higher LAGC TAC, the NGOM season could be longer than it has been in recent years; however, this would be the case aside from Alternative 3, though Alternative 3 could amplify the extended season at some level. In either scenario, the direct impacts of Alternative 3 to non-target species would be analyzed in future actions developed by the Council that set catch limits in the NGOM.

As discussed previously, bycatch of non-target stocks in the scallop fishery tends to vary seasonally. Though bycatch seasonality in the NGOM fishery is uncertain, it is possible that extending the NGOM season by limiting the number of sailings per day could push effort into times of the year when bycatch rates of non-target species are elevated. Under this scenario, it is possible that scallop fishery bycatch in the NGOM could increase, but the magnitude of increased bycatch is difficult to quantify and it is also difficult to determine how or if such an increase would implicate the overfishing/overfished status of non-target stocks in the area. While there could be some impact to non-target species as a result of Alternative 3, the direct impacts would be analyzed in future specifications actions that are developed by the Council that set catch limits in the NGOM and which account for any measures implemented through this action that extend the NGOM season. Therefore, the overall impact of Alternative 3 to non-target species would be negligible.

Considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of extending the NGOM season to non-target species, the impacts of Alternative 3 are likely negligible in comparison to Alternative 1 and Alternative 2.

6.3.5.4 Alternative 4 – Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually.

Alternative 4 would annually establish a seasonal closure of the NGOM management area, beginning at 12:00 am on September 1, and ending at 11:59 pm on November 31.

As discussed previously, there is very little information regarding seasonal bycatch rates of non-target species, such as GOM/GB windowpane flounder, by the scallop fishery in the NGOM management area; however, observed seasonal discard to kept ratios for GOM/GB windowpane flounder in other parts of the resource suggest that bycatch of this stock tends to increase during the fall and winter months. Should this seasonal upswing in bycatch of GOM/GB windowpane flounder occur in the NGOM during the fall and winter months, a seasonal closure of the NGOM during this time period (i.e. Alternative 4) could reduce scallop fishery bycatch of this stock. It is not possible to quantify the magnitude of bycatch reduction that would result from such a closure in the future; however, considering that the GOM/GB windowpane stock has continued to trend down and acknowledging the potential that a seasonal closure in the NGOM could deter scallop fishery bycatch of this stock to some degree, it is possible that Alternative 4 could have slight positive impact to this non-target stock relative to Alternative 1 as well as overall. However,

as previously stated, the overall direct impacts of implementing a seasonal closure in the NGOM to non-target species would be analyzed in Council actions that set NGOM catch limits in the future.

Considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of a seasonal closure of the NGOM or extending the NGOM season to non-target species, the impacts of Alternative 4 are likely negligible in comparison to Alternative 2 and Alternative 3.

6.3.6 Action 6 -Cumulative Maximum Dredge Width That Can be fished in the Northern Gulf of Maine Management Area.

6.3.6.1.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the Gulf of Maine dredge exemption program, and no additional restrictions on the combined maximum dredge width that could be fished in the NGOM. All limited access general category vessels and Limited Access vessels participating in the small dredge program would be able to fish a maximum combined dredge width of 10.5 feet in the Northern Gulf of Maine management area. Full-Time Limited Access vessels fishing in the NGOM would be able to fish a maximum combined dredge width of 31 feet, as specified in regulation.

There are a range of measures in place related to dredge configuration that are purposed to reduce bycatch of non-target species, such as a maximum 7-row apron and minimum 10-inch mesh twine top. In addition, bycatch of non-target species is directly related to area swept and landings per unit of effort (LPUE); for example, measures that reduce LPUE or overall efficiency can increase area swept, which typically increases the rate of interaction with non-target stocks. While none of the measures in Action 6 consider changing the apron length or minimum mesh requirement, there are several that consider limiting the maximum dredge width allowed for vessels fishing in the NGOM. These measures are mostly focused at limiting the size and/or number of dredges that full time limited access vessels may use when fishing in the NGOM; under Alternative 2 the maximum dredge width allowed would be 10.5 feet (i.e. current dredge width maximum for LAGC vessels) and under Alternative 3 the maximum dredge width would be limited to 15.5 feet (i.e. the size of one industry standard dredge used in the full time limited access component). Both of these alternatives would be expected to reduce efficiency of LA vessels fishing in the NGOM relative to Alternative 1.

The Council will determine how the LA component may access the NGOM through a future action; for example, if LA vessels would be allocated trips, or pounds, similar to access area fishing in the rest of the resource, or, structuring access similar to DAS management used outside of the NGOM. Should future access for the LA component in the NGOM reflect access area fishing (i.e. output control, limiting the amount that can be caught from the area per trip), reducing efficiency by limiting dredge size either through Alternative 2 or Alternative 3 would likely lead to greater area swept within the NGOM. With increased area swept and tow time needed to harvest a possession limit, it is possible that bycatch of non-target stocks in the NGOM increase under Alternative 2 and Alternative 3 relative to Alternative 1. Though it is difficult to quantify how impactful this would be, it is reasonable to expect that Alternative 1 could have some slight positive impacts to non-target species overall as well as in comparison to Alternative 2 and Alternative 3.

Should future access for the LA component in the NGOM reflect DAS management (i.e. input control, limiting the amount of time a vessel has to catch scallops), area swept, tow time, and interactions with non-target species could be somewhat greater under Alternative 1 compared to Alternative 2 and Alternative 3. In this scenario, Alternative 1 could have some negative impact to non-target species, both overall and in comparison to Alternative 2 and Alternative 3; however, it is difficult to quantify the magnitude of impact and whether bycatch of non-target species in the NGOM as a result of Alternative 1

would contribute to overfishing or an overfished status determination for any non-target stocks. Regardless of how the LA fishery may access the NGOM in the future, any gear limitations implemented through this action will be considered by the Council when analyzing the impacts of fishing to non-target species through future specifications actions.

Overall, the impact of Alternative 1 to non-target species would vary depending many of the factors described above, and a determination of direct impacts of Alternative 1 to non-target species would be made in the future when setting catch limits in the NGOM.

6.3.6.1.2 Alternative 2 – Limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft

Alternative 2 would limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area. The combined maximum dredge width could not exceed 10.5 ft (3.2 m), measured at the widest point in the bail of the dredges. Currently, 10.5 ft (3.2 m) is the maximum cumulative dredge width that can be fished by all limited access general category vessels and limited access vessels participating in the small dredge program in the Northern Gulf of Maine management area.

As discussed previously, reducing dredge width under Alternative 2 would reduce efficiency of full-time limited access vessels, in turn increasing tow time, bottom area swept, and interactions with non-target species relative to Alternative 1. It is difficult to quantify the magnitude of direct impacts between Alternative 2 and Alternative 1 because many factors, such as the method for administering access to the limited access component in the NGOM (i.e. DAS versus access area fishing), the overall level of harvest, and overlap of fishing effort and the presence of non-target species, will vary from year to year. Considering that, though the overall affect of Alternative 2 on non-target species in the NGOM may be some what negative relative to Alternative 1, a determination of direct impacts to non-target species would be analyzed by the Council when developing catch limits for this area in the future.

Alternative 2 would reduce efficiency of full-time limited access vessels in the NGOM slightly more than Alternative 3, so impacts to non-target species could be somewhat elevated under Alternative 2 relative to Alternative 3. That being said, it is difficult to quantify the magnitude of impact and whether bycatch of non-target species in the NGOM as a result of Alternative 2 would contribute to overfishing or an overfished status determination for any non-target stocks, either overall or in comparison to Alternative 1 and Alternative 3. Regardless, any gear limitations implemented through this action will be considered by the Council when analyzing the impact of fishing to non-target species through future specifications actions that set catch limits for the NGOM.

6.3.6.1.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

Alternative 3 would limit the combined dredge width of full-time limited access scallop vessels operating in the Northern Gulf of Maine management area. The combined maximum dredge width could not exceed 15.5 ft , measured at the widest point in the bail of the dredges.

As discussed previously, reducing dredge width under Alternative 3 would reduce efficiency of full-time limited access vessels, in turn increasing tow time, bottom area swept, and interactions with non-target species relative to Alternative 1. It is difficult to quantify the magnitude of direct impacts between Alternative 3 and Alternative 1 because many factors, such as the method for administering access to the limited access component in the NGOM (i.e. DAS versus access area fishing), the overall level of harvest, and overlap of fishing effort and the presence of non-target species, will vary from year to year. Considering that, though the overall effect of Alternative 3 on non-target species in the NGOM may be

somewhat negative relative to Alternative 1, a determination of direct impacts to non-target species would be analyzed by the Council when developing catch limits for this area in the future.

Alternative 3 would reduce efficiency of full-time limited access vessels in the NGOM slightly less than Alternative 2, so impacts to non-target species could be somewhat reduced under Alternative 3 relative to Alternative 2. That being said, it is difficult to quantify the magnitude of impact and whether bycatch of non-target species in the NGOM as a result of Alternative 3 would contribute to overfishing or an overfished status determination for any non-target stocks, either overall or in comparison to Alternative 1 and Alternative 2. Regardless, any gear limitations implemented through this action will be considered by the Council when analyzing the impact of fishing to non-target species through future specifications actions that set catch limits for the NGOM.

6.3.7 Action 7 - Increase the LAGC IFQ Possession Limit

The impacts of scallop fishing on non-target species are focused on the four flatfish stocks that the fishery is allocated a sub-ACL for: Georges Bank yellowtail flounder, Southern New England/Mid Atlantic yellowtail flounder, Southern windowpane flounder, and Northern windowpane flounder. If scallop fishery catches of these flatfish stocks exceed the sub-ACL, it may be subject to reactive accountability measures (AMs) in order to reduce bycatch in the future. The Scallop FMP also has many measures in place which aim to proactively mitigate bycatch of these flatfish stocks, such as the requirement for a minimum 10" twine top and maximum 7-row dredge apron, and a seasonal closure in Closed Area II access area from August 15th – November 15th to avoid GB yellowtail. Both the reactive AMs and proactive measures in place to mitigate bycatch of non-target species apply to the LAGC IFQ component.

Alternative 2 and Alternative 3 have sub-options that would increase the possession limit for either 1) all trips (open and access area trips) or 2) only access area trips. Considering that interactions with non-target stocks by the LAGC IFQ component is expected to be minimal relative to the fishery as a whole regardless of whether a higher possession limit is implemented for all trips or only access area trips, direct comparisons are analyzed in the following sections for each alternative but not for each sub-option.

6.3.7.1 Alternative 1 – No Action

The LAGC IFQ harvest represents a small portion of overall landings in the scallop fishery, and therefore contributes proportionally to bycatch estimates of non-target species. This is the case under the current possession limit (600 pounds, Alternative 1) and is also expected to be the case under a higher possession limit. Increasing the possession limit would not change allocations to the LAGC IFQ component; rather, it would offer vessels the flexibility to harvest allocations in fewer trips than under the current 600-pound limit (Alternative 1).

It is possible that increasing the trip limit could make it economically feasible for LAGC IFQ vessels to fish open trips farther offshore (i.e. due to reduced trip costs), in areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing the potential for interactions with non-target stocks. Considering this, it is possible that interactions with non-target species could be somewhat elevated by maintaining the 600 pound limit (Alternative 1) relative to increasing the possession limit through Alternative 2 or Alternative 3; however, bycatch as a result of Alternative 1, Alternative 2, or Alternative 3 would still be a minimal amount relative to bycatch from the fishery as a whole, meaning it is unlikely that any marginal increase or decrease would have a noticeable impact to non-target species. Though it is possible that interactions with non-target stocks could be slightly greater under Alternative 1 relative to Alternative 2 and Alternative 3, bycatch is not expected to implicate the stock status of any non-target stocks either overall or in comparison to the other trip limit alternatives.

6.3.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Alternative 2 would increase the LAGC IFQ possession limit to 800 pounds at the level specified for Sub-Option 1 and Sub-Option 2. The LAGC IFQ harvest represents a small portion of overall landings and bycatch of non-target species in the scallop fishery. This is expected to be the case under any of the possession limit alternatives considered through this action, including Alternative 2 which would increase the current possession limit to 800 pounds for either all trips (Sub-Option 1), or only access area trips (Sub-Option 2). Increasing the possession limit would not change allocations to the LAGC IFQ component; rather, it would offer vessels the flexibility to harvest allocations in fewer trips than under the current 600-pound limit (Alternative 1).

It is possible that increasing the trip limit through Alternative 2 could make it economically feasible for LAGC IFQ vessels to fish trips farther offshore (i.e. due to reduced trip costs), in areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing the potential for interactions with non-target stocks. Considering this, it is possible that interactions with non-target species could be somewhat reduced under Alternative 2 relative to Alternative 1 (i.e. maintaining the 600 pound limit), and somewhat elevated relative to Alternative 3; however, bycatch as a result of Alternative 2, Alternative 1, or Alternative 3 would still be a minimal amount relative to bycatch from the fishery as a whole, meaning it is unlikely that any marginal increase or decrease would have a noticeable impact to non-target species. Though it is possible that interactions with non-target stocks could be reduced under Alternative 2 relative to Alternative 1 and somewhat elevated relative to Alternative 3, bycatch from the LAGC IFQ component operating under an 800-pound possession limit is not expected to implicate the stock status of any non-target stocks either overall or in comparison to the other trip limit alternatives.

6.3.7.3 Alternative 3—Increase the LAGC IFQ possession limit to 1,200 pounds per trip

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips (Sub-Option 1) or for access area trips only (Sub-Option 2). The LAGC IFQ harvest represents a small portion of overall landings and bycatch of non-target species in the scallop fishery. This is expected to be the case under any of the possession limit alternatives considered through this action, including Alternative 3 which would increase the current possession limit to 1,200 pounds for either all trips (Sub-Option 1), or only access area trips (Sub-Option 2). Increasing the possession limit would not change allocations to the LAGC IFQ component; rather, it would offer vessels the flexibility to harvest allocations in fewer trips than under the current 600-pound limit (Alternative 1).

It is possible that increasing the trip limit through Alternative 3 could make it economically feasible for LAGC IFQ vessels to fish trips farther offshore (i.e. due to reduced trip costs), in areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing the potential for interactions with non-target stocks. Considering this, it is possible that interactions with non-target species could be somewhat reduced under Alternative 3 relative to Alternative 1 (i.e. maintaining the 600 pound limit) and reduced to a lesser degree relative to Alternative 2; however, bycatch as a result of Alternative 3, Alternative 1, or Alternative 2 would still be a minimal amount relative to bycatch from the fishery as a whole, meaning it is unlikely that any marginal reduction in bycatch as a result of a 1,200- pound possession limit would have a noticeable impact to non-target species. Though it is possible that interactions with non-target stocks could be reduced under Alternative 3 relative to Alternative 1 and Alternative 2, bycatch from the LAGC IFQ component operating under an 1,200-pound possession limit is not expected to implicate the stock status of any non-target stocks either overall or in comparison to the other trip limit alternatives.

6.3.8 Action 8 - Increase the Amount of Observer Compensation Available for LAGC IFQ vessels

Action 8 considers adjust the amount of observer compensation that LAGC IFQ vessels are eligible to receive when carry an observer. Alternatives 2 and Alternative 3 would allow for additional compensation for observed IFQ trips to account for potentially longer trip times should the Council elect to increase the LAGC IFQ possession limit through this action. Table 6 provides an example of the level of compensation that would be available under each option depending on the length of an observed trip (using the FY2019 daily compensation rate of 250 pounds).

Observer records are used in management of the fishery and serve a primary function of characterizing catch rates of non-target species throughout the range of the scallop fishery. Observer coverage in the LAGC IFQ fishery is currently administered through the Scallop Industry Funded Observer program, which sets aside portion of annual allocations to support the costs of carrying an observer and processing the data collected. Action 8 does not propose changing any of these key components of the scallop IFO program, but instead considers increasing the amount of compensation that would be available to LAGC IFQ vessels carrying an observer to more accurately reflect the cost of carrying an observer if the possession limit is increased through this action and the average trip time dock-to-dock increases. Alternative 1 would maintain the current amount of compensation available to LAGC IFQ vessels carrying an observer, set at one 24-hour day, whereas Alternative 2 would increase the amount to a maximum of two days, prorated in 12-hour increments over one day, and Alternative 3 would allow for an additional full day of compensation for trips greater than 24-hours.

A key argument for Alternative 2 and Alternative 3 is that aligning the amount that vessels can be compensated when carrying an observer with the length of the trip will reduce the risk of observer bias in the LAGC IFQ fishery. Relieving vessels of the additional cost burden for trips of over one day will reduce the likelihood that fishing behavior will be different for observed trips versus unobserved trips. Considering that observer data is a critical need for accurately characterizing interactions of the LAGC IFQ component with non-target species, it is likely that reducing any potential observer bias that could exist under Alternative 1 through Alternative 2 or Alternative 3 would reduce uncertainty around the impacts to non-target species when analyzed by the Council in future specifications actions. Having less uncertainty in the data streams used to inform impacts of the scallop fishery on non-target species would likely have an indirect positive impact to non-target stocks in the future. That being said, regardless of the long-term indirect impacts to non-target stocks as a result of Alternative 1, Alternative 2, or Alternative 3, bycatch from the LAGC IFQ component under any of these alternatives is not expected to implicate the stock status of any non-target stocks either overall or in comparison to the each other.

None of the alternatives in Action 8 would be expected to have a direct impact on allocations to the LAGC IFQ component, the location or amount of fishing effort (aside from a slight increase in landings for observed trips to harvest the additional compensation), or the underlying bycatch of non-target stocks. Considering this, and acknowledging that the LAGC IFQ component is attributed with small portion of overall landings and bycatch of non-target species relative to the scallop fishery as a whole, the direct impacts of Alternative 1, Alternative 2, and Alternative 3 to non-target species are expected to be negligible overall as well as in comparison to each other.

6.3.9 Action 9 - One-way Transfer of Quota from LA with IFQ to LAGC IFQ-Only

Action 9 considers alternatives that would allow temporary transfers from LA vessels with IFQ to LAGC IFQ-only vessels (Alternative 2) or both temporary and permanent transfers from LA vessels with IFQ to

LAGC IFQ-only vessels (Alternative 3). These measures are primarily administrative in nature and would not be expected change the level of allocations to either LA with IFQ vessels or LAGC IFQ-only vessels, the level of directed effort, or associate bycatch of non-target stocks. The only change that could result from these measures is the type of vessel that fishes a minimal portion of annual projected landings that are allocated to LA vessels with IFQ (i.e. 0.5% of the APL). Regardless of which alternative is adopted by the Council, they Council would continue analyzing the direct impacts of annual allocations to non-target species through future specifications actions. Considering this, the impacts of Alternative 1, Alternative 2, and Alternative 3 to non-target species would be negligible overall as well as in comparison to one another.

6.3.10 Action 10 – Specifications and Framework Adjustment Process

Through Action 10, the Council would identify a list of specific issues that may be addressed through future specifications actions or framework adjustments. This action is administrative and would not directly change anything in the fishery when Amendment 21 is implemented. Any impacts associated with changes that are made through future actions as a result of Action 10 would be analyzed in future actions, including the direct impacts they might have on non-target species. Considering this, the impact of Alternative 1 and Alternative 2 to non-target species is expected to be negligible overall as well as in comparison to one another.

6.4 IMPACTS ON PROTECTED SPECIES

Impacts of scallop fishing on protected resources is gauged by the level of scallop effort that overlaps with regions where protected resource species are typically observed and is measured by projected area swept. Interaction risks with protected species, such as sea turtles and Atlantic sturgeon, are strongly associated with the amount of gear in the water, gear soak or tow time, as well as the area of overlap, either in space or time, of the gear and a protected species, with risk of an interaction increasing with increases of any or all of these factors. Any alternatives that will result in a low projected area swept (i.e. higher landings per unit effort) would reduce the overall time gear is deployed in the water, thereby reducing the potential for interactions.

The majority of the his action focuses on management measures for Northern Gulf of Maine management area, but there are several actions that focus on the way the LAGC IFQ component may operate in the rest of the resource (i.e. Georges Bank, Mid-Atlantic), such as potentially increasing the LAGC IFQ possession limit. In the Gulf of Maine. Though very few of the measures in this action would directly increase or decrease the risk of interaction with protected species throughout the range of the fishery, those that do are analyzed in terms of the protected species which overlap with the region of the fishery.

As discussed in Section 5.4, species of sea turtles such as leatherback turtles exist throughout the range of the scallop fishery, but are more common in the Mid-Atlantic region than on Georges Bank and in the Gulf of Maine. Specifically for the Gulf of Maine, there is a low level of co-occurrence between hard-shelled sea turtles and scallop gear, especially considering that hard-shelled sea turtle interactions with scallop fishing gear in the Gulf of Maine are non-existent (FSB, 2015, 2016, 2017, 2018; Murray, 2011, 2013, 2015a, 2015b; Murray & Orphanides, 2013; NMFS, 2012; Warden, 2011a, 2011b).

Atlantic sturgeon is known to occur in the Gulf of Maine year-round and are vulnerable to interactions with scallop fishing gear. Specifically, according to the NMFS Opinion on the sea scallop fishery issued on July 12, 2012, it was determined that some small level of bycatch may occur in the scallop fishery; however, the incidence rate is likely to be very low. Review of available observer data from 1989-2019 confirms this determination. No Atlantic sturgeon have been reported as caught in scallop bottom trawl gear where the haul target or trip target is scallop (FSB, 2015, 2016, 2017, 2018, 2019). However, NEFOP and ASM observer data have recorded one (1) Atlantic sturgeon interaction with scallop dredge gear targeting Atlantic sea scallops; this sturgeon was released alive (FSB, 2015, 2016, 2017, 2018, 2019). Based on this information, new or elevated effort, gear, longer soak or tow times in the NGOM management area could increase the risk of with Atlantic sturgeon, though the likelihood of an interaction still be slight.

6.4.1 Action 1 – Northern Gulf of Maine Catch Limits

Action 1 considers how the scallop biomass in the Northern Gulf of Maine should be accounted for in the legal limits of the fishery (OFL, ABC, ACL).

6.4.1.1.1 Alternative 1: No Action

There would be no change to how scallops within the Northern Gulf of Maine are accounted for within the fishery's legal limits, and the ACL flowchart (Figure 1). The impacts of Alternative 1 to protected species would likely be indirect and negligible because the level of harvest and associated risk of interaction with protected species would not be directly linked to the process for setting catch limits in the NGOM. This is the case for Alternative 2 as well, meaning the impacts of either alternative to protected species would be expected to be neutral to each other and negligible overall.

6.4.1.1.2 Alternative 2: Account for the Northern Gulf of Maine as part of the Acceptable Biological Catch and Annual Catch Limits.

Alternative 2 would account for the scallop biomass in the Northern Gulf of Maine as part of the legal limits in the fishery by adding biomass from the area into calculations of the overfishing limit (OFL) and acceptable biological catch (ABC). The impacts of Alternative 2 to protected species would likely be indirect and negligible because the level of harvest and associated risk of interaction with protected species would not be directly linked to the process for setting legal catch limits in the NGOM. This is the case for Alternative 1 as well, meaning the impacts of either alternative would be expected to be neutral in comparison and negligible overall.

6.4.2 Action 2 – Northern Gulf of Maine Allocations

Action 2 addresses how the allocations to the Northern Gulf of Maine (NGOM Allocation) would be shared between a set-aside for directed Limited Access General Category fishing in the management unit, and Limited Access and Limited Access General Category IFQ vessels. Allocations for each fishing year would be specified through a separate specifications package or framework adjustment.

The key differences between Alternative 1 and Alternative 2 with regard to fishing behavior is that the limited access component would be able to fish in the NGOM under DAS management until the LAGC TAC is harvested and the area closes to all scallop vessels under Alternative 1, whereas under Alternative 2, the limited access component would be able fish in the NGOM under a specified allocation which would be determined in a later action.

6.4.2.1 Alternative 1: No Action

Under Alternative 1, allocations to the Northern Gulf of Maine management area would follow the approach the Council established in Amendment 11. An ACL specified as a hard-TAC would be set for the LAGC component fishing in the NGOM management area. When the NGOM hard-TAC is caught, the area would close to all scallop vessels (including LA vessels). LA catch would not be applied against the NGOM TAC, and limited access vessels would operate under DAS management as long as the LAGC NGOM TAC has not been caught.

Regarding impacts to protected species, scallop fishing will occur in the NGOM at some level under both Alternative 1 and Alternative 2; however, neither of these alternatives will directly allocate catch limits in the NGOM when this action is implemented. Therefore, though scallop fishing in the NGOM is likely to occur in the future as a result of either Alternative 1 or Alternative 2, these alternatives in and of themselves will not directly influence the level of effort, bottom area swept, tow time, or direct risk of interactions with protected species.

Under Alternative 1, LA vessels would be able to fish in the NGOM under DAS management as long as the NGOM TAC had not been caught. DAS allocations to LA vessels are based on projections of the resource in the Georges Bank and Mid-Atlantic regions (i.e. not the NGOM) and accounted for when analyzing the potential impacts of fishery allocations on protected species. It is possible LA vessels could elect to fish in the NGOM under DAS management as a result of Alternative 1, which means that there could be an uncertain level of additional effort in this part of the resource that overlaps with protected species such as Atlantic sturgeon and some species of turtles on a seasonal basis. In this scenario, the risk of interaction with protected species in the NGOM could be elevated; however, it would also mean that LA vessels would be directing effort away from other parts of the resource that have typically higher risk of interaction with protected species, such as loggerhead turtles in the Mid-Atlantic region. Regardless of which scenario unfolds, expected fishing effort/behavior and direct impacts to protected species will be analyzed through future actions that allocate catch limits to the scallop fishery, including for the NGOM.

Considering that directed scallop fishing will occur at some level in the NGOM region regardless of Alternative 1 or Alternative 2 and acknowledging that there is always potential for an interaction with protected species, it is possible that the overall impacts of both Alternative 1 and Alternative 2 could be slightly negative on protected species.

6.4.2.2 Alternative 2: Create Northern Gulf of Maine set-aside to support research and a directed LAGC fishery, share additional NGOM TAC between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ).

Alternative 2 would create a NGOM set-aside that would support a directed LAGC fishery in the NGOM management area. The NGOM set-aside would be a portion of the NGOM allocation up to a trigger (see Options 1 – 4). When the NGOM allocation is set at a level above the trigger, the pounds above the trigger would be shared between the NGOM set-aside and NGOM APL. The NGOM set-aside would support directed LAGC fishing in the area and the NGOM APL would be added to the overall APL to increase allocations for the LA and LAGC IFQ. If the NGOM allocation exceeds the trigger and pounds are allocated to the LA and LAGC IFQ components through the NGOM APL, the Council would determine the methods of how the NGOM APL could be harvested in a subsequent specifications package or framework adjustment.

Establishing a mechanism that sets allocations between the NGOM set-aside and NGOM APL will ensure the level of effort in the NGOM is known for both the LA and LAGC components. Specifying the level of fishing effort for either component in the NGOM will promote conservative management of this part of the resource and could reduce uncertainty around bottom area swept, tow time, and associated risk of interactions with protected species that overlap with the fishery in the NGOM. Reduced uncertainty around whether additional effort could occur in the NGOM management area (e.g., such as LA vessels having the option to fish DAS under Alternative 1) could have some benefit to protected species in this part of the resource. Regardless, expected fishing effort/behavior and direct impacts to protected species will be analyzed through future actions that allocate catch limits to the scallop fishery, including for the NGOM. Considering that directed scallop fishing will occur at some level in the NGOM region regardless of Alternative 1 or Alternative 2 and acknowledging that there is always potential for an interaction with protected species, it is possible that the overall impacts of both Alternative 1 and Alternative 2 could be slightly negative on protected species.

6.4.2.2.1 Options 1 - 4: NGOM set-aside triggers and allocation splits between the NGOM set-aside and the NGOM APL

Options 1 – 4 specify a NGOM set-aside trigger, and the how the remaining NGOM allocation could be split between the NGOM set-aside and the NGOM APL. These measures focus on how NGOM allocations would be distributed to different components of the fishery in the future but would not specify the level of harvest in the NGOM in a given year. Selecting a trigger and allocation sharing arrangement is not expected to have direct or indirect impacts to protected species because the level of harvest and associated risk of interaction with protected species in the NGOM would be determined through future actions. Though there is an inherent risk of interactions with protected species at any level of scallop fishing as a result of the allocation trigger and sharing arrangement established through this action, direct impacts to protected species would be analyzed in future actions that directly specify the level of harvest from the NGOM. Considering this, the impacts of Alternative 2 Options 1 – 4 on protected species would be negligible in comparison to each other and negligible overall.

6.4.3 Action 3 – Monitoring Directed Scallop Fishing in the Northern Gulf of Maine Management Area

The Council is considering a range of options in Amendment 21 that would facilitate monitoring on the Northern Gulf of Maine management area. There is currently no mechanism in place to deploy at-sea monitors for LAGC vessels fishing in the NGOM (Alternative 1). Both Alternative 2 and Alternative 3 would establish a call-in requirement for observer coverage for LAGC vessels fishing in the NGOM, with the only difference being the existing program that would be used to support monitoring in the NGOM (i.e. scallop industry funded observer program versus NEFOP). None of the Alternatives in Action 3 would directly impact the level of harvest in the NGOM or associated risk of interaction with protected species; however, some indirect impacts to protected species could be expected if observer coverage is expanded to this part of the resource and more fishery dependent data becomes available to characterize the level of interaction between the scallop fishery and protected species when operating in the NGOM.

6.4.3.1 Alternative 1 – No Action

There would be no change to the scallop industry funded observer program, and no observer call-in requirement for LAGC Category A and B vessels fishing for scallops in federal waters in the NGOM management area. This alternative would not dictate the level of harvest from the NGOM or have direct impacts on the level of interaction with protected species in this part of the resource; however, continuing the current state of no observer coverage in the NGOM would lead to indirect negative impacts as the level of interaction with protected species, such as Atlantic sturgeon and loggerhead turtles, would continue to be highly uncertain in this part of the resource. Without fishery dependent data such as catch records obtained by at-sea observers, addressing issues with the overlap of the scallop fishery and protected species in the NGOM fishery will continue to be challenging. Considering this, Alternative 1 could result in indirect slightly negative impacts to protected species relative to Alternative 2 and Alternative 3.

6.4.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM TAC to off-set monitoring costs.

Alternative 2 would expand the observer call-in requirement to all scallop vessels operating in the NGOM, including LAGC Category B vessels. This expansion of the call-in requirement would facilitate observer coverage in the NGOM management area. Recording fishing behavior, catch rates, and any incidental interactions with protected species through at-sea observer records is critical in understanding the impact of the scallop fishery effort throughout the range of the resource as it relates to protected species. Without this fishery dependent data stream, the level of interaction with protected species and the scallop fishery in the NGOM management area would continue to be highly uncertain and create challenges with analyzing direct impacts of NGOM catch limits on protected species in this area through the Council's decision-making process. Establishing a monitoring program for the directed NGOM fishery would reduce the level of uncertainty around the overlap and potential impact of scallop fishing to protected species in this area over the long term and would allow the Council to consider impacts of NGOM catch limits to protected species in future actions. Alternative 2 would not directly impact the level of effort, tow time, bottom area swept, or associated risk of interaction between scallop fishing in the NGOM and protected species and thus would not have a direct impact to protected species; however, considering that observer data would be available inform the relationship between scallop effort and potential interactions with protected species when setting catch limits in the NGOM, Alternative 2 would likely have indirect positive impacts to protected species overall, and positive impacts in comparison to

Alternative 1. Alternative 2 would be expected to have negligible impacts in comparison to Alternative 3 because both alternatives would facilitate monitoring in the NGOM management area.

6.4.3.3 Alternative 3 - Monitor directed scallop fishing in the NGOM with observers from the NEFOP program.

Alternative 3 would recommend that NMFS utilize the existing NEFOP program to observe directed scallop trips in federal waters in the Northern Gulf of Maine management area. This would expand the number of observer programs being used to monitor the scallop fishery. Recording fishing behavior, catch rates, and any incidental interactions with protected species through at-sea observer records is critical in understanding the impact of the scallop fishery effort throughout the range of the resource as it relates to protected species. Without this fishery dependent data stream, the level of interaction with protected species and the scallop fishery in the NGOM management area would continue to be highly uncertain and create challenges with analyzing direct impacts of NGOM catch limits on protected species in this area through the Council's decision-making process. Establishing a monitoring program for the directed NGOM fishery would reduce the level of uncertainty around the overlap and potential impact of scallop fishing to protected species in this area over the long term and would allow the Council to consider impacts of NGOM catch limits to protected species in future actions. Alternative 3 would not directly impact the level of effort, tow time, bottom area swept, or associated risk of interaction between scallop fishing in the NGOM and protected species and thus would not have a direct impact to protected species; however, considering that observer data would be available inform the relationship between scallop effort and potential interactions with protected species when setting catch limits in the NGOM, Alternative 3 would likely have indirect positive impacts to protected species overall, and positive impacts in comparison to Alternative 1. Alternative 3 would be expected to have negligible impacts in comparison to Alternative 2 because both alternatives would facilitate monitoring in the NGOM management area.

6.4.4 Action 4 – Support Scallop Research using Scallops from the NGOM

Action 3 considers whether a portion of the NGOM set-aside should be added to the 1.25-million-pound Scallop RSA and/or made available for RSA compensation fishing. All alternatives in this section are administrative in nature and would not directly affect the level of effort, tow time, bottom area swept, or associated risk of interaction between the scallop fishery and protected species that exist in the NGOM. Therefore, all alternatives in Action 4 are expected to have negligible direct impacts to protected species overall as well as in comparison to each other.

6.4.5 Action 5 – NGOM Fishing Season

The Council developed a range of alternatives that address how the directed scallop fishery in the Northern Gulf of Maine can be prosecuted. The Council can select multiple Alternatives in this section as preferred.

6.4.5.1 Alternative 1 – No Action

There would be no changes to measures governing how vessels can fish allocations in the NGOM. The NGOM management area would remain open year-round, unless an allocation is reached, and the area closes to a particular component. There would be no limits on the number of days that a vessel could land their trip in a calendar week or limits on multiple sailings per day, and no seasonal closure of the NGOM between September and November.

Under the current resource conditions in the NGOM management area, the level of directed effort, scallop harvest, and associated risk of interaction with protected species is minimal compared to what is estimated for the fishery as a whole. Under these conditions, direct impacts to protected species without measures in place to limit the number of days a vessel could land in a week (i.e. Alternative 2) or limit multiple sailings per day (i.e. Alternative 3) would be negligible because the overall level of harvest and associated risk of interactions would be minimal and likely not introduce new or elevated effort, tow time, or bottom area swept in the NGOM.

There are alternatives in this action that would support potentially greater levels of harvest from the NGOM if and when biomass in this area increases substantially. The total level of scallop fishing and associated risk of interactions with protected species may increase under this scenario; however, even with no measures in place to restrict the number of trips per week (i.e. Alternative 2) or sailings per day (i.e. Alternative 3), direct impacts to protected species would likely continue to be minimal. Regardless of whether the NGOM fishery is reflective of recent conditions or an upswing in biomass and overall effort occurs, the direct impacts of the fishery to protected species would be analyzed in future actions and would account for any measures that would extend the NGOM fishing season that are implemented through this action.

Though the presence of hard-shell sea turtle and leatherback turtles is less in the Gulf of Maine relative to other parts of the scallop resource, the Gulf of Maine is known as the northernmost foraging grounds for these protected species. Migration to the northern range of foraging grounds tends to occur as water temperatures warm in the Gulf of Maine, meaning hard-shell and leatherback turtles may occur in this region beginning in June (Shoop & Kenney, 1992) (Dodge et al., 2014; M. James et al., 2005; M. C. James et al., 2006; NMFS & USFWS, 1992). Alternatives that extend the NGOM fishing season to overlap with this time period could have some negative impacts to these protected species of sea turtle; however, the seasonal overlap of the NGOM fishery with protected turtle species would be dependent on the overall allocation to this area more so than the measures considered in Action 5.

While there could be some impact to protected species as a result of Alternative 1, the direct impacts would be analyzed in future specifications actions that are developed by the Council that set catch limits in the NGOM and which account for any measures implemented through this action that extend the NGOM season. Therefore, the overall impact of Alternative 1 to protected species would be negligible.

Considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of extending the NGOM season to protected species, the impacts of Alternative 1 are likely negligible in comparison to Alternative 2, Alternative 3, and Alternative 4.

6.4.5.2 Alternative 2 - Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area

Under Alternative 2, LAGC vessels would be prohibited from landing scallops more than five (5) times per calendar week (Monday – Sunday) from declared scallop trips in the Northern Gulf of Maine Management area.

Limiting the number of trips that can be landed per week could extend the timing of scallop fishing in the NGOM to some degree, depending on the level of biomass, NGOM TAC, catch rates, and number of active vessels participating in the NGOM fishery. Under current conditions, the NGOM season is already relatively brief (i.e. roughly 1 month) and most vessels already fish 5 or fewer trips per week (Figure 21), meaning it is unlikely that Alternative 2 would noticeably extend the NGOM season. At greater levels of biomass and a higher LAGC TAC, the NGOM season could be longer than it has been in recent years; however, this would be the case aside from Alternative 2, though Alternative 2 could amplify the extended season at some level. In either scenario, the direct impacts of Alternative 2 to protected species would be analyzed in future actions developed by the Council that set catch limits in the NGOM.

Though there are seasonal trends in the presence of some protected species in the Gulf of Maine, for instance hard-shell and leatherback turtles, it is unlikely that Alternative 2 in and of itself would significantly shift the timing of the NGOM fishery—the timing of the NGOM fishery would be mostly dictated by the size of the NGOM TAC. As stated previously, direct impacts of scallop fishing to protected species are analyzed in terms of fishing effort, tow time, and bottom area swept, with the risk of interactions with protected species increasing with any and all of these factors. Considering that Alternative 2 would not increase any of these factors, and acknowledging the unlikelihood that Alternative 2 would significantly shift the timing of the NGOM fishery to a time of year when protected species occur in this region, the impacts of Alternative 2 to protected species would likely be negligible overall. Furthermore, considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of extending the NGOM season to protected species, the impacts of Alternative 2 are likely negligible in comparison to Alternative 1, Alternative 3, and Alternative 4.

6.4.5.3 Alternative 3 – Limit vessels to one sailing per day

LAGC vessels would be prohibited from sailing multiple times on one calendar day.

Limiting the number of sailings per day could extend the timing of scallop fishing in the NGOM to some degree, depending on the level of biomass, NGOM TAC, catch rates, and number of active vessels participating in the NGOM fishery. Under current conditions, the NGOM season has been relatively brief (i.e. roughly 1 month) and roughly 20-30% of LAGC vessels sailed two trips in one day at least once during the season (Table 24), meaning it is unlikely that limiting the number of sailings per day could noticeably extend the season. At greater levels of biomass and a higher LAGC TAC, the NGOM season could be longer than it has been in recent years; however, this would be the case aside from Alternative 3, though Alternative 3 could amplify the length of the season at some level. In either scenario, the direct impacts of Alternative 3 to protected species would be analyzed in future actions developed by the Council that set catch limits in the NGOM.

