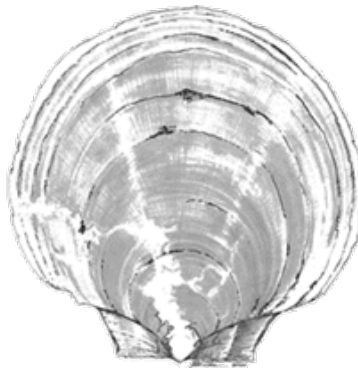


Scallop Fishery Management Plan

Framework Adjustment 32

Including an Environmental Assessment and
Regulatory Flexibility Analysis



Final-Submission

March 6, 2020

Prepared by the
New England Fishery Management Council

In consultation with the
National Marine Fisheries Service



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FRAMEWORK ADJUSTMENT 32 TO THE ATLANTIC SEA SCALLOP FISHERY MANAGEMENT PLAN

Proposed Action: Propose updated fishery specifications for FY 2020 and FY 2021(default) with corresponding management measures, and manage removals from the NGOM management area.

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Abstract: The New England Fishery Management Council, in consultation with NOAA's National Marine Fisheries Service, has prepared Framework Adjustment 32 to the Atlantic Sea Scallop Fishery Management Plan, which includes a final environmental assessment that presents the range of alternatives to achieve the goals and objectives of the action. The proposed action focuses on setting scallop fishery specifications for fishing years 2020 and 2021 (default). The document describes the affected environment and valued ecosystem components and analyzes the impacts of the alternatives on both. It addresses the requirements of the National Environmental Policy Act, the Magnuson Stevens Fishery Conservation and Management Act, the Regulatory Flexibility Act, and other applicable laws.

1.0 EXECUTIVE SUMMARY

Framework 32 (FW32) is intended to set specifications and to adjust management measures for the Atlantic Sea Scallop fishery to achieve the objectives of the fishery management plan (FMP). This action is needed to prevent overfishing and improve yield-per-recruit from the fishery, and to manage total removals from the Northern Gulf of Maine management area. The Council considered a range of alternatives to address the purpose and need of this action. A summary of the alternatives considered, and the rationale for the Council preferred alternatives are summarized in Table 1 (the preferred alternatives are in bold).

The Council selected Alternative 2, updated overfishing limit (OFL) and ABC for FY 2020 and FY 2021 (default) as *preferred*.

The Council developed Northern Gulf of Maine (NGOM) management measures to track fishing effort and cap landings by all components from the NGOM management area. These measures include a two-year closure within the management area to protect scallop recruitment, and updated total allowable catch (TAC) for FY 2020 and FY 2021 (default).

A closure option for the portion of Stellwagen Bank within the NGOM management area was developed to improve the yield-per-recruit of an incoming year class, while providing some access to larger, older scallops that were also observed in the 2019 surveys. The Council's preferred alternative (Alternative 2 in Section 4.2.1) would close roughly 71 mi² (183 km²) of the NGOM management unit to directed scallop fishing for two years, with the expectation that this closure would be revisited in 2020 to confirm that it is protecting small scallops and improving yield-per-recruit.

The Council's *preferred alternative* (Alternative 2, Sub-Option 2 in Section 4.2.2.2) would set the overall NGOM TAC at 350,000 pounds in FY 2020, and 265,000 pounds in FY 2021 (default). The Limited Access General Category share of the TAC would be set at 210,000 pounds for FY 2020, and 167,500 pounds for FY 2021. The LA share of the TAC would be set at 140,000 pounds for FY 2020, and 97,500 pounds for 2021. The LA share of the NGOM TAC would be available only for research-set-aside (RSA) compensation fishing. Any LA or LAGC vessels that are awarded NGOM RSA compensation pounds would be required to declare into the area and fish exclusively within the NGOM management area.

The Council developed a range of fishery specifications for 2020 and default measures for 2021 for both limited access and limited access general category vessels, and selected Alternative 3 with Sub-Option 2 (Section 4.3.1.3.2) as the *preferred alternative*. The possession limit for all access areas open to the fishery under this scenario would be set to 18,000 pounds. The *preferred alternative* would allocate a total of six access area trips. Four would be 18,000-pound allocations, along with two "half trips" (i.e. 9,000-pound allocations). Access area allocations under the *preferred alternative* would be: The Mid-Atlantic Access Area (2 FT LA trips), Closed Area II Access Area (1 FT LA trip), Closed Area I Access Area (1/2 FT LA FLEX trip), the Nantucket Lightship North Access Area (1/2 FT LA trips), and the Nantucket Lightship South Deep Access Area (1 FT LA trip). Part or all of the flex trip allocation (9,000 pounds) could be fished within Closed Area I or the Mid-Atlantic Access Area. This option would allow LA vessels to broadly distribute effort in the event that Closed Area I biomass projections are overly optimistic. Part-time LA access area allocations would be set at a total of 36,000 pounds per vessel. The part-time LA trip limit would be 12,000 pounds, and part-time LA vessels would receive one (1) Closed Area II trip, and two (2) Mid-Atlantic Access Area trip. The *preferred alternative* would set LA DAS allocations at an open area fishing mortality rate of $F=0.33$. This open area F rate corresponds to 24 DAS for full-time LA vessels in FY 2020 and 9.6 DAS for part-time vessels. The total landings associated with the *preferred alternative* are projected to be roughly 52 million pounds. The observer set aside would be around 1 million pounds, the research set-aside (RSA) would be at 1.25 million pounds, and landings from incidental limited access permits would be estimated at 50,000 pounds. The annual projected landings (APL) is calculated by reducing the total landings by set-asides and incidental removals. The

APL is then split between the LA (94.5%) and the LAGC IFQ (5.5%) components. Annual projected landings for FY 2020 are estimated to be approximately 49.3 million pounds, with LA harvest around 46.6 million pounds, and LAGC IFQ set at roughly 2.7 million pounds.

This action also includes default measures for FY 2021. These default measures were developed to be in place only until a subsequent action implements updated allocations for FY 2021. Default measures for full-time limited access vessels set DAS at 75% of the DAS allocation for 2020 (18 DAS), and allocate one (1) 18,000-pound access area trip to the Mid-Atlantic Access Area. Part-time LA vessels would be allocated one (1) 7,200-pound access area trip to the Mid-Atlantic Access Area. The LAGC IFQ default allocation for FY 2021 would be set at 75% of the quota allocated for the 2020 fishing year and the LAGC IFQ component would receive 571 access area trips to the Mid-Atlantic Access Area.

The Council considered multiple options to address access area trip exchanges. Access area trip allocations were recommended as either full trips (18,000 pounds) or half trips (9,000 pounds). Half trips (9,000 pounds) were recommended for two separate areas that did not have enough exploitable biomass to support removals of a full trip. The *preferred alternative* (Alternative 2 in Section 4.3.2) would allow pound-for-pound exchanges of access area allocations in all areas at increments of 9,000 pounds (i.e. the lowest access area allocation in FW32). All access area allocations could be exchanged in increments of 9,000 pounds regardless of the initial allocation. The *preferred alternative* is intended to facilitate partial access to several access areas, while improving flexibility to individual vessels, allowing each vessel to pursue fishing opportunities that make the most sense for them. Allocating partial trips and allowing access area allocations to be exchanged at the lowest increment of allocation (i.e. 9,000 pounds) is viewed as an equitable, alternative approach to a lottery system.

Framework 32 would also set the number of LAGC IFQ access area trips that may be taken in open rotational access areas. The *preferred alternative* (Alternative 2 in Section 4.4) would allocate a total of 2,855 trips, which would be allocated to the MAAA, Closed Area I, Nantucket Lightship North, and Nantucket Lightship South Deep. This option would distribute 1,142 access area trips to the MAAA, and 571 trips to each of the other three access areas (Closed Area I, Nantucket Lightship North, Nantucket Lightship South Deep). The *preferred alternative* distributes the LACG IFQ share of Closed Area II allocation to the other available access areas on Georges Bank to keep LAGC IFQ trips in this region proportional to the total FT LA access area allocation for Georges Bank.

The Council also considered additional measures to reduce fishery impacts. The Council recommended extending an existing seasonal closure of Closed Area II to reduce impacts on flatfish stocks, and to restrict where RSA compensation fishing can occur. The *preferred alternative* (Alternative 2 in Section 4.5.1) would restrict RSA compensation fishing to the Mid-Atlantic Access Area, the Northern Gulf of Maine Management Area, and in open areas. Compensation fishing in the NGOM management area would be restricted only to vessels that receive NGOM RSA compensation pounds. The *preferred alternative* (Alternative 2 in Section 4.5.2) would extend the existing Closed Area II Access Area seasonal closure by two weeks, meaning the duration of the closure would be from August 15 through November 30. Extending the Closed Area II seasonal closure is recommended as a means to further reduce bycatch of Georges Bank yellowtail flounder and northern windowpane flounder.

Table 1 - Summary of the alternatives considered, and the rationale for the Council preferred alternatives.

Framework 32			Council Rationale
4.1	Overfishing Limit (OFL) and Acceptable Biological Catch (ABC)		<p>The Council recommends the updated OFL/ABC values as preferred because they are based on the most recent estimates of scallop biomass, and are recommended by the SSC. Setting the OFL and ABC using 2019 survey data should reduce the likelihood of overfishing compared to using outdated information. The estimate of scallop biomass is based on annual surveys, and in some cases multiple surveys are conducted in more critical areas.</p> <p>Overall, using the estimates in the preferred alternative to set fishery specifications should have positive biological, economic, and social impacts over the long-term because the ABC values were determined based on the most recent scientific information available to prevent overfishing of the scallop resource and to optimize yield-per-recruit.</p>
4.1.1	Alternative 1	No Action for OFL and ABC	
4.1.2	Alternative 2 (Preferred)	Updated OFL and ABC for FY2020 and FY2021	

4.2.1 – Partial Closure of Stellwagen Bank to Protect Small Scallops			Council Rationale
4.2.1.1	Alternative 1	No Action (no closure)	<p>The Council recommends closing part of the NGOM management area in 2020 and 2021 to protect small scallops and improve yield-per-recruit.</p> <p>The 2019 ME DMR/UMaine dredge survey of the Northern Gulf of Maine detected large numbers of small scallops on Stellwagen Bank. Alternative 2 closes a portion of Stellwagen Bank within the NGOM management unit to improve the yield-per-recruit, while providing some access to larger, older scallops that were also observed in the 2019 surveys. Some directed scallop fishing could be expected north and west of the closure boundaries as well as on southern Jeffreys Ledge and in Ipswich Bay.</p> <p>The closure could be expected to have positive biological impact on scallops in the NGOM because it is expected to minimize discard and incidental mortality of recruits and increase biomass and optimize yield-per-recruit over the duration of the closure. The closure is also expected to lead to fishing effort in the Jeffreys Ledge and Ipswich Bay areas of the NGOM, where the highest densities of exploitable scallops were detected in 2019 surveys. If the closure redirects effort to areas of higher scallop density, the closure recommended in Alternative 2 could have low positive impacts on protected species, EFH, and non-target species since effort and area swept would likely be reduced.</p>
4.2.1.2	Alternative 2 (Preferred)	Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (2 year closure)	

4.2.2 - Northern Gulf of Maine Total Allowable Catch (TAC)			Council Rationale
4.2.2.1	Alternative 1	No Action (135,000 lb TAC)	<p>The Council recommends setting the overall NGOM TAC using exploitable biomass projections for 2020 and 2021, capping removals for all fishery components, developing separate TAC for the LA and LAGC, and making the LA share of TAC available for NGOM RSA compensation fishing.</p> <p>The TAC share for each component is based on allocating the first 70,000 lbs of the overall TAC to the LAGC component, and then splitting the remaining TAC 50/50 between the LA and the LAGC. The LA share of the NGOM TAC would be available for RSA compensation fishing only. Any LA or LAGC vessels that are awarded NGOM RSA compensation pounds would be required to declare into the area and fish exclusively within the NGOM management area. Any overages would be deducted from the following year's component specific TAC.</p> <p>The LAGC share of the TAC would be set at 210,000 pounds for FY 2020, and 167,500 pounds for FY 2021. The LA share of the TAC would be set at 140,000 pounds for FY 2020, and 97,500 pounds for 2021.</p> <p>The NGOM TAC alternatives developed by the Council are based on conservative F_{TARGET} rates. The preferred alternative could be expected to result in higher overall landings than 2018 and 2019 levels, but lower landings relative to 2016 and 2017. The <i>preferred alternative</i> (Section 4.2.2.2.2) could be expected to have positive economic impacts relative to No Action and is anticipated to result in a complete accounting of removals from the NGOM management area, and a timely closure when the fishery is projected to achieve the TAC. The Council's preferred alternative is expected to continue to reduce swept area relative FY 2017 when both LA and LAGC were active in the area. Impacts on protected resources could be considered slightly negative. LAGC revenues and economic benefits would be higher in the short term.</p>
4.2.2.2.1	Alt. 2 – Sub-Option 1 F=0.18	<p>Set 2020 and 2021 NGOM TAC at F=0.18, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC.</p> <p>2020 Overall TAC: 310,000 2021 Overall TAC: 240,000</p>	
4.2.2.2.2	Alt. 2 – Sub-Option 2 F=0.2 (Preferred)	<p>Set 2020 and 2021 NGOM TAC at F=0.20, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC.</p> <p>2020 Overall TAC: 350,000 2021 Overall TAC: 265,000</p>	

4.3.1 – Fishing Year 2020 & 2021 Specifications			Council Rationale
4.3.1.1	Alt. 1	No Action: 1 trip to MAAA, 1 trip to NLS-West, 18 DAS	A full description of the <i>preferred</i> specifications alternative can be found in Section 4.3.1.3.2. The overall F rate associated with the Council’s <i>preferred alternative</i> is estimated to be F=0.182, which is well below at F=0.51 used for the ABC/ACL. The <i>preferred</i> open area F rate (F=0.33) is also substantially less than F=0.64, which is considered the upper limit for open area fishing as of SARC 65 (2018).
4.3.1.2.1	Alt. 2, sO1	6 Access area trips, CAII-ext OPEN 22 DAS	Overall scallop removals, rotational access, and open area F rates were similar across Alternatives 2 and 3, and therefore the biological, EFH, protected resources, socio-economic, and non-target species impacts of the measures that the Council considered for FY 2020 and FY 2021 are similar. The <i>preferred alternative</i> could be expected to result in scallop landings of 52 million pounds. Total revenue is estimated to be \$487.4 million dollars, which is \$50.7 million dollars more than the Status Quo estimates, and \$4 million dollars less than the highest revenue estimate under consideration. Alternative 3 Sub-Option 2 could also be expected to result in area swept that is comparable FW28 levels, less than FW27 and Status Quo projections, and slightly greater than FW29 and FW30 levels. The bycatch estimates associated with the preferred alternative are above and below the anticipated sub-ACLs approved by the Council through groundfish Framework 59. Bycatch estimates represent a reasonable approximation of catch that may occur. The projections are forecasts (with error) and should not be interpreted as precise estimates. Review of past estimates has shown that the projections have over-estimated and under-estimated catches. In the case of northern windowpane, the two most recent scallop projections have been over double realized catch. There are several measures in this action that are expected to reduce northern windowpane and GB yellowtail bycatch below the projection amount, such that realized catch would lower than the point estimate in this FW. While the Council considered setting LA DAS using F rates that were well below the upper bound, the preferred alternative would result in Status Quo DAS (24). Fishing pressure in the open bottom where some recruitment was detected in the 2019 surveys would be limited by the proposed closure of CAII-ext.
4.3.1.2.2	Alt. 2, sO2	6 Access area trips, CAII-ext OPEN 24 DAS	
4.3.1.3.1	Alt. 3, sO1	6 Access area trips, CAII-ext CLOSED 22 DAS	
4.3.1.3.2	Alt. 3, sO2 (Preferred)	6 Access area trips, CAII-ext CLOSED 24 DAS	

Section 4.3.2 – Full Time Limited Access Trip Exchanges			Council Rationale
4.3.2.1	Alt. 1	No Action, one-for-one FT LA trip exchanges at the increment of the possession limit (i.e. 18,000 pounds)	The <i>preferred alternative</i> (Section 4.3.2.2) would allow pound-for-pound exchanges of access area allocations in all areas at increments of 9,000 pounds (i.e. the lowest access area allocation in FW32). All access area allocations could be exchanged at an increment of 9,000 pounds regardless of the initial allocation. The trip exchange alternatives are not expected change overall fishery impact conclusions for several VECs (Biological Impacts, Non-target species impacts, Impacts on Physical Environment and Essential Fish Habitat) since these are evaluated at the fishery level. Relative to Alternative 3, the social impacts could be considered positive for allowing exchanges at 9,000 pounds because it avoids a lottery, which can create winners and losers.
4.3.2.2	Alt. 2 (Preferred)	Allow pound-for-pound exchanges at 9,000 pounds for FT LA vessels	
4.3.2.3	Alt. 3	Lottery for Closed Area I and NLS-N trips.	

Section 4.4 – Access Area Trip Allocations to the LAGC IFQ Component			Council Rationale
4.4.1	Alternative 1	No Action (571 trips, default measure)	<p>The Council recommends Alternative 2 (Section 4.4.2), setting the overall LAGC IFQ access area allocation at 5.5% of the total access area allocations. Alternative 2, when combined with the Council’s preferred alternative in Section 4.3.1.3.2, would result in 2,855 total access area trips that would be distributed to CAI (571 trips), NLS-North (571 trips), NLS-S-Deep (571 trips), and the MAAA (1,142 trips). Access area allocations developed in Alternative 2 (Section 4.4.2) would follow the 94.5% and 5.5% split, as specified in Amendment 11.</p> <p>The <i>preferred alternative</i> increases the opportunity for LAGC IFQ vessels to operate in access areas relative to No Action, but below FY 2019 levels. This option could have potentially low positive impacts on the resource overall by spreading effort out and providing more access in areas with higher catch rates. This could potentially reduce total area swept since the LAGC would have the opportunity to fish on high densities of scallops in access areas. The <i>preferred alternative</i> could be expected to help to reduce fishing times and lower trips costs. If LAGC trips are not taken in the access areas, LAGC catch is assumed to come from open areas instead. This could result in lower or higher catch efficiency relative to the access area trips, depending on the open area fished and the resource conditions there. The impacts on non-target species would likely be mixed, as a concentration of fishing in one stock area is likely to reduce effort in other stock areas; however, lesser impacts to non-target species would be expected in areas with higher scallop catch rates relative to areas with lower scallop catch rates.</p> <p>The rationale for the distribution of trips is that it would maintain the overall proportion of access area trips available to the LA component in the Mid-Atlantic and Georges Bank regions. This is expected to provide opportunities for more LAGC vessels throughout both regions to fish in access areas with higher catch rates compared to open areas. Providing access closer to a vessel’s homeport could be expected to limit fishing time and lower overall trips costs across the entire LAGC component.</p>
4.4.2	Alternative 2 (Preferred)	<p>Update Access Area Trips to the LAGC IFQ component, Distribute Closed Area II Access Area Allocation to CAI and NLS-N Access Areas (2,855 total trips)</p> <p>Allocated trips: CAI (571) NLS-North (571) NLS-S-Deep (571) MAAA (1,142)</p>	

Section 4.5.1 – RSA Compensation Fishing			Council Rationale
4.5.1.1	Alt. 1	No Action, RSA Comp fishing restricted to open areas	<p>The <i>preferred alternative</i> (Alternative 2 in Section 4.5.1) would restrict RSA compensation fishing to the Mid-Atlantic Access Area, the Northern Gulf of Maine Management Area, and in open areas. Compensation fishing in the NGOM management area would be restricted only to vessels that receive NGOM RSA compensation pounds.</p> <p>The rationale for restricting RSA compensation fishing in the NGOM is to control overall F in the area and to track removals accurately. With regard to compensation fishing in access areas, limiting RSA fishing to only the MAAA could be expected to have positive impacts for GB yellowtail and northern windowpane since RSA compensation fishing would be prohibited in Closed Area I & II. From a biological perspective, this measure would likely reduce F in Closed Area I & II, and the NLS access areas, and would redistribute effort to areas where overall impact on the resource is expected to be negligible. Restricting RSA compensation fishing to the LA TAC in the NGOM is expected to lead to a complete accounting of removals from the management area while maintaining a relatively low F.</p>
4.5.1.2	Alt. 2 (Preferred)	Allow RSA compensation fishing in the Mid-Atlantic Access Area, with limited RSA compensation fishing in the NGOM Management Area, and open areas.	

Section 4.5.2 – Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder			Council Rationale
4.5.2.1	Alt. 1	No Action, RSA Comp fishing restricted to open areas	<p>The <i>preferred alternative</i> (Alternative 2 is Section 4.5.2) would extend the existing Closed Area II Access Area seasonal closure by two weeks, meaning the duration of the closure would be from August 15 through November 30. Extending the Closed Area II seasonal closure is recommended as a means to further reduce bycatch of Georges Bank yellowtail flounder and northern windowpane flounder.</p> <p>Extending the closure of Closed Area II Access Area could have low positive impacts on several VECs if fishing effort shifts to the months immediately preceding the closure (June, July, August). Meat yields are higher and bycatch rates of GB yellowtail and northern windowpane are lower during these months. Since allocations are in pounds, vessels may be able to catch their allocations with fewer scallops (U10s vs. 10-20s), which could mean less area swept and fewer impacts on EFH and protected resources.</p>
4.5.2.2	Alt. 2 (Preferred)	<p>Extend Seasonal Closures of Closed Area II Access Area through November 30th in FY 2020.</p> <p>(Closure from Aug. 15 – Nov. 30, 2020)</p>	

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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

This framework to the Scallop Fishery Management Plan (FMP) sets fishery specifications for fishing year (FY) 2020 and default measures for FY 2021. The New England Fishery Management (Council) decided to develop a one-year action only, including default measures for Year 2 (FY2021).

The list of measures routinely addressed as part of scallop specifications has increased over the years to include overall annual catch limits, specific allocations for both limited access (LA) and limited access general category (LAGC) vessels. Below is a list of the measures included in scallop fishery specifications:

- Overfishing Limit (OFL) and Acceptable Biological Catch (ABC), which is approved by the SSC;
- Annual Catch Limits (ACL) (for both the limited access and limited access general category fisheries, Annual Catch Target (ACT) for the LA fishery; and Annual Projected Landings (APL) for LA and LAGC;
- Allocations for limited access vessels include DAS allocations, access area allocations with associated possession limits;
- Allocations for limited access general category vessels include an overall IFQ for both permit types, as well as a fleet wide, area-specific maximum number of access area trips available for the general category fishery;
- NGOM TAC(s);
- Incidental catch target-TAC; and set-aside of scallop catch for the industry funded observer program and research set-aside program.

The Council also has included other management measures for consideration in this action.

3.2 PURPOSE AND NEED

This Framework (FW32) is intended to set specifications and to adjust management measures for the Atlantic Sea Scallop fishery. The need for this action is to achieve the objectives of the Atlantic Sea Scallop FMP to prevent overfishing and optimize yield by improving yield-per-recruit from the fishery, to manage total removals from the Northern Gulf of Maine management area, and to mitigate impacts on Georges Bank yellowtail flounder .

The purpose for this action is to set specifications including: OFL, ABC, scallop fishery ACLs and ACTs including associated set-asides, day-at-sea (DAS) allocations, general category fishery allocations, and area rotation schedule and allocations for the 2020 fishing year, as well as default measures for FY2021 that are expected to be replaced by a subsequent action (Table 2).

Table 2. Purpose and need for Framework 32.

Purpose	Need
To set specifications including: OFL, ABC, scallop fishery ACLs and ACTs including associated set-asides, day-at-sea (DAS) allocations, general category fishery allocations, and area rotation schedule and allocations for the 2020 fishing year, as well as default measures for FY2021 that are expected to be replaced by a subsequent action.	To achieve the objectives of the Atlantic Sea Scallop FMP to prevent overfishing and improve yield-per recruit from the fishery.
To set landing limits for the LA and LAGC components in the Northern Gulf of Maine management area based on exploitable biomass	To manage total removals from the Northern Gulf of Maine management area.

3.3 SUMMARY OF ANNUAL CATCH LIMITS

Amendment 15 (2011) established a method for accounting for all catch in the scallop fishery and included designations of Overfishing Limit (OFL), ABC, ACLs, and Annual Catch Targets (ACT) for the scallop fishery, as well as scallop catch for the Northern Gulf of Maine (NGOM), incidental, and state waters catch components of the scallop fishery. The scallop fishery assessment will determine the exploitable biomass, including an assessment of discard and incidental mortality (mortality of scallops resulting from interaction, but not capture, in the scallop fishery).

The OFL is specified as the level of catch and associated fishing mortality rate (F) that, above which, overfishing is occurring. The OFL will account for landings of scallops in state waters by vessels without Federal scallop permits. In 2018, SARC 65 approved an OFL equivalent to $F = 0.64$. To account for scientific uncertainty, ABC is set at a level with an associated F that has a 25-percent probability of exceeding the F associated with OFL (i.e., a 75-percent probability of being below the F associated with the OFL).

The ACL is equal to the ABC in the Scallop FMP. SARC 65 determined that the F associated with the ABC/ACL is $F=0.51$. Set-asides for observer and RSA are removed from the ABC (1 percent of the ABC/ACL and 1.25 mil lb. (567 mt) respectively). After those set-asides are removed, the remaining available landings (allocation) is divided between the LA and LAGC fisheries into two sub-ACLs: 94.5% for the LA fishery sub-ACL, and 5.5% for the LAGC fishery sub-ACL. Figure 4 summarizes how the various ACL terms are related in the Scallop FMP.

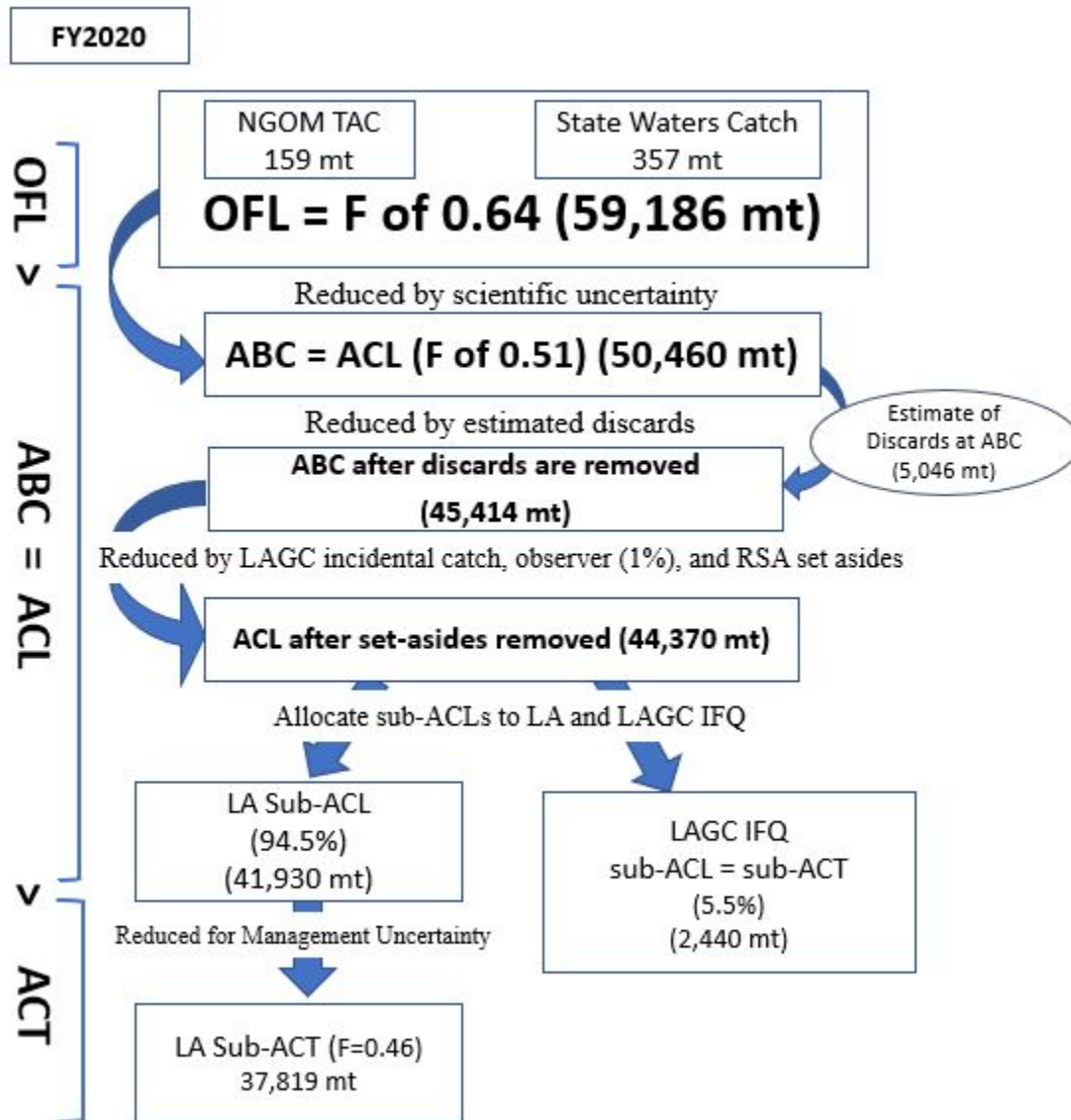
Amendment 15 also established ACTs for each component in order to account for management uncertainty. For the LA fleet, the ACT will have an associated F that has a 25-percent chance of exceeding ABC (75% probability that the ACT will not exceed the ABC/ACL). The F associated with the LA ACT is $F = 0.46$. The major sources of management uncertainty in the LA fishery are carryover provisions including the 10 DAS carryover provision and allowing vessels to fish unused access area allocation within the first 60 days of the following fishing year. For the LAGC fleet, the ACT will be set equal to the LAGC fleet's sub-ACL, since this component is quota-managed and is presumed to have less management uncertainty. The fishery specifications allocated to the fishery may be set at an F rate lower than the ACT, but fishery specifications may not exceed this level. For example, the Council's preferred alternative for FY 2020 specifications is anticipated to result in an overall $F=0.182$.

Finally, since the NGOM portion of the scallop fishery is not part of the scallop assessment for the rest of the fishery, the NGOM catch target will be added and specified as a separate Total Allowable Catch (TAC), in addition to ABC/ACL for the rest of the fishery.

The annual projected landings (APL) were developed using a forward projection model (SAMS) of the scallop resource. The APL is the combination of projected landings of exploitable scallops from open area

DAS when fishing at an F determined by the Council, and expected landings from access areas. The APL is allocated between the Limited Access component (94.5%) and the LAGC IFQ component (5.5%).

Figure 1 – Scallop ACL-Flowchart with proposed 2020 OFL, ABC, and ACL values.



4.0 ALTERNATIVES UNDER CONSIDERATION

4.1 ACTION 1 – OVERFISHING LIMIT AND ACCEPTABLE BIOLOGICAL CATCH

4.1.1 Alternative 1 - No Action for OFL and ABC

Under Alternative 1 (No Action), the OFL and ABC would be the default 2020 values adopted in Framework 30 (Table 3) that were calculated for FY2019 and FY2020 based on survey and fishery data through 2018. These would remain in place until a subsequent action replaced them. Through Framework 30, these values were selected based on the same control rules: 1) OFL is equivalent to the catch associated with an overall fishing mortality rate equivalent to F_{MSY} ; and 2) ABC is set at the fishing mortality rate with a 25% chance of exceeding OFL where risk is evaluated in terms of the probability of overfishing compared to the fraction loss to yield. These values include estimated discards. Therefore, when the fishery specifications are set based on these limits (Table 4), the estimate of discards is removed first and allocations are based on the remaining ABC available (Table 3, column to the far right).

Table 3 - No Action OFL and ABC for FY 2020 (default) approved through Framework 30 (values in mt).

Fishing Year	OFL (including discards at OFL)	ABC (including discards)	Discards (at ABC)	ABC available to fishery (after discards removed)
2020	59,447	50,943	4,915	46,028

Table 4 – No Action (default) ACL related values for the scallop fishery based on 2019 OFL and ABC approved through Framework 30.

Catch limits	2020 (mt)
Overfishing Limit	59,447
Acceptable Biological Catch/ACL (discards removed)	46,028
Incidental Catch (Estimated catch by LAGC Cat. C permits)	23
Research Set-Aside (RSA)	567
Observer Set-Aside	460
ACL for fishery	44,978
Limited Access ACL	42,504
LAGC Total ACL	2,474
LAGC IFQ ACL (5% of ACL)	2,249
Limited Access with LAGC IFQ ACL (0.5% of ACL)	225
Limited Access ACT (F=0.46)	38,337
Annual Projected Landings (APL)***	*
Limited Access Projected Landings (94.5% of APL)	*
Total IFQ Annual Allocation (5.5% of APL)	1,122**
LAGC IFQ Annual Allocation (5% of APL)	1,020**
Limited Access with LAGC IFQ Annual Allocation (0.5% of APL)	102**
<p>*The catch limits for the 2020 fishing year are subject to change through a future specifications action or framework adjustment. This includes the setting of an APL for 2020 that will be based on the 2019 annual scallop surveys.</p> <p>**As a precautionary measure, the 2020 IFQ annual allocations are set at 75% of the 2019 IFQ Annual Allocations.</p> <p>***The APL value reflects the Council's preferred alternatives for specifications from FW30.</p>	

4.1.2 Alternative 2 – Updated OFL and ABC for FY 2020 and FY 2021 (default) (*Preferred Alternative*)

Alternative 2 would specify OFLs and ABCs for FY 2020 and set default values for FY 2021 based on recent October 2019 SSC recommendations shown in Table 5. The fishing mortality rates for OFL and ABC would be based on the results of SARC 65 (2018). The fishing mortality rate associated with the OFL would be $F=0.64$, while the F associated with the ABC would be $F=0.51$.

Once OFL and ABC are established, associated ACLs for the fishery can be defined. Table 6 summarizes the various ACL allocations for the fishery based on decisions made in Amendment 15 when ACLs were implemented.

Rationale: This alternative utilizes the most recent scallop survey data and represents the most up-to-date scientific information available which is important when setting the OFL and ABC due to the dynamic nature of the scallop resource. While the scallop resource is considered healthy and has been relatively stable in recent years, some annual variability in exploitable biomass is anticipated. Accounting for this variability by using the most recent scientific information available is needed to prevent overfishing and improve yield-per-recruit for the fishery.

Table 5 – Alternative 2 OFL and ABC values for FY 2020 and FY 2021 (default).

Fishing Year	OFL (including discards at OFL)	ABC (including discards)	Discards (at ABC)	ABC available to fishery (after discards removed)
2020	59,186	50,460	5,046	45,414
2021	47,503	40,430	3,995	36,435

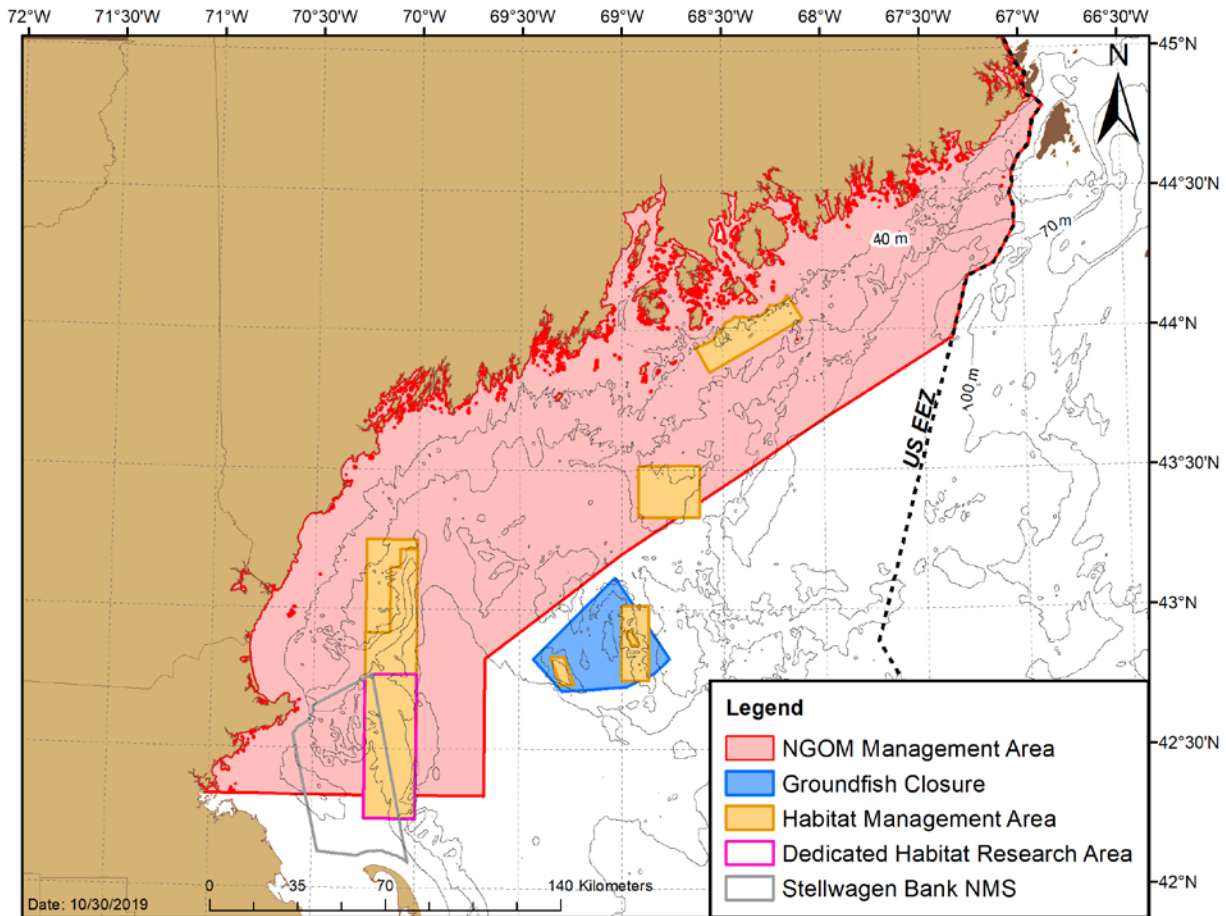
Table 6 - Alternative 2 ACL & APL related values for the scallop fishery based on 2020 and 2021 OFL and ABC.

	FY2020	FY2021
	mt	mt
OFL	59,186	47,503
ABC/ACL (discards removed)	45,414	36,435
Incidental Catch	23	23
RSA	567	567
Observer set-aside	454	364
ACL for fishery	44,370	35,481
Limited Access ACL	41,930	33,530
Limited Access ACT	37,819	30,242
LAGC Total ACL	2,440	1,951
LAGC IFQ ACL	2,219	1,774
LA w/ LAGC IFQ ACL (0.5% of ACL)	222	177
APL (after set-asides are removed)***	22,370	(*)
Limited Access Projected Landings (94.5% of APL)	21,140	(*)
Total IFQ Annual Allocation (5.5% of APL)	1,230	923
LAGC IFQ Annual Allocation (5% of APL)	1,119	839
Limited Access with LAGC IFQ Annual Allocation (0.5% of APL)	112	84
<p>*The catch limits for the 2021 fishing year are subject to change through a future specifications action or framework adjustment. This includes the setting of an APL for 2021 that will be based on the 2020 annual scallop surveys.</p> <p>**As a precautionary measure, the 2021 IFQ annual allocations are set at 75% of the 2020 IFQ Annual Allocations.</p> <p>***The APL value reflects the Council’s preferred alternatives for specifications from FW32.</p>		

4.2 ACTION 2 – NORTHERN GULF OF MAINE MANAGEMENT AREA

Action 2 addresses management in the Northern Gulf of Maine Management Area (Map 1). In Framework 32, the Council is considering action on two issues: 1) the partial closure of Stellwagen Bank, north of 42°20’N, to protect small scallops, and; 2) TAC setting for the management unit using the temporary approach approved through Framework 29 and used in Framework 30.

Map 1 – The Northern Gulf of Maine Management Area relative to groundfish closures, habitat management areas, and the Stellwagen Bank National Marine Sanctuary.



4.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

4.2.1.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to where the LAGC or LA components can fish on declared trips in the NGOM Management Area. Stellwagen Bank would be open to fishing while the management area is open to directed scallop fishing.

4.2.1.2 Alternative 2 – Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (2 year closure) (*Preferred Alternative*)

Alternative 2 would close part of Stellwagen Bank north of 42°20'N to directed scallop fishing in the NGOM Management Area for two years (FY2020-2021) to protect small scallops that were observed in 2019 dredge surveys of this area. The explicit purpose of this closure would be to conserve small scallops. The closure would cover roughly 71 mi² (183 km²) of Stellwagen Bank, directly north of the southern boundary of the NGOM Management Area and directly west of the Western Gulf of Maine Groundfish

Closure Area. This closure would protect a substantial number of small scallops that have not recruited into the fishery. This closure would be re-assessed after one year to confirm that it is in fact protecting small scallops and improving yield-per-recruit. The closure area is shown in Map 2, and closure coordinates are provided in Table 7.

Rationale: The 2019 ME DMR/UMaine dredge survey of the Northern Gulf of Maine detected many small scallops on Stellwagen Bank. Alternative 2 closes this part of the NGOM management area to improve the yield-per-recruit of these scallops, while providing some access to larger, older scallops that were also observed in the 2019 surveys. Within the NGOM Management Area in FY2020, directed scallop fishing could be expected north and west of the closure boundaries as well as on southern Jeffreys Ledge and in Ipswich Bay. Since surveys detected an older year class on Stellwagen Bank, the closure would be revisited again in 2020 if survey data or research information is available, and the Council could consider modifying this boundary.

Map 2 – Boundary of partial closure of Stellwagen Bank to directed scallop fishing within the NGOM Management Area (Alternative 2).

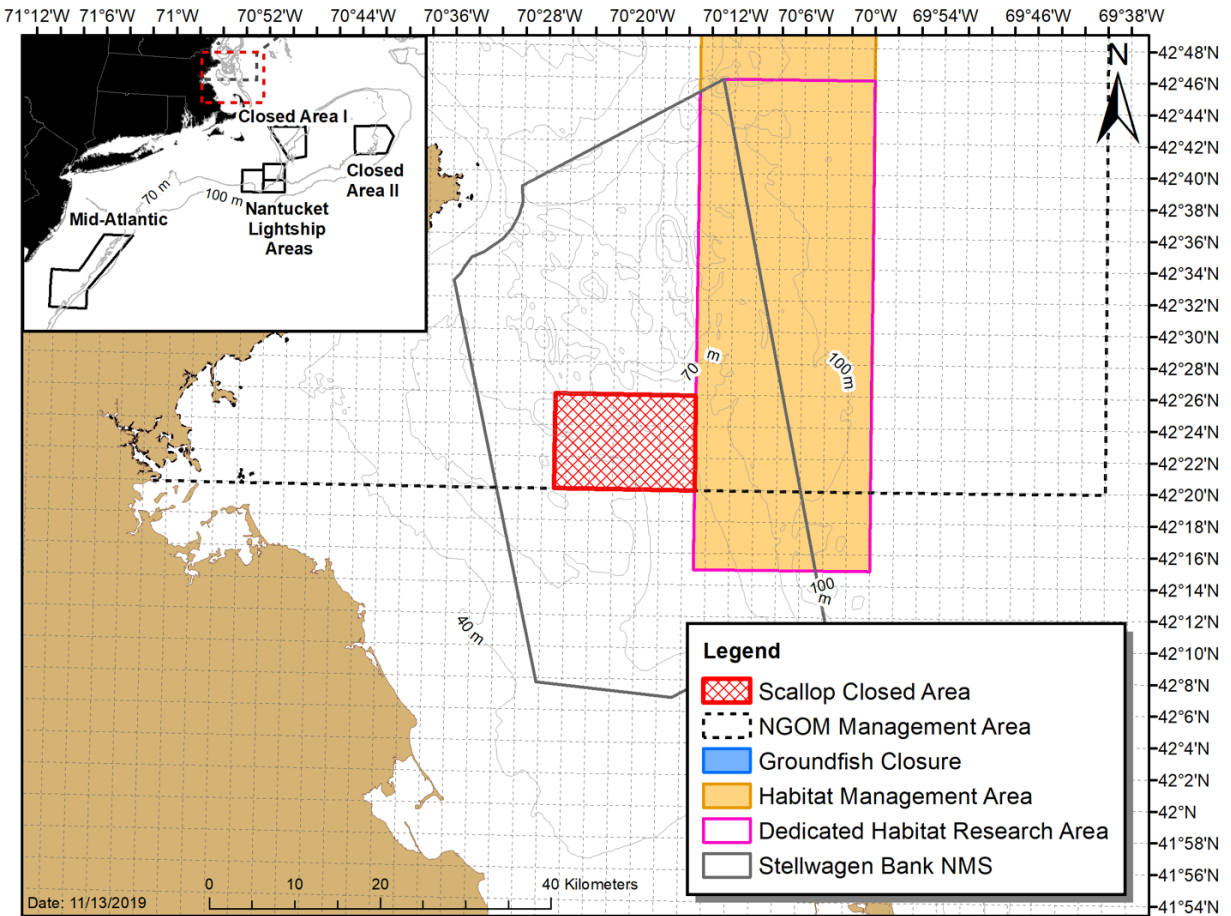


Table 7 – Coordinates of partial closure of Stellwagen Bank to directed scallop fishing within the NGOM Management Area (Alternative 2).

Point	Latitude	Longitude
1	42° 26' 0" N	70° 27' 0" W
2	42° 26' 0" N	70° 15' 0" W
3	42° 20' 0" N	70° 15' 0" W
4	42° 20' 0" N	70° 27' 0" W
5	42° 26' 0" N	70° 27' 0" W

4.2.2 Northern Gulf of Maine TAC Setting

Alternatives in Framework 32 were developed to be consistent with the problem statement that the Council developed in Framework 29 and are consistent with measures implemented through FW29 (FY2018) and FW30 (FY2019):

Recent high landings and unknown biomass in the NGOM scallop management area underscore the critical need to initiate surveys and develop additional tools to better manage the area and fully understand the total removals from the management area.

The Council also approved measures in Framework 29 that have enabled the tracking of total removals from the Northern Gulf of Maine management area since FY2018.

Method for setting NGOM TAC. Both Alternatives under consideration in this section (Alternative 1 and Alternative 2) would maintain the same approach to developing and splitting a total TAC for the NGOM that was implemented through Framework 29 for FY2018 and Framework 30 for FY2019. The LAGC share would be calculated by applying the first 70,000 lbs to LAGC TAC, and then splitting the remaining pounds 50/50 between the LAGC and LA component. The rationale for this approach is that the NGOM TAC for the LAGC component was set at 70,000 pounds from FY 2008 – FY 2016. This TAC split is intended to be a short-term solution to allow controlled fishing in the NGOM management area until Amendment 21 can address NGOM issues more holistically. This approach—the first 70,000 pounds to the LAGC, then 50/50 split between LA and LAGC—is not intended to be permanent.

Under both Alternative 1 and Alternative 2, the LAGC and LA shares of the RSA are administered under separate TACs. The NGOM management area would remain open for each component until their TAC is projected to be harvested, even if the other component has reached its TAC. The LA share of the NGOM TAC would be available for RSA compensation fishing only. Any LA or LAGC vessels that are awarded NGOM RSA compensation pounds would be required to declare into the area and fish exclusively within the NGOM management area. An overage of the NGOM RSA harvest would be deducted from the following year's LA TAC.

4.2.2.1 Alternative 1 – No Action

The total NGOM hard TAC would be set at 170,000 pounds, which is based on fishing Ipswich Bay, Stellwagen Bank, and Jeffreys Ledge portions of the management area at a $F=0.20$ in FY 2019 and FY 2020. The overall TAC would be split between the LA and LAGC, with 50,000 pounds available to support RSA compensation fishing (LA share), and 120,000 pounds available for harvest by the LAGC component. The area would open on April 1, 2020 with no change to the current management program.

The NGOM management area would remain open for each component until their TAC is projected to be harvested, even if the other component has reached its TAC. For example, if the LAGC component harvests its TAC before all NGOM RSA compensation pounds are harvested, the area would remain open for NGOM RSA compensation fishing.

Table 8 - The FY 2020 NGOM TAC under Alternative 1 - No Action (default measures from FW30)

Year	2020 TAC (lbs)
Overall TAC	170,000
LA (RSA) TAC	50,000
LAGC TAC	120,000

Rationale: Specifying a total NGOM TAC at 170,000 pounds and capping removals is consistent with the Council's problem statement established through FW29 and are the default measures set through FW30.

This approach is intended to be a short-term solution until a future action can be developed to address NGOM issues more holistically (through Amendment 21).

4.2.2.2 Alternative 2 - Set 2020 and 2021 NGOM TAC, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (*Sub-Option 2 is Preferred Alternative*)

As noted at the outset of this section, alternatives under consideration (Section 4.2.2.1 and Section 4.2.2.2) maintain the Council's preferred short-term approach to managing the NGOM that was developed through FW29. Since this is considered a temporary approach until Amendment 21 can be developed and implemented, several key elements of the management strategy are restated here for clarity.

The total NGOM hard TAC would be set by applying a fishing mortality rate to the projected exploitable biomass from Ipswich Bay, and Jeffreys Ledge. Removals for all fishery components (General Category and Limited Access permit holders) would be capped at specified TAC equivalent to the 2020 and 2021 (default) fishing mortality rate in sub-Option 1 and sub-Option 2.

The LA share of the NGOM TAC would be available for RSA compensation fishing only. This would not be in addition to the 1.25 million lbs set-aside for the RSA program. These pounds would not be exclusive to RSA research in the NGOM, but priority would be given to support research projects in the NGOM. Any LA or LAGC vessels that are awarded NGOM RSA compensation pounds would be required to declare into the area and fish exclusively within the NGOM management area. Any NGOM RSA harvest overages would be deducted from the following year's LA TAC.

The LAGC share would be calculated by applying the first 70,000 lbs to LAGC TAC, and then splitting the remaining pounds 50/50 between the LAGC and LA component. The LAGC and LA (RSA) would operate under separate TACs.

The NGOM management area would remain open for each component until their TAC is projected to be harvested, even if the other component has reached its TAC. For example, if the LAGC component harvests its TAC before all NGOM RSA compensation pounds are harvested, the area would remain open for NGOM RSA compensation fishing.

Rationale: Survey data reflects the most up-to-date scientific information for the scallop resource in the NGOM. Capping removals for all fishery components at the specified TAC addresses the Council's problem statement of fully understanding total removals from the management area.

4.2.2.2.1 Sub-Option 1 – Set NGOM TAC at F=0.18

The overall NGOM TAC would be set by applying a fishing mortality rate of F=0.18 to the exploitable biomass in Ipswich Bay and on Jeffrey's Ledge. The FY 2020 overall TAC would be set at 310,000 lbs, and the FY 2021 default TAC would be set at 240,000 lbs. The LAGC share of the FY 2020 NGOM TAC would be 190,000 lbs, while the LA/RSA share would be set at 120,000 lbs.

Rationale: The Gulf of Maine is relatively data-poor compared to Georges Bank and the Mid-Atlantic. In the absence of area specific reference points, the Council considered fishing the NGOM management area at an F rate (0.18) to use a conservative approach for managing this area.

4.2.2.2.2 Sub-Option 2 – Set NGOM TAC at F=0.20

The overall NGOM TAC would be set by applying a fishing mortality rate of F=0.20 to the exploitable biomass in Ipswich Bay and on Jeffrey's Ledge. The FY 2020 overall TAC would be set at 350,000 lbs, and the FY 2021 default TAC would be set at 265,000 lbs. The LAGC share of the FY 2020 NGOM TAC would be 210,000 lbs, while the LA/RSA share would be set at 140,000 lbs.

Rationale: The Gulf of Maine is relatively data-poor compared to Georges Bank and the Mid-Atlantic. In the absence of area specific reference points, the Council considered fishing the NGOM management area at an F rate (0.20) to use a conservative approach for managing this area.

Table 9 - Comparison of overall NGOM TAC Options in FW32

Alternative in FW32	F _{TARGET}	FY2020 TAC	FY2021 TAC
A1		170,000	
A2, Sub1	F=0.18	310,000	240,000
A2, Sub2	F=0.20	350,000	265,000

Table 10 - Comparison of Potential NGOM TACs for LA (RSA) and LAGC for FY 2020 (lbs) for each sub-option considered in Alternative 2 of Section 4.2

FW 32 Alternative	FW 32 Section	F	2020 TAC (lbs)	LA/RSA Share (lbs)	LAGC Share (lbs)
1	4.2.1		170,00	50,000	120,000
2, Sub-Option 1	4.2.2.2.1	0.18	310,000	120,000	190,000
2, Sub-Option 2	4.2.2.2.2	0.20	350,000	140,000	210,000

4.3 ACTION 3 - FISHERY SPECIFICATIONS & TRIP EXCHANGES

4.3.1 Fishery Specifications

The LA (94.5%) and LAGC IFQ (5.5%) allocations are based on Annual Projected Landings (APL).

Table 11 - Comparison of allocations and DAS associated with each specification alternative.

Alternative In FW32	Description	Overall F rate	Open area F	Annual Projected Landings (APL)	APL w/ set-asides removed	LA Share (94.5%)	LAGC IFQ Share (5.5%)
4.3.1.1	No Action	0.061	0.24	27,593,057	25,292,158	23,901,089	1,391,069
4.3.1.2.1	CAII ext Open 22 DAS	0.183	0.27	50,353,581	48,052,682	45,409,784	2,642,897
4.3.1.2.2	CAII ext Open 24 DAS	0.189	0.3	52,046,731	49,745,832	47,009,811	2,736,021
4.3.1.3.1	CAII ext Closed 22 DAS	0.18	0.3	49,972,181	47,671,282	45,049,361	2,621,921
4.3.1.3.2	CAII ext Closed 24 DAS	0.182	0.33	51,619,034	49,318,135	46,605,638	2,712,497
4.3.1.4*	Status Quo	0.108	0.23	44,881,707	42,580,808	40,238,864	2,341,944

* “Status Quo” refers to Framework 30 preferred measures and is provided in the alternatives section of Framework 32 to provide continuity and context for the reader, but is not an option proposed for Council decision.