Though there are seasonal trends in the presence of some protected species in the Gulf of Maine, for instance, hard-shell and leatherback turtles, it is unlikely that Alternative 3 in and of itself would significantly shift the timing of the NGOM fishery—the timing of the NGOM fishery would be mostly dictated by the size of the NGOM TAC. As stated previously, direct impacts of scallop fishing to protected species are analyzed in terms of fishing effort, tow time, and bottom area swept, with the risk of interactions with protected species increasing with any and all of these factors. Considering that Alternative 3 would not directly increase any of these factors, and acknowledging the unlikelihood that Alternative 3 would significantly shift the timing of the NGOM fishery to a time of year when protected species occur in this region, the impacts of Alternative 3 to protected species would likely be negligible overall. Furthermore, considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of extending the NGOM season to protected species, the impacts of Alternative 3 are likely negligible in comparison to Alternative 1, Alternative 2, and Alternative 4.

6.4.5.4 Alternative 4 – Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually.

Alternative 4 would annually establish a seasonal closure of the NGOM management area, beginning at 12:00 am on September 1, and ending at 11:59 pm on November 31.

As discussed previously, though the presence of hard-shell sea turtle and leatherback turtles is less in the Gulf of Maine relative to other parts of the scallop resource, the Gulf of Maine is known as the northernmost foraging grounds for these protected species. Migration to the northern range of foraging grounds tends to occur as water temperatures warm in the Gulf of Maine, meaning hard-shell and

leatherback turtles may occur in this region beginning in June (Shoop & Kenney, 1992) (Dodge et al., 2014; M. James et al., 2005; M. C. James et al., 2006; NMFS & USFWS, 1992). Considering that the timing of sea turtle occurrence in the Gulf of Maine and the seasonal closure in Alternative 4 do not overlap, it is unlikely that Alternative 4 would have a direct impact on these protected sea turtle species. In a scenario where biomass and overall catch limits in the NGOM are significantly elevated compared to recent years, it is possible that effort that would have occurred in the NGOM during the September through November time period could be shifted to the summer months when hard-shell and leatherback turtles are known to occur in the Gulf of Maine region. Under this scenario, it is possible that Alternative 4 could have some negative impacts to these protected species; however, considering the low level of co-occurrence between hard-shelled sea turtles and scallop gear in this sub-region overall, especially considering that hard-shelled sea turtle interactions with scallop fishing gear in the Gulf of Maine are non-existent (FSB, 2015, 2016, 2017, 2018; Murray, 2011, 2013, 2015a, 2015b; Murray & Orphanides, 2013; NMFS, 2012; Warden, 2011a, 2011b) and that hard-shelled sea turtles are generally less common in the Gulf of Maine relative to the Mid-Atlantic, it is more likely that the overall impact of Alternative 4 would be negligible.

Regardless, as previously stated, the overall direct impacts of implementing a seasonal closure in the NGOM to protected species would be analyzed in Council actions that set NGOM catch limits in the future. Considering that the alternatives in Action 5 are additive and acknowledging the difficulty with quantifying the direct impacts of a seasonal closure of the NGOM or extending the NGOM season to protected species, the impacts of Alternative 4 are likely negligible in comparison to Alternative 1, Alternative 2, and Alternative 3.

6.4.6 Action 6 -Cumulative Maximum Dredge Width That Can be fished in the Northern Gulf of Maine Management Area.

6.4.6.1.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the Gulf of Maine dredge exemption program, and no additional restrictions on the combined maximum dredge width that could be fished in the NGOM. All limited access general category vessels and Limited Access vessels participating in the small dredge program would be able to fish a maximum combined dredge width of 10.5 feet in the Northern Gulf of Maine management area. Full-Time Limited Access vessels fishing in the NGOM would be able to fish a maximum combined dredge width of 31 feet, as specified in regulation.

The risk of interactions with protected species is directly related to area swept and landings per unit of effort (LPUE); for example, measures that reduce LPUE or overall efficiency can increase area swept, which typically increases the risk of dredge interactions with protected species. There are several measures in Action 6 that consider limiting the maximum dredge width allowed for vessels fishing in the NGOM. These measures are mostly focused at limiting the size and(or) number of dredges that full time limited access vessels may use when fishing in the NGOM; under Alternative 2 the maximum dredge width allowed would be 10.5 feet (i.e. current dredge width maximum for LAGC vessels) and under Alternative 3 the maximum dredge width would be limited to 15.5 feet (i.e. the size of one industry standard dredge used in the full time limited access component). Both of these alternatives would be expected to reduce efficiency of LA vessels fishing in the NGOM relative to Alternative 1.

The Council will determine how the LA component may access the NGOM through a future action; for example, if LA vessels would be allocated trips, or pounds, similar to access area fishing in the rest of the resource, or, structuring access similar to DAS management used outside of the NGOM. Should future access for the LA component in the NGOM reflect access area fishing (i.e. output control, limiting the amount that can be caught from the area per trip), reducing efficiency by limiting dredge size either through Alternative 2 or Alternative 3 would likely lead to greater area swept within the NGOM. With

increased area swept and tow time needed to harvest a possession limit, it is possible that the risk of interactions with protected species in the NGOM, such as hard-shell and leatherback sea turtle species and/or Atlantic sturgeon, could increase under Alternative 2 and Alternative 3 relative to Alternative 1. Though it is difficult to quantify how impactful this would be, it is reasonable to expect that Alternative 1 could have some slight positive impacts to protected species overall as well as in comparison to Alternative 2 and Alternative 3.

Should future access for the LA component in the NGOM reflect DAS management (i.e. input control, limiting the amount of time a vessel has to catch scallops), area swept, tow time, and the risk of interactions between scallop dredges and protected species could be somewhat greater under Alternative 1 compared to Alternative 2 and Alternative 3. In this scenario, Alternative 1 could have some slightly negative impacts to protected species, both overall and in comparison to Alternative 2 and Alternative 3; however, it is difficult to quantify the magnitude of impact and whether the risk of interaction with protected species in the NGOM as a result of Alternative 1 would result in any takes of the protected species discussed previously. Regardless of how the LA fishery may access the NGOM in the future, any gear limitations implemented through this action will be considered by the Council when analyzing the impacts of fishing to protected species through future specifications actions.

Overall, the impact of Alternative 1 to protected species would vary depending on many of the factors described above, and a determination of direct impacts of Alternative 1 to protected species would be made in the future when setting catch limits in the NGOM.

6.4.6.1.2 Alternative 2 – Limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft

Alternative 2 would limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area. The combined maximum dredge width could not exceed 10.5 ft (3.2 m), measured at the widest point in the bail of the dredges. Currently, 10.5 ft (3.2 m) is the maximum cumulative dredge width that can be fished by all limited access general category vessels and limited access vessels participating in the small dredge program in the Northern Gulf of Maine management area.

As discussed previously, reducing dredge width under Alternative 2 would reduce efficiency of full-time limited access vessels, in turn increasing tow time, bottom area swept, and the risk of interactions with protected species relative to Alternative 1. It is difficult to quantify the magnitude of direct impacts between Alternative 2 and Alternative 1 because many factors, such as the method for administering access to the limited access component in the NGOM (i.e. DAS versus access area fishing), the overall level of harvest, and overlap of fishing effort and the presence of protected species, will vary from year to year. Considering that, though the overall effect of Alternative 2 on protected species in the NGOM may be somewhat negative relative to Alternative 1, a determination of direct impacts to protected species would be analyzed by the Council when developing catch limits for this area in the future.

Alternative 2 would reduce efficiency of full-time limited access vessels in the NGOM slightly more than Alternative 3, so impacts to protected species could be somewhat elevated under Alternative 2 relative to Alternative 3. That being said, it is difficult to quantify the magnitude of impact and whether the risk of interactions with protected species in the NGOM as a result of Alternative 2 would actually result in takes of the abovementioned protected species, either overall or in comparison to Alternative 1 and Alternative 3. Regardless, any gear limitations implemented through this action will be considered by the Council when analyzing the impact of fishing to protected species through future specifications actions that set catch limits for the NGOM.

6.4.6.1.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

Alternative 3 would limit the combined dredge width of full-time limited access scallop vessels operating in the Northern Gulf of Maine management area. The combined maximum dredge width could not exceed 15.5 ft, measured at the widest point in the bail of the dredges.

As discussed previously, reducing dredge width under Alternative 3 would reduce efficiency of full-time limited access vessels, in turn increasing tow time, bottom area swept, and the risk of interactions with protected species relative to Alternative 1. It is difficult to quantify the magnitude of direct impacts between Alternative 3 and Alternative 1 because many factors, such as the method for administering access to the limited access component in the NGOM (i.e. DAS versus access area fishing), the overall level of harvest, and the overlap of fishing effort and the presence of protected species, will vary from year to year. Despite the overall effect of Alternative 3 on protected species in the NGOM potentially being slightly negative relative to Alternative 1, a determination of direct impacts to protected species would be analyzed by the Council when developing catch limits for this area in the future.

Alternative 3 would reduce efficiency of full-time limited access vessels in the NGOM slightly less than Alternative 2, so impacts to protected species could be somewhat reduced under Alternative 3 relative to Alternative 2. That being said, it is difficult to quantify the magnitude of impact and whether the risk of interactions with protected species in the NGOM as a result of Alternative 3 would actually result in takes of the abovementioned protected species, either overall or in comparison to Alternative 1 and Alternative 2. Regardless, any gear limitations implemented through this action will be considered by the Council when analyzing the impact of fishing to protected species through future specifications actions that set catch limits for the NGOM.

6.4.7 Action 7 - Increase the LACG IFQ Possession Limit

Impacts of scallop fishing on protected resources are typically gauged by the level of scallop effort that overlaps with regions where protected resource species are typically observed and is measured by projected area swept. Specifically, interaction risks with protected species, such as sea turtles and Atlantic sturgeon, are strongly associated with amount of time and location of gear in the water, with vulnerability of an interaction increasing with increases of any or all of these factors.

Observed interactions with protected species (specifically sea turtles) have been more common in the Mid-Atlantic relative to other parts of the resource area (i.e., GB, GOM, and SNE). As such, management measures have been included in the Scallop FMP to reduce the risk of interactions in this region, primarily in the form of a seasonal gear requirement (i.e. the use of a turtle chain mat and deflector dredge west of 71°W from May 1st through November 30th). This gear requirement applies to all LA and LAGC IFQ vessels that fish a combined dredge width of 10.5 ft or greater.

It is possible that increasing the trip limit could make it economically feasible for LAGC IFQ vessels to fish open trips farther offshore (i.e. due to reduced trip costs) to areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing the potential for interactions with protected species. If this shift of effort was focused in the Mid-Atlantic region, LAGC IFQ vessels would still be subject to the seasonal gear restrictions described previously that reduce the potential for interactions with sea turtles, meaning the risk of an interaction with protected resource species would not be any greater than expected under the 600-pound possession limit.

Increasing the possession limit would allow LAGC IFQ vessels to harvest quota in fewer trips but would not change the level of allocation or landings expected from the LAGC IFQ component, meaning overall effort is not expected to change relative to the 600-pound trip limit. This means that increasing the

possession limit is not expected to increase area swept; however, if area swept did increase due to an increased possession limit, the potential for interactions with protected resource species would likely increase relative to the 600-pound possession limit. Under this unlikely scenario, increasing the possession limit could have slightly negative impacts on protected species relative to the 600-pound limit. Despite this, and due to the LAGC IFQ component representing 5.5% of the scallop fishery, any increased risk for interactions would likely be unnoticeable relative to what is expected under the 600-lb possession limit, and insignificant relative to the entire fishery.

Alternative 2 and Alternative 3 have sub-options that would increase the possession limit for either 1) all trips (open and access area trips) or 2) only access area trips. Considering that interactions with protected species by the LAGC IFQ component is expected to be minimal relative to the fishery as a whole regardless of whether a higher possession limit is implemented for all trips or only access area trips, direct comparisons are analyzed in the following sections for each alternative but not for each sub-option.

6.4.7.1 Alternative 1 – No Action

The LAGC IFQ harvest represents a small portion of overall landings in the scallop fishery, and therefore contributes proportionally to potential impacts to protected species. This is the case under the current possession limit (600 pounds, Alternative 1) and is also expected to be the case under a higher possession limit. Increasing the possession limit would not change allocations to the LAGC IFQ component; rather, it would offer vessels the flexibility to harvest allocations in fewer trips than under the current 600-pound limit (Alternative 1).

It is possible that increasing the trip limit could make it economically feasible for LAGC IFQ vessels to fish open trips farther offshore (i.e. due to reduced trip costs), in areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing overall tow time and bottom area swept, as well as the risk of interactions with protected species. Considering this, it is possible that interactions with protected species could be somewhat elevated by maintaining the 600 pound limit (Alternative 1) relative to increasing the possession limit through Alternative 2 or Alternative 3; however, the risk of interactions with protected species as a result of Alternative 1, Alternative 2, or Alternative 3 would still be a minimal, particularly relative to the fishery as a whole, meaning it is unlikely that any marginal increase or decrease would have a noticeable impact to protected species. Though it is possible that interactions with protected species could be slightly greater under Alternative 1 relative to Alternative 2 and Alternative 3, it is difficult to quantify the magnitude of impact and whether the risk of interactions with protected species LAGC IFQ fishery as a result of Alternative 1 would actually result in takes of the abovementioned protected species, either overall or in comparison to Alternative 2 and Alternative 3.

6.4.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Alternative 2 would increase the LAGC IFQ possession limit to 800 pounds at the level specified for Sub-Option 1 and Sub-Option 2. The LAGC IFQ harvest represents a small portion of overall landings and risk of interactions with protected species in the scallop fishery. This is expected to be the case under any of the possession limit alternatives considered through this action, including Alternative 2 which would increase the current possession limit to 800 pounds for either all trips (Sub-Option 1), or only access area trips (Sub-Option 2). Increasing the possession limit would not change allocations to the LAGC IFQ component; rather, it would offer vessels the flexibility to harvest allocations in fewer trips than under the current 600-pound limit (Alternative 1).

It is possible that increasing the trip limit through Alternative 2 could make it economically feasible for LAGC IFQ vessels to fish trips farther offshore (i.e. due to reduced trip costs), in areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing overall tow time and bottom area swept,

as well as the risk of interactions with protected species. Considering this, it is possible that the risk of interactions with protected species could be somewhat reduced under Alternative 2 relative to Alternative 1 (i.e. maintaining the 600 pound limit), and somewhat elevated relative to Alternative 3; however, an reduced or increased chance of interactions with protected species as a direct result of Alternative 2, Alternative 1, or Alternative 3 would still be a minimal relative to what is possible from the fishery as a whole, meaning it is unlikely that any marginal increase or decrease would have a noticeable impact to protected species. Though it is possible that interactions with protected species could be slightly reduced under Alternative 2 relative to Alternative 1 and slightly elevated relative to Alternative 3, it is difficult to quantify the magnitude of impact to protected species or determine whether the risk of interactions as a result of the 800-pound possession limit would actually result in takes of the abovementioned protected species, either overall or in comparison to Alternative 1 and Alternative 3.

6.4.7.3 Alternative 3—Increase the LAGC IFQ possession limit to 1,200 pounds per trip

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips (Sub-Option 1) or for access area trips only (Sub-Option 2). The LAGC IFQ harvest represents a small portion of overall landings and risk of interactions with protected species in the scallop fishery. This is expected to be the case under any of the possession limit alternatives considered through this action, including Alternative 3 which would increase the current possession limit to 1,200 pounds for either all trips (Sub-Option 1), or only access area trips (Sub-Option 2). Increasing the possession limit would not change allocations to the LAGC IFQ component; rather, it would offer vessels the flexibility to harvest allocations in fewer trips than under the current 600-pound limit (Alternative 1).

It is possible that increasing the trip limit through Alternative 3 could make it economically feasible for LAGC IFQ vessels to fish trips farther offshore (i.e. due to reduced trip costs), in areas with higher catch rates and meat sizes. In this scenario, it could be expected that improved fishing conditions would reduce the overall time gear is deployed in the water, thereby reducing overall tow time and bottom area swept, as well as the risk of interactions with protected species. Considering this, it is possible that the risk of interactions with protected species could be somewhat reduced under Alternative 3 relative to Alternative 1 (i.e. maintaining the 600 pound limit) and reduced to a lesser degree relative to Alternative 2; however, an reduced or increased chance of interactions with protected species as a direct result of Alternative 3, Alternative 1, or Alternative 2 would still be a minimal relative to what is possible from the fishery as a whole, meaning it is unlikely that any marginal increase or decrease would have a noticeable impact to protected species. Though it is possible that interactions with protected species could be slightly reduced under Alternative 3 relative to Alternative 1 and slightly reduced relative to Alternative 2, it is difficult to quantify the magnitude of impact to protected species or determine whether the risk of interactions as a result of the 1,200-pound possession limit would actually result in takes of the abovementioned protected species, either overall or in comparison to Alternative 1 and Alternative 2.

6.4.8 Action 8 - Increase the Amount of Observer Compensation Available for LAGC IFQ vessels

Action 8 considers adjust the amount of observer compensation that LAGC IFQ vessels are eligible to receive when carry an observer. Alternatives 2 and Alternative 3 would allow for additional compensation for observed IFQ trips to account for potentially longer trip times should the Council elect to increase the LAGC IFQ possession limit through this action.

Observer records are used in management of the fishery and are a key data stream in monitoring and characterizing interactions of the scallop fishery with protected species throughout the range of the resource. Observer coverage in the LAGC IFQ fishery is currently administered through the Scallop

Industry Funded Observer program, which sets aside a portion of annual allocations to support the costs of carrying an observer and processing the data collected. Action 8 does not propose changing any of these key components of the scallop IFQ program, but instead considers increasing the amount of compensation that would be available to LAGC IFQ vessels carrying an observer to more accurately reflect the cost of carrying an observer if the possession limit is increased through this action and the average trip time dock-to-dock increases. Alternative 1 would maintain the current amount of compensation available to LAGC IFQ vessels carrying an observer, set at one 24-hour day, whereas Alternative 2 would increase the amount to a maximum of two days, prorated in 12-hour increments over one day, and Alternative 3 would allow for an additional full day of compensation for trips greater than 24-hours.

A key argument for Alternative 2 and Alternative 3 is that aligning the amount that vessels can be compensated when carrying an observer with the length of the trip will reduce the risk of observer bias in the LAGC IFQ fishery. Relieving vessels of the additional cost burden for trips of over one day will reduce the likelihood that fishing behavior will be different for observed trips versus unobserved trips. Considering that observer data is a critical need for accurately characterizing interactions of the LAGC IFQ component with protected species, it is likely that reducing any potential observer bias that could exist under Alternative 1 through Alternative 2 or Alternative 3 would reduce uncertainty around the impacts to protected species when analyzed by the Council in future specifications actions. Having less uncertainty in the data streams used to inform impacts of the scallop fishery on protected species would likely have an indirect positive impact to protected species in the future. That being said, regardless of the long-term indirect impacts to protected species as a result of Alternative 1, Alternative 2, or Alternative 3, none of these alternatives are expected to change the likelihood of interactions between the LAGC IFQ component and protected species, either overall or in comparison to the each other.

None of the alternatives in Action 8 would have a direct impact on allocations to the LAGC IFQ component, the location or amount of fishing effort, bottom area swept, or the associated risk of interactions with protected species. Considering this, and acknowledging that impacts of the LAGC IFQ component to protected species is minimal relative to the fishery as a whole, the direct impacts of Alternative 1, Alternative 2, and Alternative 3 to protected species are expected to be negligible overall as well as in comparison to each other.

6.4.9 Action 9 - One-way Transfer of Quota from LA with IFQ to LAGC IFQ-Only

Action 9 considers alternatives that would allow temporary transfers from LA vessels with IFQ to LAGC IFQ-only vessels (Alternative 2) or both temporary and permanent transfers from LA vessels with IFQ to LAGC IFQ-only vessels (Alternative 3). These measures are administrative in nature and will not change the level of allocations to either LA with IFQ vessels or LAGC IFQ-only vessels, the level of directed effort, bottom area swept, or associated risk of interactions with protected species. The only change that could result from these measures is the type of vessel that fishes a minimal portion of annual projected landings that are allocated to LA vessels with IFQ (i.e. 0.5% of the APL). Regardless of which alternative is adopted by the Council, they Council would continue analyzing the direct impacts of annual allocations to protected species through future specifications actions. Considering this, the impacts of Alternative 1, Alternative 2, and Alternative 3 to protected species would be negligible overall as well as in comparison to one another.

6.4.10 Action 10 – Specifications and Framework Adjustment Process

Through Action 10, the Council would identify a list of specific issues that may be addressed through future specifications actions or framework adjustments. This action is administrative and would not directly change anything in the fishery when Amendment 21 is implemented. Any impacts associated with changes that are made through future actions as a result of Action 10 would be analyzed in future actions, including the direct impacts they might have on protected species. Considering this, the impact of Alternative 1 and Alternative 2 to protected species is expected to be negligible overall as well as in comparison to one another.

DRAFT

6.5 IMPACTS TO PHYSICAL HABITAT AND EFH

6.5.1 Action 1 – Northern Gulf of Maine Catch Limits

Action 1 relates to how the NGOM allocations are accounted for with respect to legal catch limits for the scallop fishery (i.e. OFL and ABC) and is distinct from setting annual allocations for the management area (Action 2).

6.5.1.1 Alternative 1 – No Action

Alternative 1/No Action keeps the NGOM catch limits outside of the OFL and ABC limits for the fishery. Specifically, the NGOM limit would continue to be included as part of the OFL. Fishing effort and therefore effects of the fishery on EFH are directly related to the NGOM and other allocations (Action 2 and future specifications actions), and not to the OFL and ABC. Thus, the inclusion or exclusion of the NGOM resource in OFL and ABC determinations does not have direct effects on effort and therefore on impacts to EFH.

6.5.1.2 Alternative 2 – Account for the Northern Gulf of Maine as part of the Acceptable Biological Catch and Annual Catch Limits

Alternative 2 would include exploitable biomass of scallops in the NGOM in the overall OFL and ABC for the fishery. Doing so more fully incorporates growth (or decline) of the NGOM portion of the resource into overall limits. This could increase (or decrease) OFL and ABC for the fishery, and therefore could increase (or decrease) fishing effort and thus impacts to EFH. However, these effects are indirect, and the impacts of increasing or decreasing allocations will be considered when allocations are set in a specifications action, using whatever approach is selected under Action 2.

6.5.2 Action 2 – Northern Gulf of Maine Allocations

Action 2 establishes a process for setting annual allocations to the NGOM. While the effects of these allocations will be evaluated in those future specifications actions, Action 2 in this amendment will influence the overall size of the NGOM allocations, as well as which vessels are able to harvest the allocation and in which proportions.

6.5.2.1 Alternative 1 – No Action

Alternative 1/No Action maintains the existing approach to NGOM allocations. Importantly, this approach allows Limited Access vessels to fish in the area using DAS until closure of the area to all vessels is triggered via harvest of the hard TAC by the LAGC NGOM permit and LAGC ITQ vessels. Overall, LA DAS limits establish an upper bound on potential LA activity in the NGOM. Further, scallop catch rates in the management area create a practical limit on how much effort might be expended in the management area. Despite these limits, there is substantial uncertainty in how much LA effort might occur in the NGOM under this alternative, since it is not directly controlled, such that a range of impacts to habitats in the Gulf of Maine could result under this alternative. Under No Action, larger amounts of LA DAS-based effort are most likely to occur when there is substantial biomass in a relatively small area, such that harvest is efficient and economically worthwhile, compared to using those DAS in other areas. Such conditions could result in localized negative impacts to habitat. However, given that most of the scallop resource, and therefore most of the effort and habitat impacts associated with the fishery will remain in the Georges Bank and Mid-Atlantic Bight regions, regardless of which alternative is selected

for Action 2. Alternative 1 is not expected to have direct or indirect impacts on the scallop resource, or on EFH.

6.5.2.2 Alternative 2 – Create a Northern Gulf of Maine set-aside to support research and a directed LAGC fishery, share additional NGOM allocation between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ).

Alternative 2 explicitly allocates pounds of harvest from the NGOM to either those fishing under the NGOM set-aside, or to LA and LAGC IFQ vessels. Various overall limits, triggers, and percentage splits are considered via the four management options. All options exert more precise control over the amount of effort and harvest that might occur in the NGOM as compared to Alternative 1/No Action.

6.5.2.2.1 Options 1 - 4: NGOM set-aside triggers and allocation splits between the NGOM set-aside and the NGOM APL.

Options 1 – 4 specify a NGOM set-aside trigger as summarized in the table below. Pounds up to this trigger would be allocated towards the NGOM set aside, while pounds over this trigger would be split between the set-aside and the NGOM APL. Selecting a trigger and sharing arrangement is not expected to have direct or indirect impacts on the scallop resource, or on EFH. The impacts of annual allocations will be analyzed in subsequent actions that set those allocations. Regardless of the option adopted, catch and therefore the impacts to EFH of the annual NGOM specifications will scale up or down with the condition of the scallop resource. It is assumed that EFH impacts would be similar, regardless of the permit category or size of vessel harvesting the resource.

Table 87 - Comparison of NGOM Set-Aside Triggers and Allocation Splits

Option	Trigger (lb)	Split (%NGOM set aside vs. %NGOM APL)
1	1,000,000	5/95
2	600,000	25/75 to 3,000,000 lb; 5/95 over 3,000,000 lb
3	500,000	5/95
4	200,000	25/75 to 3,000,000 lb; 5/95 over 3,000,000 lb

6.5.3 Action 3 – Monitoring Directed Scallop Fishing in the Northern Gulf of Maine Management Area

This action relates to monitoring of the NGOM fishery by at-sea observers. No direct effects on EFH are expected.

6.5.3.1 Alternative 1 – No Action

Under No Action there would continue to be no observer call-in requirement for LAGC Category A and B vessels fishing in the NGOM, and therefore no changes in costs or incentives/disincentives to fishing that would influence the level of effort in the fishery. No impacts to EFH are expected.

6.5.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM TAC to off-set monitoring costs

Alternative 2 would add an observer call-in requirement and would then create a set-aside mechanism to offset program costs to vessels. The intention of the set-aside is that carrying an observer would be cost-

neutral to the vessels, i.e. they would have additional pounds available to harvest and the revenue from this harvest would be equivalent to the rates paid to observers. While there are other logistical costs to the program, including the need to comply with the call-in requirement, preparing the vessel to carry an observer in addition to the crew, etc., effects on fishing practices such as choice of fishing location are not expected to result from implementation of an IFM program in the NGOM. Therefore, no impacts to EFH are expected to result from this alternative.

6.5.3.3 Alternative 3 – Monitor directed scallop fishing in the NGOM with observers from the NEFOP program

Alternative 3 would add an observer call-in requirement but would provide observer coverage via the NEFOP, such that vessels would not pay a daily rate to the observers if selected to carry one. While there are other logistical costs to the program, including the need to comply with the call-in requirement, preparing the vessel to carry an observer in addition to the crew, etc., effects on fishing practices such as choice of fishing location are not expected to result from implementation of the NEFOP in the NGOM. Therefore, no impacts to EFH are expected to result from this alternative.

6.5.4 Action 4 – Support Scallop Research using scallops from the Northern Gulf of Maine

These alternatives relate to more formal inclusion of the NGOM in the RSA program.

6.5.4.1 Alternative 1 – No Action

Under Alternative 1, the Council could recommend that the NGOM be available to support compensation fishing using the existing set-aside mechanism, but removals would not be accounted for in the NGOM allocation, and the overall size of the RSA program would not increase. No direct effects on EFH are expected.

6.5.4.2 Alternative 2 – Allocate a portion of the NGOM allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

This action expands the RSA program and uses scallops set aside from the NGOM Allocations as compensation for research. There may be some indirect positive impacts on EFH due to improved management associated with knowledge gained from RSA-funded research. Since compensation pounds would be a set-aside from the NGOM allocation, there would not be an increase in fishing associated with establishing the NGOM RSA set-aside as compared to Alternative 1. Therefore, substantial direct effects on fishing effort and thus on EFH are not expected. Potential indirect benefits would scale with increasing RSA allocations, from Option 1 (5%) to Option 3 (15%). Option 4, a 50,000 lb set-aside, would be slightly higher than a 10% allocation associated with the FY2020 TAC of 435,000 lb, and thus based on the current status of the resource, would allow for slightly more research funding than Option 2, and therefore would have a larger magnitude of indirect benefits.

6.5.5 Action 5 – Northern Gulf of Maine Fishing Season

Action 5 relates to the prosecution of the fishery and includes two alternatives to limit fishing activity and one seasonal closure during periods of lower yield.

6.5.5.1 Alternative 1 – No Action

Under Alternative 1 attainment of the NGOM TAC is controlled via trip limits, but there are no weekly limits on landings and vessels can declare multiple trips per day.

6.5.5.2 Alternative 2 - Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area

Under Alternative 2, there would be a weekly cap of 5 trips for LAGC vessels. This is intended to slow harvest of the resource and extend the season, which concludes when LAGC vessels have harvested the NGOM TAC. The overall amount of harvest would not change under this alternative, but the season might run further into the summer if it was implemented (in the past, the season has ended in April or May). Since meat yields remain high into the summer, there should not be an increase or decrease in fishing time associated with the season extension to harvest the same catch.

6.5.5.3 Alternative 3 – Limit vessels to one sailing per day

LAGC vessels are subject to a per-trip limit but are not currently constrained in terms of taking multiple trips per day to harvest multiple trip limits. Alternative 3 would change patterns of effort for some vessels that sail more than once per day, in an effort to extend the season. Similar to Alternative 2, this could mean harvest goes into the summer months, a time of good meat yields (Table 86). Thus, increases in effort are unlikely, only a temporal redistribution of fishing activity. Given this, no effects on EFH are expected, neutral relative to Alternative 1.

6.5.5.4 Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually

In general, the NGOM season does not extend this long into the fall, but if it did, this alternative would close the area during a season when meat yields are lower, and therefore when it takes more effort/bottom contact time to harvest the trip limit. Therefore, this alternative is expected to have positive impacts on EFH. The magnitude of this effect is likely slight, since most effort in the fishery occurs in other regions, and because the season rarely extends into the fall.

6.5.6 Action 6 – Cumulative Maximum Dredge Width that can be fished in the Northern Gulf of Maine Management Area

These three alternatives relate to the gears permitted for use in the NGOM fishery. Changes to gear width could influence area swept and therefore habitat impacts, but many factors combine to influence area swept. These include constraints on effort such as trip limits or crew limits, and whether access is governed primarily by possession limits or by days at sea. Some of these provisions would need to be set in future specifications actions. Should future access for the LA component in the NGOM reflect access area fishing (i.e. output control, limiting the amount that can be caught from the area per trip), reducing efficiency by limiting dredge size either through Alternative 2 or Alternative 3 would likely lead to greater area swept within the NGOM, and therefore additional negative impacts on habitat. Though it is difficult to quantify, it is reasonable to expect that Alternative 1 could have slight positive impacts to habitat in comparison to Alternative 2 and Alternative 3. Possible constraints and their influence on swept area will be discussed below under each alternative.

As noted above, differences in swept area between LA and LAGC vessels under different dredge width limitations will influence habitat impacts of the fleet. However, it is important to remember that LAGC vessels are already limited to using smaller dredges, and that given the trigger system described under Action 2, LA vessels will only have access to the NGOM resource under higher biomass scenarios, and

even if these triggers are exceeded, LA vessels will only get 5-25% of the allocation above the trigger. Given this context, reducing gear width for LA vessels fishing larger dredges will have minimal impacts on the magnitude of habitat impacts associated with the fishery overall.

6.5.6.1 Alternative 1 – No Action

Under Alternative 1/No Action, dredge width is governed by permit category. Currently, 10.5 ft (3.2 m) is the maximum cumulative dredge width that can be fished by all limited access general category vessels and limited access vessels participating in the small dredge program in the Northern Gulf of Maine management area. Other vessels, including LA vessels that might be fishing in the NGOM under DAS, can fish two dredges up to 31 ft total width.

Alternative 1 is expected to have minimal effects on the magnitude of habitat impacts associated with the scallop fishery. Given the allocation split between LAGC and LA permits outlined in the various Action 2 alternatives, most effort in the NGOM fishery will continue to be from LAGC vessels using 10.5 ft dredges. When LA vessels fishing larger dredges do fish in the NGOM, they will do so with gear that allows them to do so efficiently, i.e. minimizing bottom time and therefore fuel costs. Minimizing bottom contact will in turn minimize impacts to EFH.

6.5.6.2 Alternative 2 – Limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft

Alternative 2 would require some LA vessels to use smaller and fewer dredges than they normally would while fishing in the NGOM. Fishing with smaller/fewer dredges will reduce catch per tow for these vessels.

If these LA vessels are fishing under a DAS, and assuming crew limit restrictions remain in place, this shift to smaller dredges could lead to lower catch per day. This could create disincentives for LA vessels to fish in the NGOM, reducing EFH impacts locally, but increasing them elsewhere. The net effects on EFH would depend on the relative efficiency of fishing with smaller vs. larger dredges in the NGOM vs. elsewhere, where scallop densities may vary. In terms of area swept, while each tow would have a path approximately one-third as wide (10.5 vs. 31 ft), and therefore a reduced habitat impact, vessels would likely make more tows per day to make up for reduced catch in each tow, such that the net effects on EFH are difficult to predict.

If these LA vessels are fishing under a possession limit system, it is reasonable to assume that they will continue to fish until they reach the possession limit, requiring additional tows than they would need to make with two 15-ft dredges. As noted above, the net effects of adding tows on EFH are uncertain. There could still be a disincentive to fish in the NGOM given the requirement to use smaller gear, thereby shifting effort elsewhere, with uncertain net impacts.

6.5.6.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

Alternative 3 would require some LA vessels to use fewer dredges than they normally would while fishing in the NGOM. The effects would be similar to Alternative 2, but less pronounced, as dredge width per tow would be half vs. one third what is normally used. Net effects on EFH would be uncertain.

6.5.7 Action 7 – Increase the LAGC IFQ Possession Limit

These alternatives would maintain (No Action) or increase (Alternatives 2 and 3) the possession limit for LAGC IFQ vessels. Since overall harvest is capped by the total amount of quota allocated, distributing that harvest amongst fewer trips is unlikely to have a substantial impact on EFH, positive or negative. However, increasing the trip limit could make it economically feasible to steam further from port for a trip, due to higher density beds and/or larger scallops that could be more efficiently harvested (larger scallops also command a premium price). Fishing on denser aggregations would reduce bottom time and therefore habitat impacts. Overall, the LAGC amounts to just 5.5% of the fishery, so any positive impacts are likely to be relatively minor at the scale of the fishery.

6.5.7.1 Alternative 1 – No Action

Under Alternative 1/No Action, the trip limits would be maintained at 600 lb. Impacts to EFH are expected to be negligible.

6.5.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Alternative 2 would increase the trip limit by a third, to 800 lb. Impacts to EFH are expected to be slightly positive, assuming that the increased limit would create incentives for vessels to travel further offshore to fish on denser beds.

6.5.7.3 Alternative 3 – Increase the LAGC IFQ possession limit to 1,200 pounds

Alternative 3 would double the trip limit to 1,200 lb. Impacts to EFH are expected to be slightly positive, and more positive than Alternative 2, assuming that the increased limit would create incentives for vessels to travel further offshore to fish on denser beds, and that the larger limit would create a stronger incentive.

6.5.7.3.1 Sub-Option 1—Increase the LAGC IFQ possession limit to 1,200 pounds per trip for open and access area trips

Sub-Option 1 is expected to have a greater impact on the spatial distribution of effort toward dense aggregations further offshore, and thus a greater impact on EFH, as compared to Sub-Option 2, since it affords greater flexibility.

6.5.7.3.2 Sub-Option 2—Increase the LAGC IFQ possession limit to 1,200 pounds per trip for only access area trips

LAGC IFQ vessels are able to opt-in to fishing in access areas, with access area allocations available on a first-come, first-served basis. Despite the overall ceiling on access area catch, Sub-Option 2 is still expected to have some impact on fleet behavior, perhaps incentivizing fishing in areas further offshore (e.g. CAII).

6.5.8 Action 8 – Increase the Amount of Observer Compensation Available for LAGC IFQ vessels

This action would increase observer compensation for LAGC IFQ vessels, bringing it more in line with costs, and thereby reducing the risk of observer bias. Since observer data are used to improve the information going into fisheries management decisions, this is expected to have slight, indirect, benefits on EFH. Because the compensation is taken from a set-aside, a net increase or decrease in fishing time is not expected. Given the number of pounds in question, as compared to the changes considered under Action 7, effects on the spatial distribution of effort are expected to be minimal.

6.5.8.1 Alternative 1 – No Action

Alternative 1/No Action would maintain the current compensation structure, and would therefore have slightly negative, indirect impacts to EFH.

6.5.8.2 Alternative 2 – Prorate daily compensation rate in 12-hour increments for observed LAGC IFQ trips longer than one day

Alternative 2 would allow for additional pounds of compensation during longer trips. This is expected to reduce observer bias in the fishery and thereby improve the data collected. This in turn is expected to have indirect, slightly positive impacts on EFH.

6.5.8.3 Alternative 3 – Allow a second day of compensation for trips over 24 hours

Alternative 3 would also allow for additional pounds of compensation during longer trips. This is expected to reduce observer bias in the fishery and thereby improve the data collected. This in turn is expected to have indirect, slightly positive impacts on EFH.

6.5.9 Action 9 – One-way Transfer of Quota from LA with IFQ to LAGC IFQ-Only

Under Action 9, there would be no change to the overall LAGC IFQ allocation, which would remain at 5.5% of the APL. Measures in Action 9 would not be expected to have substantial impacts on fishing effort or EFH because there would be no change in the overall allocation to this component.

6.5.9.1 Alternative 1—No Action

Alternative 1 is expected to have negligible impacts to fishing effort and EFH, since there would be no change in which vessels are harvesting the quota, and the overall amount of harvest is not expected to change.

6.5.9.2 Alternative 2—Allow temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Alternative 2 would allow temporary transfers of quota to LAGC IFQ vessels. Given differences between the LAGC and LA components of the fleet, this could affect where fishing occurs and therefore might influence, albeit slightly, the magnitude of EFH impacts in the fishery. The direction of this change would depend on the relative vulnerability of different habitats to fishing impacts. This is difficult to predict in the absence of specific data on scallop distributions but could be assessed in the context of annual specifications setting. Overall, the LAGC amounts to just 5.5% of the fishery, and only a portion of this quota is held by LA vessels, so any positive impacts are likely to be relatively minor at the scale of the fishery.

6.5.9.2.1 Sub-Options 1 & 2 – Temporary changes to quota accumulation caps

These sub-options address how much quota can be held by LAGC IFQ only permit holders. For Sub-Option 1, there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). Under Sub-Option 2, temporary and permanent one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. Both scenarios would not be expected to

have impacts on their own and relative to each other because estimated fishing mortality associated with LAGC IFQ removals would remain the same.

6.5.9.3 Alternative 3—Allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Similar to Alternative 2, Alternative 3 would allow transfers of quota to LAGC IFQ vessels, but these transfers could be permanent. Given differences between the LAGC and LA components of the fleet, this could affect where fishing occurs and therefore might influence, albeit slightly, the magnitude of EFH impacts in the fishery. The direction of this change would depend on the relative vulnerability of different habitats to fishing impacts. This is difficult to predict in the absence of specific data on scallop distributions but could be assessed in the context of annual specifications setting. Overall, the LAGC amounts to just 5.5% of the fishery, and only a portion of this quota is held by LA vessels, so any positive impacts are likely to be relatively minor at the scale of the fishery.

6.5.9.3.1 Sub-Options 1 & 2 – Changes to quota accumulation caps up to 5.5% of the APL

These sub-options address how much quota can be held by LAGC IFQ only permit holders. For Sub-Option 1, there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). Under Sub-Option 2, temporary and permanent one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. Both scenarios would not be expected to have impacts on their own and relative to each other because estimated fishing mortality associated with LAGC IFQ removals would remain the same.

6.5.10 Action 10 – Specifications and Framework Adjustment Process

These alternatives relate to the range of issues that can be addressed via the framework adjustment process.

6.5.10.1 Alternative 1 – No Action

Alternative 1 would not, in and of itself, have any direct impacts on EFH. Relative to Alternative 2, Alternative 1 could be expected to have negligible impacts.

6.5.10.2 Alternative 2 – Expand the list of measures that can be addressed through specifications and/or framework adjustments

Alternative 2 would not, in and of itself, have any direct impacts on EFH. Relative to Alternative 1, Alternative 2 could be expected to have negligible impacts.

6.6 ECONOMIC AND SOCIAL IMPACTS

6.6.1 Economic Impacts

6.6.1.1 Action 1 – Northern Gulf of Maine Catch Limits

Action 1 considers how the scallop biomass in the Northern Gulf of Maine should be accounted for in the legal limits of the fishery (OFL, ABC, ACL). The Council uses a separate process to set specifications for the Northern Gulf of Maine.

6.6.1.1.1 Alternative 1 - No Action

There would be no change to how scallops within the Northern Gulf of Maine are accounted for within the fishery's legal limits, and the ACL flowchart. The Northern Gulf of Maine ACL would continue to be specified as TAC that is included in the OFL, along with state waters catch estimates. This specification is done through a separate process (see Action 2). The fishery-wide ABC and ACL would not be increased with biomass from the Northern Gulf of Maine.

The economic impacts of Alternative 1 would likely be negligible.

6.6.1.1.2 Alternative 2 - Account for the Northern Gulf of Maine as part of Acceptable Biological Catch and Annual Catch Limits

Alternative 2 would establish a new process that would account for exploitable scallop biomass in the Northern Gulf of Maine Management Area, and include this as part of the OFL, ABC, and ACL. As part of this process, target fishing levels will be set lower than the fishing mortality rate associated with ACL to account for uncertainty and prevent overfishing. This requirement is expected to have long-term economic benefits on the fishery by helping to ensure that catch limits and fishing mortality targets are set at or below the OFL.

Alternative 2 would also increase the fishery-wide observer set-aside with biomass from the Northern Gulf of Maine. This would mean that there would be a larger pool of pounds to use to offset the cost of carrying observers. If the Council selects this option (Alternative 2), and Alternative 2 in Action 3, a NGOM specific monitoring set-aside would not be needed. This would mean that there would be additional pounds for the NGOM set-aside and the directed scallop fishery in that area. This could be expected to have a direct positive economic impact.

The impacts of Alternative 2 on the scallop resource would likely be indirect and low positive to negligible.

6.6.1.2 Action 2 – Northern Gulf of Maine Allocations

6.6.1.2.1 Alternative 1 - No Action

Under Alternative 1, allocations to the Northern Gulf of Maine management area would follow the approach the Council established in Amendment 11. In this approach, a catch limit would not be set for the Limited Access component when fishing inside the management area. Instead, LA vessels could operate inside and outside the NGOM management unit when fishing under days-at-sea (DAS) management. An ACL specified as a hard-TAC would be set for the LAGC component fishing in the NGOM management area. When the NGOM hard-TAC is caught, the area would close to all scallop vessels (including LA vessels).

Under Alternative 1, the LAGC component could fish the NGOM area up to a catch limit set by the Council, which would be specified as a hard TAC.

When compared to Alternative 2 and each Option for a NGOM Set-Aside trigger, this option could result in higher overall allocations for the LAGC component because there would be no allocation sharing arrangement of the TAC between the LAGC and the LA. In the short-term, this could result in higher revenues for LAGC component fishing at 200-pounds a day. However, there would be no restriction on LA vessels using DAS to fish the NGOM management area. This could result in higher than projected fishing mortality in the management area, which could reduce future allocations for the LAGC component.

Relative to Alternative 2, there could be negative impacts on the LAGC IFQ and LA components of the fishery because there would be no mechanism to allocate exploitable biomass in the NGOM. While the LA would continue to be able to fish in the area, they would not receive any additional DAS or allocations based on the biomass in this NGOM management area. Likewise, while LAGC IFQ vessels could continue to access the area at 200-pounds per trip, they would not receive any additional allocations based on the biomass in the NGOM management unit.

6.6.1.2.2 Alternative 2 - Create Northern Gulf of Maine set-aside to support research and a directed LAGC fishery, share additional NGOM TAC between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ)

Alternative 2 and the various Options would cap the removals from the NGOM management area for all permit categories, and establish a process for allocating to the LAGC component, as well as the LA and LAGC IFQ.

Compared to Alternative 1, the economic impacts of Alternative 2 are likely to be mixed, and dependent on the size of the NGOM allocation. When scallop biomass in the NGOM management area is relatively low, and catch rates are low, the impact on the LA component could be expected to be negligible compared to Alternative 1 because these vessels would be unlikely to fish their DAS in the management area vs. on Georges Bank or in the Mid-Atlantic. When the NGOM allocation is below the set-aside trigger, the LA and LAGC IFQ components would not receive any additional allocation, which would also be the case with Alternative 1.

Compared to Alternative 1, Alternative 2 could be expected to have a direct positive impact when the NGOM allocation is above the set-aside trigger, the LA and LAGC IFQ components would receive between 75% and 95% of the allocation about the trigger, have access to the area, and would not have to fish DAS when accessing the area. This allocation would be in addition to the allocations from Georges Bank and the Mid-Atlantic that these permit holders receive. This is particularly important if the spatial extent of the scallop resource shifts in response to climate change.

Since Alternative 2 would set landings limits for all components, there is a lower risk of harvest exceeding the allocation to the area compared to Alternative 1.

6.6.1.2.2.1 Option 1 - NGOM set-aside trigger of 1 million pounds. Pounds over the trigger would be split 5% for the NGOM set-aside and 95% for the NGOM APL

The NGOM set-aside trigger would be set at 1 million pounds. At or below this value, the NGOM allocation would be allocated as NGOM Set-Aside. Over this value, the NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside at 95% and 5%, respectively. Table 88 summarizes the economic impacts of various level of NGOM TAC (ranging from 100,000 lbs. to 6 million lbs.) with this option on the share of NGOM (set-aside) and NGOM APL together with their corresponding revenues and effort levels.

With the Option 1, scallop revenue for NGOM (set-aside) is expected to increase by about \$952,000 for every 100,000 pounds increase in NGOM TAC allocation up to 1 million pounds. The NGOM (set-aside) revenue at the 1 million pounds trigger level is about \$9.52 million. After the trigger threshold, NGOM (set-aside) revenue increases at much slower pace for all increments in NGOM TAC, i.e., after the trigger level, NGOM (set-aside) revenue increases only by about \$47,600 per 100,000 pounds increment in NGOM TAC. Thus, NGOM (set-aside) revenues nominally increases to \$9.996 million, \$10.472 million and \$11.9 million for the NGOM TAC of 2 million, 3 million, and 6 million pounds, respectively. For all allocation over the 1 million pounds trigger, 95% would go to the NGOM APL and the NGOM (APL) revenues are estimated at \$0.904 million, \$9.044 million, \$18.088 million and \$45.900 million for the NGOM TAC of 1.1 million, 2 million, 3 million, and 6 million pounds, respectively.

The number of trips on NGOM (set-aside) and NGOM (APL) allocations are estimated with some assumptions about trip limits. Both allocations may have some measures to control derby effect and the fishery may be open for limited time by means of fishing season or DAS. Currently LAGC (NGOM and IFQ) vessels fishing in the NGOM area can land up to 200 lbs. in a trip when fishing the NGOM set-aside. To utilize NGOM (APL) allocation, it is assumed that IFQ and LA vessels may land up to 600 lbs. (current trip limit) and 18,000 lbs. per trip (common FT LA access area allocation), respectively. The number of trips for the NGOM (set-aside), NGOM (APL-IFQ) and NGOM (APL-LA) allocations are estimated using these assumptions (Table 88). There will be about 500 NGOM (set-aside) trips for every 100,000 lbs. of NGOM allocation, and 5,000 NGOM (set-aside) trips at the 1 million lbs. trigger threshold. The number of trips beyond the trigger threshold increases, but at a very slow pace. The number of NGOM (set-aside) trips increases by 25 trips for every 100,000 pound increase in NGOM allocation. Likewise, the number of NGOM (APL) trips for IFQ vessels range from 9 to 435 trips for the NGOM TAC 1.1 million to 6.0 million lbs.; and the number of NGOM (APL) trips for LA vessels range from 5 to 249 trips for the NGOM TAC 1.1 million to 6.0 million lbs.

Table 93 provides comparison of NGOM (set-aside) revenue per vessel for the boats that actively participates in the NGOM. In FY2018, there were 40 boats that actively fished scallop in NGOM with an annual revenue of \$31,926 per boat from the NGOM (federal water) alone (Table 98). This revenue may increase depending on the NGOM TAC allocations. The NGOM (set-aside) revenue per boat varies on the NGOM TAC and fleet size. In a fleet size of 40 boats, the revenue per boat ranges from \$23,800 to \$238,000 for the NGOM TAC 100,000 to 1 million pounds or the revenue per boat increases by \$23,800 for every 100,000 pounds increment in NGOM TAC up to the trigger. Per boat revenue after the trigger increases but at a lower rate due to lower NGOM allocation after the trigger.

NGOM APL is allocated at 5.5% and 94.5% between LAGC IFQ and LA vessels. The distribution of NGOM (APL) revenue per boat will depend on the level of participation by LAGC IFQ and LA boats in NGOM. There were about 347 LA and 123 LAGC IFQ boats actively fishing for scallop in both access and open areas in FY2018, but only few of these boats may participate for NGOM APL allocation.

Comparison of NGOM revenue from the allocation relative to the LA and LAGC IFQ revenues from Georges Bank and the Mid-Atlantic.

Table 88 - Economic impact of NGOM Allocation in Alternative 2 Option 1-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips at various trip limits)

	Allocation pounds		Revenues (in 2018 \$)		Effort at @200 lbs./trip	Effort at @600 lbs./trip	Effort at @ 18000 lbs./trip
NGOM Allocation lbs.	NGOM (set- aside) lbs.	NGOM (APL) lbs.	NGOM (set- aside) Revenue\$	NGOM (APL) Revenue \$	No. of NGOM (set-aside) trips	NGOM (APL- IFQ) trips	NGOM (APL-LA) trips
100,000	100,000	0	\$952,000	\$0	500	0	0
200,000	200,000	0	\$1,904,000	\$0	1,000	0	0
300,000	300,000	0	\$2,856,000	\$0	1,500	0	0
400,000	400,000	0	\$3,808,000	\$0	2,000	0	0
500,000	500,000	0	\$4,760,000	\$0	2,500	0	0
600,000	600,000	0	\$5,712,000	\$0	3,000	0	0
700,000	700,000	0	\$6,664,000	\$0	3,500	0	0
800,000	800,000	0	\$7,616,000	\$0	4,000	0	0
900,000	900,000	0	\$8,568,000	\$0	4,500	0	0
1,000,000	1,000,000	0	\$9,520,000	\$0	5,000	0	0
1,100,000	1,005,000	95,000	\$9,567,600	\$904,400	5,025	9	5
1,200,000	1,010,000	190,000	\$9,615,200	\$1,808,800	5,050	17	10
1,300,000	1,015,000	285,000	\$9,662,800	\$2,713,200	5,075	26	15
1,400,000	1,020,000	380,000	\$9,710,400	\$3,617,600	5,100	35	20
1,500,000	1,025,000	475,000	\$9,758,000	\$4,522,000	5,125	44	25
1,700,000	1,035,000	665,000	\$9,853,200	\$6,330,800	5,175	61	35
2,000,000	1,050,000	950,000	\$9,996,000	\$9,044,000	5,250	87	50
2,500,000	1,075,000	1,425,000	\$10,234,000	\$13,566,000	5,375	131	75
3,000,000	1,100,000	1,900,000	\$10,472,000	\$18,088,000	5,500	174	100
3,500,000	1,125,000	2,375,000	\$10,710,000	\$22,610,000	5625	218	125
6,000,000	1,250,000	4,750,000	\$11,900,000	\$45,220,000	6,250	435	249

6.6.1.2.2.2 Option 2 - NGOM Set-Aside Trigger of 600,000 pounds. Pounds over the trigger would be split 25% for the NGOM set-aside and 75% for the NGOM APL up to 3 million pounds, then 5% for the NGOM set-aside and 95% for the NGOM APL

The NGOM set-aside trigger would be set at 600,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM Set-Aside. Over this value up to 3 million pounds, the NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside at 75% and 25%, respectively. Above 3 million pounds, NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside at 95% and 5%, respectively. Table 89 summarizes the economic impacts of various level of NGOM Allocation (ranging from 100,000 lbs. to 6 million lbs.) with this option on the share of NGOM (set-aside) and NGOM APL together with their corresponding revenues and effort levels.

With the Option 2, scallop revenue for NGOM (set-aside) is expected to increase by about \$952,000 for every 100,000 lbs. increase in NGOM allocation up to 600,000 pounds. The NGOM (set-aside) revenue at the 600,000 pounds trigger is about \$5.71 million. After the trigger, NGOM (set-aside) revenue increases at a slower pace for all increments in NGOM Allocation, i.e., after the first-tier trigger, NGOM (set-aside) revenue increases by about \$238,000 per 100,000 pounds increment in NGOM Allocation up to 3 million pounds. After 3 million pounds or second-tier trigger, revenue increases by about \$47,600 for every 100,000 increase in NGOM Allocation. Thus, NGOM (set-aside) revenues gradually increases to \$6.664 million, \$11.424 million and \$12.852 million for the NGOM Allocation of 1 million, 3 million, and 6 million pounds, respectively.

For all allocation over the 600 pounds trigger, 95% would go to the NGOM APL. Therefore, NGOM (APL) revenues are estimated at \$0.714 million, \$2.856 million, \$9.996 million, \$17.136 million and \$44.268 million, for the NGOM TAC of 0.7 million, 1 million, 2 million, 3 million, and 6 million pounds, respectively.

The number of trips on NGOM (set-aside) and NGOM (APL) allocations are estimated with same assumptions about trip limits as described Alternative 2 Option 1. There will be about 500 NGOM (set-aside) trips for every 100,000 lbs. NGOM Allocation, and it may reach to 3000 NGOM (set-aside) trips at the 600,000 pounds of trigger. The number of trips beyond the first-tier trigger increases, but at a slow pace, i.e., after the first-tier trigger, NGOM (set-aside) trips increases by 125 trips for each additional 100,000 pounds of NGOM Allocation up to 3 million pounds, then by 25 trips per 100,000 pounds NGOM Allocation after the second-trigger. The number of NGOM (APL) trips for IFQ vessels range from 7 to 165 trips for the NGOM Allocation 600,000 pounds to 3 million pounds, and then to 426 trips at 6 million pounds. Likewise, the number of NGOM (APL) trips for LA vessels range from 5 to 95 trips for the NGOM TAC 600,000 pounds to 3 million pounds, and then to 244 trips at 6 million pounds.

Table 93 provides comparison of NGOM (set-aside) revenue per vessel for the boats that actively participates in the NGOM. In FY2018, there were 40 boats that actively fished scallop in NGOM with an annual revenue of \$31,926 per boat from the NGOM (federal water) alone (Table 98). This revenue may increase depending on the NGOM allocations. The NGOM (set-aside) revenue per boat varies on the NGOM Allocation and fleet size. For the fleet size of 40 boats, the revenue per boat ranges from \$23,800 to \$142,800 for the NGOM Allocation 100,000 to 600,000 pounds or the revenue per boat increases by \$23,800 for every 100,000 pounds increment in NGOM Allocation up to the trigger. Per boat revenue after the first- and second trigger increases but at a lower rate.

Table 89 - Economic impact of NGOM Allocation in Alternative 2 Option 2-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips)

NGOM Allocation lbs	NGOM (set-aside) lbs	NGOM (APL) lbs	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$	No. of NGOM (set-aside) Trips	NGOM (APL-IFQ) trips	NGOM (APL-LA) trips
100,000	100,000	0	\$952,000	\$0	500	0	0
200,000	200,000	0	\$1,904,000	\$0	1,000	0	0
300,000	300,000	0	\$2,856,000	\$0	1,500	0	0
400,000	400,000	0	\$3,808,000	\$0	2,000	0	0
500,000	500,000	0	\$4,760,000	\$0	2,500	0	0
600,000	600,000	0	\$5,712,000	\$0	3,000	0	0
700,000	625,000	75,000	\$5,950,000	\$714,000	3,125	7	4
800,000	650,000	150,000	\$6,188,000	\$1,428,000	3,250	14	8
900,000	675,000	225,000	\$6,426,000	\$2,142,000	3,375	21	12
1,000,000	700,000	300,000	\$6,664,000	\$2,856,000	3,500	28	16
1,100,000	725,000	375,000	\$6,902,000	\$3,570,000	3,625	34	20
1,200,000	750,000	450,000	\$7,140,000	\$4,284,000	3,750	41	24
1,300,000	775,000	525,000	\$7,378,000	\$4,998,000	3,875	48	28
1,400,000	800,000	600,000	\$7,616,000	\$5,712,000	4,000	55	32
1,500,000	825,000	675,000	\$7,854,000	\$6,426,000	4,125	62	35
1,700,000	875,000	825,000	\$8,330,000	\$7,854,000	4,375	76	43
2,000,000	950,000	1,050,000	\$9,044,000	\$9,996,000	4,750	96	55
2,500,000	1,075,000	1,425,000	\$10,234,000	\$13,566,000	5,375	131	75
3,000,000	1,200,000	1,800,000	\$11,424,000	\$17,136,000	6,000	165	95
3,500,000	1,225,000	2,275,000	\$11,662,000	\$21,658,000	5,625	209	119
6,000,000	1,350,000	4,650,000	\$12,852,000	\$44,268,000	6,750	426	244

6.6.1.2.2.3 Option 3 - NGOM Set-Aside Trigger of 500,000 pounds. Pounds over the trigger would be split 5% for the NGOM set-aside and 95% for the NGOM APL.

The NGOM set-aside trigger would be set at 500,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM Set-Aside. Over this value, the NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside at 95% and 5%, respectively. Table 90 summarizes the economic impacts of various level of NGOM TAC on the share of NGOM (set-aside) and NGOM APL together with their revenues and effort levels.

With the Option 3, scallop revenue for NGOM (set-aside) is estimated to increase by about \$952,000 for every 100,000 lbs. increase in NGOM TAC allocation up to 500,000 pounds. The NGOM (set-aside) revenue at the 500,000 pounds trigger is about \$4.76 million. After the first-tier trigger, NGOM (set-aside) revenue increases at much slower pace for all increments in NGOM TAC, i.e., after the first-tier trigger, NGOM (set-aside) revenue increases only by about \$47,600 per 100,000 pounds increment in NGOM TAC. Thus, NGOM (set-aside) revenues marginally increases to \$4.998 million, \$5.476 million,

\$5.950 million and \$7.378 million for the NGOM TAC of 1 million, 2 million, 3 million, and 6 million pounds, respectively.

For all allocation over the 500 pounds trigger, 95% would go to the NGOM APL. The NGOM (APL) revenues are estimated at \$0.904 million, \$4.522 million, \$13,566 million, 22.61 million and \$49.742 million for the NGOM TAC of 0.6 million, 1 million, 2 million, 3 million, and 6 million pounds, respectively.

The number of trips on NGOM (set-aside) and NGOM (APL) allocations are estimated with same assumptions about trip limits as described Alternative 2 Option 1. There will be about 500 NGOM (set-aside) trips for every 100,000 lbs. NGOM TAC, and it may reach to 2,500 NGOM (set-aside) trips at the 500,000 pounds trigger. The number of trips beyond the trigger increases, but at a very slow pace, i.e., NGOM (set-aside) trips increased by 25 trips for each additional 100,000 pounds of NGOM TAC. Similarly, the number of NGOM (APL) trips range from 9 to 479 trips for IFQ vessels, and 5 to 274 trips for LA vessels for the NGOM TAC 500,000 pounds to 6 million pounds.

Table 93 provides comparison of NGOM (set-aside) revenue per vessel for the boats that actively participates in the NGOM. In FY2018, there were 40 boats that actively fished scallop in NGOM with an annual revenue of \$31,926 per boat from the NGOM (federal water) alone (Table 98). This revenue may increase depending on the NGOM TAC allocations. The NGOM (set-aside) revenue per boat varies on the NGOM TAC and fleet size (Table 98). For the fleet size of 40 boats, the revenue per boat ranges from \$23,800 to \$119,000 for the NGOM TAC 100,000 to 500,000 pounds or the revenue per boat increases by \$23,800 for every 100,000 pounds increment in NGOM TAC up to the trigger. Per boat revenue after the first trigger increases but at a lower rate.

Table 90 - Economic impact of NGOM TAC in Alternative 2 Option 3-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips).

	Allocation pounds		Revenues (in 2018 \$)		Effort at @200 lbs./trip	Effort at @600 lbs./trip	Effort at @18000 lbs./trip
NGOM Allocation lbs	NGOM (set-aside) lbs	NGOM (APL) lbs	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$	No. of NGOM (set-aside) Trips	NGOM (APL-IFQ) trips	NGOM (APL-LA) trips
100,000	100000	0	\$952,000	\$0	500	0	0
200,000	200000	0	\$1,904,000	\$0	1,000	0	0
300,000	300000	0	\$2,856,000	\$0	1,500	0	0
400,000	400000	0	\$3,808,000	\$0	2,000	0	0
500,000	500000	0	\$4,760,000	\$0	2,500	0	0
600,000	505,000	95,000	\$4,807,600	\$904,400	2,525	9	5
700,000	510,000	190,000	\$4,855,200	\$1,808,800	2,550	17	10

800,000	515,000	285,000	\$4,902,800	\$2,713,200	2,575	26	15
900,000	520,000	380,000	\$4,950,400	\$3,617,600	2,600	35	20
1,000,000	525,000	475,000	\$4,998,000	\$4,522,000	2,625	44	25
1,100,000	530,000	570,000	\$5,045,600	\$5,426,400	2,650	52	30
1,200,000	535,000	665,000	\$5,093,200	\$6,330,800	2,675	61	35
1,300,000	540,000	760,000	\$5,140,800	\$7,235,200	2,700	70	40
1,400,000	545,000	855,000	\$5,188,400	\$8,139,600	2,725	78	45
1,500,000	550,000	950,000	\$5,236,000	\$9,044,000	2,750	87	50
1,700,000	560,000	1,140,000	\$5,331,200	\$10,852,800	2,800	105	60
2,000,000	575,000	1,425,000	\$5,474,000	\$13,566,000	2,875	131	75
2,500,000	600,000	1,900,000	\$5,712,000	\$18,088,000	3,000	174	100
3,000,000	625,000	2,375,000	\$5,950,000	\$22,610,000	3,125	218	125
3,500,000	650,000	2,850,000	\$6,188,000	\$27,132,000	3,250	261	150
6,000,000	775,000	5,225,000	\$7,378,000	\$49,742,000	3,875	479	274

6.6.1.2.2.4 Option 4 – NGOM Set-Aside trigger of 200,000 pounds. Pounds over the trigger would be split 25% for the NGOM set-aside and 75% for the NGOM APL up to 3 million pounds, then 5% for the NGOM set-aside and 95% for the NGOM APL.

The NGOM set-aside trigger would be set at 200,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM Set-Aside. Over this value up to 3 million pounds, the NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside at 75% and 25%, respectively. Above 3 million pounds, NGOM allocation would be shared between the NGOM APL and additional allocation for the NGOM set-aside at 95% and 5%, respectively. Table 4 summarizes the economic impacts of various level of NGOM Allocations on the share of NGOM (set-aside) and NGOM APL together with their corresponding revenues and effort levels.

With the Option 4, scallop revenue for NGOM (set-aside) is estimated to increase by about \$952,000 for every 100,000 lbs. increase in NGOM allocation up to 200,000 pounds. The NGOM (set-aside) revenue at the 200,000 pounds trigger level is about \$1.904 million. After the first trigger, NGOM (set-aside) revenue increases at much slower pace for all increments in NGOM TAC, i.e., after the first-trigger, NGOM (set-aside) revenue increases by about \$238,000 per 100,000 pounds increment in NGOM TAC up to 3 million pounds. After 3 million pounds or second-trigger, revenue increases by \$47,600 per 100,000 pounds increment in NGOM TAC. Thus, NGOM (set-aside) revenues gradually increases to \$2.142 million, \$3.808 million, \$6.188 million, \$8.568 million and \$9.996 million for the NGOM TAC of 0.3 million, 1 million, 2 million, 3 million, and 6 million pounds, respectively.

For all allocation over the 200,000 pounds trigger, 95% would go to the NGOM APL. NGOM (APL) revenues are estimated at \$0.714 million, \$2.856 million, \$9.996 million, \$17.136 million and \$44.268 million, for the NGOM TAC of 0.3 million, 1 million, 2 million, 3 million, and 6 million pounds, respectively.

The number of trips on NGOM (set-aside) and NGOM (APL) allocations are estimated with same assumptions about trip limits as described Alternative 2 Option 1. There will be about 500 NGOM (set-aside) trips for every 100,000 lbs. NGOM TAC, and it may reach to 1,000 NGOM (set-aside) trips at the 200,000 pounds trigger. The number of trips beyond the first-trigger increases, but at a slow pace, i.e., NGOM (set-aside) trips increased by 125 trips for each additional 100,000 pounds of NGOM TAC up to 3 million pounds. The number of NGOM (APL) trips for IFQ vessels range from 7 to 193 trips for the NGOM TAC from 200,000 pounds to 3.0 million pounds, and 454 trips at 6 million pounds. Likewise, the number of NGOM (APL) trips for LA vessels range from 4 to 110 trips for the NGOM TAC from 200,000 pounds to 3 million pounds, and 260 trips at 6 million pounds.

Table 93 provides comparison of NGOM (set-aside) revenue per vessel for the boats that actively participates in the NGOM. In FY2018, there were 40 boats that actively fished scallop in NGOM with an annual revenue of \$31,926 per boat from the NGOM (federal water) alone (Table 98). This revenue may increase depending on the NGOM TAC allocations. The NGOM (set-aside) revenue per boat varies on the NGOM TAC and fleet size (Table 94). For the fleet size of 40 boats, the revenue per boat ranges from \$23,800 to \$47,600 for the NGOM TAC 100,000 to 200,000 pounds. Per boat revenue after the first- and second-trigger increase but at a lower rate.

Table 91 - Economic impact of NGOM TAC in Alternative 2 Option 4-- NGOM (set-aside) and NGOM(APL) allocations along with their revenues (in 2018\$) and efforts (no. of trips).

NGOM Allocation lbs.	Allocation pounds		Revenues (in 2018 \$)		Effort at @200 lbs./trip	Effort at @600 lbs./trip	Effort at @ 18000 lbs./trip
	NGOM (set-aside) lbs.	NGOM (APL) lbs.	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$	No. of NGOM (set-aside) Trips	NGOM (APL- IFQ) trips	NGOM (APL- LA) trips
100,000	100,000	0	\$952,000	\$0	500	0	0
200,000	200,000	0	\$1,904,000	\$0	1,000	0	0
300,000	225,000	75,000	\$2,142,000	\$714,000	1,125	7	4
400,000	250,000	150,000	\$2,380,000	\$1,428,000	1,250	14	8
500,000	275,000	225,000	\$2,618,000	\$2,142,000	1,375	21	12
600,000	300,000	300,000	\$2,856,000	\$2,856,000	1,500	28	16
700,000	325,000	375,000	\$3,094,000	\$3,570,000	1,625	34	20

800,000	350,000	450,000	\$3,332,000	\$4,284,000	1,750	41	24
900,000	375,000	525,000	\$3,570,000	\$4,998,000	1,875	48	28
1,000,000	400,000	600,000	\$3,808,000	\$5,712,000	2,000	55	32
1,100,000	425,000	675,000	\$4,046,000	\$6,426,000	2,125	62	35
1,200,000	450,000	750,000	\$4,284,000	\$7,140,000	2,250	69	39
1,300,000	475,000	825,000	\$4,522,000	\$7,854,000	2,375	76	43
1,400,000	500,000	900,000	\$4,760,000	\$8,568,000	2,500	83	47
1,500,000	525,000	975,000	\$4,998,000	\$9,282,000	2,625	89	51
1,700,000	575,000	1,125,000	\$5,474,000	\$10,710,000	2,875	103	59
2,000,000	650,000	1,350,000	\$6,188,000	\$12,852,000	3,250	124	71
2,500,000	775,000	1,725,000	\$7,378,000	\$16,422,000	3,875	158	91
3,000,000	900,000	2,100,000	\$8,568,000	\$19,992,000	4,500	193	110
3,500,000	925,000	2,575,000	\$8,806,000	\$24,514,000	4,625	236	135
6,000,000	1,050,000	4,950,000	\$9,996,000	\$47,124,000	5,250	454	260

6.6.1.2.3 Comparison of NGOM Allocation Economic Impacts across Options in Alternative 2.

The following tables and figures allow the public to draw comparison between each for the allocation options for the NGOM that have been proposed in Amendment 21. The comparisons are made across all options at different NGOM TAC levels on various parameters such as NGOM set-aside and APL allocations, revenues, number of trips, and revenue per boat. Since NGOM TAC allocation differs across option with different trigger values, comparison provided in graphs give better idea about relative strengths and weakness of each option. NGOM TAC cutoff at 3.5 million or 6 million pounds provides cumulative impact for an option if the allocations reach to that far levels.

NGOM (set-aside) allocation is higher in Option 1 compared to Option 3 and Option 4 up to NGOM TAC 2.5 million pounds, but Option 2 leads after this NGOM TAC level (Table 92 and Figure 47). Similarly NGOM (APL) allocation is higher in Option 4 compared to other Options up to NGOM TAC 1.5 million pounds, but Option 3 leads other options after this NGOM TAC (Table 92 and Figure 48).

NGOM (set-aside) and NGOM (APL) revenues follows their corresponding allocation. NGOM (set-aside) revenue is higher in Option 1 compared to Option 3 and Option 4 up to NGOM TAC 2.5 million pounds, but Option 2 is the highest over 2.5 million pounds. At this allocation, the revenue for Option 1 and Option 2 are equal at \$10.234 million (Table 93 and Figure 47). Similarly NGOM (APL) revenue is higher in Option 4 compared to all Options up to 1.5 million pounds NGOM TAC, but Option 3 leads other options after this NGOM TAC (Table 93 and Figure 48).

NGOM (set-aside) per boat (active) is higher in Option 1 compared to Option 3 and Option 4 up to NGOM TAC 2.5 million pounds, but Option 2 leads after this level. At this TAC, the revenue for Option 1 and Option 2 are equal at \$255,850 per boat (Table 94 and Figure 49). In FY2018, there were 40 boats with LGC (A/B) permits actively fishing for scallops in the NGOM waters with annual scallop revenue of about \$23,926 per boat on top of the fishing revenues from other species and scallops in other areas (state and open waters) (Table 98). NGOM fleet income can be boosted substantially with higher level of NGOM allocation.

Table 96 and Table 97 provide the number of trips NGOM set-aside and APL allocations by LGC(A/B), LAGC IFQ and LA vessels. Although the fishery in NGOM waters is open for all permit holders, the

number of trips will depend on the number of active boats in NGOM. In FY2018, there were about 40 boats with LGC(A/B) permits actively fishing in NGOM waters. LGC(A/B) permits have a trip limit of 200 pounds per trip, but LAGC IFQ and LA boats may land up to 600 pounds and 18,000 pounds in a trip, respectively. These trip limits determine potential number of trips on each NGOM set-aside or APL allocations. NGOM APL allocation is distributed 5.5% to LAGC IFQ and 94.5% to LA components.

In summary:

- Option 1 and Option 3 use the same allocation sharing arrangement, with 95% of the allocation above the trigger going to the NGOM APL and 5% of the biomass about the trigger going to the NGOM APL. Option 1 has higher NGOM (set-aside) revenue than Option 3 at all NGOM Allocation above 500,000 pounds. However, Option 3 yields higher NGOM (APL) revenues above that NGOM Allocation level (Figure 47 and Figure 48). If the Council selects a value between Option 1 and Option 3 (ex: 750,000 pounds), then the impacts could be expected to be within the analyzed range.
- Option 2 and Option 4 use same the allocation arrangement between NGOM set-aside and NGOM APL. These options split the allocation above the NGOM set-aside trigger using two tiers (75% & 25% up to 3 million pounds and then 95% & 5%) Option 2 has higher NGOM set-aside revenue than Option 4 at all NGOM TAC above 200,000 pounds. However, Option 4 yields higher NGOM (APL) revenues above that TAC level (Figure 47 and Figure 48). If the Council selects a value between Option 2 and Option 4 (ex: 300,000 pounds), then the impacts could be expected to be within the analyzed range.
- Comparing the above two sets of alternatives, Option 1 yields higher NGOM (set-aside) revenue compared to Option 2 at the NGOM TAC less than 2.5 million pounds. But, Option 2 has higher NGOM (APL) revenue compared to Option 1 on NGOM TAC less than 2.5 million pounds (Figure 47 and Figure 48).
- Overall, Option 1 could be expected to result in the highest NGOM (set-aside) allocation and resultant benefits at lower ranges of NGOM Allocation (less than 2.5 mil pounds), but Option 2 could be expected to result in higher allocations and revenues and above a 2.5 million pound allocation. Likewise, Option 4 is better on NGOM (APL) allocation and resultant benefits at lower ranges of NGOM Allocation less than 1.5 million pounds, but Option 3 is better after this level of NGOM Allocation.
- There is a tradeoff between NGOM (set-aside) and NGOM (APL) allocation within an Option, however. The specific NGOM Allocation depends on expected biomass level each year. Since the fishery is open to all boats, those who can participate in the fishery will be able to increase fishing revenue profitably compared to other fisheries by utilizing scallop allocation whether in NGOM set-aside or APL.

Table 92 - NGOM TAC allocation for NGOM (set-aside) and NGOM (APL) by Alternative 2 Options

	Option 1 – 1 million lbs. trigger, 95/5 split		Option 2 – 600,000 lbs. trigger, 25/75 then 95/5		Option 3 – 500,000 lbs. trigger, 95/5 split		Option 4 – 200,000 lbs. trigger, 25/75 then 95/5	
NGOM TAC lbs.	NGOM (set-aside) lbs.	NGOM (APL) lbs.	NGOM (set-aside) lbs.	NGOM (APL) lbs.	NGOM (set-aside) lbs.	NGOM (APL) lbs.	NGOM (set-aside) lbs.	NGOM (APL) lbs.
100,000	100,000	-	100,000	-	100,000	-	100,000	-
200,000	200,000	-	200,000	-	200,000	-	200,000	-
300,000	300,000	-	300,000	-	300,000	-	225,000	75,000
400,000	400,000	-	400,000	-	400,000	-	250,000	150,000
500,000	500,000	-	500,000	-	500,000	-	275,000	225,000
600,000	600,000	-	600,000	-	505,000	95,000	300,000	300,000
700,000	700,000	-	625,000	75,000	510,000	190,000	325,000	375,000
800,000	800,000	-	650,000	150,000	515,000	285,000	350,000	450,000
900,000	900,000	-	675,000	225,000	520,000	380,000	375,000	525,000
1,000,000	1,000,000	-	700,000	300,000	525,000	475,000	400,000	600,000
1,100,000	1,005,000	95,000	725,000	375,000	530,000	570,000	425,000	675,000
1,200,000	1,010,000	190,000	750,000	450,000	535,000	665,000	450,000	750,000
1,300,000	1,015,000	285,000	775,000	525,000	540,000	760,000	475,000	825,000
1,400,000	1,020,000	380,000	800,000	600,000	545,000	855,000	500,000	900,000
1,500,000	1,025,000	475,000	825,000	675,000	550,000	950,000	525,000	975,000
1,700,000	1,035,000	665,000	875,000	825,000	560,000	1,140,000	575,000	1,125,000
2,000,000	1,050,000	950,000	950,000	1,050,000	575,000	1,425,000	650,000	1,350,000
2,500,000	1,075,000	1,425,000	1,075,000	1,425,000	600,000	1,900,000	775,000	1,725,000
3,000,000	1,100,000	1,900,000	1,200,000	1,800,000	625,000	2,375,000	900,000	2,100,000
3,500,000	1,125,000	2,375,000	1,225,000	2,275,000	650,000	2,850,000	925,000	2,575,000
6,000,000	1,250,000	4,750,000	1,350,000	4,650,000	775,000	5,225,000	1,050,000	4,950,000

Note: The values at different trigger levels across options are marked in bold.

Table 93 - Comparison of NGOM (set-aside) and NGOM (APL) revenue (in 2018\$) by Options in Alternative 2.

	Option 1 – 1 million lbs. trigger, 95/5 split		Option 2 – 600,000 lbs. trigger, 25/75 then 95/5		Option 3 – 500,000 lbs. trigger, 95/5 split		Option 4 – 200,000 lbs. trigger, 25/75 then 95/5	
NGOM TAC lbs.	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$	NGOM (set-aside) Revenue\$	NGOM (APL) Revenue \$
100,000	\$952,000	\$0	\$952,000	\$0	\$952,000	\$0	\$952,000	\$0
200,000	\$1,904,000	\$0	\$1,904,000	\$0	\$1,904,000	\$0	\$1,904,000	\$0
300,000	\$2,856,000	\$0	\$2,856,000	\$0	\$2,856,000	\$0	\$2,142,000	\$714,000
400,000	\$3,808,000	\$0	\$3,808,000	\$0	\$3,808,000	\$0	\$2,380,000	\$1,428,000
500,000	\$4,760,000	\$0	\$4,760,000	\$0	\$4,760,000	\$0	\$2,618,000	\$2,142,000
600,000	\$5,712,000	\$0	\$5,712,000	\$0	\$4,807,600	\$904,400	\$2,856,000	\$2,856,000
700,000	\$6,664,000	\$0	\$5,950,000	\$714,000	\$4,855,200	\$1,808,800	\$3,094,000	\$3,570,000
800,000	\$7,616,000	\$0	\$6,188,000	\$1,428,000	\$4,902,800	\$2,713,200	\$3,332,000	\$4,284,000
900,000	\$8,568,000	\$0	\$6,426,000	\$2,142,000	\$4,950,400	\$3,617,600	\$3,570,000	\$4,998,000
1,000,000	\$9,520,000	\$0	\$6,664,000	\$2,856,000	\$4,998,000	\$4,522,000	\$3,808,000	\$5,712,000
1,100,000	\$9,567,600	\$904,400	\$6,902,000	\$3,570,000	\$5,045,600	\$5,426,400	\$4,046,000	\$6,426,000
1,200,000	\$9,615,200	\$1,808,800	\$7,140,000	\$4,284,000	\$5,093,200	\$6,330,800	\$4,284,000	\$7,140,000
1,300,000	\$9,662,800	\$2,713,200	\$7,378,000	\$4,998,000	\$5,140,800	\$7,235,200	\$4,522,000	\$7,854,000
1,400,000	\$9,710,400	\$3,617,600	\$7,616,000	\$5,712,000	\$5,188,400	\$8,139,600	\$4,760,000	\$8,568,000
1,500,000	\$9,758,000	\$4,522,000	\$7,854,000	\$6,426,000	\$5,236,000	\$9,044,000	\$4,998,000	\$9,282,000
1,700,000	\$9,853,200	\$6,330,800	\$8,330,000	\$7,854,000	\$5,331,200	\$10,852,800	\$5,474,000	\$10,710,000
2,000,000	\$9,996,000	\$9,044,000	\$9,044,000	\$9,996,000	\$5,474,000	\$13,566,000	\$6,188,000	\$12,852,000
2,500,000	\$10,234,000	\$13,566,000	\$10,234,000	\$13,566,000	\$5,712,000	\$18,088,000	\$7,378,000	\$16,422,000
3,000,000	\$10,472,000	\$18,088,000	\$11,424,000	\$17,136,000	\$5,950,000	\$22,610,000	\$8,568,000	\$19,992,000
3,500,000	\$10,710,000	\$22,610,000	\$11,662,000	\$21,658,000	\$6,188,000	\$27,132,000	\$8,806,000	\$24,514,000
6,000,000	\$11,900,000	\$45,220,000	\$12,852,000	\$44,268,000	\$7,378,000	\$49,742,000	\$9,996,000	\$47,124,000

Table 94 - Comparison of Revenue per boat of NGOM Set-Aside and NGOM (APL) in 2018 dollars.