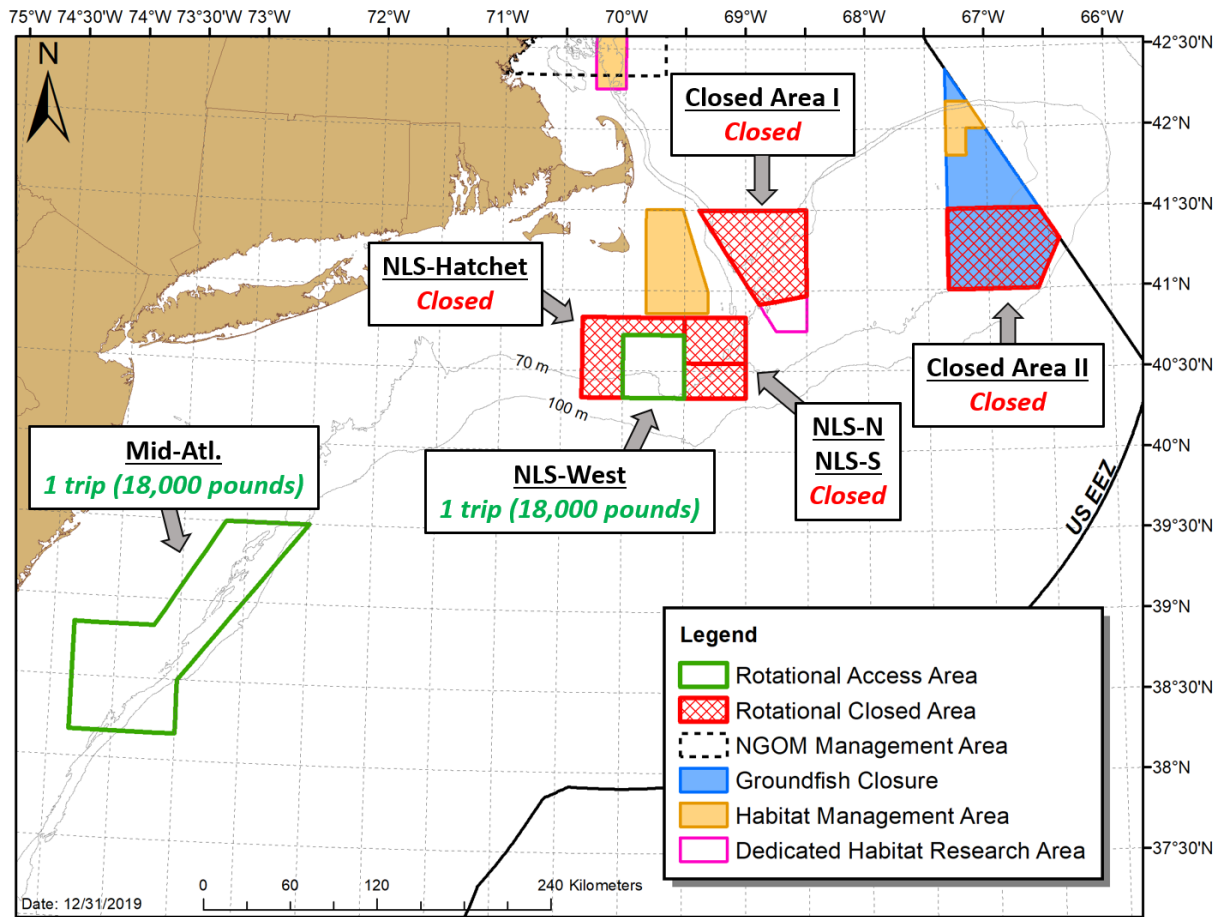
4.3.1.1 Alternative 1 – No Action (Default Measures)

Under Alternative 1 – No Action, the default specifications approved in Framework 30 would remain in place for the 2020 fishing year. There would be no allocations specified for the 2021 fishing year. Default measures approved in Framework 30 include full-time Limited Access DAS set at 18, which are 75% of the projected DAS for FY2019. Part-time Limited Access vessels would receive 7.20 DAS, and Occasional Limited Access vessels would be allocated 1.5 DAS. The LA component would have some access to the Mid-Atlantic Access Area and Nantucket Lightship West areas, the equivalent of one 18,000-pound trip for FT vessels in each area (Map 3).

Under the FW30 default measures for FY 2020, the LAGC IFQ allocation would be 1,122 mt (2,473,587 lbs) for LAGC IFQ and LA with LAGC IFQ quota. This allocation is equivalent to 5.5% of the annual projected landings (APL) for FY2019 from FW30. LAGC IFQ vessels would also have access in the Mid-Atlantic Access Area and Nantucket Lightship West areas on April 1, 2020 under default measures, with a fleet wide maximum of 571 trips to each area.

The target TAC for vessels with a LAGC Incidental permit is 50,000 pounds.

Map 3 – Spatial management under Alternative 1 (No Action).



4.3.1.2 Alternative 2 – Six Access Area Trips, Closed Area II-ext open

Alternative 2 would allocate a total of six access area trips, four would be 18,000 pound allocations, along with two ½ trips (9,000-pound allocations). Access areas open to the fishery under this scenario would be: The Mid-Atlantic Access Area (2 FT LA trips), Closed Area II Access Area (1 FT LA trip), Closed Area I Access Area (1/2 FT LA FLEX trip), and the Nantucket Lightship North Access Area (1/2 FT LA trips), and the Nantucket Lightship South Deep Access Area (1 FT LA trip).

Alternative 2 is considering modifications to the traditional CAII AA boundary that would make the eastern portion of the area (i.e. CAII-Southeast) available to the fishery while the western portion of the area (i.e. CAII-Southwest) will be closed to scallop fishing for the entire year (Map 4). Coordinates of the proposed CAII-Southwest closure are provided in Table 13. The eastern boundary of CAII AA would be extended east to the Hague Line.

Within the Nantucket Lightship region, boundaries for the NLS-North would be expanded south to encompass part of the NLS-S-Shallow and the boundary for the NLS-South would shift to focus around the dense aggregations of slow-growing scallops in the deeper water (i.e. 70 m depth and greater). The NLS-South boundary was also expanded south by 5'. Alternative 2 would establish a small area between the NLS-North and NLS-South, designated as the “Nantucket Lightship Triangle” (NLS-Triangle), which would be closed to the fishery for FY2020. The NLS-Triangle has an area of approximately 30 nmi² (101 km²). Coordinates for the proposed NLS-Triangle closure are provided in Table 14. The Nantucket

Lightship Hatchet area, which remained closed as a rotational management area following the partial approval of OHA2 would become open bottom under this option. The Nantucket Lightship Hatchet was the remainder of the original Nantucket Lightship Groundfish Closure that did not overlap with scallop access areas.

In the open bottom (areas outside of rotational management areas and closures), the fishery would have access to the Closed Area II-ext, which is closed in Alternative 3. In all alternatives, the Nantucket Lightship West area, which was an access area in FY 2018 and FY 2019 would be open bottom.

The specific allocations associated with Alternative 2:

- The FY2020 Annual Projected Landings (APL) for this alternative are 50.3 million pounds (open area F=0.27, 22 DAS), or 52 million pounds (open area F=0.3, 24 DAS) before set-asides are accounted for (i.e. RSA, observer).
- Each full-time limited access vessel would be allocated a total of 90,000 access area pounds (see Table 12). The FT LA trip limit would be set at 18,000 lbs in all available access areas: Closed Area II, Closed Area I, the Mid-Atlantic Access Area, Nantucket Lightship South Deep, and Nantucket Lightship North.
- For access area trips in the NLS-S-deep, crew limits for LA vessels could be increased by 2 from the current maximum crew limit in regulation.
- The FLEX trip allocation (9,000 pounds) could be fished only within Closed Area I or the MAAA (see Table 12). This option would allow LA vessels to more broadly distribute effort if Closed Area I biomass projections are overly optimistic.
- Access area allocations would be set at 36,000 pounds for PT LA vessels, and 7,500 pounds for Occasional LA vessels. The LA PT trip limit would be set at 12,000 pounds, and PT vessels would receive two (2) MAAA trips and one (1) Closed Area II trip. The LA Occ trip limit would be set at 7,500 pounds, and Occ vessels would be able to fish in their allocation in the MAAA.
- The LAGC incidental target TAC would be set at 50,000 lbs.
- Allocated Limited Access access area trips would be available in the same access areas defined by Framework 32 for the first 60 days of FY2021, even if the area is scheduled to close in FY 2021 (Map 6, Map 7). Vessels planning to fish FY2020 access area allocation must start their trip (i.e., position on their VMS unit seaward of the demarcation line) by 23:59 on May 30, 2021. For example, trips allocated to the NLS-S-Deep Access Area could only be fished in the access area boundary defined by FW32 in the first 60 days of FY2021.
- FY2021 default measures under Alternative 2 would allocate FT LA vessels one (1) 18,000-pound access area trip to the Mid-Atlantic Access Area as defined by Framework 32. PT LA vessels would be allocated one (1) 7,200-pound access area trip to the Mid-Atlantic Access Area, as defined by Framework 32. The LAGC IFQ component would also receive access area trips to the MAAA, proportional to 5.5% of the default access area allocations to each area (trips to the MAAA). The LAGC IFQ and LA DAS allocations would be set at 75% of the FY2020 allocations.
- NLS-West Payback: If FW32 implementation is delayed, if a vessels fishes any of its NLS-West access area trip allocated as a default measure through FW30, that vessel would lose their Closed Area II AA trip allocated through FW32. This does not prohibit vessels from fishing the remainder of their FY2019 NLS-West allocation (i.e. 3 trips at 18,000 pounds each) during the first 60 days of FY2020.

Rationale: As a response to the large year class of scallops observed in and around CAII AA in 2019, this alternative is considering modifications to the traditional CAII AA boundary which will focus fishery effort in the eastern portion of the area (i.e. CAII-Southeast) and the western portion of the area (i.e. CAII-Southwest) will be closed to scallop fishing for the entire year (Map 4). The eastern boundary of CAII AA would be extended east to the Hague Line to encompass the large scallops just outside of the

traditional CAII boundary. The majority of scallops in the eastern portion of CAII AA will be exploitable and are anticipated to have high yield, whereas the western portion of the area is mostly home to the large set of 2-year-old scallops that have not yet recruited to the fishery.

Modifications to rotational boundaries in the Nantucket Lightship region are intended to optimize yield in this part of the resource. Expanding the NLS-North boundary to encompass the shallow portion of the former NLS-South would increase the biomass of adult scallops in the NLS-North, and improve this fishing opportunity in FY2020. Adjusting the NLS-South boundary around the dense aggregation of slow-growing scallops is intended to focus fishing effort on the large year class of scallops in this area that will be 8 years old in FY2020. Expanding the NLS-South boundary southward by 5' will expand the area and provide vessels more room to fish considering that the scallops are relatively concentrated there. The NLS-Triangle closure comprises a small area with low scallop densities that could be used for research purposes in the absence of fishing. The establishment of the NLS-Triangle rotational area does not bind the Council to facilitating or supporting research in this area in any way.

The NLS-Hatchet area remained closed following the partial approval of OHA2 and the removal of the Nantucket Lightship groundfish closed area because there was no survey scallop survey or fishery data to inform potential fishing effort or other impacts from re-opening the area. This area is outside of the scallop dredge survey strata and outside of the projection model (SAMS) domain and is not known to be productive scallop bottom. A 2018 survey of the area using the HabCam v3 towed vehicle did not detect any scallops larger than 35 mm in this area. Since the area has been recently surveyed, and no scallops were detected, it is highly unlikely that the area would be fished.

The NLS-West payback provision is intended to disincentivize access area fishing using 2020 default allocations. This area will become open bottom in FY2020, and there may be vessels that attempt to finish harvesting their 2019 NLS-West allocation during the first 60 days of the 2020 FY. If specifications do not go into place on April 1, 2020, all FT LA vessels will be allocated an 18,000-pound access area trip to this area. When FW32 measures are implemented, this trip will not be allocated. The payback provision is intended to deter permit holders from trying to utilize default allocations that will not be awarded when new specifications go into place. Projected biomass in the NLS-West was high and this area was expected to be able to support a default trip in FY2020; however, an unexpected decrease in biomass was observed in the NLS-West between the 2018 and 2019 surveys and 2020 projections of exploitable biomass suggested that this area cannot support additional access area fishing in 2020.

Table 12 - Summary of Alternative 2 & Alternative 3 Access Area Allocations for FT LA Vessels

Open Access Areas	Allocation	Where Can Trips Be Fished?
Closed Area II	One 18,000 lb trip	<ul style="list-style-type: none">• Closed Area II
Closed Area I	½ trip FLEX trip, 9,000 lb allocation	FLEX trip allocation can be fished within any of the following access areas: <ul style="list-style-type: none">• Closed Area I• MAAA
Nantucket Lightship North	½ trip, 9,000 lb allocation	<ul style="list-style-type: none">• NLS-North Only
Nantucket Lightship South Deep	One 18,000 lb trip	<ul style="list-style-type: none">• NLS-South Deep Only
Mid-Atlantic Access Area	Two 18,000 lb trips	<ul style="list-style-type: none">• MAAA Only

Map 4 – Spatial management under Alternative 2 (six trip option with CAII-ext open area).

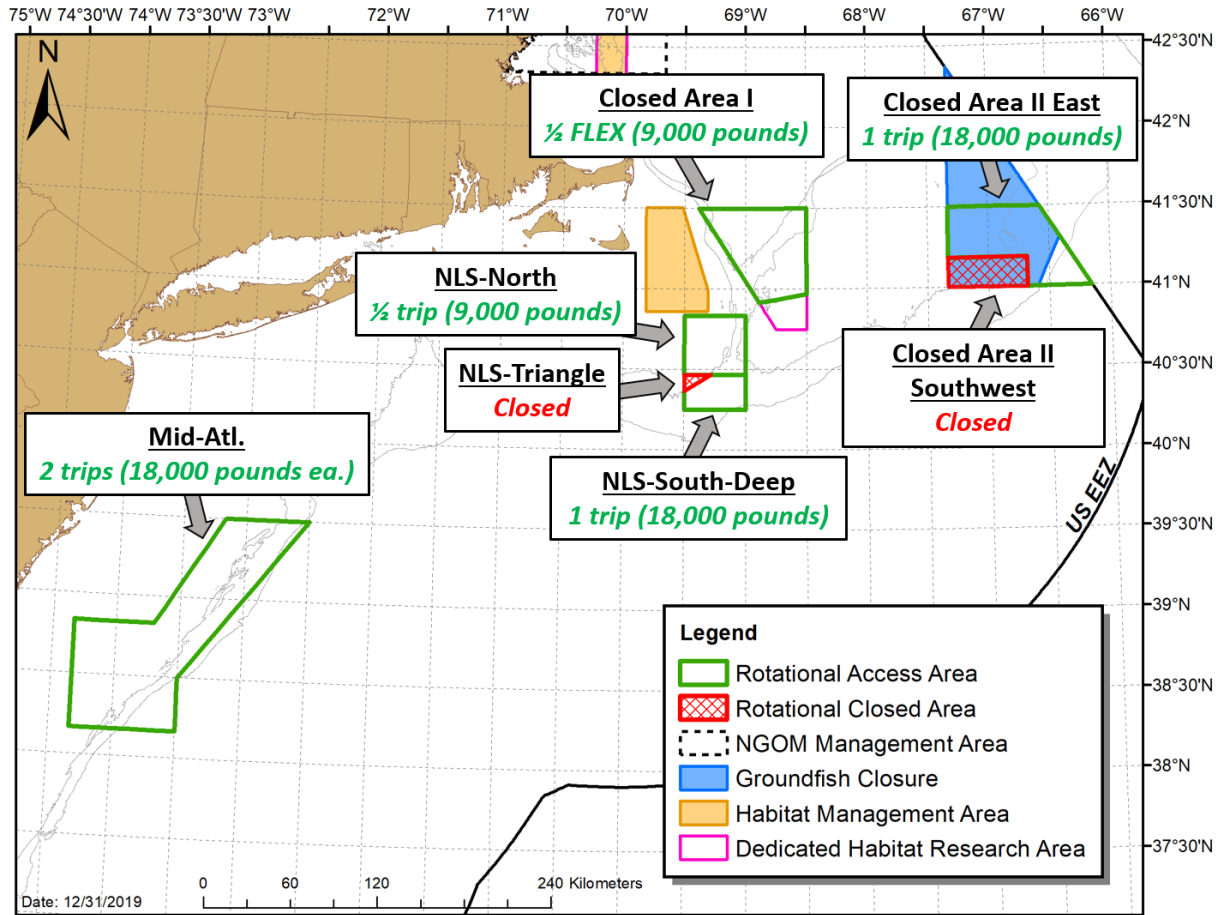


Table 13 – Coordinates of the CAII-Southwest closure proposed under Alternative 2.

Point	Latitude	Longitude
1	41° 11' 0" N	67° 20' 0" W
2	41° 11' 0" N	66° 41' 0" W
3	41° 0' 0" N	66° 41' 0" W
4	41° 0' 0" N	67° 20' 0" W
5	41° 11' 0" N	67° 20' 0" W

Table 14 – Coordinates of the Nantucket Lightship Triangle closure proposed under Alternative 2, Alternative 3, and Alternative 4.

Point	Latitude	Longitude
1	40° 28' 0" N	69° 30' 0" W
2	40° 28' 0" N	69° 17' 0" W
3	40° 22' 0" N	69° 30' 0" W
4	40° 28' 0" N	69° 30' 0" W

4.3.1.2.1 Sub-Option 1 – Open area fishing at F=0.27 (22 DAS)

Sub-Option 1 would set the FT LA DAS at 22, which is expected to result in an average open area fishing mortality rate of F=0.27 in open areas. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 48,052,682 lbs.
- The LAGC IFQ APL (5.5%) would be 2,642,897 lbs. The LAGC IFQ only (5% of APL) would be set at 2,402,634 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,982,173 lbs.
- DAS allocations for full-time, part-time, and occasional permits are shown in Table 15.

Table 15 - Summary of LA DAS allocations for each permit type at 22 DAS for FT LA vessels.

	FY 2020	FY 2021
FT LA	22	16.5
PT LA	8.8	6.6
Occ	2	1.4

4.3.1.2.2 Sub-Option 2 – Open area fishing at F=0.30 (24 DAS)

Sub-Option 2 would set the FT LA DAS at 24, which is expected to result in an average open area fishing mortality rate of F=0.30 in open areas. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 49,745,832 lbs.
- The LAGC IFQ APL (5.5%) would be 2,736,021 lbs. The LAGC IFQ only (5% of APL) would be set at 2,487,292 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 2,052,016 lbs.
- DAS allocations for full-time, part-time, and occasional permits are shown in Table 16.

Table 16 - Summary of LA DAS allocations for each permit type at 24 DAS for FT LA vessels.

	FY 2020	FY 2021
FT LA	24	18
PT LA	9.6	7.2
Occ	2	1.5

4.3.1.3 **Alternative 3 – Six Access Area Trips, Closed Area II-ext closed to open bottom fishing (*Sub-Option 2 is Preferred Alternative*)**

Alternative 3 would allocate a total of six access area trips, four would be 18,000-pound allocations, along with two ½ trips (9,000-pound allocations). Access area allocations to the fishery under this scenario would be: The Mid-Atlantic Access Area (2 FT LA trips), Closed Area II Access Area (1 FT LA trip), Closed Area I Access Area (1/2 FT LA FLEX trip), and the Nantucket Lightship North Access Area (1/2 FT LA trips), and the Nantucket Lightship South Deep Access Area (1 FT LA trip).

In the open bottom (i.e. areas outside of rotational management areas and closures), the fishery would not have access to the Closed Area II-Extension. Coordinates of the CAII-Southwest and CAII-Extension closure are provided in Table 17. In all alternatives, the Nantucket Lightship West area, which was an access area in FY 2018 and FY 2019, would be open bottom.

Within the Nantucket Lightship region, boundaries for the NLS-North would be expanded south to encompass part of the NLS-S-Shallow and the boundary for the NLS-South would shift to focus around the dense aggregations of slow-growing scallops in the deeper water (i.e. 70 m depth and greater). The NLS-South boundary was also expanded south by 5'. Alternative 3, as well as Alternative 2, would establish a small area between the NLS-North and NLS-South, designated as the “Nantucket Lightship Triangle” (NLS-Triangle), which would be closed to the fishery for FY2020. Coordinates for the proposed NLS-Triangle closure are provided in Table 14. The Nantucket Lightship Hatchet area, which remained closed as a rotational management area following the partial approval of OHA2, would become open bottom under this option. The Nantucket Lightship Hatchet was the remainder of the original Nantucket Lightship Groundfish Closure that did not overlap with scallop access areas.

The specific allocations associated with Alternative 3:

- The FY2020 Annual Projected Landings (APL) for this alternative are 50.0 million pounds (open area F=0.30, 22 DAS) or 51.6 million pounds (open area F=0.33, 24 DAS) before set-asides are accounted for (i.e. RSA, observer).
- Each full-time limited access vessel would be allocated a total of 90,000 pounds to access areas (see Table 12). The FT LA trip limit would be set at 18,000 pounds in all access areas: Closed Area II, Closed Area I, the Mid-Atlantic Access Area, Nantucket Lightship South Deep, and Nantucket Lightship North.
- For access area trips in the NLS-S-deep, crew limits for LA vessels could be increased by 2 from the maximum crew limit in regulation.
- The FLEX trip allocation (9,000 pounds) could be fished only within Closed Area I or the MAAA (see Table 12). This option would allow LA vessels to more broadly distribute effort if Closed Area I biomass projections are overly optimistic.
- Access area allocations would be set at 36,000 pounds for PT LA vessels, and 7,500 pounds for Occasional LA vessels. The LA PT trip limit would be set at 12,000 pounds, and PT vessels would receive two (2) MAAA trips and one (1) Closed Area II trip. The LA Occ trip limit would be set at 7,500 pounds, and Occ vessels would be able to fish in their allocation in the MAAA.
- The LAGC incidental target TAC would be set at 50,000 lbs.
- Allocated Limited Access access area trips would be available in the same access areas defined by Framework 32 for the first 60 days of FY2021, even if the area is scheduled to close in FY 2021 (Map 6, Map 7) . Vessels planning to fish FY2020 access area allocation must start their trip (i.e., position their VMS unit seaward of the demarcation line) by 23:59 on May 30, 2021. For example, trips allocated to the NLS-S-Deep Access Area could only be fished in the access area boundary defined by FW32 in the first 60 days of FY2021.
- FY2021 default measures under Alternative 3 would allocate FT LA vessels one (1) 18,000-pound access area trip to the Mid-Atlantic Access Area as defined by Framework 32. PT LA

vessels would be allocated one 7,200-pound access area trip to the Mid-Atlantic Access Area, as defined by Framework 32. The LAGC IFQ component would also receive access area trips to the MAAA, proportional to 5.5% of the default access area allocations to each area (trips to the MAAA). The LAGC IFQ and LA DAS allocations would be set at 75% of the FY2020 allocations.

- NLS-West Payback: If FW32 implementation is delayed, if a vessel fishes any of its default NLS-West access area trip allocated through FW30, that vessel would lose their Closed Area II AA trip allocated through this action (FW32). This does not prohibit vessels from fishing the remainder of their FY2019 NLS-West allocation (3 trips at 18,000 pounds) during the first 60 days of the 2020 FY.

Map 5 – Spatial management under Alternative 3 (CAII-Southwest and Extension closure).

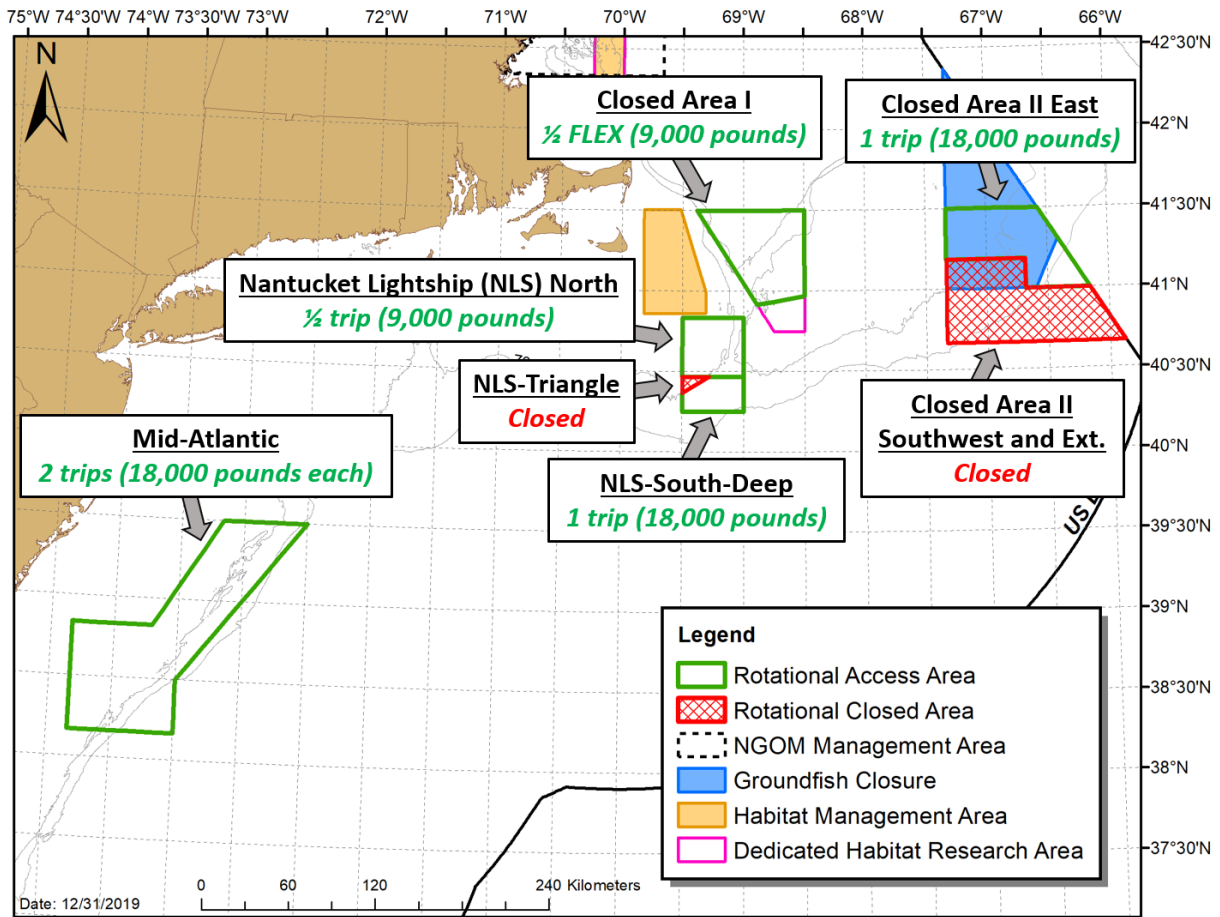
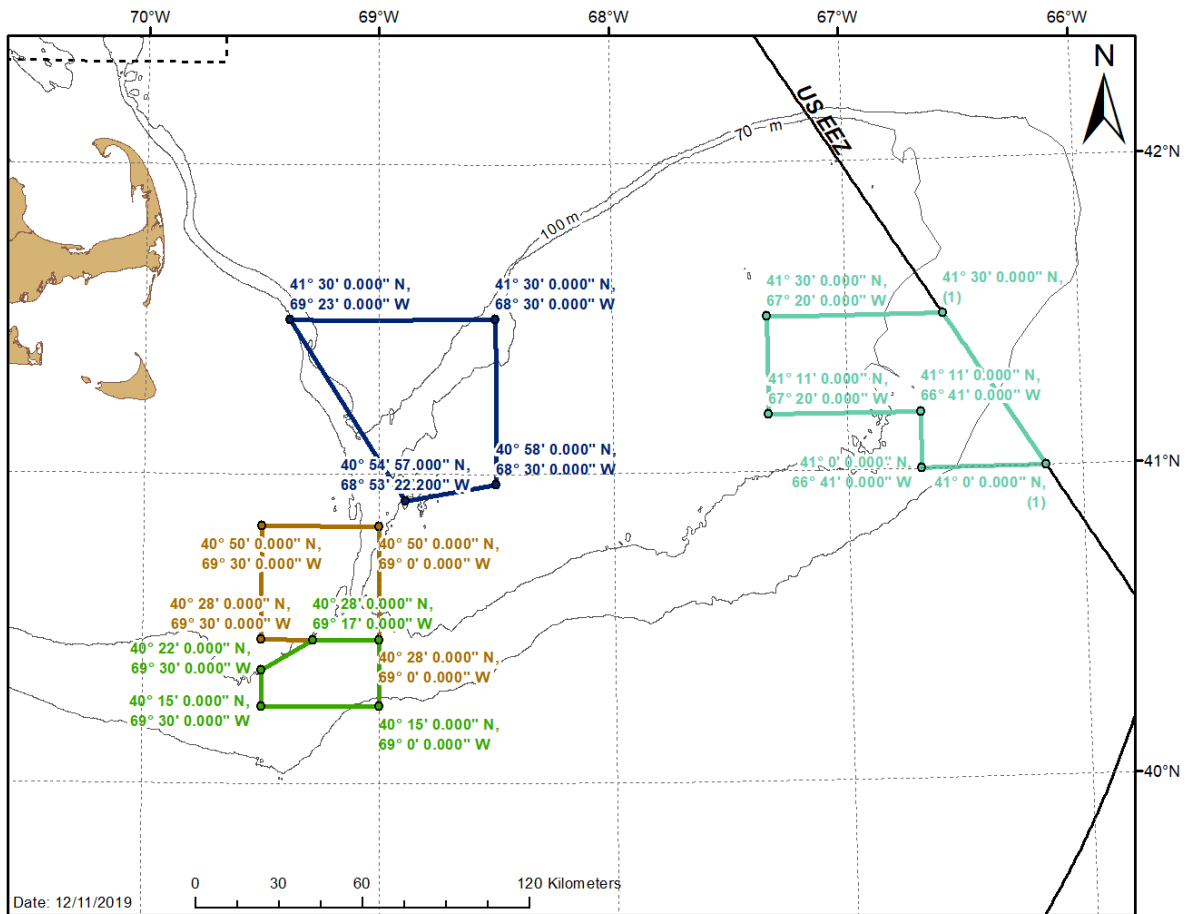


Table 17 – Coordinates of the continuous CAII-Southwest and CAII-Extension closure proposed under Alternative 3.

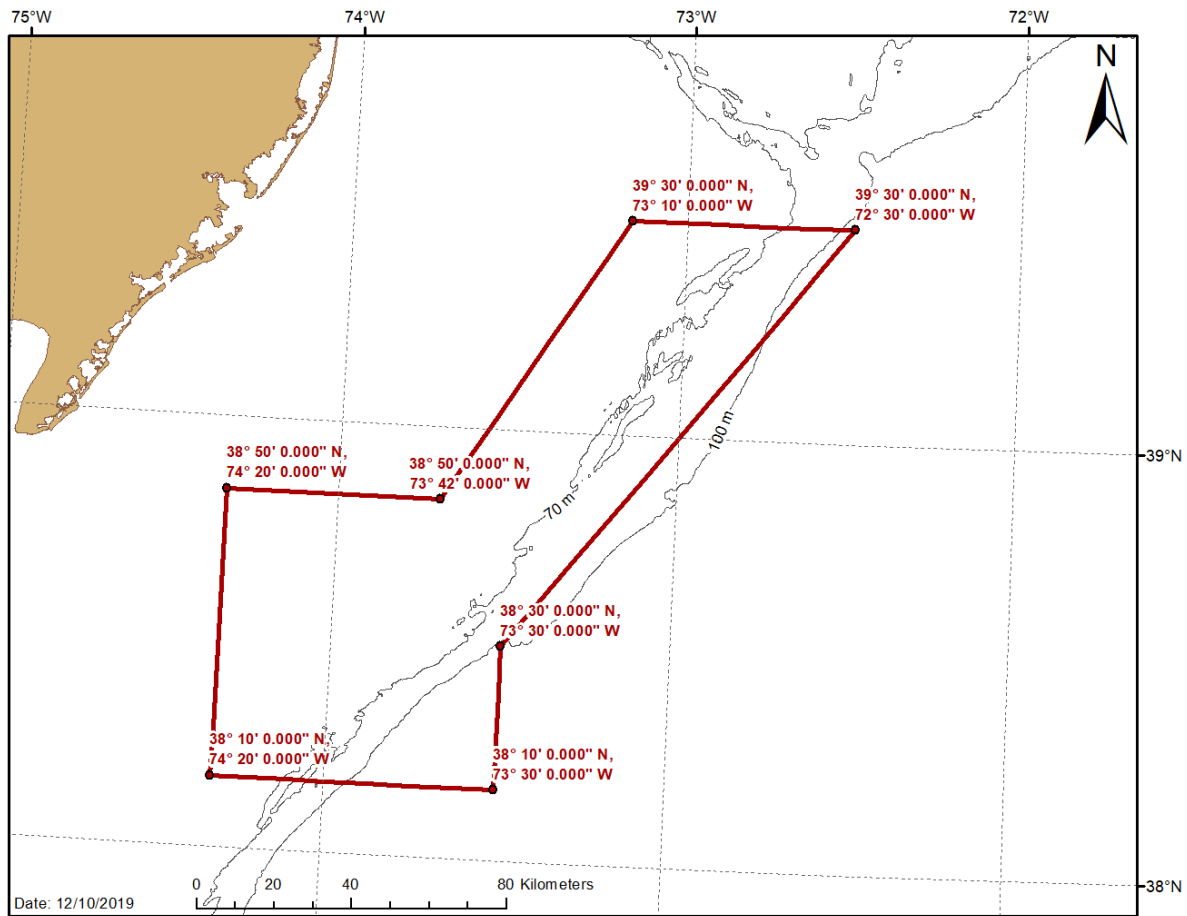
Point	Latitude	Longitude
1	41° 11' 0" N	67° 20' 0" W
2	41° 11' 0" N	66° 41' 0" W
3	41° 0' 0" N	66° 41' 0" W
4	41° 0' 0" N	(1)
5	40° 40' 0" N	(1)
6	40° 40' 0" N	67° 20' 0" W
7	41° 11' 0" N	67° 20' 0" W

(1) intersection of US-Canada Maritime Boundary

Map 6 – Proposed rotational management configuration for areas on Georges Bank in Framework 32. Access area trips may be fished within the defined boundaries of FW32 for the first 60 days of FY2021.



Map 7 – Proposed rotational management configuration for the Mid-Atlantic Access Area in Framework 32. Access area trips may be fished within the defined boundaries of FW32 for the first 60 days of FY2021.



4.3.1.3.1 Sub-Option 1 – Open area fishing at F=0.30 (22 DAS)

Sub-Option 1 would set the FT LA DAS at 22, which is expected to result in an average open area fishing mortality rate of F=0.30 in open areas when the Closed Area II extension is closed. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 47,671,282 lbs.
- The LAGC IFQ APL (5.5%) would be 2,621,921 lbs. The LAGC IFQ only (5% of APL) would be set at 2,383,564 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,966,440 lbs.
- DAS allocations for full-time, part-time, and occasional permits are shown in Table 18.

Table 18 - Summary of LA DAS allocations for each permit type at 22 DAS for FT LA vessels.

	FY 2020	FY 2021
FT LA	22	16.5
PT LA	8.8	6.6
Occ	2	1.4

4.3.1.3.2 Sub-Option 2 – Open area fishing at F=0.33 (24 DAS)

Sub-Option 2 would set the FT LA DAS at 24, which is expected to result in an average open area fishing mortality rate of F=0.33 in open areas when the Closed Area II extension is closed. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 49,318,135 lbs.
- The LAGC IFQ APL (5.5%) would be 2,712,497 lbs. The LAGC IFQ only (5% of APL) would be set at 2,465,907 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 2,034,373 lbs.
- DAS allocations for full-time, part-time, and occasional permits are shown in Table 19.

Table 19 - Summary of LA DAS allocations for each permit type at 24 DAS for FT LA vessels.

	FY 2020	FY 2021
FT LA	24	18
PT LA	9.6	7.2
Occ	2	1.5

Rationale: As a response to the large year class of scallops observed in and around CAII AA in 2019, this alternative is considering modifications to the traditional CAII AA boundary which will focus fishery effort in the eastern portion of the area (i.e. CAII-Southeast) and the western portion of the area (i.e. CAII-Southwest) will be closed to scallop fishing for the entire year (Map 4). This option also closes the Closed Area II extension to protect small scallops. The eastern boundary of CAII AA would be extended east to the Hague Line to encompass the large scallops just outside of the traditional CAII boundary. The majority of scallops in the eastern portion of CAII AA will be exploitable and are anticipated to have high yield, whereas the western portion of the area is mostly settled by the large set of 2-year-old scallops that have not yet recruited to the fishery.

Modifications to rotational boundaries in the Nantucket Lightship region are intended to optimize yield in this part of the resource. Expanding the NLS-North boundary to encompass the shallow portion of the former NLS-South would increase the biomass of adult scallops in the NLS-North and improve this fishing opportunity in FY2020. Adjusting the NLS-South boundary around the dense aggregation of slow-growing scallops is intended to focus fishing effort on the large year class of scallops in this area that will be 8 years old in FY2020. Expanding the NLS-South boundary southward by 5' will expand the area and provide vessels more room to fish considering that the scallops are relatively concentrated there. The NLS-Triangle closure comprises a small area with low scallop densities that could be used for research purposes in the absence of fishing. Establishment of the NLS-Triangle rotational area does not bind the Council to facilitating or supporting research in this area in any way.

The NLS-Hatchet area remained closed following the partial approval of OHA2 and the removal of the Nantucket Lightship groundfish closed area because there was no survey scallop survey or fishery data to inform potential fishing effort or other impacts from re-opening the area. This area is outside of the scallop dredge survey strata and outside of the projection model (SAMS) domain and is not known to be

productive scallop bottom. A 2018 survey of the area using the HabCam v3 towed vehicle did not detect any scallops larger than 35mm in this area. Since the area has been recently surveyed, and no scallops were detected, it is highly unlikely that the area would be fished.

The NLS-West payback provision is intended to disincentivize access area fishing using 2020 default allocations. This area will become open bottom in FY2020, and there may be vessels that attempt to finish harvesting their 2019 NLS-West allocation during the first 60 days of the 2020 FY. If specifications do not go into place on April 1, 2020, all FT LA vessels will be allocated an 18,000-pound access area trip to this area. When FW32 measures are implemented, this trip will not be allocated. The payback provision is intended to deter permit holders from trying to utilize default allocations that will not be awarded when new specifications go into place. Projected 2019 biomass in the NLS-West was high and this area was expected to be able to support a default trip in FY2020; however, an unexpected decrease in biomass was observed in the NLS-West between the 2018 and 2019 surveys and 2020 projections of exploitable biomass suggested that this area cannot support additional access area fishing in 2020.

The FLEX concept in this action is similar to what the Council preferred for CAI FLEX trips in FW30 and the ET-FLEX/MAAA in FW28. The FLEX allocation allows effort allocated in one area to be redistributed to another area at a vessels discretion. Closed Area I has been fished for the last two years, including CAI carryover pounds in FY2018. The 2019 surveys and 2020 projections suggest that the area can only support a partial trip in 2020. If projections for 2020 exploitable biomass are overly optimistic, it could be difficult for the fishery to harvest the allocation in CAI. Under this scenario, the FLEX concept would allow vessels to fish their “CAI” trip in the MAAA if CAI is not producing as anticipated. Vessels could opt not to go to CAI at all, or could land part of their CAI trip, and redirect the remaining FLEX allocation to the MAAA. Exploitable biomass in the MAAA is projected to be sufficient to support any redirection of effort from CAI.

The scallop meats in the NLS-S-deep area are expected to range between 30 and 50 count in 2020. Increasing the maximum crew limit on Limited Access vessels when fishing in the NLS-S-Deep Access Area is intended to allow increased processing capacity of small scallops.

4.3.1.4 Status Quo Allocations from Framework 30

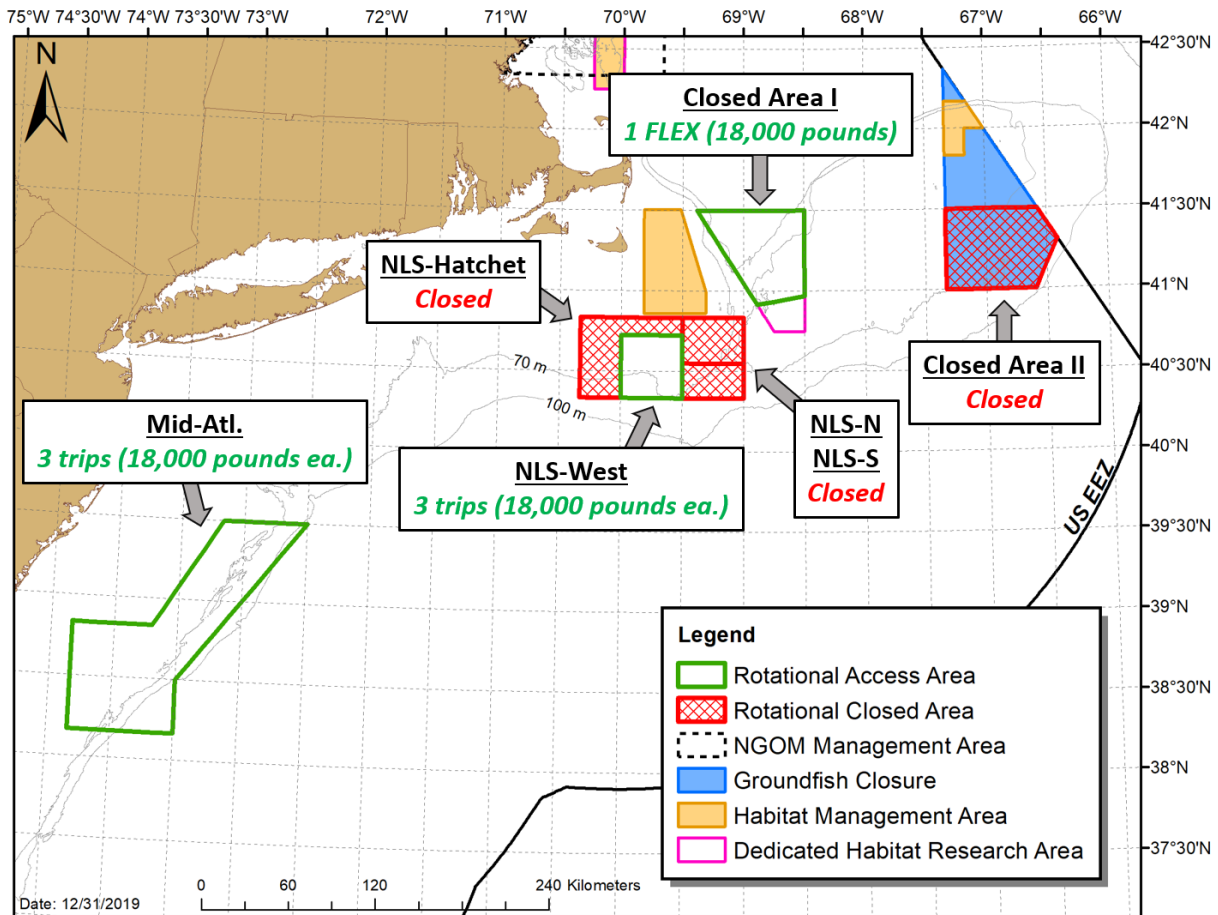
The allocations and spatial management measures that were approved for FY 2019 through Framework 30 are presented for a “status quo” comparison with updated spatial management alternatives (Section 4.3.1.2, Section 4.3.1.3). The impact analyses in this action (Section 6.0) include the impacts of “no change” to the spatial management scenarios because it is a more realistic comparison than to No Action (Section 4.3.1.1), which only captures trade-offs between the default measures approved in FW30 (i.e. partial allocations). A description of the Framework 30 preferred measures is provided in the alternatives section of Framework 32 to provide continuity and context for the reader, but is not an option proposed for Council decision.

In Framework 32, the Status Quo run that is presented deviates from the modeling assumptions made in FW30 due to substantial changes in scallop biomass. Therefore, Status Quo should not be considered a perfect comparison to the FY2019 approach to spatial management. For example, Framework 30 allocated three FT LA trips with 18,000-pound allocations to the Nantucket Lightship West for FY2019, and anticipated that fishing options would be available in this area for FY2020. In contrast, updated forward projections of exploitable biomass in the NLS-West suggests that this area could not support one FT LA trip in FY 2020. Therefore, the model fishes this area at an $F=2.0$, and then assumes harvesters will not attempt to continue fishing the area. These assumptions have impacts on estimates of fishing mortality and swept area and are discussed in Section 6.0 of this action. Framework 30 allocated full-time limited access vessels a total of seven access area trips with an 18,000-pound trip limit, translating to a total access area allocation of 126,000 pounds per vessel. The Council allocated three (3) trips to the Nantucket Lightship-West, three (3) trips to the Mid-Atlantic Access Area, and one (1) Closed Area I

FLEX trip (Map 8). The Flex trip allocation (18,000 pounds) could be fished within Closed Area I, the Nantucket Lightship-West, and(or) the Mid-Atlantic Access Area. This option was developed and selected so that LA vessels could redirect effort outside of Closed Area I if the biomass projection for this area was overly optimistic.

Fishing the open bottom at an $F=0.23$ would result in an allocation of 18 DAS in FY2020 (vs. 24 DAS in FY2019). Applying status quo spatial management in FY 2020 would be expected to result in a total APL of 44.8 million pounds, which is roughly 28% less than the 62.5 million pound APL associated with the same spatial management and open area F applied for FY2019.

Map 8 – Status Quo spatial management (FW30 allocations for FY2019).



4.3.2 Full Time Limited Access Trip Exchanges

4.3.2.1 Alternative 1 - No Action

Under Alternative 1 there would be no change to the current trip exchange regulations. This would mean that access area allocations would only be exchangeable on a one-for-one basis at the increment of the possession limit (i.e. 18,000 pounds). Under this option, 9,000-pound trips in the NLS-North and CAI would not be exchangeable.

Rationale: This is the existing model for access area exchanges that has been in place since Amendment 10. For the first time, in this action (FW32), the Council is considering allocating access area trips to the FT LA fleet at different increments (i.e. 18,000 pounds, 9,000 pounds) to support partial access in areas that do not have enough exploitable biomass to support effort from the entire fishery (i.e. Closed Area I, NLS-North).

4.3.2.2 Alternative 2 - Allow pound-for-pound exchanges at 9,000 pounds for FT LA vessels (*Preferred Alternative*)

Alternative 2 would allow pound-for-pound exchanges of access area allocations in all areas at increments of 9,000 pounds (i.e. the lowest access area allocation in FW32) for FT LA vessels. All access area allocations could be exchanged at an increment of 9,000 pounds regardless of the initial allocation. For example, 9,000 pounds from the NLS-North could be exchanged for 9,000 pounds from CAI. CAI “flex” allocation could be fished in either CAI or the MAAA.

There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (i.e. 12,000 pounds).

Rationale: This alternative is intended to improve flexibility to individual vessels, allowing each vessel to pursue fishing opportunities that make the most sense for them. Allocating partial trips and allowing access area allocations to be exchanged at the lowest increment of allocation (i.e. 9,000 pounds) is viewed as an equitable, alternative approach to a lottery system. Lottery systems have been employed by the Council in the past to allocate access to areas with not enough exploitable biomass to support effort of a full trip. The lottery has been characterized by some as inequitable because the resulting allocations can be advantageous for some but not others. Like the existing trip exchange measures in the Scallop FMP, allowing trip exchanges at 9,000-pound increments does not change the level of harvest expected from each access area. In future years, this establishes a process for allowing trip exchanges at different allocation levels to access areas. Part time and occasional vessels were not included in this option because they would receive equal trip allocations to Closed Area II and the MAAA, whereas FT LA vessels would receive allocations of 9,000 pounds in some areas, and 18,000 pounds in others.

4.3.2.3 Alternative 3 - Lottery for Closed Area I and NLS-N trips

Allocate a split trip to the NLS-North and CAI using a random, non-regional lottery system. If Alternative 3 is selected, half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half of the FT LA fleet would receive one, 18,000-pound “flex” trip to CAI. CAI “flex” allocation could be fished in either CAI or the MAAA. One-for-one trip exchanges would be permitted for all access area trips at increments of the possession limit (i.e. 18,000 pounds).

Rationale: A lottery system is a way to allocate access area trips when there is not enough biomass in an area to support a full trip. The lottery allows larger trips to be allocated (e.g., 18,000 pounds vs. 9,000 pounds). This alternative is consistent with the approach used by the Council to allocate access to areas with not enough exploitable biomass to support removals from the entire LA component.

4.4 ACTION 4 - ACCESS AREA TRIP ALLOCATIONS TO THE LAGC IFQ COMPONENT

4.4.1 Alternative 1 – No Action (Default measures from FW30)

Alternative 1 would set LAGC IFQ access area trips at 571 trips to the Mid-Atlantic Access Area, and 571 trips to Nantucket Lightship West, which is the number of trips specified through default measures in Framework 30. As noted above, the LAGC IFQ fishery is allocated a fleet wide total number of access area trips. Individual vessels are not required to take trips in specific areas. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

Rationale: Framework 30 specified a set number of LAGC IFQ access area trips in default measures to provide LAGC IFQ vessels fishing opportunities should updated specifications for FY2020 be delayed. Default access area trip allocations for the LAGC IFQ component reflects the trip equivalent of 5.5% of the default access area allocation to the FT LA fleet.

4.4.2 Alternative 2 – Update LAGC IFQ Access Area Trip Allocations, Distribute Closed Area II Access Area Allocation to CAI and NLS-N Access Areas (*Preferred Alternative*)

Under Alternative 2, the number of total access area trips allocated to the LAGC IFQ component under this option would be dependent upon the APL value in each specification run (Section 4.3), and is driven by the number of access area trips that are allocated to the FT LA component. When 5.5% is applied to the FT LA access area allocations for FY2020 (i.e. four 18,000-pound allocations and two 9,000-pound allocations), the LAGC IFQ component would receive 2,855 trips. This method has been used in previous actions.

Alternative 2 would allocate LAGC IFQ access area trips proportional to the LA allocations in each access area (Table 20) and would distribute the LAGC IFQ Closed Area II trip allocation to Closed Area I and the Nantucket Lightship North. As shown in Table 20, this would result in 571 LAGC access areas trips to Closed Area I, 571 LAGC access area trips to the Nantucket Lightship North, and 1,142 LAGC access area trips to the MAAA. There would be 571 trips available in the NLS-S-deep access area.

Rationale: The Closed Area II LAGC IFQ trip allocation would be distributed to Georges Bank access areas. Since Closed Area II is considered part of the LAGC IFQ’s Georges Bank share of access area trip allocation, this option would keep LAGC IFQ trips on Georges Bank proportional to the total FT LA access area allocation for Georges Bank.

Under Alternative 2, allocations would follow the 94.5% and 5.5% split, as specified in Amendment 11. This approach leads to more opportunity for the LAGC IFQ to harvest scallops from access areas compared to Alternative 1(No Action).

Table 20 - Potential LAGC IFQ Access Area Trips by Area for FY 2020.

Specs. Alt.	Distribution of CAII trips	LAGC IFQ Trips	CAI	NLS-North	NLS-S-deep	MAAA
		Total Trips	Allocated LAGC Trips to Each Access Area			
Alt. 1	No Action	1,142	571 to NLS-West and 571 to MAAA			
Alt. 2	NLS-N, CAI	2,855	571	571	571	1,142

4.5 ACTION 5 - ADDITIONAL MEASURES TO REDUCE FISHERY IMPACTS

4.5.1 RSA Compensation Fishing

4.5.1.1 Alternative 1 – No Action

Under No Action, Research Set-Aside (RSA) compensation fishing would be restricted to areas open to LA DAS fishing only. Vessels with RSA poundage would not be allowed to harvest RSA compensation from access areas.

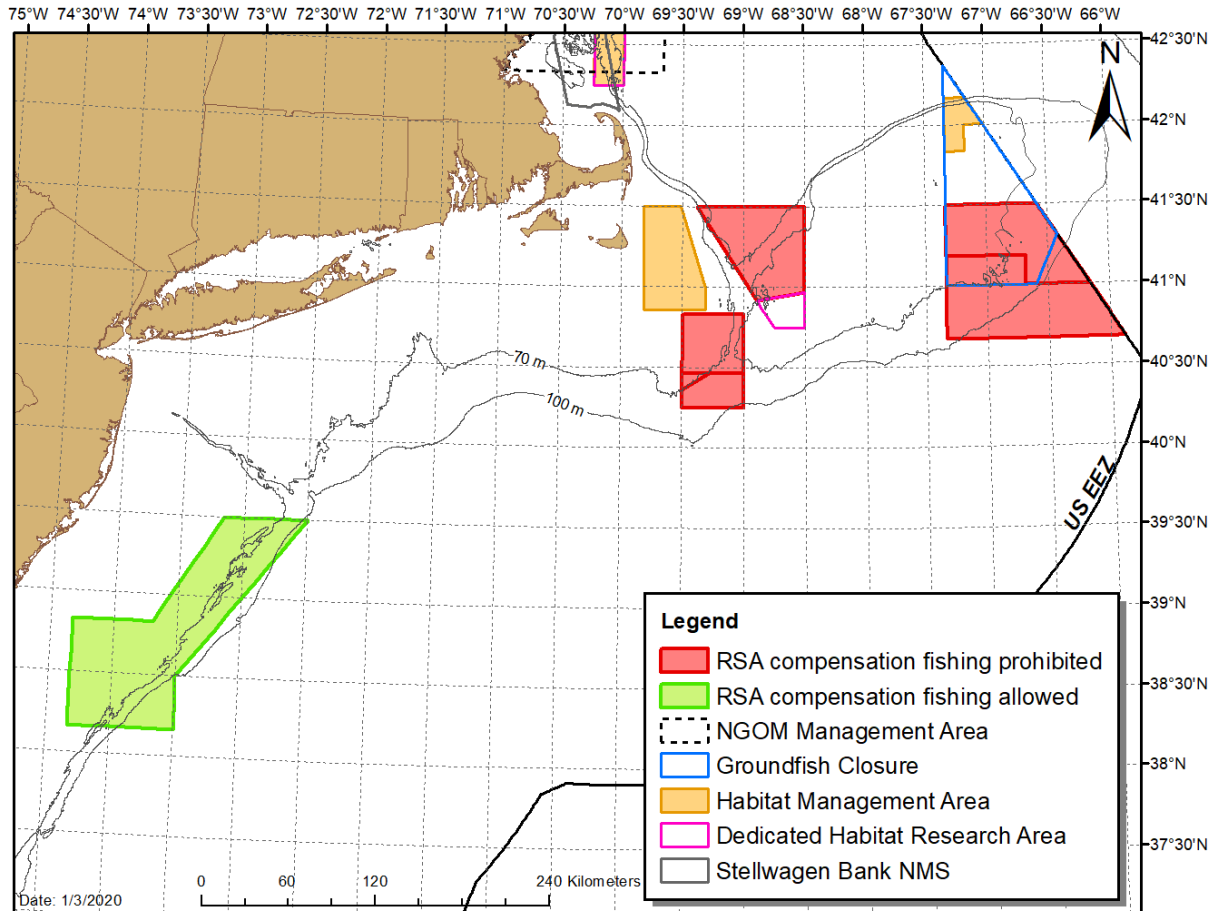
4.5.1.2 Alternative 2 – Allow RSA compensation fishing in the Mid-Atlantic Access Area, with limited RSA compensation fishing in the NGOM Management Area (*Preferred Alternative*)

Under Alternative 2, RSA compensation fishing would be permitted only in the Mid-Atlantic Access Area, the Northern Gulf of Maine Management Area, and in open areas (Map 9). RSA compensation fishing would not be permitted in the following access areas: Closed Area II Access Area, Closed Area I Access Area, Nantucket Lightship North Access Area, and the Nantucket Lightship South Deep Access Area.