	Option 1			Option 2			Option 3			Option 4		
	N=40	N=347	N=123	N=40	N=347	N=123	N=40	N=347	N=123	N=40	N=347	N=123
NGOM Allocation lbs.	NGOM (set-aside)	NGOM (APL-LA)	NGOM (APL-IFQ)	NGOM (set-aside)	NGOM (APL-LA)	NGOM (APL-IFQ)	NGOM (set-aside)	NGOM (APL-LA)	NGOM (APL-IFQ)	NGOM (set-aside)	NGOM (APL-LA)	NGOM (APL-IFQ)
100,000	\$23,800	\$0	\$0	\$23,800	\$0	\$0	\$23,800	\$0	\$0	\$23,800	\$0	\$0
200,000	\$47,600	\$0	\$0	\$47,600	\$0	\$0	\$47,600	\$0	\$0	\$47,600	\$0	\$0
300,000	\$71,400	\$0	\$0	\$71,400	\$0	\$0	\$71,400	\$0	\$0	\$53,550	\$1,944	\$319
400,000	\$95,200	\$0	\$0	\$95,200	\$0	\$0	\$95,200	\$0	\$0	\$59,500	\$3,889	\$639
500,000	\$119,000	\$0	\$0	\$119,000	\$0	\$0	\$119,000	\$0	\$0	\$65,450	\$5,833	\$958
600,000	\$142,800	\$0	\$0	\$142,800	\$0	\$0	\$120,190	\$2,463	\$404	\$71,400	\$7,778	\$1,277
700,000	\$166,600	\$0	\$0	\$148,750	\$1,944	\$319	\$121,380	\$4,926	\$809	\$77,350	\$9,722	\$1,596
800,000	\$190,400	\$0	\$0	\$154,700	\$3,889	\$639	\$122,570	\$7,389	\$1,213	\$83,300	\$11,667	\$1,916
900,000	\$214,200	\$0	\$0	\$160,650	\$5,833	\$958	\$123,760	\$9,852	\$1,618	\$89,250	\$13,611	\$2,235
1,000,000	\$238,000	\$0	\$0	\$166,600	\$7,778	\$1,277	\$124,950	\$12,315	\$2,022	\$95,200	\$15,556	\$2,554
1,100,000	\$239,190	\$2,463	\$404	\$172,550	\$9,722	\$1,596	\$126,140	\$14,778	\$2,426	\$101,150	\$17,500	\$2,873
1,300,000	\$241,570	\$7,389	\$1,213	\$184,450	\$13,611	\$2,235	\$128,520	\$19,704	\$3,235	\$113,050	\$21,389	\$3,512
1,500,000	\$243,950	\$12,315	\$2,022	\$196,350	\$17,500	\$2,873	\$130,900	\$24,630	\$4,044	\$124,950	\$25,278	\$4,150
2,000,000	\$249,900	\$24,630	\$4,044	\$226,100	\$27,223	\$4,470	\$136,850	\$36,945	\$6,066	\$154,700	\$35,000	\$5,747
2,500,000	\$255,850	\$36,945	\$6,066	\$255,850	\$36,945	\$6,066	\$142,800	\$49,260	\$8,088	\$184,450	\$44,723	\$7,343
3,000,000	\$261,800	\$49,260	\$8,088	\$285,600	\$46,667	\$7,662	\$148,750	\$61,575	\$10,110	\$214,200	\$54,445	\$8,940
3,200,000	\$264,180	\$54,186	\$8,897	\$287,980	\$51,593	\$8,471	\$151,130	\$66,501	\$10,919	\$216,580	\$59,371	\$9,748
3,500,000	\$267,750	\$61,575	\$10,110	\$291,550	\$58,982	\$9,684	\$154,700	\$73,890	\$12,132	\$220,150	\$66,760	\$10,962
6,000,000	\$297,500	\$123,150	\$20,220	\$321,300	\$120,557	\$19,795	\$184,450	\$135,465	\$22,242	\$249,900	\$128,335	\$21,072

Table 95 - Comparison of NGOM (set-aside) revenue per boat (in 2018\$) by Alternative 4.2.2 Options and fleet size.

NGOM TAC lbs	Option 1 – 1 million lbs. trigger, 95/5 split				Option 2– 600,000 lbs. trigger, 25/75 then 95/5				Option 3– 500,000 lbs. trigger, 95/5 split				Option 4– 200,000 lbs. trigger, 25/75 then 95/5			
	NGOM (set-aside) Revenue\$	Revenue per boat when NGOM (set-aside) fleet size is			NGOM (set-aside) Revenue\$	Revenue per boat when NGOM (set-aside) fleet size is			NGOM (set-aside) Revenue\$	Revenue per boat when NGOM (set-aside) fleet size is			NGOM (set-aside) Revenue\$	Revenue per boat when NGOM (set-aside) fleet size is		
		N=40	N=110	N=425		N=40	N=110	N=425		N=40	N=110	N=425		N=40	N=110	N=425
100,000	\$952,000	\$23,800	\$8,655	\$2,240	\$952,000	\$23,800	\$8,655	\$2,240	\$952,000	\$23,800	\$8,655	\$2,240	\$952,000	\$23,800	\$8,655	\$2,240
200,000	\$1,904,000	\$47,600	\$17,309	\$4,480	\$1,904,000	\$47,600	\$17,309	\$4,480	\$1,904,000	\$47,600	\$17,309	\$4,480	\$1,904,000	\$47,600	\$17,309	\$4,480
300,000	\$2,856,000	\$71,400	\$25,964	\$6,720	\$2,856,000	\$71,400	\$25,964	\$6,720	\$2,856,000	\$71,400	\$25,964	\$6,720	\$2,142,000	\$53,550	\$19,473	\$5,040
400,000	\$3,808,000	\$95,200	\$34,618	\$8,960	\$3,808,000	\$95,200	\$34,618	\$8,960	\$3,808,000	\$95,200	\$34,618	\$8,960	\$2,380,000	\$59,500	\$21,636	\$5,600
500,000	\$4,760,000	\$119,000	\$43,273	\$11,200	\$4,760,000	\$119,000	\$43,273	\$11,200	\$4,760,000	\$119,000	\$43,273	\$11,200	\$2,618,000	\$65,450	\$23,800	\$6,160
600,000	\$5,712,000	\$142,800	\$51,927	\$13,440	\$5,712,000	\$142,800	\$51,927	\$13,440	\$4,807,600	\$120,190	\$43,705	\$11,312	\$2,856,000	\$71,400	\$25,964	\$6,720
700,000	\$6,664,000	\$166,600	\$60,582	\$15,680	\$5,950,000	\$148,750	\$54,091	\$14,000	\$4,855,200	\$121,380	\$44,138	\$11,424	\$3,094,000	\$77,350	\$28,127	\$7,280
800,000	\$7,616,000	\$190,400	\$69,236	\$17,920	\$6,188,000	\$154,700	\$56,255	\$14,560	\$4,902,800	\$122,570	\$44,571	\$11,536	\$3,332,000	\$83,300	\$30,291	\$7,840
900,000	\$8,568,000	\$214,200	\$77,891	\$20,160	\$6,426,000	\$160,650	\$58,418	\$15,120	\$4,950,400	\$123,760	\$45,004	\$11,648	\$3,570,000	\$89,250	\$32,455	\$8,400
1,000,000	\$9,520,000	\$238,000	\$86,545	\$22,400	\$6,664,000	\$166,600	\$60,582	\$15,680	\$4,998,000	\$124,950	\$45,436	\$11,760	\$3,808,000	\$95,200	\$34,618	\$8,960
1,100,000	\$9,567,600	\$239,190	\$86,978	\$22,512	\$6,902,000	\$172,550	\$62,745	\$16,240	\$5,045,600	\$126,140	\$45,869	\$11,872	\$4,046,000	\$101,150	\$36,782	\$9,520
1,200,000	\$9,615,200	\$240,380	\$87,411	\$22,624	\$7,140,000	\$178,500	\$64,909	\$16,800	\$5,093,200	\$127,330	\$46,302	\$11,984	\$4,284,000	\$107,100	\$38,945	\$10,080
1,300,000	\$9,662,800	\$241,570	\$87,844	\$22,736	\$7,378,000	\$184,450	\$67,073	\$17,360	\$5,140,800	\$128,520	\$46,735	\$12,096	\$4,522,000	\$113,050	\$41,109	\$10,640
1,400,000	\$9,710,400	\$242,760	\$88,276	\$22,848	\$7,616,000	\$190,400	\$69,236	\$17,920	\$5,188,400	\$129,710	\$47,167	\$12,208	\$4,760,000	\$119,000	\$43,273	\$11,200
1,500,000	\$9,758,000	\$243,950	\$88,709	\$22,960	\$7,854,000	\$196,350	\$71,400	\$18,480	\$5,236,000	\$130,900	\$47,600	\$12,320	\$4,998,000	\$124,950	\$45,436	\$11,760
1,700,000	\$9,853,200	\$246,330	\$89,575	\$23,184	\$8,330,000	\$208,250	\$75,727	\$19,600	\$5,331,200	\$133,280	\$48,465	\$12,544	\$5,474,000	\$136,850	\$49,764	\$12,880
2,000,000	\$9,996,000	\$249,900	\$90,873	\$23,520	\$9,044,000	\$226,100	\$82,218	\$21,280	\$5,474,000	\$136,850	\$49,764	\$12,880	\$6,188,000	\$154,700	\$56,255	\$14,560
2,500,000	\$10,234,000	\$255,850	\$93,036	\$24,080	\$10,234,000	\$255,850	\$93,036	\$24,080	\$5,712,000	\$142,800	\$51,927	\$13,440	\$7,378,000	\$184,450	\$67,073	\$17,360
3,000,000	\$10,472,000	\$261,800	\$95,200	\$24,640	\$11,424,000	\$285,600	\$103,855	\$26,880	\$5,950,000	\$148,750	\$54,091	\$14,000	\$8,568,000	\$214,200	\$77,891	\$20,160
3,100,000	\$10,519,600	\$262,990	\$95,633	\$24,752	\$11,471,600	\$286,790	\$104,287	\$26,992	\$5,997,600	\$149,940	\$54,524	\$14,112	\$8,615,600	\$215,390	\$78,324	\$20,272
3,200,000	\$10,567,200	\$264,180	\$96,065	\$24,864	\$11,519,200	\$287,980	\$104,720	\$27,104	\$6,045,200	\$151,130	\$54,956	\$14,224	\$8,663,200	\$216,580	\$78,756	\$20,384
3,300,000	\$10,614,800	\$265,370	\$96,498	\$24,976	\$11,566,800	\$289,170	\$105,153	\$27,216	\$6,092,800	\$152,320	\$55,389	\$14,336	\$8,710,800	\$217,770	\$79,189	\$20,496
3,400,000	\$10,662,400	\$266,560	\$96,931	\$25,088	\$11,614,400	\$290,360	\$105,585	\$27,328	\$6,140,400	\$153,510	\$55,822	\$14,448	\$8,758,400	\$218,960	\$79,622	\$20,608
3,500,000	\$10,710,000	\$267,750	\$97,364	\$25,200	\$11,662,000	\$291,550	\$106,018	\$27,440	\$6,188,000	\$154,700	\$56,255	\$14,560	\$8,806,000	\$220,150	\$80,055	\$20,720
6,000,000	\$11,900,000	\$297,500	\$108,182	\$28,000	\$12,852,000	\$321,300	\$116,836	\$30,240	\$7,378,000	\$184,450	\$67,073	\$17,360	\$9,996,000	\$249,900	\$90,873	\$23,520

Table 96 - Comparison of NGOM Set-Aside total trips per boat per total trips for Alternative 4.2.2 Options.

	Option 1 – 1 million lbs. trigger, 95/5 split			Option 2 – 600,000 lbs. trigger, 25/75 then 95/5			Option 3 – 500,000 lbs. trigger, 95/5 split			Option 4 – 200,000 lbs. trigger, 25/75 then 95/5		
		trip limit =200 lbs.	n=40		trip limit =200 lbs.	n=40		trip limit =200 lbs.	n=40		trip limit =200 lbs.	n=40
NGOM TAC lbs.	NGOM (set- aside) lbs.	No. of NGOM (set-aside) Trips	No. of NGOM (set-aside) Trips /boat	NGOM (set-aside) lbs.	No. of NGOM (set-aside) Trips	No. of NGOM (set-aside) Trips /boat	NGOM (set-aside) lbs.	No. of NGOM (set-aside) Trips	No. of NGOM (set-aside) Trips /boat	NGOM (set-aside) lbs.	No. of NGOM (set-aside) Trips	No. of NGOM (set-aside) Trips /boat
100,000	100,000	500	13	100,000	500	13	100,000	500	13	100,000	500	13
200,000	200,000	1,000	25	200,000	1,000	25	200,000	1,000	25	200,000	1,000	25
300,000	300,000	1,500	38	300,000	1,500	38	300,000	1,500	38	225,000	1,125	28
400,000	400,000	2,000	50	400,000	2,000	50	400,000	2,000	50	250,000	1,250	31
500,000	500,000	2,500	63	500,000	2,500	63	500,000	2,500	63	275,000	1,375	34
600,000	600,000	3,000	75	600,000	3,000	75	505,000	2,525	63	300,000	1,500	38
700,000	700,000	3,500	88	625,000	3,125	78	510,000	2,550	64	325,000	1,625	41
800,000	800,000	4,000	100	650,000	3,250	81	515,000	2,575	64	350,000	1,750	44
900,000	900,000	4,500	113	675,000	3,375	84	520,000	2,600	65	375,000	1,875	47
1,000,000	1,000,000	5,000	125	700,000	3,500	88	525,000	2,625	66	400,000	2,000	50
1,100,000	1,005,000	5,025	126	725,000	3,625	91	530,000	2,650	66	425,000	2,125	53
1,200,000	1,010,000	5,050	126	750,000	3,750	94	535,000	2,675	67	450,000	2,250	56
1,300,000	1,015,000	5,075	127	775,000	3,875	97	540,000	2,700	68	475,000	2,375	59
1,400,000	1,020,000	5,100	128	800,000	4,000	100	545,000	2,725	68	500,000	2,500	63
1,500,000	1,025,000	5,125	128	825,000	4,125	103	550,000	2,750	69	525,000	2,625	66
1,700,000	1,035,000	5,175	129	875,000	4,375	109	560,000	2,800	70	575,000	2,875	72
2,000,000	1,050,000	5,250	131	950,000	4,750	119	575,000	2,875	72	650,000	3,250	81
2,500,000	1,075,000	5,375	134	1,075,000	5,375	134	600,000	3,000	75	775,000	3,875	97
3,000,000	1,100,000	5,500	138	1,200,000	6,000	150	625,000	3,125	78	900,000	4,500	113
3,500,000	1,125,000	5,625	141	1,225,000	6,125	153	650,000	3,250	81	925,000	4,625	116
6,000,000	1,250,000	6,250	156	1,350,000	6,750	169	775,000	3,875	97	1,050,000	5,250	131

Table 97 - Comparison of NGOM (APL)* trips for LA and LAGC IFQ boats across Options in Alternative2.

	Option 1 – 1 million lbs. trigger, 95/5 split			Option 2 – 600,000 lbs. trigger, 25/75 then 95/5			Option 3 – 500,000 lbs. trigger, 95/5 split			Option 4 – 200,000 lbs. trigger, 25/75 then 95/5		
	trip limit=	600 lbs.	18000 lbs.	trip limit=	600 lbs.	18000 lbs.	trip limit=	600 lbs.	18000 lbs.	trip limit=	600 lbs.	18000 lbs.
NGOM TAC lbs.	NGOM (APL) lbs.	NGOM (APL-IFQ) trips	NGOM (APL-LA) trips	NGOM (APL) lbs.	NGOM (APL-IFQ) trips	NGOM (APL-LA) trips	NGOM (APL) lbs.	NGOM (APL-IFQ) trips	NGOM (APL-LA) trips	NGOM (APL) lbs.	NGOM (APL-IFQ) trips	NGOM (APL-LA) trips
100,000	-	-	-	-	-	-	-	-	-	-	-	-
200,000	-	-	-	-	-	-	-	-	-	-	-	-
300,000	-	-	-	-	-	-	-	-	-	75,000	7	4
400,000	-	-	-	-	-	-	-	-	-	150,000	14	8
500,000	-	-	-	-	-	-	-	-	-	225,000	21	12
600,000	-	-	-	-	-	-	95,000	9	5	300,000	28	16
700,000	-	-	-	75,000	7	4	190,000	17	10	375,000	34	20
800,000	-	-	-	150,000	14	8	285,000	26	15	450,000	41	24
900,000	-	-	-	225,000	21	12	380,000	35	20	525,000	48	28
1,000,000	-	-	-	300,000	28	16	475,000	44	25	600,000	55	32
1,100,000	95,000	9	5	375,000	34	20	570,000	52	30	675,000	62	35
1,200,000	190,000	17	10	450,000	41	24	665,000	61	35	750,000	69	39
1,300,000	285,000	26	15	525,000	48	28	760,000	70	40	825,000	76	43
1,400,000	380,000	35	20	600,000	55	32	855,000	78	45	900,000	83	47
1,500,000	475,000	44	25	675,000	62	35	950,000	87	50	975,000	89	51
1,700,000	665,000	61	35	825,000	76	43	1,140,000	105	60	1,125,000	103	59
2,000,000	950,000	87	50	1,050,000	96	55	1,425,000	131	75	1,350,000	124	71
2,500,000	1,425,000	131	75	1,425,000	131	75	1,900,000	174	100	1,725,000	158	91
3,000,000	1,900,000	174	100	1,800,000	165	95	2,375,000	218	125	2,100,000	193	110
3,500,000	2,375,000	218	125	2,275,000	209	119	2,850,000	261	150	2,575,000	236	135
6,000,000	4,750,000	435	249	4,650,000	426	244	5,225,000	479	274	4,950,000	454	260

Figure 47 - NOGM Set-Aside allocations at increasing NGOM Allocations.

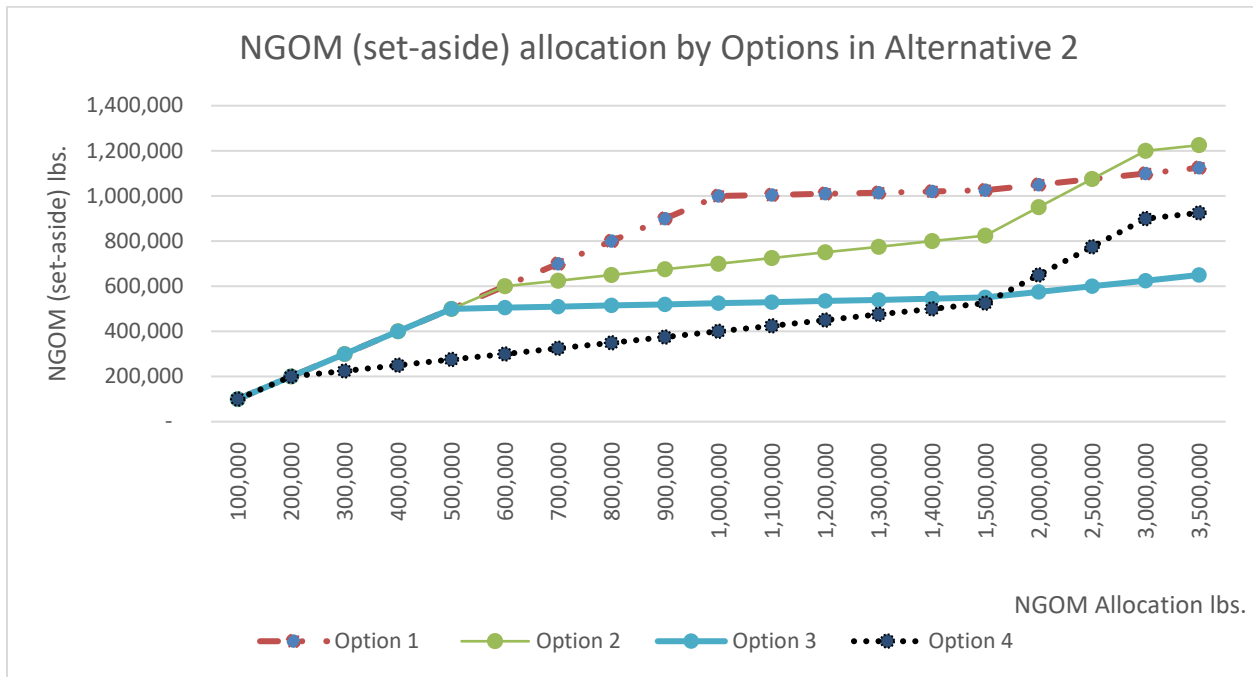


Figure 48 - NGOM APL allocations at increasing at increasing NGOM Allocations.

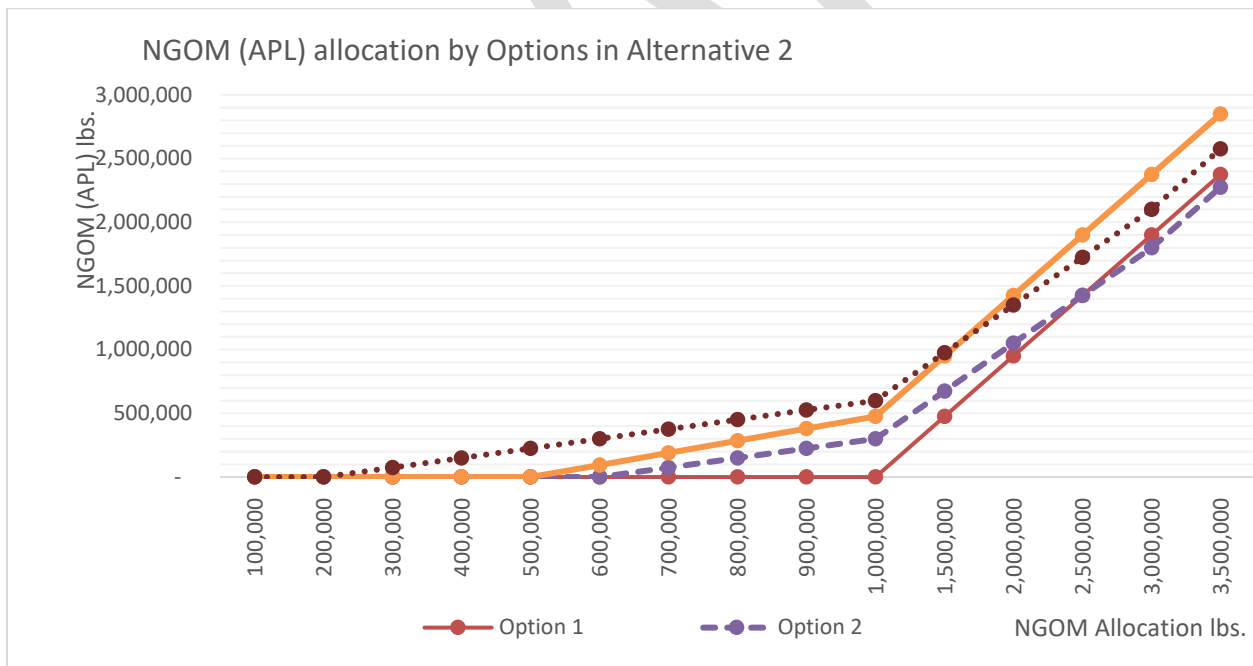


Figure 49 - NGOM Set-Aside Revenue at increasing NGOM Allocations for Options 1-4 in Alternative 4.2.2.

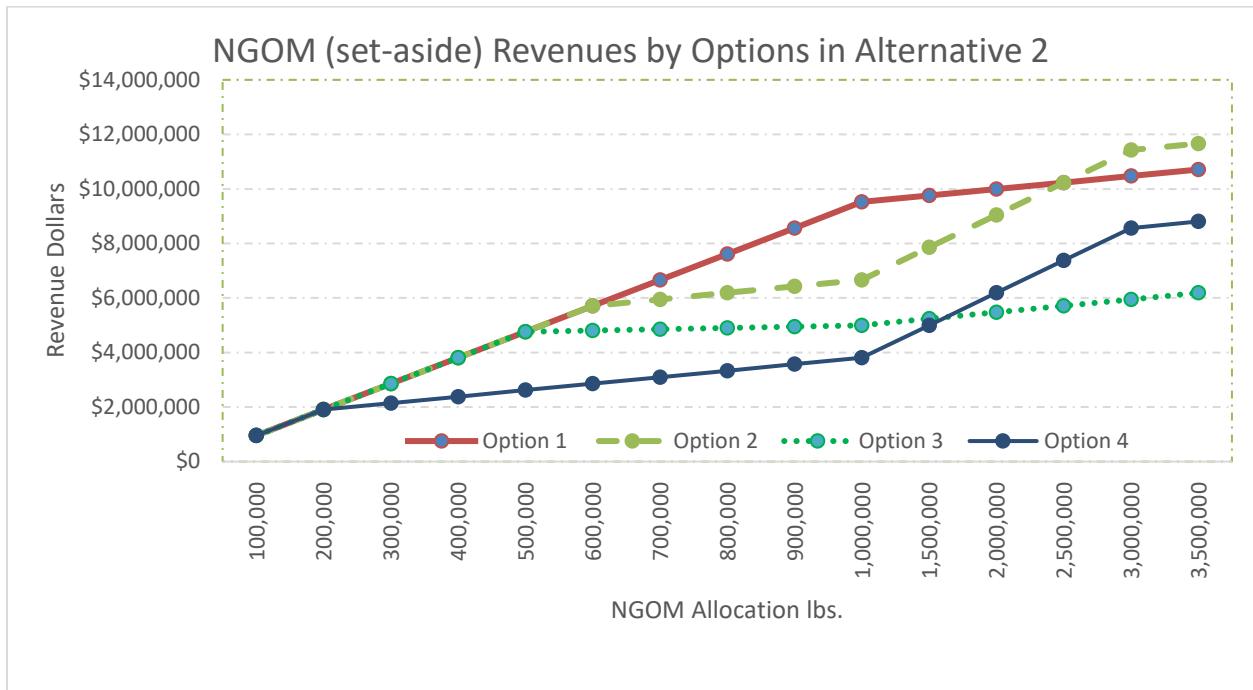


Figure 50 - NGOM APL Revenues at increasing NGOM Allocations for Options 1-4 in Alternative 4.2.2.

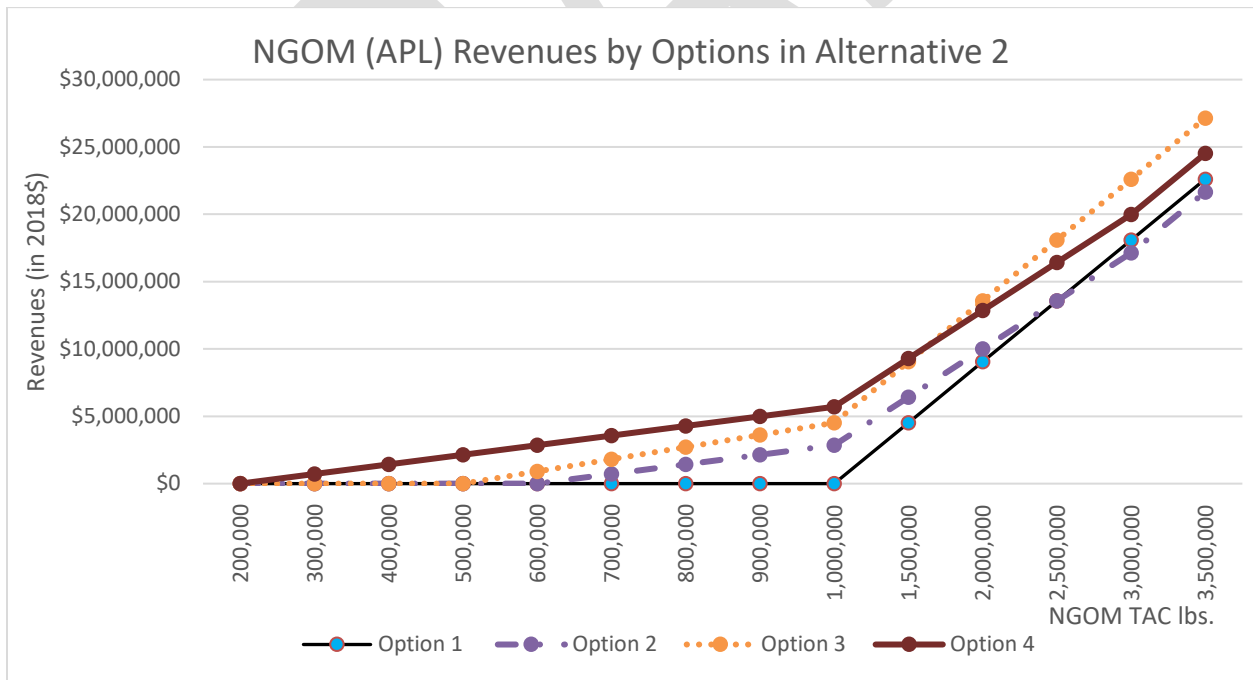


Figure 51 - NGOM Set-Aside Revenues per boat (n=40) at increasing NGOM Allocations for Options 1-4 in Alternative 4.2.2.

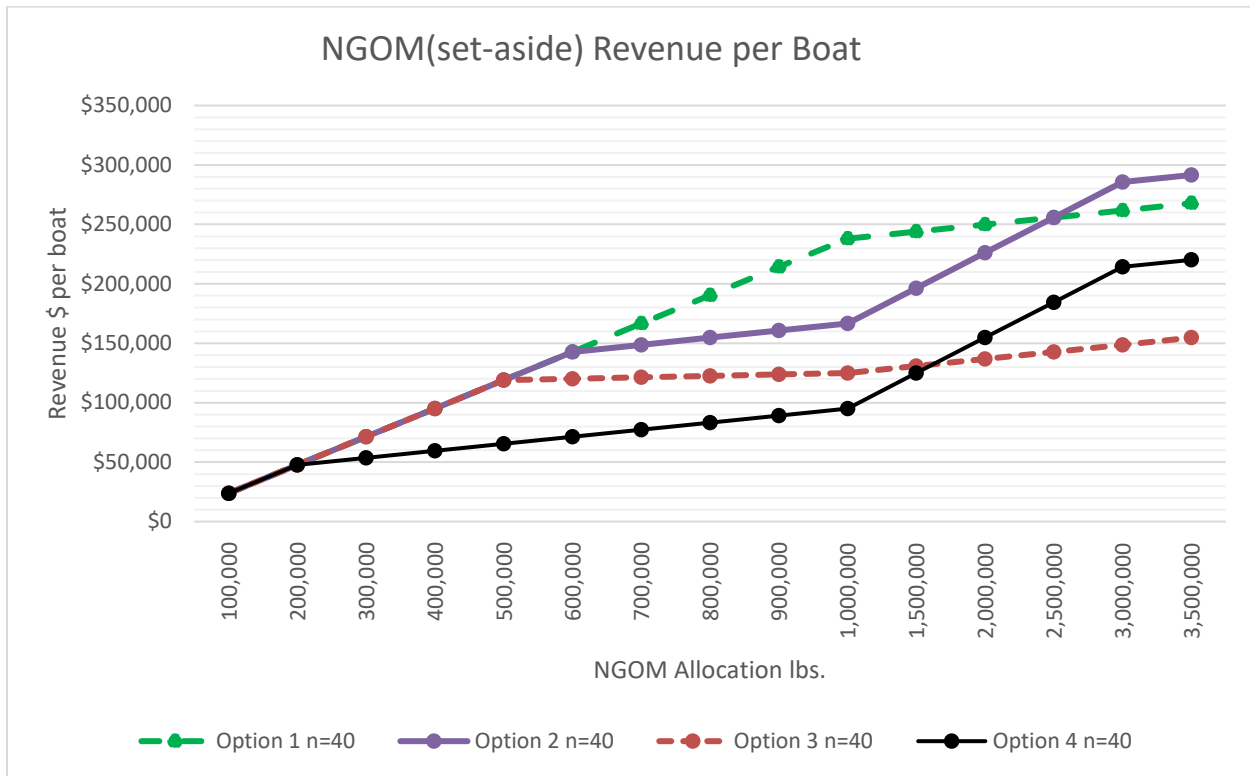


Table 98. Revenues from scallop and other species by the LGC (A/B) fleet operating in the NGOM in FY2018.

Revenue Description	Scallop Revenues (in 2018\$) from different areas				Revenues from Other species	Total Permit Value (Scallop\$ + Other \$) N=40
	NGOM (Federal water) *N=40	NGOM (State water) n=25	Non-NGOM (Federal Water) n=14	Total Scallop Revenue N=40	Non-Scallop Fish Revenue N=40	
Total Revenues	\$1,277,052	\$791,831	\$319,231	\$2,388,114	\$4,686,207	\$7,074,321
Percent Revenues	53.48%	33.16%	13.37%	33.76%	66.24%	100.00%
Per Boat Revenues	\$31,926	\$31,673	\$7,981	\$59,703	\$117,155	\$176,858

Note: * There were 40 boats actively fishing scallop in NGOM (federal waters) in FY2018. A sub-set of this fleet were also fishing in state and open waters.

6.6.1.3 Action 3 – Monitoring Directed Scallop Fishing in the Northern Gulf of Maine Management Area.

6.6.1.3.1 Alternative 1 – No Action

With respect to direct vessel costs, Alternative 1 could be expected to have negligible economic impacts on the LAGC fleet fishing in the NGOM since there would be no observer coverage, and no potential for the LAGC component to incur costs of carrying observers.

Relative to Alternatives 2 & 3, Alternative 1 could be expected to have neutral to low positive economic impacts.

6.6.1.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM TAC to offset monitoring costs.

With respect to direct vessel costs, Alternative 2 could be expected to have a neutral to low negative economic impact. While the LAGC component fishing the NGOM set-aside at 200 pounds per day would be required to cover the cost of monitoring, the Scallop Industry Funded Observer Program would be expanded so that vessels selected for monitoring/observers would be eligible to land additional scallops to offset the costs. Allocating additional pounds to offset the cost of an observer would likely lead to longer trips. If the additional compensation leads to higher trip costs, or enough pounds are not allocated to cover observer plus crew and vessel trip expenses, the impacts could be low negative at the trip level. In a more extreme scenario, if there are not enough pounds allocated in a given year to support the monitoring coverage in the area, the vessel would be responsible for paying for the cost of monitoring. The impacts could be positive if the observer compensation allocated per trip exceeds the actual cost of carrying an observer, which could result in slightly more profit for the vessel on that trip. The magnitude of these impacts depends on the size of the NGOM allocation, the target coverage level for the area, and the compensation rate set for carrying an observer in the NGOM which will be estimated by NMFS.

Observers collect a wide range of information that informs scallop management and is used in stock assessment models. This information could be expected to support more sophisticated modeling techniques of the scallop population in the Northern Gulf of Maine. Since the collection of fishery data is linked to scallop management, Alternative 2 could have indirect positive impacts on the scallop biomass in the NGOM over the long term by supporting management aimed at increasing scallop yield.

Relative to Alternative 1 and Alternative 3, Alternative 2 could be expected to have neutral to low negative economic impacts.

6.6.1.3.3 Alternative 3 - Monitor directed scallop fishing in the NGOM with observers from the NEFOP program

Alternative 3 could be expected to have neutral economic impacts on the LAGC fleet fishing in the NGOM since the cost of carrying an observer would be covered by NOAA through the NEFOP program.

Observers collect a wide range of information that informs scallop management and is used in stock assessment models. This information could be expected to support more sophisticated modeling techniques of the scallop population in the Northern Gulf of Maine. Since the collection of fishery data is linked to scallop management, Alternative 3 could have indirect positive impacts on the scallop biomass in the NGOM over the long term by supporting management aimed at increasing scallop yield. Relative to Alternative 1, Alternative 3 could be expected to have neutral economic impacts on vessels since there are no additional costs assumed in either scenario. Relative to Alternative 2, Alternative 3 could be expected to have a neutral to low positive impact with regard to improved management, since Alternative 3 would also facilitate the collection of data by observers using a different program and vessels would not directly

incur costs of carrying observers. It is worth noting that while vessels may not be responsible for covering the cost of observers, it is a real cost that is paid by NOAA Fisheries. If coverage is paid for with SBRM funds, there would be fewer resources available to support coverage in other fisheries.

6.6.1.4 Action 4 – Support Scallop Research using scallops from the Northern Gulf of Maine

6.6.1.4.1 Alternative 1 – No Action

There would be no change to the scallop RSA program. Under the existing process, the Council could recommend that the NGOM be available to support compensation fishing, but compensation fishing within the area would not be accounted for in the NGOM Allocation.

No Action would likely have direct and low negative economic impact because removals from compensation fishing would be in addition to the allocation set for the area. This could result in realized F rates that are higher than target F rates. This could lead to a degradation of the scallop resource to the long-term detriment of the fishery.

Relative to Alternative 2, Alternative 1 could be expected to have a low negative impact on the scallop resource in the Northern Gulf of Maine.

6.6.1.4.2 Alternative 2 – Allocate a portion of the NGOM allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Alternative 2 would establish a process to set-aside a portion of the NGOM Allocation that would be used to increase the overall size of the Scallop RSA. The economic impacts of Alternative 2 would vary with the amount of allocation that would contribute to the RSA. Over the long-term, RSA investments in resource surveys and research to support management would likely have positive impacts.

Relative to Alternative 1, Alternative 2 would have low positive economic impacts. .

▪ Options 1 - 4: Allocate part of the NGOM allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing

Options 1-4 would establish a process to determine the size of the NGOM research set-aside. This process, in and of itself, is not expected to have direct or indirect impacts on the scallop resource. The impacts of annual allocations, and the subsequent size of the NGOM research set-aside, will be analyzed in subsequent actions that set those allocations. From a economic perspective, these options are administrative measure because they set up a way to calculate how much of the NGOM Allocation would be set-aside for research and added to the overall scallop RSA.