RSA compensation fishing would be permitted in the NGOM management area, per NGOM alternatives as specified in Section 4.2. RSA compensation fishing would be permitted in the NGOM management area up to the poundage specified in the Council's preferred alternative for the Limited Access share of the NGOM TAC, and only by vessels that are awarded NGOM RSA compensation pounds.

Rationale: This provision is intended to 1) Accurately account for scallop removals in the NGOM by restricting RSA compensation fishing to vessels that receive a portion of the LA TAC; 2) Facilitate access to high densities of scallops in the Mid-Atlantic Access Area; 3) reduce impacts on small scallops and flatfish in Closed Area II, specifically Northern windowpane flounder and Georges Bank yellowtail flounder; 4) Reduce overall mortality in access areas where a full trip of 18,000 pounds was not allocated (i.e. Nantucket Lightship North and Closed Area I).

Map 9 – Rotational access areas where RSA compensation fishing can and cannot occur in FY2020 under Alternative 2.



4.5.2 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

4.5.2.1 Alternative 1 – No Action

There would be no change to when scallop vessels could access the Closed Area II Access Area. The existing seasonal closure to protect flatfish would remain in place from August 15 – November 15 of each year.

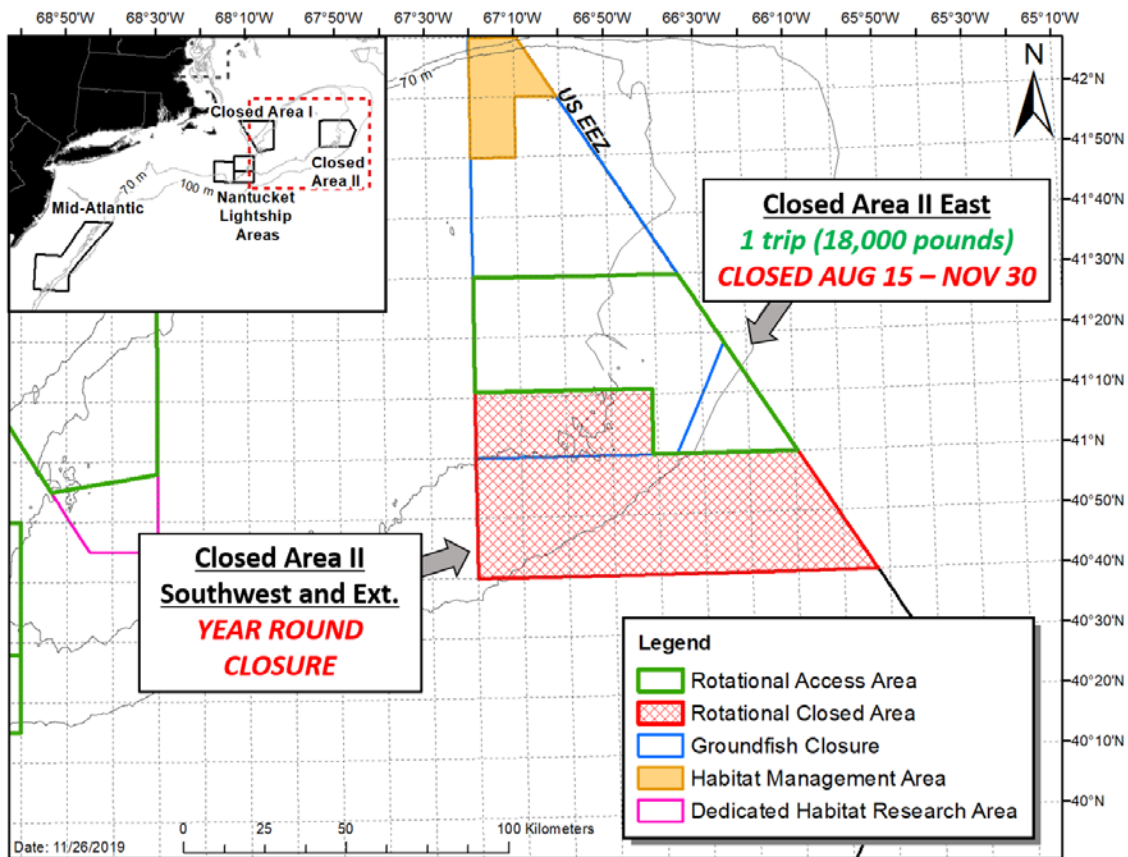
Rationale: The existing seasonal closure of Closed Area II Access Area is targeted around a time of year when GB yellowtail bycatch rates are known to be relatively high.

4.5.2.2 Alternative 2 – Extend Seasonal Closures of Closed Area II Access Area through November 30th in FY 2020 (*Preferred Alternative*)

Alternative 2 would extend the existing Closed Area II Access Area seasonal closure by two weeks in November, making the newly configured area closed from August 15 until November 30, as a means to further reduce bycatch of Georges Bank yellowtail flounder and Northern windowpane flounder (Map 10). Closed Area II Access Area would re-open to access area fishing on December 1, 2020. This measure would be in place for one year, and expire after the 2020 fishing year.

Rationale: Historically, GB yellowtail and Northern windowpane d/K ratios have been higher in November compared to the summer months in CAII Access Area. Though scallop landings from CAII Access Area have been lower in November than the late-spring early-summer months, the bycatch savings expected by extending the existing closure an additional two weeks are anticipated to reduce catch of both GB yellowtail and Northern windowpane flatfish stocks. Additionally, extending the seasonal closure in CAII compliments other measures that are expected to reduce bycatch in this action, such as the year-round closure of a portion of Closed Area II AA (i.e. Closed Area II Southwest) and Closed Area II-Ext, and restricting RSA compensation fishing from Closed Area II Access Area.

Map 10 - Area coverage of the extended CAII seasonal closure under Alternative 2 (Aug. 15 – Nov. 30, 2020).



4.6 CONSIDERED BUT REJECTED ALTERNATIVES

The alternatives below were considered but rejected by the Council for the following reasons.

The NGOM TAC option of $F=0.25$ was the highest fishing mortality initially considered in FW32 and did not align with the Council's intent to maintain conservative harvest levels in the NGOM management area.

The specification alternatives with the largest closure on eastern Georges Bank and its DAS sub-options were rejected because they were expected to result in the highest fishing mortality of all options considered in this action. Closing the southern flank and keeping DAS constant resulted in a higher overall open area F . Additional analyses showed that there were fewer small scallops in the proposed closure area than originally expected. The tradeoff of increased open area fishing mortality for was not worthwhile because of the additional limitations such a closure would place open area fishing and potential that it would redirect effort to other parts of the resource with high northern windowpane flounder bycatch.

All 20 DAS sub-options were rejected because this level of open area fishing is unnecessarily conservative considering that the F rate associated with the preferred option (24 DAS) is already far below the upper limit of mortality associated with the OFL and ABC and is consistent with open area allocations in recent years.

The sub-options for distributing access area trip allocations to the LAGC IFQ component were rejected because the Council preferred redistributing Closed Area II trips to Closed Area I and the Nantucket Lightship North.

4.6.1 Northern Gulf of Maine TAC Setting

4.6.1.1 Sub-Option 3 – Set NGOM TAC at $F=0.25$

The overall NGOM TAC would be set by applying a fishing mortality rate of $F=0.25$ to the exploitable biomass in Ipswich Bay and on Jeffrey's Ledge. The FY 2020 overall TAC would be set at 435,000 lbs, and the FY 2021 default TAC would be set at 320,000 lbs. The LAGC share of the FY 2020 NGOM TAC would be 252,500 lbs, while the LA/RSA share would be set at 182,500 lbs.

4.6.2 Fishery Specifications

4.6.2.1 Alternative 2 – 20 DAS option

Sub-Option 1 would set the FT LA DAS at 20, which is expected to result in an average open area fishing mortality rate of $F=0.24$ in open areas. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 46,333,076 lbs.
- The LAGC IFQ APL (5.5%) would be 2,548,319 lbs. The LAGC IFQ only (5% of APL) would be set at 2,316,654 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,911,239 lbs.

4.6.2.2 **Alternative 3 – 20 DAS option**

Sub-Option 1 would set the FT LA DAS at 20, which is expected to result in an average open area fishing mortality rate of $F=0.27$ in open areas when the Closed Area II extension is closed. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 46,006,792 lbs.
- The LAGC IFQ APL (5.5%) would be 2,530,374 lbs. The LAGC IFQ only (5% of APL) would be set at 2,300,340 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,897,780 lbs.

4.6.2.3 **Alternative 4 - Six Access Area Trips, Closed Area II-ext and part of the Southern Flank closed to open bottom fishing**

Alternative 4 would allocate a total of six access area trips, four would be 18,000 pounds allocations, along with two ½ trips (9,000 pound allocations). Access areas open to the fishery under this scenario would be: The Mid-Atlantic Access Area (2 FT LA trips), Closed Area II Access Area (1 FT LA trip), Closed Area I Access Area (1/2 FT LA FLEX trip), and the Nantucket Lightship North Access Area (1/2 FT LA trips), and the Nantucket Lightship South Deep Access Area (1 FT LA trip).

In the open bottom (areas outside of rotational management areas and closures), the fishery would not have access to CAII-Southwest, CAII-Extension, or a portion of the southern flank (Map 11); coordinates of the proposed “Southeast Part” closure are provided in Table 21. In all alternatives, the Nantucket Lightship West area, which was an access area in FY 2018 and FY 2019 would be open bottom.

Within the Nantucket Lightship region, boundaries for the NLS-North would be expanded south to encompass part of the NLS-S-Shallow and the boundary for the NLS-South would shift to focus around the dense aggregations of slow-growing scallops in the deeper water (i.e. 70 m depth and greater). The NLS-South boundary was also expanded south by 5'. Alternative 3, as well as Alternatives 2 and 4, would establish a small area between the NLS-North and NLS-South, designated as the “Nantucket Lightship Triangle” (NLS-Triangle), which would be closed to the fishery for FY2020. Coordinates for the proposed NLS-Triangle closure are provided in Table 14. The Nantucket Lightship Hatchet area, which remained closed as a rotational management area following the partial approval of OHA2 would become open bottom under this option. The Nantucket Lightship Hatchet was the remainder of the original Nantucket Lightship Groundfish Closure that did not overlap with scallop access areas.

The specific allocations associated with Alternative 4:

- The FY2020 Annual Projected Landings (APL) for this alternative are 46.7 million pounds (open area $F=0.30$, 20 DAS), 48.2 million pounds (open area $F=0.34$, 22 DAS), or 49.7 million pounds (open area $F=0.38$, 24 DAS) before set-asides are accounted for (i.e. RSA, observer).
- Each full-time limited access vessel would be allocated a total of 90,000 access area pounds (see Table 12). The FT LA trip limit would be set at 18,000 lbs in all available access areas: Closed Area II, Closed Area I, the Mid-Atlantic Access Area, Nantucket Lightship South Deep, and Nantucket Lightship North.
- For access area trips in the NLS-S-deep, crew limits for LA vessels could be increased by 2 from the maximum crew limit in regulation.
- The FLEX trip allocation (9,000 pounds) could be fished only within Closed Area I or the MAAA (see Table 12). This option would allow LA vessels to more broadly distribute effort if Closed Area I biomass projections are overly optimistic.
- Access area allocations would be set at 36,000 pounds for PT LA vessels. LA PT trip limit would be set at 12,000 pounds, and PT vessels would receive two (2) MAAA trips and one (1) Closed Area II trip.

- The LAGC incidental target TAC would be set at 50,000 lbs.
- Allocated Limited Access access area trips would be available in the same access areas defined by Framework 32 for the first 60 days of FY2021, even if the area is scheduled to close in FY 2021. Vessels planning to fish 2020 access area allocation must start their trip (i.e., position on their VMS unit seaward of the demarcation line) by 23:59 on May 30, 2021. For example, trips allocated to the NLS-S-Deep Access Area could only be fished in the access area boundary defined by FW32 in the first 60 days of FY2021.
- FY2021 default measures under Alternative 2 would allocate FT LA vessels one (1) 18,000 pound access area trip to the Mid-Atlantic Access Area as defined by Framework 32. PT LA vessels would be allocated one 7,200 pound access area trip to the Mid-Atlantic Access Area, as defined by Framework 32. The LAGC IFQ component would also receive access area trips to the MAAA, proportional to 5.5% of the default access area allocations to each area (trips to the MAAA). The LAGC IFQ and LA DAS allocations would be set at 75% of the 2020 allocations.

Map 11 – Spatial management under Alternative 4 (Southeast Part closure).

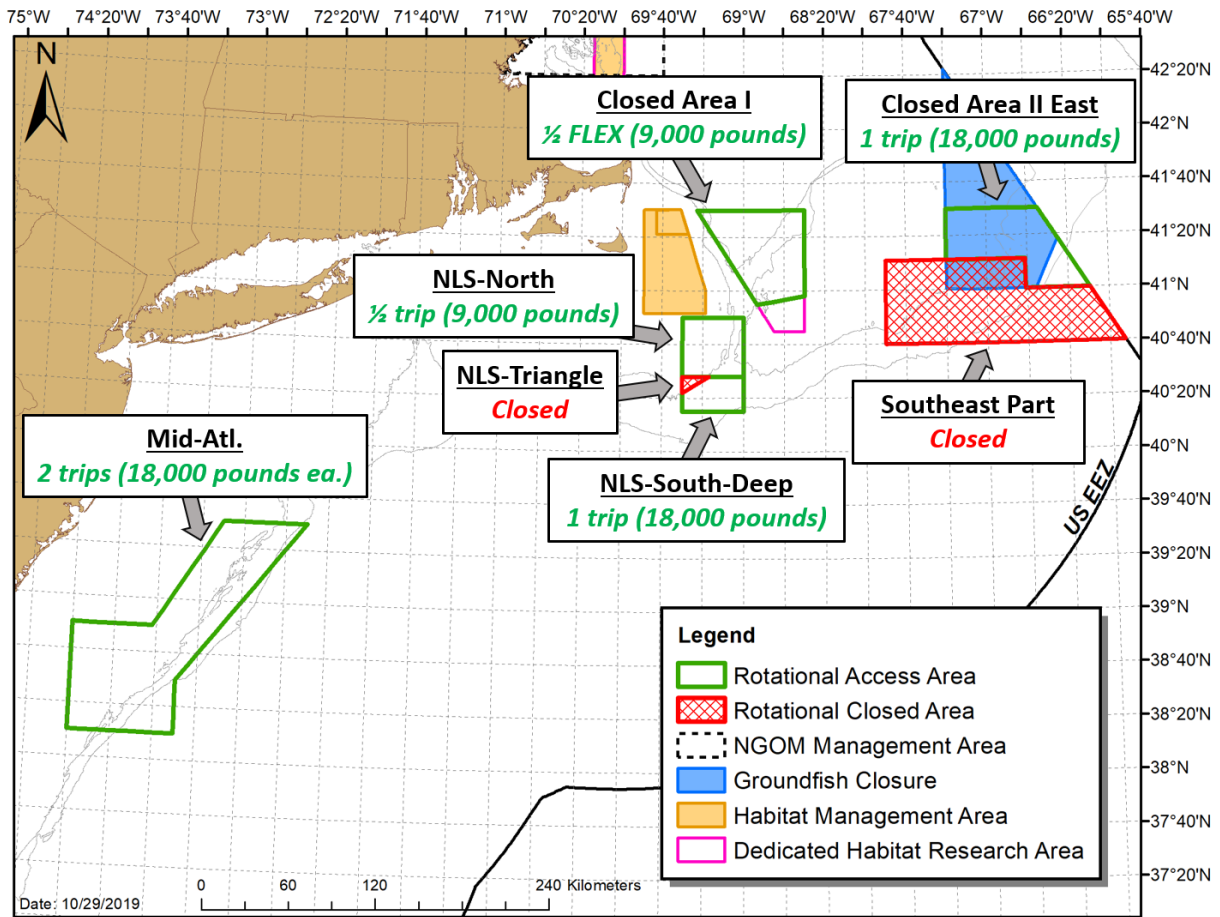


Table 21 – Coordinates of the “Southeast Part” closure proposed under Alternative 4. Note that coordinates represent a continuous boundary of CAII-Southwest, CAII-Extension, and part of the Southern Flank.

Point	Latitude	Longitude
1	41° 11' 0" N	67° 50' 0" W
2	41° 11' 0" N	66° 41' 0" W
3	41° 0' 0" N	66° 41' 0" W
4	41° 0' 0" N	(1)
5	40° 40' 0" N	(1)
6	40° 40' 0" N	67° 50' 0" W
7	41° 11' 0" N	67° 50' 0" W

(1) intersection of US-Canada Maritime Boundary

4.6.2.4 Sub-Option 1 – Open area fishing at F=0.30 (20 DAS)

Sub-Option 1 would set the FT LA DAS at 20, which is expected to result in an average open area fishing mortality rate of F=0.30 in open areas when the Closed Area II extension and the southern flank east are closed. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 44,393,008 lbs.
- The LAGC IFQ APL (5.5%) would be 2,441,615 lbs. The LAGC IFQ only (5% of APL) would be set at 2,219,650 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,831,212 lbs.

4.6.2.5 Sub-Option 2 – Open area fishing at F=0.34 (22 DAS)

Sub-Option 2 would set the FT LA DAS at 22, which is expected to result in an average open area fishing mortality rate of F=0.34 in open areas when the Closed Area II extension and the southern flank east are closed. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 45,907,584 lbs.
- The LAGC IFQ APL (5.5%) would be 2,524,917 lbs. The LAGC IFQ only (5% of APL) would be set at 2,295,379 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,893,688 lbs.

4.6.2.6 Sub-Option 3 – Open area fishing at F=0.38 (24 DAS)

Sub-Option 2 would set the FT LA DAS at 24, which is expected to result in an average open area fishing mortality rate of F=0.38 in open areas when the Closed Area II extension and the southern flank east are closed. The specific allocations associated with Alternative 2 would be:

- The APL after set-asides are removed would be 47,395,704 lbs.
- The LAGC IFQ APL (5.5%) would be 2,606,764 lbs. The LAGC IFQ only (5% of APL) would be set at 2,369,785 lbs. The FY 2021 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2020 value, which would be 1,955,073 lbs.

Rationale: As a response to the large year class of scallops observed in and around CAII AA in 2019, this alternative is considering modifications to the traditional CAII AA boundary which will focus fishery effort in the eastern portion of the area (i.e. CAII-Southeast) and the western portion of the area (i.e. CAII-Southwest) will be closed to scallop fishing for the entire year (Map 4). This option also closes the Closed Area II extension and part of the Southern Flank to protect small scallops. The eastern boundary of CAII AA would be extended east to the Hague Line to encompass the large scallops just outside of the traditional CAII boundary. The majority of scallops in the eastern portion of CAII AA will be exploitable and are anticipated to have high yield, whereas the western portion of the area is mostly home to the large set of 2-year-old scallops that have not yet recruited to the fishery.

Modifications to rotational boundaries in the Nantucket Lightship region are intended to optimize yield in this part of the resource. Expanding the NLS-North boundary to encompass the shallow portion of the former NLS-South would increase the biomass of adult scallops in the NLS-North and improve this fishing opportunity in FY2020. Adjusting the NLS-South boundary around the dense aggregation of slow-growing scallops is intended to focus fishing effort on the large year class of scallops in this area that will be 8 years old in FY2020. Expanding the NLS-South boundary southward by 5' will expand the area and provide vessels more room to fish considering that the scallops are relatively concentrated there. The NLS-Triangle closure comprises a small area with low scallop densities that could be used for research purposes in the absence of fishing. Establishment of the NLS-Triangle does not bind the Council to facilitating or supporting research in this area in any way.

The NLS-Hatchet area remained closed following the partial approval of OHA2 and the removal of the Nantucket Lightship groundfish closed area because there was no survey scallop survey or fishery data to inform potential fishing effort or other impacts from re-opening the area. This area is outside of the scallop dredge survey strata and outside of the projection model (SAMS) domain and is not known to be productive scallop bottom. A 2018 survey of the area using the HabCam v3 towed vehicle did not detect any scallops larger than 35mm in this area. Since the area has been recently surveyed, and no scallops were detected, it is highly unlikely that the area would be fished

4.6.3 Access Area Trip Allocations to the LAGC IFQ

4.6.3.1 Sub Option 1: Distribute Closed Area II Access Area Allocation to the MAAA, CAI, and NLS-N Access Areas

Sub-Option 1 would distribute the LAGC IFQ Closed Area II trip allocation evenly across Closed Area I, the Nantucket Lightship North, and the Mid-Atlantic Access Area, in addition to the baseline trip allocation for these respective areas. As shown in Table 20, this would result in 476 LAGC access areas trips to Closed Area I and the Nantucket Lightship North, and 1,333 trips to the MAAA. There would be 571 trips available in the NLS-S-deep access area.

Rationale: The Closed Area II LAGC IFQ trip allocation would be distributed to Georges Bank and the Mid-Atlantic access areas, increasing access area fishing opportunities across both regions of the fishery.

4.6.3.2 Sub-Option 3: Sub-Option 3: Distribute Closed Area II Access Area Allocation to CAI, NLS-N, and NLS-S-deep Access Areas

Sub-Option 3 would distribute the LAGC IFQ Closed Area II allocation evenly across Closed Area I, the Nantucket Lightship North, and the Nantucket Lightship South-Deep Access Areas. As shown in Table 20, this would result in 476 LAGC access areas trips to Closed Area I, 476 LAGC access area trips to the Nantucket Lightship North, 761 LAGC access area trips to the NLS-S-Deep Access Area, and 1,142 trips to the MAAA.

Rationale: The Closed Area II LAGC IFQ trip allocation would be distributed to Georges Bank access areas. Since Closed Area II is considered part of the LAGC IFQ's Georges Bank share of access allocation, this option would keep LAGC IFQ trips on GB proportional to the total FT LA access area allocation for Georges Bank.

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, predator 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 ATLANTIC SEA SCALLOP RESOURCE

5.2.1 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 2 - 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.

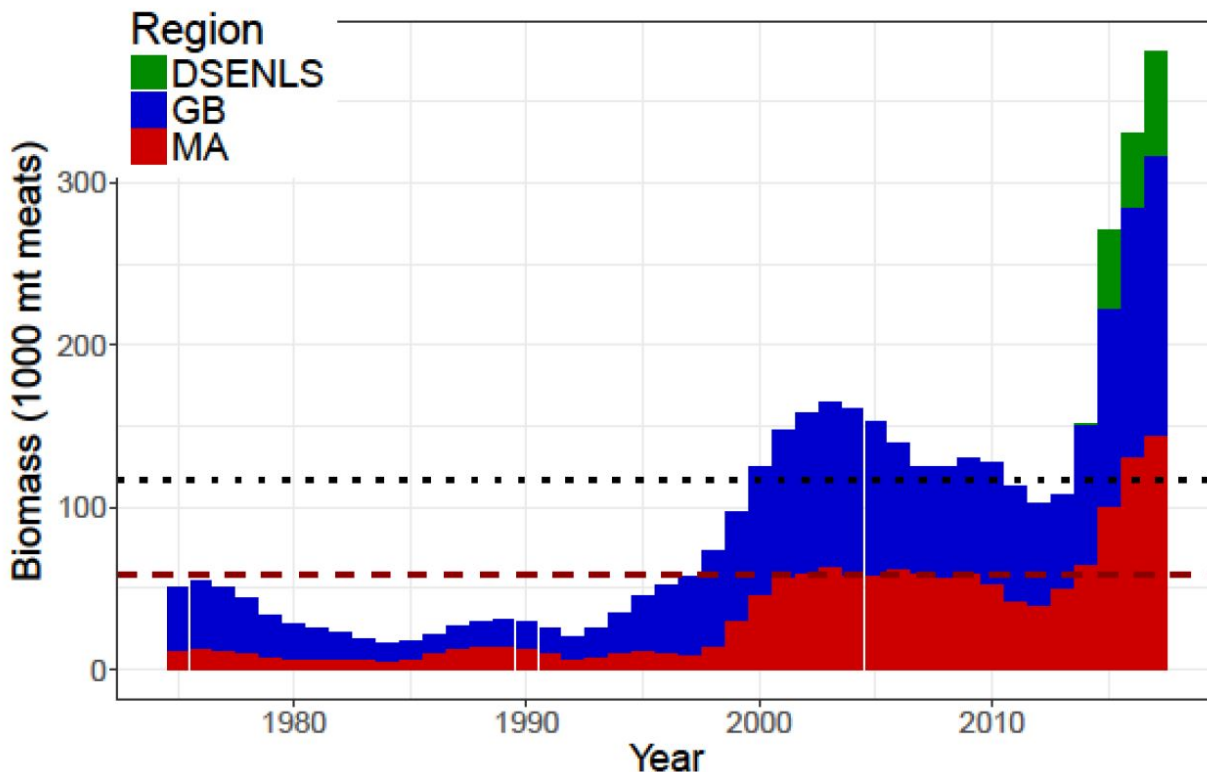


Figure 3 - Fully recruited annual fishing mortality rate for scallop from 1975 - 2017

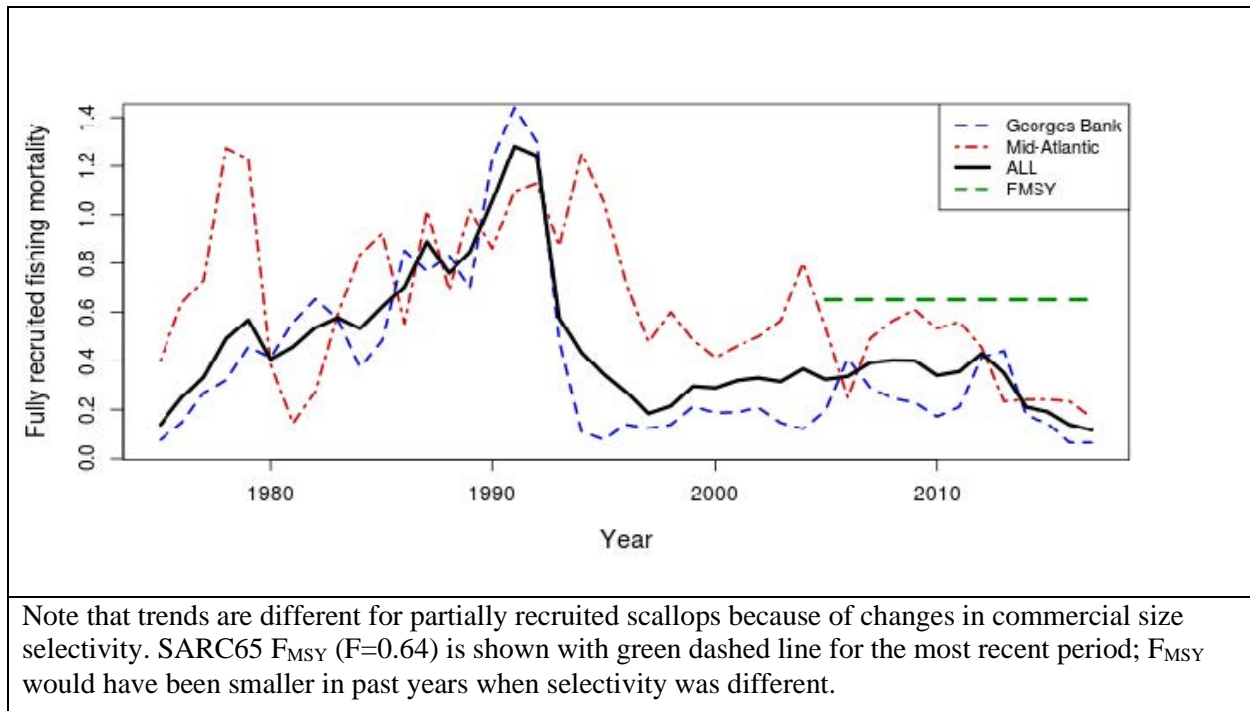


Table 22 - 2017 Atlantic sea scallop stock status.

	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.		

5.2.2 Northern Gulf of Maine

In 2019, the University of Maine and Maine Department of Marine Resources (DMR) conducted a dredge survey of the Northern Gulf of Maine and the portion of Stellwagen Bank directly south of the NGOM. The survey area covered Stellwagen Bank, southern Jeffreys Ledge, Ipswich Bay, and Platts Bank, as well as other areas off the coast of Downeast Maine. Survey coverage was slightly different than the 2016 survey (i.e. next most recent UMaine/ME DMR dredge survey)—survey stations in the area of Mount Desert Island and on Fippennies Ledge were dropped, and the portion of Stellwagen Bank south of the NGOM was added in 2019. The 2019 dredge survey detected a high level of recruitment on Stellwagen Bank and to a lesser extent on Southern Jeffreys Ledge. Larger scallops (> 75 mm SH) were distributed across the southern extent of the survey domain and overall catch was lower in the northern extent (i.e. MSI, Platts Bank) relative to the southern extent. L-Fs for all survey areas estimated mean shell height to be 63 mm—this size distribution was driven by the extraordinarily high catches of < 55 mm scallops in Stellwagen Bank. Excluding catch from Stellwagen Bank, mean shell height across the survey area was ~110 mm. Based on known growth rates for Stellwagen Bank, most of the large year class observed there could be expected to reach approximately 75 mm in March 2020, over 101 mm by February 2021, and fully selective to the 4” ring by June 2021. There is spatial overlap of the recruit class and larger year

class on Stellwagen Bank. Outside of Stellwagen Bank, the highest densities and most exploitable biomass were observed on southern Jeffreys Ledge. A comparison of estimates between the 2016 and 2019 surveys suggests that total biomass in the NGOM has decreased over time, but abundance has increased.

Table 23 - Biomass, exploitable biomass, and target TACs for Jeffreys Ledge survey area. Landings in mt.

	F=0.18			F=0.2			F=0.25		
Year	Bms	ExpBms	Land (TAC)	Bms	ExpBms	Land (TAC)	Bms	ExpBms	Land (TAC)
2019	724	674		724	674		724	674	
2020	697	652	117.34	697	652	130.38	697	652	162.97
2021	520	495	89.13	511	486	97.21	488	464	116

Table 24 - Biomass, exploitable biomass, and target TACs for Ipswich Bay survey areas. Catch in mt.

	F=0.18			F=0.2			F=0.25		
Year	Bms	ExpBms	Land	Bms	ExpBms	Land	Bms	ExpBms	Land
2019	153	122		153	122		153	122	
2020	159	138	24.92	159	138	27.69	159	138	34.62
2021	129	120	21.52	126	117	23.5	121	113	28.14

5.2.3 Summary of 2019 Scallop Surveys

The Atlantic sea scallop resource was surveyed by the following groups/methods in 2019: the Virginia Institute of Marine Science (VIMS) dredge survey of the Mid-Atlantic Bight, Nantucket Lightship Area, Closed Area I, and Closed Area II and surrounds; the University of Massachusetts Dartmouth School for Marine Science and Technology (SMAST) high-resolution drop camera survey of the Mid-Atlantic Bight, Nantucket Lightship, Closed Area I, the Great South Channel, and the Northern Flank of Georges Bank; the Coonamessett Farm Foundation (CFF) HabCam survey of the Nantucket Lightship, Closed Area II, and the Elephant Trunk; and the Northeast Fisheries Science Center (NEFSC) dredge survey of Georges Bank and HabCam survey of portions of Georges Bank and the Mid-Atlantic.

The survey information below is detailed at the spatial resolution of Scallop Area Management Simulation (SAMS model) areas. 2019 SAMS area boundaries are shown in Figure 4 for Georges Bank and Figure 5 for the Mid-Atlantic Bight.

Figure 4 – The 2019 Georges Bank SAMS areas used for projections in FW32.

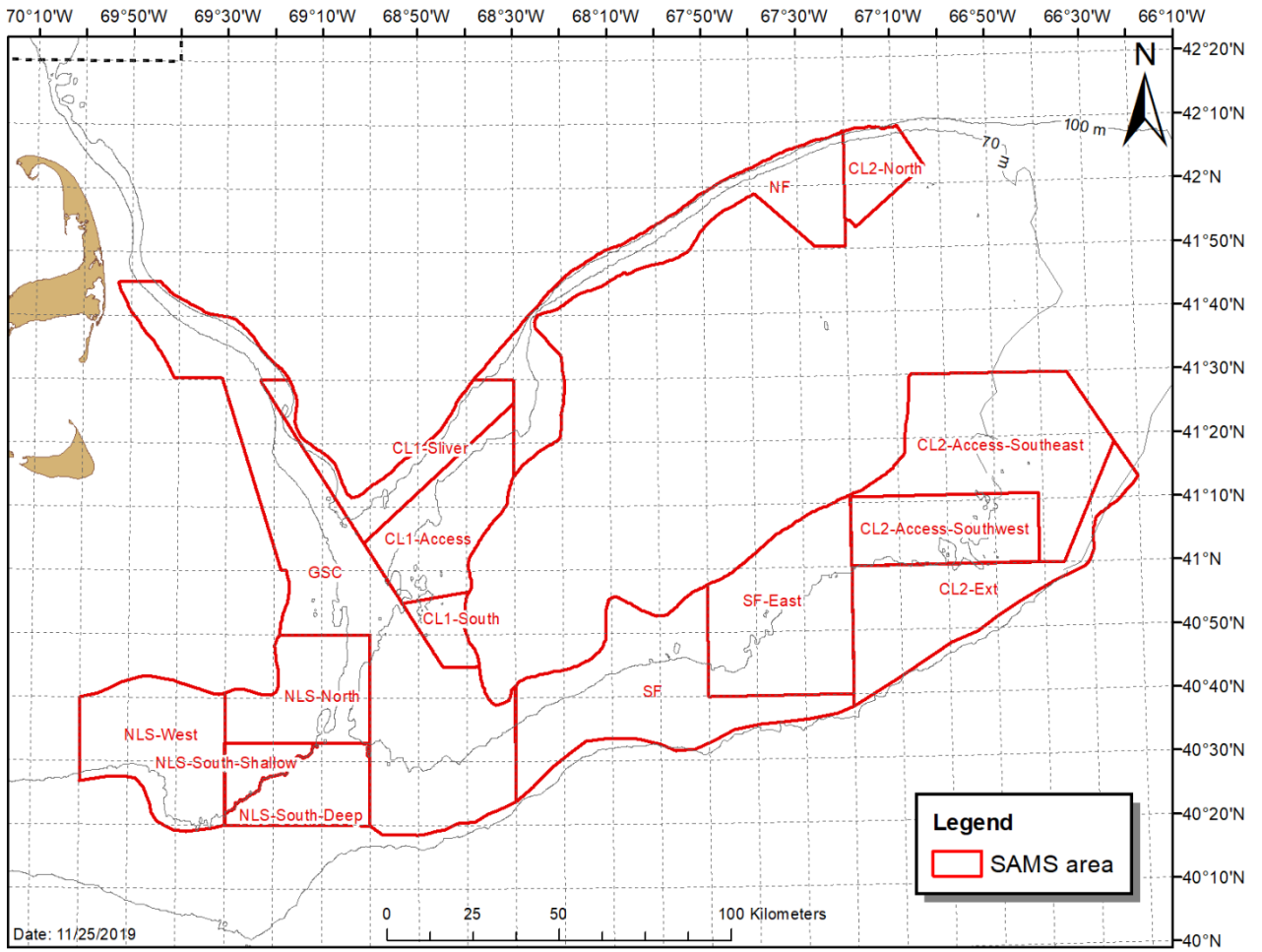
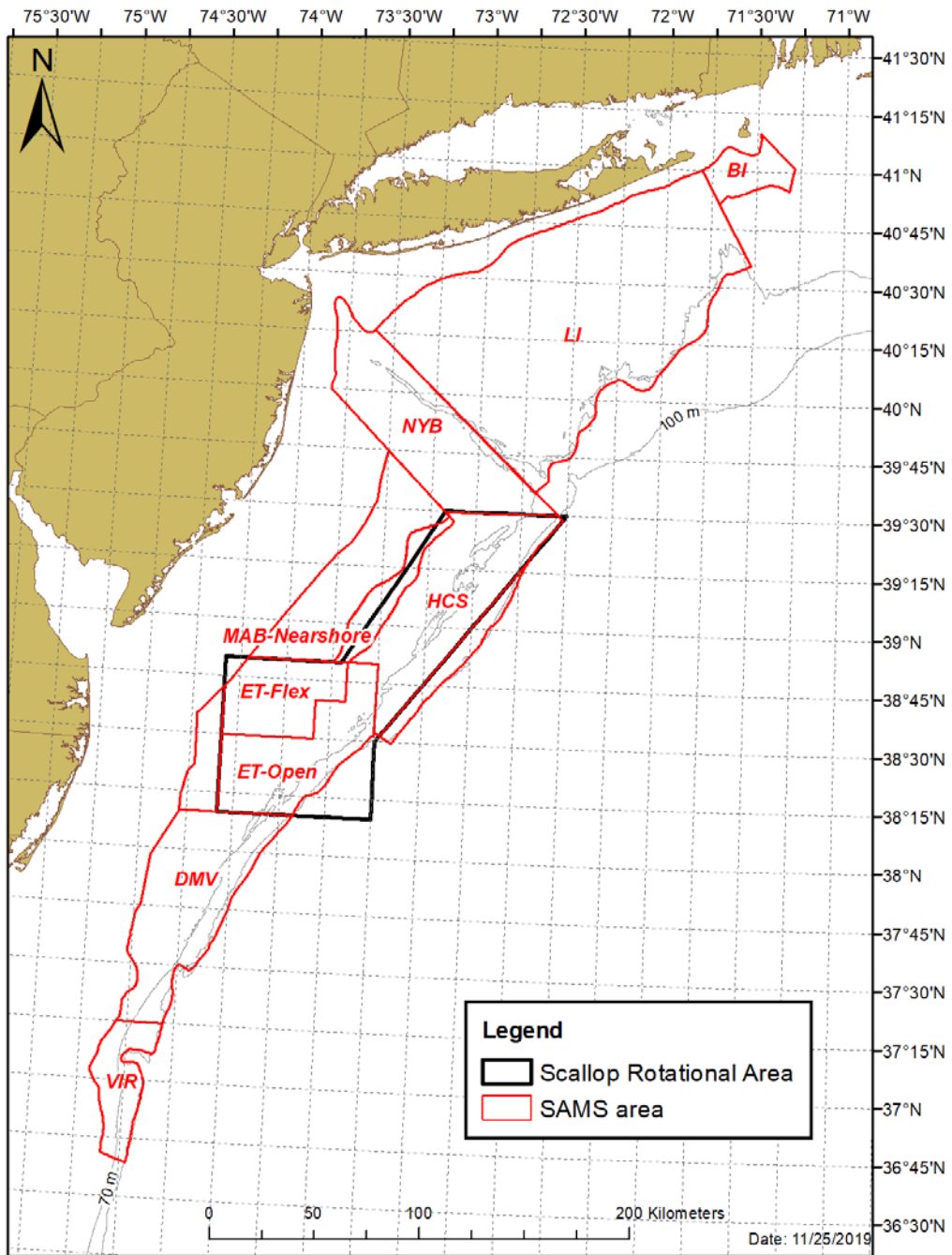


Figure 5 – The 2019 Mid-Atlantic SAMS Areas used for projections in FW32.



5.2.3.1 VIMS dredge survey

The primary objective of the VIMS cooperative dredge survey was to assess the abundance and distribution of scallops in the Mid-Atlantic Bight (MAB), Nantucket Lightship (NLS), Closed Area I (CAI), and Closed Area II (CAII). Between early May and mid-July of 2019, VIMS completed 450 stations in the Mid-Atlantic Bight (MAB), 200 stations in the Closed Area I and Closed Area II survey domain, and 135 stations in the NLS. Area swept biomass estimates were calculated for each SAMS area using dredge selectivity parameters and shell height to meat weight (SHMW) parameter estimates from SARC 65 (2018).

Area swept biomass estimates were derived for each SAMS area using Yochum and DuPaul (2008) dredge selectivity parameters and length-weight parameters from SARC 65.

In the MAB survey domain, smaller scallops (35-75 mm shell height) were observed in open areas around the “Gully” (i.e. rim of the Hudson Canyon) as well as spread out in the LI, HCS, and ET SAMS areas. The majority of larger scallops (> 75 mm shell height) were observed in the SAMS areas of the Mid-Atlantic Access Area, primarily within the ET, ET-Flex, and HCS, and to a lesser extent in the LI SAMS area.

In the NLS survey domain, the majority of smaller scallops (i.e. 35-75 mm shell height) were observed in the NLS-S-deep SAMS area and consist of the 7-year-old class of animals that have experienced abnormally slow growth and have been tracked closely since 2015. Some larger scallops (i.e. > 75 mm shell height) were observed in the NLS-S-deep SAMS area, though a comparison of shell height to meat weight relationships suggest that these scallops have lower yield than similar sized scallops in other parts of the NLS. The majority of larger scallops have persisted in the NLS-West and the largest scallops were seen in the NLS-North, though densities in the NLS-North were lower than the other parts of the NLS and appeared to have a broader spatial distribution.

In the CAI and CAII survey domain, substantial recruitment was seen along the southern border of CAII AA/northern border of CAII-extension and to a lesser extent in the eastern portion of CAII AA. The recruitment observed in the CAII survey domain appeared to follow the 50-fathom depth contour. Larger scallops (> 75 mm shell height) were also seen along the 50-fathom contour, but were mostly concentrated in the eastern peak of the CAII AA. There was limited overlap of larger scallops and recruits in CAII AA. In CAI, some smaller (35-75 mm shell height) scallops were seen in the northwest corner of the CL1-sliver SAMS area, and the majority of large scallops in CAI were aggregated along the 50-fathom contour in the CL1-sliver SAMS area.

At least 15 scallops per station were sampled to inform shell height to meat weight (SHMW) relationships and meat quality observations. SHMW workups were used to estimate expanded length frequencies and included in a mixed effects model that estimates SHMW relationships for each SAMS area:

In the MAB, predicted SHMW relationships were similar across SAMS areas and less divergence was seen between SAMS areas compared to 2018. The DMV SAMS area had the smallest meat weight at a given height for the MAB survey domain.

For the NLS, predicted SHMW relationships appeared to be similar to 2018, with the NLS-S-deep SAMS area having the lowest SHMW relationship and only SAMS area within the NLS survey domain that was significantly different than the NLS-North.

In CAI AA, the SHMW relationship for CL1-Access SAMS area was significantly greater than the CL1-Sliver SAMS area, which is a change from 2018. Brief PDT discussion suggested the difference could be driven by a depth affect considering scallops in the CL1-Sliver SAMS area are mostly found in greater than 50 fathoms.

SHMW relationships were relatively consistent in the CAII survey domain, with the SHMW relationship for CL2-Access SAMS area being slightly greater than the CL2-Ext and SF SAMS areas.

In the MAB, L-F plots did not give a strong signal of very small scallops (< 20 mm) in the ET like the CFF HabCam survey reported (see below); however, the VIMS survey did not overlap directly (spatially or temporally) with where the HabCam identified these smaller animals and it is unlikely that the survey dredge would retain these scallops due to them being very small (i.e. roughly thumbnail size). Relative L-F distribution in the DMV SAMS area suggested some recruitment had occurred, but this is relative to the very low biomass for the DMV SAMS overall. The mean SH in the commercial dredge within the MAB survey domain was greater than 100 mm.

In the NLS survey domain, there was a slight signal of small scallops observed in the NLS-North which is consistent with recent years. In CAI, L-Fs from both the survey and commercial dredge suggested mean shell height of greater than 100 mm. L-F plots indicated that recruitment had occurred in all three SAMS areas within the CAII survey domain (i.e. CL2-Access, CL2-Ext, SF). Pictures from the VIMS survey in CAII suggested that some one-year-olds were captured in the dredge; however, the L-F distribution suggests that both one- and two-year-olds were present in CAII at the time of the 2019 survey.

A significant number of clappers were observed in survey stations in the NLS-West. The percentage of clappers to total scallop catch ranged from 1-26% and the L-F distribution of clappers and live scallops were very similar; it was suggested that this may be an indication of higher than expected discard mortality in the NLS-West, potentially as a result of high grading and(or) deck loading.

5.2.3.2 **SMAST drop camera survey**

Between early May and mid-July of 2019, SMAST completed drop camera surveys in the MAB, NLS, CAI, Great South Channel, and Northern Flank. SMAST estimates of abundance, biomass, mean meat weight, and mean shell height were based on quadrat still images from the high-resolution digital still camera. SARC 65 SHMW parameter estimates were used in biomass and mean meat weight calculations, except for the NLS SAMS areas which used VIMS 2016-2019 SHMW parameter estimates.

Estimates of total biomass by SAMS area in the Georges Bank survey domain suggested a large biomass of older scallops in the CAII North HAPC. A substantial decrease in biomass was seen in CAI AA between the 2018 and 2019 drop camera surveys in this area. For Georges Bank, the bulk of biomass continues to be concentrated in the NLS, primarily in the NLS-S-deep and NLS-West. Higher densities seem to persist in CAI-Sliver as well as in the NLS-West.

There was a significant decline in biomass between the 2018 and 2019 survey of the NLS-West. Projections for this area for 2019 were around 40,000 mt, but the 2019 drop camera survey estimate was roughly 13,000 mt. Despite this decline in biomass, density estimates from other parts of the NLS- with scallops did not change much between 2018 and 2019. The similarity in density for areas with scallops in 2018 and 2019 could suggest that the decrease in biomass may not be driven by natural mortality, but rather from fishery removals and higher discard mortality.

An increase in biomass was seen in the NLS-S-deep between 2018 and 2019 which appears to be driven by some growth occurring over the past year (i.e. roughly 15 mm). A large decrease in density in the NLS-S-deep was observed between 2017 and 2018; however, density appeared to be similar between 2018 and 2019.

A set of smaller scallops were observed in the northwest peak of CAI, and the smaller animals observed in the GSC in 2018 have continued to grow and were estimated to be recruit size at the time of the 2019 survey. The recruits in the GSC do appear to have some overlap with larger scallops and fishing effort does appear to be happening close to the recruits.

In CAII North HAPC, the majority of scallops appear to be old and encrusted with epifauna. This area has typically been thought of as a refuge for larger seeding scallops; however, the 2019 survey did not

indicate another year class coming into the resource meaning a downturn in biomass could be expected there in the future.

A comparison of CAI AA between 2017 and 2019 suggests a decline in density had occurred over time, though the 2019 estimate suggested that density is still exploitable.

The 2019 drop camera survey covered the entirety of the MAB and suggested similar findings as the VIMS dredge survey. A spattering of recruitment was observed in the SAMS areas adjacent to the Hudson Canyon which is typical for this area annually. Some pre-recruits (< 35 mm SH) were observed in the southern part of ET-Open. There were a lot of larger scallops observed in ET-Open despite there being little to no fishery activity there in FY2018.

5.2.3.3 CFF HabCam survey

The Coonamessett Farm Foundation surveyed the NLS, CAII and Southern Flank, and the Elephant Trunk using HabCam v3 in summer 2019. In CAII and the Southern Flank, pre-recruits (35-75 mm scallops) were observed broadly across the survey area. Observations of > 75 mm SH scallops suggested that strong recruitment had occurred in the southern portion of CAII AA, along the northern boundary of CAII-ext, and extending into the SF. Similar to other survey findings, larger animals appeared most prevalent in the eastern peak of CAII AA. A clear spatial break between the recruits and larger animals was not evident in CAII AA; however, larger scallops appear to be distributed farther east than the recruits. Though scallops < 20 mm cannot be accurately quantified, animals in this size range were observed patchily across the survey area.

In the NLS, there were no observations of high densities of incoming year classes. The majority of recruit-size scallops were observed in the NLS-S-deep SAMS area, though it was acknowledged that these are the slow growing 7-year-old animals that have been tracked, not actually recruits. Larger scallops (> 75 mm SH) were observed across the survey domain, though the highest densities in the NLS-West appear to be retracting over time. Scallops between 75 and 100 mm SH were highly concentrated in the NLS-West and NLS-S-deep, while > 100 mm SH animals were distributed widely across the NLS-N. A comparison of L-F in the NLS-West between 2018 and 2019 suggests that little to no growth occurred over the past year and that some growth was apparent in the NLS-S-deep. Similar to other survey findings, a substantial decrease in biomass was observed between 2018 and 2019 in the NLS-West while an increase was estimated for the NLS-S-deep.

In the ET survey area, high densities of < 20 mm scallops were concentrated along the northern border of the ET-Flex SAMS area. Densities of pre-recruits (35-75 mm SH) were generally low across the survey area. Some recruitment was observed in the southern extent of the ET-Open SAMS area, but at lower densities than what the SMAST drop camera observed in this area. Larger scallops (> 75 mm SH) were distributed across the area, with notably higher densities in the ET-Flex SAMS area. It was suggested that the HabCam biomass estimate for the ET (based on combined data from the CFF and NEFSC survey) were being driven mostly by the non-random NEFSC HabCam tow which focused on the high-density aggregation in the ET-Flex.

5.2.3.4 NEFSC dredge and HabCam survey

The 2019 NEFSC sea scallop survey used HabCam v4 and a survey dredge to assess the sea scallop resource. In the ET, one-year-old pre-recruits were observed in the northern part of the area while the adult distribution was consistent with recent years in being highly concentrated in the ET-Flex area. Very low densities were observed in the DMV SAMS area. One concentrated high-density aggregation of larger animals appeared to be driving the biomass estimate in the HC SAMS area. No notable densities of scallops were observed in the inshore-MAB SAMS areas. As noted in other surveys, some pre-recruits and recruits were observed in open areas around the southern rim of the Hudson Canyon, which is

typically a productive area. Overall, very little recruitment was observed in the MAB aside from a small pulse in the HC and ET.

For Georges Bank, 105 dredge tows were completed and combined HabCam (i.e. NEFSC and CFF) efforts covered the NLS, CAII, CAII-ext, and SF. A moderately strong signal of pre-recruits (35-75 mm SH) were observed along the 50-fathom depth contour throughout the SF SAMS area and into CAII-ext and CAII AA. Two patches of larger scallops (> 75 mm SH) were observed in CAII AA, one that overlapped with the smaller year class and the other which was concentrated in the eastern portion of CAII AA. Similar to findings from other surveys, the majority of adult biomass on Georges Bank was concentrated in the NLS-West and NLS-S-deep, and to a lesser extent in CAII-North HAPC and the eastern portion of CAII AA. The dredge survey detected some pre-recruits around Pollock Rip (i.e. northwest of CAI AA) and also in southern CAII. Some recruitment was observed in the Channel which is typical for this area, while the most prevalent recruitment seen across Georges Bank was in the SF SAMS area.

A comparison of mean biomass across all surveys by SAMS area suggested that projections for 2019 (i.e. from FW30) were relatively close to what the 2019 surveys observed, with the exception of the NLS-West which saw a substantial decrease in biomass relative to the 2019 projection. Generally, estimates from optical and dredge surveys were relatively consistent in areas without very high density but dredge efficiency appears to still be an issue in the NLS-West and NLS-S-deep. Unlike in 2018, the ET-Flex dredge estimate did not appear to diverge as much from the optical surveys—it was suggested that this could be due to the efficiency issue occurring at only a few stations in the ET-Flex.

Figure 6 – Length frequencies by SAMS area from the Mid-Atlantic portions of the 2019 VIMS dredge survey.

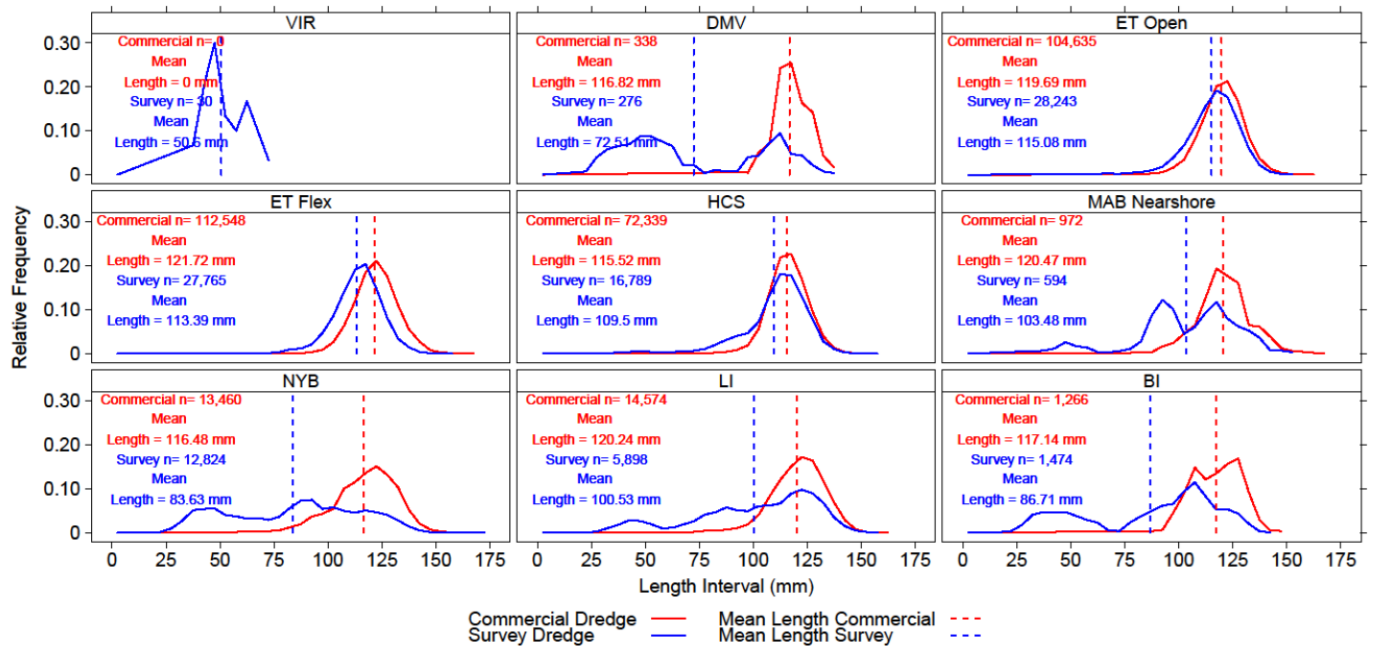


Figure 7 – Length frequencies by SAMS area from the NLS portion of the 2019 VIMS dredge survey.

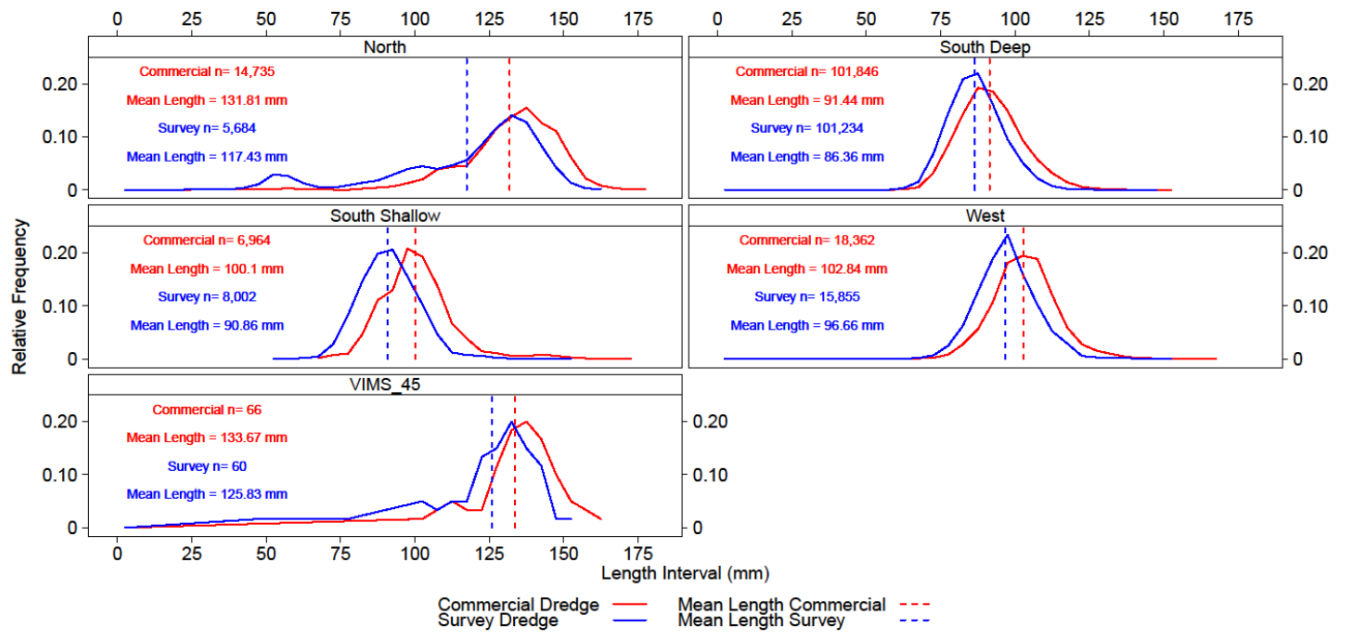


Figure 8 – Length frequencies by SAMS area from the CAII portion of the 2019 VIMS dredge survey.

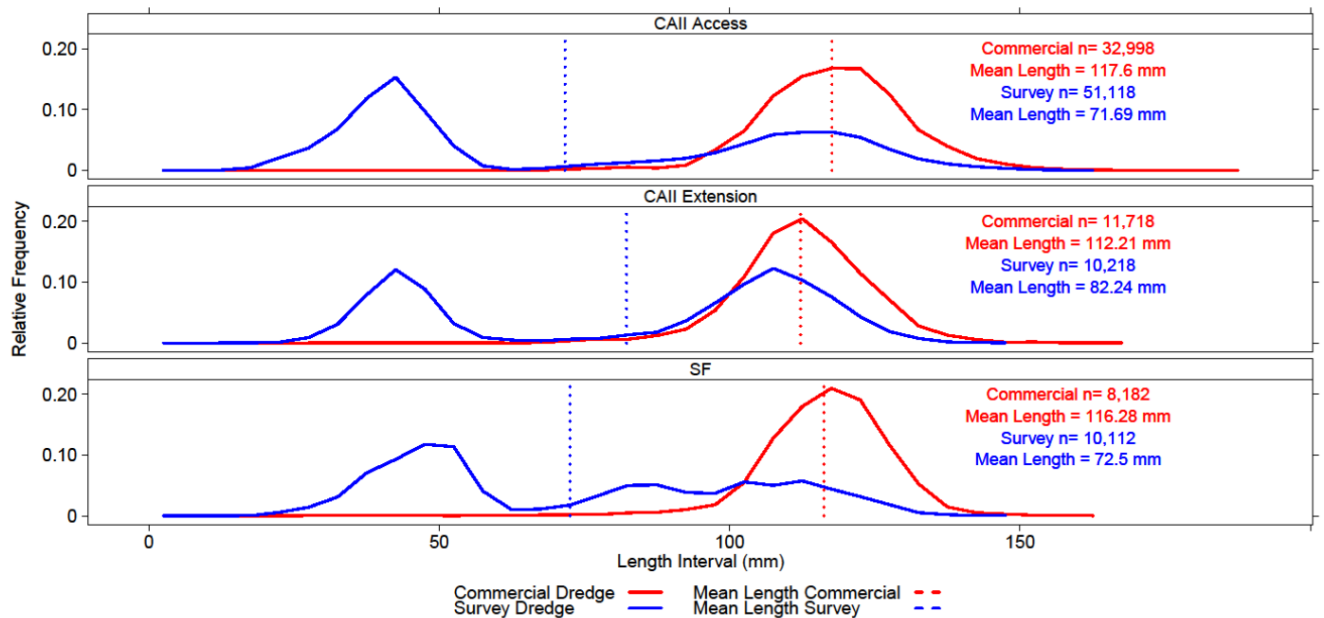


Figure 9 – Scallop catch per tow of 35-75 mm animals (left) and > 75 mm animals (right) from the 2019 VIMS survey dredge in the Mid-Atlantic Bight.

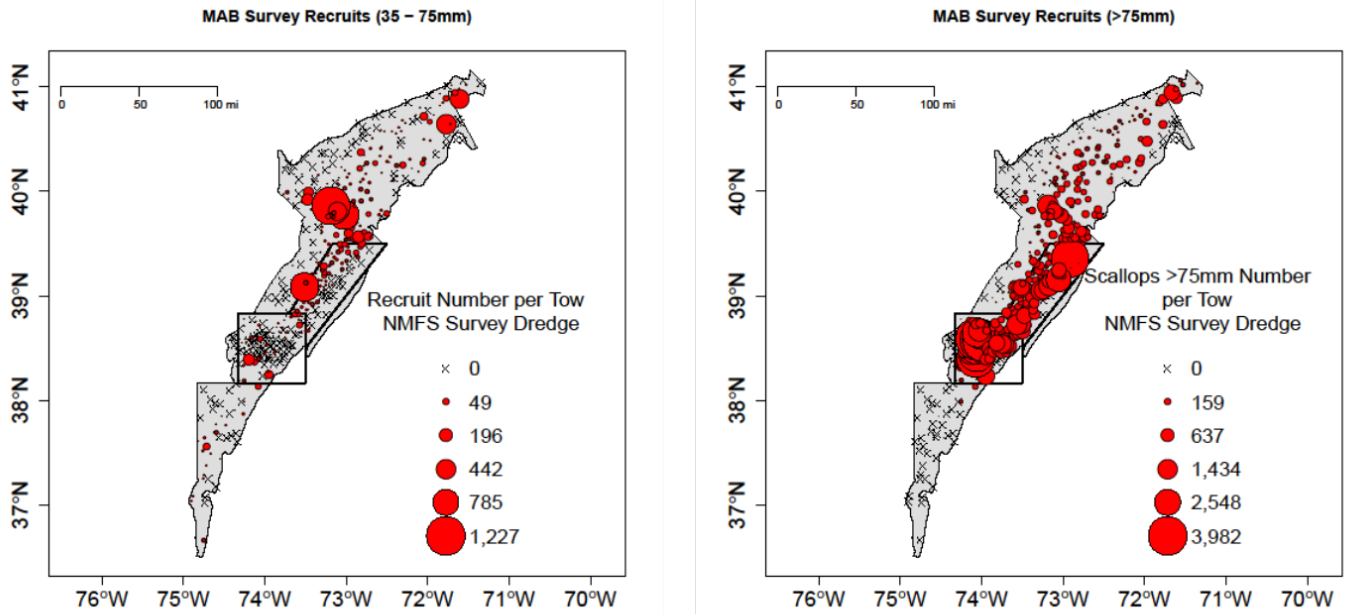


Figure 10 – Scallop catch per tow of 35-75 mm animals (left) and > 75 mm animals (right) from the 2019 VIMS survey dredge in the NLS.

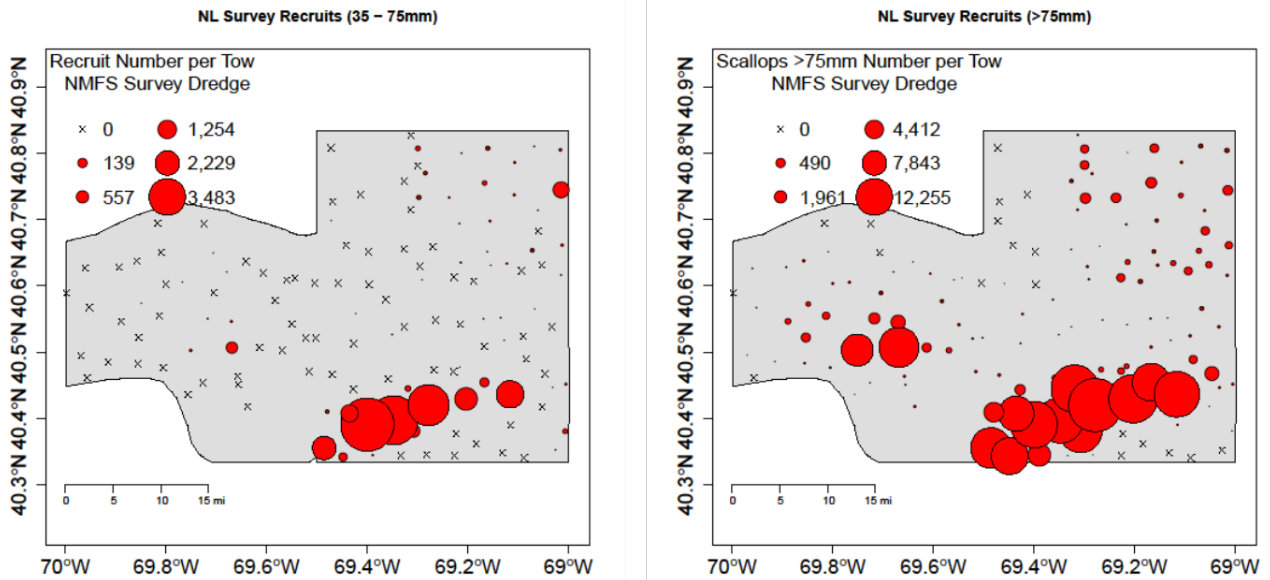


Figure 11 – Scallop catch per tow of < 35 mm animals (left) 35-75 mm animals (center) and > 75 mm animals (right) from the 2019 VIMS survey dredge in CAI and CAII.

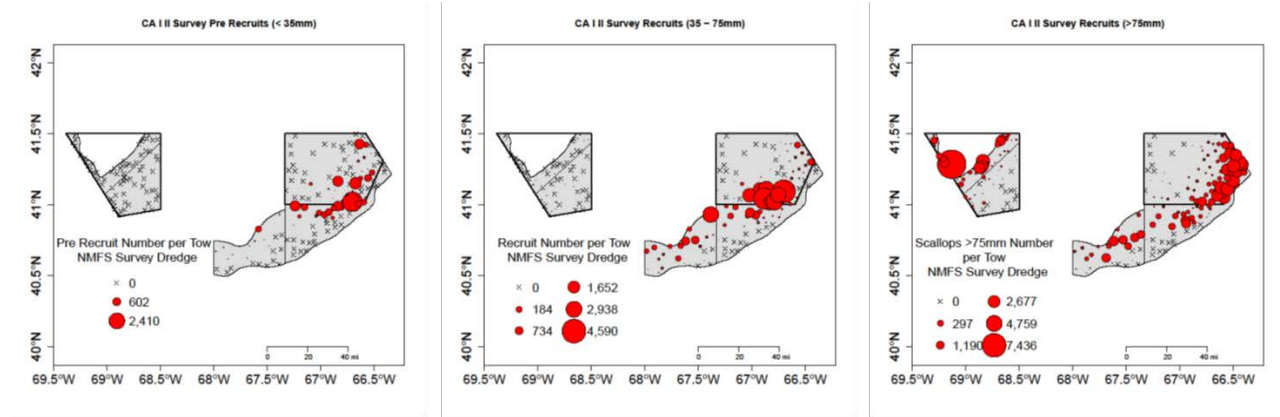


Figure 12 – Observed scallop density (m⁻²) by the 2019 SMAST drop cam survey of the NLS, GSC, CAI, and NF.

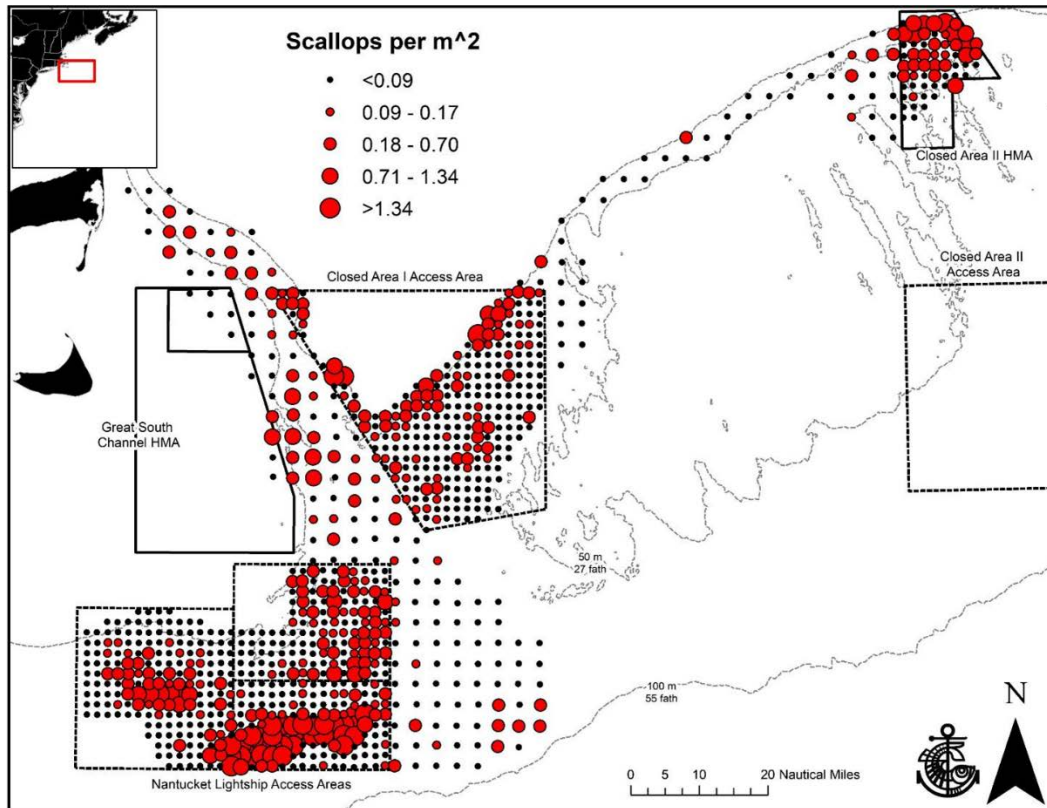


Figure 13 – Observed length frequencies from the 2017, 2018, and 2019 SMAST drop cam surveys of the NLS-S-Deep.

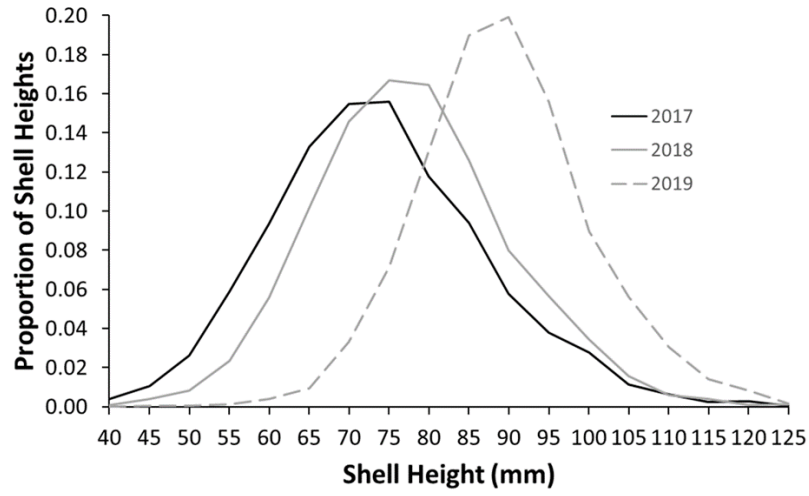


Figure 14 – Relative length frequencies from the 2019 CFF HabCam survey of the Nantucket Lightship by SAMS area.

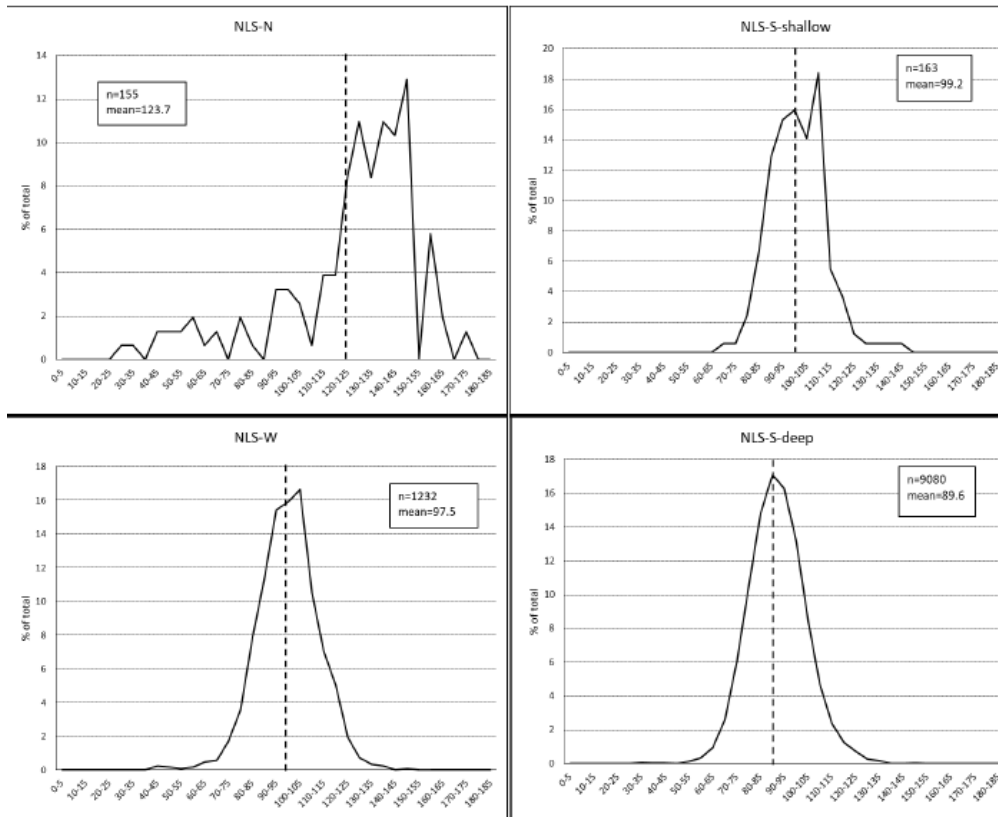


Figure 15 – Biomass estimate ‘heat map’ from the 2019 CFF HabCam survey of the Nantucket Lightship.

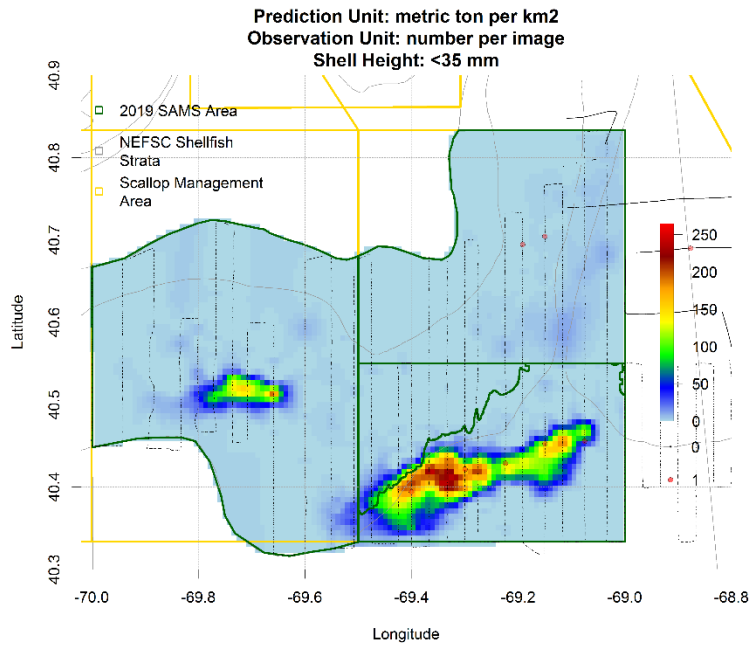
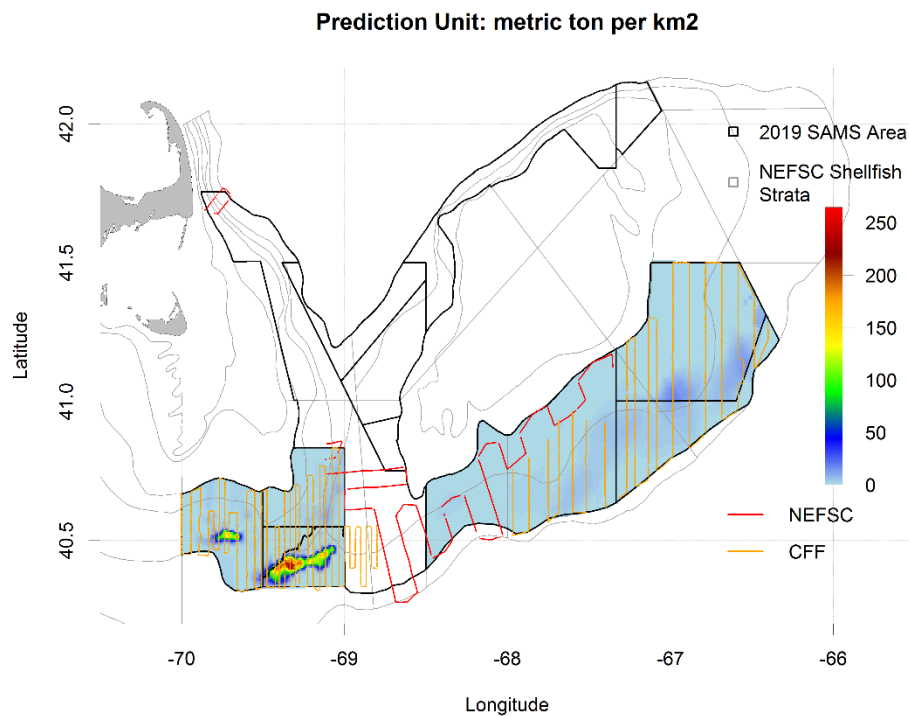


Figure 16 – 2019 HabCam survey tracks on Georges Bank conducted by NEFSC and CFF with resulting biomass estimates (predicted biomass, mt per km²).



5.2.4 2019 Combined Survey Biomass Estimates

Results from all surveys of the resource (see Section 5.2.3) were combined to estimate 2019 scallop biomass. Overall biomass is estimated by taking the mean biomass of all surveys by SAMS area. Survey groups applied the updated SARC 65 shell height to meat weight (SHMW) parameters when estimating 2019 biomass by SAMS area except for estimates in the NLS-S-deep, NLS-S-shallow, and NLS-N, and NLS-W SAMS areas. For these NLS SAMS areas, survey groups applied SHMW parameters estimates from VIMS survey dredge data collected between 2016 and 2019 to better estimate the unique characteristics of animals within the NLS. Combined 2019 biomass by SAMS area is shown in Table 25.

Table 25 – Biomass estimates from the 2019 surveys (i.e. Dredge, Drop Cam, HabCam) and the combined mean estimate of all surveys (i.e. Mean) by region and SAMS area. (September 10, 2019)

Region	Subarea	Dredge				DropCam				Habcam				Mean			
		Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt
GB	CL1ACC	18.4	693	84	35.6	36	1049	203	29					27.1	871	73	32.1
GB	CL1NA	259.0	7857	912	29.5	154	3487	786	23					206.4	5672	401	27.5
GB	CL-2(N)	154.0	5778	2026	37.5	184.1	5,926	1,608	32					169.1	5852	862	34.6
GB	CL-2(S)	1671.0	20,689	1,129	15.4					1035	11710	356	11.3	1353.0	16200	592	12.0
GB	CL2Ext	312.1	5,568	566	17.4					653	6714	117	10.3	482.5	6141	289	12.7
GB	NLSAccN	81.5	3368	210	41.3	122	4,690	696	38.35	71	3066	379	42.9	91.6	3708	273	40.5
GB	NLSAccS-Shallow	117.6	1721	426	14.6	305	4655	3398	15.3	219	3420	9	15.6	213.8	3265	1142	15.3
GB	NLSAccS-Deep	3618.6	36608.8	1182	10.1	4839	49689	8919	10.3	3829	46060	871	12	4095.6	44119	3013	10.8
GB	NLS-W	600.8	10080.4	663	16.7	838	13,438	6,325	16.03	623	12575	3618	20.2	687.4	12031	2439	17.5
GB	NF	91.0	1585	735	17.5	57.2	1,008	372	18					74.1	1297	275	17.5
GB	GSC	296.0	7302	1354	24.7	439	6135	1000	14.0					367.6	6719	561	18.3
GB	GSC-45	1.7	82.57	29.51	49.5									1.7	83		49.5
GB	SF	686.8	12216.0	2127	17.8					1074	8514	188	7.9	880.4	10365	1068	11.8
GB	TOTAL	7908.4	113549	3937	14.4									8650.3	116322	4391	13.4
MAB	BI	94.9	1,515	254	17.3	47	1076	305	23	37	850	8	22.7	59.8	1147	132	19.2
MAB	LI	407.3	9,079	350	22.4	501	9417	962	19	570	12282	770	21.6	492.7	10259	427	20.8
MAB	NYB	537.8	7425	523	14.8	464	7032	1288	15	487	7091	330	14.6	496.4	7183	476	14.5
MAB	MA inshore	53.4	1265	181	23.7					26	1020	7	39.6	39.7	1143	91	28.8
MAB	HCSAA	380.4	8544	775	22.6	580	10185	783	18	762	18303	2273	24	574.1	12344	842	21.5
MAB	ET Open	592.0	15,105	897	25.8	888	18051	1187	20	634	17215	229	27.1	704.6	16790	502	23.8
MAB	ET Flex	523.6	13,529	1,174	25.5	771	19654	2711	25	778	24357	457	31.3	690.9	19180	996	27.8
MAB	DMV	20.3	203	43	10.5	89	374	111	4	47.0	599	58	12.8	52.2	392	44	7.5
MAB	VIR	4.2	14	1	3.0									4.2	14	1	3.3
MAB	TOTAL	2614.0	56679	1811	21.7					3341.0	81717	2477	24.5	3114.6	68452	1546	22.0
	TotalOpen	2505	46255	2687	219					2894	37070	224	130	2951	44741	1271	204
	TOTAL TOTAL	10522	170228	4333	16.2					3341	81717	2477	24.5	11765	184774	4655	15.7

5.2.5 2020 Biomass Projections

SAMS Model Run (2020 projections using 2019 survey data):

1. Model configured the same as SARC 65, with 8 areas in Mid-Atlantic and 12 in Georges Bank.
2. L_{∞} in deep portion of NLS-S-deep was set to 110 mm to match observed growth (SARC 65).
3. L_{∞} in the NLS-West was set to 119 mm to match observed growth.
4. ABC: $F=0.51$

Table 26 – 2020/2021 projected exploitable biomass by SAMS area, including ABC and OLF estimates.

SAMS Area	Proj 2020 Ebms	Land@F=0.51
HCS	7530	2591
Virginia	1	6
ET-Op	13708	4620
ET-Flex	13439	4499
DMV	298	158
NYB	5224	2357
LI	7199	2696
MAInsh+BI	2230	947
CLI-North	3151	1131
CLI-Middle	671	235
CLII-North	5089	1665
CLII-South	13196	4998
NLS-West	3658	1434
NLS-North	3273	1096
NLS-Sshal	2570	1376
NLS-Sdeep	18480	8234
CLII-Ext	5800	2484
GSC	4637	1662
Nflank	1272	500
Sflank	7104	2725
TotalOpen	33765	13535
Total	118530	45414

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 27 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 27 – 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 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 28 summarizes anticipated catch limits of these four flatfish stocks for FY2020 as well as projected scallop fishery bycatch for FY2020. Table 29 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 28 - Comparison of 2020 Scallop Fishery flatfish sub-ACLs with bycatch projections (pref. alt).

	OFL	US ABC	Scallop ABC	Scallop sub-ACL	2020 Bycatch Projections
Stock	2020	2020			
GB Yellowtail Flounder	unknown	120	19	19	~23 mt
SNE/MA Yellowtail Flounder	31	22	2	2	2-3 mt
Northern Windowpane Flounder	84	59	12	12	30-34 mt
Southern Windowpane Flounder	568	426	153	143	133-148 mt

Table 29 – 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 30 to facilitate consideration of the species most likely to interact with the scallop fishery relative to the preferred alternative.

Table 30 – 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:		
<p>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></p> <p>² This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins.</p>		

In Table 30, 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 30, 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 31). 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 31).” 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 31 - 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 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

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.

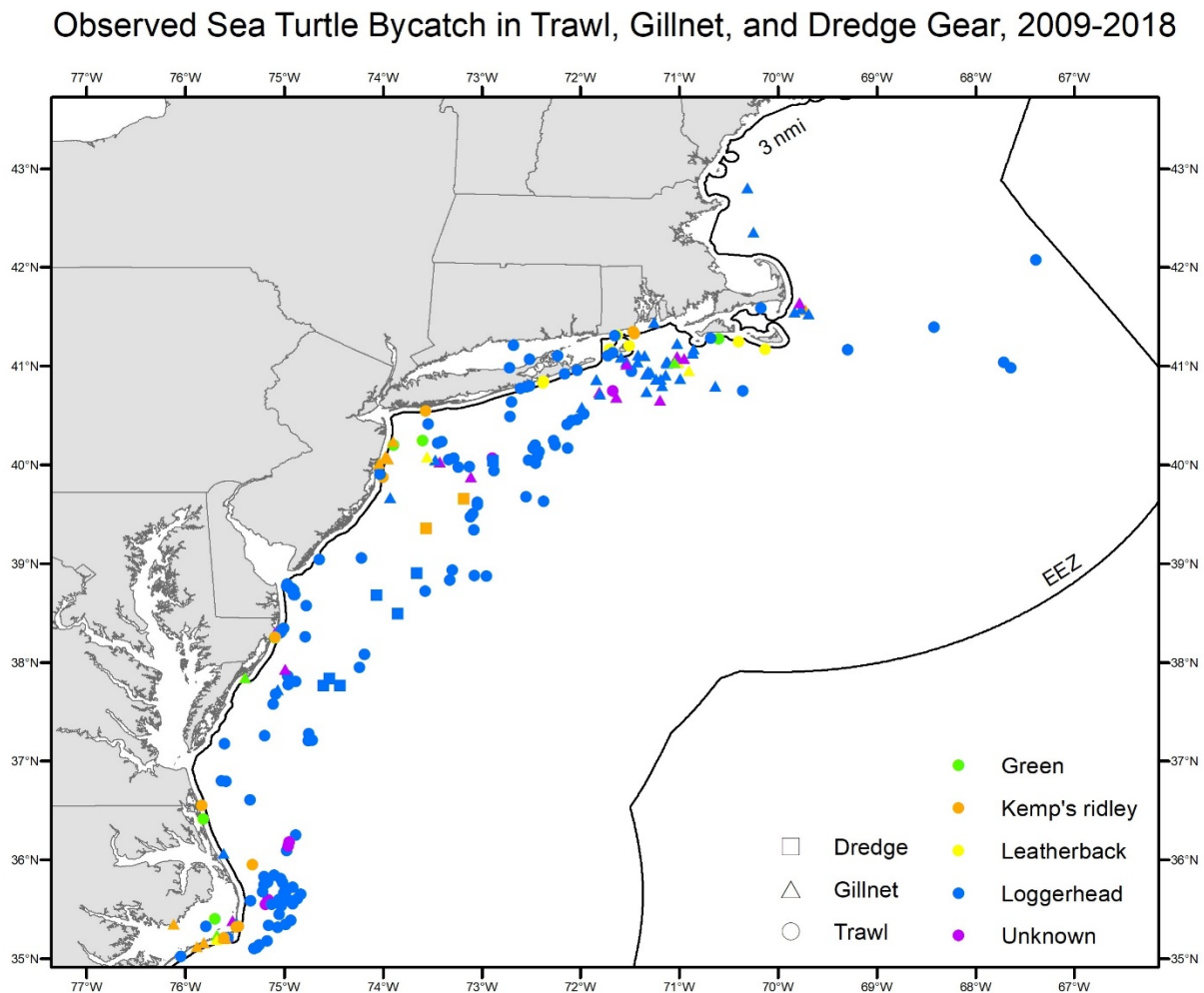
⁴ Murray (2015a) defined the Mid-Atlantic as the boundaries of the Mid-Atlantic Ecological Production; roughly waters west of 71°W to the North Carolina/South Carolina border)

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.

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

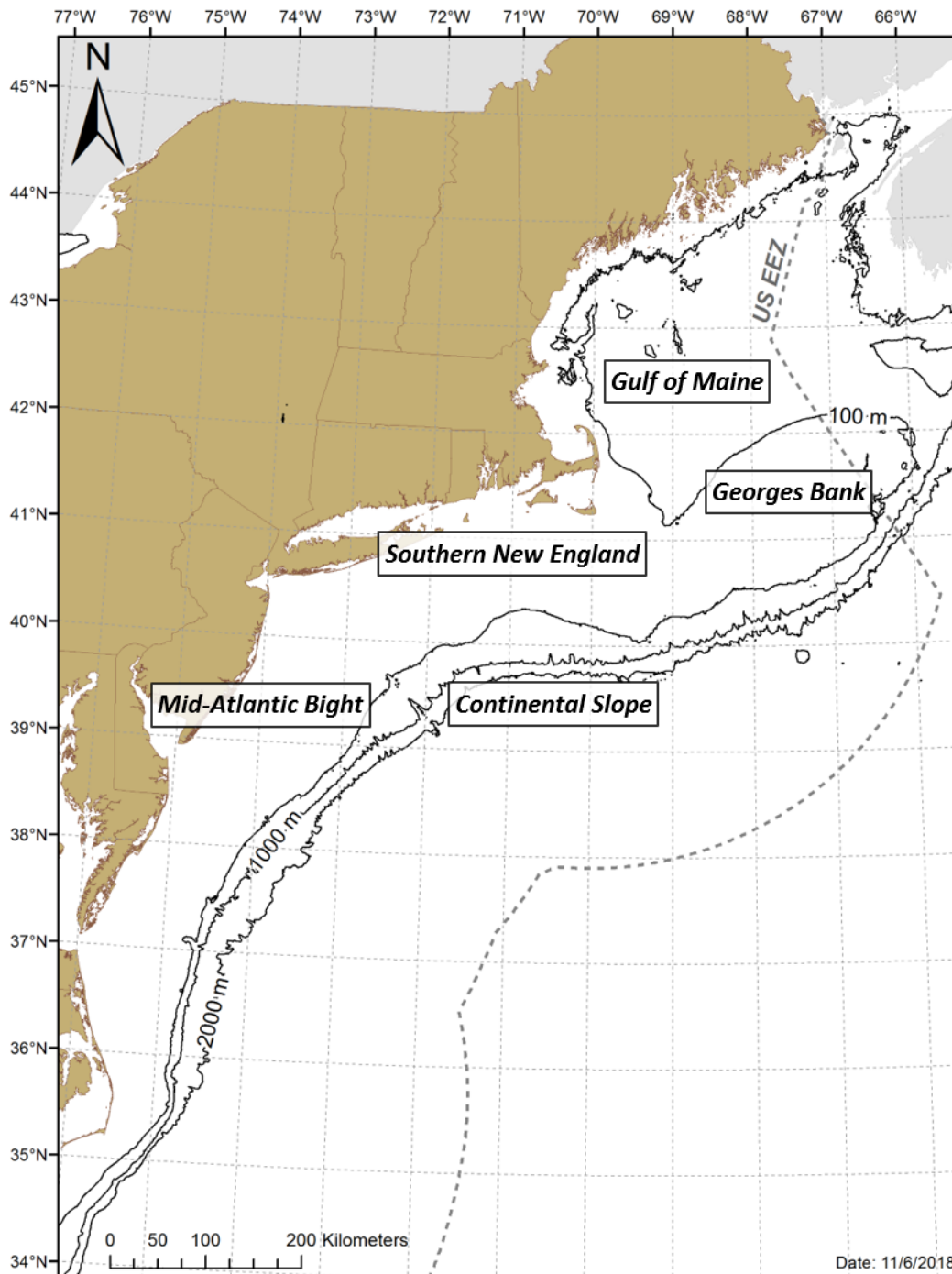
The Northeast U.S. Shelf Ecosystem includes the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream to a depth of 2,000 m (Map 12) (Sherman, Jaworski, & Smayda, 1996). Four distinct sub-regions are identified: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The physical oceanography and biota of these regions were described in the Scallop Amendment 11. Much of this information was extracted from Stevenson et al. (2004), and the reader is referred to this document and sources referenced therein for additional information. Primarily relevant to the scallop fishery are Georges Bank and the Mid-Atlantic Bight, although some fishing also occurs in the Gulf of Maine.

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). This area, which could potentially be affected by the preferred alternative, has been identified as EFH for various species. These species include American plaice, Atlantic cod, Atlantic halibut, Atlantic herring, Atlantic sea scallop, Atlantic surf clam, Atlantic wolfish, barndoor skate, black sea bass, clearnose skate, haddock, little skate, longfin squid, monkfish, ocean pout, ocean quahog, pollock, red hake, redfish, rosette skate, scup, silver hake, spiny dogfish, summer flounder, thorny skate, white hake, windowpane flounder, winter flounder, witch flounder, winter skate, and yellowtail flounder. Table 32 describes information on the geographic area, depth, and EFH description for each applicable life stage of these species. Map 13 displays the updated year-round and seasonal EFH areas for all NEFMC species and is consistent with the OHA2 measures approved by the NMFS on January 3, 2018. For more detailed descriptions of the approved OHA2 areas the reader is referred to the Council website ([OHA2 FEIS, Vol. 2](#)).

Another purpose of OHA2 was to evaluate existing habitat management areas and develop new habitat management areas. To assist with this effort, an analytical approach was developed to characterize and map habitats and to assess the extent to which different habitat types are vulnerable to different types of fishing activities. This body of work, termed the Swept Area Seabed Impact approach, includes a quantitative, spatially-referenced model that overlays fishing activities on habitat through time to estimate both potential and realized adverse effects to EFH. The approach is detailed in this document, available on the Council webpage:

http://www.nefmc.org/habitat/planamen/efh_amend_2/appendices%20-%20dec2013/Appendix%20D%20-%20Swept%20Srea%20Seabed%20Impact%20approach.pdf.

Map 12 – Northeast U.S. Shelf Ecosystem and geographic extent of the US sea scallop fishery.



The Council identified final recommendations for modifications to habitat management areas over two Council meetings, April 2015 and June 2015. On October 6, 2017 the NMFS published a notice of availability of OHA2 and requested public comments for the agency to consider in the

approval/disapproval decision on the amendment ([50 CFR §648, 2017](#)), and a proposed rule for OHA2 was published on November 6, 2017 ([50 CFR §648, 2017](#)). A final decision regarding OHA2 was published by the NMFS on January 3, 2018, with implementation of the amendment on April 9, 2018. A summary of the Council's preferred recommendations can be found at www.nefmc.org, and Map 13 is included below with the approved habitat management areas and seasonal spawning areas.

Map 13 – Approved OHA2 measures, including year-round spatial management areas and seasonal spawning areas. Note the scallop fishery is exempt from the Inshore Roller Gear Restricted Area (shown in tan blocks) and CAI seasonal closure.

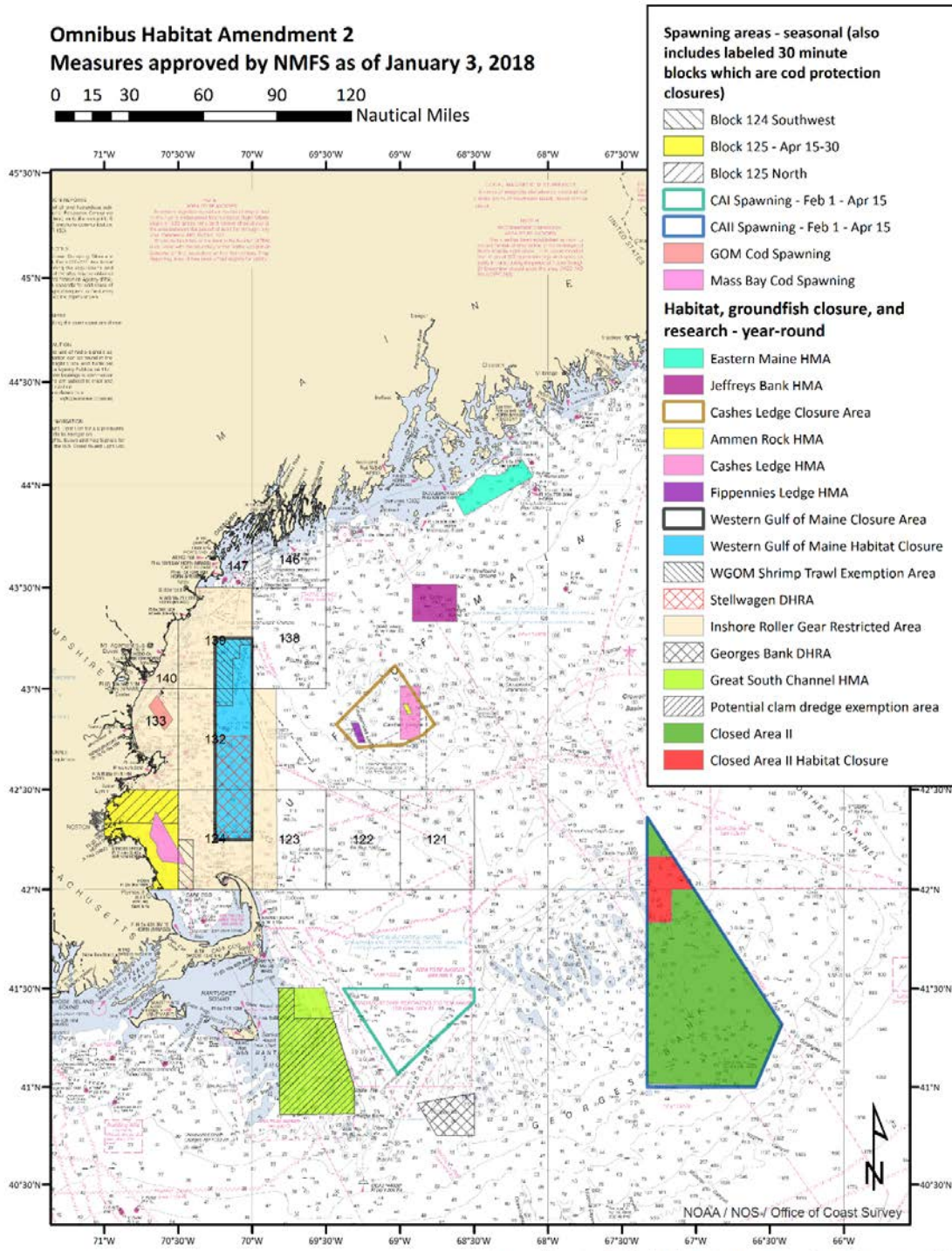


Table 32 – Geographic distributions and habitat characteristics of Essential Fish Habitat designations for benthic fish and shellfish species managed by the New England and Mid-Atlantic fishery management councils in depths less than 100 meters in the Greater Atlantic region, up-dated January 2018.

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Acadian redfish	Juveniles	Gulf of Maine and the continental slope north of 37°38'N	50-200 in Gulf of Maine, to 600 on slope	Sub-tidal coastal and offshore rocky reef substrates with associated structure-forming epifauna (e.g., sponges, corals), and soft sediments with cerianthid anemones
Acadian redfish	Adults	Gulf of Maine and the continental slope north of 37°38'N	140-300 in Gulf of Maine, to 600 on slope	Offshore benthic habitats on finer grained sediments and on variable deposits of gravel, silt, clay, and boulders
American plaice	Juveniles	Gulf of Maine and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay	40-180	Sub-tidal benthic habitats on mud and sand, also found on gravel and sandy substrates bordering bedrock
American plaice	Adults	Gulf of Maine, Georges Bank and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay	40-300	Sub-tidal benthic habitats on mud and sand, also gravel and sandy substrates bordering bedrock

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Atlantic cod	Juveniles	Gulf of Maine, Georges Bank, and Southern New England, including nearshore waters from eastern Maine to Rhode Island and the following estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay	Mean high water-120	Structurally-complex intertidal and sub-tidal habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna
Atlantic cod	Adults	Gulf of Maine, Georges Bank, Southern New England, and the Mid-Atlantic to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay	30-160	Structurally complex sub-tidal hard bottom habitats with gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae, also sandy substrates and along deeper slopes of ledges
Atlantic halibut	Juveniles & Adults	Gulf of Maine, Georges Bank, and continental slope south of Georges Bank	60-140 and 400-700 on slope	Benthic habitats on sand, gravel, or clay substrates
Atlantic herring	Eggs	Coastal Gulf of Maine, Georges Bank, and Southern New England	5-90	Sub-tidal benthic habitats on coarse sand, pebbles, cobbles, and boulders and/or macroalgae

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Atlantic sea scallop	Eggs	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Inshore and offshore benthic habitats (see adults)
Atlantic sea scallop	Larvae	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	No information	Inshore and offshore pelagic and benthic habitats: pelagic larvae (“spat”), settle on variety of hard surfaces, including shells, pebbles, and gravel and to macroalgae and other benthic organisms such as hydroids
Atlantic sea scallop	Juveniles	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Benthic habitats initially attached to shells, gravel, and small rocks (pebble, cobble), later free-swimming juveniles found in same habitats as adults

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Atlantic sea scallop	Adults	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Benthic habitats with sand and gravel substrates
Atlantic surfclams	Juveniles and adults	Continental shelf from southwestern Gulf of Maine to Cape Hatteras, North Carolina	Surf zone to about 61, abundance low >38	In substrate to depth of 3 ft
Atlantic wolffish	Eggs	U.S. waters north of 41°N latitude and east of 71°W longitude	<100	Sub-tidal benthic habitats under rocks and boulders in nests
Atlantic wolffish	Juveniles	U.S. waters north of 41°N latitude and east of 71°W longitude	70-184	Sub-tidal benthic habitats
Atlantic wolffish	Adults	U.S. waters north of 41°N latitude and east of 71°W longitude	<173	A wide variety of sub-tidal sand and gravel substrates once they leave rocky spawning habitats, but not on muddy bottom
Barndoor skate	Juveniles and adults	Primarily on Georges Bank and in Southern New England and on the continental slope	40-400 on shelf and to 750 on slope	Sub-tidal benthic habitats on mud, sand, and gravel substrates

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Black sea bass	Juveniles and adults	Continental shelf and estuarine waters from the southwestern Gulf of Maine and Cape Hatteras, North Carolina	Inshore in summer and spring	Benthic habitats with rough bottom, shellfish and eelgrass beds, man-made structures in sandy-shelly areas, also offshore clam beds and shell patches in winter
Clearnose skate	Juveniles	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-30	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
Clearnose skate	Adults	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-40	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
Haddock	Juveniles	Inshore and offshore waters in the Gulf of Maine, on Georges Bank, and on the continental shelf in the Mid-Atlantic region	40-140 and as shallow as 20 in coastal Gulf of Maine	Sub-tidal benthic habitats on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Haddock	Adults	Offshore waters in the Gulf of Maine, on Georges Bank, and on the continental shelf in Southern New England	50-160	Sub-tidal benthic habitats on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel and adjacent to boulders and cobbles along the margins of rocky reefs
Little skate	Juveniles	Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the Mid-Atlantic region as far south as Delaware Bay, including certain bays and estuaries in the Gulf of Maine	Mean high water-80	Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud
Little skate	Adults	Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the Mid-Atlantic region as far south as Delaware Bay, including certain bays and estuaries in the Gulf of Maine	Mean high water-100	Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud
Longfin inshore squid	Eggs	Inshore and offshore waters from Georges Bank southward to Cape Hatteras	Generally <50	Bottom habitats attached to variety of hard bottom types, macroalgae, sand, and mud

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Monkfish	Juveniles	Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope	50-400 in the Mid-Atlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope	Sub-tidal benthic habitats on a variety of habitats, including hard sand, pebbles, gravel, broken shells, and soft mud, also seek shelter among rocks with attached algae
Monkfish	Adults	Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope	50-400 in the Mid-Atlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope	Sub-tidal benthic habitats on hard sand, pebbles, gravel, broken shells, and soft mud, but seem to prefer soft sediments, and, like juveniles, utilize the edges of rocky areas for feeding
Ocean pout	Eggs	Georges Bank, Gulf of Maine, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	<100	Sub-tidal hard bottom habitats in sheltered nests, holes, or rocky crevices
Ocean pout	Juveniles	Gulf of Maine, on the continental shelf north of Cape May, New Jersey, on the southern portion of Georges Bank, and including certain bays and estuaries in the Gulf of Maine	Mean high water-120	Intertidal and sub-tidal benthic habitats on a wide variety of substrates, including shells, rocks, algae, soft sediments, sand, and gravel

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Ocean pout	Adults	Gulf of Maine, Georges Bank, on the continental shelf north of Cape May, New Jersey, and including certain bays and estuaries in the Gulf of Maine	20-140	Sub-tidal benthic habitats on mud and sand, particularly in association with structure forming habitat types; i.e. shells, gravel, or boulders
Ocean quahogs	Juveniles and adults	Continental shelf from southern New England and Georges Bank to Virginia	9-244	In substrate to depth of 3 ft
Pollock	Juveniles	Inshore and offshore waters in the Gulf of Maine (including bays and estuaries in the Gulf of Maine), the Great South Channel, Long Island Sound, and Narragansett Bay, Rhode Island	Mean high water-180 in Gulf of Maine, Long Island Sound, and Narragansett Bay; 40-180 on Georges Bank	Intertidal and sub-tidal pelagic and benthic rocky bottom habitats with attached macroalgae, small juveniles in eelgrass beds, older juveniles move into deeper water habitats also occupied by adults
Pollock	Adults	Offshore Gulf of Maine waters, Massachusetts Bay and Cape Cod Bay, on the southern edge of Georges Bank, and in Long Island Sound	80-300 in Gulf of Maine and on Georges Bank; <80 in Long Island Sound, Cape Cod Bay, and Narragansett Bay	Pelagic and benthic habitats on the tops and edges of offshore banks and shoals with mixed rocky substrates, often with attached macro algae

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Red hake	Juveniles	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including Passamaquoddy Bay to Cape Cod Bay in the Gulf of Maine, Buzzards Bay and Narragansett Bay, Long Island Sound, Raritan Bay and the Hudson River, and lower Chesapeake Bay	Mean high water-80	Intertidal and sub-tidal soft bottom habitats, esp those that provide shelter, such as depressions in muddy substrates, eelgrass, macroalgae, shells, anemone and polychaete tubes, on artificial reefs, and in live bivalves (e.g., scallops)
Red hake	Adults	In the Gulf of Maine, the Great South Channel, and on the outer continental shelf and slope from Georges Bank to North Carolina, including inshore bays and estuaries as far south as Chesapeake Bay	50-750 on shelf and slope, as shallow as 20 inshore	Sub-tidal benthic habitats in shell beds, on soft sediments (usually in depressions), also found on gravel and hard bottom and artificial reefs
Rosette skate	Juveniles and adults	Outer continental shelf from approximately 40°N to Cape Hatteras, North Carolina	80-400	Benthic habitats with mud and sand substrates
Scup	Juveniles	Continental shelf between southwestern Gulf of Maine and Cape Hatteras, North Carolina and in nearshore and estuarine waters between Massachusetts and Virginia	No information	Benthic habitats, in association with inshore sand and mud substrates, mussel and eelgrass beds

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Scup	Adults	Continental shelf and nearshore and estuarine waters between southwestern Gulf of Maine and Cape Hatteras, North Carolina	No information, generally overwinter offshore	Benthic habitats
Silver hake	Juveniles	Gulf of Maine, including certain bays and estuaries, and on the continental shelf as far south as Cape May, New Jersey	40-400 in Gulf of Maine, >10 in Mid-Atlantic	Pelagic and sandy sub-tidal benthic habitats in association with sand-waves, flat sand with amphipod tubes, shells, and in biogenic depressions
Silver hake	Adults	Gulf of Maine, including certain bays and estuaries, the southern portion of Georges Bank, and the outer continental shelf and some shallower coastal locations in the Mid-Atlantic	>35 in Gulf of Maine, 70-400 on Georges Bank and in the Mid-Atlantic	Pelagic and sandy sub-tidal benthic habitats, often in bottom depressions or in association with sand waves and shell fragments, also in mud habitats bordering deep boulder reefs, on over deep boulder reefs in the southwest Gulf of Maine
Summer flounder	Juveniles	Continental shelf and estuaries from Cape Cod, Massachusetts, to Cape Canaveral, Florida	To maximum 152	Benthic habitats, including inshore estuaries, salt marsh creeks, seagrass beds, mudflats, and open bay areas
Summer flounder	Adults	Continental shelf from Cape Cod, Massachusetts, to Cape Canaveral, Florida, including shallow coastal and estuarine waters during warmer months	To maximum 152 in colder months	Benthic habitats

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Spiny dogfish	Juveniles	Primarily the outer continental shelf and slope between Cape Hatteras and Georges Bank and in the Gulf of Maine	Deep water	Pelagic and epibenthic habitats
Spiny dogfish	Female sub-adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Male sub-adults	Primarily in the Gulf of Maine and on the outer continental shelf from Georges Bank to Cape Hatteras	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Female adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Male adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Thorny skate	Juveniles	Offshore Gulf of Maine, some coastal bays in the Gulf of Maine, and on the continental slope from Georges Bank to North Carolina	35-400 offshore Gulf of Maine, <35 inshore Gulf of Maine, to 900 om slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
Thorny skate	Adults	Offshore Gulf of Maine and on the continental slope from Georges Bank to North Carolina	35-400 offshore Gulf of Maine, <35 inshore Gulf of Maine, to 900 om slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
White hake	Juveniles	Gulf of Maine, Georges Bank, and Southern New England, including bays and estuaries in the Gulf of Maine	Mean high water - 300	Intertidal and sub-tidal estuarine and marine habitats on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
White hake	Adults	Gulf of Maine, including coastal bays and estuaries, and the outer continental shelf and slope	100-400 offshore Gulf of Maine, >25 inshore Gulf of Maine, to 900 on slope	Sub-tidal benthic habitats on fine-grained, muddy substrates and in mixed soft and rocky habitats
Windowpane flounder	Juveniles	Estuarine, coastal, and continental shelf waters from the Gulf of Maine to northern Florida, including bays and estuaries from Maine to Maryland	Mean high water - 60	Intertidal and sub-tidal benthic habitats on mud and sand substrates
Windowpane flounder	Adults	Estuarine, coastal, and continental shelf waters from the Gulf of Maine to Cape Hatteras, North Carolina, including bays and estuaries from Maine to Maryland	Mean high water - 70	Intertidal and sub-tidal benthic habitats on mud and sand substrates
Winter flounder	Eggs	Eastern Maine to Absecon Inlet, New Jersey (39° 22'N) and Georges Bank	0-5 south of Cape Cod, 0-70 Gulf of Maine and Georges Bank	Sub-tidal estuarine and coastal benthic habitats on mud, muddy sand, sand, gravel, submerged aquatic vegetation, and macroalgae

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Winter flounder	Juveniles	Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and Mid-Atlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey	Mean high water - 60	Intertidal and sub-tidal benthic habitats on a variety of bottom types, such as mud, sand, rocky substrates with attached macro algae, tidal wetlands, and eelgrass; young-of-the-year juveniles on muddy and sandy sediments in and adjacent to eelgrass and macroalgae, in bottom debris, and in marsh creeks
Winter flounder	Adults	Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and Mid-Atlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey	Mean high water - 70	Intertidal and sub-tidal benthic habitats on muddy and sandy substrates, and on hard bottom on offshore banks; for spawning adults, also see eggs
Winter skate	Juveniles	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries from eastern Maine to Chincoteague Bay, Virginia, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic	0-90	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
Winter skate	Adults	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries in Maine and New Hampshire, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic	0-80	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud
Witch flounder	Juveniles	Gulf of Maine and outer continental shelf and slope	50-400 and to 1500 on slope	Sub-tidal benthic habitats with mud and muddy sand substrates
Witch flounder	Adults	Gulf of Maine and outer continental shelf and slope	35-400 and to 1500 on slope	Sub-tidal benthic habitats with mud and muddy sand substrates
Yellowtail flounder	Juveniles	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	20-80	Sub-tidal benthic habitats on sand and muddy sand
Yellowtail flounder	Adults	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	25-90	Sub-tidal benthic habitats on sand and sand with mud, shell hash, gravel, and rocks

* Unless otherwise noted, common temperature and salinity ranges were derived primarily from inshore and offshore trawl survey data (mostly fall and spring). Temperature and salinity information is meant to supplement the EFH text descriptions; it is not prescriptive.