For Options 1, 2, and 3, using a percentage of the NGOM allocation would result in annual variation in the size of overall RSA and the amount of scallops that can be harvested in the area through compensation fishing. The size of the NGOM set-aside could have impacts on the amount of scallops that are allocated as part of the NGOM set-aside and the NGOM APL. For example, if the NGOM allocation is around 6 million pounds, the contribution to the overall RSA from Option 1 would be 300,000 pounds compared to 900,000 pounds if Option 3 is selected, while Option 4 would cap the RSA contribution from the NGOM at 50,000 pounds. Since the RSA would still be harvested by scallop vessels through compensation fishing, this allocation decision represents a zero-sum game at the fishery level with respect to overall landings. However, impacts by vessel permit category could vary. For example, under Option 3, the NGOM set-aside would be reduced by up to 15%. This would have a direct negative economic impact on LAGC vessels fishing the NGOM at 200 pounds per trip. The magnitude of the reduction to support the RSA program would vary by option, and the size of the NGOM allocation. In general, Option 3 would have a larger negative impact on allocations to the directed fishery (i.e., NGOM set-aside and NGOM

APL) than Options 1 and 2 at higher levels of allocation. At very low levels of allocation, Option 4 could have negative economic impacts on the directed scallop fishing in the NGOM because 50,000 pounds could represent a substantial portion of the NGOM Allocation.

6.6.1.5 Action 5 – Northern Gulf of Maine Fishing Season

Action 5 includes several measures could have an impact on the scallop resource in the Northern Gulf of Maine. The economic impact of the Action 5 alternatives on the scallop resource is likely to vary with 1) the size of the NGOM set-aside, and 2) the combination of alternatives that are selected. Scallop meat weights vary seasonally and are generally larger in the spring and summer (Section 5.2). Variation in meat size can impact ex-vessel prices over the course of a season. Examples of how the length of the season may vary depending on how many vessels are active in the fishery, the number of 200-pound landings per week, and the size of the NGOM set-aside are shown in TABLE XXX.

The magnitude of economic impacts on the resources is likely to vary depending on which alternatives are selected, but in general if a combination of Alternatives 2, 3, and 4 are selected, there could be more of an impact compared to only one of the options being selected.

6.6.1.5.1 Alternative 1 – No Action

No Action could be expected to have direct low positive economic impacts. LAGC vessels would have maximum flexibility to prosecute the NGOM set-aside portion of the fishery, with no seasonal closures or additional restrictions on sailing/landing. This flexibility allows vessels to sail multiple times in a 24-hour period to take advantage of weather windows or to maximize their time spent in the directed fishery.

Relative to Alternatives 2 and 3, Alternative 1 could be expected to have a low positive economic impact.

6.6.1.5.2 Alternative 2 - Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area

Limiting the number of sailings per week may extend the length of the season, but would remove some of the existing flexibility vessels have to fish the NGOM area. Alternative 2 could be expected to have mixed economic impacts on LAGC vessels fishing the NGOM set-aside in the Northern Gulf of Maine.

If the scallop season is extended to a time of year when seasonal meat weight is higher, there could be slight positive impacts since larger market grades generally command a higher ex-vessel price. If the season is extended so that fishing occurs when meat weight is lower, there could be slight negative economic impacts if smaller market grades receive lower than average ex-vessel prices.

Since LAGC vessels may participate in multiple fisheries, and limiting the number of sailings per week in the NGOM could impact their ability to participate in other seasonal fisheries if they opt to continue scallop fishing in the NGOM. This lost opportunity may have direct negative impacts.

6.6.1.5.3 Alternative 3 – Limit vessels to one sailing per day

Limiting the number of sailings per day may extend the length of the season, but would remove some of the existing flexibility vessels have to fish the NGOM area.

Alternative 3 could be expected to have a low negative impacts on LAGC vessels fishing the NGOM set-aside in the Northern Gulf of Maine because existing flexibility allows vessels to sail multiple times in a 24 hour period to take advantage of weather windows or to maximize their time spent in the directed fishery.

If the scallop season is extended to a time of year when seasonal meat weight is higher, there could be slight positive impacts since larger market grades generally command a higher ex-vessel price. If the

season is extended so that fishing occurs when meat weight is lower, there could be slight negative economic impacts if smaller market grades receive lower than average ex-vessel prices.

Since LAGC vessels may participate in multiple fisheries, and limiting the number of sailings per day in the NGOM could impact their ability to participate in other seasonal fisheries if they opt to continue scallop fishing in the NGOM. This lost opportunity may have direct negative impacts.

6.6.1.5.4 Alternative 4 - Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually.

Closing the NGOM from September 1 – November 31 would shift fishing effort to other times of the year, and would remove some of the existing flexibility vessels have to fish the NGOM area.

Since meat yields generally decline during this time, Alternative 4 could be expected to have slight positive economic impacts if fishing occurs at a time of year when yields are higher since larger market grades generally command a higher ex-vessel price.

6.6.1.6 Action 6 – Cumulative Maximum Dredge Width that can be fished in the Northern Gulf of Maine Management Area

6.6.1.6.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the Gulf of Maine dredge exemption program, and no additional restrictions on the combined maximum dredge width that could be fished in the NGOM. All limited access general category (LAGC) vessels and Limited Access (LA) vessels fishing in the small dredge program could use a combined dredge width of up to 10.5 ft in the Northern Gulf of Maine management area. Full-time LA vessels fishing in the NGOM could use a combined dredge width of up to 31 ft.

The economic impacts of Alternative 1 would likely be moderate positive. The full-time LA vessels have historically fished two 15' dredges in the NGOM area, and on Georges Bank and in the Mid-Atlantic. Allowing these vessels to fish the same size gear in the NGOM as in the other parts of the resource would be expected to result in comparable catch rates and overall efficiency in the NGOM.

Relative to Alternative 2 and Alternative 3, Alternative 1 could be expected to have positive economic impacts.

6.6.1.6.2 Alternative 2 – Limit the combined dredge width of all federal permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft.

Alternative 2 would limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft. This measure would not impact the maximum dredge width that LAGC and LA vessels in the small dredge program, since their maximum dredge width is already 10.5 ft.

Alternative 2 would likely have direct negative economic impacts for full-time LA vessels. These vessels typically fish two 15 ft dredges and would need to switch to a single 10.5 ft dredge; potentially needing to purchase a new smaller dredge as a result of Alternative 2 would have a direct negative impact on these vessel owners. LPUE of the full-time LA vessels, which typically fish two 15' dredges, would be expected to be reduced in the NGOM under Alternative 2 as a result of using smaller fishing gear.

If there are higher levels of exploitable biomass in the NGOM, reducing the combined dredge width will severely limit the LPUEs and could have a high negative impact as a result of underutilization of available scallop resource. In scenarios when LA vessels can fish DAS in the NGOM area, reducing the

cumulative maximum dredge width may disincentivize vessels from fishing NGOM versus using their DAS in areas where they can use both dredges.

In a scenario where LA vessels receive vessel level allocations to harvest in the NGOM (similar to access area trips), the requirement to fish a 10.5' dredge would likely have low negative economic impacts because it would take vessels longer to harvest the allocated scallops using a smaller dredge. Compared to Alternative 1, Alternative 2 would likely lead to increased trip costs, which would directly impact vessel level profits.

Alternative 2 would likely have direct negative economic impacts for full-time LA vessels relative to Alternative 1. Relative to Alternative 3, Alternative 2 could be expected to have a negative economic impact.

6.6.1.6.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

Alternative 3 would limit the combined dredge width of full-time limited access scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft. This measure would not impact the maximum dredge width that LAGC and LA vessels in the small dredge program, since their maximum dredge width is already 10.5 ft.

Alternative 3 would likely have direct negative economic impacts for full-time LA vessels relative to Alternative 1. These vessels typically fish two 15 ft dredges and would need to switch to a single dredge of up to 15.5 ft when fishing in the NGOM as a result of Alternative 3. LPUE and overall efficiency of full-time LA vessels would be expected to be reduced as a direct result of the requirement to use smaller dredges under Alternative 3.

If there are higher levels of exploitable biomass in the NGOM, reducing the combined dredge width will severely limit LPUEs and overall efficiency and could have a negative impact as a result of underutilization of available scallop resource. In scenarios when LA vessels can fish DAS in the NGOM area, reducing the cumulative maximum dredge width to 15.5' may disincentivize vessels from fishing NGOM versus using their DAS in areas where they can use both dredges.

In a scenario where LA vessels receive vessel level allocations to harvest in the NGOM (similar to access area trips), the requirement to a dredge no greater than 15.5 ft would likely have low negative economic impacts overall because it would take vessels longer to harvest allocated scallops. Compared to Alternative 1, Alternative 3 would likely lead to increased trip costs, which would directly impact vessel level profits.

Relative to Alternative 2, Alternative 3 could have low positive impacts because FT LA vessels would be able to fish with a cumulative maximum width of 15.5 ft. This additional 5' of dredge width could be expected to result in higher LPUE compared to a 10.5 ft dredge.

6.6.1.7 Action 7 - Increase the LAGC IFQ Possession Limit

The alternatives in Section 4.7 consider increasing the current LAGC IFQ possession limit of 600 pounds per trip to either 800 pounds (Alternative 2) or 1,200 pounds (Alternative 3). For Alternative 2 and Alternative 3, there are sub-options for increasing the possession limit for all trips (Sub-Option 1) or for access area trips only (Sub-Option 2).

In carrying out the economic analysis of different trip possession limit in the LAGC IFQ fishery some key factors and assumptions were considered and are described in this section. The economic impacts of trip

possession limits are evaluated across all alternatives in open, access area and ALL⁵ (open and access combined) areas by using LAGC IFQ data from FY2010 to FY2017. The analyses in this action are based on annual landing for LAGC IFQ vessels that derived 75% or more of their revenue from scallops and were active in the LAGC IFQ fishery for more than 10 DAS. For the FY2010 to FY2017 time period, there were an average of 72 vessels that met these criteria and landed an average of 30,000 pounds per year, which represents about 78% of landings and 64% of active LAGC IFQ vessels in recent years. To fully understand the economic impacts of changing the possession limit at the vessel and fleet level, impact analyses were weighted to account for the 22% of landings and 36% of active LAGC IFQ vessels that did not meet the above criteria. This translates to about 96 active vessels of this performance in the LAGC IFQ fleet to represent all landings.⁶ The estimate of 30,000 pounds of annual landings per vessel is also close to the average in FY2017 and other years.

Effort in the LAGC IFQ fishery, and corresponding economic outcomes for different possession limits, are first analyzed for a standardized individual LAGC IFQ vessel by taking account of the landing derived from open trips and access area trips. The possession limit alternatives are also analyzed in terms of aggregated impacts to the fleet as a whole.

Fishing effort and landings differs between open and access areas. There have been more scallop landings coming from open areas compared to access areas, but LAGC IFQ landings from access areas increased substantially beginning FY2015. In FY2015, half of the scallop landing in the IFQ fishery came from access areas. In FY2016 and FY2017, about 59 percent of landed scallops came from open areas and 41 percent from access areas. In recent fishing years (FY2018 and FY2019), the projected landings from access areas have been a larger proportion of overall landings, meaning that the LAGC IFQ component would have the opportunity to derive a larger proportion of its landings from access areas.

The current trip possession limit in the LAGC IFQ fishery has been 600 pounds since it increased from 400 pounds possession limit through Amendment 15. However, average landings per trip were less in both open and access areas during FY2017; average landings per open trip for LAGC IFQ vessels were roughly 507 pounds and roughly 593 pounds for access area trips. Due to variabilities in transit time, fishing time, trip time, and LPUE between open and access areas in the LAGC IFQ fishery, the economic impacts were standardized for a better comparison on some key parameters such as trip transit time, fishing time, trip length, trip cost per DAS, LPUE per DAS, and net revenue per DAS for the range possession limit alternatives being considered in this action.

One recent change to the LAGC IFQ fishery was the expansion of Scallop Dredge Exemption Areas on Georges Bank and in Southern New England on February 14, 2020. This expansion allows LAGC IFQ vessels to fish open trips on parts of Georges Bank and the Great South Channel that are further offshore. If vessels elect to expand their range to harvest scallops in these areas, trip length and trip costs could increase.

Quota trading has also been an important activity among LAGC IFQ permit holders. The annual amount of leased-in quota has ranged between 1.14 million to 2.38 million pounds during FY2010 to FY2017 (Appendix I). Quota is typically traded in a lease market between individual permit holders or through a quota pool associated with a permit bank. Quota leasing has been an important source of income to those who lease-out their IFQ quota and has also been a major fishing cost for those who lease-in quota. Lease cost can be a major cost for those leasing quotas in large amounts since lease price per pound is about

⁵ ALL area will have total values or weighted average values from open and access areas, however. Total impacts are easier to evaluate in ALL area because of differences in effort and landings in open and access areas.

⁶ Landing characteristics here implies an IFQ vessel with annual 30,000 pounds landings that derives 75% or more fishing income from scallop with more than 10 DAS. Therefore, 96 homogenous vessels with these characteristics will capture all landings in the IFQ fishery. About one third of fleet spend 10 or less DAS and derives less than 75% income from scallop landings.

four to five times of the trip cost per pound (Table 125). LAGC IFQ permit holders trade annual quota allocations in different ways; some lease out their quota in full and remain inactive in the IFQ fishery for the fishing year, while others remain active in the fishery and lease-out or lease-in quotas in at varying proportions of their total landings. The decision to be in the lease market and the amount of lease trading depend on various economic incentives or individual circumstances. Lease costs depend on various factors that affect lease price, including but not limited to ex-vessel price per pound, trip costs per pound, annual quota allocations, affiliation group (i.e., individual or permit bank), whether lease transactions are within or outside of an affiliation group, and the number of net leasers (i.e., lease-in). These factors and more details on lease price modeling is discussed in Appendix I.

Lease costs directly affect individual scallop fisherman's financial or accounting profitability, depending on the proportion or ratio of leased-in to landed pounds which varies across fishermen. Economic impacts in the analysis of the alternatives are evaluated without accounting for lease costs since any outcome from LAGC IFQ quota trading among permit holders is a zero-sum game in terms of fleet wide impacts (i.e., lease rent directly offsets lease cost in the IFQ fishery) (Appendix I). However, financial impacts of lease prices and lease costs are separately discussed in the section on financial analysis of lease costs by possession limit and area. They are presented and compared in Table 127, Table 129, Table 130 and Table 131. Financial impacts are analyzed first for individual LAGC IFQ vessels based on a range of "lease groups", representing the proportion of total landings that are leased in per year. The impacts are later aggregated to the fleet level based on the proportion of landings from open and access areas and accounting for the number of vessels that leased-in quota at various proportions. Table 125 and Table 126 present lease prices and lease costs by possession limit, area, and by the proportion of total landings that are leased in. Appendix I discusses LAGC IFQ lease price and cost analyses in more detail along with scenario analyses of changes in scallop prices and trip costs as it relates to increasing the LAGC IFQ possession limit.

Economic characteristics, measured in terms of landings, revenues, prices, share of revenue from scallop, and distribution of landing from open and access area trips, provide some background information about the LAGC IFQ fishery. Table 99 and Table 100 provide scallop landings, revenues and prices (in both nominal and 2019 dollars), and share of scallop fishing income from ALL areas in the LAGC IFQ fishery during FY2010-FY2017. Table 101 shows the distribution of landings from open and access areas for the same time period. In FY2017, about 2.48 mil pounds of scallop were landed with a revenue of \$29.13 million from ALL areas.

As noted below in Table 99 and Table 100 and in Section 5.6.5.3 and Section 5.6.5.10, LAGC IFQ businesses participate in a range of other fisheries in the New England and Mid-Atlantic regions. Once fishermen use up their allocated quota, any savings in trips or trip time may be utilized for other activities like vessel maintenance, travel, other jobs, or participation in other fisheries. The management strategies used in these other fisheries varies considerably, and the potential impacts of a possession limit increase in the LAGC IFQ fishery is linked to the ability for LAGC IFQ vessels to redirect effort into them. For example, the Surf Clam/Ocean Quahog and part of the Northeast Multispecies fisheries use vessel or sector level allocations as part of their management, while other fisheries such as Black Sea Bass, Summer Flounder, Scup, and squid (longfin and illex) use fleet level catch and landings limits. While not discussed for each specific fishery, the impacts of increasing the LAGC IFQ possession limit on other fisheries is likely to vary, and would be driven by a wide range of factors including current management strategies of each fishery, the suite of permit holdings for an individual vessel, their current LAGC IFQ quota holdings, and geographic proximity to other fisheries, among other things.

The affected environment (Section 5.6.5) has more information related to the LAGC IFQ fishery and its performance over time. Some of the sections in 5.6.5 include information on LAGC IFQ participation in other fisheries, seasonal activity and vessel characteristics, and distribution of quota holdings. Time series information on IFQ leasing are in Appendix I.

Table 99. Scallop and non-scallop landings (pounds), revenues and prices (in Nominal dollars) in the IFQ fishery (FY2010-FY2017)

FY	Scallop landings	Revenue from Scallop	Revenue from other scallops	Revenue from Other species	scallop landed (lbs. per vessel)	scallop revenue (dollars per vessel)	% revenue from scallop	Scallop Price (nominal \$ per lb.
2010	2,221,461	\$19,213,981	\$1,477,081	\$22,040,884	14,712	\$127,245	59%	\$8.65
2011	2,772,974	\$28,805,890	\$2,945,426	\$22,941,653	20,094	\$208,738	66%	\$10.39
2012	2,864,505	\$29,276,670	\$2,197,739	\$18,363,291	23,289	\$238,022	72%	\$10.22
2013	2,302,540	\$27,860,265	\$1,237,780	\$14,521,625	19,513	\$236,104	72%	\$12.10
2014	2,128,550	\$27,561,903	\$1,332,352	\$15,796,330	16,248	\$210,396	72%	\$12.95
2015	2,408,551	\$30,648,128	\$1,088,870	\$16,399,308	18,817	\$239,439	71%	\$12.72
2016	3,518,386	\$42,631,387	\$2,074,595	\$16,769,184	24,953	\$302,350	78%	\$12.12
2017	2,480,813	\$27,931,281	\$1,075,807	\$18,146,199	18,108	\$203,878	70%	\$11.26

Table 100. Scallop and non-scallop landings (pounds), revenues and prices (in 2019 dollars) in the IFQ fishery (FY2010-FY2017)

FY	Scallop landings	Revenue from Scallop	Revenue from other scallops	Revenue from Other species	scallop landed (lbs. per vessel)	scallop revenue (dollars per vessel)	% revenue from scallop	Scallop Price (2019 \$ per lb.
2010	2,221,461	\$22,524,555	\$1,731,582	\$25,838,534	14,712	\$149,169	59%	\$10.14
2011	2,772,974	\$32,741,193	\$3,347,814	\$26,075,816	20,094	\$237,255	66%	\$11.81
2012	2,864,505	\$32,600,420	\$2,447,246	\$20,448,056	23,289	\$265,044	72%	\$11.38
2013	2,302,540	\$30,574,991	\$1,358,390	\$15,936,623	19,513	\$259,110	72%	\$13.28
2014	2,128,550	\$29,766,686	\$1,438,932	\$17,059,940	16,248	\$227,226	72%	\$13.99
2015	2,408,551	\$33,059,743	\$1,174,550	\$17,689,723	18,817	\$258,280	71%	\$13.72
2016	3,518,386	\$45,413,492	\$2,209,982	\$17,863,533	24,953	\$322,081	78%	\$12.91
2017	2,480,813	\$29,131,095	\$1,122,019	\$18,925,686	18,108	\$212,636	70%	\$11.74

Table 101. Distribution of scallop landings, trip days, and LPUEs in open, access, and ALL areas (FY2010-2017).

FY	OPEN			ACCESS			ALL Areas			Percent landings from	
	sum of scallop meats (pounds.)	sum of trip length (DAS)	LPUE (pounds/DAS)	sum of scallop meats (pounds.)	sum of trip length (DAS)	LPUE (pounds/DAS)	sum of scallop meats (pounds.)	sum of trip length (DAS)	LPUE (pounds/DAS)	OPEN	ACCESS
2010	1,668,661	3,234	515.99	466,408	1,192	391.13	2,135,069	4,426	482.35	78%	22%
2011	2,292,888	3,814	601.18	358,231	653	548.78	2,651,119	4,467	593.52	86%	14%
2012	2,709,165	4,062	666.89	63,028	211	298.04	2,772,193	4,274	648.64	98%	2%
2013	2,184,328	3,881	562.76	51,095	148	345.26	2,235,423	4,029	554.77	98%	2%
2014	1,722,944	3,737	461.02	262,888	530	495.57	1,985,832	4,268	465.32	87%	13%
2015	1,166,320	3,188	365.80	1,187,839	1,783	666.38	2,354,159	4,971	473.59	50%	50%
2016	2,035,419	4,623	440.27	1,396,234	2,484	562.07	3,431,653	7,107	482.84	59%	41%
2017	1,376,958	2,718	506.62	971,862	1,640	592.56	2,348,820	4,358	538.96	59%	41%

6.6.1.7.1 Alternative 1 – No Action

This alternative would maintain the current LAGC IFQ possession limit of 600 pounds for both open and access area trips.

The 600-pound possession limit is the benchmark to evaluate other possession limit alternatives. The economic impacts of the 600-pound trip limit across alternatives are evaluated standardized for an individual LAGC IFQ vessel in open, access and ALL areas by considering LAGC IFQ data up to FY2017 (i.e. as discussed in the introduction). Economic outcomes are then aggregated at the fleet level, representing a fleet of vessels that derive 75% or more fishing income from the LAGC IFQ fishery and are active in the LAGC IFQ fishery for more than 10 DAS.

Table 103 provides LAGC IFQ characteristics and fishery performance with a 600-pound trip limit in open, access and ALL⁷ areas. This analysis is based on updated 2017 fishery data for trip length and observer data for the percent of time spent transit versus fishing per trip. It gives an estimate of trip time (transit time, fishing time, and trip length) to harvest 600 pounds scallop along with LPUEs and trip costs per DAS corresponding to the possession limit, and total trips and DAS required to land 30,000 pounds by an IFQ boat. The percent change on the above variables are compared with other possession limits by area in Table 122.

With a 600 pound possession limit, per pound fishing time and trip costs are lower for access area trips than open area trips. To land 600 pounds in a trip, the trip cost is estimated to be about \$575 for access area trips, but \$677 for open area trips. Although transit time to access areas is higher compared to open area trips, total trip length and trip costs to land the 600 pound possession limit are lower for access area trips. To land the 600-pound trip limit, it takes about 12.9 hours of fishing time in access areas, but 20.5 hours for open area trips (Table 103). Fishing time is about 27% lower in access area trips compared to open area trips under the 600-pound trip limit.

Scallop fishing productivity in terms of landings per unit of effort (LPUE) is higher in access areas by about 18 percent compared to open area (i.e., 641 pounds per day in access areas compared to 544 pounds per day in open areas). That means it takes less than a day to land the 600-pound possession limit in access areas, whereas open area trip length is little more than a day. The difference in LPUEs trip types (i.e., access area vs. open area) suggests the potential benefits of increasing the possession limit would largely be for access area trips (Table 103).

The percent change in trip costs, trip length, lease prices, and LPUE associated with the 600-pound possession limit relative to other trip limit alternatives by area are presented in Table 102.

Table 103. Trip characteristics of an IFQ vessel in a 600 pounds. possession limit by Area (costs and price in 2019\$)

Area	Poss. Limit	* Transit time hrs.	*Total fishing time (TFT) hrs.	* Trip length hrs.	** Trip costs per DAS	Trip costs per lb.	**** No. of trips	**** Annual DAS	Lease price per lb.	*** LPUE (per DAS)	TFT hours per lb.
Open	600	5.99	20.48	26.47	\$677	\$1.13	29	32	\$3.95	544	0.034
Access	600	9.58	12.90	22.48	\$575	\$0.96	21	19	\$4.44	641	0.021
ALL	600	7.48	17.34	24.82	\$635	\$1.06	50	52	\$4.15~	584	0.029

Notes: ~ weightage average price where weights are 59% open area and 41% access area.

* time to land the possession limit pounds (in hours)

** trip cost to land the possession limit (in 2019 \$)

*** LPUE per DAS at the possession limit.

**** no. of trips and total DAS required for annual landing 30,000 pounds by an IFQ vessel in ALL area. The total effort in all area is distributed as 41% in access area and 59% in open area.

⁷ The values for different parameters in ALL area is either weighted average or total of the open and access area in all alternatives in this action. The weights are 59% in open area and 41% in access area.

Table 104 presents economic impact of the 600-pound possession limit to an average LAGC IFQ vessel. For a vessel that lands 30,000 pounds scallop annually, the net revenue after trip costs is \$320,452 overall (i.e., “ALL”), of which \$187,949 comes from open area trips and \$132,503 from access area trips.

Table 104. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with 600 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

Area	Poss. limit	Annual No. of trips	Annual DAS	Annual trip costs	*Total revenue	Net revenue	Crew share	Vessel share	Vessel Owner's Profits	Net revenue per DAS
Open	600	29	32	\$19,851	\$207,800	\$187,949	\$88,205	\$99,744	\$60,251	\$5,814
Access	600	21	19	\$11,900	\$144,403	\$132,503	\$63,189	\$69,314	\$41,869	\$6,838
ALL	600	50	52	\$31,751	\$352,203	\$320,452	\$151,395	\$169,058	\$102,120	\$6,198

Note: The estimates are for an IFQ vessel that lands 30000 pounds annually.

*Total revenue between open and access area is distributed at 59% and 41%, respectively.

Table 105 presents economic impact of the 600-pound possession limit at the LAGC IFQ fleet level. The fleet level net revenue from access area fishing is \$12.23 million and \$17.34 million from open area fishing under the 600-pound possession limit. Crew shares from access area fishing is about \$5.83 million and \$8.14 million from open area fishing. Owner's profit is about \$3.86 million from access areas and \$5.56 million from open areas. The net revenue for the LAGC IFQ fleet is estimated to be about \$29.6 million overall, and the crew and owner's profit are about \$13.97 million and \$9.42 million, respectively.

The standardized economic benefit in terms of net revenue per DAS is higher for the access area fishing compared to open area fishing and higher compared to the weighted average of both access area and open area fishing (i.e., “ALL”). Net revenue per DAS from access area fishing is higher by \$1,024 compared to open area fishing with the 600-pound possession limit. Table 117 compares the net revenue per DAS in this alternative with other alternatives. Net revenue per DAS is lowest in this alternative relative to other alternatives.

Table 105. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 600 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

AREA	Poss. limit	No. of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Crew share	Vessel share	Vessel owner's profit	Net Revenue per DAS
Open	600	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$8,142,015	\$9,207,137	\$5,561,623	\$5,814
Access	600	1,910	1,789	\$1,098,488	\$13,329,541	\$12,231,053	\$5,832,873	\$6,398,180	\$3,864,857	\$6,838
ALL	600	4,615	4,773	\$2,930,872	\$32,511,076	\$29,580,205	\$13,974,888	\$15,605,317	\$9,426,480	\$6,198

Table 115 and Table 116 compare the LAGC IFQ fleet level net revenue from all areas in this possession limit alternative with other possession limit alternatives. Net revenue from Alternative 1 (i.e., 600-pound possession limit) is the lowest compared to all other alternatives.

6.6.1.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Alternative 2 would increase the LAGC IFQ possession limit to 800 pounds at the level specified for Sub-Option 1 and Sub-Option 2.

- **Option 1—Increase the LAGC IFQ possession limit to 800 pounds per trip for both open and access area trips.**

This alternative would increase the LAGC IFQ possession limit to 800 pounds for both open and access area trips. This alternative only considers the possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

This alternative is expected to increase fishing revenue and vessel profit compared to the 600-pound limit (Alternative 1) in both areas. Increasing the possession limit would reduce the overall number of trips and combined steam time needed to harvest quota, thereby reducing trip costs (i.e. fuel) and operating expenses (i.e. vessel maintenance) relative to the current 600-pound limit. Once fishermen use up their allocated individual quota, any savings in trips or trip time may be utilized for other fishing activities or for other activities like vessel maintenance, travel, other jobs, or participation in other fisheries.

Increasing the possession limit would allow vessels to increase their catch potential on individual trip. The ability to harvest a vessels quota in fewer trips may afford LAGC IFQ vessels more flexibility in deciding where and when to fish. Targeting parts of the scallop resource farther offshore leads to increased trip time with longer steam times, but on the other hand saves total transit time to fishing grounds, thus, reducing the number of trips to harvest annual quota allocations. Fishermen would be able to save on trip costs commuting to fishing grounds to harvest their allocated quotas in less time.

Table 107 provides IFQ possession limit characteristics and fishery performance with an 800-pound trip limit in open, access, and combined for ALL areas. This analysis is based on updated 2017 fishery data for trip length and observer data for the percent of time spent transiting and fishing. It gives an estimate of trip time (i.e., transit time, fishing time, and total trip length) to harvest 800 pounds, LPUE and trip costs per DAS corresponding to the possession limit, and total trips and DAS required to land 30,000 pounds by an LAGC IFQ vessel in a year. The percent change on the above variables are compared with the 600-pound possession limits (Alternative 1) by area in Table 122.

With an 800-pound possession limit, per pound fishing time and trip costs are lower for access area trips than open area trips. To land 800 pounds in a trip, the trip cost is about \$685 in access areas, but \$852 in open areas. Although transit time to access area is higher compared to open areas, total trip length and hence trip costs to land the 800-pound possession limit is lower in access areas. To land an 800-pound trip limit, it takes about 17.2 hours in access area compared to 27.3 hours in open areas. Fishing time is about 37% lower in access area compared to open areas. The trip cost associated with an 800-pound possession limit is 20% lower in access areas compared to open areas. Trip cost per pound is lower with an 800-pound possession limit compared to a 600-pound possession limit (Alternative 1).

LPUE in access areas is 24% higher compared to open areas. LPUE under the 800-pound possession limit is estimated at 717 pounds per day for access areas, but 576 pounds in open areas. The differences in LPUE across areas suggests that potential benefits of increasing possession limit would largely be realized in access areas (Table 118). The percent change in trip cost, trip length, lease price, and LPUE under an 800-pound possession limit is compared to the other possession limit alternatives by area in Table 106.

Table 107. Economic characteristics of different trip possession limits for an IFQ vessel (n=1) in open, access, and ALL areas (trip costs and lease prices in 2019 dollars)

Area	Poss. limit	to land possession limit*			in landing poss. limit	****For annual landings		per lb.		LPUE/Das at Poss. Limit	TFT per lb.
		Transit time hrs.	Total fishing time (TFT) hrs.	Trip length (hrs.)	trip costs adj	Annual No. of trips	Annual I DAS	**trip costs	Lease price	*** LPUE (per DAS)	
Open	800	5.99	27.30	33.29	\$852	21.98	30.50	\$1.06	\$4.13	577	0.034
Access	800	9.58	17.19	26.78	\$685	15.52	17.31	\$0.86	\$4.76	717	0.021
ALL	800	7.48	23.12	30.60	\$783	37.50	47.81	\$0.98	\$4.39~	635	0.029
Percent change in (compared to 600 pounds poss. limit):											
Open	800			25.79%				-5.66%	4.45%	6.68%	
Access	800			19.12%				-10.66%	7.22%	11.93%	
ALL	800			23.29%				-7.53%	5.60%	8.69%	

Note; ~ weightage average lease price where weights are 59% open area and 41% access area.

* time to land the possession limit pounds (in hours)

** trip cost to land the possession limit (in 2019 \$)

*** LPUE per DAS at the possession limit.

**** no. of trips and total DAS required for annual landing 30,000 pounds by an IFQ vessel in ALL area. The total effort in all area is distributed as 41% in access area and 59% in open area.

Table 108 presents the economic impact of an 800-pound possession limit to an average LAGC IFQ vessel. Economic benefits are expected to be higher by increasing the possession limit to 800 pounds for all trips area compared to the 600-pound possession limit (Alternative 1). For a vessel that lands 30,000 pounds of scallop annually, the net revenue after trip costs in ALL area is marginally higher by 0.75 percent compared to the 600 pounds possession limit (Alternative 1). Under Alternative 2 Sub-Option 1 (i.e., 800-pound possession limit for all trips), per vessel annual net revenue after trip costs is \$322,844, of which \$189,073 will be from open area trips and \$133,772 from access area trips.

Table 108. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with 800 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

Area	Poss. limit	No. of trips	Annual DAS	Annual trip cost	Total revenue	Net revenue	% change in net revenue*	Crew share**	Vessel share**	Vessel owner's profit	% change in profit*	Net revenue per DAS
Open	800	22	30	\$18,727	\$207,800	\$189,073	0.60%	\$89,329	\$99,744	\$60,959	1.17%	\$6,200
Access	800	16	17	\$10,632	\$144,403	\$133,772	0.96%	\$64,458	\$69,314	\$42,796	2.21%	\$7,727
ALL	800	38	48	\$29,359	\$352,203	\$322,844	0.75%	\$153,786	\$169,058	\$103,717	1.56%	\$6,753

*percent change compared to 600 pounds possession limit for the same area.

**crew and vessel shares are at 52% and 48% of revenues, respectively.

Table 109 presents economic impacts of an 800-pound possession limit at the LAGC IFQ fleet level.⁸ The fleet level net revenue from access areas with an 800-pound possession limit is about \$12.34 million, i.e., 0.96% higher than under the 600 pounds possession limit (Alternative 1). The crew and owner's profit

⁸ Note that annual totals on effort, trip costs, net revenue after trip costs, and crew or vessel shares between open and access areas are different because of difference in percent of total landings from the corresponding areas.

are about \$5.95 million and \$3.95 million, respectively. The fleet level net revenue with an 800-pound possession limit in the open area is about \$17.45 million, i.e., 0.60% higher than under the 600-pound possession limit. The crew and owner's profit in the open area are about \$8.25 million and \$5.62 million, respectively.

The net revenue for the LAGC IFQ fleet overall (i.e., "ALL") is estimated to be about \$29.8 million with the 800-pound possession limit. This is an increase of roughly 0.75% compared to the 600-pound trip limit. Crew share and owner profit are about \$14.20 and \$9.57 million, respectively. Crew share and owner profit increase by about 1.58% and 1.56%, respectively, in this possession limit compared to the 600-pound trip limit.

Any increases in revenue for crew and owner revenue may be adjusted to account for the cost of leasing quota. As business plans and quota holdings vary for each vessel, lease costs are discussed later in this section.

The standardized economic benefit in terms of net revenue per DAS is higher for the access area compared to open area. Net revenue per DAS in access areas is higher by \$1,527 compared to open area with a 800-pound possession limit (Table 109). The percent change of net revenue per DAS is 13% greater for access area trips 6.6% for open area trips relative to the 600-pound possession limit. Table 117 compares the net revenue per DAS in this alternative with other alternatives. Net revenue per DAS is higher than Alternative 1 and Alternative 2 (SO2) but lower than Alternative 3 (SO1 and SO2).

Table 109. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with the 800 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

AREA	Poss. limit	No. of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Crew share	Vessel share	Vessel owner's profit	Net Revenue per DAS	% Change from 600 lbs. on net revenue per DAS
Open	800	2,029	2,815	\$1,728,686	\$19,181,535	\$17,452,849	\$8,245,712	\$9,207,137	\$5,626,953	\$6,200	6.63%
Access	800	1,432	1,598	\$981,398	\$13,329,541	\$12,348,143	\$5,949,963	\$6,398,180	\$3,950,367	\$7,727	13.00%
ALL	800	3,462	4,413	\$2,710,084	\$32,511,076	\$29,800,992	\$14,195,676	\$15,605,317	\$9,573,876	\$6,753	8.95%

Table 115 and Table 116 compares the LAGC IFQ fleet level net revenue from ALL areas in this possession limit alternative with other possession limit alternatives. Net revenue in this alternative is higher than what is estimated for the 600-pound possession limit (Alternative 1) and Alternative 2 Sub-Option 2, but lower compared to Alternative 3 Sub-Option 1 and Alternative 3 Sub-Option 2.

▪ **Option 2—Increase the LAGC IFQ possession limit to 800 pounds per trip for only access area trips**

This alternative would increase the LAGC IFQ possession limit to 800 pounds for access area trips and maintains the 600-pound possession limit for open trips. This alternative only considers the access area possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

Table 110 presents economic impact of Alternative 2 Sub-Option 2, an 800-pound possession limit for access area trips and a 600-pound possession limit for open area trips, at the LAGC IFQ fleet level. The total net revenue for the LAGC IFQ fleet from this alternative is estimated to be about \$29.7 million, which is 0.35% less than estimated for Alternative 2 Sub-Option 1.

The standardized economic benefit in terms of net revenue per DAS is higher for access areas compared to open and ALL area, i.e., \$7,727 in access areas (with an 800-pound trip limit) and \$5,814 in open area (with a 600-pound trip limit). Net revenue difference between open and access areas in this sub-option is \$1,913 per DAS (Table 110). The percent change in net revenue per DAS with an 800-pound trip limit in access areas is 33% greater than net revenue per DAS from open area trips with a 600-pound trip limit. Table 117 compares the net revenue per DAS in this alternative with other alternatives. Net revenue per DAS is higher than Alternative 1 and but lower than other alternatives.

Table 110. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 800 pounds trip possession limit in access and 600 pounds trip limit in open areas (economic values in 2019 dollars)

AREA	Poss. limit	Annual No. of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Crew share	Vessel share	Vessel owner profit	Net Revenue per DAS
OPEN	600	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$8,142,015	\$9,207,137	\$5,561,623	\$5,814
ACCESS	800	1,432	1,598	\$981,398	\$13,329,541	\$12,348,143	\$5,949,963	\$6,398,180	\$3,950,367	\$7,727
ALL	Hybrid	4,138	4,582	\$2,813,781	\$32,511,076	\$29,697,295	\$14,091,978	\$15,605,317	\$9,511,990	\$6,481

Table 115 and Table 116 compares net revenue of the LAGC IFQ fleet from all areas under Alternative 2 Sub-Option 2 with the other possession limit alternatives being considered in this action. Net revenue in this alternative is higher than Alternative 1 (600-pound possession limit), but lower compared Alternative 2 Sub-Option 1, Alternative 3 Sub-Option 1, and Alternative 3 Sub-Option 2.

6.6.1.7.3 Alternative 3—Increase the LAGC IFQ possession limit to 1,200 pounds per trip

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips (Sub-Option 1) or for access area trips only (Sub-Option 2).

- **Option 1—Increase the LAGC IFQ possession limit to 1,200 pounds per trip for open and access area trips**

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips. This Alternative only considers the possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

This alternative is expected to increase fishing revenue and vessel profit compared to both the 600- and 800-pound limits, as fishermen would be able to save on trip costs commuting to fishing grounds to harvest their individual vessel allocated quotas in less time. Increasing the possession limit to 1,200 pounds would reduce the overall number of trips and combined steam time needed to harvest quota, thereby reducing trip costs (i.e. fuel) and operating expenses (i.e. vessel maintenance) relative to the current 600-pound limit. Once fishermen use up their allocated individual quota, any savings in trips or trip time may be utilized for other fishing activities or will have some personal time for other activities like vessel maintenance, leisure, other jobs, etc.