** See Appendix B in Northeast FMC (2016) for additional information on other preferred habitat features for Atlantic salmon

5.6 HUMAN COMMUNITIES

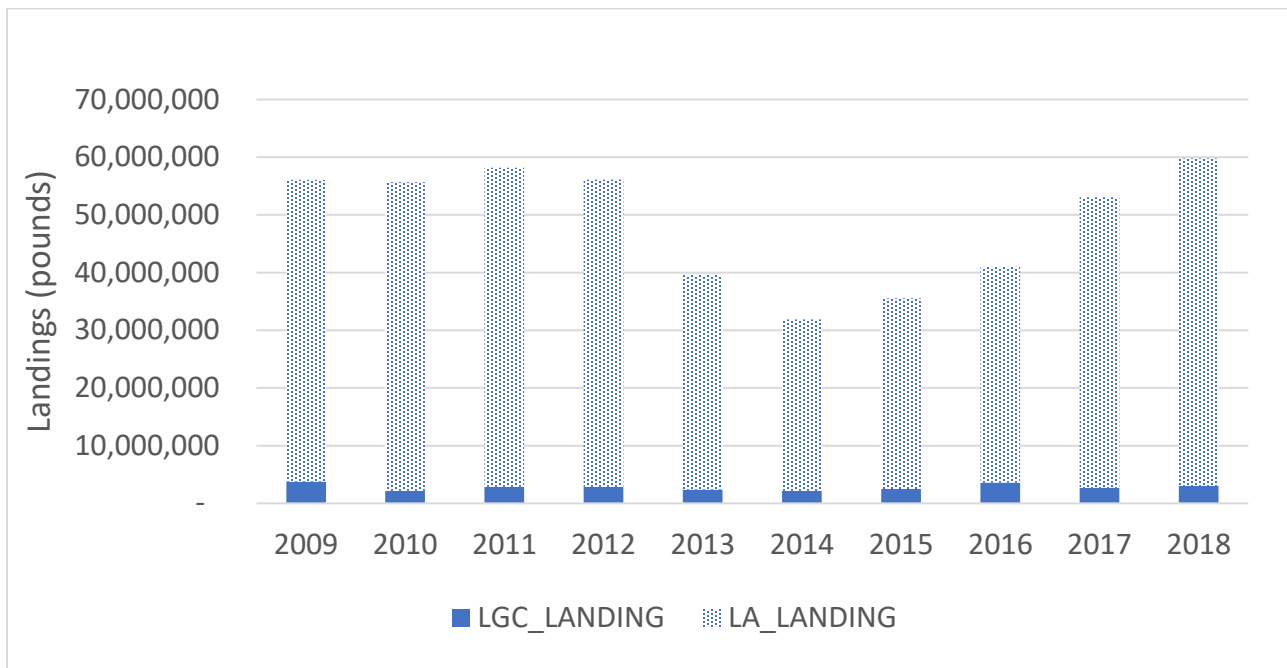
5.6.1 Economic Trends in the Sea Scallop Fishery

5.6.1.1 Trends in landings, prices and revenues

During the fishing years 2009-2018, scallop landings ranged from about 32 to 60 million pounds. In 2018, the total scallop landing from all permit categories increased to about 59.8 million pounds, i.e., a 12.7 percent increase from 2017 landings. Limited access (LA) vessels attributed to majority of the scallop landings. In 2017, the LA vessels landed about 50.37 million pounds of scallops. It increased to about 56.76 million pounds in 2018 (Table 33 and Figure 18).

Landings by the general category vessels declined after 2009 as a result of the Amendment 11 implementation that restricts TAC for the limited access general category (LAGC) fishery to 5.5% of the total ACL. The landings by LAGC fishery (IFQ, NGOM and incidental permits) has also slightly increased in 2018 to about 3.03 million pounds compared to about 2.7 million pounds in 2017 (Table 33 and Figure 18).

Figure 18. Scallop landings (in lbs.) by permit category (2009-2018).



Note: LGC only landing (IFQ or NGOM but excludes INCI); LA landing = (SC_% =T)

Scallop revenue (in 2018 dollars) peaked in 2011 at about \$645.6 million. It declined during fishing years 2013-2015 but increased to about \$532.24 million in 2017 (Table 33 and Figure 19). The ex-vessel prices of scallops (in 2018 dollars) increased significantly to over \$9.23 per pound in 2011. The declines in the value of the dollar led to an increase in exports of large scallops to the European countries resulting in record revenues from scallops for the first time in scallop fishing industry history. Average scallop ex-vessel price peaked at about \$13.21 per pound in 2014 due to the decline in landings by about 45% from

its peak in 2011. As a result, scallop revenue declined by a smaller percentage (31%) relative to the decline in landings from about \$645.6 million in 2011 to \$427.63 million in 2014 (in 2018 dollars).

Average scallop price remained about \$12.75 per pound during 2014-2016, but it fell slightly below \$10 per pound in 2017 and 2018 due to increase in scallop landings. The prices in 2017 and 2018 were \$9.93 and \$9.19, respectively. Although price declined in 2018 relative to 2017 or prior years, the scallop revenue has, however, increased to about \$552.12 million in 2018 compared to \$532.24 million in 2017 (Table 33 and Figure 19).

Figure 19. Trends in total scallop revenue and ex-vessel price per pound (both in 2018 \$) by fishing year (LA & LAGC fisheries)

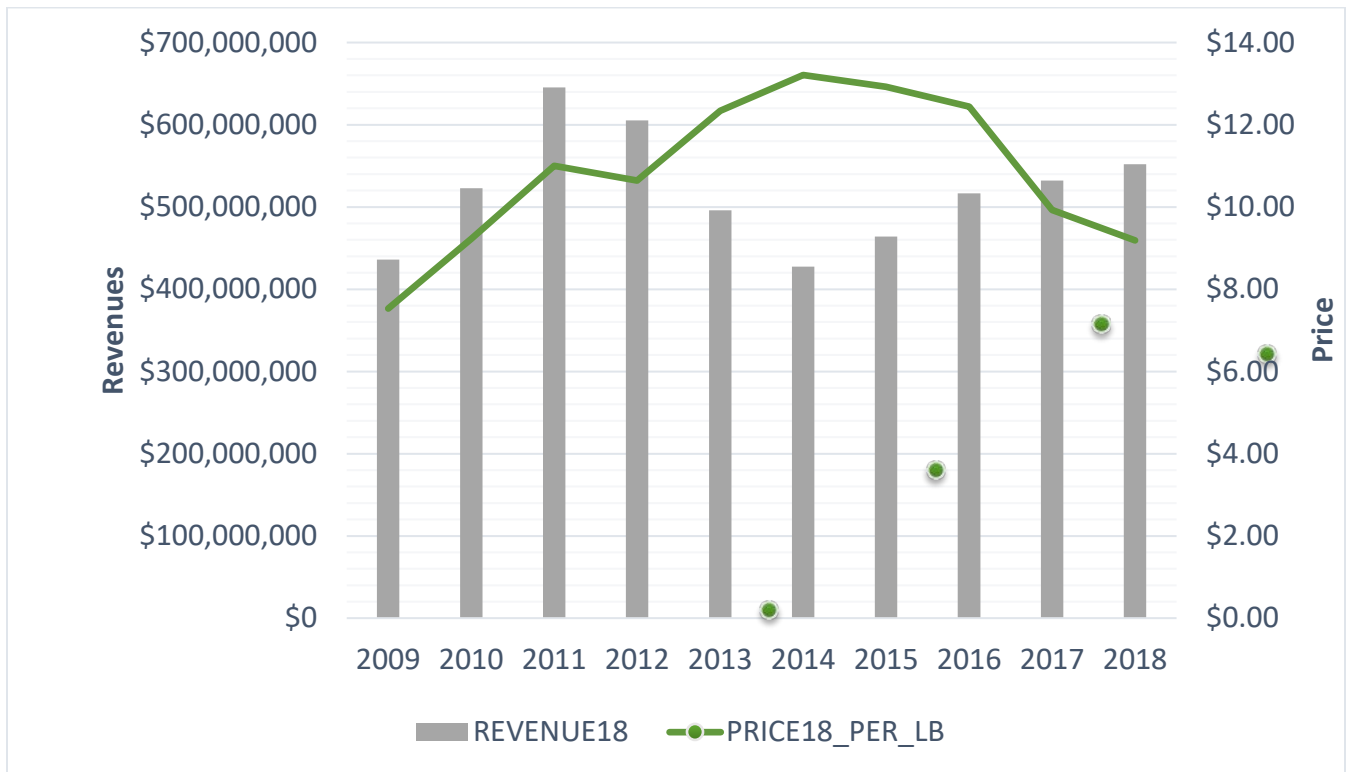


Table 33. Sea scallop landings (also by permit category), revenues, and average prices (2009-2018).

Fish Years	Landings (pounds)			Total Revenues		Price per pound
	LGC	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

The average annual scallop landing per vessel for full-time dredge (FT) ranged between 98,951 pounds in 2014 to 183,323 pounds in 2018. Similarly, average annual scallop landing per vessel for full-time small dredge (FT SMD) ranged between 61,142 pounds in 2014 to 145,581 pounds in 2018. Average landings per vessel saddled during 2013-2018 for both FT and FT-SMD vessels (Table 34 and Figure 20).

Table 34. Average scallop landings and revenues (in 2018 dollars) per vessel for FT and FT SMD vessels.

Fish Year	Average Landings per vessel (lbs.)		Average Revenue per vessel (in 2018 dollars)	
	FT	FT SMD	FT	FT SMD
2009	169,027	137,706	\$1,292,018	\$989,609
2010	169,762	130,634	\$1,575,099	\$1,175,993
2011	175,687	140,572	\$1,929,544	\$1,550,559
2012	169,640	135,832	\$1,808,680	\$1,412,915
2013	123,168	78,734	\$1,523,744	\$938,028
2014	98,951	61,142	\$1,308,706	\$787,748
2015	108,581	78,454	\$1,406,220	\$976,310
2016	119,126	92,718	\$1,500,801	\$1,057,357
2017	157,413	137,951	\$1,554,050	\$1,346,451
2018	183,323	145,581	\$1,684,430	\$1,328,460

The average annual scallop revenue per vessel for both full-time dredge (FT) and full-time small dredge (FT-SMD) fluctuated with the annual landings during 2009-2018. The average scallop revenue per FT vessel reached about \$1.92 million (in 2018 dollars) in 2011 as a result of higher landings combined with an increase in ex-vessel prices, but it declined to \$1.3 million in 2014. For FT-SMD vessels, average revenue per vessel increased to over \$1.55 million in 2011, but it declined to \$0.78 million in 2014. The revenue decline in 2014 was due to the decline in landings for the fishing year (Table 34 and Figure 20, Figure 21). In 2018, average revenue per vessel for FT and FT-SMD vessels increased to \$1.68 million and \$1.33 million, respectively due to an increase in landings for both permit categories (Table 34 and Figure 21).

Figure 20. Trends on average scallop landings per full-time vessel by permit category.

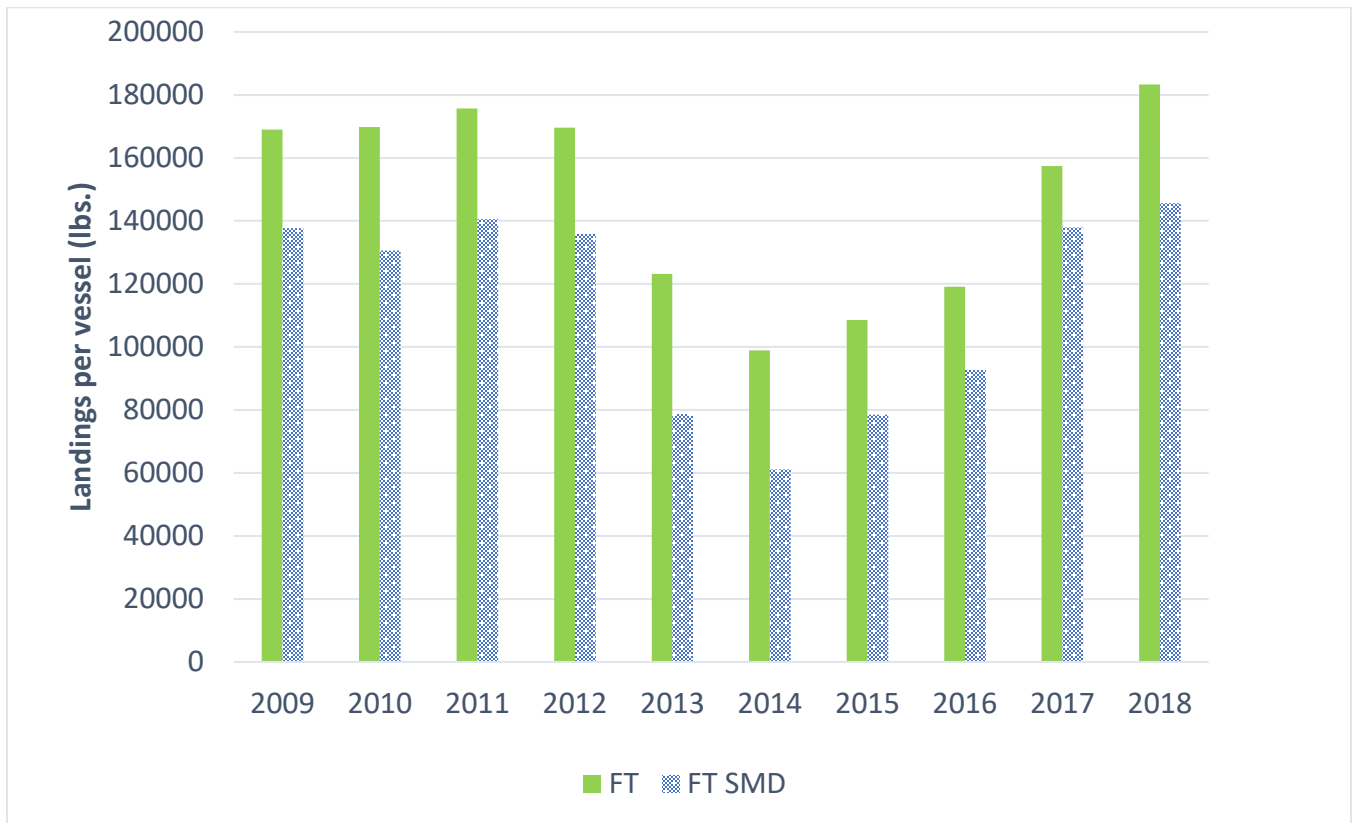
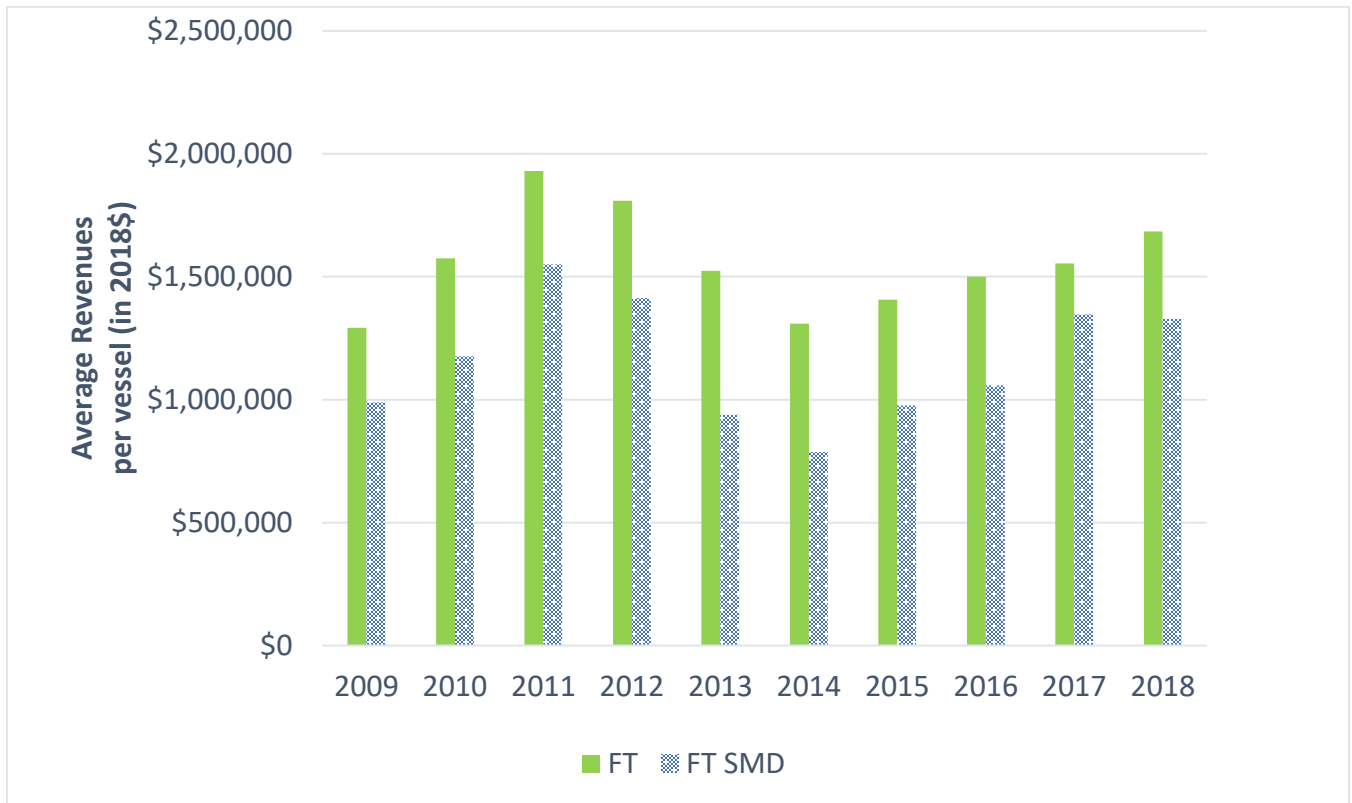
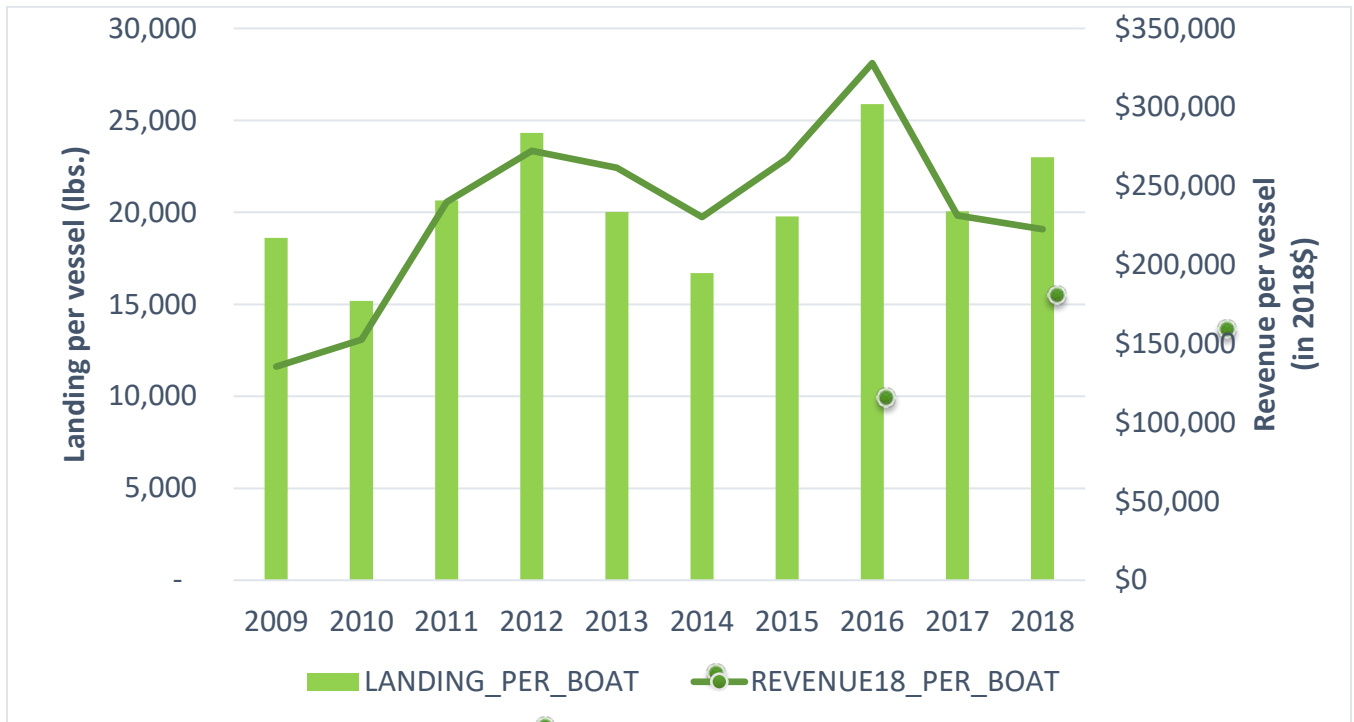


Figure 21. Trends in average scallop revenue per full-time vessel by permit category (in 2018 \$)



Although LAGC IFQ landings declined after 2009, as the overall TAC for this fishery declined from 10% in 2009 to 9% in 2010, scallop landings per active LAGC vessel exceeded the levels in 2009 after 2010 as the quota was consolidated. The revenue per vessel by IFQs vessel has increased over time since 2011. The revenue peaked to about \$327,978 in 2016 but declined to around \$231,330 in 2017 and \$222,591 in 2018 (Figure 22). Increase in average revenue may be attributed to high prices for larger grades of scallops.

Figure 22. Average scallop landings and scallop revenue per vessel (in 2018 \$) for LGC IFQ only boats



5.6.1.1.1 Trends in landings by permit category for limited access vessels

Table 35 and Table 36 describe scallop landings by LA vessels by gear type and permit category. Most limited access category effort is from vessels using scallop dredges, including small dredges. The number of full-time trawl permits (FT-NET) has decreased continuously and has been at 11 full-time trawl permitted vessels (Table 48). Table 36 shows that the percentage of landings by FT trawl permits has remained around 3% of total limited access scallop landings in recent years.⁵ About 80% of the scallop pounds were landed by vessels with full-time dredge (FT) permits and 14% landed by vessels with full-time small dredge (FT-STD) permits in 2018. Including the FT-NET vessels that use dredge gear, the percentage of scallop pounds landed by dredge gear amounted to over 99% of the total scallop landings during 2009-2018.

⁵ There were only 11 FT trawl permits in 2015. VTR data during 2009-2013 showed that over 90% of the scallop pounds by the FT trawl permitted vessels were landed using dredge gear (10 vessels) since these vessels are allowed to use dredge gear even though they have a trawl permit. All of the part-time trawl and occasional trawl permits were converted to small dredge vessels.

Table 35. Scallop landings (lbs.) by limited access vessels by permit category

FISHYEAR	'FT'	'FT-SMD'	'FT-NET'	'PT'	'PT-SMD'	Total (lbs.)
2009	41,411,655	7,298,416	1,847,312	226,968	1,516,859	52,301,210
2010	42,779,955	6,792,986	1,788,545	238,648	1,902,279	53,502,413
2011	44,097,327	7,309,724	1,937,170	211,192	1,722,153	55,277,566
2012	42,749,294	7,063,239	1,756,899	210,977	1,442,388	53,222,797
2013	30,791,957	4,094,184	1,226,997	154,673	954,055	37,221,866
2014	24,836,675	3,179,401	880,098	107,759	709,398	29,713,331
2015	27,036,665	4,079,589	933,717	140,919	865,263	33,056,153
2016	29,781,474	4,821,326	1,279,350	199,145	1,276,757	37,358,052
2017	39,668,120	7,173,447	1,740,087	218,980	1,566,268	50,366,902
2018	45,463,989	7,861,387	1,619,563		1,820,059	56,764,998

Table 36. Percentage of scallop landings (lbs.) by limited access vessels by permit category

FISHYEAR	'FT'	'FT-SMD'	'FT-NET'	'PT'	'PT-SMD'
2009	79.18%	13.95%	3.53%	0.43%	2.90%
2010	79.96%	12.70%	3.34%	0.45%	3.56%
2011	79.77%	13.22%	3.50%	0.38%	3.12%
2012	80.32%	13.27%	3.30%	0.40%	2.71%
2013	82.73%	11.00%	3.30%	0.42%	2.56%
2014	83.59%	10.70%	2.96%	0.36%	2.39%
2015	81.79%	12.34%	2.82%	0.43%	2.62%
2016	79.72%	12.91%	3.42%	0.53%	3.42%
2017	78.76%	14.24%	3.45%	0.43%	3.11%
2018	80.09%	13.85%	2.85%		3.21%

5.6.1.1.2 Trends in landings for the limited access IFQ vessels

Beginning 2010 fishing year, LAGC-IFQ vessels were allocated 5% of the estimated scallop catch resulting a decline in landings by the general category vessels.⁶ Council's IFQ program report presented on June 2017 provides a detailed review of the trends of the IFQ fishery during 2010-2015.⁷ Table 37 presents the number of IFQ only permits (i.e., excluding LA vessels with IFQ permits) and their scallop landings during 2009-2018. Compared to 2017, the landings by IFQ vessels increased in 2018 from about 2.6 million pounds to 2.8 million pounds.

Table 37. LAGC IFQ active vessels and landings (excluding LA vessels with IFQ permits)

Fish Year	Permit (IFQ only)	IFQ only landings lbs.
2009	202	3,759,904
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	3,493,944
2017	129	2,588,370
2018	123	2,828,544

5.6.1.2 Trends in effort allocations and LPUE

With the implementation of Amendment 10 the LA vessels were allocated DAS for open areas and area specific access area trips with no open area trade-offs.⁸ The DAS averaged to about 25,000 during 2009-2012; it ranged from 16,000 to 19,000 during 2013-2015; and it has increased substantially to around 23,400 during 2016-2018 fishing years (Figure 23).

⁶ The general category scallop fishery has always been a comparatively small but diverse part of the overall scallop fishery. Beside LAGC-IFQ permits, there is also a separate limited entry program for general category fishing in the Northern Gulf of Maine (NGOM). Furthermore, a separate limited entry incidental catch permit (INCI) was adopted that will permit vessels to land and sell up to 40 pounds of scallop meat per trip while engaged in other fisheries. During the transition period to the full-implementation of Amendment 11, the general category vessels were allocated 10% of the scallop TAC.

⁷ http://s3.amazonaws.com/nefmc.org/3.170615_Draft_LAGC_IFQ_ProgramReview_wAppendicies.pdf

⁸ Although the vessels could no longer use their access area allocations in the open areas, Amendment 10 and Frameworks 16 to 18 continued to include an automatic DAS charge of 12 DAS for each access area trip until it was eliminated by NMFS.

Table 38. DAS and access area allocations per full-time vessel

Year	Action	DAS	AA trips	CA I	CA II	NLS	HC	ETA	DMV	Poss. Limit
2008	FW19	35	5	Closed	Closed	1 trip	Closed	4 trips	Closed	18,000
2009	FW19	42	5	Closed	1 trip	Closed	Closed	3 trips	1 trip	18,000
2010	FW21	38	4	Closed	Closed	1 trip	Closed	2 trips	1 trip	18,000
2011	FW22 and EA	32	4	1.5 trips	0.5 trips	Closed by emergency	1 trip	converted to open area	1 trip	18,000
2012	FW22 and EA	34	4	1 trip**	1 trip	0.5 trips	1.5 trips	Closed (Dec 12, 2012, by EA)	Closed by EA (trips converted)	18,000
2013 ¹	FW24	33	2	118 trips**	182 trips	116 trips	210 trips	Closed	Closed	13,000
2014 ¹	FW25	31	2	Closed	197 trips	116 trips	Closed	Closed	313 trips****	12,000
2015	FW26	30.86	3 *****	Closed	Closed	Closed	Merged into one Mid-Atlantic AA, but inshore part of ETA closed			17,000
2016	FW27	34.55	3	Closed	Closed	Closed ~	Merged into one Mid-Atlantic AA, but inshore part of ETA closed			17,000
2017	FW28	30.41	4	Closed	1	1	1, plus another trip to ETA rotational area			18,000
2018	FW29	24	6	1	Closed	2 NLS-W, 1 NLS-S			2	18,000
2019	FR30	24	7	1	Closed	3 in NLS-W			3	18,000

¹ Access area trips were allocated to FT LA vessels using a lottery. Numbers shown are total trips allocated per area (not per vessel).

* FW18 also allowed vessels to exchange 2006 CA2 and NL trips for ETA 2007 trips

**1 trip after emergency action May 2012 (157 vessels get initial trip per FW22 and 156 get CA1 trip converted from initial DMV trip)

*** FW25 then allows unused trips to be carried over to future year

**** Vessels given choice of Delmarva trip or 5 DAS

***** Vessels were not allocated trips in access areas, instead a poundage was allocated with a possession limit

~ NL- north open to LAGC only

Total DAS-used by the LA vessels were higher in 2010 despite lower number of access area trips (4 trips per vessel). Open area DAS allocations were slightly higher in 2010 (38 DAS versus 37 DAS in 2009) and vessels spend more time fishing in the access areas. Total DAS-used further declined since 2011 due to the decrease in open area DAS allocations. As a result of reduction in the number of access area trips

to two trips per full-time vessel in 2014, the total DAS-used reached its lowest level in this year with a total of 16,289 days (Figure 23).

Figure 23. Total DAS-used (Date landed – Date sailed) and LPUE by all LA vessels

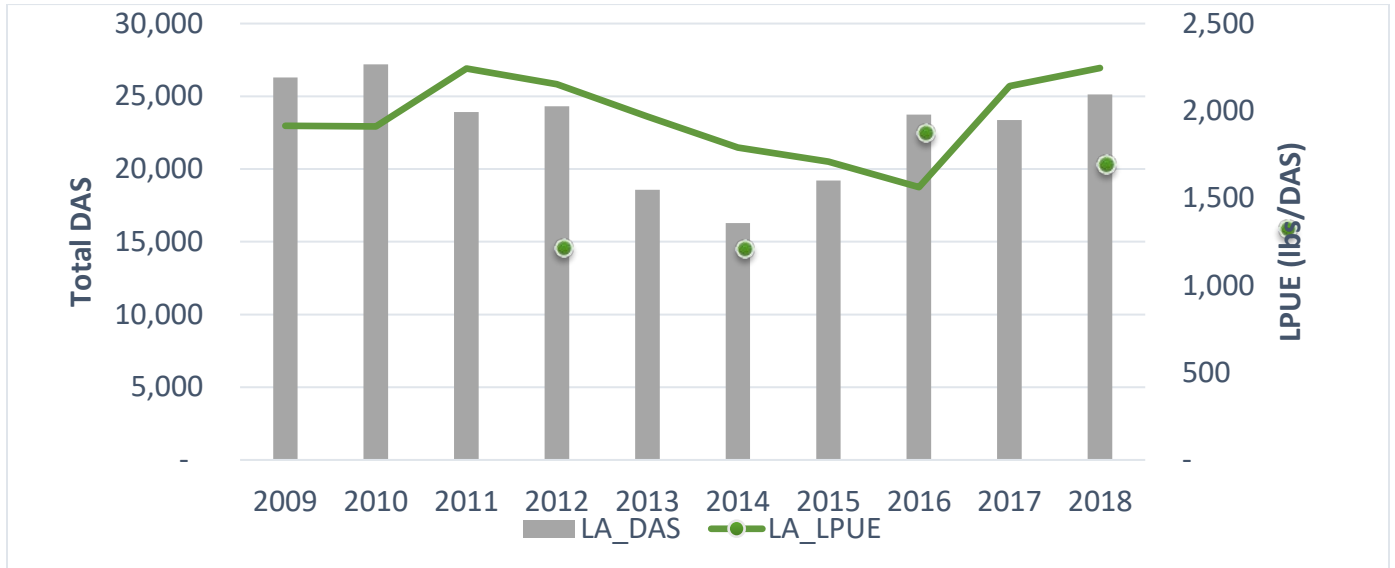
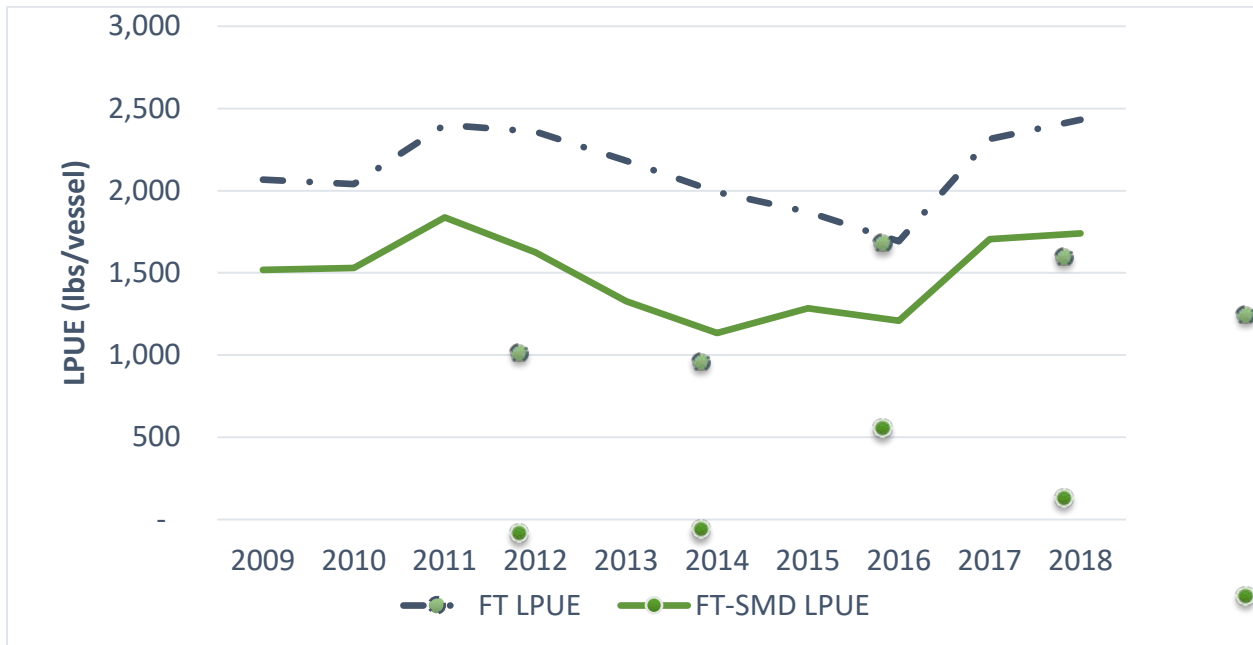


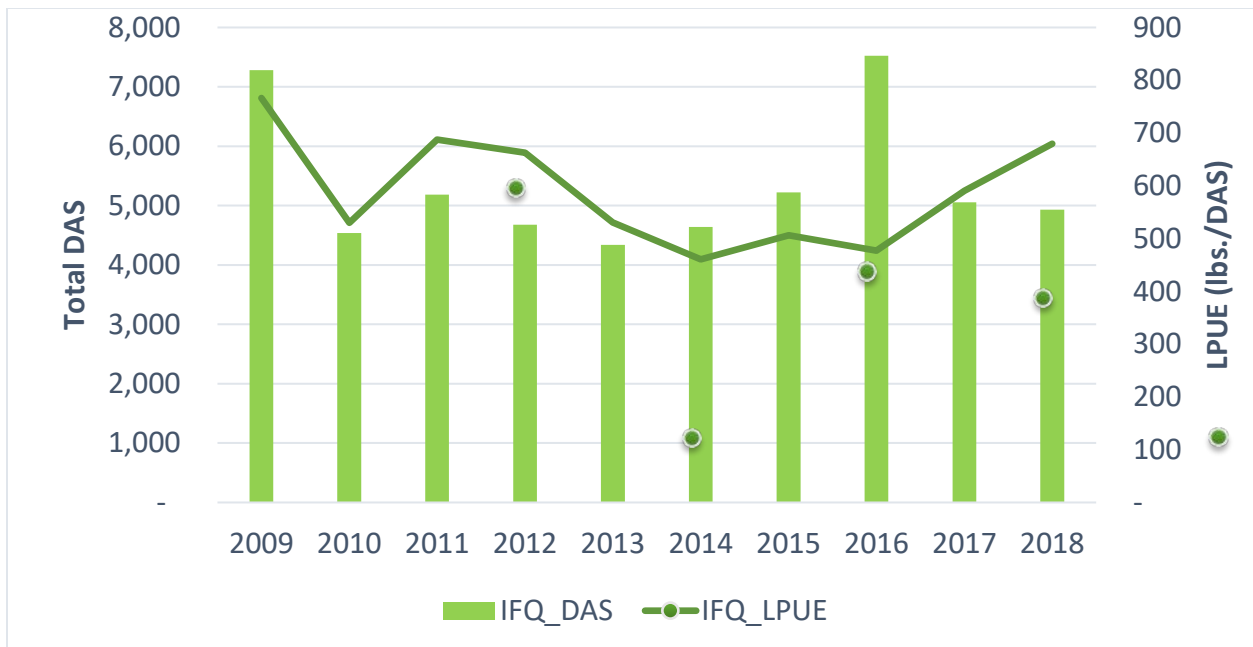
Figure 24 shows that LPUE for the full-time dredge (FT) vessels was higher (2,181 lbs. in 2013) than the LPUE for full time small dredge (FT-STD) vessels (1,328 lbs. in 2013). In 2018, the LPUE for the FT and FT-SMD vessels were 2,431 lbs. and 1,740 lbs., respectively. They increased substantially from their lows during 2014-2016 (Figure 24).

Figure 24. LPUE for full-time vessels by permit category (includes steam time)



DAS for LAGC-IFQ vessels declined substantially by about one third from its highest level at 7,524 in 2016 to 5,055 in 2017 and 4,933 in 2018. LPUE for LAGC-IFQ vessels were lower during 2013-2017 than during 2009-2012. LPUE for the IFQ vessels increased from 478 lb. in 2016 to 590 lb. in 2017 and 680 lb. in 2018 (Figure 25).

Figure 25. LPUE and DAS-used for LAGC-IFQ vessels (includes steam time, excludes LA vessels)



5.6.1.3 Trends in the meat count and size composition of scallops

The share of larger scallops (U10) which was about 15% during 2009 -2011 increased to about 20% in 2012-2013 and to 26% in 2014. But it declined to about 17% in 2015 and 11% in 2016. Similarly, the share of 11-20 count scallops declined from 77% in 2011 to 45% in 2016 fishing year. On the other hand, the share of 21-30 scallop counts increased from 5.55% in 2011 to about 35.38% in 2016. In 2017, the share of U10 landing nearly doubled from its level in 2016 rising from 11% to 19%, and to 18% in 2018; the share of U1120 landing increased from 45% in 2016 to 55% in 2017 and even increased to 68% in 2018; but the share of U2130 declined substantially from 35.38% in 2016 to 23.61% in 2017 and further declined to 11.53% in 2018 (Table 39 and Table 40).

Table 39. Scallop landings by market category (lbs.)

Fishyear	U10	11 to 20	21 to 30	31+	UNK	Grand Total
2009	8,426,450	35,799,075	12,193,737	172,283	1,327,049	57,918,594
2010	8,770,955	36,052,201	10,831,759	63,244	939,048	56,657,207
2011	8,543,436	45,260,311	3,256,836	306,256	1,339,491	58,706,330
2012	10,485,521	41,587,639	3,486,843	63,484	1,234,715	56,858,202
2013	8,666,779	24,780,078	5,564,030	125,631	1,076,312	40,212,830
2014	8,046,766	19,084,369	4,079,070	286,378	873,788	32,370,371
2015	6,115,533	21,138,141	7,719,681	170,252	772,211	35,915,818
2016	4,720,193	18,774,077	14,691,792	2,202,112	1,141,890	41,530,064
2017	10,186,798	29,399,041	12,655,069	388,708	979,780	53,609,396
2018	10,857,391	41,363,933	6,929,958	65,768	875,675	60,092,725

Table 40. Size composition of scallops (in percent)

Fish Year	U10	11 to 20	21 to 30	31+	UNK
2009	14.55%	61.81%	21.05%	0.30%	2.29%
2010	15.48%	63.63%	19.12%	0.11%	1.66%
2011	14.55%	77.10%	5.55%	0.52%	2.28%
2012	18.44%	73.14%	6.13%	0.11%	2.17%
2013	21.55%	61.62%	13.84%	0.31%	2.68%
2014	24.86%	58.96%	12.60%	0.88%	2.70%
2015	17.03%	58.85%	21.49%	0.47%	2.15%
2016	11.37%	45.21%	35.38%	5.30%	2.75%
2017	19.00%	54.84%	23.61%	0.73%	1.83%
2018	18.07%	68.83%	11.53%	0.11%	1.46%

Table 41. Composition of scallop revenue by size (percent of total scallop revenue)

Fish Year	U10	U1120	U21 to 30	U31+	UNK
2009	18.10%	59.37%	20.08%	0.27%	2.18%
2010	20.18%	58.37%	19.59%	0.12%	1.73%
2011	14.93%	76.48%	5.85%	0.52%	2.22%
2012	19.29%	72.40%	6.16%	0.11%	2.04%
2013	23.17%	60.43%	13.85%	0.30%	2.25%
2014	27.89%	56.48%	12.11%	0.77%	2.75%
2015	21.04%	56.67%	19.95%	0.42%	1.94%
2016	16.52%	45.46%	31.16%	4.13%	2.74%
2017	25.18%	50.20%	21.88%	0.67%	2.07%
2018	20.80%	65.43%	12.09%	0.11%	1.58%

Larger scallops fetched higher prices than the smaller scallops which led to an increase in overall average scallop prices especially since 2010 (Table 42). Price per pound (in 2018 dollars) for U10 landings reached highest at \$18.08 in 2016, but declined to \$13.16 in 2017 and further declined to \$10.58 in 2018. An increase or decrease in prices of U10 scallops corresponds to annual landings for this market category.

Table 42. Price of scallop per pound by market category (in 2018 dollars)

Fish Years	Price U10	Price U11 to U20	Price 21+	Price Unknown category
2009	\$9.37	\$7.23	\$7.18	\$7.17
2010	\$12.03	\$8.47	\$9.46	\$9.66
2011	\$11.29	\$10.91	\$11.53	\$10.69
2012	\$11.14	\$10.54	\$10.69	\$10.00
2013	\$13.26	\$12.10	\$12.34	\$10.38
2014	\$14.82	\$12.66	\$12.61	\$13.47
2015	\$15.96	\$12.44	\$11.98	\$11.65
2016	\$18.08	\$12.50	\$10.79	\$12.37
2017	\$13.16	\$9.09	\$9.20	\$11.26
2018	\$10.58	\$8.73	\$9.62	\$9.94

5.6.1.4 Trends in permits by permit plan and category

Table 43 shows the number of limited access vessels by permit category during 2009-2017 fishing years. 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). Of these permits, the majority is dredge vessels, with a small number of full-time small dredge (FT-SMD) and full-time trawl (FT-NET) permit holders.⁹ The number of LA vessels holding one of the LAGC permit is shown in Table 44. The unique vessels with Right-ID Numbers are shown in Table 45 for 2008-2012. Only 347 out of 356 permits in 2008 belonged to unique vessels.

⁹ The permit numbers shown in the Table 43 include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number.

Table 43. Number of limited access vessels by permit category and gear

PERMIT CAT		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
FT	Full Time	245	251	252	252	250	249	250	250	249	249
FT-NET	Full-time Trawl	11	11	11	11	11	12	11	11	11	10
FT-SMD	Full-time Small Dredge	53	52	52	51	52	53	51	51	51	54
<i>FT</i>	Full-time	309	314	315	314	313	314	312	312	311	313
PT	Part-time	2	2	2	2	2	2	2	2	2	1
PT-SMD	Part-time Small Dredge	30	32	32	31	30	32	31	32	31	31
<i>PT</i>	Part-time	32	34	34	33	32	34	33	34	33	32
SUM		341	348	349	347	345	348	345	346	344	345

Table 44. LAGC permits held by limited access (LA) vessels by permit category

CALENDAR_YEAR	'LA vessels with IFQ permit'	'LA vessels with NGOM permit'	'LA vessels with INCI permit'
2009	40	26	111
2010	40	27	113
2011	40	27	113
2012	41	27	111
2013	38	27	112
2014	40	27	113
2015	40	27	113
2016	40	27	113
2017	40	27	113
2018	39	27	113

Table 45. Unique scallop permits and category by application year

PERMIT CATEGORY	2008	2009 to 2018
Full-time	250	250
Full-time small dredge	52	52
Full-time net boat	11	11
Total full-time	313	313
Part-time	2	2
Part-time small dredge	31	32
Part-time trawl	0	0
Total part-time	33	34
Occasional	1	0
Total Limited access	347	347

Table 46 shows that the number of LAGC permits, including LGC permits held by LA vessels, that declined considerably after 2007 as a result of the Amendment 11 provisions. The numbers of LAGC permits by category, excluding the LGC permits held by LA vessels, are shown in Table 47.

Table 46. LAGC permits (LAGC permits held by LA vessels are included)

Calendar Year	No. of permits qualified under A11 program)		
	IFQ	NGOM	INCI
2009	238	33	167
2010	198	36	167
2011	181	34	168
2012	164	39	177
2013	156	49	173
2014	166	52	168
2015	163	53	158
2016	172	60	165
2017	166	60	148
2018	166	68	149

Table 47. LAGC permits after Amendment 11 implementation (LAGC permits held by LA vessels are excluded)

Year	IFQ	NGOM	INCI
2009	198	7	56
2010	158	9	54
2011	141	7	55
2012	123	12	66
2013	118	22	61
2014	126	25	55
2015	123	26	45
2016	133	33	52
2017	127	33	35
2018	127	41	36

The trends in the estimated number of active LA vessels are shown in Table 48 by permit plan. The number of full-time trawl permits (FT-NET) has decreased continuously and has been at 11 full-time trawl permitted vessels (Table 48).¹⁰ Table 49 shows the number of active LAGC vessels by permit category excluding those LA vessels which have both LA and LAGC permits.

Table 48. Active vessels (i.e., vessels with scallop landings) by fishing year during 2009-2018

FISHYEAR	'FT'	'PT'	'FT-SMD'	'PT-SMD'	'FT-NET'
2009	245	2	53	32	11
2010	252	2	52	32	11
2011	251	2	52	32	11
2012	252	2	52	31	11
2013	250	2	52	31	11
2014	251	2	52	31	11
2015	249	2	52	32	11
2016	250	2	52	32	11
2017	252	2	52	31	11
2018	248	0	54	31	10

¹⁰ Majority of these vessels (10 out of 11 in 2010) landed scallops using dredge even though they had a trawl permit.

Table 49. Number of active vessels with LAGC permits by permit category (excludes LA vessels with LGC permits)

FISHYEAR	IFQ only	NGOM only	INCI only
2009	202	8	59
2010	143	9	51
2011	139	8	55
2012	118	11	65
2013	115	24	58
2014	126	25	53
2015	122	24	44
2016	135	31	51
2017	129	35	35
2018	123	40	36

5.6.1.5 Trends in limited access (LA only) and “IFQ only” permits by home and primary state

Permits are important economic assets and access to the scallop fishery with the permits have tremendous values to fishermen incentivizing both fishery conservation as well as increasing fishing productivities, thus, taking economic benefits sustainably. Majority of the LA vessels have home state and primary state of landing in the state of Massachusetts followed by New Jersey, Virginia and North Carolina (Table 50 and Table 51). The numbers of vessels in home port state and port of landing have remained about same across the years and geographies during 2009-2018 suggesting that permits transfers across states doesn't exist or very minimal.¹¹

¹¹ The Scallop PDT generally describes changes in the scallop fishery at the community level based on both port of landing, and home port state. A port of landing is the actual port where fish and shellfish have been landed. A home port is the port identified by a vessel owner on a vessel permit application and is where supplies are purchased or crews are hired. Statistics based on port of landing begin to describe the benefits that other fishing related businesses (such as dealers and processors) derive from the landings made in their port. Alternatively, statistics based on homeport gives an indication of the benefits received by vessel owners and crew from that port. However, during this analysis the PDT in the past have observed that many vessels declare a primary port for the year and it may not always match up with the actual port that a vessel landed the majority of scallop catches for the year. Therefore, these results should take that into consideration.

Table 50. Number of limited access permits (LA only) by home state (Permit data)

Home Port States	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
CT	10	10	10	10	9	9	9	10	10	9
FL	4	4	4	4	3	3	3	3	3	3
MA	145	147	148	149	149	150	145	145	145	147
ME	4	3	3	3	3	3	3	3	3	2
NC	41	40	39	38	40	39	41	41	38	38
NJ	84	90	92	91	92	94	91	92	96	94
NY	3	4	3	2	2	1	0	0	1	1
PA	5	5	4	3	3	3	3	3	3	3
RI	2	3	2	2	2	2	2	2	2	2
VA	43	45	45	46	42	44	52	46	45	44
Total	341	351	350	348	345	348	349	345	346	343

Table 51. Number of limited access permits (LA only) by primary state (Permit data)

Primary State	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
CT	10	10	10	10	9	9	9	10	10	9
MA	146	148	149	150	150	153	148	148	147	149
ME	4	3	3	3	3	3	3	3	3	2
NC	26	25	24	23	25	25	29	29	27	26
NJ	88	93	94	94	94	95	93	95	100	98
NY	2	3	3	2	2	1	0	0	1	1
PA	1	1	1	1	1	1	1	1	0	0
RI	2	3	2	2	2	2	2	2	2	2
VA	62	64	64	63	59	60	64	58	56	56
Total	341	350	350	348	345	349	349	346	346	343

The number of LAGC IFQ permits are also summarized by both homeport state and primary port state as identified by the permit owner (Table 52 and Table 53).

Table 52. Number of LAGC-IFQ permits (IFQ only) by home state (exclude LA vessels with IFQ permits)

HPST	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
CT	3	2	1	2	3	4	3	3	3	3
DE	1	2	2	2	2	2	2	2	3	0
FL	1	1	0	0	0	0	0	0	0	0
GA	1	1	0	0	0	0	0	0	0	0
MA	60	44	43	37	36	40	41	44	46	48
MD	8	5	4	3	2	2	2	4	3	3
ME	9	6	3	4	3	3	5	3	6	9
NC	30	22	16	9	10	9	10	12	8	8
NH	4	2	3	3	2	2	1	1	1	1
NJ	54	48	44	40	39	43	40	43	39	37
NY	17	15	15	13	12	13	12	12	11	11
PA	1	1	1	1	1	1	0	0	0	0
RI	5	5	6	6	6	4	4	4	4	4
TX	0	0	0	1	1	1	1	1	1	1
VA	5	4	3	3	2	3	2	4	3	3
Total	199	158	142	124	119	127	123	133	128	128

Table 53. Number of LAGC-IFQ permits (IFQ only) by primary state (excludes LA vessels with IFQ permits)

PPST	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
CT	3	2	1	2	3	4	3	4	4	4
DE	0	0	0	0	0	0	0	1	1	0
FL	2	2	0	0	0	0	0	0	0	0
GA	1	1	0	0	0	0	0	0	0	0
MA	60	45	44	38	37	41	42	45	47	49
MD	10	8	7	6	5	5	5	6	6	4
ME	8	5	3	4	3	3	5	3	6	9
NC	27	21	15	9	10	9	10	13	9	8
NH	4	1	2	2	1	1	0	0	0	0
NJ	55	48	45	41	40	44	40	43	39	35
NY	17	15	15	13	12	13	12	11	10	10
PA	0	0	0	0	0	0	0	0	0	2
RI	6	6	6	6	6	4	4	4	4	4
Total	198	158	142	124	119	127	123	133	128	128

5.6.1.6 Foreign trade (import, export, and re-export) of scallops in FY2017-FY2018

Historically, China, Canada, and Japan have been the major exporters of various scallop products to the U.S. In FY2018, U.S. imported about 43 mil lbs. or \$230 million dollar worth of scallop products primarily from China, Canada, Japan, Mexico and Argentina. U.S. imports of scallop products in 2018 declined by about 12% relative to the import value in 2017. Similarly, the top five destinations for the U.S. scallop exports have been Canada, Netherlands, France, Belgium, and United Kingdom. In FY2018, the U.S. exported about 14 mil pounds or \$120 million worth of scallop products primarily to Canada, Netherland, France, Belgium, and United Kingdom. Scallop export in 2018 declined by about 19% relative to FY2017. The U.S. also re-exported some of its imports at reexport value of about \$16 million primarily to France and Canada. The re-export value in 2018 declined by about 50% relative to FY2017. Table 54 presents the volume and values (in nominal dollars) of U.S. imports, exports, re-exports of scallops with major countries in FY 2018 and FY2017. It also provides average import and export prices scallop products.