Table 111 provides LAGC IFQ possession limit characteristics and fishery performance with a 1,200-pound trip limit in open, access and ALL areas. The analysis is based on updated 2017 fishery data for trip length and observer data for percent of total trip time spent transiting versus fishing. It gives an estimate of trip time (transit time, fishing time, and trip length) to harvest 1,200 pounds scallop along with LPUE and trip costs per DAS corresponding to the possession limit, and total trips and DAS needed to land 30,000 pounds by an LAGC IFQ vessel. The percent change on the above variables are compared with the 600-pound possession limits by area in Table 122.

With a 1,200-pound possession limit, per pound fishing time and trip costs are lower in the access areas compared to open areas. Although transit time to access areas is higher compared to open trips, total trip length and hence trip costs to land a 1,200-pound possession limit is lower in access areas. To land a 1,200-pound trip limit, trip length is about 25.79 hours in access areas compared to 40.95 hours in open areas. Fishing time is about 37% lower in access areas compared to open area. To land 1,200 pounds in a trip, the trip cost is about \$905 in access areas, but \$1,201 in open areas. The trip cost with this possession limit in access areas is 25% lower compared to open areas. Trip cost per pound is lower in this possession limit alternative compared to both 600- and 800-pounds limits.

LPUE associated with the 1,200-pound possession limit in access areas is 814 pounds per day, but is 614 pounds per day in open areas. LPUE in access areas is 33% higher compared to open areas. The differences in LPUEs across areas suggests that potential benefits of increasing the possession limit would be gained largely in access areas (Table 118).

The percent change in trip cost, trip length, lease price, and LPUE under a 1,200-pound possession limit compared to other possession limits alternatives by area are presented in Table 122.

Table 111. Economic characteristics of 1200 pounds possession limits for an IFQ vessel (n=1) in open, access, and ALL areas (trip costs and lease prices in 2019 dollars)

		*to land possession limit			**To land possession limit	per lb.		LPUE/Das at Poss. Limit		****for annual landings	
Area	Poss. limit	Transit time hrs.	Total fishing time hrs.	Trip length (hrs.)	trip costs adj	trip costs	Lease price	***LPUE (per DAS)	TFT per lb.	Annual No. of trips	Annual DAS
Open	1200	5.99	40.95	46.94	\$1,152	\$0.96	\$4.13	614	0.034	14.66	28.67
Access	1200	9.58	25.79	35.38	\$868	\$0.72	\$4.89	814	0.021	10.34	15.25
ALL	1200	7.48	34.68	42.16	\$1,035	\$0.86	\$4.45~	697	0.029	25.00	43.91
Percent Change in (compared to 600 pounds poss. Limit):											
Open	1200			77.36%		-11.32%	9.11%	14.21%			
Access	1200			57.36%		-21.32%	14.96%	27.09%			
ALL	1200			69.87%		-15.07%	11.53%	19.27%			

Notes: ~ weightage average price where weights are 59% open area and 41% access area.
 * time to land the possession limit pounds (in hours)
 ** trip cost to land the possession limit (in 2019 \$)
 *** LPUE per DAS at the possession limit.
 **** no. of trips and total DAS required for annual landing 30,000 pounds by an IFQ vessel in ALL area. The total effort in all area is distributed as 41% in access area and 59% in open area.

Table 112 presents the economic impact of a 1,200 pound possession limit to an average LAGC IFQ vessel. Economic benefits are expected to be higher by increasing possession limit to 1,200 pounds in access areas and open areas compared to the 600-pound possession limit. For a vessel that lands 30,000 pounds of scallop annually, the net revenue after trip costs in ALL area is marginally higher by about 1.49 percent compared to the 600-pound possession limit (Alternative 1). Net revenue from access areas with the 1,200-pound trip limit is higher than the 600-pound possession limit by 1.91%.

Per vessel annual net revenue after trip costs is \$325,236 overall, of which \$190,196 will be from open area fishing and \$135,040 from access area fishing.

Table 112. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with 1200 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

Area	Poss. limit	No. of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	% change in net revenue*	Crew share	Vessel share	Vessel owner Profits	% change in profit*	Net revenue per DAS
Open	1200	15	29	\$17,604	\$207,800	\$190,196	1.20%	\$90,452	\$99,744	\$61,666	2.35%	\$6,635
Access	1200	10	15	\$9,363	\$144,403	\$135,040	1.91%	\$65,726	\$69,314	\$43,722	4.42%	\$8,857
ALL	1200	25	44	\$26,967	\$352,203	\$325,236	1.49%	\$156,178	\$169,058	\$105,314	3.13%	\$7,406

*percent change compared to 600 pounds possession limit for the same area.

Table 113 presents the economic impact of a 1,200-pound possession limit at the LAGC IFQ fleet level.⁹ The overall net revenue for the LAGC IFQ fleet with a 1,200-pounds possession limit is estimated to be

⁹ Note that annual totals on effort, trip costs, net revenue after trip costs, and crew or vessel shares between open and access areas are different because of difference in percent of total landings from the corresponding areas.

about \$30 million, or roughly 1.49%, compared to the 600-pound trip limit (Alternative 1). Crew share and vessel owner's profit are about \$14.4 million and \$9.72 million, respectively under the 1,200-pound possession limit, which is an increase of 3.16% and 3.13%, respectively, compared to Alternative 1 (600-pound trip limit).

The fleet level net revenue from access areas with a 1,200-pound possession limit is about \$12.46 million, roughly 1.91% higher than estimated for the 600-pound possession limit for access areas. The crew and owner's profit are about \$6.06 million and \$4.035 million, respectively. The fleet level net revenue with 1,200-pound possession limit in the open area is about \$17.56 million, roughly 1.20% higher than the 600-pound possession limit. The crew and owner's profit are about \$8.34 million and \$5.69 million, respectively.

Any increases in crew and owner revenue may be adjusted to account for the cost of leasing quota. As business plans and quota holdings vary for each vessel, lease costs are discussed later in this section.

The standardized economic benefit in terms of net revenue per DAS with a 1,200-pound possession limit is higher for access areas compared to open areas. Net revenue per DAS in access areas is higher by \$2,222 compared to open areas in this possession limit alternative (Table 113). The percent change of net revenue per DAS compared to the 600-pound trip limit is an increase of 29.5% in access areas and 14.1% in open areas. Table 117 compares the net revenue per DAS in this alternative with other alternatives. Net revenue per DAS in this alternative is highest among all alternatives.

Table 113. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 1200 pounds trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

AREA	Poss. limit	No. of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Crew share	Vessel share	Vessel owner profit	Net Revenue per DAS	% Change from 600 lbs. on net revenue per DAS
Open	1200	1,353	2,646	\$1,624,988	\$19,181,535	\$17,556,547	\$8,349,410	\$9,207,137	\$5,692,283	\$6,635	14.11%
Access	1200	955	1,407	\$864,309	\$13,329,541	\$12,465,233	\$6,067,053	\$6,398,180	\$4,035,877	\$8,857	29.53%
ALL	1200	2,308	4,053	\$2,489,297	\$32,511,076	\$30,021,780	\$14,416,463	\$15,605,317	\$9,721,272	\$7,406	19.50%

Table 115 and Table 116 compare the LAGC IFQ fleet level net revenue from all areas under Alternative 3 Sub-Option 1 relative to the other possession limit alternatives being considered in this action. Net revenue in this alternative (i.e., 1,200-pound possession limit for all trips) is the highest among all alternatives in this action.

▪ **Option 2—Increase the LAGC IFQ possession limit to 1,200 pounds per trip for only access area trips**

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for access area trips and maintain the 600-pound possession limit for open trips. This alternative only considers the access area possession limit and does not propose any changes to how the LAGC IFQ component is administered or managed (i.e. no changes to allocation, rotational management, capacity restrictions, observer compensation rate, etc.).

Table 114 presents economic impact of a 1,200-pound possession limit in access area and a 600-pound possession limit in open areas at the LAGC IFQ fleet level. The net revenue for the LAGC IFQ fleet from

ALL areas is estimated to be roughly \$29.8 million, which is 0.69% less than the Alternative 3 Sub-Option 1.

The standardized economic benefit in terms of net revenue per DAS is higher for access areas compared to open and ALL areas, i.e., \$8,859 in access area (with a 1,200-pound trip limit) and \$5,814 in open areas (with a 600-pound trip limit). The difference in net revenue per DAS between open and access area trips in this sub-option is \$3,045 per DAS (Table 114). The percent change in net revenue per DAS with a 1,200-pound trip limit in access areas relative to an open area trip limit of 600 pounds is roughly 52%. Table 117 compares the net revenue per DAS in this alternative with other alternatives. Net revenue per DAS is higher than Alternative 1 but lower compared to rest other alternatives.

Table 114. Estimated Economic Impact for the IFQ Fleet in landing 30,000 pounds scallop by an individual vessel annually with 1200 pounds trip possession limit in access and 600 pounds trip limit in open areas (economic values in 2019 dollars)

AREA	Possession limit	Number of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Crew share	Vessel share	Vessel owner profit	Net Revenue per DAS
Open	600	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$8,142,015	\$9,207,137	\$5,561,623	\$5,814
Access	1200	955	1,407	\$864,309	\$13,329,541	\$12,465,233	\$6,067,053	\$6,398,180	\$4,035,877	\$8,859
ALL	Hybrid	3,661	4,391	\$2,696,692	\$32,511,076	\$29,814,385	\$14,209,068	\$15,605,317	\$9,597,500	\$6,790

Table 115 and Table 116 compare the overall LAGC IFQ fleet level net revenue under this possession limit alternative relative to the other possession limit alternatives being considered in this action. Net revenue under this alternative (Alternative 3 Sub-Option 2) is higher than the 600-pound possession limit alternative (Alternative 1) and the 800-pound possession limit alternatives (Alternative 2 Sub-Option 1 and Alternative 2 Sub-Option 2), but lower compared to Alternative 3 Sub-Option 1 (1,200-pound possession limit for all trips).

6.6.1.7.4 Additional Economic Analyses for the LAGC IFQ Possession Limit

■ Comparative Economic Impacts at IFQ Vessel And Fleet Levels

The following tables (Table 115 through Table 123) provide comparisons of IFQ Fleet Level Net Revenues across Alternatives in Action 7:

Table 115. Ranking of IFQ fleet level net revenues in ALL area (in 2019\$) by alternative in Action 7

Alternative	Rank	Fleet level net revenue	Percent change in fleet level net revenue compared to				
			Alt. 1	Alt. 2 SO1	Alt. 2 SO2	Alt. 3 SO1	Alt. 3 SO2
Alt 1	5	\$29,580,205	0.00%				
Alt 2 SO1	3	\$29,800,992	0.75%	0.00%			
Alt 2 SO2	4	\$29,697,295	0.40%	-0.35%	0.00%		
Alt 3 SO1	1	\$30,021,780	1.49%	0.74%	1.09%	0.00%	
Alt 3 SO2	2	\$29,814,385	0.79%	0.04%	0.39%	-0.69%	0.00%

Note: Alt 2 SO1 or Alternative 2.1 are alternative 2 sub-option 1 and likewise on others.

Table 116. Differences in IFQ fleet level net revenues in ALL area (in 2019\$) between alternatives, i.e., ROW minus COLUMN.

Alternatives		Poss. Limits between open and access areas	COLUMN Alternatives				
			Alt 1	Alt. 2 SO1	Alt. 2 SO2	Alt. 3 SO1	Alt. 3 SO2
ROW Alternatives	Alt 1	600 open & 600 access	\$0				
	Alt 2 SO1	800 open & 800 access	\$220,787	\$0			
	Alt 2 SO2	600 open & 800 access	\$117,090	-\$103,697	\$0		
	Alt 3 SO1	1200 open & 1200 access	\$441,575	\$220,787	\$324,485	\$0	
	Alt 3 SO2	600 open & 1200 access	\$234,180	\$13,393	\$117,090	-\$207,395	\$0

Note: Alt 2 SO1= Alternative 2 sub-option 1 = Alternative 2.1 and likewise on other alternatives.

Table 117. Economic impact of IFQ possession limits in terms of normalized economic value (i.e., net revenue per DAS) and percent change of it from 600 pounds trip limit by area.

Alternatives	AREA	Possession limit	Net Revenue per DAS	% Change from 600 lbs
Alt 1	OPEN	600	\$5,814	-
	ACCESS	600	\$6,838	-
	ALL	600	\$6,198	-
Alt 2 SO1	OPEN	800	\$6,200	6.63%
	ACCESS	800	\$7,727	13.00%
	ALL	800	\$6,753	8.95%
n/a	OPEN	1000	\$6,455	11.01%
	ACCESS	1000	\$8,370	22.41%
	ALL	1000	\$7,132	15.06%
Alt 3 SO1	OPEN	1200	\$6,635	14.11%
	ACCESS	1200	\$8,857	29.53%
	ALL	1200	\$7,406	19.50%
Alt 2 SO2	OPEN	600	\$5,814	
	ACCESS	800	\$7,727	
	ALL	*Hybrid	\$6,481	4.57%
Alt 3 SO3	OPEN	600	\$5,814	
	ACCESS	1200	\$8,859	
	ALL	Hybrid	\$6,790	9.55%

*hybrid value is compared with ALL in 600 pounds possession limit.

Table 118. Economic characteristics of different IFQ trip possession limits in open, access, and ALL areas (trip costs and lease prices in 2019 dollars)

*Alt.	Poss. limit	Area	to land possession limit			To land possession limit trip costs adj	per lb.		LPUE/Das at Poss. Limit LPUE (per DAS)	TFT per lb.	Percent Change in (compared to 600 pounds. poss. Limit)			
			Transit time hrs.	Total fishing time hrs.	Trip length (hrs.)		trip costs	Lease price			Trip cost per lb.	trip length	Lease price	LPUE (per DAS)
Alt 1	600	Open	5.99	20.48	26.47	\$677	\$1.13	\$3.79	544	0.034	-	-	-	-
	600	Access	9.58	12.90	22.48	\$575	\$0.96	\$4.44	641	0.021	-	-	-	-
	600	ALL	7.48	17.34	24.82	\$635	\$1.06	\$4.15	584	0.029	-	-	-	-
Alt 2 SO1	800	Open	5.99	27.30	33.29	\$852	\$1.06	\$4.13	577	0.034	-5.66%	25.79%	4.45%	6.68%
	800	Access	9.58	17.19	26.78	\$685	\$0.86	\$4.76	717	0.021	-10.66%	19.12%	7.22%	11.93%
	800	ALL	7.48	23.12	30.60	\$783	\$0.98	\$4.39	635	0.029	-7.53%	23.29%	5.60%	8.69%
n/a	1000	Open	5.99	34.13	40.12	\$1,027	\$1.03	\$4.24	598	0.034	-9.1%	51.6%	7.2%	11.1%
	1000	Access	9.58	21.49	31.08	\$795	\$0.80	\$4.96	772	0.021	-17.1%	38.2%	11.8%	20.6%
	1000	ALL	7.48	28.90	36.38	\$931	\$0.93	\$4.54	670	0.029	-12.1%	46.6%	9.1%	14.8%
Alt 3 SO1	1200	Open	5.99	40.95	46.94	\$1,201	\$1.00	\$4.31	614	0.034	-11.32%	77.36%	9.11%	14.21%
	1200	Access	9.58	25.79	35.38	\$905	\$0.75	\$5.10	814	0.021	-21.32%	57.36%	14.96%	27.09%
	1200	ALL	7.48	34.68	42.16	\$1,079	\$0.90	\$4.64	697	0.029	-15.07%	69.87%	11.53%	19.27%
Alt 2 SO2	600	Open	5.99	20.48	26.47	\$677	\$1.13	\$3.79	544	0.034	-	-	-	-
	800	Access	9.58	17.19	26.78	\$685	\$0.86	\$4.76	717	0.021	-10.66%	19.12%	7.22%	11.93%
Alt 3 SO2	600	Open	5.99	20.48	26.47	\$677	\$1.13	\$3.79	544	0.034	-	-	-	-
	1200	Access	9.58	25.79	35.38	\$905	\$0.75	\$5.10	814	0.021	-21.32%	57.36%	14.96%	27.09%

*Alternative 2.1= Alternative 2 sub-option 1 and likewise on other alternatives.

Table 119. Estimated Economic Impact for the IFQ Fleet (n=96) that an individual vessel lands 30,000 pounds scallop annually with different trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

Alternative	Possession limit	Area	Number of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	*Crew share	*Vessel share	Owner's Profits
Alt 1	600	OPEN	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$6,350,772	\$7,181,567	\$4,338,066
	600	ACCESS	1,910	1,789	\$1,098,488	\$13,329,541	\$12,231,053	\$4,549,641	\$4,990,580	\$3,014,588
	600	ALL	4,615	4,773	\$2,930,872	\$32,511,076	\$29,580,205	\$10,900,413	\$12,172,147	\$7,352,654
Alt 2 SO1	800	OPEN	2,029	2,815	\$1,728,686	\$19,181,535	\$17,452,849	\$6,431,656	\$7,181,567	\$4,389,023
	800	ACCESS	1,432	1,598	\$981,398	\$13,329,541	\$12,348,143	\$4,640,971	\$4,990,580	\$3,081,286
	800	ALL	3,462	4,413	\$2,710,084	\$32,511,076	\$29,800,992	\$11,072,627	\$12,172,147	\$7,467,623
n/a	1000	OPEN	1,623	2,714	\$1,666,467	\$19,181,535	\$17,515,068	\$6,480,186	\$7,181,567	\$4,419,598
	1000	ACCESS	1,146	1,484	\$911,145	\$13,329,541	\$12,418,397	\$4,695,769	\$4,990,580	\$3,121,305
	1000	ALL	2,769	4,197	\$2,577,612	\$32,511,076	\$29,933,465	\$11,175,955	\$12,172,147	\$7,536,605
Alt 3 SO1	1200	OPEN	1,353	2,646	\$1,624,988	\$19,181,535	\$17,556,547	\$6,512,540	\$7,181,567	\$4,439,981
	1200	ACCESS	955	1,407	\$864,309	\$13,329,541	\$12,465,233	\$4,732,301	\$4,990,580	\$3,147,984
	1200	ALL	2,308	4,053	\$2,489,297	\$32,511,076	\$30,021,780	\$11,244,841	\$12,172,147	\$7,582,592
Alt 2 SO2	600	OPEN	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$6,350,772	\$7,181,567	\$4,338,066
	800	ACCESS	1,432	1,598	\$981,398	\$13,329,541	\$12,348,143	\$4,640,971	\$4,990,580	\$3,081,286
Alt 3 SO2	600	OPEN	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$6,350,772	\$7,181,567	\$4,338,066
	1200	ACCESS	955	1,407	\$864,309	\$13,329,541	\$12,465,233	\$4,732,301	\$4,990,580	\$3,147,984

*crew and vessel shares at 52% and 48% of revenue, respectively.

Table 120. Economic Impact at IFQ Fleet level (that represent 100% landings) of Different Possession Limits by Area (in 2019\$) along with normalized economic values.

Alternatives	Possession limit	AREA	Number of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Net Revenue per DAS	% Change on net revenue per DAS from 600 lbs.
Alt 1	600	Open	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$5,814	-
		Access	1,910	1,789	\$1,098,488	\$13,329,541	\$12,231,053	\$6,838	-
		ALL	4,615	4,773	\$2,930,872	\$32,511,076	\$29,580,205	\$6,198	-
Alt 2 SO1	800	Open	2,029	2,815	\$1,728,686	\$19,181,535	\$17,452,849	\$6,200	6.63%
		Access	1,432	1,598	\$981,398	\$13,329,541	\$12,348,143	\$7,727	13.00%
		ALL	3,462	4,413	\$2,710,084	\$32,511,076	\$29,800,992	\$6,753	8.95%
n/a	1000	Open	1,623	2,714	\$1,666,467	\$19,181,535	\$17,515,068	\$6,455	11.01%
		Access	1,146	1,484	\$911,145	\$13,329,541	\$12,418,397	\$8,370	22.41%
		ALL	2,769	4,197	\$2,577,612	\$32,511,076	\$29,933,465	\$7,132	15.06%
Alt 3 SO1	1200	Open	1,353	2,646	\$1,624,988	\$19,181,535	\$17,556,547	\$6,635	14.11%
		Access	955	1,407	\$864,309	\$13,329,541	\$12,465,233	\$8,857	29.53%
		ALL	2,308	4,053	\$2,489,297	\$32,511,076	\$30,021,780	\$7,406	19.50%
Alt 2 SO2	600	Open	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$5,814	
	800	Access	1,432	1,598	\$981,398	\$13,329,541	\$12,348,143	\$7,727	
	Hybrid	ALL	4,138	4,582	\$2,813,781	\$32,511,076	\$29,697,295	\$6,481	
Alt 3 SO2	600	Open	2,706	2,984	\$1,832,383	\$19,181,535	\$17,349,152	\$5,814	
	1200	Access	955	1,407	\$864,309	\$13,329,541	\$12,465,233	\$8,859	
	Hybrid	ALL	3,661	4,391	\$2,696,692	\$32,511,076	\$29,814,385	\$6,790	

Table 121. Economic Impact to an IFQ vessel (n=1) in landing 30,000 pounds scallop annually with different trip possession limit in open, access, and ALL areas (economic values in 2019 dollars)

Alt	Area	Poss. limit	No. of trips	Annual DAS	Annual trip costs	Total revenue	Net revenue	Lease price	Crew share	Vessel share	Owner's Profit	Percent Change in (compared to 600 pounds. poss. limit)		
												Net revenue	Crew share	Owner's profit
Alt 1	Open	600	29	32	\$19,851	\$207,800	\$187,949	\$3.95	\$88,205	\$99,744	\$60,251	-	-	-
	Access	600	21	19	\$11,900	\$144,403	\$132,503	\$4.44	\$63,189	\$69,314	\$41,869	-	-	-
	All	600	50	52	\$31,751	\$352,203	\$320,452	\$4.15	\$151,395	\$169,058	\$102,120	-	-	-
Alt 2 SO1	Open	800	22	30	\$18,727	\$207,800	\$189,073	\$4.13	\$89,329	\$99,744	\$60,959	0.60%	1.27%	1.17%
	Access	800	16	17	\$10,632	\$144,403	\$133,772	\$4.76	\$64,458	\$69,314	\$42,796	0.96%	2.01%	2.21%
	All	800	38	48	\$29,359	\$352,203	\$322,844	\$4.39	\$153,786	\$169,058	\$103,717	0.75%	1.58%	1.56%
n/a	Open	1000	18	29	\$18,053	\$207,800	\$189,747	\$4.24	\$90,003	\$99,744	\$61,383	0.96%	2.04%	1.88%
	Access	1000	12	16	\$9,871	\$144,403	\$134,533	\$4.96	\$65,219	\$69,314	\$43,351	1.53%	3.21%	3.54%
	All	1000	30	45	\$27,924	\$352,203	\$324,279	\$4.54	\$155,222	\$169,058	\$104,675	1.19%	2.53%	2.50%
Alt3 SO1	Open	1200	15	29	\$17,604	\$207,800	\$190,196	\$4.31	\$90,452	\$99,744	\$61,666	1.20%	2.55%	2.35%
	Access	1200	10	15	\$9,363	\$144,403	\$135,040	\$5.10	\$65,726	\$69,314	\$43,722	1.91%	4.01%	4.42%
	All	1200	25	44	\$26,967	\$352,203	\$325,236	\$4.64	\$156,178	\$169,058	\$105,314	1.49%	3.16%	3.13%
Alt2 SO2	Open	600	29	32	\$19,851	\$207,800	\$187,949	\$3.95	\$88,205	\$99,744	\$60,251	-	-	-
	Access	800	16	17	\$10,632	\$144,403	\$133,772	\$4.76	\$64,458	\$69,314	\$42,796	0.96%	2.01%	2.21%
Alt3 SO2	Open	600	29	32	\$19,851	\$207,800	\$187,949	\$3.95	\$88,205	\$99,744	\$60,251	-	-	-
	Access	1200	10	15	\$9,363	\$144,403	\$135,040	\$5.10	\$65,726	\$69,314	\$43,722	1.91%	4.01%	4.42%

Table 122. Percent change in trip cost, trip length, lease price, and LPUE in a possession limit compared to 600 pounds trip limits in a management area.

Alts.	Area	Possession limit	% change in trip cost per landed pound	% change in trip length	% change in lease price	% change in LPUE
Alt 1	Open	600	-	-	-	-
	Access	600	-	-	-	-
	All	600	-	-	-	-
Alt 2 SO1	Open	800	-5.7%	25.8%	4.5%	6.7%
	Access	800	-10.7%	19.1%	7.2%	11.9%
	All	800	-7.5%	23.3%	5.6%	8.7%
n/a	Open	1000	-9.1%	51.6%	7.2%	11.1%
	Access	1000	-17.1%	38.2%	11.8%	20.6%
	All	1000	-12.1%	46.6%	9.1%	14.8%
Alt 3 SO1	Open	1200	-11.3%	77.4%	9.1%	14.2%
	Access	1200	-21.3%	57.4%	15.0%	27.1%
	All	1200	-15.1%	69.9%	11.5%	19.3%

Table 123. Percent change in IFQ fleet level efforts, net revenue, crew share and owner profit in a possession limit compared to 600 pounds possession limit for a scallop management area.

Alts.	AREA	Possession limit	Percent change in annual number of trips	Percent change in annual DAS	Percent change in net revenue	Percent change in crew share	Percent change in owner profit
Alt 1	Open	600	-	-	-	-	-
	Access	600	-	-	-	-	-
	All	600	-	-	-	-	-
Alt 2 SO1	Open	800	-25%	-6%	0.60%	1.27%	1.17%
	Access	800	-25%	-11%	0.96%	2.01%	2.21%
	All	800	-25%	-8%	0.75%	1.58%	1.56%
n/a	Open	1000	-40%	-9%	0.96%	2.04%	1.88%
	Access	1000	-40%	-17%	1.53%	3.21%	3.54%
	All	1000	-40%	-12%	1.19%	2.53%	2.50%
Alt 3 SO1	Open	1200	-50%	-11%	1.20%	2.55%	2.35%
	Access	1200	-50%	-21%	1.91%	4.01%	4.42%
	All	1200	-50%	-15%	1.49%	3.16%	3.13%

- **Financial impact of lease costs on IFQ vessel and fleet by possession limit alternatives**

With the increase in trip limits, lease price or cost is expected to increase because leasers are expected to generate additional income from higher landings per trip as well as savings in trip costs on the trips with higher possession limits. To those who lease-out, any income by leasing out their quota is a resource rent, but for those who lease-in, the lease cost is an accounting cost. Lease price analysis has been carried out in detail in the Appendix I, but is briefly explained in this section as well.

Table 124. Total lease-in pounds and scallop landings by active vessel (FY2010-FY2017)

FY	Sum of LEASE-IN	Sum of SCALLOP_LANDED
2010	1,142,840	2,221,461
2011	1,352,343	2,772,974
2012	1,377,839	2,864,505
2013	1,174,345	2,302,540
2014	1,272,943	2,128,550
2015	1,521,953	2,408,551
2016	2,381,968	3,518,386
2017	1,570,158	2,480,813

Table 125 summarizes IFQ lease prices by possession limit and scallop area. Scallop prices range between \$3.95 to \$5.10 per pound depending on the trip possession limit and area. Prices are higher with the higher trip possession limit. The lease price model also estimates that lease price would be higher in scenarios of only access area fishing compared to open area fishing. There could be some plausible factors attributing to estimated price differences based on lease price model parameter estimates. Higher scallop price and higher LPUE positively affects lease price. So better grade scallops with premium price and more landings per unit effort appear to be largely coming from distant access area. Also, trip cost per pound is lower in the access area because of higher LPUE in access area. These factors suggest that people going to distant access areas more likely to be paying higher price for lease quota because of more fish and better priced fish in access area together with their savings in trip costs there because of these efficiency factors. The demand factors and economic incentives may have attributed to differences in estimated lease prices between areas and possession limit.

Compared to 600-pound trip limit (Alternative 1) for open area, lease price is 4.5% higher with an 800-pound trip limit (Alternative 2) and 9.1% higher with a 1,200-pound trip limit (Alternative 3). In access areas, lease price is 7.2% higher with an 800-pound trip limit (Alternative 2 Sub-Option 1) and 15% higher with a 1,200-pound trip limit (Alternative 3 Sub-Option 1) compared to the 600-pound trip limit (Alternative 1). Lease prices are also compared between open and access area at different trip possession limits. Lease prices in access areas are higher compared to open area by 12.3%, 15.3%, and 18.3% relative to Alternative 1 (600-pound limit), Alternative 2 Sub-Option 1 (800 pound limit), and Alternative 3 Sub-Option 1 (1,200-pound limit), respectively.

Table 125. Summary of per pound lease prices (in 2019\$) by possession limit and area.

Alternatives	Poss. Limit	IFQ Quota Lease Price (dollar per lb.)			% Change in Lease Price compared to 600 lb. Poss. Limit.			% Change in Lease Price compared to Open area		
		OPEN	ACCESS	ALL*	OPEN	ACCESS	ALL	OPEN	ACCESS	ALL
Alternative 1	600	\$3.95	\$4.44	\$4.15	-	-	-	-	12.3%	5.1%
Alternative 2 O1	800	\$4.13	\$4.76	\$4.39	4.5%	7.2%	5.7%	-	15.3%	6.3%
n/a	1000	\$4.24	\$4.96	\$4.54	7.2%	11.8%	9.2%	-	17.1%	7.1%
Alternative 3 O1	1200	\$4.31	\$5.10	\$4.64	9.1%	15.0%	11.7%	-	18.3%	7.6%

*Weighted average price with the weights where weights are 59% for open and 41% for access area.

Quota trading has been an important activity among LAGC IFQ permit holders. Quota is traded in a lease market individually or through a pool of a permit bank. It has been an important source of income to those who lease-out their quotas but is a major fishing cost for those who lease-in quotas. Lease cost can be a major cost for those leasing quotas in large amount since lease price per pound is about four times greater than the trip cost per pound (Table 125). LAGC IFQ permit holders trade the annual quota allocations in different proportions of their annual scallop landings. For example, some trade their quotas in full and remain inactive in the LAGC IFQ fishery for the fishing year, while others lease-out or lease-in quotas in various proportion of total annual landings. The decision to be in the lease market and the amount of lease trading depend on various economic incentives or individual circumstances.

Table 126 summarizes lease costs for different amounts of leased quota for an LAGC IFQ vessel by possession limit alternatives and area. Financial profitability for a vessel will depend on the leased quota amount in a trip possession limit alternative and area. Annual lease costs increase with higher possession limits. In ALL areas, it is highest in under the 1,200-pound possession limit alternative (Alternative 3), but the lowest under the 600-pound possession limit (Alternative 1). Lease costs affect the financial profitability of crews and vessel owners differently, depending on who bears the cost of leased quota and the proportion leased quota relative to total landings.

Table 126. Summary of lease proportion, annual lease amount, and annual lease cost and lease prices (in 2019\$) for an IFQ vessel by possession limit and area.

Annual Pounds for an IFQ boat=		30,000 lbs.	OPEN		ACCESS		ALL	
Possession limit	lease/land ratio %	Leased amount	Average of Lease price	Annual lease costs	Average of Lease price	Annual lease costs	Lease price	Annual lease costs
600	0.0%	0	\$3.95	\$0	\$4.44	\$0	\$4.15	\$0
	12.5%	3750	\$3.95	\$14,817	\$4.44	\$16,639	\$4.15	\$15,571
	37.5%	11250	\$3.95	\$44,450	\$4.44	\$49,917	\$4.15	\$46,712
	50.0%	15000	\$3.95	\$59,267	\$4.44	\$66,556	\$4.15	\$62,283
	62.5%	18750	\$3.95	\$74,084	\$4.44	\$83,195	\$4.15	\$77,854
	87.5%	26250	\$3.95	\$103,717	\$4.44	\$116,474	\$4.15	\$108,995
800	0.0%	0	\$4.13	\$0	\$4.76	\$0	\$4.39	\$0
	12.5%	3750	\$4.13	\$15,477	\$4.76	\$17,841	\$4.39	\$16,455
	37.5%	11250	\$4.13	\$46,430	\$4.76	\$53,522	\$4.39	\$49,364
	50.0%	15000	\$4.13	\$61,907	\$4.76	\$71,362	\$4.39	\$65,819
	62.5%	18750	\$4.13	\$77,384	\$4.76	\$89,203	\$4.39	\$82,274
	87.5%	26250	\$4.13	\$108,337	\$4.76	\$124,884	\$4.39	\$115,184
1000	0.0%	0	\$4.24	\$0	\$4.96	\$0	\$4.54	\$0
	12.5%	3750	\$4.24	\$15,887	\$4.96	\$18,603	\$4.54	\$17,010
	37.5%	11250	\$4.24	\$47,660	\$4.96	\$55,808	\$4.54	\$51,031
	50.0%	15000	\$4.24	\$63,547	\$4.96	\$74,411	\$4.54	\$68,042

	62.5%	18750	\$4.24	\$79,434	\$4.96	\$93,013	\$4.54	\$85,052
	87.5%	26250	\$4.24	\$111,207	\$4.96	\$130,219	\$4.54	\$119,073
1200	0.0%	0	\$4.31	\$0	\$5.10	\$0	\$4.64	\$0
	12.5%	3750	\$4.31	\$16,166	\$5.10	\$19,129	\$4.64	\$17,392
	37.5%	11250	\$4.31	\$48,498	\$5.10	\$57,386	\$4.64	\$52,176
	50.0%	15000	\$4.31	\$64,664	\$5.10	\$76,515	\$4.64	\$69,568
	62.5%	18750	\$4.31	\$80,830	\$5.10	\$95,644	\$4.64	\$86,960
	87.5%	26250	\$4.31	\$113,163	\$5.10	\$133,901	\$4.64	\$121,744

▪ Individual IFQ vessel level financial impact of lease costs

As mentioned earlier financial profitability for an LAGC IFQ fisherman depends on individual's choice of the proportion of leased-in quota to the total pounds of scallops landed. Financial impacts are assessed by area and possession limit for an individual LAGC IFQ vessel level in the 1st step for different groups of IFQ vessels that lease-in quotas at different proportions of scallop landings. The impacts in terms of net revenue net of lease cost, crew share, and vessel owner's profitability are presented in Table 127. Crew share and owner's profitability are evaluated in two scenarios: i) when all lease costs are borne by crews, and ii) when lease costs are equally shared between crew and the vessel owner. In the 2nd step, financial impacts are aggregated at the fleet level. The percent changes on financial impacts for Alternative 2 and Alternative 3 are compared to the 600-pound possession limit (Alternative 1) in a lease/landing group in Table 128.

Appendix I discusses LAGC IFQ lease price and cost analysis in more detail along with scenario analyses of that describe changes in scallop prices and trip costs associated with the possession limit alternatives considered in this action.

Some Key Points:

Key takeaways from the financial analysis of lease costs when compared to the 600 pounds possession limit for a lease to landing ratio group (Table 127 and Table 128):

- net revenue net of lease cost¹⁰ declines in ALL and open area when the proportion of lease-in to landing is greater than 25%. It declines in access area when the proportion is about 50% or more. It declines more with higher trip possession limits in both areas after some level of lease-in to landing ratio.
- When crews bear all the lease costs, crew share declines, and declines more with higher possession limits in ALL and open areas when the proportion of lease-in to total landings is greater than 25%. It also declines in access areas when the proportion of lease-in to total landings is 50% or more. For all areas, crew shares decline at increasing possession limits.
- When the crew bears all lease costs, vessel owner's profit increases with an increase in possession limits. Owner's profit is unaffected regardless of the ratio of leased in quota to total landings.

¹⁰ Net revenue is revenue minus trip cost, but net revenue net of lease cost is the net revenue minus lease cost whether for an individual IFQ vessel or fleet.

Instead, it increases by a higher percentage in access area compared to ALL and open areas. Profit in access area increases by 2 % and 4 % under the 800- and 1200-pound possession limit options, respectively, compared to the 600-pound trip limit. On the other hand, profit in ALL areas increases by 1.5% and 3 % under the 800- and 1200-pound possession limit options, respectively, compared to the 600-pound trip limit.

- When crews bear half of lease costs, crew share improves marginally in ALL and access areas compared to the 600-pound possession limit. It is higher with higher possession limit alternatives when the lease-in to total landings ratio is less than 75%. Depending on the possession limit and lease-in to land proportion, the increase in crew share range between 0.16% to 2.7% in ALL areas, and between 0.77% to 3.61% percent in access areas. Similarly, crew share in open areas also improves, but it remains slightly negative when the lease to total landing proportion is over 50% (i.e., a decline of 0.28% to 2.7%, depending on the possession limit and lease-in to total landing proportion).
- Vessel owner's profit declines when vessel owners also bear the lease cost. The profit decreases slightly with an increase in possession limits relative to the 600-pound limit for the groups that lease-in more than 50% of total landings in ALL areas and more than 75% in access areas. Depending on the possession limit and lease to landing proportion, vessel profit declines by about 0.24% to 6.68% in ALL area and 0.1.75% to 3.9% in access area.