Table 54. Summary of U.S. scallop trades during FY2017 and FY2018.

FY 2018 U.S. Scallop Trades								
Import 2018			Export 2018			Re-Export 2018		
Countries	mil lbs	mil \$	Countries	mil lbs	mil \$	Countries	mil lbs	mil \$
China	17.86	\$49.06	Canada	4.16	\$39.82	France	1.53	\$9.63
Canada	8.14	\$78.69	Netherlands	2.73	\$21.71	Canada	0.61	\$4.10
Japan	4.46	\$43.86	France	1.57	\$14.46	China (Hk)	0.08	\$0.35
Mexico	4.17	\$16.67	Belgium	1.02	\$7.81	Netherlands	0.06	\$0.51
Argentina	3.89	\$19.71	U.K.	0.90	\$7.32	U.K.	0.04	\$0.42
Other	4.50	\$21.65	Other	3.55	\$28.41	Other	0.09	\$0.66
Total	43.02	\$229.65	Total	13.95	\$119.53	Total	2.41	\$15.65
FY 2017 U.S. Scallop Trades								
Import 2017			Export 2017			Re-Export 2017		
Countries	mil lbs	mil \$	Countries	mil lbs	mil \$	Countries	mil lbs	mil \$
China	17.49	\$60.85	Canada	4.90	\$45.68	France	3.35	\$21.15
Canada	7.83	\$80.04	Netherlands	3.36	\$28.39	Canada	0.64	\$5.35
Argentina	6.56	\$37.51	France	1.95	\$18.09	China (Hk)	0.10	\$1.07
Japan	5.94	\$65.83	Belgium	1.67	\$14.15	Netherlands	0.09	\$0.58
France	1.15	\$2.30	U.K.	1.18	\$8.64	U.K.	0.09	\$1.00
Other	2.97	\$16.39	Other	3.92	\$32.57	Other	0.34	\$2.49
Total	41.94	\$262.91	Total	16.98	\$147.53	Total	4.60	\$31.64
Price (dollar/pound) in current dollar								
Import Price 2018		\$5.34	Export Price 2018		\$8.57	Re-Export Price 2018		\$6.49
Import Price 2017		\$6.27	Export Price 2017		\$8.69	Re-Export Price 2017		\$6.87

Source: Science and Technology, National Fisheries Services (www.st.nmfs.noaa.gov); Data accessed and compiled in Nov. 2019.

5.6.1.7 Trip and Fixed costs

Trip and fixed cost and estimate for the LA and IFQ vessels are provided in Appendix for Economic Model.

5.6.2 Fishing Communities

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.

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 ports. 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 55);
- At least 50% of average annual fishing revenue was from sea scallops, 2010-2017 (with \$500K as a minimum scallop revenue); or
- 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.

Secondary ports. 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 the following criterion:

- At least \$500K average annual revenue of sea scallops during 2010-2017.

Communities identified. Based on these criteria, there are 11 primary ports and 12 secondary ports in the sea scallop fishery (Table 56); confidential ports have been combined with adjacent non-confidential ports). The primary and secondary ports comprise about 92% and 4% of total fishery revenue, respectively, during 2010-2017. Most of the fishery revenue is from landings in New Bedford, and 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.” For example, while Chatham, Massachusetts is considered secondary here, its contribution to the fishery closely matches Provincetown, its neighbor to the north and primary scallop port.

Because of the size and diversity of the sea scallop fishery, it is unpractical 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 (4%) 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/.

Table 55 – Fishing revenue in primary and secondary sea scallop ports, calendar years 2010-2017.

Port	Average revenue, 2010-2017		
	All fisheries	Sea scallops only	% sea scallops
Primary Ports			
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, NJ	\$25.4M	\$11.6M	46%
Narragansett/Pt. Judith, RI	\$42.1M	\$7.2M	17%
Wildwood/Avalon, NJ	\$6.5M	\$6.3M	97%
Stonington, CT	\$6.9M	\$4.8M	69%
Provincetown, MA	\$4.7M	\$2.2M	47%
Secondary Ports			
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=approx. 200)	\$1,046.3M	\$460.4M	44%
<i>Note: Inflation adjusted to 2017 dollars.</i>			
<i>Source: NMFS dealer data, accessed October 2018.</i>			

Table 56 – Communities of Interest (primary and secondary ports) in the sea scallop fishery.

State	Community	Average revenue, 2010-2017 ^a			Top 10 landing port, 2013-2017 ^b		Primary/Secondary
		>\$500K	>\$5M	% scallops	LA	LAGC	
MA	Gloucester	√					Secondary
	Sandwich	√					Secondary
	Provincetown	√				√	Primary
	Chatham	√					Secondary
	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	Point Pleasant	√	√		√	√	Primary
	Barnegat Light/Long Beach	√	√	√	√	√	Primary
	Atlantic City	√					Secondary
	Wildwood/Avalon	√	√	√			Primary
	Cape May	√	√	√	√	√	Primary
MD	Ocean City	√					Secondary
VA	Hampton/Seaford	√	√	√	√		Primary
	Newport News	√	√	√			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.

6.0 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

The impacts of the alternatives under consideration are evaluated herein relative to the valued ecosystem components (VECs) described in the Affected Environment (Section 4.6.1) and to each other.

6.1 INTRODUCTION

6.1.1 Evaluation Criteria

This action evaluates the potential impacts using the criteria in Table 57.

Table 57. Terms used to summarize impacts on VECs

VEC	Direction		
	Positive (+)	Negative (-)	Neutral/Negligible
Allocated target species, other landed species, and protected species	Actions that increase stock/population size for stocks in rebuilding. For stocks that are rebuilt, actions that maintain stock population sizes at rebuilt levels. For protected species, actions that increase the population size, or decrease gear interactions.	Actions that decrease stock/population sizes for overfished stocks. Actions that would cause a rebuilt stock to become overfished. For protected species, actions that decrease the population size, or increase or maintain gear interactions.	Actions that have little or no positive or negative impacts to stocks or populations.
Physical Environment/Habitat/EFH	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Human Communities	Actions that increase revenue and social well-being of fishermen and/or associated businesses	Actions that decrease revenue and social well-being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses
Impact Qualifiers:			
	All VECs: Mixed both positive and negative		
Low (L, as in low positive or low negative)	To a lesser degree		
High (H; as in high positive or high negative)	To a substantial degree (not significant)		
Likely	Some degree of uncertainty associated with the impact		
	Negative (-)	Negligible (NEGL)	Positive (+)
	← High	Low	Low High →

6.1.2 Approach to Impacts Analysis

6.2 IMPACTS ON ATLANTIC SEA SCALLOPS (BIOLOGICAL IMPACTS)

The Atlantic sea scallop resource is considered healthy; the stock is not overfished and overfishing was not occurring as of 2017. Additionally, after a period of very high fishing mortality during the mid-1980's and early-1990's, management measures reduced fishing mortality and the stock responded positively. The overall impact of management on this resource has been positive from a biological perspective, with biomass increasing dramatically between 1994-2004, where it has remained fairly stable or increased. As noted in Table 58, the updated OFL for 2020 is nearly 24% greater than ABC/ACL for the fishery, while the actual allocations to fishery are around half of the total ABC (~100 million lb ABC vs. 50-60 million lb. APL). The impact analysis should be considered in the context of a successful management regime, and a large buffer between the OFL and allocations, with a low risk of exceeding the OFL.

6.2.1 Action 1 - Overfishing Limit and Acceptable Biological Catch

The Magnuson-Stevens Act requires that annual catch limits (ACLs) and accountability measures (AMs) be set in all fishery management plans to prevent overfishing. Acceptable Biological Catch (ABC) is defined as the maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan.

Table 58 - Comparison of the No Action OFL/ABC (default 2020 from FW30) and updated OFL and ABC estimates for 2020 and 2021 (Alternative 2).

	FY	OFL	ABC including discards	Discards	ABC with discards removed
Alt. 1 – No Action	2020	59,447	50,943	4,915	46,028
Alt. 2 – Updated OFL and ABC	2020	59,186	50,460	5,046	45,414
	2021	47,503	40,430	3,995	36,435

6.2.1.1 Alternative 1 – No Action for OFL and ABC

Under “No Action”, the overall OFL and ABC would be set at the default values for FY 2020, which were adopted by the Council through FW30. The No Action ABC including discards is 50,943 mt or about 112 million pounds. The OFL and ABC values for No Action and Alternative 2 are very similar (~400 mt difference). The proposed ABC for FY2020 including discards is 50,460 mt or 111.2 million pounds. This is a slight decrease (1 million pounds) from 2019 default measures. The growth of large year classes in the Nantucket Lightship area and the Mid-Atlantic Access Area, which have been tracked over several years, are beginning to level off and animals from these year classes have recruited into the fishery.

As in past years, both alternatives (Alternative 1 and Alternative 2) would result in a healthy scallop biomass in the short and long term and should both be considered to be a low positive impact. In general

the best available data should be used to set ABC, which would include updated survey and fishery data used in the proposed ABC compared to older data used in the No Action ABC (Alternative 1).

6.2.1.2 Alternative 2 – Updated OFL and ABC for FY 2020 and FY 2021 (Default) (*Preferred Alternative*)

The FY 2020 and FY 2021 OFL and ABC values that were approved by the SSC and recommended to the Council are summarized in Table 58. The updated ABC estimate including discards is 50,460 mt or 111.2 million pounds for FY2020. This is about 483 mt, or about 1 million pounds, lower than the No Action ABC (default). The current OFL and ABC values are driven by the growth of large year classes the Nantucket Lightship area and the Mid-Atlantic Access Area, which were considered exceptional when they were first observed.

While the FY 2020 OFL and ABC estimates are nearly the same as No Action, the 2021 default values decline, reflecting anticipated mortality (both *F* and *M*) in high density areas of the Nantucket Lightship South Deep and in the Mid-Atlantic Access Areas. Some recruitment was detected on eastern Georges Bank in the 2019 surveys; however, after several years of below-average recruitment, the fishery will continue mining the two exceptional year classes in the Mid-Atlantic and Nantucket Lightship regions until the recruits on eastern Georges Bank have reached harvestable size.

Overall, the OFL and ABC values in Alternative 2 are based on the most updated survey information and model configurations; therefore, there should be low positive impacts on the scallop resource from setting fishery limits with updated data for two years. Since fishing targets for the majority of the fishery are set lower than these limits, the plan reduces the risk of overfishing and optimizes overall yield from the fishery over the long term. As compared to Alternative 1, using the best available science to set the specification should have low-positive impacts.

6.2.2 Action 2 – Northern Gulf of Maine Management Area

6.2.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

6.2.2.1.1 Alternative 1 – No Action

Under Alternative 1, LAGC and LA vessels would be able to fish Stellwagen Bank in fishing year 2020. The 2019 dredge survey of Stellwagen Bank detected high densities of scallop small scallops mixed with the larger animals that were targeted by the fishery during the 2019 season. The scallops on Stellwagen that were fished in 2019 are still expected to be some of the largest in the NGOM management area in 2020 and would likely be targeted by fishermen first. However, these animals are mixed with high densities of recruits. Therefore, directed scallop fishing for larger scallops on Stellwagen Bank could be expected to result in discard and incidental mortality of smaller animals that have not recruited to the fishery, which is not consistent with the goals of the Scallop FMP. Since recruitment events in the Gulf of Maine region have been episodic over several decades, not protecting this recruitment event could have negative biological impacts on the resource in this region.

Relative to Alternative 2, No Action would be expected to have a low negative biological impact on scallops in the Northern Gulf of Maine management area.

6.2.2.1.2 Alternative 2 – Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (*Preferred Alternative*)

Alternative 2 would close part of Stellwagen Bank north of 42°20'N to directed scallop fishing in the NGOM Management Area for two years to protect small scallops that were observed in 2019 dredge surveys of this area. The closure would cover roughly 71 square miles on Stellwagen Bank and would protect a substantial number of small scallops that have not recruited into the fishery. The closure area is shown in Map 2, and closure coordinates are provided in Table 7.

Stellwagen Bank has supported directed scallop fishing in the Northern Gulf of Maine Management Area for the last four fishing years (FY 2016 – FY 2019). While the 2019 surveys detected high densities of scallop small scallops, the survey also detected larger animals that were targeted by the fishery in 2019. The directed scallop fishing could be expected to north and west of the closure boundaries.

Relative to Alternative 1, a partial closure of Stellwagen Bank would be expected to have a low positive biological impact on scallops in the Northern Gulf of Maine management area.

6.2.2.2 Northern Gulf of Maine TAC Setting

Management: Both Alternative 1 and Alternative 2 would continue to implement measures developed through Framework 29 to fully account for removals from the NGOM management area by closing the NGOM management area to LA DAS fishing, and restricting harvest by LA vessels to NGOM RSA compensation awards. Both Alternative 1 and Alternative 2 could be expected to result in a complete accounting of removals from the NGOM management area.

Under both alternatives, separate NGOM TACs would be established for the LA and LAGC components, and the area would close to a component once its respective TAC was projected to be achieved. For example, if the LA TAC was attained but the LAGC TAC was not, LA vessels would no longer be allowed to fish in the NGOM, whereas the LAGC component would be allowed to continue fishing until the LAGC TAC was reached. To manage LA removals from the area, the LA share of the TAC would be awarded as NGOM RSA compensation fishing, and count as part of the 1.25 million lb scallop research set-aside (not in addition to). LA vessels would declare into the area and be limited to fishing within the area to harvest any NGOM RSA pounds they may be awarded. There would be no change in how LAGC vessels operate in the NGOM management area.

Assessment/TAC Setting: The NGOM is data-poor relative to the rest of the scallop resource (ex: no annual survey) and is not included within the CASA assessment model. There are no established biological reference points for this area. Areas of the NGOM from Machias/Seal Island to Stellwagen Bank were surveyed by UMaine/ME DMR in 2016. Additional survey work was completed in 2017 on Jeffreys Ledge and Stellwagen Bank using optical surveys (SMASST drop camera and CFF HabCam), after the area was closed to fishing. In 2018, the SMASST drop camera survey covered Stellwagen Bank, Jeffreys Ledge, Ipswich Bay, and Platts Bank. ME DMR and UMaine conducted a dredge survey of the NGOM ranging from Machias/Seal Island to Stellwagen Bank in 2019.

The 2020 and 2021 TACs considered in Alternative 2 ($F=0.20$, $F=0.18$) were developed using 2019 survey data and projecting exploitable biomass for the coming years from only Jeffreys Ledge and in Ipswich Bay.

SARC 65 estimates of natural mortality on Georges Bank were 0.2, and 0.25 for the Mid-Atlantic. All NGOM TAC options under consideration are either equal to or less than natural mortality estimates on Georges Bank. The recommended fishing mortality rates in two discrete areas of the NGOM would be less than a 1/3rd of the F_{msy} value for the fishery ($F=0.64$) set in SARC 65. Harvest associated with these low fishing mortality rates could be expected to result in low positive impacts on the scallop resource in the management area.

6.2.2.2.1 Alternative 1 – No Action

Overall, Alternative 1 could be expected to have a low positive impact on the scallop resource since it an overall TAC of 170,000 pounds would be expected to result in a low fishing mortality rate across the management unit. All NGOM TAC options under consideration 170,000 lbs (Alt. 1 – FW 30 Default), 310,000 (F=0.18), 350,000 lbs (F=0.20) could be considered conservative given the projection biomass in the management area. Alternative 1 could be expected to result in fishing mortality that is below F=0.18 (Alt. 2 sub-option 1) or F=0.20 (Alt. 2 sub-option 2) if fishing only occurs in Ipswich Bay and on Jeffreys Ledge.

6.2.2.2.2 Alternative 2 - Set 2020 and 2021 NGOM TAC, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (*Sub-Option 2 is Preferred Alternative*)

Alternative 2 would split the NGOM TAC between the LA and LAGC components using the same formula that the Council recommended in Framework 29. The first 70,000 lbs would be allocated to the LAGC component, and the remainder split 50/50 between the LA and LAGC. The overall level of harvest is expected be predictable with this approach, since Alternative 2 would establish separate TACs and reporting requirements for both the LA and LAGC.

6.2.2.2.2.1 Sub-Option 1 – Set NGOM TAC at F=0.18

Setting the NGOM TAC using exploitable biomass from Ipswich Bay and Jeffreys Ledge and fishing at F=0.18 would result in an overall TAC of 310,000 lbs for FY 2020, and a default TAC of 240,000 lbs in FY 2020.

Alternative 2 sub-option 1 is likely to result in a higher F than Alternative 1 (No Action) and fewer removals than sub-option 2. Since removals are conservative under all option, sub-option 1 would have negligible impacts on the scallop resource in this management area relative to No Action and Alternative 2 sub-option 2.

6.2.2.2.2.2 Sub-Option 2 – Set NGOM TAC at F=0.2

Setting the NGOM TAC using exploitable biomass from Ipswich Bay and Jeffreys Ledge and fishing at F=0.20 would result in an overall TAC of 350,000 lbs for FY 2020, and a default TAC of 265,000 lbs in FY 2020.

Alternative 2 sub-option 2 is likely to result in a higher F than Alternative 1 (No Action) and Alternative 2 sub-option 1 (F=0.18). Fishing at F=0.20 could be expected to result in conservative removals from the management unit. Since removals are conservative under all option, sub-option 2 would have negligible impacts on the scallop resource in this management area relative to No Action and Alternative 2 sub-option 1.

6.2.3 Summary of Relevant Biological Information

The following section describes the short-term (ST) and long-term (LT) impacts of fishery removals for each specification scenario. It should also be noted that the Council has been updating specifications on an annual basis with adjustments to the rotational management program and access areas. All estimates beyond FY 2020 are expected to be revisited again through a future action.

6.2.3.1 Overall Fishing Mortality

- All the alternatives under consideration have a total estimate of short term fishing mortality that is considerably lower than the limit used for setting fishery allocations for the fishery overall. The ACT, or annual catch target, includes an overall fishing mortality limit of 0.46 for the total fishery. The range of total fishing mortality under consideration is between 0.06 (Alternative 1 -

No Action) and a high of 0.19 for options that would allocate 6 total access area trips and fish open areas at $F=0.3$ with the Closed Area II extension open.

- The total fishing mortality is constrained by the fishing target principle that does not enable average fishing mortality to increase above F_{MSY} in open areas (0.64). For the purposes of this analysis, average total fishing mortality over the long term was simulated at $F=0.48$. There are no Alternatives under consideration in Framework 32 that would set open area F at the upper bound of $F=0.64$. Alternatives in Section 4.3.1 consider open area F rates under two separate open bottom configurations, and include DAS options of 22 DAS and 24 DAS. Setting open area F lower than the maximum target reduces overall fishing mortality.
- When compared to estimates of the overall F from the preferred alternatives in recent actions (FW25 – 30), the estimates of overall (total) F rates for all alternatives under consideration are similar (Table 59).
- The risk of overfishing is relatively low for all of the alternatives under consideration since the projected F rates are well below 0.64. However, the projection model tends to underestimate fishing mortality. In recent years when the projected F rate compared has been compared with the actual F rate the following year, total F has been underestimated by 20-30% in some years. Even if the projected open area F of $F=0.33$ is underestimated by 30%, overfishing would not occur.

Figure 26 - Comparison of overall fishing mortality for each specification scenario.

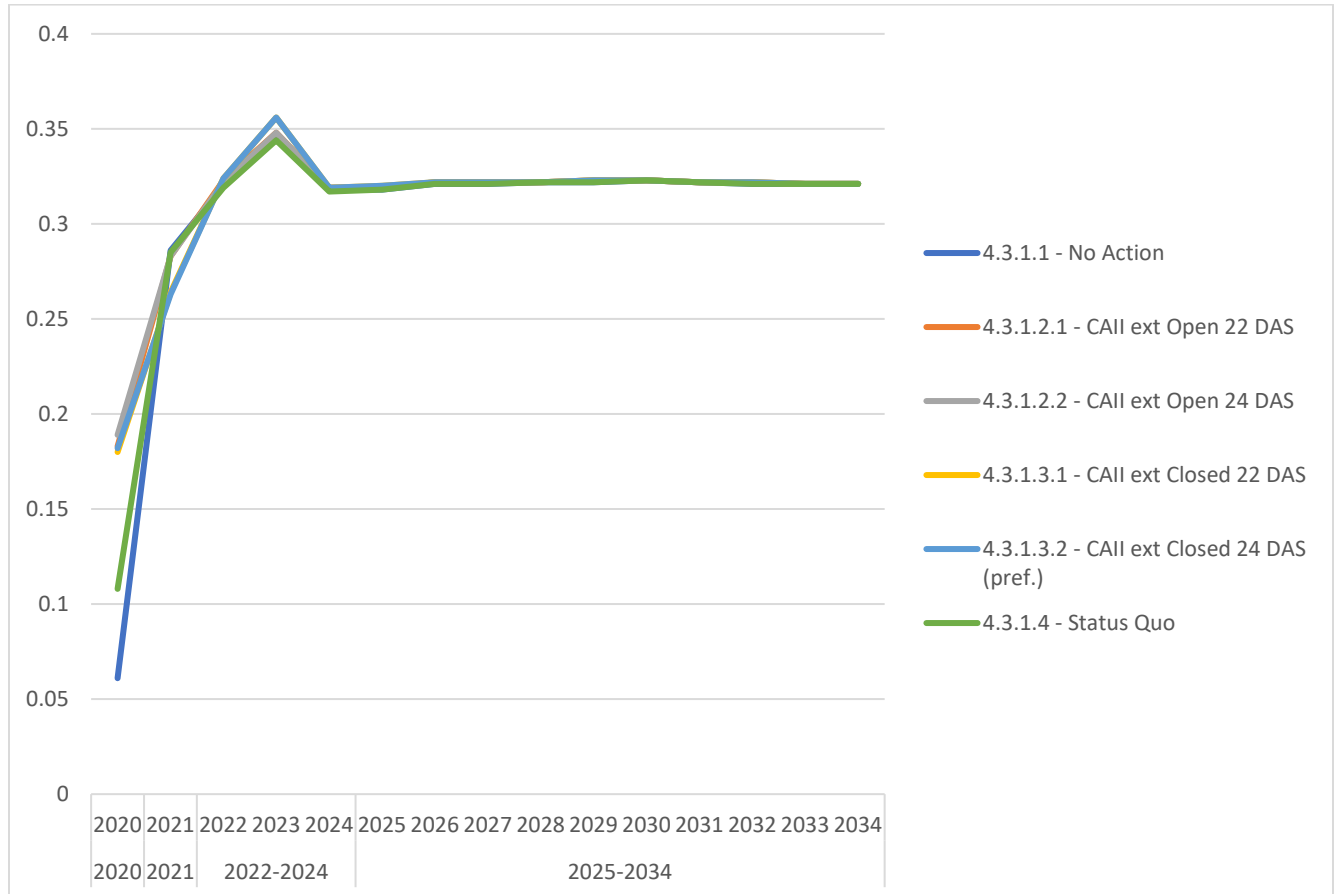
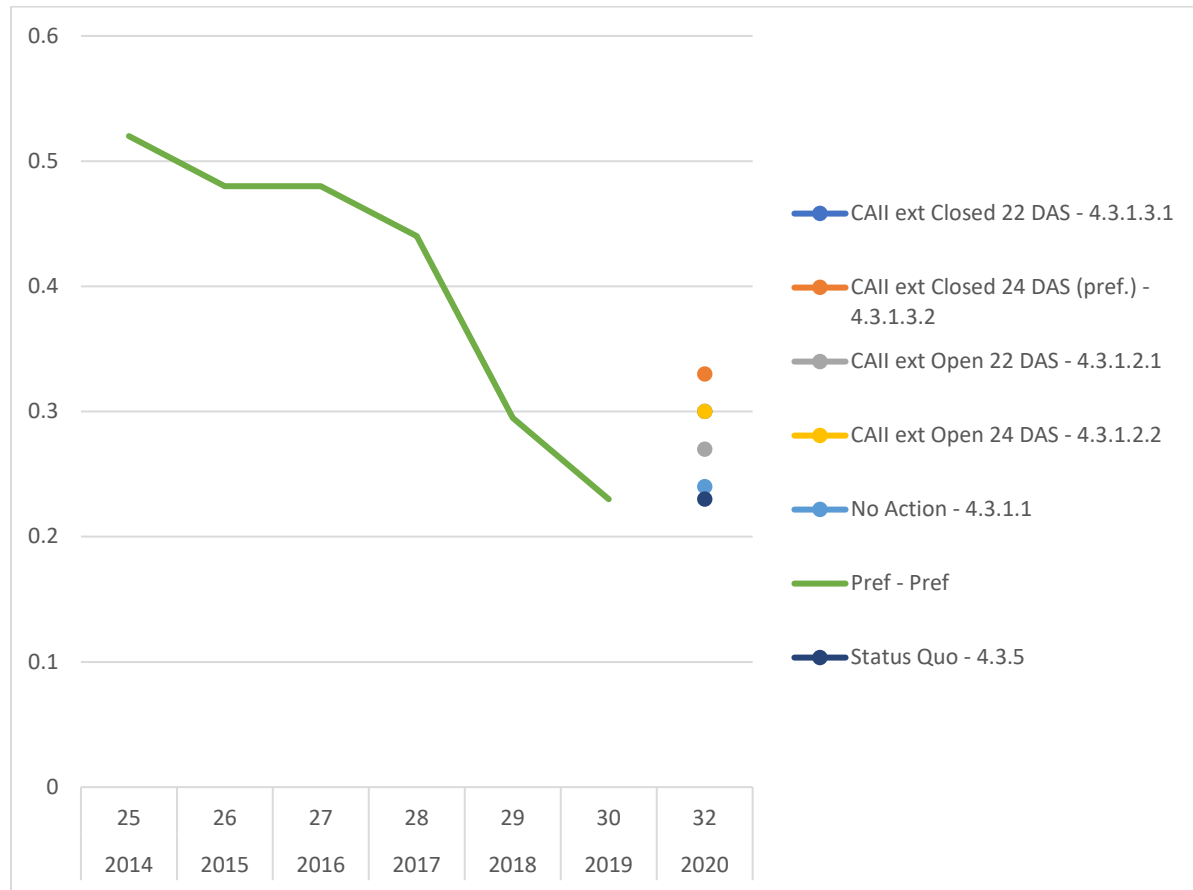


Table 59 - Comparison of estimates overall F and open area F between alternatives in FW32 and Council preferred alternatives form past actions.

Section	Description	Run	FW	FY Year	Overall F rate	Open Area F
	FW 25 Preferred	Pref	25	2014	0.21	0.52
	FW 26 Preferred	Pref	26	2015	0.224	0.48
	FW 27 Preferred	Pref	27	2016	0.1	0.48
	FW28 Preferred	Pref	28	2017	0.11	0.44
	FW 29 Preferred	Pref	29	2018	0.175	0.295
	FW 30 Preferred	Pref	30	2019	0.139	0.23
4.3.1.1	No Action	NA	32	2020	0.061	0.24
4.3.1.2.1	CAII ext Open 22 DAS	xop22	32	2020	0.183	0.27
4.3.1.2.2	CAII ext Open 24 DAS	xop24	32	2020	0.189	0.3
4.3.1.3.1	CAII ext Closed 22 DAS	xc22	32	2020	0.18	0.3
4.3.1.3.2	CAII ext Closed 24 DAS	xc24	32	2020	0.182	0.33
4.3.1.4	Status Quo	SQ	32	2020	0.108	0.23

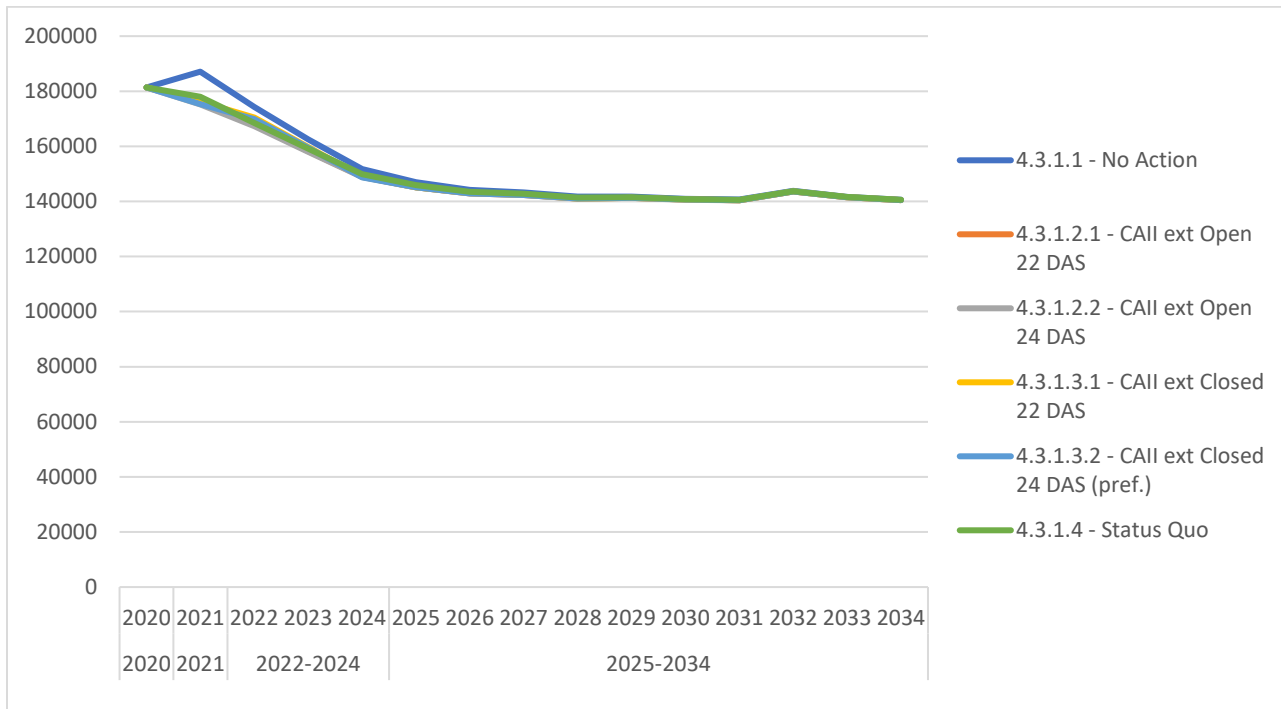
Figure 27 - Comparison of projected open area F between alternatives in FW32 relative to projected open area F of Council preferred alternatives from past actions (green line).



6.2.3.2 Projected Total Biomass

Overall the projected biomass for the various alternatives are similar in the long and short-term (Figure 28). In 2018 the projected biomass is nearly the same for all runs. In the short-term (2020 and 2021) the No Action run has higher biomass because landings were assumed to be lower in 2020, which means more scallops were assumed to remain in the population and grow. It is important to keep in mind that these are mean values, and based on various assumptions for natural mortality and future recruitment, projected landings can vary.

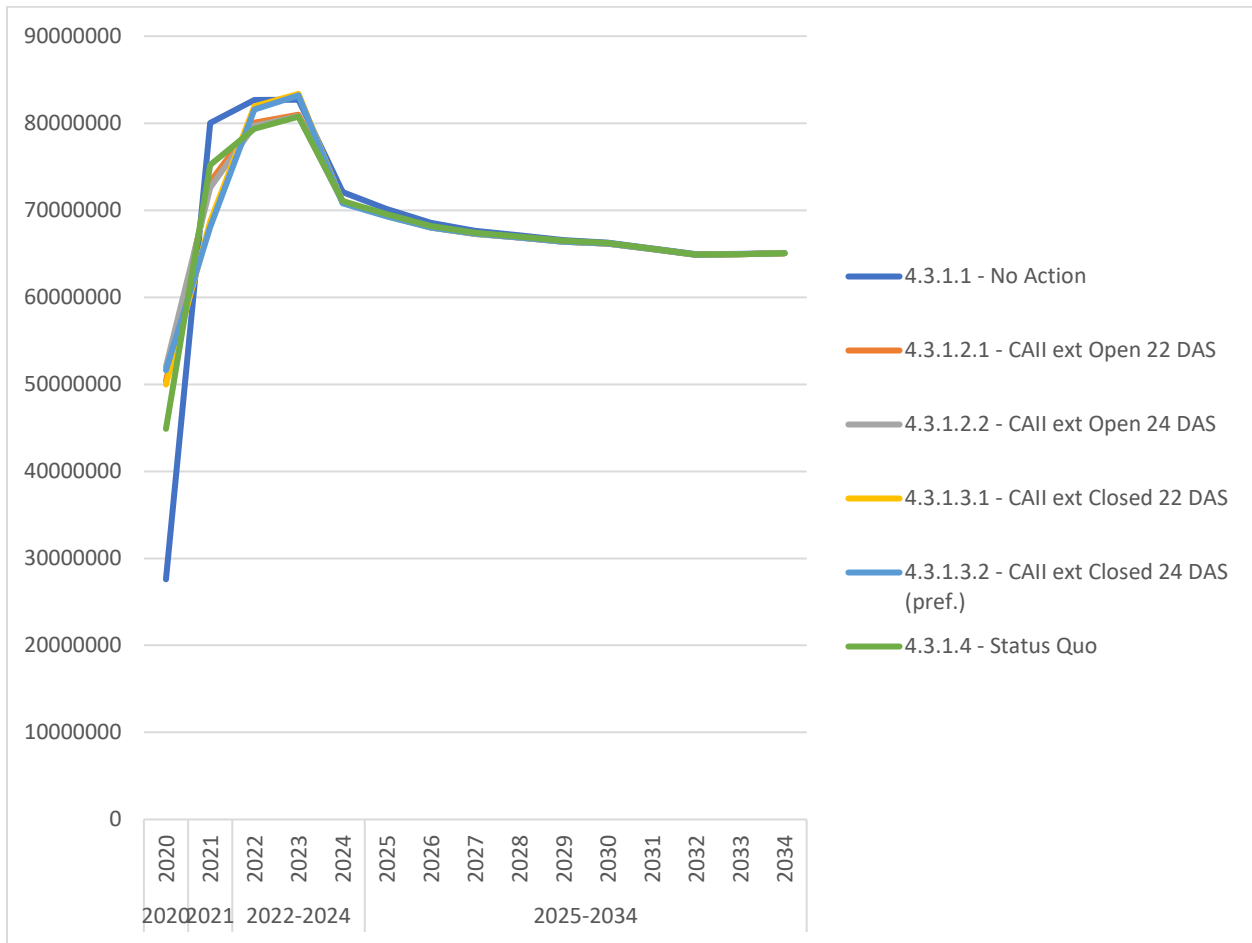
Figure 28 – Comparison of projected total biomass (mt meats) for each specification alternative.



6.2.3.3 Projected Landings

Overall the projected landings for the alternative runs under consideration are similar – with the exception of No Action (Figure 29). Alternative 2, with the Closed Area II extension open, results in higher landings in the short term, while Alternative 3 with the Closed Area II extension closed (model assumes two year closure) would result in higher landings in 2022. The ACL for the fishery is anticipated to be 99 million lbs for FY2020. Therefore, total projected landings are likely to around 50% of the ACL, and well below the OFL. It is important to keep in mind that these are mean values and based on various assumptions for natural mortality and future recruitment. These projections also generally assume higher levels of F starting in year 2 of the projection (ex: open area F=0.48). These landing estimates are useful to make comparisons across alternatives, but are very likely to be higher than realized removals in 2021. The Council plans to revisit scallop fishery specifications again in 2020 to make recommendations for 2021. The uncertainty in projected landings is lower for year 1 but increases for 2021 and beyond.

Figure 29 – Comparison of projected total scallop landings (millions of pounds) for each alternative.



6.2.3.4 NLS-Hatchet Area

The NLS-Hatchet area (Table 60) remained closed following the partial approval of OHA2 and the removal of the Nantucket Lightship groundfish closed area because there was no survey scallop survey or fishery data to inform potential fishing effort or other impacts from re-opening the area. This area is outside of the scallop dredge survey strata and outside of the projection model (SAMS) domain and is not known to be productive scallop bottom. A 2018 survey of the area using the HabCam v3 towed vehicle did not detect any scallops larger than 35 mm in this area (Figure 30 and Figure 31). Since the area has been recently surveyed, and no scallops were detected, it is highly unlikely that there would be directed scallop fishing in this area. Both Alternatives 2 and 3 in Section 4.3.1 propose opening this area to scallop fishing.

Table 60 - Boundaries of the NLS-Hatchet Area

Point	N latitude	W longitude
NLSH1	40°50'	69°30'
NLSH2	40°43.44'	69°30'
NLSH3	40°43.44'	70°
NLSH4	40°20'	70°
NLSH5	40°20'	70°20'
NLSH6	40°50'	70°20'
NLSH7	40°50'	69°30'

Figure 30 - HabCam tracks and scallop counts in the Nantucket Lightship region from 2018 surveys. No scallops between 35-75mm were detected in the NLS-Hatchet Area in the CFF survey.

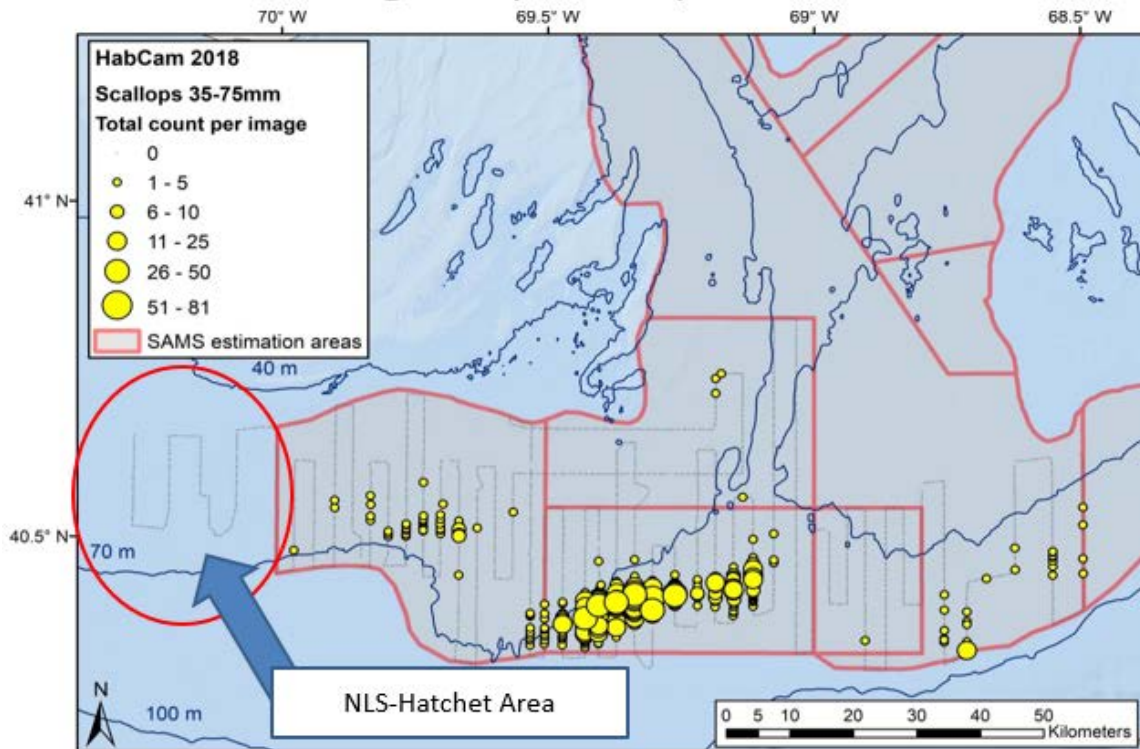
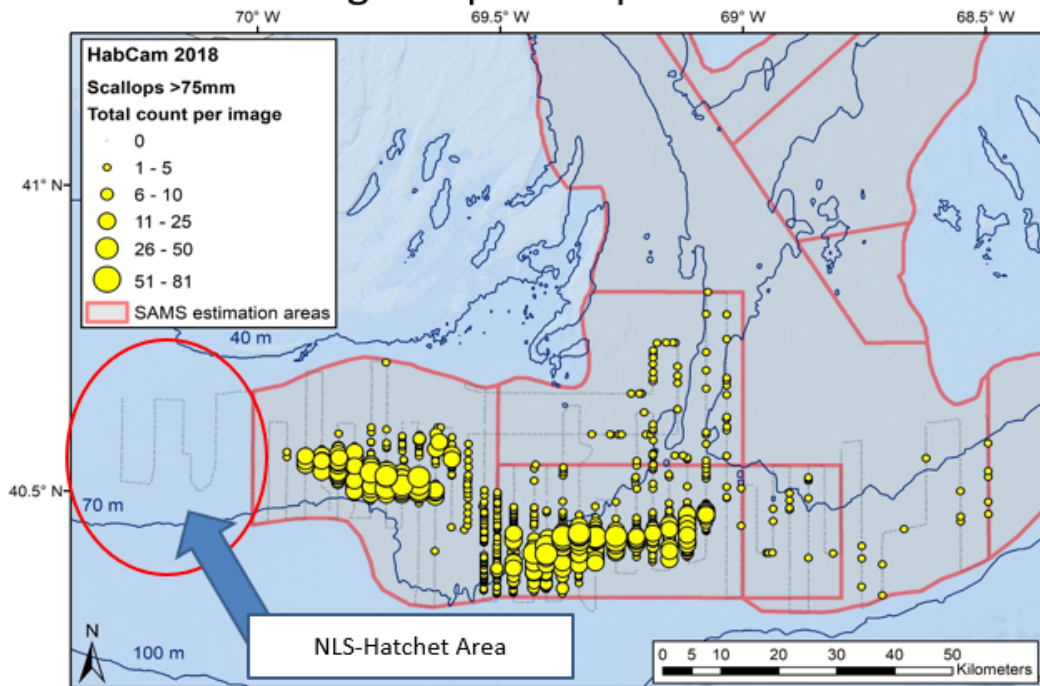


Figure 31 - HabCam tracks and scallop counts in the Nantucket Lightship region from 2018 surveys. No scallops with a SH > 75mm were detected in the NLS-Hatchet Area in the CFF survey.



6.2.4 Action 3 – Fishery Specifications & Trip Exchanges

The Council considered two rotational management alternatives in Framework 32, with different open area F values for each option (22 DAS and 24 DAS), for a total of five (5) allocation alternative, not including Status Quo. The information presented in Section 6.2.3, Summary of Relevant Biological Information, is intended to support the Council’s evaluation of each alternative in and of itself, and in comparison to each of the other allocation options, plus the Status Quo (comparison only). In this section, Status Quo refers to the condition described in 4.3.1.4, which applies Framework 30 spatial management configuration to 2019 resource conditions. The following figures and tables include information and data to support the Council’s evaluation of each alternative and decision-making process:

- Figure 26 - Comparison of overall fishing mortality for each specification scenario.
- Figure 27 - Comparison of projected open area F between alternatives in FW32 relative to projected open area F of Council preferred alternatives from past actions (green line).
- Figure 28 – Comparison of projected total biomass (mt meats) for each specification alternative.
- Figure 29 – Comparison of projected total scallop landings (millions of pounds) for each alternative.
- Table 59 - Comparison of estimates overall F and open area F between alternatives in FW32 and Council preferred alternatives form past actions.
- Table 63 - Summary of projected landings, overall LPUE, and bottom area swept for alternatives under consideration in FW32, plus a status quo scenario. Pref. indicates Council preference.
- Table 64 - Comparison of area swept between each alternative in Framework 32. Alternatives are similar to one another but very distinct from status quo. Pref. indicates Council preference.

6.2.4.1 Fishery Specifications

6.2.4.1.1 Alternative 1 – No Action (Default Measures from Framework 29)

Alternative 1 would allocate two 18,000 lb FT LA trips, and 18 DAS to FT LA vessels. One trip would be allocated to the MAAA, and one trip would be allocated to the Nantucket Lightship West. From an overall resource perspective, this option would result in positive biological impacts. However, since the Nantucket Lightship West was not expected to support a trip in fishing year 2020, allocating a default trip to the area would likely create substantial localized fishing pressure. The projection model does not predict that six million pounds can be harvested from the area, and assumes that the scallop fleet will move to other areas after F reaches $F=2.0$.

Alternative 1 would result in a low ($F=0.061$) overall F rates, which is the lowest overall F under consideration in this action, and well below the OFL. With respect to open area F rates, this option ($F=0.24$) could be expected to result in similar biological impacts relative to Status Quo ($F=0.23$) and low positive impacts relative to the DAS options (22 and 24 DAS) in Alternatives 2 and 3. This alternative would have mostly low positive biological impacts on the scallop resource. Relative to the other Alternative options in FW32 with respect to overall F , and short-term biomass estimates low positive impacts would be expected.

6.2.4.1.2 Alternative 2 – Six Access Area Trips, Closed Area II-ext Open

Alternative 2 would allocate a total of six access area trips: Four would be 18,000 pounds allocations, along with two ½ trips (9,000-pound allocations). Access areas open to the fishery under this scenario would be: The Mid-Atlantic Access Area (2 FT LA trips), Closed Area II Access Area (1 FT LA trip), Closed Area I Access Area (1/2 FT LA FLEX trip), and the Nantucket Lightship North Access Area (1/2 FT LA trips), and the Nantucket Lightship South Deep Access Area (1 FT LA trip). The sub-Options for Alternative 2 would allocate either 22 open area DAS (Sub-Op 1) or 24 open area DAS (Sub-Op 2) to FT LA vessels.

From an overall resource perspective, this option would result in positive biological impacts on the scallop resource. Alternative 2 would result in a low overall F rate depending on the sub-option selected ($F=0.183$ or $F=0.189$), which is similar to the overall F rates of all other action alternatives under consideration in this action (except No Action), and well below the OFL. With respect to open area F rates, $F=0.27$ (22 DAS) and $F=0.3$ (24 DAS) could be expected to result in low negative biological impacts relative to both Status Quo ($F=0.23$) and No Action ($F=0.24$) and similar to low positive impacts relative to Alternatives 3 sub-options of 22 and 24 DAS with Closed Area II extension closed ($F=0.3$ and $F=0.33$). This alternative would have mostly negligible biological impacts relative to the other Alternative options in FW32 with respect to overall F , and short-term biomass estimates.

6.2.4.1.3 Alternative 3 – Six Access Area Trips, Closed Area II-ext Open (*sub-option 2 is the Preferred Alternative*)

Alternative 3 would close the CAII-Extension to scallop fishing and allocate a total of six access area trips to FT LA vessels (two trips to the MAAA, one trip to Closed Area II, one trip to the NLS-S-Deep, ½ trip to CAI and a ½ trip to the NLS-North). The Sub-Options for Alternative 2 would allocate either 22 open area DAS (Sub-Op 1) or 24 open area DAS (Sub-Op 2) to FT LA vessels.

From an overall resource perspective, this option would result in positive biological impacts relative to overall fishing mortality. Alternative 3 would result in a low overall F rates depending on the sub-option selected ($F=0.18$ or $F=0.182$), which is nearly the same as the overall F rates of Alternatives 2, but less than Status Quo, and well below the OFL. With respect to open area F rates, either $F=0.3$ or $F=0.33$ could be expected to result in low negative biological impacts relative to both Status Quo ($F=0.23$) and No

Action (F=0.24). This alternative would have mostly negligible biological impacts relative to the other Alternative options in FW32 with respect to overall F, and short-term biomass estimates.

6.2.4.2 Full Time Limited Access Trip Exchanges

The Council is considering modifying current regulations governing FT LA trip exchanges. All options under consideration (Alternatives 1, 2, and 3) would not change overall allocations or expected landings from access areas under the rotational management program. Trip exchange alternatives are administrative in nature since allowing exchanges would not change any part of 2020 fishery allocations, or the conclusions for biological impacts described above (Section 6.2.4.1). For example, while vessels would be able to exchange access area allocations in 9,000 pound increments, the total removals from each access area is capped at the number of pound allocated to that area. The alternatives are summarized below.

- Under Alternative 1, there would be no change to the current trip exchange regulations. This would mean that access area allocations could only be exchanged on a one-for-one basis at the increment of the possession limit (i.e. 18,000 pounds). Under this option, 9,000-pound trips in the NLS-North and CAI could not be exchanged.
- Alternative 2 would allow pound for pound exchanges to all areas in increments of 9,000 pounds (the lowest allocation in FW32). There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (12,000 lbs for part time).
- Alternative 3 would allocate a split trip to the NLS-North and CAI using a random, non-regional lottery system. Half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half of the FT LA fleet would receive one, 18,000-pound “flex” trip to CAI. CAI “flex” allocation could be fished in either CAI or the MAAA. One-for-one trip exchanges would be permitted for all access area trips at increments of the possession limit (i.e. 18,000 pounds).

6.2.5 Action 4 - Access Area Trip Allocations to the LAGC IFQ Component

The LAGC IFQ component is allocated a fleet wide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the LA fishery. After the total number of access area trips are determined, a maximum number of trips are identified by access area, and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

Both options (No Action and Alternative 2) would redirect fishing effort out of Closed Area II to other parts of the scallop resource. This is expected to mitigate impacts on any small scallops in this area.

6.2.5.1 Alternative 1 – No Action

Since the LAGC IFQ access area allocation is a relatively small proportion of the total LAGC IFQ allocation, and a much small proportion of total scallop catch, these removals do not have a major impact on the resource. However, if the full LAGC quota is harvested, primarily from open areas, impacts of Alternative 1 are likely negligible at the stock level, but potentially low negative on the scallop resource in nearshore areas. While the LAGC IFQ fleet would not be able to fish in several access areas which hold higher densities of larger scallops under Alternative 1, this option would likely have a negligible biological impact on the resource overall and relative to Alternative 2.

6.2.5.2 Alternative 2 - LAGC IFQ Access Area Trips (*Preferred Alternative*)

LAGC IFQ harvest from access areas would likely reduce impacts on the resource in open areas by allowing vessels to utilize their quota within rotational management areas. Overall this option could have negligible to potentially low positive impacts on the resource overall by spreading effort out and providing more access to larger animals in higher catch rate areas, potentially reducing total area swept compared to other options. Alternative 2 would likely have a negligible to low positive biological impact on the resource relative to Alternative 1.

6.2.6 Action 5 – Additional Measures to Reduce Fishery Impacts

6.2.6.1 RSA Compensation Fishing

Scallop RSA compensation fishing is expected to constitute 2.5% of total scallop landings in FY 2020 (1.25 million pounds). Overall, removals from RSA compensation fishing represent a small proportion of fishery landings. While the Council is prescriptive about where RSA compensation can be fished, Alternative 1 and Alternative 2 are not expected to alter the status of the scallop resource.

6.2.6.1.1 Alternative 1 – No Action

Alternative 1 (No Action) would prohibit vessels from fishing RSA compensation in access areas. This option would increase effort in open areas. The Council's preferred alternative is to set DAS at 24, noting unremarkable recruitment in the 2016, 2017, 2018, and 2019 surveys. This option would be expected to slightly increase F in the open areas, and have a slightly negative impact on that portion of the resource relative to Alternative 2. While No Action would have a slightly negative impact relative to Alternative 2, the overall impact on the stock would be expected to be negligible since projected landings are well below the OFL and ABC, and the RSA is very small part of the APL.

6.2.6.1.2 Alternative 2 – Allow RSA compensation fishing in the Mid-Atlantic Access Area, with limited RSA compensation fishing in the NGOM Management Area (*Preferred Alternative*)

Alternative 2 could be expected to have negligible impacts on the scallop resource as a whole. Vessels would be allowed to fish RSA compensation pounds from the Mid-Atlantic Access Area and the NGOM management area. Vessels would not be able to fish RSA compensation pounds in any other access areas, and only vessels receiving allocations of NGOM RSA compensation would be able to fish their awards in the NGOM management area.

Alternative 2 would expand where RSA compensation fishing can occur and may be expected to slightly reduce F in the open areas, and therefore have a slightly positive impact on that portion of the resource relative to Alternative 1. There is some potential for negligible to low-negative biological impacts on a finer scale if catch rates or availability of preferred market grades result in higher than anticipated fishing mortality in discrete areas. The overall impact on the stock would be expected to be negligible since projected landings are well below the OFL and ABC, and the RSA is very small part of the APL.