Step 1: Financial impacts at individual IFQ vessel (n=1) level

Table 127. Financial Impact (in 2019\$) of leased IFQ quotas to an IFQ vessel (n=1) under different leased to landing ratios by area and possession limits

Limit	lease/land	lease cost			Net Revenue net of lease cost			Crew share w/ lease cost on crews			Owner's profit w/ lease cost on crews			Crew share w/ 50% lease cost			Owner's profit w/ 50% lease cost		
		Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All
	0.0%	\$0	\$0	\$0	\$187,949	\$132,503	\$320,452	\$88,205	\$63,189	\$151,395	\$60,251	\$41,869	\$102,120	\$88,205	\$63,189	\$151,395	\$60,251	\$41,869	\$102,120
	12.5%	\$9,187	\$6,384	\$15,571	\$178,762	\$126,119	\$304,881	\$79,018	\$56,805	\$135,824	\$60,251	\$41,869	\$102,120	\$83,612	\$59,997	\$143,609	\$55,658	\$38,677	\$94,335
	37.5%	\$27,560	\$19,152	\$46,712	\$160,389	\$113,351	\$273,740	\$60,645	\$44,037	\$104,682	\$60,251	\$41,869	\$102,120	\$74,425	\$53,613	\$128,038	\$46,471	\$32,293	\$78,764
	50.0%	\$36,747	\$25,536	\$62,283	\$151,202	\$106,967	\$258,169	\$51,458	\$37,653	\$89,112	\$60,251	\$41,869	\$102,120	\$69,832	\$50,421	\$120,253	\$41,877	\$29,101	\$70,979
	62.5%	\$45,934	\$31,920	\$77,854	\$142,015	\$100,583	\$242,598	\$42,271	\$31,269	\$73,541	\$60,251	\$41,869	\$102,120	\$65,238	\$47,229	\$112,468	\$37,284	\$25,909	\$63,193
	87.5%	\$64,307	\$44,688	\$108,995	\$123,642	\$87,815	\$211,457	\$23,898	\$18,501	\$42,399	\$60,251	\$41,869	\$102,120	\$56,052	\$40,845	\$96,897	\$28,097	\$19,525	\$47,623
	0.0%	\$0	\$0	\$0	\$189,073	\$133,772	\$322,844	\$89,329	\$64,458	\$153,786	\$60,959	\$42,796	\$103,717	\$89,329	\$64,458	\$153,786	\$60,959	\$42,796	\$103,717
	12.5%	\$9,708	\$6,746	\$16,455	\$179,364	\$127,025	\$306,389	\$79,620	\$57,711	\$137,332	\$60,959	\$42,796	\$103,717	\$84,474	\$61,085	\$145,559	\$56,104	\$39,422	\$95,490
	37.5%	\$29,125	\$20,239	\$49,364	\$159,948	\$113,532	\$273,480	\$60,204	\$44,219	\$104,422	\$60,959	\$42,796	\$103,717	\$74,766	\$54,338	\$129,104	\$46,396	\$32,676	\$79,035
	50.0%	\$38,833	\$26,986	\$65,819	\$150,239	\$106,786	\$257,025	\$50,495	\$37,472	\$87,967	\$60,959	\$42,796	\$103,717	\$69,912	\$50,965	\$120,877	\$41,542	\$29,303	\$70,807
	62.5%	\$48,542	\$33,732	\$82,274	\$140,531	\$100,039	\$240,570	\$40,787	\$30,726	\$71,513	\$60,959	\$42,796	\$103,717	\$65,058	\$47,592	\$112,650	\$36,688	\$25,929	\$62,580
	87.5%	\$67,958	\$47,225	\$115,184	\$121,114	\$86,546	\$207,661	\$21,370	\$17,233	\$38,603	\$60,959	\$42,796	\$103,717	\$55,349	\$40,845	\$96,195	\$26,980	\$19,183	\$46,125
	0.0%	\$0	\$0	\$0	\$190,196	\$135,040	\$325,236	\$90,452	\$65,726	\$156,178	\$61,666	\$43,722	\$105,314	\$90,452	\$65,726	\$156,178	\$61,666	\$43,722	\$105,314
	12.5%	\$10,261	\$7,131	\$17,392	\$179,935	\$127,909	\$307,844	\$80,191	\$58,596	\$138,786	\$61,666	\$43,722	\$105,314	\$85,321	\$62,161	\$147,482	\$56,536	\$40,157	\$96,618
	37.5%	\$30,784	\$21,392	\$52,176	\$159,412	\$113,648	\$273,060	\$59,668	\$44,334	\$104,003	\$61,666	\$43,722	\$105,314	\$75,060	\$55,030	\$130,090	\$46,275	\$33,026	\$79,226
	50.0%	\$41,045	\$28,523	\$69,568	\$149,151	\$106,517	\$255,668	\$49,407	\$37,204	\$86,611	\$61,666	\$43,722	\$105,314	\$69,929	\$51,465	\$121,394	\$41,144	\$29,461	\$70,530
	62.5%	\$51,306	\$35,653	\$86,960	\$138,890	\$99,387	\$238,276	\$39,146	\$30,073	\$69,219	\$61,666	\$43,722	\$105,314	\$64,799	\$47,900	\$112,699	\$36,013	\$25,895	\$61,834
	87.5%	\$71,829	\$49,915	\$121,744	\$118,367	\$85,125	\$203,492	\$18,623	\$15,812	\$34,435	\$61,666	\$43,722	\$105,314	\$54,538	\$40,769	\$95,307	\$25,752	\$18,765	\$44,442
800 access	0.0%	\$0	\$0	\$0	\$187,949	\$133,772	\$321,721	\$88,205	\$64,458	\$152,663	\$60,251	\$42,796	\$103,047	\$88,205	\$64,458	\$152,663	\$60,251	\$42,796	\$103,047
	12.5%	\$9,187	\$6,746	\$15,933	\$178,762	\$127,025	\$305,787	\$79,018	\$57,711	\$136,729	\$60,251	\$42,796	\$103,047	\$83,612	\$61,085	\$144,697	\$55,658	\$39,422	\$95,080
	37.5%	\$27,560	\$20,239	\$47,799	\$160,389	\$113,532	\$273,921	\$60,645	\$44,219	\$104,864	\$60,251	\$42,796	\$103,047	\$74,425	\$54,338	\$128,763	\$46,471	\$32,676	\$79,147
	50.0%	\$36,747	\$26,986	\$63,733	\$151,202	\$106,786	\$257,988	\$51,458	\$37,472	\$88,930	\$60,251	\$42,796	\$103,047	\$69,832	\$50,965	\$120,797	\$41,877	\$29,303	\$71,180
	62.5%	\$45,934	\$33,732	\$79,666	\$142,015	\$100,039	\$242,054	\$42,271	\$30,726	\$72,997	\$60,251	\$42,796	\$103,047	\$65,238	\$47,592	\$112,830	\$37,284	\$25,929	\$63,213
	87.5%	\$64,307	\$47,225	\$111,532	\$123,642	\$86,546	\$210,188	\$23,898	\$17,233	\$41,131	\$60,251	\$42,796	\$103,047	\$56,052	\$40,845	\$96,897	\$28,097	\$19,183	\$47,280
1200 access	0.0%	\$0	\$0	\$0	\$187,949	\$135,040	\$322,989	\$88,205	\$65,726	\$153,931	\$60,251	\$43,722	\$103,973	\$88,205	\$65,726	\$153,931	\$60,251	\$43,722	\$103,973
	12.5%	\$9,187	\$7,131	\$16,318	\$178,762	\$127,909	\$306,671	\$79,018	\$58,596	\$137,614	\$60,251	\$43,722	\$103,973	\$83,612	\$62,161	\$145,773	\$55,658	\$40,157	\$95,815
	37.5%	\$27,560	\$21,392	\$48,952	\$160,389	\$113,648	\$274,037	\$60,645	\$44,334	\$104,979	\$60,251	\$43,722	\$103,973	\$74,425	\$55,030	\$129,455	\$46,471	\$33,026	\$79,497
	50.0%	\$36,747	\$28,523	\$65,270	\$151,202	\$106,517	\$257,719	\$51,458	\$37,204	\$88,662	\$60,251	\$43,722	\$103,973	\$69,832	\$51,465	\$121,297	\$41,877	\$29,461	\$71,338
	62.5%	\$45,934	\$35,653	\$81,587	\$142,015	\$99,387	\$241,402	\$42,271	\$30,073	\$72,344	\$60,251	\$43,722	\$103,973	\$65,238	\$47,900	\$113,138	\$37,284	\$25,895	\$63,179
	87.5%	\$64,307	\$49,915	\$114,222	\$123,642	\$85,125	\$208,767	\$23,898	\$15,812	\$39,710	\$60,251	\$43,722	\$103,973	\$56,052	\$40,769	\$96,821	\$28,097	\$18,765	\$46,862

Table 128. Percent change (compared to 600 pounds limit) in financial impact (in 2019\$) of leased IFQ quotas to an IFQ vessel (n=1) under different leased to landing ratios by area and possession limits.

limit	lease/land	% Change in net revenue net of lease cost			% Change in crew share w/ lease cost on crews			% Change in owner's profit w/ lease cost on crews			% Change in crew share w/ 50% lease			% Change in owner's profit w/ 50%lease		
		Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All
600 Alt 1	0.00%	0%	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%	0%	0%
	12.50%	0%	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%	0%	0%
	37.50%	0%	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%	0%	0%
	50.00%	0%	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%	0%	0%
	62.50%	0%	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%	0%	0%
	87.50%	0%	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%	0%	0%
800 Alt 2.1	0.00%	0.60%	0.96%	0.75%	1.27%	2.01%	1.58%	1.175%	2.212%	1.564%	1.27%	2.01%	1.58%	1.17%	2.21%	1.56%
	12.50%	0.34%	0.72%	0.49%	0.76%	1.59%	1.11%	1.175%	2.212%	1.564%	1.03%	1.81%	1.36%	0.80%	1.93%	1.22%
	37.50%	-0.28%	0.16%	-0.10%	-0.73%	0.41%	-0.25%	1.175%	2.212%	1.564%	0.46%	1.35%	0.83%	-0.16%	1.19%	0.34%
	50.00%	-0.64%	-0.17%	-0.44%	-1.87%	-0.48%	-1.28%	1.175%	2.212%	1.564%	0.11%	1.08%	0.52%	-0.80%	0.69%	-0.24%
	62.50%	-1.05%	-0.54%	-0.84%	-3.51%	-1.74%	-2.76%	1.175%	2.212%	1.564%	-0.28%	0.77%	0.16%	-1.60%	0.08%	-0.97%
	87.50%	-2.04%	-1.44%	-1.80%	-10.58%	-6.86%	-8.95%	1.175%	2.212%	1.564%	-1.25%	-0.00024%	-0.72%	-3.98%	-1.75%	-3.14%
1200 Alt 3.1	0.00%	1.20%	1.91%	1.49%	2.55%	4.01%	3.16%	2.349%	4.425%	3.127%	2.55%	4.01%	3.16%	2.35%	4.42%	3.13%
	12.50%	0.66%	1.42%	0.97%	1.48%	3.15%	2.18%	2.349%	4.425%	3.127%	2.04%	3.61%	2.70%	1.58%	3.82%	2.42%
	37.50%	-0.61%	0.26%	-0.25%	-1.61%	0.67%	-0.65%	2.349%	4.425%	3.127%	0.85%	2.64%	1.60%	-0.42%	2.27%	0.59%
	50.00%	-1.36%	-0.42%	-0.97%	-3.99%	-1.19%	-2.81%	2.349%	4.425%	3.127%	0.14%	2.07%	0.95%	-1.75%	1.23%	-0.63%
	62.50%	-2.20%	-1.19%	-1.78%	-7.39%	-3.83%	-5.88%	2.349%	4.425%	3.127%	-0.67%	1.42%	0.21%	-3.41%	-0.05%	-2.15%
	87.50%	-4.27%	-3.06%	-3.77%	-22.07%	-14.54%	-18.78%	2.349%	4.425%	3.127%	-2.70%	-0.19%	-1.64%	-8.35%	-3.90%	-6.68%

■ **IFQ Fleet Level Financial Impact of Lease Costs**

Step 2: Financial impacts at IFQ fleet (N=96) level

Table 129. Financial Impacts with Lease Costs at IFQ Fleet Level (values in 2019\$) by lease proportions, area and possession limit alternatives

Poss. limit	lease/land	lease cost			Net Revenue net of lease cost			Crew share w/ lease cost on crews			Owner's profit w/ lease cost on crews			Crew share w/ 50% lease cost			Owner's profit w/ 50% lease cost		
		Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All
600 Alt 1	0.00%	\$0	\$0	\$0	\$5,248,114	\$3,699,891	\$8,948,006	\$2,462,955	\$1,764,431	\$4,227,414	\$1,682,393	\$1,169,111	\$2,851,505	\$2,462,955	\$1,764,431	\$4,227,414	\$1,682,393	\$1,169,111	\$2,851,505
	12.50%	\$68,408	\$47,536	\$115,944	\$1,331,089	\$939,101	\$2,270,191	\$588,380	\$422,979	\$1,011,366	\$448,638	\$311,763	\$760,401	\$622,588	\$446,747	\$1,069,335	\$414,438	\$287,995	\$702,433
	37.50%	\$307,824	\$213,913	\$521,737	\$1,791,422	\$1,266,043	\$3,057,465	\$677,358	\$491,859	\$1,169,217	\$672,957	\$467,645	\$1,140,602	\$831,270	\$598,816	\$1,430,086	\$519,045	\$360,688	\$879,733
	62.50%	\$598,555	\$415,942	\$1,014,498	\$1,850,565	\$1,310,674	\$3,161,239	\$550,824	\$407,459	\$958,296	\$785,117	\$545,585	\$1,330,702	\$850,101	\$615,430	\$1,465,545	\$485,839	\$337,614	\$823,453
	87.50%	\$2,394,199	\$1,663,769	\$4,057,968	\$4,603,287	\$3,269,420	\$7,872,707	\$889,741	\$688,806	\$1,578,547	\$2,243,191	\$1,558,815	\$3,802,006	\$2,086,859	\$1,520,691	\$3,607,550	\$1,046,073	\$726,931	\$1,773,041
800 Alt 2.1	0.00%	\$0	\$0	\$0	\$5,279,500	\$3,735,326	\$9,014,798	\$2,494,341	\$1,799,866	\$4,294,178	\$1,702,163	\$1,194,996	\$2,896,098	\$2,494,341	\$1,799,866	\$4,294,178	\$1,702,163	\$1,194,996	\$2,896,098
	12.50%	\$72,287	\$50,232	\$122,526	\$1,335,572	\$945,848	\$2,281,420	\$592,863	\$429,725	\$1,022,595	\$453,910	\$318,666	\$772,293	\$629,006	\$454,848	\$1,083,855	\$417,759	\$293,542	\$711,033
	37.50%	\$325,304	\$226,054	\$551,358	\$1,786,496	\$1,268,065	\$3,054,561	\$672,432	\$493,892	\$1,166,313	\$680,865	\$477,998	\$1,158,439	\$835,079	\$606,914	\$1,441,992	\$518,208	\$364,966	\$882,760
	62.50%	\$632,540	\$439,554	\$1,072,094	\$1,831,227	\$1,303,585	\$3,134,812	\$531,486	\$400,383	\$931,869	\$794,343	\$557,665	\$1,351,512	\$847,756	\$620,160	\$1,467,916	\$478,073	\$337,875	\$815,466
	87.50%	\$2,530,129	\$1,758,223	\$4,288,389	\$4,509,167	\$3,222,174	\$7,731,379	\$795,622	\$641,598	\$1,437,219	\$2,269,550	\$1,593,328	\$3,861,464	\$2,060,686	\$1,520,691	\$3,581,414	\$1,004,486	\$714,198	\$1,717,269
1200 Alt 3.1	0.00%	\$0	\$0	\$0	\$5,310,858	\$3,770,732	\$9,081,590	\$2,525,698	\$1,835,272	\$4,360,970	\$1,721,904	\$1,220,853	\$2,940,691	\$2,525,698	\$1,835,272	\$4,360,970	\$1,721,904	\$1,220,853	\$2,940,691
	12.50%	\$76,405	\$53,099	\$129,504	\$1,339,824	\$952,430	\$2,292,254	\$597,115	\$436,315	\$1,033,422	\$459,175	\$325,561	\$784,184	\$635,313	\$462,860	\$1,098,174	\$420,976	\$299,015	\$719,432
	37.50%	\$343,834	\$238,932	\$582,766	\$1,780,509	\$1,269,361	\$3,049,870	\$666,446	\$495,177	\$1,161,634	\$688,762	\$488,341	\$1,176,276	\$838,362	\$614,643	\$1,453,005	\$516,856	\$368,875	\$884,893
	62.50%	\$668,557	\$464,586	\$1,133,156	\$1,809,844	\$1,295,089	\$3,104,920	\$510,102	\$391,874	\$901,977	\$803,555	\$569,731	\$1,372,322	\$844,381	\$624,174	\$1,468,555	\$469,277	\$337,432	\$805,745
	87.50%	\$2,674,249	\$1,858,374	\$4,532,623	\$4,406,894	\$3,169,269	\$7,576,164	\$693,349	\$588,693	\$1,282,042	\$2,295,873	\$1,627,804	\$3,920,921	\$2,030,492	\$1,517,861	\$3,548,353	\$958,767	\$698,635	\$1,654,610
Alt 2.2 600 open 800 access	0.00%	\$0	\$0	\$0	\$5,248,114	\$3,735,326	\$8,983,440	\$2,462,955	\$1,799,866	\$4,262,821	\$1,682,393	\$1,194,996	\$2,877,389	\$2,462,955	\$1,799,866	\$4,262,821	\$1,682,393	\$1,194,996	\$2,877,389
	12.50%	\$68,408	\$50,232	\$118,640	\$1,331,089	\$945,848	\$2,276,937	\$588,380	\$429,725	\$1,018,105	\$448,638	\$318,666	\$767,304	\$622,588	\$454,848	\$1,077,436	\$414,438	\$293,542	\$707,980
	37.50%	\$307,824	\$226,054	\$533,878	\$1,791,422	\$1,268,065	\$3,059,487	\$677,358	\$493,892	\$1,171,250	\$672,957	\$477,998	\$1,150,956	\$831,270	\$606,914	\$1,438,184	\$519,045	\$364,966	\$884,011
	62.50%	\$598,555	\$439,554	\$1,038,109	\$1,850,565	\$1,303,585	\$3,154,150	\$550,824	\$400,383	\$951,207	\$785,117	\$557,665	\$1,342,782	\$850,101	\$620,160	\$1,470,262	\$485,839	\$337,875	\$823,714
	87.50%	\$2,394,199	\$1,758,223	\$4,152,422	\$4,603,287	\$3,222,174	\$7,825,461	\$889,741	\$641,598	\$1,531,339	\$2,243,191	\$1,593,328	\$3,836,519	\$2,086,859	\$1,520,691	\$3,607,550	\$1,046,073	\$714,198	\$1,760,271
Alt 3.2 600 open 1200 access	0.00%	\$0	\$0	\$0	\$5,248,114	\$3,770,732	\$9,018,847	\$2,462,955	\$1,835,272	\$4,298,227	\$1,682,393	\$1,220,853	\$2,903,246	\$2,462,955	\$1,835,272	\$4,298,227	\$1,682,393	\$1,220,853	\$2,903,246
	12.50%	\$68,408	\$53,099	\$121,506	\$1,331,089	\$952,430	\$2,283,519	\$588,380	\$436,315	\$1,024,695	\$448,638	\$325,561	\$774,199	\$622,588	\$462,860	\$1,085,448	\$414,438	\$299,015	\$713,453
	37.50%	\$307,824	\$238,932	\$546,756	\$1,791,422	\$1,269,361	\$3,060,782	\$677,358	\$495,177	\$1,172,535	\$672,957	\$488,341	\$1,161,298	\$831,270	\$614,643	\$1,445,913	\$519,045	\$368,875	\$887,920
	62.50%	\$598,555	\$464,586	\$1,063,141	\$1,850,565	\$1,295,089	\$3,145,654	\$550,824	\$391,874	\$942,698	\$785,117	\$569,731	\$1,354,848	\$850,101	\$624,174	\$1,474,275	\$485,839	\$337,432	\$823,271
	87.50%	\$2,394,199	\$1,858,374	\$4,252,573	\$4,603,287	\$3,169,269	\$7,772,556	\$889,741	\$588,693	\$1,478,434	\$2,243,191	\$1,627,804	\$3,870,995	\$2,086,859	\$1,517,861	\$3,604,720	\$1,046,073	\$698,635	\$1,744,708

Table 130. Summary of Financial Impacts with Lease Costs at IFQ Fleet Level (sub-total values in 2019\$) by possession limit alternatives and area (includes

Poss. limit	Alternatives	Rank*	lease cost			Net Revenue net of lease cost			Crew share w/ lease cost on crews			Owner's profit w/ lease cost on crews			Crew share w/ 50% lease cost			Owner's profit w/ 50% lease cost		
			Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All	Open	Access	All
600	Alt 1	1	\$3,368,986	\$2,341,160	\$5,710,146	\$14,824,477	\$10,485,130	\$25,309,607	\$5,169,258	\$3,775,535	\$8,944,841	\$5,832,297	\$4,052,919	\$9,885,216	\$6,853,773	\$4,946,115	\$11,799,929	\$4,147,789	\$2,882,339	\$7,030,165
800	Alt 2.1	4	\$3,560,259	\$2,474,063	\$6,034,367	\$14,741,962	\$10,474,998	\$25,216,970	\$5,086,743	\$3,765,464	\$8,852,176	\$5,900,831	\$4,142,653	\$10,039,806	\$6,866,867	\$5,002,479	\$11,869,355	\$4,120,689	\$2,905,577	\$7,022,626
600 op & 800 ac	Alt 2.2	2	\$3,368,986	\$2,474,063	\$5,843,049	\$14,824,477	\$10,474,998	\$25,299,475	\$5,169,258	\$3,765,464	\$8,934,722	\$5,832,297	\$4,142,653	\$9,974,950	\$6,853,773	\$5,002,479	\$11,856,252	\$4,147,789	\$2,905,577	\$7,053,366
1200	Alt 3.1	5	\$3,763,044	\$2,614,991	\$6,378,048	\$14,647,929	\$10,456,881	\$25,104,797	\$4,992,709	\$3,747,331	\$8,740,044	\$5,969,269	\$4,232,290	\$10,194,395	\$6,874,246	\$5,054,810	\$11,929,057	\$4,087,780	\$2,924,810	\$7,005,371
600 op & 1200 ac	Alt 3.2	3	\$3,368,986	\$2,614,991	\$5,983,977	\$14,824,477	\$10,456,881	\$25,281,358	\$5,169,258	\$3,747,331	\$8,916,589	\$5,832,297	\$4,232,290	\$10,064,586	\$6,853,773	\$5,054,810	\$11,908,584	\$4,147,789	\$2,924,810	\$7,072,599

vessels with no leases).

*Ranking based on net revenue net of lease cost for ALL area.

**Table 131. Summary of Financial Impacts with Lease Costs at IFQ Fleet Level (sub-total values in 2019\$) by lease proportions, area and possession limit alternatives
(EXCLUDES vessels with no leases)**

Poss. limit	Alternativ es (Rank)	lease cost			Net Revenue net of lease cost			Crew share			Owner's profit			Crew share			Owner's profit		
		Open	Access	All	Open	Access	All	w/ lease cost on crews			w/ lease cost on crews			w/ 50% lease cost			w/ 50% lease cost		
							All	Open	Access	All	O P e n	Access	All	O P e n	Access	All	Open	Access	All
600	Alt 1 (Rank 1)	\$3,368,986	\$2,341,160	\$5,710,146	\$9,576,363	\$6,785,239	\$16,361,604	\$2,706,303	\$2,011,104	\$4,717,427	\$4,149,900	\$2,883,808	\$7,033,711	\$4,149,900	\$3,181,684	\$7,572,515	\$2,465,395	\$1,713,228	\$4,178,661
800	Alt 2.1 (Rank 4)	\$3,560,259	\$2,474,063	\$6,034,367	\$9,462,462	\$6,739,672	\$16,202,172	\$2,592,403	\$1,965,598	\$4,557,997	\$4,198,666	\$2,947,657	\$7,143,708	\$4,198,666	\$3,202,613	\$7,575,177	\$2,418,526	\$1,710,581	\$4,126,528
600 op/ 800 ac	Alt 2.2 (Rank 2)	\$3,368,986	\$2,474,063	\$5,843,049	\$9,576,363	\$6,739,672	\$16,316,035	\$2,706,303	\$1,965,598	\$4,671,901	\$4,149,900	\$2,947,657	\$7,097,560	\$4,149,900	\$3,202,613	\$7,593,431	\$2,465,395	\$1,710,581	\$4,175,976
1200	Alt 3.1 (Rank 5)	\$3,763,044	\$2,614,991	\$6,378,048	\$9,337,071	\$6,686,149	\$16,023,207	\$2,467,011	\$1,912,059	\$4,379,074	\$4,273,664	\$3,011,437	\$7,253,704	\$4,273,664	\$3,219,538	\$7,568,086	\$2,365,876	\$1,703,957	\$4,064,680
600 op/ 1200 ac	Alt 3.2 (Rank 3)	\$3,368,986	\$2,614,991	\$5,983,977	\$9,576,363	\$6,686,149	\$16,262,512	\$2,706,303	\$1,912,059	\$4,618,362	\$4,149,900	\$3,011,437	\$7,161,340	\$4,149,900	\$3,219,538	\$7,610,356	\$2,465,395	\$1,703,957	\$4,169,353

Fleet Level Impacts of IFQ Lease Cost:

The key findings of fleet level impacts vary depending upon the groups of vessels that are included in the analysis. Section 1 below describes the fleet level impacts of possession limit increases when vessel that do not lease IFQ are omitted from the analysis. Section 2 below describes the fleet level impacts when those vessels that do not lease are included in the analysis.

1. Key findings (EXCLUDES vessels with no leases):

- Fleet level aggregated net revenue net of lease costs declines on all higher possession limit alternatives when lease costs are considered.
- Fleet level aggregated net revenues net of lease costs (Table 131) are marginally different across alternatives in ALL areas, however it is highest under the 600-pound possession limit (Alternative 1) and lowest under the 1,200-pound possession limit (Alternative 3.1).
- Fleet level net revenue net of lease cost in ALL areas ranges from \$16.0 million in Alternative 3.1 to \$16.4 million in Alternative 1.
- Fleet level lease cost in ALL areas ranges from \$5.7 million in Alternative 1 to \$6.4 million in Alternative 3.1.
- Crew share and profit shares varies depending on lease cost sharing arrangements, but they narrowly differ across alternatives.
 - When crews bear all lease costs:
 - fleet level crew share is highest (\$4.7 million) in Alternative 1 but lowest in Alternative 3.1 (\$4.4 million)
 - fleet level owner's profit is highest (\$7.3 million) in Alternative 3.1 but lowest in Alternative 1 (\$7.0 million).
 - When crews and vessel owner share lease costs equally:
 - fleet level crew share is highest (\$7.6 million) in Alternative 3.2 but lowest in Alternative 3.1 (\$7.6 million)
 - fleet level owner's profit is highest (\$4.2 million) in Alternative 1 but lowest in Alternative 3.1 (\$4.1 million).

2. Key Findings –(INCLUDES vessels with no lease):

- Fleet level aggregated net revenues net of lease costs (**Table 130**) are marginally different across alternatives in ALL area, however it is highest in the 600-pound possession limit (Alternative 1) but lowest in the 1,200-pound possession limit (Alternative 3.1).
- Fleet level net revenue net of lease cost in ALL areas range from \$25.1 million in Alternative 3.1 to \$25.3 million in Alternative 1.
- Fleet level lease cost in ALL areas range from \$5.7 million in Alternative 1 to \$6.4 million in Alternative 3.1.
- Crew share and profit shares varies depending on lease cost sharing arrangements and they narrowly differ across alternatives.
 - When crews bear all lease costs:
 - fleet level crew share is highest (\$8.9 million) in Alternative 1 but lowest in Alternative 3.1 (\$8.7 million)
 - fleet level owner's profit is highest (\$10.2 million) in Alternative 3.1 but lowest in Alternative 1 (\$10 million).
 - When crews and vessel owner share lease costs equally:

- fleet level crew share is highest (\$11.9 million) in Alternative 3.1 but lowest in Alternative 1 (\$11.8 million)
- fleet level owner's profit is highest (\$7.1 million) in Alternative 3.2 but lowest in Alternative 2.1 (\$7.0 million).

6.6.1.8 Action 8 - Increase the Amount of Observer Compensation Available for LAGC IFQ vessels

6.6.1.8.1 Alternative 1 – No Action

With respect to direct vessel costs, Alternative 1 could be expected to have negligible economic impacts on the LAGC IFQ fleet since there would be no observer coverage, and no potential for the LAGC component to incur costs of carrying observers.

Relative to Alternatives 2 & 3, Alternative 1 could be expected to have neutral to low negative impact on the scallop resource.

6.6.1.8.2 Alternative 2 – Prorate daily compensation rate in 12-hour increments for observed LAGC IFQ trips longer than one day

Currently, LAGC IFQ vessels are allowed one day of compensation for carrying an observer regardless of the length of a trip but are required to assume the cost of having the observer on board even when a trip exceeds the one day limit. Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip is expected to reduce the risk of observer bias in the LAGC IFQ fishery.

With respect to direct vessel costs, Alternative 2 could be expected to have mixed economic impacts. The scallop Industry Funded Observer Program would be utilized so that vessels selected for monitoring/observers would be eligible to land additional scallops to offset the costs. The impacts could be mixed because the observer compensation may exceed the actual cost of an observer, which could result in slightly more profit for the vessel on that trip. Conversely, if a vessel is selected to carry an observer and there are not enough pounds available in the observer set-aside, the vessel would be responsible for paying for the cost of monitoring. This additional cost could be expected to have a negative economic impact on vessels at the trip level. The magnitude of these impacts depends on the size of the LAGC IFQ allocation, and the coverage level for the area, and the daily compensation rate which will be set by NMFS.

Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. Shell height data is used to represent size-frequencies landed by the fishery and estimate fishery selectivity in the stock assessment model. Size frequencies from assessment model (CASA) are used in the forward projecting model (SAMS). Observer data has been used to estimate LPUE in the fishery, which is a factor in determining DAS allocations. This information is used to set allocations at a level where harvest is projected to result in stock status is above an overfished condition. Over the long-term this could be expected to result in positive economic impacts.

Relative to Alternative 1, Alternative 2 could be expected to have positive economic impacts. Relative to Alternative 3, Alternative 2 could be expected to have neutral to low positive impacts because Alternative 3 would be expected to utilize more of the observer set-aside than Alternative 2 on trips that sail for over 24 hours with an observer. This reduces the chances that vessels would have to pay out of pocket (i.e. no compensation pounds) to cover an observer.

6.6.1.8.3 Alternative 3 – Allow a second day of compensation for trips over 24 hours

Currently, LAGC IFQ vessels are allowed one day of compensation for carrying an observer regardless of the length of a trip but are required to assume the cost of having the observer on board even when a trip exceeds the one day limit. Aligning the amount that vessels can be compensated when carrying an observer with the length of the trip is expected to reduce the risk of observer bias in the LAGC IFQ fishery.

With respect to direct vessel costs, Alternative 3 could be expected to have mixed economic impacts. The scallop Industry Funded Observer Program would be utilized so that vessels selected for monitoring/observers would be eligible to land additional scallops to offset the costs. The impacts could be mixed because the observer compensation may exceed the actual cost of an observer, which could result in slightly more profit for the vessel on that trip. Conversely, if a vessel is selected to carry an observer and there are not enough pounds available in the observer set-aside, the vessel would be responsible for paying for the cost of monitoring. This additional cost could be expected to have a negative economic impact on vessels at the trip level. The magnitude of these impacts depends on the size of the LAGC IFQ allocation, and the coverage level for the area, which will be set by NMFS.

Observers collect a wide variety of information that is used to support scallop management, such as shell height, signs of disease or parasites, and data on kept and discarded catch. Shell height data is used to represent size-frequencies landed by the fishery and estimate fishery selectivity in the stock assessment model. Size frequencies from assessment model (CASA) are used in the forward projecting model (SAMS). Observer data has been used to estimate LPUE in the fishery, which is a factor in determining DAS allocations. This information is used to set allocations at a level where harvest is projected to result in stock status is above an overfished condition. Over the long-term this could be expected to result in positive economic impacts.

Relative to Alternative 1, Alternative 3 could be expected to have positive economic impacts. Relative to Alternative 2, Alternative 3 could be expected to have negligible to low negative impacts because Alternative 3 would be expected to utilize more of the observer set-aside than Alternative 2 on trips that sail for over 24 hours with an observer.

6.6.1.9 Action 9 - One-way Transfer of Quota from LA with IFQ to LAGC IFQ-Only

6.6.1.9.1 Alternative 1—No Action

Alternative 1 is expected to have negligible economic impacts, since there would be no change in which vessels are harvesting the this portion of the LAGC IFQ quota (0.5% of the APL), and the overall amount of harvest is not expected to change. Relative to Alternatives 2 and 3, Alternative 1 would be expected to have low negative impacts.

6.6.1.9.2 Alternative 2—Allow temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Allowing temporary transfer of quota from LA vessels with IFQ to LAGC IFQ-only vessels could be expected to have low positive economic impacts. While there may be changes in which vessels harvest the 5.5% of the APL, allocations for the IFQ component would remain the same. This measure may lead to changes in the distribution of landings by IFQ permit holders. Although LA vessels with IFQ retains only 0.5% of the IFQ quota, that quota are often underutilized since they derive large part of fishing income from LA access allocation and open DAS. Underutilization of harvestable scallop resources is a

loss to the economy. In the other hand, the allocation can be utilized by temporary transfer of quota to the LAGC IFQ only stakeholders who can efficiently utilize the quota so as to fully utilize scallop resources to the permissible extent. That will boost income of both LA vessel with IFQ and LAGC IFQ-only permit holders. The measure leads to a win-win situation and it has a positive economic impact.

▪ **Sub-Option 1 – No change to LAGC IFQ quota accumulation caps**

The sub-option will keep the current arrangement of the LAGC IFQ quota accumulation cap at 5%. Under this sub-option, LAGC IFQ-only vessels that are already at quota accumulation maximums would not be able to increase their holdings through one-way temporary transfers of IFQ from LA vessels with IFQ. This would be a neutral economic impact to these vessels overall but slightly negative relative to Sub-Option 2. LAGC IFQ-only vessels that are not at quota accumulation caps would still be able to increase their quota holdings through temporary transfers from LA vessels with IFQ up to 5% of the LAGC IFQ-only allocation. The impacts of sub-option 1 to these vessels would be neutral overall.

▪ **Sub-Option 2 – Apply LAGC IFQ quota accumulation caps to 5.5% of the APL**

For sub-option 2, temporary one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. This would allow vessels that are at the quota accumulation cap to increase their landing in a fishing year.

Under this sub-option, LAGC IFQ-only vessels that are already at quota accumulation maximums would be able to increase their holdings through one-way temporary transfers of quota from LA vessels with IFQ or from transfers within the LAGC IFQ-only component. This would be a slightly positive economic impact to these vessels and slightly positive to Sub-Option 1 because they would be able to land additional pounds in a given year. LAGC IFQ-only vessels that are not at quota accumulation caps would still be able to increase their quota holdings through temporary transfers from LA vessels with IFQ up to 5% of the LAGC IFQ-only allocation regardless of sub-option 1 or sub-option 2, however holdings could be increased to a greater magnitude under sub-option 2. The impacts of sub-option 2 to these vessels would be neutral to slightly positive overall and slightly positive relative to sub-option 1.

6.6.1.9.3 Alternative 3—Allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Allowing permanent as well as temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only vessels could be expected to have positive economic impacts. While there may be changes in which vessels harvest the 5.5% of the APL, allocations for the IFQ component would remain the same.

Alternative 3 would expand the pool of IFQ allocation that would be available for permanent and temporary transfers to LAGC IFQ-only vessels.

Allowing LA vessels with LAGC IFQ to permanently or temporarily transfer IFQ could be expected to have positive economic impacts for those vessels both these vessels and LAGC IFQ-only vessels.

Expanding the pool of quota that is available for LAGC IFQ-only vessels through permanent transfers could be expected to have a positive impact relative to temporary transfers because it would likely incentivize investment in quota to improve efficiency of an LAGC IFQ fishing platform.

▪ **Sub-Option 1 – No change to LAGC IFQ quota accumulation caps**

For sub-option 1, there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner) of 5% of the overall fishery-wide APL. Under this sub-option, LAGC IFQ-only vessels that are already at quota accumulation maximums would not be able to

increase their holdings through one-way permanent or temporary transfers of quota from LA vessels with IFQ. This would be a neutral economic impact to these vessels overall but slightly negative relative to Sub-Option 2, which would allow quota holdings to increase above the current maximum. LAGC IFQ-only vessels that are not at quota accumulation caps would still be able to increase their quota holdings through permanent or temporary transfers from LA vessels with IFQ up to 5% of the LAGC IFQ-only allocation regardless of sub-option 1 or sub-option 2, however holdings could be increased to a greater magnitude under sub-option 2. Therefore, the impacts of sub-option 1 to these vessels would be neutral to slightly negative overall and slightly negative relative to sub-option 2.

▪ **Sub-Option 2 – Apply LAGC IFQ quota accumulation caps to 5.5% of the APL**

For sub-option 2, permanent and temporary one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. This would allow vessels that are at the quota accumulation cap to increase their landing in a fishing year.

Under this sub-option, LAGC IFQ-only vessels that are already at quota accumulation maximums would be able to increase their holdings through one-way permanent or temporary transfers of quota from LA vessels with IFQ or from transfers within the LAGC IFQ-only component. This would be a slightly positive economic impact to these vessels and slightly positive to relative to Sub-Option 1 because they would be able to land additional pounds in a given year. LAGC IFQ-only vessels that are not at quota accumulation caps would still be able to increase their quota holdings through permanent or temporary transfers from LA vessels with IFQ up to 5% of the LAGC IFQ-only allocation regardless of sub-option 1 or sub-option 2, however holdings could be increased to a greater magnitude under sub-option 2. Therefore, the impacts of sub-option 2 to these vessels would be neutral to slightly positive overall and slightly positive relative to sub-option 1.

6.6.1.10 Action 10 – Specifications and Framework Adjustment Process

6.6.1.10.1 Alternative 1 – No Action

Alternative 1 would be expected to have negligible economic impacts because there would be no change to the list of measures that may be addressed through future specifications actions or framework adjustments. This measure would not, in and of itself, have any direct economic impacts. Relative to Alternative 2, Alternative 1 could be expected to have negligible impacts.

6.6.1.10.2 Alternative 2 – Expand the list of measures that can be addressed through specifications and/or framework adjustments.

Alternative 2 would be expected to have negligible economic impacts because it would identify a list of specific issues that may be addressed through future specifications actions or framework adjustments. This measure would not, in and of itself, have any direct economic impacts. Relative to Alternative 2, Alternative 1 could be expected to have negligible impacts.

6.6.2 Social Impacts

The social effects of regulations relate to changes factors such as demographics, employment fishery dependence, safety, attitudes towards management, equity, cultural values, and the well-being of persons, families, and fishing communities (e.g., NMFS 2007; Burdge 1998). It is important to consider impacts

on the following: the fishing fleet (vessels grouped by fishery, primary gear type, and/or size); vessel owners and employees (captains and crew); dealers and processors; consumers; community cooperatives; fishing industry associations; cultural components of the community; and fishing families. While some management measures may have a short-term negative impact on some communities, this should be weighed against potential long-term benefits to all communities which can be derived from a sustainable fishery. Framework 32 further describes approaches to the analysis of impacts on human communities (Section 6.6).

6.6.2.1 Action 1 – Northern Gulf of Maine Catch Limits

Action 1 considers how the scallop biomass in the Northern Gulf of Maine should be accounted for in the legal limits of the fishery (OFL, ABC, ACL). Since the Council uses a process separate from Amendment 21 to set specifications for the Northern Gulf of Maine, the preferred alternative in Action 1 will not limit what the Council can choose as preferred other sections of Amendment 21.

6.6.2.1.1 Alternative 1 – No Action

Under No Action, the Northern Gulf of Maine ACL would continue to be specified as TAC that is only included in the OFL, not in the ABC.

The social impacts of Alternative 1 would likely be indirect. Alternative 1 is administrative (regarding the specifications process) and would have no direct impacts on the human communities, positive or negative. Any direct impacts would occur through setting specifications, to be analyzed through future actions. Specifying the NGOM TAC separately from OFL, ABC and ACL set for the rest of the stock area is an approach that has been used to manage the fishery for several years. Recent use of this approach has not resulted in significant adverse social or economic impacts (NEFMC 2020, Section 6.5.2). It has likely prevented overfishing and the stock is not overfished. However, this approach is considered temporary and continuing this approach indefinitely may result in uncertainty about the long-term management of the fishery, a low negative impact on the attitudes and beliefs of fishermen towards management and on the ability of businesses and households to plan in the long term. Thus, the indirect impacts would likely be low negative.

6.6.2.1.2 Alternative 2 – Account for the Northern Gulf of Maine as part of the Acceptable Biological Catch and Annual Catch Limits

Alternative 2 would account for the scallop biomass in the Northern Gulf of Maine as part of the legal limits in the fishery by adding biomass from the area into calculations of the OFL and ABC. Alternative 2 would move the accounting of the Northern Gulf of Maine ACL from only within the OFL to also be in the fishery-wide ACL (Figure 2). By including NGOM scallop biomass as part of the scallop OFL and ABC, the ACL and sub-ACLs for the LA and LAGC IFQ, and the LA ACT would increase.