6.2.6.2 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

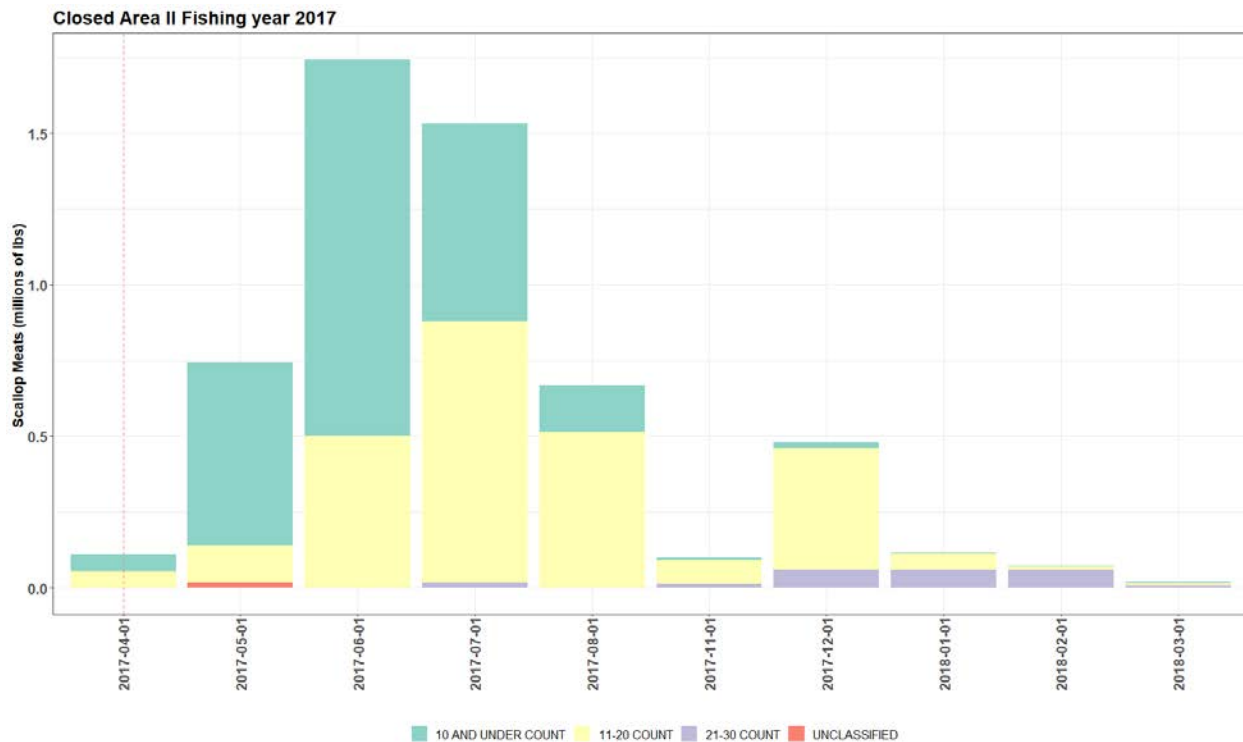
6.2.6.2.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the existing seasonal closure to protect flatfish in Closed Area II, which currently runs from August 15th – November 15th annually. The overall biological impacts of a two-week closure in Closed Area II in November would likely be low since landings from CAII are historically lower at this time of year compared to the summer months when meat yields are higher (Figure 32). The overall impact on the stock would be expected to be negligible under Alternative 1, and between the two options.

6.2.6.2.2 Alternative 2 – Extend Seasonal Closures of Closed Area II Access Area through November 30th in FY 2020 (*Preferred Alternative*)

The overall impact on the stock would be expected to be negligible under Alternative 2, and between the two options. Under Alternative 2, CAII AA trips that would have been taken between November 16th and November 30th would be fished at other times of the year. If displaced fishing occurs when meat yields are better, this could have slight positive biological impacts because fewer scallops would need to be harvested to achieve the overall allocation (Figure 32). Rotational management allocates a fixed level of removals from an access area that may be fished in a given fishing year; therefore, a temporal displacement of CAII AA effort within a year would not change the overall removals from CAII AA in that year.

Figure 32 - Summary of monthly landings from Closed Area II Access Area in FY 2017



6.3 IMPACTS ON NON-TARGET SPECIES (BYCATCH)

This section primarily addresses the potential impact of scallop fishing on the four flatfish stocks that the scallop fishery has sub-ACLs for: Georges Bank (GB) yellowtail flounder, Southern New England/Mid-Atlantic yellowtail flounder, Gulf of Maine/Georges Bank (GOM/GB, “northern”) windowpane flounder, and Southern New England/Mid-Atlantic (SNE/MA, “southern”) windowpane flounder. Projections of catch of these four stocks are typically completed through each specification cycle. Bycatch estimates represent a reasonable approximation of catch that may occur. The projections are forecasts (with error)

and should not be interpreted as precise estimates. Review of past estimates has shown that the projections have over-estimated and under-estimated catches. It is important to note that the methods and underlying assumptions used for in-season catch accounting may vary from the methods used to project catch. The FY 2020 bycatch projections associated with each specification alternative for the four stocks with a scallop sub-ACL are shown in Table 61.

Table 61 – FY2020 scallop fishery bycatch projections (mt) associated with FW32 specifications alternatives for GB yellowtail, SNE/MA yellowtail, northern windowpane, and southern windowpane, relative to the anticipated 2020 sub-ACLs for these stocks and close area coverage on eastern Georges Bank.

Alternative	Scenario		GB YT	SNE/MA YT	GOM/GB WP	SNE/MA WP
<i>Anticipated 2020 sub-ACL</i>		GB Closure	<i>~19 mt</i>	<i>~2 mt</i>	<i>~12 mt</i>	<i>~143 mt</i>
4.3.1	No Action 1 MAAA: 18k 1 NLS-W: 18k DAS: 18	CAII AA closed	0.76	1.45	8.35	77.06
4.3.2	2 MAAA: 18k 1 CAII East: 18k 1 NLS-S-Deep: 18k ½ CAI: 9k ½ NLS-N: 9k DAS: 22, 24	CAII- West closed (area = 324 nmi ²)	23.44- 23.51	2-2.11	30.81-31.58	133.46- 136.87
4.3.3	2 MAAA: 18k 1 CAII East: 18k 1 NLS-S-Deep: 18k ½ CAI: 9k ½ NLS-N: 9k DAS: 22, 24	CAII- Southwest closed (area = 1,525 nmi ²)	23.25 – 23.3	2.18-2.3	32.91-32.91	135.17- 142.92
4.3.4	Status Quo 1 CAI: 18k Flex 3 MAAA 18k 3 NLS-W 18k DAS: 24	CAII AA closed	4.01	1.42	23.21	87.95
<p><i>Note:</i> The sub-ACLs for GOM/GB WP, SNE/MA YT, SNE/MA WP were set through FW58. Groundfish Framework 59 is considering an updated GBYT sub-ACL based on the new TRAC assessment and US/Canada agreement.</p>						

6.3.1 Action 1 – Overfishing Limit and Acceptable Biological Catch (Alternative 2 is Preferred Alternative)

The overfishing limit and acceptable biological catch are the absolute limits the fishery is not allowed to exceed. As has been the case recent years, fishery allocations under consideration in this action (Section 4.3.1) are well below the OFL and ABC values for both Alternative 1 (No Action, default OFL and ABC from FW30) and Alternative 2 (Updated OFL and ABC). Neither Alternative 1 or Alternative 2 are expected to have a direct impact on non-target species because the anticipated level of effort, spatial distribution of scallop fishing activity, and projections of non-target species bycatch in FY2020 are not based on the OFL or ABC limits. Impacts to non-target species are, however, directly related to the fishery allocations (annual projected landings or APL) being considered in this action and are assessed below in Section 6.3.3.1.

6.3.2 Action 2 – Northern Gulf of Maine Management Area

6.3.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

Overall impacts on non-target species under both No Action or a partial closure of Stellwagen Bank (Alternative 2) could be expected to be negligible since this action is not expected to have a positive or negative impact to stocks or populations of species that are caught during the directed scallop fishery in the NGOM management area. The proposed partial closure of Stellwagen Bank would shift where the fishery occurs in the NGOM management unit, but who not shift fishing into new stock areas. This conclusion is based on available survey information, some of which is described in Table 62.

6.3.2.1.1 Alternative 1 - No Action

Under Alternative 1, LAGC and LA vessels would be able to fish on Stellwagen Bank during fishing year 2020. The 2019 dredge survey of Stellwagen Bank detected high densities of scallop small scallops as well as larger animals that were harvested by the fishery during the 2019 season. The scallops on Stellwagen are expected to be some of the largest in the Northern Gulf of Maine management area and would likely be targeted by fishermen. While Stellwagen Bank holds large animals that would likely be targeted, 2019 surveys indicated that Jeffreys Ledge held the highest densities in the NGOM management area. With both areas open, vessels are likely to target large scallops due the price premium they command.

If vessels are able to achieve their trip limit (200 lbs per day) with less bottom contact on Jeffrey’s Ledge relative to if they fished on Stellwagen, the realized swept area and tow time in the management unit and the catch of non-target species may be somewhat lower under Alternative 2, and somewhat greater under Alternative 1. However, In the context of the overall scallop fishery, the NGOM harvest and associated area swept is low. Furthermore, aside from any affect a spatial closure on Stellwagen Bank could have on non-target species, it is important to note that the potential bycatch levels in the NGOM would be low in comparison to the levels expected across the entirety of the scallop fishery because the NGOM fishery represents less than 1% of expected landings for FY2020. Considering the scale of the NGOM fishery regardless of a closure on Stellwagen Bank, it is unlikely that bycatch levels from either Alternative 1 or Alternative 2 would lead to catch limits being exceeded for any non-target fish stocks; therefore, the impact of Alternative 1 on non-target species could negligible overall.

6.3.2.1.2 Alternative 2 - Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (Preferred Alternative)

Alternative 2 would close part of Stellwagen Bank north of 42°20'N to directed scallop fishing in the NGOM Management Area for two years to protect small scallops that were observed in 2019 dredge surveys of this area. The closure would cover roughly 71 square miles on Stellwagen Bank (Map 2) and would protect a substantial number of small scallops that have not recruited into the fishery.

Stellwagen Bank has supported directed scallop fishing in the Northern Gulf of Maine Management Area for the last four fishing years (FY 2016 – FY 2019). While the 2019 surveys detected high densities of scallop small scallops, the survey also detected larger animals that were targeted by the fishery in 2019. While Stellwagen Bank holds large animals that would likely be targeted, 2019 surveys indicated that Jeffreys Ledge held the highest densities in the NGOM management area. By closing Stellwagen Bank under Alternative 2, vessels are likely to fish Jeffreys Ledge, which is likely to have favorable catch rates and potentially lead to more efficient fishing in comparison to Stellwagen Bank. This means that directed effort to Jeffreys Ledge as a result of Alternative 2 could result in less area swept for the same amount of landings. Therefore, if vessels are able to achieve their trip limit (200 lbs per day) with less bottom contact on Jeffrey's Ledge relative to if they fished on Stellwagen, the realized swept area and tow time in the management unit and the catch of non-target species may be somewhat lower under Alternative 2 relative to Alternative 1. However, because the NGOM fishery and associated area swept in this brief scallop season (i.e. less than one month in the past several years) is low compared to the rest of the scallop fishery, it is likely that the impacts of Alternative 2 and Alternative 1 would be negligible in comparison to each other.

Furthermore, aside from any affect a spatial closure on Stellwagen Bank could have on non-target species, it is important to note that the potential bycatch levels in the NGOM would be minute in comparison to the levels expected across the entirety of the scallop fishery because the NGOM fishery represents less than 1% of expected landings for FY2020. Considering the scale of the NGOM fishery regardless of a closure on Stellwagen Bank, it is highly unlikely that bycatch levels from either Alternative 2 or Alternative 1 would lead to catch limits being exceeded for any non-target fish stocks; therefore, the impact of Alternative 2 on non-target species could be considered negligible relative to Alternative 1 and negligible overall.

6.3.2.2 Northern Gulf of Maine TAC Setting

The Northern Gulf of Maine Management Area overlaps with part of the northern windowpane stock boundary. This area also overlaps with part of the Cape Cod/Gulf of Maine yellowtail stock boundary. Currently, bycatch estimates for these stocks are not stratified by the NGOM management area, and NGOM specific discard estimates are not developed for in-season catch accounting. However, to assess potential impacts, an analysis of Cape Cod/Gulf of Maine (CC/GOM) yellowtail and northern windowpane bycatch in the NGOM management area was completed in FW29 using audited data from the 18 observed LA trips in the NGOM between March 1, 2017 and March 23, 2017 (data provided by NEFOP staff). Catch data from the 443 observed hauls reported 164,039 lbs of kept scallops, along with 1,005 lbs of discarded CC/GOM yellowtail and 451 lbs of discarded northern windowpane. The d/K ratio (lbs of discarded fish/lbs of kept scallops) for CC/GOM yellowtail from these trips was 0.0061 and the d/K ratio for northern windowpane was 0.0028. Since there is no observer coverage of LAGC NGOM trips, the estimates from LA fishing in 2017 represent a reasonable approximation of what discard rates could be during the time of year that the NGOM is being fished. The d/K ratios of CC/GOM and northern windowpane are very low.

Table 62 - Comparison of CC/GOM and northern Windowpane bycatch for the NGOM management area in FY 2020.

Section	Alt.	F rate	2020 NGOM TAC	CC/GOM YT bycatch (lbs)	Northern Windowpane Bycatch (lbs)	Bycatch Estimate (lbs) of YT and Windowpane
				(2017 d/k: 0.0061)	(2017 d/k: 0.0028)	
4.2.2.1	Alt. 1		170,000	1,037	476	1,513
4.2.2.2.1	Alt. 2 sO 1	F=0.18	310,000	1,891	868	2,759
4.2.2.2.2	Alt. 2 sO 2	F=0.20	350,000	2,135	980	3,115

6.3.2.2.1 Alternative 1 - No Action (Default Measures from Framework 30)

Relative to Alternative 2 Sub-Option 1 and Alternative 2 Sub-Option 2, Alternative 1 could be expected to result in lower bycatch of CC/GOM YT flounder and Northern windowpane. Since overall bycatch is expected to be low, it is difficult to make a distinction between each option relative to bycatch of CC/GOM YT and northern Windowpane; therefore, the impact of Alternative 1 on non-target species would most likely be negligible in comparison to Alternative 2. Due to the low probability that the estimates of bycatch associated with Alternative 1 would contribute to non-target stocks being overfished, the impacts of Alternative 1 on non-target species would likely be negligible overall.

6.3.2.2.2 Alternative 2 - Set NGOM TAC using exploitable biomass projections for 2020 and 2021, cap removals for all fishery components, and apply LA share of TAC toward RSA compensation fishing. NGOM TAC split: first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (Sub-Option 2 is Preferred Alternative)

Relative to Alternative 1, the sub-options associated with Alternative 2 could be expected to result in slightly higher bycatch. Since overall bycatch is expected to be low under Alternative 2 and Alternative 1, it is difficult to make a distinction between each option relative to bycatch of CC/GOM yellowtail and northern windowpane. Since the level of bycatch associated with Alternative 2 and Alternative 1 is comparable and very low overall, the impact of Alternative 2 on non-target species would most likely be negligible compared to Alternative 1. Due to the low probability that the estimated level of bycatch associated with Alternative 2 would contribute to non-target stocks being overfished, the impacts of Alternative 2 on non-target species would likely be negligible overall.

6.3.3 Action 3 – Fishery Specifications & Trip Exchanges

6.3.3.1 Fishery Specifications

6.3.3.1.1 Alternative 1 - No Action (Default Measures from Framework 30)

Alternative 1 would allocate one 18,000-pound FT LA trip to the MAAA, one 18,000-pound FT LA trip to the NLS-West, and 18 DAS to FT LA vessels. The scallop fishery is not expected to exceed the limit of any flatfish stocks that it has sub-ACLs for under Alternative 1 (Table 61). Of all specifications options considered in this action, Alternative 1 could be expected to result in the lowest total bycatch of the four

flatfish stocks that the scallop fishery has sub-ACLs for. Therefore, Alternative 1 could be expected to have positive impacts on non-target species relative to Alternatives 2, 3, and Status Quo, and for these stocks overall. Because the overall level of bycatch projected for Alternative 1 is minimal relative to overall catch limits for these flatfish stocks, it is unlikely that bycatch resulting from Alternative 1 would increase the risk of stock-wide catch limits being exceeded or result in overfishing, meaning the overall impact of Alternative 1 could be considered low positive.

6.3.3.1.2 Alternative 2 – Six Access Area Trips, Closed Area II-Ext Open

Alternative 2 would maintain CAII-Extension as open bottom and allocate a total of six access area trips to FT LA vessels (two trips to the MAAA, one trip to Closed Area II, one trip to the NLS-S-Deep, ½ trip to CAI and a ½ trip to the NLS-North). The Sub-Options for Alternative 2 would allocate either 22 open area DAS (Sub-Op 1) or 24 open area DAS (Sub-Op 2) to FT LA vessels.

Bycatch projections associated with Alternative 2 Sub-Option 1 and Alternative 2 Sub-Option 2 are very similar for each flatfish stock and are analyzed collectively in the following text. As described in Table 61, bycatch projections for FY2020 under Alternative 2 are very close to the anticipated scallop fishery sub-ACL for SNE/MA yellowtail, and less than the anticipated sub-ACL for SNE/MA windowpane. Therefore, the overall impact of Alternative 2 on SNE/MA yellowtail and SNE/MA windowpane would be considered negligible.

Bycatch projections associated with Alternative 2 are greater than the anticipated FY2020 sub-ACL for GB yellowtail by roughly 4 mt and are about 18 mt greater than the anticipated sub-ACL for northern windowpane. These projections are primarily driven by spatial management under Alternative 2, which would allocate access to Closed Area II Access Area, where the scallop fishery interacts with GB yellowtail and GOM/GB windowpane at a higher rate relative to other parts of the resource. Despite this overlap, there are also several actions in FW32 that are anticipated to reduce bycatch of these flatfish stocks beyond the level projected for FY2020 (Table 61). For example, the proposed alternative in Section 4.5.1 (Alternative 2) would prohibit RSA compensation fishing from both CAII and CAI. This prohibition is expected to further reduce bycatch of GB yellowtail and northern windowpane below projections, particularly for northern windowpane considering that catch rates of this stock are known to be high in both CAII and CAI.

There are additional modifications to spatial management under Alternative 2 that are anticipated to reduce bycatch of northern windowpane and GB yellowtail; for example, the south western part of the traditional CAII AA overlaps with both northern windowpane and GB yellowtail stock areas. Alternative 2 would close this area to scallop fishing for the entirety of FY2020, which is expected to have positive impacts to northern windowpane and GB yellowtail by eliminating flatfish catch that could come from this area. Another spatial management measure that is anticipated to have positive impacts on non-target stocks throughout eastern Georges Bank is the proposed alternative in Section 4.5.2, which would extend the current seasonal closure of CAII an additional two weeks, making the duration of this closure from August 15 to November 30th. As noted in Figure 33, observed bycatch rates of northern windowpane and GB yellowtail are elevated during this time of year in CAII and extending the seasonal closure is anticipated to result in lower realized bycatch of these two stocks than what is represented in the FY2020 projections (Table 61).

There are caveats associated with the methodology used to project flatfish bycatch for the out year, and it is reasonable to expect the northern windowpane and GB yellowtail bycatch projections for FY2020 are overestimated for several reasons. The estimation methods used to calculate these projections rely on the most recent 12 months of observer data available. This means that FY2020 bycatch projections of GB yellowtail and northern windowpane in CAII AA are based on observer records from FY2017, the last time the scallop fishery had access to this area. A comparison of observed discard to kept ratios for northern windowpane and GB yellowtail indicates that relative bycatch of these flatfish stocks has

declined outside of CAII (i.e. in areas that have been consistently fished by the scallop fishery) since FY2017. For this reason, it is highly possible that FY2020 realized catch rates of northern windowpane and GB yellowtail in CAII will be less than what the projection for Alternative 2 suggests.

As previously mentioned, the bycatch projections represent a reasonable approximation of catch that may occur and are highly dependent on projections of scallop biomass, assumptions of catch rates across the resource, and predictions of fishing behavior (e.g., where vessels will fish and at what time of year). As such, the projections should be used as a basis for comparing relative bycatch among the alternatives considered in this action, but should not be used to make a direct comparison to realized bycatch of past fishing years or to anticipated sub-ACLs for the flatfish stocks in the future. This point is supported by Table 29, which describes the notable divergence of realized bycatch from projections over the past several scallop fishing years for all four stocks that the scallop fishery has sub-ACLs for. Regarding projection performance of northern windowpane, it is worth noting that the projected bycatch for this stock was 234% greater than realized bycatch the last year that the scallop fishery accessed CAII (i.e. FY 2017). In FY2018, the last complete scallop fishing year, northern windowpane projections were overestimated by 227%.

In addition to the comprehensive suite of proactive measures in place that are aimed at reducing bycatch of flatfish stocks, the Council, through FW29 (NEFMC 2018), developed a reactive accountability measure (AM) that could be triggered if the scallop fishery does exceed its sub-ACL. The reactive AM would require the use of a modified dredge when fishing in Closed Area II and Closed Area II extension if triggered. Should it be triggered, the reactive AM would be put into effect by NMFS in a future fishing year.

Though scallop fishery catch of GB yellowtail and northern windowpane under Alternative 2 is anticipated to be lower than the level projected for FY2020, it is still possible that the sub-ACLs could be exceeded in FY2020 which could be considered a negative impact on these non-target flatfish stocks. While it is important to acknowledge this point, it is also worth noting that total catches of GB yellowtail and northern windowpane by the groundfish, scallop, and other fisheries have been declining in recent years and are considered to be very low relative to historic levels. Considering the likelihood that this trend of low catch will continue in FY2020 for all components that interact with GB yellowtail and northern windowpane, even if the scallop fishery were to exceed its sub-ACLs for FY2020 under Alternative 2, it is unlikely that the overages would cause the overall ABC to be exceeded for these stocks. Under this scenario, the impacts of Alternative 2 on non-target species would be considered negligible because total catch by all components that interact with GB yellowtail and northern windowpane would not be exceeded. Overall impacts on non-target species are likely to be negligible to low negative.

Projected bycatch of all flatfish stocks is anticipated to be greater under Alternative 2 compared to Alternative 1 and Status Quo (Alternative 4), meaning the impacts of Alternative 2 could be considered low negative relative to Alternative 1 and Status Quo (Alternative 4). Bycatch is expected to be very similar under Alternative 2 and Alternative 3, meaning the impacts of either option on these non-target flatfish stocks could be considered negligible in comparison.

6.3.3.1.3 Alternative 3 – Six Access Area Trips, Closed Area II-Extension Closed (*Sub-Option 2 is Preferred Alternative*)

Alternative 3 would close CAII-Extension to scallop fishing and allocate a total of six access area trips to FT LA vessels (two trips to the MAAA, one trip to Closed Area II, one trip to the NLS-S-Deep, ½ trip to CAI and a ½ trip to the NLS-North). The Sub-Options for Alternative 3 would allocate either 22 open area DAS (Sub-Op 1) or 24 open area DAS (Sub-Op 2) to FT LA vessels.

Bycatch projections associated with Alternative 3 Sub-Option 1 and Alternative 3 Sub-Option 2 are very similar for each flatfish stock and are analyzed collectively in the following text. As described in Table 61, bycatch projections for FY2020 under Alternative 3 are very close to the anticipated scallop fishery sub-ACL for SNE/MA yellowtail, and less than the anticipated sub-ACL for SNE/MA windowpane. Therefore, the overall impact of Alternative 3 on SNE/MA yellowtail and SNE/MA windowpane would be considered neutral.

Bycatch projections associated with Alternative 3 are greater than the anticipated FY2020 sub-ACL for GB yellowtail by roughly 4 mt and are about 20 mt greater than the anticipated sub-ACL for northern windowpane. These projections are primarily driven by spatial management under Alternative 3, which would allocate access to Closed Area II Access Area, where the scallop fishery interacts with GB yellowtail and GOM/GB windowpane at a higher rate relative to other parts of the resource. Despite this overlap, there are also several actions in FW32 that are anticipated to reduce bycatch of these flatfish stocks beyond the level projected for FY2020 (Table 61). For example, the proposed alternative in Section 4.5.1.2 would prohibit RSA compensation fishing from both CAII and CAI. This prohibition is expected to further reduce bycatch of GB yellowtail and northern windowpane below projections, particularly for northern windowpane considering that catch rates of this stock are known to be high in both CAII and CAI.

There are additional modifications to spatial management under Alternative 3 that are anticipated to reduce bycatch of northern windowpane and GB yellowtail; for example, the south western part of the traditional CAII AA and CAII-Ext are known to have significant overlap with both northern windowpane and GB yellowtail stocks. Alternative 3 would close both of these areas to scallop fishing for the entirety of FY2020, which is expected to have positive impacts to northern windowpane and GB yellowtail. Another spatial management measure that is anticipated to have positive impacts on non-target stocks throughout eastern Georges Bank is the proposed alternative in Section 4.5.2.2, which would extend the current seasonal closure of CAII an additional two weeks, making the duration of this closure from August 15 to November 30th. As noted in Figure 33, observed bycatch rates of northern windowpane and GB yellowtail are elevated during this time of year in CAII and extending the seasonal closure is anticipated to result in lower realized bycatch of these two stocks than what is represented in the FY2020 projections (Table 61).

There are caveats associated with the methodology used to project flatfish bycatch for the out year, and it is reasonable to expect the northern windowpane and GB yellowtail bycatch projections for FY2020 are overestimated for several reasons. The estimation methods used to calculate these projections rely on the most recent 12 months of observer data available. This means that FY2020 bycatch projections of GB yellowtail and northern windowpane in CAII AA are based on observer records from FY2017, the last time the scallop fishery had access to this area. A comparison of observed discard to kept ratios for northern windowpane and GB yellowtail indicates that relative bycatch of these flatfish stocks has declined outside of CAII (i.e. in areas that have been consistently fished by the scallop fishery) since FY2017. For this reason, it is highly possible that FY2020 realized catch rates of northern windowpane and GB yellowtail in CAII will be less than what the projection for Alternative 3 suggests.

As previously mentioned, the bycatch projections represent a reasonable approximation of catch that may occur and are highly dependent on projections of scallop biomass, assumptions of catch rates across the resource, and predictions of fishing behavior (e.g., where vessels will fish and at what time of year). As such, the projections should be used as a basis for comparing relative bycatch among the alternatives considered in this action, but should not be used to make a direct comparison to realized bycatch of past fishing years or to anticipated sub-ACLs for the flatfish stocks in the future. This point is supported by Table 29, which describes the notable divergence of realized bycatch from projections over the past several scallop fishing years for all four stocks that the scallop fishery has sub-ACLs for. Regarding projection performance of northern windowpane, it is worth noting that the projected bycatch for this

stock was 234% greater than realized bycatch the last year that the scallop fishery accessed CAII (i.e. FY 2017). In FY2018, the last complete scallop fishing year, northern windowpane projections were overestimated by 227%.

In addition to the comprehensive suite of proactive measures in place that are aimed at reducing bycatch of flatfish stocks, the Council, through FW29 (NEFMC 2018), developed a reactive accountability measure (AM) that could be triggered if the scallop fishery does exceed its sub-ACL. The reactive AM would require the use of a modified dredge when fishing in Closed Area II and Closed Area II extension if triggered. Should it be triggered, the reactive AM would be put into effect by NMFS in a future fishing year.

Though scallop fishery catch of GB yellowtail and northern windowpane under Alternative 3 is anticipated to be lower than the level projected for FY2020, it is still possible that the sub-ACLs could be exceeded in FY2020 which would be considered a negative impact on these non-target flatfish stocks. While it is important to acknowledge this point, it is also worth noting that total catches of GB yellowtail and northern windowpane by the groundfish, scallop, and other fisheries have been declining in recent years and are considered to be very low relative to historic levels. Considering the likelihood that this trend of low catch will continue in FY2020 for all components that interact with GB yellowtail and northern windowpane, even if the scallop fishery were to exceed its sub-ACLs for FY2020 under Alternative 3, it is unlikely that the overages would cause the overall ABC to be exceeded for these stocks. Under this scenario, the impacts of Alternative 3 on non-target species would be considered neutral because total catch by all components that interact with GB yellowtail and northern windowpane would not be exceeded. Overall impacts on non-target species are likely to be negligible to low negative.

Projected bycatch of all flatfish stocks is anticipated to be greater under Alternative 3 compared to Alternative 1 and Status Quo (Alternative 4), meaning the impacts of Alternative 3 could be considered negative relative to Alternative 1 and Status Quo (Alternative 4). Bycatch is expected to be very similar under Alternative 3 and Alternative 2, meaning the impacts of either option on these non-target flatfish stocks could be considered negligible in comparison.

6.3.3.2 Full Time Limited Access Trip Exchanges

The Council is considering modifying current regulations governing FT LA trip exchanges. All options under consideration (Alternatives 1, 2, and 3) would not change overall allocations or expected landings from access areas. Since area swept estimates are based on projected LPUE in each access area, these trip exchange alternatives are not expected change overall fishery impact conclusions described above in the specifications section (Section 6.3.3.1), and are administrative in nature since they will not, in and of themselves, have a direct impact non-target species. The alternatives are summarized below.

- Under Alternative 1, there would be no change to the current trip exchange regulations. This would mean that access area allocations could only be exchanged on a one-for-one basis at the increment of the possession limit (i.e. 18,000 pounds). Under this option, 9,000-pound trips in the NLS-North and CAI could not be exchanged.
- Alternative 2 would allow pound for pound exchanges to all areas in increments of 9,000 pounds (the lowest allocation in FW32). There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (12,000 lbs for part time).
- Alternative 3 would allocate a split trip to the NLS-North and CAI using a random, non-regional lottery system. Half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half of the FT LA fleet would receive one, 18,000-pound “flex” trip to CAI. CAI “flex” allocation could be fished in either CAI or the MAAA. One-for-one trip exchanges would be permitted for all access area trips at increments of the possession limit (i.e. 18,000 pounds).

6.3.4 Action 4 - Access Area Trip Allocations to the LAGC IFQ Component

The LAGC IFQ component is allocated a fleet wide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the LA fishery. After the total number of access area trips are determined, a maximum number of trips are identified by access area, and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

Both options (No Action and Alternative 2) would redirect fishing effort out of Closed Area II to other parts of the scallop resource. This is expected to mitigate impacts on Georges Bank yellowtail flounder and northern windowpane flounder, particularly if fishing redirects to parts of the scallop resource that are outside of the stock area.

6.3.4.1 Alternative 1 – No Action

Alternative 1 would set LAGC IFQ access area trips at 571 trips to the Mid-Atlantic Access Area, and 571 trips to Nantucket Lightship West, which is the number of trips specified through default measures in Framework 30. The LAGC IFQ fishery represents a very small portion of overall landings and in the past has represented a very small portion of interactions with non-target species. Generally, LAGC catch in access areas is a small percentage of the overall catch and vessels tend to fish where catch rates are higher, so if they are higher in access areas, most trips that are allocated would be fished there, and if they are not, more LAGC catch would come from open areas. This means that while the access area allocation options may increase flexibility for LAGC vessels in terms of where they can fish, impacts to non-target species are likely to be similar for all options, including Alternative 1. With the scallop fishery's sub-ACLs for key flatfish stocks at very low levels, how access area trips are allocated is increasingly important. The impact of Alternative 1 on non-target species is likely to be negligible.

6.3.4.2 Alternative 2 - LAGC IFQ Access Area Trips (*Preferred Alternative*)

Alternative 2 would allocate 2,855 LAGC access area trips to the LAGC IFQ component. 571 access area trips would be allocated to Closed Area I, NLS-N, and the NLS-S-deep. The remainder would be allocated to the MAAA.

The opportunity to fish in access areas could be expected to result in low positive impacts on allocated flatfish because the majority of projected bycatch is expected to come from open areas. Also, the nature of the LAGC IFQ fishery is such that vessels are motivated to fish areas with high LPUE, thereby reducing area swept and ultimately minimizing catch of non-target species. It is also important to note that occurrences of high bycatch of non-target species in the LAGC IFQ fishery are relatively minimal when compared to the amount of bycatch by the entire fishery over the course of the year. Therefore, impacts of Alternative 2 on non-target species could be negligible to low positive relative to Alternative 1 and on non-target species overall.

6.3.5 Action 5 – Additional Measures to Reduce Fishery Impacts

6.3.5.1 RSA Compensation Fishing

There are two alternatives are under consideration related to RSA compensation fishing in access areas. Alternative 1 would prohibit vessels from fishing RSA compensation in access areas. Alternative 2 would allow vessels to fish an RSA compensation trip in any area open to the fishery, along with the Mid-

Atlantic Access Area and Northern Gulf of Maine management area. Vessels would not be able to fish RSA compensation pounds in the Closed Area I & II Access Areas, or the Nantucket Lightship North and South-deep access areas. Alternative 2 is expected to help reduce impacts on Georges Bank yellowtail flounder and Northern windowpane flounder because it would not allow compensation fishing in Closed Area I and Closed Area II where bycatch of these stocks is anticipated. Alternative 2 is likely to redirect more effort to the MAAA compared to Alternative 1. This could be viewed as a positive impact since that area outside of the GBYT and NWP stock boundaries.

6.3.5.1.1 Alternative 1 – No Action

Alternative 1 would prohibit RSA compensation fishing in access areas. Overall impacts of Alternative 1 on non-target species are likely to be negligible since RSA compensation fishing effort is a relatively small proportion of overall scallop fishing effort, around 2% the projected landings (1.25 million pounds). Impacts on non-target species may vary depending on where and when RSA compensation fishing occurs. Since bycatch estimates in the MAAA are low and there are high densities of scallops in this area, prohibiting RSA compensation fishing from the MAAA under Alternative 1 could be expected to have low negative impacts on non-target species relative to Alternative 2.

6.3.5.1.2 Alternative 2 – Allow RSA compensation fishing in the Mid-Atlantic Access Area, with limited RSA compensation fishing in the NGOM Management Area (Preferred Alternative)

Alternative 2 would allow scallop vessels to harvest RSA compensation allocations in the Mid-Atlantic Access Area, in the NGOM management area up to the LA share of the NGOM TAC (for eligible vessels), and from the parts of the resource that are available to the fishery under DAS management. Though the preferred specifications alternative (Section 4.3.1.3) would allocate access to Closed Area II, Closed Area I, the Nantucket Lightship North, and the Nantucket Lightship South Deep, Alternative 2 would prohibit RSA compensation fishing in these areas for FY2020. Since bycatch estimates in the MAAA are low and there are high densities of scallops in this area, allowing RSA compensation fishing from the MAAA under Alternative 2 could be expected to have low positive impacts on non-target species relative to Alternative 1 if RSA effort directs to this access area. Overall impacts of Alternative 2 on non-target species are likely to be negligible to low-positive since RSA compensation fishing effort is a relatively small proportion of overall scallop fishing effort, around 2% the projected landings (1.25 million pounds) and this option allows directed fishing in areas of low-bycatch and high densities of exploitable scallops (MAAA).

6.3.5.2 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

6.3.5.2.1 Alternative 1 – No Action

Under Alternative 1 the existing seasonal closure of Closed Area II would be in place between August 15th and November 15th, which is the time of year that the scallop fishery and GB yellowtail flounder stock have been known to have strong overlap on eastern Georges Bank. The seasonal closure was developed with the objective of proactively reducing bycatch of GB yellowtail flounder in years that the scallop fishery has access to Closed Area II. The August 15 to November 15 seasonal closure has been in place since fishing year 2013.

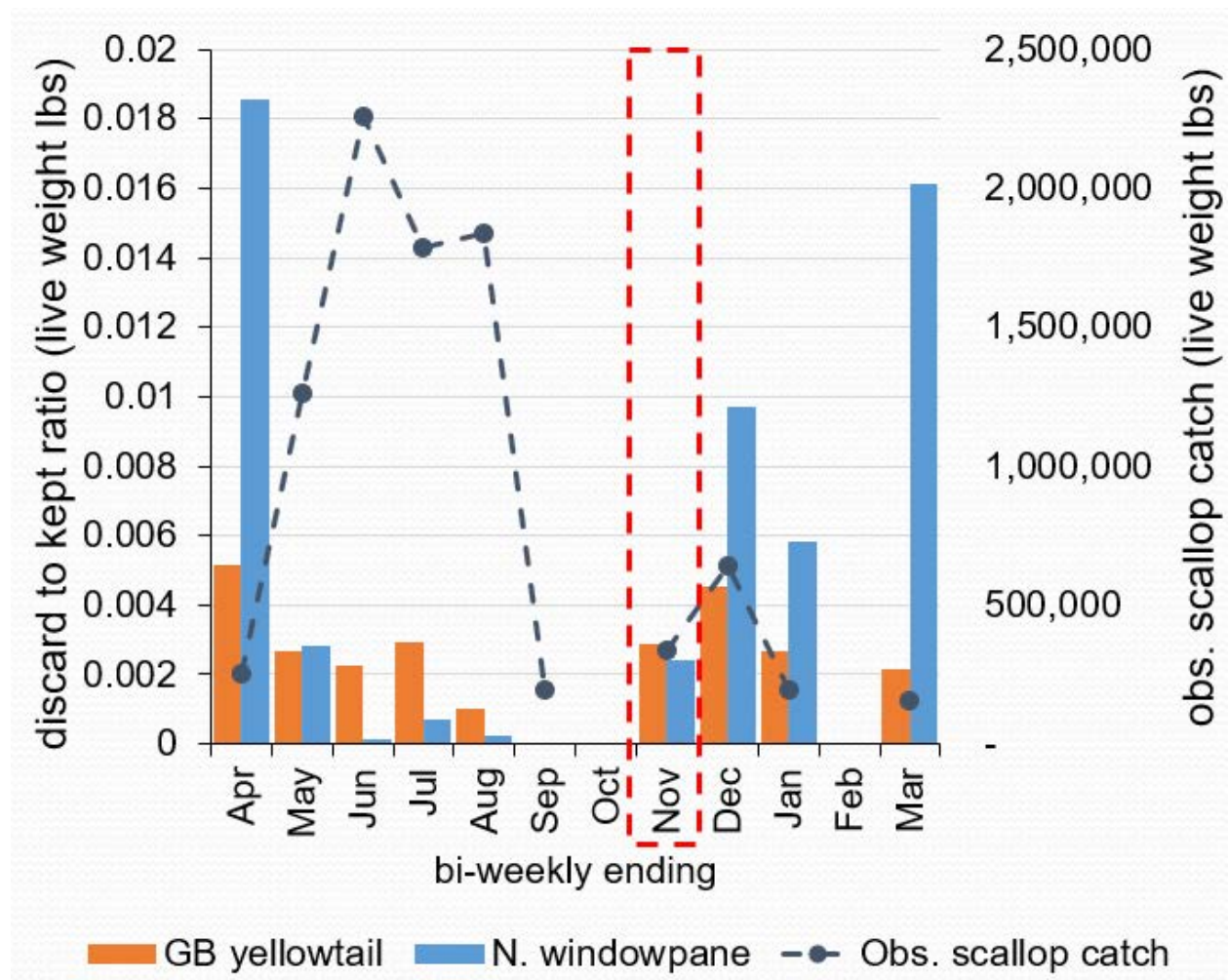
Alternative 1 is expected to have positive impacts on non-target species, particularly GB yellowtail flounder, northern windowpane flounder, and other non-target stocks that persist in Closed Area II between August 15th and November 15th because scallop fishing in Closed Area II will not occur during

this time. Considering that Alternative 2 would extend the timing of this closure by two weeks (i.e. encompassing late November, when GB yellowtail and northern windowpane bycatch is elevated), the impacts of Alternative 1 on these non-target stock could be negligible to low negative because bycatch savings of Alternative 1 would not be as great as Alternative 2.

6.3.5.2.2 Alternative 2 – Extend Seasonal Closure of Closed Area II Access Area through November 30th in FY 2020 (*Preferred Alternative*)

Under Alternative 2, the existing seasonal closure in Closed Area II Access Area would be extended an additional two weeks, meaning the duration of the closure would be August 15th through November 30th. Alternative 2 was designed with the specific goal of reducing catch of GB yellowtail and northern windowpane by prohibiting fishing in this area when bycatch has typically been high for these stocks. Scallop fishing that would have occurred in CAII AA between November 16th and November 30th would most likely be shifted into the summer months (i.e. June and July) because this is when meat yield tends to be the highest on eastern Georges Bank; vessels will be incentivized to fish when meat yield is at its highest because they will be able to harvest allocations in less time compared to when meat yield is lower as a result of increased catch rates (i.e. LPUE), and also because larger scallops command a price premium. This is supported by Figure 32, which shows seasonal landings from Closed Area II by market grade in the 2017 fishing year (i.e. the last time the scallop fishery had access to Closed Area II). Observed discard to kept (d/K) ratios for GB yellowtail and northern windowpane suggest that bycatch rates of these stocks in June and July by the scallop fishery in Closed Area II are among the lowest across the year (Figure 33). Therefore, considering that Alternative 2 would prevent scallop fishing during the time of year when GB yellowtail and northern windowpane bycatch is elevated and that displaced effort would most likely occur in the summer months when bycatch rates of these stocks are low, the impact of Alternative 2 on non-target stocks is anticipated to be positive overall. Because bycatch savings of Alternative 2 could be expected to be greater than maintaining the existing seasonal closure under Alternative 1, the impact of Alternative 2 on non-target species could be low positive relative to Alternative 1.

Figure 33 - Comparison of observed CAII d/K ratios and observed scallop landings by month. November is shown in the red box.



6.4 IMPACTS ON PROTECTED SPECIES

6.4.1 Action 1 – Overfishing Limit and Acceptable Biological Catch

Annual Biological Catch (ABC) and overfishing limits (OFL) are recommended by the Council’s Scientific and Statistical Committee and approved by the Council. The growth of large year classes in the Nantucket Lightship area and the Mid-Atlantic Access Area, which have been tracked over several years, are beginning to level off and animals from these year classes have recruited into the fishery. Regardless of this influx of biomass to the fishery, the OFL, ABC, and ACL values set by the Council are often much higher than the projected landings by the fishery (in this action, both alternatives are nearly double). Therefore, realized impacts on protected species for this framework will largely reflect measures discussed in Section 6.5, and are only indirectly related to the ABC and OFL values.

The FY 2020 and FY 2021 OFL and ABC values that were approved by the SSC and recommended to the Council are summarized in Table 58. The updated ABC estimate including discards is 50,460 mt or 111.2 million pounds for FY2020. This is about 483 mt, or about 1 million pounds, lower than the No Action ABC (default). The current OFL and ABC values are driven by the growth of large year classes

the Nantucket Lightship area and the Mid-Atlantic Access Area, which were considered exceptional when they were first observed.

6.4.1.1 Alternative 1 – No Action for OFL and ABC

The scallop fishery is prosecuted with scallop dredge and bottom trawl gear. As provided in Section 5.4, ESA listed species of sea turtles and Atlantic sturgeon are at risk of interaction with these gear types, with interactions often resulting in injury or mortality to the species. Based on this, the scallop fishery is likely to result in some level of negative impacts to ESA listed species. Taking into consideration fishing behavior/effort under this alternative, as well the fact that interaction risks with protected species are strongly associated with the amount of gear in the water, gear soak or tow duration, 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 in of any or all of these factors), we determined the level of negative impacts to ESA listed species to be low. Below, we provide support for this determination.

Under “No Action”, the overall OFL and ABC would be at the default values for FY2020, which were adopted by the Council through FW30. The No Action ABC including discards is 50,943 mt or about 112 million pounds. The No Action OFL including discards is 59,447 mt or roughly 131 million pounds. The FY2019 OFL and ABC values for No Action and Alt. 2 are very similar, with the proposed FY2020 OFL (Alternative 2) being less than 1% lower than No Action (Alternative 1) and the proposed FY2020 ABC (Alternative 2) being less than 1% lower than No Action (Alternative 1) (Table 3, Table 5). The proposed ABC for FY2020 including discards is 50,460 mt or approximately 111 million pounds, which is a decrease of roughly 28 million pounds compared to 2019. This decrease is primarily attributed to the large year classes on both Georges Bank and in the Mid-Atlantic being fished down with only marginal recruitment occurring in recent years.

Given the above, the ABC and OFL being proposed Alternative 1 (No Action) are greater than the range of ABC and OFL values that were authorized by the fishery between 2012 and 2017 but are consistent with values authorized for 2018 through FW29 and for 2019 through FW30, though slightly decreased compared to 2019. The OFL and ABC are not a direct measure of the Annual Projected Landings (APL) for the scallop fishery and are therefore not a direct measure of expected fishing behavior under such specifications. Furthermore, APL estimates associated with fishery allocations being considered in this action (see Section 4.1, Table 6) are consistent with the range of removals that have been authorized by the fishery since 2012 and do not exceed the ABC and OFL values specified in Alternative 1 (No Action). In addition, projected landings for FY2020 are consistent with scallop fishery harvests in recent years, and therefore, changes in fishing behavior and effort are not expected to differ greatly from what has been previously observed in the fishery.

As noted above, interaction risks with protected species are strongly associated with amount, time, and location of gear in the water. As fishing behavior and expected levels of effort under the No Action are not expected to change any of these operating conditions, the No Action is not expected to introduce new or elevated interaction risks to these ESA listed species. Given this, and the fact that the this action would still require compliance with sea turtle chain mat and TDD regulations, Alternative 1 (No Action) would likely have low negative impacts on ESA listed species.

6.4.1.2 Alternative 2 – Updated OFL and ABC for FY 2020 and FY 2021 (Default) (*Preferred Alternative*)

The OFL and ABC values approved by the SSC for FY2020 and FY2021 (default) are summarized in Table 5. The updated ABC estimate including discards is 50,460 mt or approximately 111 million pounds for FY2020. This is about 483 mt, or about 1.1 million pounds, lower than the No Action ABC for FY2020 (Alternative 1, default measures from FW30). Updated survey results suggest a decrease in biomass, primarily due to the large year classes on Georges Bank and the Mid-Atlantic being fished down with only marginal recruitment occurring over the past several years.

The default OFL and ABC values for FY2021 under Alternative 2 represent a continued decline from the record high levels in recent years. This decline is attributed to the extraordinarily large 2012- and 2013-year classes recruiting to the fishery and the absence of strong recruitment in subsequent years. These exceptionally strong year classes make up the majority of total biomass and, except for the slow growing deep-water scallops in the Nantucket Lightship, are responsible for the majority of the population being considered exploitable. The 2018 re-opening of several habitat and groundfish closures that hold high densities of scallops (through the partial approval of OHA2) facilitated the harvest of animals that were previously inaccessible to the fishery. Scallop harvesting is expected to continue in these areas in 2020 and beyond, resulting in an expected decline in biomass (and associated OFL and ABC estimates) as these animals are removed from the population.

Under Alternative 2, the proposed OFL and ABC for FY2020 are greater than the range of the ABC and OFL values that were authorized by the fishery between 2012 and 2016 but are consistent with values authorized for 2017 through 2019. The increase in the ABC and OFL between FY2017 and FY2019 and then roughly similar values between FY2019 and FY2020 reflects the higher estimates of scallop biomass observed in recent surveys of the scallop resource and then the leveling off of this scallop biomass as the large year classes recruit with a lack of subsequent recruitment. Though similar to the historically higher values estimated for the past several years, the OFL and ABC values associated with Alternative 2 are not a direct measure of the APL allocated to the fishery, and therefore are not a direct measure of expected fishing behavior under such specifications. In fact, fishery allocations are projected to result in significantly lower landings than the OFL and ABC limits under Alternative 2 and are similar to projected landings over the past 6 years. Based on this, the OFL and ABC in and of themselves are not expected to change fishing behavior in a manner that significantly differs from Alternative 1. As a result, impacts on protected species under Alternative 2 are expected to be like those assessed for Alternative 1; therefore, relative to Alternative 1, Alternative 2 is likely to result in negligible impacts on ESA listed species.

6.4.2 Action 2 – Northern Gulf of Maine Management

6.4.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

6.4.2.1.1 Alternative 1 – No Action

Under Alternative 1, no closure would be established on Stellwagen Bank, and therefore LAGC and LA vessels would be able to fish Stellwagen Bank during fishing year 2020. The 2019 dredge survey of Stellwagen Bank detected high densities of scallop small scallops as well as larger animals that were targeted by the fishery during the 2019 season. The scallops on Stellwagen are expected to be some of the largest in the Northern Gulf of Maine management area and would likely be targeted by fishermen. While Stellwagen Bank holds large animals that would likely be targeted, 2019 surveys indicated that Jeffreys Ledge held the highest densities of exploitable scallops in the NGOM management area. With both areas open, vessels are likely to fish in both areas, since many operators choose to target large scallops due the price premium they command. Because there are many small scallops on Stellwagen Bank and

considering how higher densities of adult scallops are found on Jeffreys Ledge, fishing on Jeffreys Ledge is likely more efficient and would have lower impacts in terms of area swept for the same amount of landings. Therefore, if vessels are able to achieve their trip limit (200 lbs per day) with less bottom contact on Jeffrey's Ledge relative to if they fished on Stellwagen, the realized swept area and tow time in the management unit and the impacts to protected species may be lower under Alternative 2, and greater under Alternative 1. Under this scenario, the impacts of Alternative 2 on protected species may be slightly positive relative to Alternative 1; however, because the NGOM fishery and associated area swept in this brief (i.e. less than one month in the past several years) scallop season is low compared to the rest of the scallop fishery, it is more likely that the impacts of Alternative 1 and Alternative 2 would be negligible in comparison to each other. Considering that directed scallop fishing will occur at some level in the GOM region regardless of Alternative 1 or Alternative 2 and acknowledging that there is always potential for an interaction with protected species, albeit a slight chance, it is possible that the overall impacts of both Alternative 1 and Alternative 2 could be slightly negative on protected species.

6.4.2.1.2 Alternative 2 - Alternative 2 - Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (Preferred Alternative)

Alternative 2 would close part of Stellwagen Bank north of 42°20'N to directed scallop fishing in the NGOM Management Area for two years to protect small scallops that were observed in 2019 dredge surveys of this area. The closure would cover roughly 71 square miles on Stellwagen Bank and would protect a substantial number of small scallops that have not recruited into the fishery. The closure area is shown in Map 2, and closure coordinates are provided in Table 7.

Stellwagen Bank has supported directed scallop fishing in the Northern Gulf of Maine Management Area for the last four fishing years (FY2016 – FY2019). While the 2019 surveys detected high densities of small scallops on Stellwagen Bank, the survey also detected larger animals that were targeted by the fishery in 2016 through 2019. By closing the majority of Stellwagen Bank under Alternative 2, some scallop fishing could be expected to the north and west of the new closure boundaries; however, the majority of effort that would have occurred on Stellwagen Bank would likely shift to Jeffreys Ledge, which has higher densities of exploitable scallops. Fishing on this part of the population may result in less tow time needed to harvest a 200-pound possession limit, thereby reducing area swept and reducing the risk of interactions with protected species relative to Alternative 1. Under this scenario, it is reasonable to expect that Alternative 2 could have low positive impacts on protected species relative to Alternative 1. Considering that directed scallop fishing will occur at some level in the GOM region regardless of Alternative 2 or Alternative 1 and acknowledging that there is always potential, albeit slight, for an interaction with protected species when fishing activity overlaps with known distributions of ESA-listed species, it is possible that the overall impacts of both Alternative 2 and Alternative 1 on protected species could be low negative.

6.4.2.2 Northern Gulf of Maine TAC Setting

6.4.2.2.1 Alternative 1 - No Action

Under Alternative 1 (No Action) the total NGOM hard TAC would be set at 170,000 pounds, which would be split between the LA and LAGC components, with 50,000 pounds available to support RSA compensation fishing (LA share), and 120,000 pounds available for harvest by the LAGC component. The area would open on April 1, 2020 with no change to the current management program. The NGOM management area would remain open for each component until their TAC is projected to be harvested, even if the other component has reached its TAC. For example, if the LAGC component harvests its TAC before all NGOM RSA compensation pounds are harvested, the area would remain open for NGOM RSA compensation fishing

The 120,000 pound TAC available to the LACG fishery under Alternative 1 would be less than the TAC values in Alternative 2 and would likely result in less overall area swept on Jeffreys Ledge and in Ipswich Bay, as well as on Stellwagen Bank, depending on the closure alternative selected in Section 4.2.1. Alternative 1 (No Action) represents a reduction in the overall NGOM TAC relative to 2019 meaning that, while the rate of harvest from the LACG component is expected to be similar, the overall duration of the LACG NGOM fishery is expected to be somewhat abbreviated relative to 2019. In other words, under Alternative 1 (No Action), the LACG share of the NGOM TAC would likely be harvested by early May.

Since the LACG portion of the NGOM fishery is expected to end by early May, fishing activity is not expected to have a substantial overlap with the seasonal distribution of hard-shell turtles in the Gulf of Maine (GOM). Specifically, as provided in Section 5.4.2.1, hard-shell sea turtles migrate north as water temperatures warm in the spring and may be seen on the most northern foraging grounds in the GOM beginning in June (Shoop & Kenney, 1992). Leatherback sea turtles are also likely to occur in the GOM within a similar timeframe as hard-shell sea turtles (Dodge et al., 2014; M. James et al., 2005; M. C. James et al., 2006; NMFS & USFWS, 1992). Based on this, if the fishery closes in May, interactions with turtles are not expected.

Due to the structure of a shared overall TAC and the uncertainty associated with the timing of if, when, and(or) how much of the LA share is harvested, there is potential that fishing activity at some level could persist within the NGOM management area beyond the month of May. Under this unlikely scenario, there is the potential for sea turtles to be present in the NGOM management area and therefore, encounter scallop fishing gear (i.e. primarily dredge) known to pose an interaction risk to sea turtles, particularly hard-shelled species. However, taking into consideration expected effort, sea turtle occurrence and distribution in the GOM, as well as observed sea turtle interactions with scallop fishing gear in the GOM, the risk of an interaction is expected to be low and no greater than past years. Specifically, if the NGOM management area were open to the LACG component for the entire year, it would indicate that fishing effort is low. Furthermore, though it is impossible to predict if eligible vessels will harvest the LA share of the TAC, the effort associated with the LA share of the TAC under Alternative 1 and the Sub-Options of Alternative 2 could be expected to be minimal, especially when considering the highest potential LA share of 140,000 pounds (i.e. under Alternative 2 Sub-Option 2) relative to what an individual full-time LA vessel is expected to harvest in FY2020 outside of the NGOM (i.e. approximately 145,000 to 150,000 pounds under the specifications alternatives considered in Section 4.3.1). Regardless, the low levels of effort, gear quantity and(or) duration of tow times under Alternative 1 and Alternative 2 are not expected to increase relative to current operating conditions. As interactions with protected species 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 in of any or all of these factors), fishing behavior/effort under Alternative 1 is not expected to change any of these operating conditions and therefore is not expected to elevate interaction risks. This is further supported by the low level of co-occurrence between hard-shelled sea turtles and scallop gear in this sub-region, 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. Regarding leatherback sea turtles, although there is the potential for leatherback sea turtles to interact with scallop fishing gear (NMFS, 2012), based on fisheries observer data (FSB, 2019), as well as data provided by the Sea Turtle Disentanglement Network (STDN, 2016), leatherback sea turtle interactions with scallop fishing gear have never been observed, and therefore, while the risk of interaction exists, it is likely very low. Taking all these factors into consideration, should the fishery continue throughout the season, new or elevated (e.g., more gear, longer soak or tow times) interaction risks to sea turtles are not expected under this scenario.

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, as well as the information provided above regarding fishing effort and interaction risks to protected species, new or elevated (e.g., more gear, longer soak or tow times) interaction risks to Atlantic sturgeon are not expected under the No Action.