The social impacts of Alternative 2 would likely be indirect. Alternative 2 is administrative (regarding the specifications process) and would have no direct impacts on the human communities, positive or negative. Any direct impacts would occur through setting specifications, to be analyzed through future actions. Like No Action, having the OFL and ABC include biomass in the NGOM area would be unlikely to result in significant adverse social or economic impacts and would prevent overfishing and the stock from becoming overfished. Landings from the NGOM Area have increased in recent years (Table 32). Relative to Alternative 1, Alternative 2 would provide a degree of certainty about the long-term management of the fishery, a low positive impact relative to No Action on the attitudes and beliefs of fishermen towards management and on the ability of businesses and households to plan in the long term. Thus, the indirect impacts would likely be low positive.

6.6.2.2 Action 2 – Northern Gulf of Maine Allocations

6.6.2.2.1 Alternative 1 – No Action

Under Alternative 1, LA vessels could operate inside and outside the NGOM management unit when fishing under days-at-sea (DAS) management. When the NGOM TAC is caught by LAGC vessels, the area would close to all scallop vessels, i.e., LA fishing only stops when the LAGC TAC is reached.

In the short term, the social impacts would likely be low positive. The fishery would continue to benefit from fishing in the NGOM. With no change in the TAC setting method, benefits would continue to accrue to both fishery components (LA and LAGC). LA vessels had historically fished in this area and would continue to be able to access the area using DAS if allowed through future specifications (until the LAGC TAC is reached each year).

From when the NGOM area was created in FY 2008 through FY 2017, LA vessels could fish commercially in the NGOM using a DAS until the LAGC TAC was met and the management area was closed to all federally permitted scallop vessels. However, between FY 2009 – FY 2015, there were no landings by LA vessels from the NGOM Area. LA landings were 293K lb in FY 2016 and 1M lb in FY 2017 (Figure 24). In 2018 (through Framework 29), harvest controls in the NGOM were modified so that the TAC was split between LAGC and LA components, and the LA share was dedicated to research compensation fishing. LA vessels have been active in the statistical areas encompassing NGOM 511-514, but primarily in 514 (likely north and south of the NGOM southern boundary).

In the long term, the social impacts would likely be low negative. Scallop removals could exceed the LAGC TAC if LA vessels fish DAS in the NGOM, as in the past. Exceeding TACs could lead to negative impacts on the scallop resource and compromise the long-term management goal of reaching OY. There could be negative impacts on the scallop fishery workforce and participation in and dependence on the fishery. Since Alternative 1 is administrative, impacts would be further analyzed through setting specifications in future actions.

6.6.2.2.2 Alternative 2 – Create a Northern Gulf of Maine Set-Aside to support research and a directed LAGC fishery, share additional NGOM Allocation between the NGOM Set-Aside and NGOM APL (LA and LAGC IFQ).

Alternative 2 would create a NGOM Set-Aside for the LAGC fishery in the NGOM management area. The NGOM set-aside would equal the NGOM Allocation up to a trigger. When the NGOM Allocation is below the trigger, LA vessels could not fish commercially in the NGOM Area. When the NGOM Allocation is above the trigger, the pounds above the trigger would be shared between the NGOM Set-Aside and NGOM APL. The NGOM APL would then be added to the overall APL to increase allocations for the LA and LAGC IFQ.

In the short term and long term, the social impacts would likely be positive and more positive than Alternative 1. The fishery would continue to benefit from fishing in the NGOM. Benefits would continue to accrue to both LA and LAGC, but there would be resource sharing formula to let LA vessels commercially fish in the area when biomass is above the trigger. Because remaining within catch limits is more likely under Alternative 2, there would be long-term benefits to the resource and fishery-related businesses and communities. Alternative 2 would allow for a more orderly access to the resource, with likely positive impacts on stakeholder attitudes towards management if fishing in the area becomes more predictable. This would improve long-term planning for businesses and households. Climate vulnerability assessments indicate that the scallop resource is vulnerable to climate change (e.g., Hare 2020; Rogers et al. 2019). Should a northward shift in the population distribution occur, the NGOM Area may become more a more important fishing ground and interest in fishing this area could increase. Since Alternative 2 is administrative, impacts would be further analyzed through setting specifications in future actions.

Alternative 2 would have differential impacts among ports. Gloucester is a key landing port for the vessels that would be fishing the NGOM Set-Aside, particularly the LAGC NGOM vessels, as it is near the most productive fishing grounds in this area and has the necessary shoreside infrastructure to support the fishery. However, these LAGC vessels are from homeports throughout Maine, New Hampshire and Massachusetts (Table 27). Should biomass increase substantially and become more distributed throughout the area, landings may increase in more northerly ports as well. Vessels that would qualify for fishing the NGOM APL are distributed throughout the range of the fishery; many are based out of New Bedford but occur down to North Carolina. Currently, it is worthwhile for only a small portion to make trips to the NGOM Area, and primarily by vessels based in New England, but incentives may change should the NGOM Allocation increase substantially.

Within Alternative 2, there are four options for how to divide the NGOM Allocation between the NGOM Set-Aside and the NGOM APL:

- Option 1: The NGOM Set-Aside trigger would be set at 1 million pounds. At or below this value, the NGOM Allocation would be allocated as NGOM Set-Aside. Over this value, the remaining NGOM Allocation would be shared between the NGOM APL (95%) and additional allocation for the NGOM set-aside (5%).
- Option 2: The NGOM Set-Aside trigger would be set at 600,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM set-aside. Over this value, the remaining NGOM allocation would be shared between the NGOM APL (75%) and additional allocation for the NGOM set-aside (25%), and above a Tier of 3M lb, 95% to the NGOM APL and 5% to the NGOM set-aside.
- Option 3: The NGOM set-aside trigger would be set at 500,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM set-aside. Over this value, the remaining NGOM allocation would be shared between the NGOM APL (95%) and additional allocation for the NGOM set-aside (5%).
- Option 4: the NGOM set-aside trigger would be set at 200,000 pounds. At or below this value, the NGOM allocation would be allocated as NGOM set-aside. Over this value, the remaining NGOM allocation would be shared between the NGOM APL (75%) and additional allocation for the NGOM set-aside (25%), and above a Tier of 3M lb, 95% to the NGOM APL and 5% to the NGOM set-aside.

The social impacts of each option would be positive for the scallop fishery, as benefits would continue and generally increase with biomass. However, the distribution of these benefits within the fishery would vary with the option and with the size of NGOM Allocation.

For vessels that would be fishing the NGOM Set-Aside (all LAGC vessels), Option 1 would result in the highest allocation when the NGOM Allocation is under 1M lb. (Option 4 would be the lowest) and Option 2 would be highest when the Allocation is over 3M lb (Option 3 would be the lowest; Figure 47).

For vessels that would be fishing the NGOM APL (LAGC IFQ and LA vessels), Option 4 would result in the highest allocation when the NGOM Allocation is under 1M lb. (Option 1 would be the lowest, i.e. zero) and Option 3 would be highest when the Allocation is over 3M lb (Option 2 would be the lowest; Figure 48). For reference, the NGOM TAC was about 70,000 lb in FY 2008-2017, about 135,000 lb in FY 2018 and 2019, about 206,000 lb in FY 2020, so the lower biomass scenario is more likely, at least in the near term. Although the trigger above which the LA vessels could fish in the NGOM Area varies, these vessels would still be able to fish in the open and access areas to the south, and even under the highest biomass scenarios modeled, the NGOM APL would not be high enough to allow one 18,000 trip for all vessels under any option.

6.6.2.3 Action 3 – Monitoring Directed Scallop Fishing in the Northern Gulf of Maine Management Area.

The Council is considering a range of options in Amendment 21 that would facilitate monitoring on the Northern Gulf of Maine management area.

6.6.2.3.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the scallop industry-funded observer program, and no observer call-in requirement for LAGC Category A and B vessels fishing for scallops in federal waters in the NGOM management area. Thus, these vessels would continue to fish unobserved in this area.

The social impacts of Alternative 1 would likely be negative. The fishery is not benefitting from the data that is missed by not having the LAGC Category A and B vessels observed when fishing in the NGOM management area. This may lead to low negative impacts on the scallop resource, which could result in long-term negative impacts on the size of the scallop fishery workforce and participation in the fishery. Since LA vessels would still be subject to the observer call-in requirement when fishing in this and other areas (under the Scallop IFO program), Alternative 1 could be considered inequitable by this component of the fishery and result in negative attitudes towards management.

6.6.2.3.2 Alternative 2 – Monitor directed scallop fishing in the NGOM by expanding the Scallop Industry Funded Observer program, use a portion of the NGOM TAC to offset monitoring costs.

Under Alternative 2, the observer call-in requirement would expand to all scallop vessels operating in the NGOM, including LAGC Category A and B vessels. This expansion of the call-in requirement would facilitate observer coverage in the NGOM management area.

The social impacts of Alternative 2 would likely be positive. Having the data collected by the Industry-Funded Observer program would improve catch accounting to help ensure improved stability and reliability of fish stock assessments (scallop and bycatch species) and the allocations derived therefrom, though inaccurate catch alone is unlikely to be the sole, or even the primary, cause of such degraded assessments. Scallop fishermen, dealers and consumers reap the benefits of stable, reliable catch.

Relative to Alternative 1, the social impacts are likely positive. Alternative 2 would establish program to share the costs of monitoring using an approach that has been considered an equitable way to monitor the rest of the fishery. Assuming costs associated with implementing increased at-sea monitoring are passed on to crew in the form of decreased compensation, starting to monitor the LAGC vessels fishing in the NGOM management area may result in dissatisfaction among the crew of these vessels, but this approach would likely be seen as more equitable by the rest of the fishery relative to Alternative 1. The affected LAGC vessels have been primarily landing in Gloucester, but are homeported in Massachusetts, New Hampshire, and Maine (Table 34).

The social impacts of Alternative 2 would be more positive than Alternative 3. Monitoring the entire scallop fishery under one program would be simpler to administer and easier for fishermen to understand and adapt to than having a two program under Alternative 3. Having the entire fishery monitored using industry-funding could be considered more equitable than having a portion monitored with Federal funds.

6.6.2.3.3 Alternative 3 - Monitor directed LAGC scallop fishing in the NGOM with observers from the NEFOP program.

Under Alternative 3, the NEFOP program would be used to observe directed LAGC scallop trips in federal waters in the Northern Gulf of Maine management area. This would expand the number of

observer programs used to monitor the scallop fishery (NEFOP for the NGOM and Scallop IFO for the rest of the fishery).

The social impacts of Alternative 3 would likely be positive but less positive than Alternative 2. Like Alternative 2, increasing catch data collection in the NGOM Area would lead to positive fishery benefits. While industry would not have to pay for the observers under Alternative 3, having two data collection programs would be harder to administer, understand, and adapt to, and would be counter to trying to harmonize the long-term management of the fishery, particularly for the LAGC vessels that fish in and out of the NGOM. There may be negative impacts on the attitudes and beliefs of fishery participant if the observers for LAGC vessels fishing in the NGOM Area are federally funded, while the LA vessels in the NGOM area and all vessels fishing elsewhere are not.

6.6.2.4 Action 4 – Support Scallop Research using scalloping from the Northern Gulf of Maine

Action 4 considers whether a portion of the NGOM set-aside should be added to the 1.25-million-pound Scallop RSA and(or) made available for RSA compensation fishing. Figure 12 shows where the research pounds would be accounted for within the NGOM Allocation.

6.6.2.4.1 Alternative 1 – No Action

There would be no change to the scallop RSA program. The Council could recommend that compensation fishing occur in the NGOM, but removals would not be accounted for in the NGOM allocation.

The social impacts of Alternative 1 would likely be neutral to low negative. RSA compensation fishing could continue in the NGOM Area, but since realized fishing mortality rates could be higher than the target rates, this could lead to a degradation of the scallop resource to the long-term detriment of the fishery. There may also be negative impacts on the attitudes and beliefs among fishery participants if the fishery in the NGOM benefits from compensation fishing that is accounted for within the RSA compensation fishing pool available for the wider fishery.

6.6.2.4.2 Alternative 2 - Allocate a portion of the NGOM Allocation to increase the overall Scallop RSA and support Scallop RSA compensation fishing.

Alternative 2 would allocate a portion of the NGOM Allocation to support RSA compensation fishing in the NGOM management area and increase the overall number of pounds available for the scallop RSA program. The total amount of RSA available would be the sum of the NGOM research set-aside and the existing 1.25 million pound set-aside.

The social impacts of Alternative 2 would likely be low positive and more positive than Alternative 1. RSA compensation fishing could continue in the NGOM Area, and since realized fishing mortality rates would be accounted for within the NGOM Allocation, this would lead to more sustainable use of the scallop resource to the long-term benefit of the fishery. There may also be positive impacts on the attitudes and beliefs among fishery participants if the fishery in the NGOM compensation fishing is accounted for within the NGOM Allocation rather than within RSA compensation fishing pool available for the wider fishery as there could be a greater sense of fairness.

Within Alternative 2, there are four options for the portion or amount of NGOM Allocation that would be set aside for the RSA:

- Option 1: Allocate 5% of the NGOM Allocation as a research TAC.
- Option 2: Allocate 10% of the NGOM Allocation as a research TAC.
- Option 3: Allocate 15% of the NGOM Allocation to as a research TAC.
- Option 4: Allocate the first 50,000 pounds of the NGOM set-aside to as a research TAC.

Table 132 – Example distributions between RSA and the commercial fishery under the four options at different NGOM Allocation levels.

	Hypothetical NGOM Allocation							
	100,000 lb		500,000 lb		1,000,000 lb		6,000,000 lb	
Option	For RSA	Remainder	For RSA	Remainder	For RSA	Remainder	For RSA	Remainder
Option 1 = 5% of Allocation	5,000	95,000	25,000	475,000	50,000	950,000	300,000	5,700,000
Option 2 = 10% of Allocation	10,000	90,000	50,000	450,000	100,000	900,000	600,000	5,400,000
Option 3 – 15% of Allocation	15,000	85,000	150,000	350,000	150,000	850,000	900,000	5,100,000
Option 4 – 50,000 lb of Set Aside	50,000	50,000	50,000	450,000	50,000	950,000	50,000	5,950,000

The relative social impacts of these options would depend on whether the size of the RSA contribution would be sufficient to fund a NGOM survey, about 50,000 lb, and potentially additional research in the NGOM area. If not, the necessary poundage would come from the current RSA program. This may cause negative attitudes and beliefs within the fishery and a sense of unfairness if pounds to funds NGOM research need to be harvested outside the NGOM Area. Table 132 provides hypothetical examples of NGOM Allocations and the RSA pounds that would be available under each alternative. For reference, the NGOM TAC was about 70,000 lb in FY 2008-2017, about 135,000 lb in FY 2018 and 2019, about 206,000 lb in FY 2020.

At least in the near term, there would likely be insufficient scallops to fund a NGOM RSA survey under Option 1. If the NGOM Allocation were 100,000 lb, the RSA contribution would be only 5,000 lb or 10% of the necessary pounds. (Table 132). A 500,000 Allocation would provide about 50% of the catch needed. Options 2 and 3 would also provide insufficient pounds for a survey if the Allocation were 100,000 lb. As Option 4 would set the RSA pounds at 50,000 regardless of the size of the Allocation, there would be sufficient pounds for a survey under all Allocation scenarios (at or above 50,000 lb.). However, under Option 4, there would never be pounds available to fund additional research.

For Options 1-3, the pounds would be accounted for within the NGOM Allocation, rather than just the NGOM Set-aside. Since the entire fishery active in the NGOM Area would benefit from research outcomes, particularly of a NGOM survey, these options may be seen as more positive impacts on the attitudes and beliefs of fishery participants, since all fishery components would share the poundage deduction, rather than just those fishing under the NGOM Set-Aside.

Another consideration is the poundage available for commercial fishing after the RSA deduction. Option 1 would provide the most poundage for commercial fishing up to a NGOM Allocation of 1,000,000 lb, above which Option 4 provides the most (Table 132). Under a relatively low NGOM Allocation of 100,000 lb, Option 4 would provide the least poundage for commercial fishing.

In summary, each option would likely have positive social impacts, but a number of factors make it difficult to conclude which would be most or least positive.

6.6.2.5 Action 5 – Northern Gulf of Maine Fishing Season

In this action, the Council can select multiple alternatives as preferred, so the impacts are compared just relative to No Action.

6.6.2.5.1 Alternative 1 – No Action

Under No Action, there would be no changes to measures governing how vessels can fish allocations in the NGOM. The NGOM management area would remain open year-round, unless an allocation is reached, and the area closes to a component. There would be no limits on the number of days that a vessel could land their trip in a calendar week, and there would be no restrictions on the number of sailings per day.

The social impacts of Alternative 1 would likely be low positive. Continuing current measures would provide a sense of stability and predictability in fishing operations. The size of the fishery workforce and vessel dependence would be unchanged. Since FY 2017, the NGOM fishery has only lasted between 23 and 32 days each year. This is not necessarily a negative scenario if fishery participants can harvest in an efficient manner, but other options in Action 5 could slow the rate of harvest, potentially allowing more vessels to participate.

6.6.2.5.2 Alternative 2 - Limit the number of landings per LAGC vessel per week in the Northern Gulf of Maine Management Area

Under Alternative 2, LAGC vessels would be prohibited from landing scallops more than five (5) times per calendar week (Monday – Sunday) from declared scallop trips in the Northern Gulf of Maine Management area.

The social impacts of Alternative 2 would likely be low positive, but less positive than Alternative 1. The LAGC fishery would continue to benefit from fishing in the NGOM Area, but fishing would become less efficient and flexible. The number of trips in the NGOM per vessel per week vessels has generally increased since 2010, when the median was one trip per week, increasing to a median of four trips in FY 2019 (Figure 20), so Alternative 2 would constrain fishing operations for vessels fishing in the area.

6.6.2.5.3 Alternative 3 – Limit vessels to one sailing per day

Under Alternative 3, LAGC vessels would be prohibited from sailing multiple times on one calendar day.

The social impacts of Alternative 3 would likely be low positive, but less positive than Alternative 1. The LAGC fishery would continue to benefit from fishing in the NGOM Area, but fishing would become less efficient and flexible. The number of LAGC vessels with more than one sailing per day has generally increased since 2010, from zero between FY 2010-2013, up to six or seven in FY 2018 and 2019 (Table 19), so Alternative 2 would constrain fishing operations for vessels fishing in the area. Alternative 3 may

slow down the utilization of the NGOM Set-Aside, and create fishing opportunities later in the year, but it may be less efficient to do so.

6.6.2.5.4 Alternative 4 - Establish a seasonal closure of the NGOM management area from September 1 – November 31 annually.

Under Alternative 4, there would be a seasonal closure of the NGOM management area, September 1 to November 31. It would apply to all scallop fishing in federal waters in the NGOM management area, including RSA compensation fishing.

The social impacts of Alternative 4 would likely be minor to low positive. There is typically little scallop fishing this time of year in the NGOM Area and there is some potential to protect spawning with this closure, which would have long-term positive impacts on the scallop fishery. Thus, there would likely be neutral to positive impacts on the size of the scallop fishery workforce and dependence on the fishery.

6.6.2.6 Action 6 – Cumulative Maximum Dredge Width that can be fished in the Northern Gulf of Maine Management Area

6.6.2.6.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the Gulf of Maine dredge exemption program, and no additional restrictions on the combined maximum dredge width that could be fished in the NGOM. All limited access general category vessels and Limited Access vessels fishing in the small dredge program could use a combined dredge width of up to 10.5 ft in the Northern Gulf of Maine management area. Full-time LA vessels fishing in the NGOM could use a combined dredge width of up to 31 ft.

The social impacts of Alternative 1 would likely be negligible to low positive. The Full-Time LA vessels have historically fished two 15' dredges in this area and this would provide some stability for their fishing operations and ability to plan. The 10.5 ft restriction for LAGC vessels has disincentivized vessels from distant ports (to the south) from traveling to the NGOM Area to fish, limiting an influx of LAGC IFQ effort in the area. There would be little impact on the historical participation and size of the fishery in this area.

6.6.2.6.2 Alternative 2 – Limit the combined dredge width of all federal permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft.

Alternative 2 would limit the combined dredge width of all federally permitted scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 10.5 ft.

The social impacts of Alternative 2 would likely be low negative and particularly negative for Full-Time LA vessels relative to Alternative 1. These vessels typically fish a double dredge (two 15 ft dredges) and would need to switch to a single 10.5 ft dredge, potentially needing to purchase a new smaller dredge. The LPUE of the Full-time LA vessels (double dredge) has been higher than the small dredge vessels in the NGOM Area. The LA vessels would either need to make longer trips to achieve similar catches or may decide it is too inefficient to fish in the area. This would disincentivize their fishing in the NGOM Area, reducing the historical participation and dependence on this area. There may be reduced user or gear conflicts in the NGOM areas and increased crowding in other areas. There may be negative impacts on the attitudes and beliefs of fishermen towards management may be based on perceptions of differing levels of impact to specific gear types or fisheries. This could cause resentment among the subset of fishermen constrained.

6.6.2.6.3 Alternative 3 - Limit the combined dredge width of Full Time Limited Access Scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft

Alternative 3 would limit the combined dredge width of full-time limited access scallop vessels operating in the Northern Gulf of Maine management area to a maximum of 15.5 ft. All LAGC vessels and LA vessels fishing in the small dredge program would continue to fish a maximum combined dredge width of 10.5 feet in this area.

The social impacts of Alternative 3 would likely be low negative particularly for LA vessels relative to Alternative 1, but less negative than Alternative 2. The LA would not need to purchase a new smaller dredge but would only be able to fish with a single 15 ft dredge. Like under Alternative 2, the LA vessels would either need to make longer trips to achieve similar catches or may decide it is too inefficient to fish in the area. This would disincentivize their fishing in the NGOM Area, reducing the historical participation and dependence on this area. There may be reduced user or gear conflicts in the NGOM areas and increased crowding in other areas. There may be negative impacts on the attitudes and beliefs of fishermen towards management may be based on perceptions of differing levels of impact to specific gear types or fisheries. This could cause resentment among the subset of fishermen constrained.

6.6.2.7 Action 7 – Increase the LAGC IFQ Possession Limit

6.6.2.7.1 Alternative 1 – No Action

This alternative would maintain the current LAGC IFQ possession limit of 600 pounds for open and access area trips.

The social impacts of Alternative 1 would likely be low negative. The original 400-pound possession limit was increased to 600 pounds in 2011 (Amendment 15) to account for increased operating costs while maintaining the small, dayboat nature of the LAGC IFQ component. The IFQ program review in 2017 concluded that this has occurred (NEFMC 2017). Thus, this measure has helped maintain the historical participation in this fishery but gains in safety or efficiency could be realized by the action alternatives.

6.6.2.7.2 Alternative 2 – Increase the LAGC IFQ possession limit to 800 pounds

Alternative 2 would increase the LAGC IFQ possession limit to 800 pounds in the areas specified in Sub-Option 1 and Sub-Option 2.

The social impacts of Alternative 2 would likely be low positive relative to Alternative 1. Increasing the possession limit would offer the LAGC IFQ vessels, if they have the capacity to increase possession to 800 lb (many already do), more flexibility in deciding where and when to fish, which could potentially improve safety in this component of the fishery. Fishing farther offshore leads to increased trip time but increasing the possession limit can make these trips more feasible and potentially reduce the number of trips necessary to harvest quotas. The states with the highest percent of LAGC IFQ trips reaching the 600 lb limit are Maryland and Virginia, so these states may benefit the most from this alternative. If Alternative 2 increases demand for leased quota, leasing prices could increase, which would have the greatest negative impact on vessels that rely on leasing in quota. Since there is no baseline restriction, the IFQ permit could be put onto a larger vessel. If so, this may change the historical flavor of this fishery, composed of smaller vessels. By saving trip time, vessels could diversify and participate in other fisheries, which would have positive social impacts for these vessels, but may have impacts on non-IFQ vessels that are already active in those fisheries. The impacts of additional LAGC IFQ participation in other fisheries is likely to vary based on the management system in place for the species/stock. The social impacts would be less positive than Alternative 3 which would provide more flexibility.

Alternative 2 includes sub-options for increasing the possession limit for both open and access area trips (sub-Option 1) or only in the access areas (sub-Option 2). The social impacts would likely be more positive under sub-Option 1 relative to sub-Option 2, as sub-Option 1 would allow more flexibility. However, many of the LAGC IFQ vessels fish primarily in access areas, so the relative benefits of sub-Option 1 may be minor.

6.6.2.7.3 Alternative 3—Increase the LAGC IFQ possession limit to 1,200 pounds per trip

This alternative would increase the LAGC IFQ possession limit to 1,200 pounds for both open and access area trips (Sub-Option 1) or for access area trips only (Sub-Option 2).

The social impacts of Alternative 3 would likely be low positive relative to Alternative 1. Like with Alternative 2, increasing the possession limit would offer the LAGC IFQ vessels, if they have the capacity to increase possession to 1,200 lb (many already do), more flexibility in deciding where and when to fish, which could potentially improve safety in this component of the fishery. Fishing farther offshore leads to increased trip time but increasing the possession limit can make these trips more feasible and potentially reduce the number of trips necessary to harvest quotas. The states with the highest percent of LAGC IFQ trips reaching the 600 lb limit are Maryland and Virginia, so these states may benefit the most from this alternative. If Alternative 3 increases demand for leased quota, leasing prices could increase, which would have the greatest negative impact on vessels that rely on leasing in quota. Since there is no baseline restriction, the IFQ permit could be put onto a larger vessel. If so, this may change the historical flavor of this fishery, composed of smaller vessels. By saving trip time, vessels could diversify and participate in other fisheries, which would have positive social impacts for these vessels, but may have impacts on non-IFQ vessels that are already active in those fisheries. The impacts of additional LAGC IFQ participation in other fisheries is likely to vary based on the management system in place for the species/stock. The social impacts would be more positive than Alternative 2 which would provide less flexibility.

Alternative 3 includes sub-options for increasing the possession limit for both open and access area trips (sub-Option 1) or only in the access areas (sub-Option 2). The social impacts would likely be more positive under sub-Option 1 relative to sub-Option 2, as sub-Option 1 would allow more flexibility. However, many of the LAGC IFQ vessels fish primarily in access areas, so the relative benefits of sub-Option 1 may be minor.

6.6.2.8 Action 8 - Increase the Amount of Observer Compensation Available for LAGC IFQ vessels

Action 7 considers adjusting the amount of observer compensation that LAGC IFQ vessels are eligible to receive when carrying an observer. Alternatives 2 and Alternative 3 would allow for additional compensation for observed IFQ trips to account for potentially longer trip times should the Council elect to increase the LAGC IFQ possession limit through this action.

6.6.2.8.1 Alternative 1 – No Action

Under No Action, there would be no adjustment to the compensation to LAGC IFQ vessels when carrying an observer on board, so these vessels would be compensated for one 24-hour day, regardless of the length of the trip.

The social impacts of Alternative 1 would likely be low negative. Vessels would be limited to one day of observer compensation, even if trip length increases. This could disincentivize taking longer trips when observed. This could have negative impacts on the attitudes and beliefs of fishermen if they perceive this regulation as unfair.

6.6.2.8.2 Alternative 2 – Prorate daily compensation rate in 12-hour increments for observed LAGC IFQ trips longer than one day

Under Alternative 2, LAGC IFQ vessels would be eligible for additional compensation when carrying an observer on board and fishing trips longer than one 24-hour day. The daily compensation rate, as determined by NOAA fisheries, would be prorated at 12-hour increments for trips exceeding 24 hours. The amount of compensation a vessel could receive on one trip would be capped at two days (48 hours).

The social impacts of Alternative 2 would likely be low positive relative to Alternative 1 and neutral to low positive relative to Alternative 3. Observer compensation would more closely match trip length, which would incentivize taking longer trips when observed. This could have positive impacts on the attitudes and beliefs of fishermen if they perceive this regulation as fairer. Relative to Alternative 3, Alternative 2 may reduce incentives to lengthen trip just to receive more compensation, potentially conserving the use of the observer set-aside.

6.6.2.8.3 Alternative 3 – Allow a second day of compensation for trips over 24 hours

Under Alternative 3, LAGC IFQ vessels would be eligible for an additional day of compensation when carrying an observer on board and fishing trips longer than one 24-hour day. This means that LAGC IFQ vessels selected to carry an observer would be compensated for a maximum of two days should trip length exceed one 24-hour day and any trips that exceed two days would not receive any additional compensation regardless of trip length.

The social impacts of Alternative 3 would likely be low positive relative to Alternative 1 and neutral to low negative relative to Alternative 2. Observer compensation would more closely match trip length, which would incentivize taking longer trips when observed. This could have positive impacts on the attitudes and beliefs of fishermen if they perceive this regulation as fairer. Relative to Alternative 2, Alternative 3 may incentivize lengthening trips just to receive more compensation and potentially waste the use of the observer set-aside.

6.6.2.9 Action 9 - One-way Transfer of Quota from LA with IFQ to LAGC IFQ-Only

6.6.2.9.1 Alternative 1—No Action

Under No Action, there would be no change to the current prohibition on quota transfers by Limited Access vessels with IFQ.

The social impacts of Alternative 1 would likely be mixed. Continuing to disallow quota transfers would not provide flexibility for the fishery to use quota as may be more economically efficient when the allocations to individual vessels are too small to make quota use profitable. If No Action prevent full use of the quota, this could lead to negative impacts on the size of the fishery workforce and the attitudes and beliefs of fishermen. On the other hand, the lack of transferability has tended to slow down quota consolidation, thereby sustaining opportunities to participate in the fishery for more participants than market efficiency alone might enable (Olson 2011).

6.6.2.9.2 Alternative 2—Allow temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Under Alternative 2, temporary transfers (i.e., annual leases) of quota from LA vessels with IFQ to LAGC IFQ-only permits would be allowed up to the existing accumulation limits.

The social impacts of Alternative 2 would likely be mixed. For quota lessors and lessees, impacts would be more positive relative to Alternative 1 but less positive than Alternative 3 by allowing more flexibility for business operations and for the use quota to become more economically efficient. As more fully

explained in Amendment 15 (Section 5.5), gains in efficiency and profitability accrue primarily to permit holders and vessel owners remaining in a fishery. Leasing is a form of consolidation, the negative social consequences of which are more apparent across a fishery and the wider fishing communities. Smaller entities without a fleet of vessels or vertically integrated business tend to be at a disadvantage in markets for leasing quota (Bromley 2005: 224; Copes & Charles 2004: 176). Those who are better able to take advantage of measures like leasing are then increasingly able to exert control in various markets, such as leasing quota, hiring crew, or even affecting prices that fishermen receive for their product. These kinds of changes, in turn, affect the structure of communities—through changing relations between people and shifts in dominant values—and affect the viability of fishing communities as some are disproportionately impacted by geographic shifts in fishing businesses. By allowing only annual leases by IFQ vessels from LA vessels with IFQ, Alternative 2 would stem some of the pressures towards consolidation.

- **Option 1 – No change to the pool of quota that LAGC IFQ accumulation caps apply to, 5% of APL**

Under Option 1, there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). They would continue to be set based on the LAGC IFQ-only share of annual quota allocations (i.e. 5% of APL).

The social impacts of Option 1 would likely be mixed. Option 1 would not allow transfers to vessels and owners whose holdings are at the current accumulation limit. For quota lessees, low negative impacts are likely relative to Option 2, as they would be prevented from increasing their holdings. Impacts may be less negative for lessors if they can find alternate fishery participants to lease to. Option 1 would allow for a greater number of vessels and owners to participate in the fishery and to a greater degree, potentially sustaining employment fishery wide. Maintaining existing accumulation caps that were designed to prevent excessive shares could result in long-term positive impacts for the fishery.

- **Option 2 – Increase the pool of quota that LAGC IFQ quota accumulation caps apply to, 5.5% of APL**

Under Option 2, quota accumulation caps in the LAGC IFQ fishery would increase by being set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. This option would not change the percentages associated with quota accumulation caps (i.e. 2.5% per permit, 5% per owner); however, quota caps would apply to annual allocations of IFQ as a whole (i.e. 5.5% of APL) instead of to allocations to the LAGC IFQ-only component (5% of APL).

The social impacts of Option 2 would likely be mixed. For quota lessees, low positive impacts are likely relative to Option 1, as they would be allowed to increase their holdings. Lessors would have more flexibility in finding lessees if the accumulation limit increases. Option 2 may lead to fewer vessels and owners participating in the fishery, potentially decreasing the number of fishermen employed. Increasing accumulation caps that were originally designed to prevent excessive shares could result in long-term negative impacts for the fishery.

6.6.2.9.3 Alternative 3—Allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only

Alternative 3 would allow permanent and temporary transfers of quota from LA vessels with IFQ to LAGC IFQ-only permits.

The social impacts of Alternative 3 would likely be mixed. For quota lessors and lessees, impacts would be more positive relative to Alternatives 1 and 2 by allowing more flexibility for business operations and for the use quota to become more economically efficient. As with Alternative 2, Alternative 3 would lead to consolidation and gains in efficiency and profitability would likely accrue primarily to permit holders

and vessel owners remaining in a fishery. By allowing permanent transfers, Alternative 3 could result in greater consolidation than under Alternative 2.

- **Option 1 – No change to the pool of quota that LAGC IFQ accumulation caps apply to, 5% of APL**

Under Option 1, temporary and permanent one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and there would be no change to the existing quota accumulation caps in the LAGC IFQ fishery (i.e. 2.5% per permit, 5% per owner). In other words, quota accumulation caps would continue to be set based on the LAGC IFQ-only share of annual quota allocations (i.e. 5% of APL), regardless of any additional quota that is permanently or temporarily transferred in to the LAGC IFQ-only component from LA vessels with IFQ. This option does not account for the potentially increased pool of quota that may be available to LAGC IFQ-only permits through one-way temporary transfers from LA vessels with IFQ.

The social impacts of Option 1 would likely be mixed. Option 1 would not allow transfers to vessels and owners whose holdings are at the current accumulation limit. For those transferring in quota (e.g., lessees, sellers), low negative impacts are likely relative to Option 2, as they would be prevented from increasing their holdings. Impacts may be less negative for those transferring out quota (e.g., lessors, buyers) if they can find alternate fishery participants to lease to. Option 1 would allow for a greater number of vessels and owners to participate in the fishery and to a greater degree, potentially sustaining employment fishery wide. Maintaining existing accumulation caps that were designed to prevent excessive shares could result in long-term positive impacts for the fishery.

- **Option 2 – Increase the pool of quota that LAGC IFQ accumulation caps apply to, 5.5% of APL**

Under Option 2, temporary and permanent one-way transfers of quota from LA with IFQ to LAGC IFQ-only would be allowed and quota accumulation caps in the LAGC IFQ fishery would be set based on the entire pool of quota that could be available to LAGC IFQ-only permits through one-way transfers from LA vessels with IFQ. This option would not change the percentages associated with quota accumulation caps (i.e. 2.5% per permit, 5% per owner); however, quota caps would consider annual allocations of IFQ as a whole (i.e. 5.5% of APL) instead of to allocations to the LAGC IFQ-only component (5% of APL).

The social impacts of Option 2 would likely be mixed. For those transferring in quota (e.g., lessees, buyers), low positive impacts are likely relative to Option 1, as they would be allowed to increase their holdings. Those transferring out quota (e.g., lessors, buyers) would have more flexibility in finding and entity to transfer quota to if the accumulation limit increases. Option 2 may lead to fewer vessels and owners participating in the fishery, potentially decreasing the number of fishermen employed. Increasing accumulation caps that were originally designed to prevent excessive shares could result in long-term negative impacts for the fishery.

6.6.2.10 Action 10 – Specifications and Framework Adjustment Process

6.6.2.10.1 Alternative 1 – No Action

Under No Action, there would be no change to the list of measures that can be addressed through a framework adjustment action.

The social impacts of No Action would likely be indirect and negligible. Alternative 1 is administrative and would have no direct impacts on the human communities, positive or negative.

6.6.2.10.2 Alternative 2 – Expand the list of measures that can be addressed through specifications and/or framework adjustments

Under Alternative 2, the Council would expand the list of specific issues that may be addressed through future specifications actions or framework adjustments.

The social impacts of Alternative 2 would likely be indirect. Alternative 2 is administrative and would have no direct impacts on the human communities, positive or negative. Relative to No Action, allowing modification through framework actions would provide more flexibility for management to adjust to future developments and needs relative to No Action. Making adjustment possible through a framework would be a simpler process than through an amendment, potentially improving the attitudes, beliefs, and values of stakeholders of the management process. Thus, the indirect impacts would likely be low positive.

DRAFT

7.0 LITERATURE CITED

- Clay P.M., L.L. Colburn, J.A. Olson, P. Pinto da Silva, S.L. Smith, A. Westwood & J. Ekstrom (2007). Community Profiles for the Northeast U.S. Fisheries. Woods Hole, MA: U.S. Department of Commerce;
<http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html>.
- GARFO Greater Atlantic Region Permit Data. Gloucester, MA: NMFS Greater Atlantic Regional Fisheries Office;
<https://www.greateratlantic.fisheries.noaa.gov/aps/permits/data/index.html>.
- Hart D.R. & A.S. Chute (2004). *Essential Fish Habitat Source Document: Sea Scallop, *Placopecten magellanicus*, Life History and Habitat Characteristics* 2nd ed. Woods Hole, MA: U.S. Department of Commerce. NEFSC Technical Memorandum NE-198. p.
- Jepson M. & L.L. Colburn (2013). *Development of Social Indicators of Fishing Community Vulnerability and Resilience in the U.S. Southeast and Northeast Regions*. Silver Spring, MD: U.S. Department of Commerce. NOAA Tech. Memo. NMFS-F/SPO-129. 64 p.
- NEFMC (2004). *Amendment 11 to the Atlantic Sea Scallop Fishery Management Plan with a Supplemental Environmental Impact Statement, Regulatory Impact Review, and Regulatory Flexibility Analysis*. Newburyport, MA: New England Fishery Management Council in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council. 1113 p.
- NEFMC (2010). *Amendment 15 to the Scallop Fishery Management Plan including a Final Environmental Impact Statement*. Newburyport, MA: New England Fishery Management Council in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council. 516 p.
- NEFMC (2017). *Limited Access General Category (LAGC) IFQ Fishery Program Review 2010 - 2015 (LAGC IFQ REPORT)*. Newburyport, MA: NEFM Council. 173 p.
- NEFSC Social Sciences Branch. Woods Hole, MA: NMFS Northeast Fisheries Science Center;
<http://www.nefsc.noaa.gov/read/socialsci/index.html>.
- NEFSC (2018). *65th Northeast Regional Stock Assessment Workshop (65th SAW) Assessment Summary Report*. Woods Hole, MA: USDo Commerce. NEFSC Reference Document 18-11. 659 p.
- NROC Northeast Ocean Data: Northeast Regional Ocean Council;
<https://www.northeastoceandata.org/>.

U.S. Census 2012-2016 American Community Survey;
<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

U.S. Census 2013-2017 American Community Survey;
<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

DRAFT