Based on the above, the impacts on protected species (i.e. ESA listed species of sea turtles and Atlantic sturgeon) from Alternative 1 would likely be neutral to low negative. It should be noted that Alternative 1 represents a lower TAC than the Sub-Options of Alternative 2; however, the difference (i.e. 140,000 to 180,000 lbs) is indistinguishable when considered in terms of expected harvest from the scallop fishery as a whole (i.e. an APL of approximately 52 million pounds in FY2020), and is not expected to result in appreciably different durations of when fishing will occur in the NGOM management area. As it is anticipated that majority of fishing in NGOM management area will conclude by the end of May under each of these alternatives, with some, albeit small, potential for activity to spread out across the entire fishing year, impacts of Alternative 1 relative to Alternative 2 and its Sub-Options could be expected to be similar and both are anticipated to have a neutral to low-negative impact on protected resources. Therefore, when compared to each other, the impacts of Alternative 1, Alternative 2 Sub-Option 1, and Alternative 2 Sub-Option 2 on protected resources would be neutral.

6.4.2.2.2 Alternative 2 - Alternative 2 - Set 2020 and 2021 NGOM TAC, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (*Sub-Option 2 is Preferred Alternative*)

Alternative 2 would split the NGOM TAC between the LA and LAGC components, with the first 70,000 lbs allocated to the LAGC component, and the remainder split 50/50 between the LA and LAGC. This was the Council's preferred TAC split option in FW29.

The overall level of harvest will be predictable with this approach, since Alternative 2 would establish separate TACs and reporting requirements for both the LA and LAGC components. The magnitude of impacts to protected resources is expected to scale with the overall level of catch, regardless of which vessels harvest that catch. Therefore, the impacts of the allocation split (i.e. first 70,000 pounds to the LAGC, with the remainder split between LA and LAGC) on protected species are expected to be negligible.

6.4.2.2.2.1 *Sub-Option 1 - F=0.18*

Setting the NGOM TAC at $F=0.18$ would result in an overall TAC of 310,000 lbs for FY2020, which is likely to lead to more fishing and therefore have somewhat greater impacts to protected species as compared to Alternative 1 (No Action). Relative to Sub-Option 2 ($F=0.20$), fishing at $F=0.18$ could be expected to result in less area swept and associated tow time, and fewer impacts to protected species since the overall TAC would be lower. However, as stated previously in Section 6.4.2.2.1, though Alternative 2 Sub-Option 1 represents a higher TAC than Alternative 1, the difference between these alternatives (i.e. 140,000 lbs) is indistinguishable when considered in terms of expected harvest from the scallop fishery as a whole (i.e. an APL of approximately 52 million pounds in FY2020), and is not expected to result in appreciably different durations of when fishing will occur in the NGOM management area. As it is anticipated that majority of fishing in NGOM management area will conclude by the end of May, with some, albeit small, potential for activity to spread out across the entire fishing year, impacts of Alternative

2 Sub-Option 1 relative to Alternative 1 and Alternative 2 Sub-Option 2 could be expected to be similar and all three options are anticipated to have a negligible to low-negative impact on protected resources. Therefore, when compared to each other, the impacts of Alternative 1, Alternative 2 Sub-Option 1, and Alternative 2 Sub-Option 2 on protected resources would be negligible.

6.4.2.2.2.2 Sub-Option 2 - F=0.20

Setting the NGOM TAC at F=0.20 would result in an overall TAC of 350,000 lbs for FY2020, which is expected to lead to more fishing and therefore somewhat greater impacts to protected species as compared to Alternative 1 (No Action). Relative to Sub-Option 1 (F=0.18), fishing at F=0.20 could be expected to result in slightly greater impacts to protected species since the overall TAC would be higher and would likely result in higher area swept and tow time. However, as stated previously in Section 6.4.2.2.1, though Alternative 2 Sub-Option 2 represents a higher TAC than Alternative 1, the difference between these alternatives (i.e. 180,000 lbs) is indistinguishable when considered in terms of expected harvest from the scallop fishery as a whole (i.e. an APL of approximately 52 million pounds in FY2020), and is not expected to result in appreciably different durations of when fishing will occur in the NGOM management area. As it is anticipated that majority of fishing in NGOM management area will conclude by the end of May, with some, albeit small, potential for activity to spread out across the entire fishing year, impacts of Alternative 2 Sub-Option 2 relative to Alternative 1 and Alternative 2 Sub-Option 1 could be expected to be similar and all three options are anticipated to have a negligible to low-negative impact on protected resources. Therefore, when compared to each other, the impacts of Alternative 1, Alternative 2 Sub-Option 1, and Alternative 2 Sub-Option 2 on protected resources would be negligible.

6.4.3 Action 3 – Fishery Specifications & Trip Exchanges

6.4.3.1 Fishery Specifications

The Council considered two rotational management alternatives in Framework 32, with two options for open area F values for each alternative, for a total of five allocation options, including No Action. A status quo scenario was evaluated for comparison to current management, which is different from default No Action allocations. The information below is intended to support the Council's evaluation of each alternative individually and compared to each of the other allocation options. Table 63 shows landings, LPUE, and area swept by alternative, while Table 64 provides a matrix of comparisons for the area swept values only. Figure 36 compares the area swept values for each alternative graphically out to 2034. Figure 37 and Figure 38 show area swept and landings/area swept ratio, respectively, for each FW32 alternative during the 2020 fishing year relative to values realized in the recent past.

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 (see Figure 37). 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 level of impact measured using these points of reference varies very little when comparing Alternatives except for Status Quo because all alternatives are very similar in terms of the level of expected harvest, the parts of the resource that are expected to be fished, and associated area swept by the scallop fishery as a whole.

6.4.3.1.1 Alternative 1 – No Action (Default Measures From FW30)

No Action would set FT LA DAS at 18 and allocate one trip to the Mid-Atlantic Access Area and one trip to the Nantucket Lightship West. This alternative is anticipated result in reduced levels of landings compared to other alternatives, but area swept is expected to be roughly comparable to Alternatives 2 and 3. This is due to changing resource conditions in the Nantucket Lightship West, where observed biomass in 2019 was significantly reduced compared to the level projected for this area during the development of Framework 30 (i.e. which set the 2020 default allocations). The substantial decrease in biomass in the NLS-West drives the elevated projected area swept under No Action because reduced catch rates would require more bottom time to harvest the trip limit.

While overall area swept under No Action is similar to Alternative 2 and 3, area swept and time with gear in the water in the Mid-Atlantic region is anticipated to be less under No Action compared to Alternative 2, Alternative 3, and Alternative 4 (Status Quo) because only one trip would be allocated to the MAAA compared to two trips in this area under Alternative 2 and Alternative 3, and three trips under Status Quo (Alternative 4). With regard to sea turtles, the reduced projected area swept relative to the Status Quo and reduced area swept in the Mid-Atlantic region relative to other specifications alternatives means the overall duration of time gear is deployed in the water would be similar or reduced, thereby having similar or reduced potential for interactions with sea turtles. Further, leatherback and hard-shelled sea turtles can be found throughout the affected environment of the scallop fishery. Specifically, encounter rates of hard-shelled species of sea turtles are higher in the Mid-Atlantic relative to the Gulf of Maine (GOM) and Georges Bank (GB) (see Section 5.4.2.1.1) (Murray & Orphanides, 2013). Based on this, sea turtle distribution commonly overlaps with the sea scallop fishery, specifically in Mid-Atlantic waters, as evidenced by the number of sea turtle (specifically hard-shelled) interactions (see Section 5.4.2.1.2). In fact, estimated bycatch rates in trawl and dredge gear are higher in the Mid-Atlantic than in other waters in the affected environment (FSB, 2015, 2016, 2017, 2018, 2019; Murray, 2011, 2015a, 2015b; Warden, 2011a, 2011b). Since the No Action will result in less effort and lower projected area swept relative to Status Quo, as well as less overall effort allocations in the Mid-Atlantic Access Area, the number of potential interactions with sea turtles is likely to be lower under the No Action. Considering that the Mid-Atlantic is known for having a greater risk of interaction with protected species of sea turtles, the reduced area swept and dredge fishing time in this region under No Action is expected to result in positive impacts to said species relative to Alternatives 2 and 3, as well as Status Quo.

With regards to Atlantic sturgeon, 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, 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, 2019). Based on this information, as well as the information provided above regarding fishing effort (i.e., relatively low projected area swept) under the No Action, interactions with Atlantic sturgeon are expected to be low.

Taking into consideration the above information, Alternative 1 is expected to have low negative impacts on protected species (i.e., ESA listed species of sea turtles and Atlantic sturgeon). Impacts of Alternative 1 on protected resources are expected to be neutral to slightly positive relative to Alternative 2 and Alternative 3 because fewer MAAA trips would be allocated and area swept is expected to be roughly the same or slightly less than Alternatives 2 and 3. Because overall effort, particularly effort in the Mid-Atlantic region, is reduced under No Action relative to Status Quo, and considering that area swept is anticipated to be 45% less, this alternative is expected to have a high positive impact on protected species relative to Status Quo.

6.4.3.1.2 Alternative 2 – Six Access Area Trips, Closed Area II-Ext Open

Alternative 2 would maintain CAII-Extension as open bottom and allocate a total of six access area trips to FT LA vessels (two trips to the MAAA, one trip to Closed Area II, one trip to the NLS-S-Deep, ½ trip to CAI and a ½ trip to the NLS-North). The sub-Options for Alternative 2 would allocate either 22 open area DAS (Sub-Op 1) or 24 open area DAS (Sub-Op 2) to FT LA vessels.

The Sub-Options of Alternative 2 do not introduce effort to new parts of the resource and are not expected to result in significantly greater fishing effort compared to recent years; however, because scallop fishing at any level inherently poses a risk for interactions with protected species, the overall impact of Alternative 2 on protected species could be slightly negative.

Relative to Alternative 1 (No Action), the Sub-Options of Alternative 2 allocate greater access area removals, including an additional trip to the MAAA, and would allocate 4 more open area DAS under Sub-Option 1 and 6 more open area DAS under Sub-Option 2. The additional effort in the MAAA under Alternative 2 options could result in somewhat elevated potential for interactions with protected species, particularly ESA-listed species of sea turtles, which are known to have greater overlap with the scallop fishery in the Mid-Atlantic region relative to other regions where the scallop fishery is prosecuted (i.e. Georges Bank, Gulf of Maine). Typically, higher levels of removals associated with updated specifications (i.e. such as Alternative 2) result in greater area swept in comparison to the default measures they replace (i.e. Alternative 1); however, for the reasons described in Section 6.4.3.1.1 (i.e. an unexpected reduction in biomass in the NLS-West between FW30 projections and the 2019 surveys), area swept associated with the Sub-Options of Alternative 2 could be expected to be between 1% to 9% less than Alternative 1 (No Action). Despite anticipated area swept being less under Alternative 2, area swept in the Mid-Atlantic region could be expected to be greater relative to Alternative 1 due to the additional effort allocated to the MAAA as well as an increase in DAS that could be fished in open area within the Mid-Atlantic. It is reasonable to suggest that any elevated potential for an interaction with ESA-listed species of sea turtles resulting from additional effort in the MAAA under Alternative 2 could be offset by the roughly the same or lower anticipated area swept relative to Alternative 1 (No Action). Following this rationale, the impacts of Alternative 2 Sub-Options could range from slightly negative to neutral in comparison to Alternative 1.

Alternative 2 and Alternative 3 allocate the same level of rotational harvest and offer the same open area DAS Sub-Options (i.e. 22 DAS, 24 DAS). The only difference between these specifications options is in the configuration of spatial management boundaries; under Alternative 2, CAII-Extension is open to scallop fishing under DAS management, whereas under Alternative 3, the CAII-Extension is closed to all scallop fishing to protect a set of juvenile scallops that were observed there in 2019. The tradeoff of this closure is that more open bottom in a productive part of the resource would be accessible to scallop vessels fishing under DAS management under Alternative 2 relative to Alternative 3. CAII-Extension is expected to be productive in terms of having high catch rates; therefore, making it available to the scallop fishery through Alternative 2 is anticipated to reduce area swept by as much as 15% relative to the higher DAS option of Alternative 3 (Sub-Option 2, 24 DAS), or roughly similar in comparison to the lower DAS option of Alternative 3 (Sub-Option 1, 22 DAS). With reduced area swept comes reduced risk of interactions with protected species, meaning the Sub-Options of Alternative 2 could be expected to result in slightly positive to negligible impacts on protected species relative to the Sub-Options of Alternative 3.

In comparison to Status Quo, Alternative 2 options would result in reduced rotational harvest, including one less trip to the MAAA, and would allocate either 2 fewer DAS under Sub-Option 1 or the same DAS under Sub-Option 2. Due to changing resource conditions between the measures implemented for FY2019 and what is expected for FY2020, Alternative 2 options are anticipated to result in significantly less area swept than Status Quo, by roughly 46% to 50%. With regard to sea turtles, the reduced projected area swept, especially in the Mid-Atlantic region, relative to Status Quo means the overall duration of time gear is deployed in the water would be reduced, thereby having reduced potential for interactions with sea

turtles. Based on this information, it is reasonable to expect that the Sub-Options of Alternative 2 would result in high positive impacts to ESA-listed species in comparison to Status Quo.

6.4.3.1.3 Alternative 3 – Six Access Area Trips, Closed Area II-Ext Closed (*Sub-Option 2 is Preferred Alternative*)

Alternative 3 would close the CAII-Extension to scallop fishing and allocate a total of six access area trips to FT LA vessels (two trips to the MAAA, one trip to Closed Area II, one trip to the NLS-S-Deep, ½ trip to CAI and a ½ trip to the NLS-North). The Sub-Options for Alternative 2 would allocate either 22 open area DAS (Sub-Op 1) or 24 open area DAS (Sub-Op 2) to FT LA vessels.

The Sub-Options of Alternative 3 do not introduce effort to new parts of the resource and are not expected to result in significantly greater fishing effort compared to recent years; however, because scallop fishing at any level inherently poses a risk for interactions with protected species, the overall impact of Alternative 2 on protected species could be low negative.

Relative to Alternative 1 (No Action), the Sub-Options of Alternative 3 allocate greater access area removals, including an additional trip to the MAAA, and would allocate 4 more open area DAS under Sub-Option 1 and 6 more open area DAS under Sub-Option 2. The Sub-Options of Alternative 3 close CAII-Extension to open area fishing, which is open under Alternative 1, meaning open area effort that would have been directed in CAII-Extension would be displaced into other parts of the resource, including the Mid-Atlantic region. The additional effort in the MAAA and potential for increased open area fishing in the Mid-Atlantic region under Alternative 3 options could result in somewhat elevated potential for interactions with protected species, particularly ESA-listed species of sea turtles, which are known to have greater overlap with the scallop fishery in the Mid-Atlantic region relative to other regions where the scallop fishery is prosecuted (i.e. Georges Bank, Gulf of Maine). Typically, higher levels of removals associated with updated specifications (i.e. such as Alternative 3) result in greater area swept in comparison to the default measures they replace (i.e. Alternative 1); however, for the reasons described in Section 6.4.3.1.1 (i.e. an unexpected reduction in biomass in the NLS-West between FW30 projections and the 2019 surveys), area swept associated with the Sub-Options of Alternative 3 could be expected to be between 1% to 7% less than Alternative 1 (No Action). Despite anticipated area swept being less under Alternative 3, area swept in the Mid-Atlantic region could be expected to be greater relative to Alternative 1 due to the additional effort allocated to the MAAA as well as an increase in DAS that could be fished in open area within the Mid-Atlantic. It is reasonable to suggest that any elevated potential for an interaction with ESA-listed species of sea turtles resulting from additional effort in the MAAA under Alternative 3 could be offset by the roughly the same or lower anticipated area swept relative to Alternative 1 (No Action). Following this rationale, the impacts of Alternative 3 Sub-Options could range from slightly negative to negligible in comparison to Alternative 1.

Alternative 3 and Alternative 2 allocate the same level of rotational harvest and offer the same open area DAS Sub-Options (i.e. 22 DAS, 24 DAS). The only difference between these specifications options is in the configuration of spatial management boundaries; under Alternative 3, CAII-Extension is closed to scallop fishing to protect a set of juvenile scallops that were observed there in 2019, whereas under Alternative 2, the CAII-Extension is open to fishing under DAS management. The tradeoff of this closure is that less open bottom in a productive part of the resource (i.e. CAII-Extension) would be accessible to scallop vessels fishing under DAS management under Alternative 3 relative to Alternative 2. CAII-Extension is expected to be productive in terms of having high catch rates; therefore, closing it to scallop fishing under Alternative 3 is anticipated to increase area swept because vessels will be forced to fish open area DAS in areas with lower catch rates. Depending on the DAS Sub-Options compared (i.e. 22 DAS or 24 DAS), area swept under Alternative 3 could be roughly the same as Alternative 2, or as much as 17% greater than Alternative 2. With greater area swept comes elevated risk of interactions with protected species, meaning the Sub-Options of Alternative 3 could be expected to result in neutral to slightly negative impacts on protected species relative to the Sub-Options of Alternative 2.

In comparison to Status Quo, Alternative 3 options would result in reduced rotational harvest, including one less trip to the MAAA, and would allocate either 2 fewer DAS under Sub-Option 1 (i.e. 22 DAS) or the same DAS under Sub-Option 2 (i.e. 24 DAS). Due to changing resource conditions between the measures implemented for FY2019 and what is expected for FY2020, Alternative 3 options are anticipated to result in significantly less area swept than Status Quo, by roughly 41% to 45% depending on the DAS Sub-Option. With regard to sea turtles, the reduced projected area swept, especially in the Mid-Atlantic region, relative to Status Quo means the overall duration of time gear is deployed in the water would be reduced, thereby having reduced potential for interactions with sea turtles. Based on this information, it is reasonable to expect that the Sub-Options of Alternative 3 would result in high positive impacts to ESA-listed species in comparison to Status Quo.

6.4.3.2 Full Time Limited Access Trip Exchanges (*Alternative 2 is Preferred Alternative*)

The Council is considering modifying current regulations governing FT LA trip exchanges. All options under consideration (Alternatives 1, 2, and 3) would not change overall allocations or expected landings from access areas. Since area swept estimates are based on projected LPUE in each access area, these trip exchange alternatives are not expected to change overall fishery impact conclusions described above in the specifications section (Section 6.4.3.1), and are expected to have neutral impacts on protected species relative to one another. The alternatives are summarized below.

- Under Alternative 1, there would be no change to the current trip exchange regulations. This would mean that access area allocations could only be exchanged on a one-for-one basis at the increment of the possession limit (i.e. 18,000 pounds). Under this option, 9,000-pound trips in the NLS-North and CAI could not be exchanged.
- Alternative 2 would allow pound for pound exchanges to all areas in increments of 9,000 pounds (the lowest allocation in FW32). There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (12,000 lbs for part time).
- Alternative 3 would allocate a split trip to the NLS-North and CAI using a random, non-regional lottery system. Half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half of the FT LA fleet would receive one, 18,000-pound “flex” trip to CAI. CAI “flex” allocation could be fished in either CAI or the MAAA. One-for-one trip exchanges would be permitted for all access area trips at increments of the possession limit (i.e. 18,000 pounds).

6.4.4 Action 4 - Access Area Trip Allocations to the LAGC IFQ Component (*Alternative 2 is Preferred Alternative*)

The LAGC IFQ fishery is allocated a fleet wide total number of access area trips. Individual vessels are not required to take trips in specific areas. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year. This action is considering two options for allocating fleet wide trips to the LAGC IFQ fishery and two options related to the maximum number of trips per area.

Alternative 1 (No Action) would use the default number of trips allocated in FW30 (571 total trips in MAAA starting on April 1, and 571 trips in NLS-West starting on April 1). Under Alternatives 2, there would be 2,855 total access area trips allocated to the LAGC component. These trips would be distributed across the NLS-N (571 trips), CA-I (571 trips), the NLS-S-deep (571 trips), and MAAA (1,142 trips). Both the LA and LAGC fisheries have the same proportion of their allocations coming from open vs. access areas.

Alternative 1 would allocate fewer LAGC IFQ access area trips to the MAAA compared to recent years. This could provide some positive benefits to protected species, particularly sea turtles, by reducing effort and therefore the potential for interactions in an area where interactions are more commonly observed (i.e. Mid-Atlantic) relative to other parts of the resource (i.e. GB, GOM, and SNE). However, considering that fishing would still occur in some part of the resource at some level, the risk of an interaction with protected species would exist at some level, meaning the overall impact of Alternative 1 on protected resources is expected to be slightly negative.

Relative to Alternative 1, Alternative 2 represents an increase of LAGC trips in the Mid-Atlantic Access Area. Overall, increasing LAGC trips to the MAAA could have some negative impact on protected resource species because an increase in effort to the Mid-Atlantic would raise the risk of interacting with protected species, particularly sea turtles, which are observed more commonly there compared to other parts of the resource. However, because LAGC vessels can elect to fish quota in any available part of the resource (i.e. on either open trips or available access area trips), it is possible that LAGC vessels will concentrate effort in other parts of the resource where high densities of large scallops exist (i.e. access areas of GB), thereby reducing effort in the MAAA, where protected resources like sea turtles are more commonly observed than in other parts of the resource. Also, because the nature of the LAGC fishery motivates vessels to fish in areas with high LPUE to reduce trip costs, if an increase in trips to the MAAA did occur, time spent fishing by LAGC vessels is expected to be low, thereby reducing the chance of interactions with protected resources like sea turtles. Overall, impacts of Alternative 2 on protected resources are expected to be slightly negative.

6.4.5 Action 5 – Additional Measures to Reduce Fishery Impacts

6.4.5.1 RSA Compensation Fishing

There are two alternatives under consideration related to RSA compensation fishing in access areas. Alternative 1 would prohibit vessels from fishing RSA compensation in access areas. Alternative 2 would allow vessels to fish an RSA compensation trip in only the Mid-Atlantic Access Area and the Northern Gulf of Maine management unit (up to the LA TAC). Vessels would not be able to fish RSA compensation pounds in the Closed Area II AA, Closed Area I AA, NLS-N AA, and NLS-S-deep AA, and only vessels receiving allocations of NGOM RSA compensation would be able to fish their awards in the NGOM management area. Vessels would be able to access high density areas in the Mid-Atlantic Access Area.

In general, RSA compensation fishing is a small component of the overall fishery (i.e. roughly 2% of the fishery-wide projected landings associated with the preferred specifications alternative) and is considered as part of the previous impact analysis. There are two alternatives under consideration related to RSA compensation fishing in access areas. Alternative 1 would prohibit vessels from fishing RSA compensation in access areas. Alternative 2 would allow vessels to fish an RSA compensation trip in areas open to fishing under DAS management and the Mid-Atlantic Access Area, but prohibit RSA compensation fishing in CAI, CAII, and the NLS-North. Only vessels receiving allocations of NGOM RSA compensation would be able to fish their awards in the NGOM management area.

Overall impacts on protected resources are expected to be low negative from all these alternatives because the RSA compensation fishing effort is a relatively small proportion of overall scallop fishing effort, about 2% in recent years. Based on this, either alternative, when compared to the other, is expected to result in neutral impacts to protected species.

6.4.5.1.1 Alternative 1 – No Action

Under Alternative 1, RSA compensation fishing would be restricted to the open area only (i.e. areas that can be fished under DAS management). Regardless of where fishing effort occurs, interactions with sea turtles and Atlantic sturgeon are possible as these species have the potential to occur in all resource areas of the scallop fishery; however, the potential for interaction of this alternative may be higher or lower depending on the particular region where RSA fishing is directed and where observed interactions and (or) likelihood of protected species occur. For instance, if this Alternative is expected to shift effort from the Mid-Atlantic to Georges Bank, based on observed interactions, effort would be shifting from a high protected species bycatch area to a low protected species bycatch area. As a result, the potential for interactions may be reduced. However, because the SAMS model predicts that open area effort (and therefore RSA compensation fishing under Alternative 1) will be fairly evenly distributed across Georges Bank and the Mid-Atlantic, the harvest of RSA compensation pounds are not expected to be concentrated in the Mid-Atlantic. Based on this, overall impacts of Alternative 1 on protected species could be slightly negative because the risk of interacting with protected resources exists at some level regardless of where fishing occurs. Impacts of Alternative 1 on protected species are expected to be neutral relative to Alternative 2.

6.4.5.1.2 Alternative 2 – Allow RSA compensation fishing in the Mid-Atlantic Access Area, with limited RSA compensation fishing in the NGOM Management Area (Preferred Alternative)

Alternative 2 may have slightly negative impacts on protected resources overall, primarily because compensation fishing would be available in the MAAA, which, based on observed interactions, is an area generally associated with a higher risk of dredge interactions with protected species, specifically hard-shelled turtles. However, it is possible that RSA compensation fishing will be directed to parts of the resource away from the MAAA, such as productive open areas that hold high densities of harvestable scallops. Though this behavior may reduce the risk of interactions with protected species by potentially shifting effort away from an area with high observed interactions (i.e. Mid-Atlantic) to other areas with lower observed interactions, the risk of interacting with protected species exists at some level regardless of where RSA compensation fishing occurs. For this reason, overall impacts of Alternative 2 on protected resources could be slightly negative but are expected to be neutral relative to Alternative 1.

6.4.5.2 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

6.4.5.2.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the existing seasonal closure to protect flatfish in Closed Area II, which currently runs from August 15th – November 15th annually. The scallop fishery accesses CAII AA periodically when the scallop resource is strong enough to support rotational harvest by the LA component. In recent history, there have been no observed interactions of scallop dredges with protected species by vessels fishing in or around CAII AA, regardless of the time of year that fishing is occurring. Considering that interactions with protected species are low on eastern Georges Bank, and that the timing of a seasonal closure in Closed Area II is not expected to increase tow times or area swept across the fishing year, the impacts of Alternative 1 on protected species are not anticipated to be any greater or less than those assessed for the underlying specifications alternatives in Section 6.4.3.1. The impacts of Alternative 1 and Alternative 2 are expected to be negligible in comparison to each other because any seasonal shift of effort in CAII under either alternative is not expected to increase the risk of dredge interactions with protected species beyond the very low or non-existent levels that have been observed in recent history.

6.4.5.2.2 Alternative 2 - Alternative 2 – Extend Seasonal Closures of Closed Area II Access Area through November 30th in FY 2020 (*Preferred Alternative*)

Under Alternative 2, the existing seasonal closure in Closed Area II Access Area would be extended an additional two weeks, meaning the duration of the closure would be August 15th through November 30th. This will shift effort that would have been fished in CAII AA between November 16th and November 30th into in other times of the year when the seasonal closure is not in place; however, the shift in effort is not expected to have a substantial impact on the magnitude of impacts to protected species relative to Alternative 1 because protected species that interact with the scallop fishery do not have a strong seasonal presence in CAII and the overall level of effort, tow time, and area swept is not anticipated to change across the FY2020 fishing year. Any seasonal displacement of effort in CAII from extending the existing seasonal closure through the end of November is unlikely to translate to an increase of effort in areas with higher than average interaction risks with protected species during this time of year, meaning the impacts of Alternative 2 on protected species are not anticipated to be any greater or less than those assessed for the underlying specifications alternatives in Section 6.4.3.1. Furthermore, the impacts of Alternative 2 and Alternative 1 are expected to be negligible in comparison to each other because any seasonal shift of effort in CAII under either alternative is not expected to increase the risk of dredge interactions with protected species beyond the very low or non-existent levels that have been observed in recent history.

6.5 IMPACTS ON PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT

6.5.1 Action 1 – Overfishing Limit and Acceptable Biological Catch

Annual Biological Catch (ABC) and overfishing limits (OFL) are recommended by the Council’s Scientific and Statistical Committee and approved by the Council. The growth of large year classes in the Nantucket Lightship area and the Mid-Atlantic Access Area, which have been tracked over several years, are beginning to level off and animals from these year classes have recruited into the fishery. Regardless of this influx of biomass to the fishery, the OFL, ABC, and ACL values set by the Council are often much higher than the projected landings by the fishery (in this action, both alternatives are nearly double). Therefore, realized impacts on EFH for this framework will largely reflect measures analyzed in Section 6.5.3, and are only indirectly related to the ABC and OFL values.

The FY 2020 and FY 2021 OFL and ABC values that were approved by the SSC and recommended to the Council are summarized in Table 58. The updated ABC estimate including discards is 50,460 mt or 111.2 million pounds for FY2020. This is about 483 mt, or about 1 million pounds, lower than the No Action ABC (default). The current OFL and ABC values are driven by the growth of large year classes the Nantucket Lightship area and the Mid-Atlantic Access Area, which were considered exceptional when they were first observed.

6.5.1.1 Alternative 1 – No Action for OFL and ABC

As noted above, fishery impacts to EFH are only indirectly related to the OFL and ABC, and more closely reflect the specifications alternative selected. Therefore, the No Action ABC is not anticipated to have a direct impact on EFH. Because the OFL and ABC values for No Action and Alternative 2 are very similar (~400 mt difference), Alternative 1 and Alternative 2 are expected to have negligible effects relative to one another.

6.5.1.2 Alternative 2 – Updated OFL and ABC for FY 2020 and FY 2021 (Default) (*Preferred Alternative*)

The current OFL and ABC values are driven by the growth of large year classes the Nantucket Lightship area and the Mid-Atlantic Access Area, which were considered exceptional when they were first observed. Because fishery impacts to EFH are only indirectly related to the OFL and ABC, and more closely reflect the specifications alternative selected, selecting the Alternative 2 OFL and ABC values is not anticipated to have a direct impact on EFH.

6.5.2 Action 2 – Northern Gulf of Maine Management

These actions pertain to spatial management and TACs for the NGOM management area.

6.5.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

The 2019 dredge survey of Stellwagen Bank detected high densities of scallop small scallops as well as larger animals that were targeted by the fishery during the 2019 season. The scallops on Stellwagen are expected to be some of the largest in the Northern Gulf of Maine management area and would likely be targeted by fishermen due the price premium they command. The same 2019 surveys indicated that Jeffreys Ledge held the highest densities in the NGOM management area.

6.5.2.1.1 Alternative 1 – No Action

Under Alternative 1, no closure would be established on Stellwagen Bank, and therefore LAGC and LA vessels would be able to fish where they choose on Stellwagen Bank during fishing year 2020. With both Stellwagen Bank and Jeffreys Ledge open and containing large scallops and high densities of scallops, respectively, vessels are likely to fish in both areas. Because there are also many small scallops on Stellwagen Bank, fishing on Jeffreys Ledge is likely more efficient overall and would have lower impacts to EFH for the same landings. This greater efficiency means that vessels should be able to achieve their 200 lb per day trip limit with less bottom contact on Jeffreys Ledge as compared to Stellwagen Bank. Allowing fishing in both areas, versus shifting more effort to Jeffreys under a closure scenario (Alternative 2) should increase the realized swept area in the NGOM management unit. Therefore, impacts to EFH may be greater under Alternative 1 compared to Alternative 2.

6.5.2.1.2 Alternative 2 - Alternative 2 – Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (*Preferred Alternative*)

Alternative 2 would close part of Stellwagen Bank north of 42°20'N to directed scallop fishing in the NGOM Management Area for two years to protect small scallops that were observed in 2019 dredge surveys of this area. The closure would cover roughly 71 square miles on Stellwagen Bank and would protect a substantial number of small scallops that have not recruited into the fishery. The closure area is shown in Map 2, and closure coordinates are provided in Table 7.

Stellwagen Bank has supported directed scallop fishing in the Northern Gulf of Maine Management Area for the last four fishing years (FY 2016 – FY 2019). While the 2019 surveys detected high densities of scallop small scallops, the survey also detected larger animals that were targeted by the fishery in 2019. Under this alternative, directed scallop fishing could be expected to the north and west of the new closure boundaries.

As described above, a partial closure of Stellwagen Bank would be expected to shift effort the Jeffreys Ledge, which has higher densities of exploitable scallops. Fishing on this part of the population may result in lower area swept, and therefore lower impacts to EFH, compared to Alternative 1.

The sandlance (offshore species *Ammodytes dubius*) is a food source for many species, including Atlantic cod, and is therefore an important feature of the GOM ecosystem (Staudinger et al., in review). On Stellwagen Bank, sandlance are found in coarse-grained sand (Page Valentine, USGS, personal communication), which is found throughout the bank to about 50 m water depth (Valentine and Gallea 2015). Since 2013 most sandlance have been found on the southern part of the bank, outside the NGOM management area, but their distribution on Stellwagen overlaps partially with the closure proposed under this alternative (Tammy Silva, SBNMS, personal communication). Sandlance spawn in fall and winter along the Northeast US, and their eggs are demersal and adhesive (Staudinger et al., in review). As such, the eggs could be removed by bottom-tending fishing gears, including scallop dredges. Published literature indicate an extended spawning season ranging from December through May on the Grand Banks (Dalley & Winters, 1987); however, a recent analysis of *Ammodytes* captured on Stellwagen Bank in 2016 and 2017 demonstrates this species has a limited spawning period in this area, lasting no longer than 1-2 weeks in late November and early December (Murray, Wiley, & Baumann, 2019). While in theory the closure proposed in this alternative could protect sandlance eggs during the fishing year(s) in which it is effective, the NGOM fishery tends to occur in the spring, such that little practical benefit to the species would be expected.

6.5.2.2 Northern Gulf of Maine TAC Setting

6.5.2.2.1 Alternative 1 - No Action

Under No Action only LAGC fishing is allowed in the Northern Gulf of Maine Management Area. The 120,000 lb TAC available to the LAGC fishery under Alternative 1 would be less than the TAC values in Alternative 2 and would likely result in less overall area swept on Jeffreys Ledge and in Ipswich Bay, as well as on Stellwagen Bank, depending on the closure alternative selected above. Therefore, although the Alternative 1 TAC continues fishing effort and degradation of habitat leading to low negative impacts on EFH in the NGOM, it could be expected to have a low positive impact on EFH in the NGOM relative to Alternative 2, which has a higher TAC.

6.5.2.2.2 Alternative 2 - Alternative 2 - Set 2020 and 2021 NGOM TAC, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (*Sub-Option 2 is Preferred Alternative*)

Alternative 2 would establish separate TACs and reporting requirements for both the LA and LAGC. The magnitude of impacts to EFH is expected to scale with the overall level of catch, regardless of which vessels harvest that catch. Therefore, the impacts of the allocation split (first 70,000 lb LAGC, remainder split between LA and LAGC) are expected to be negligible.

6.5.2.2.2.1 *Sub-Option 1 - F=0.18*

Setting the NGOM TAC at $F=0.18$ would result in an overall TAC of 310,000 lbs for FY 2020, which is likely to lead to more fishing and therefore greater impacts to EFH as compared to Alternative 1 (No Action). Relative to Sub-Option 2 ($F=0.20$), fishing at $F=0.18$ could be expected to result in less area swept and fewer impacts to EFH since the overall TAC would be lower, and fleet is expected to harvest nearly all of the TAC from Jeffreys Ledge and Ipswich Bay.

6.5.2.2.2.2 *Sub-Option 2 - F=0.20*

Setting the NGOM TAC at $F=0.20$ would result in an overall TAC of 350,000 lbs for FY 2020, which is expected to lead to more fishing and therefore greater impacts to EFH as compared to Alternative 1 (No

Action). Relative to Sub-Option 1 (F=0.18), fishing at F=0.20 could be expected to result in greater impacts to EFH since the overall TAC would be higher and would likely result in higher area swept.

6.5.3 Action 3 – Fishery Specifications & Trip Exchanges

These alternatives define specifications and trip exchanges for FY 2020 (default 2021).

6.5.3.1 Fishery Specifications (*Alternative 3 Sub-Option 2 is Preferred Alternative*)

The Council considered two rotational management alternatives in Framework 32 (Alternatives 2 and 3), with two options each for open area F values (2.1 and 3.1 vs. 2.2. and 3.2), for a total of five allocation options, including No Action. All four alternatives have a small closure in CAII to protect small scallops (i.e. CAII Southwest), and all four allow fishing in the northern part of the CAII access area. The difference is that Alternatives 2.1 and 2.2. leave the CAII extension open to fishing under DAS, and Alternatives 3.1 and 3.2 (preferred) close the extension. In addition, Alternatives 2.1 and 3.1 allocate 22 DAS, and Alternatives 2.2 and 3.2 allocate 24 DAS. See Table 63 for scenarios; note that a status quo scenario was evaluated for comparison to current management, which is different from the No Action/default allocations.

The tables and figures in this section are intended to support the Council’s evaluation of each alternative individually and compared to each of the other allocation options. Table 63 shows projections of landings, LPUE, and area swept by alternative, based on the SAMS model, while Table 64 provides a matrix of comparisons for the area swept values only. Figure 36 compares the area swept values for each alternative graphically out to 2034. Figure 37 and Figure 38 show area swept and landings/area swept ratio, respectively, for each FW32 alternative during the 2020 fishing year relative to values realized in the recent past. The landings/area swept ratio indicates the relative ‘habitat efficiency’ of fishing across the alternatives considered.

Overall the alternatives, including No Action, are similar in terms of swept area, but landings projections are substantially less under No Action, such that habitat efficiency of No Action is much lower. Thus, the remainder of this section will focus on comparisons between the action alternatives, i.e. Alternatives 2.1, 2.2., 3.1, and 3.2 (preferred). Comparing the 22 and 24 DAS options within Alternatives 2 and 3, scenarios with 24 DAS project greater landings due to the larger allocations of days, and as expected have higher area swept estimates and therefore more negative effects on EFH.

In general Alternatives 2 and 3 are fairly similar in terms of areas to which the fishery will have access, with the difference being that the CAII extension is open to DAS fishing under Alternative 2. However, given this difference, the area swept and landings projections do not show large variations between Alternatives 2 and 3. According to surveys, the CAII extension has high densities of scallops, and the SAMS model assumes that effort will flow into areas of high density. Concentrating more harvest in areas of high density reduces fishery swept area projections, because less fishing time will be required to harvest the same biomass. Alternatives 2.1 and 2.2, which keep the CAII extension open, have higher estimated landings and lower area swept relative to Alternative 3. Thus, Alternative 3 has negative impacts on EFH relative to Alternative 2.

In terms of comparing the impacts of Alternatives 2 and 3, the question is where effort will shift to under Alternatives 3.1 and 3.2 (preferred) with the CAII extension closed, and are those locations particularly vulnerable to the effects of fishing? The substrate throughout much of southeast Georges Bank, including CAII southeast, the Southern Flank, and Closed Area II Access, is predominately sandy, and estimated to be less vulnerable to fishing as compared to some other locations targeted by the fishery (bluer areas on Figure 34, which shows intrinsic vulnerability outputs of the Fishing Effects model). This Fishing Effects

model run uses scallop dredge-specific impact and recovery parameters, and uniform a distribution of fishing at median area swept levels. Certain locations on Georges Bank are relatively more vulnerable to median levels of dredging with scallop dredges (redder areas in Figure 34). These include CAI Access, CAII Extension, Great South Channel, and Northern Flank, which are potentially open to fishing during 2020, plus Closed Area II North, which is a long-term habitat closure that cannot be dredged. One possibility under Alternative 3 (extension closed) is that additional open area days will be fished in the Great South Channel or on the Northern Flank. The model suggests that these locations are similarly vulnerable to impact as compared to the CAII extension, and compared to CAI Access, although less vulnerable to impact than CAII North (Figure 35).

Scallop distribution (Figure 12), biomass (Table 25), and exploitable biomass (Table 26) for the Great South Channel suggests that the area will be an important fishing ground, as usual, during FY2020-2021. However, biomass and exploitable biomass values for the Northern Flank of Georges Bank are relatively low, such that effort on that part of the bank should be minimal in the coming fishing year. Given their similar levels of intrinsic vulnerability, fishing more intensively in both regions, given closure of the CAII extension, would likely lead to similar impacts to EFH for Alternative 3, including the preferred alternative 3.2., as compared to Alternative 2.

It is important to bear in mind that the CAII extension is not envisioned as a long-term closure, and all open areas will be fished in the coming years. Thus, any changes in overall effects of fishing on habitat resulting from the selection of Alternative 3 over Alternative 2 are expected to be relatively short in duration.

To summarize, among the action alternatives, impacts to EFH rank from least to greatest moving from Alternative 2.1 to Alternative 3.2 (preferred), given that similar areas are fished under all alternatives, and the increase in projected area swept from Alternative 2.1 to 3.2. However, the differences between these alternatives are not substantial.

Figure 34 – Spatial distribution of percent habitat disturbance on Georges Bank. Source: Fishing Effects Model.

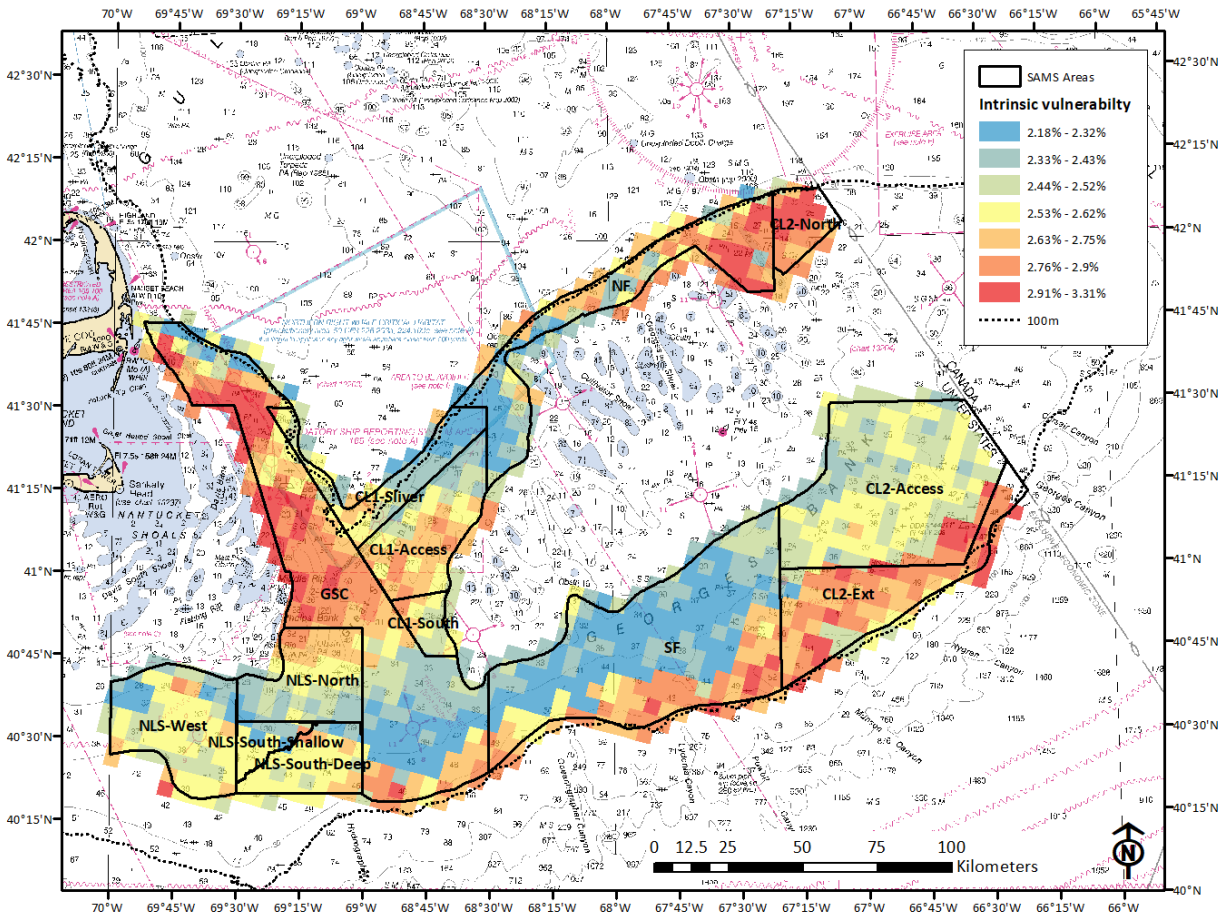


Figure 35 – Comparison of Intrinsic Habitat Vulnerability Among Selected SAMS Areas

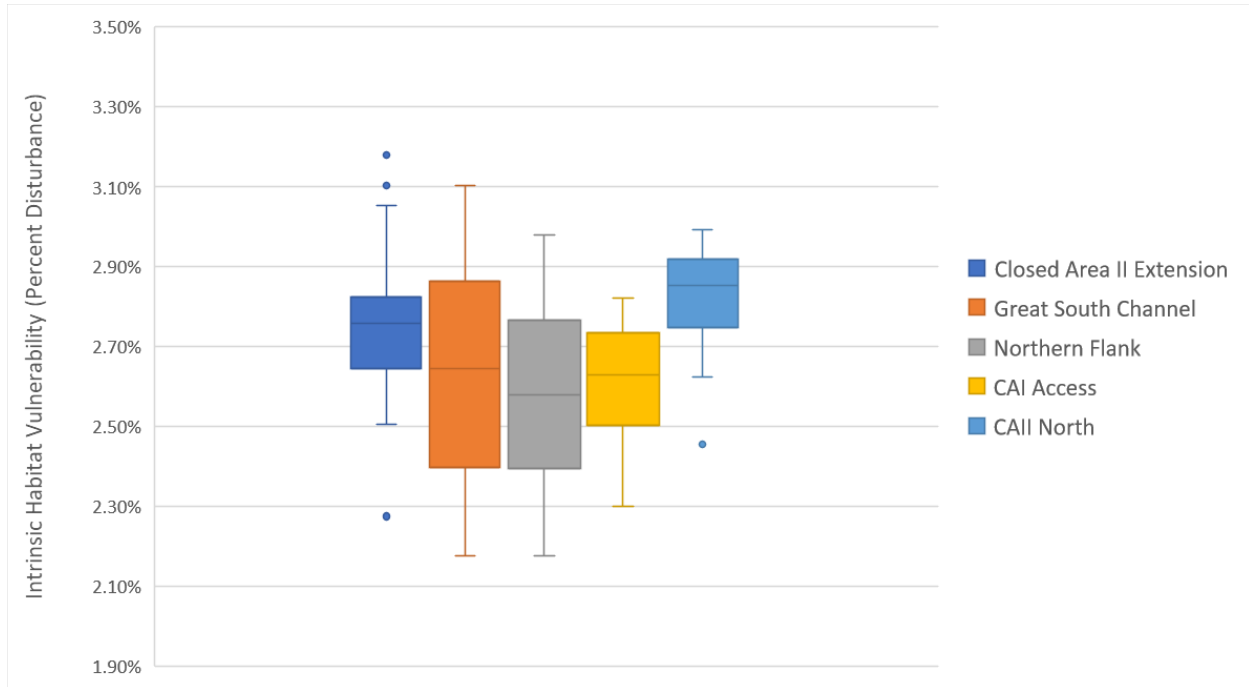


Table 63 - Summary of projected landings, overall LPUE, and bottom area swept for alternatives under consideration in FW32, plus a status quo scenario. Pref. indicates Council preference.

Section	Alternative Description	Projected Landings	LPUE Estimate	Estimate of Area Swept
4.3.1.1	No Action	27,593,057	2,659	2,832
4.3.1.2.1	CAII ext Open, 22 DAS	50,353,581	2,980	2,591
4.3.1.2.2	CAII ext Open, 24 DAS	52,046,731	2,956	2,790
4.3.1.3.1	CAII ext Closed, 22 DAS	49,972,181	2,957	2,803
4.3.1.3.2	CAII ext Closed, 24 DAS (pref.)	51,619,034	2,931	3,034
4.3.1.4	Status Quo	44,881,707	2,906	5,142

Table 64 - Comparison of area swept between each alternative in Framework 32. Alternatives are similar to one another but very distinct from status quo. Pref. indicates Council preference.

Section	Alternative	Section	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2	4.3.5
Section	Alternative	Area Swept (nm ²)	2832	2591	2790	2803	3034	5738
4.3.1.1	No Action	2832	0	241	42	29	-202	-2906
4.3.1.2.1	CAII ext Open 22 DAS	2591	-241	0	-199	-212	-443	-3147
4.3.1.2.2	CAII ext Open	2790	-42	199	0	-13	-244	-2948

	24 DAS							
4.3.1.3.1	CAII ext Closed 22 DAS	2803	-29	212	13	0	-231	-2935
4.3.1.3.2	CAII ext Closed 24 DAS (pref.)	3034	202	443	244	231	0	-2704
4.3.5	Status Quo	5738	2906	3147	2948	2935	2704	0

Figure 36 - Comparison of Bottom Area Swept estimates over the short and long term. Pref. indicates Council preference.

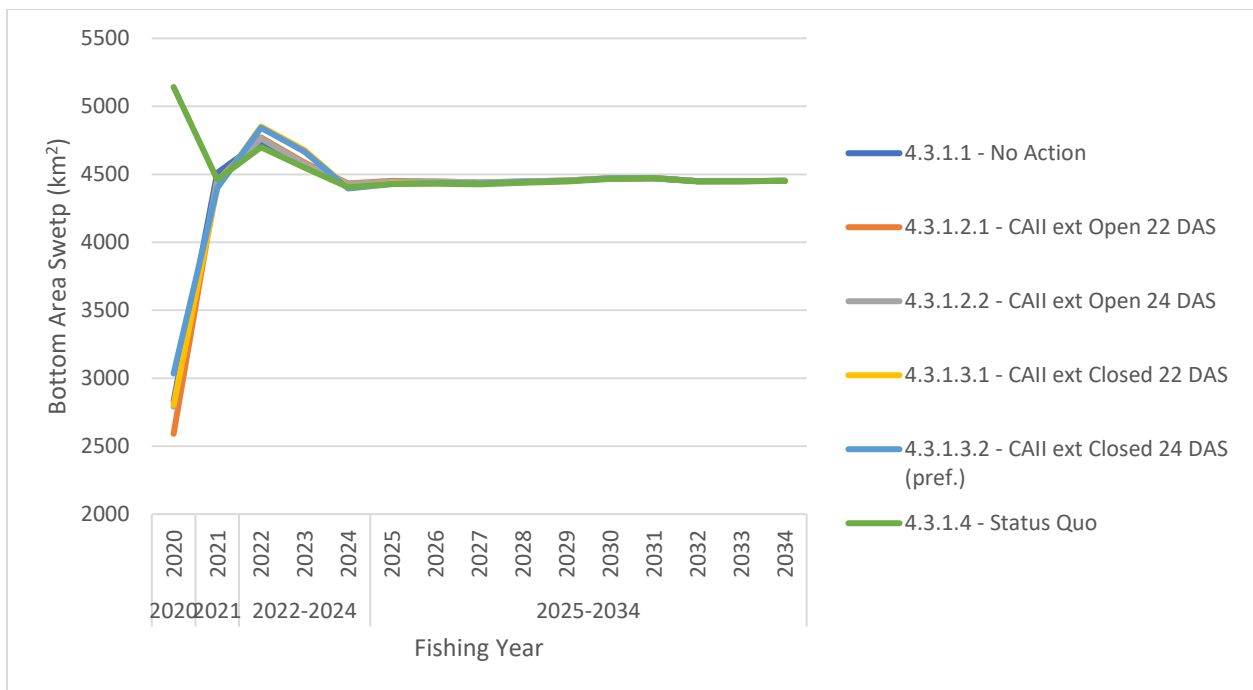


Figure 37 - Comparison of bottom area swept estimates (FW32 alternatives vs. estimates from recent Council actions). Pref. indicates Council preference.

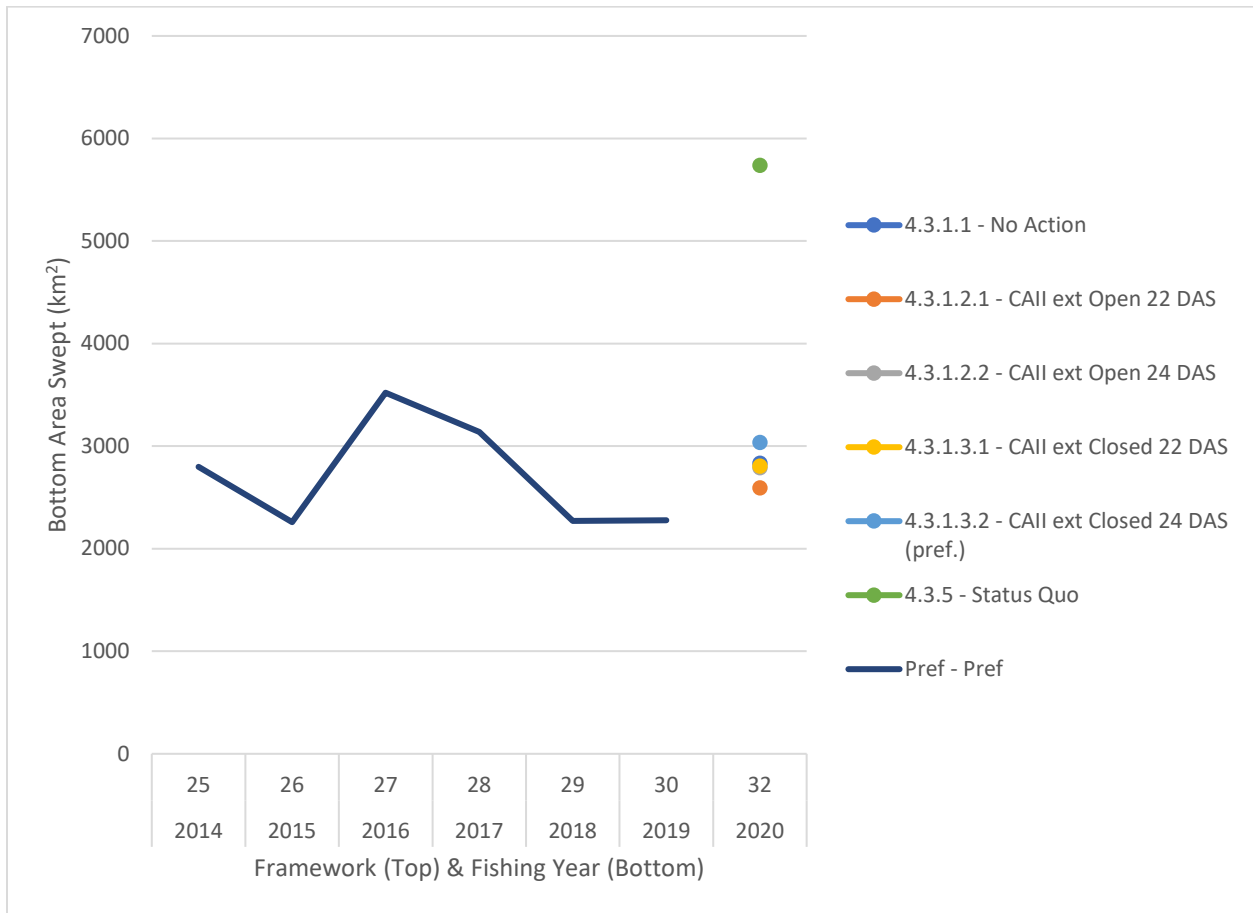
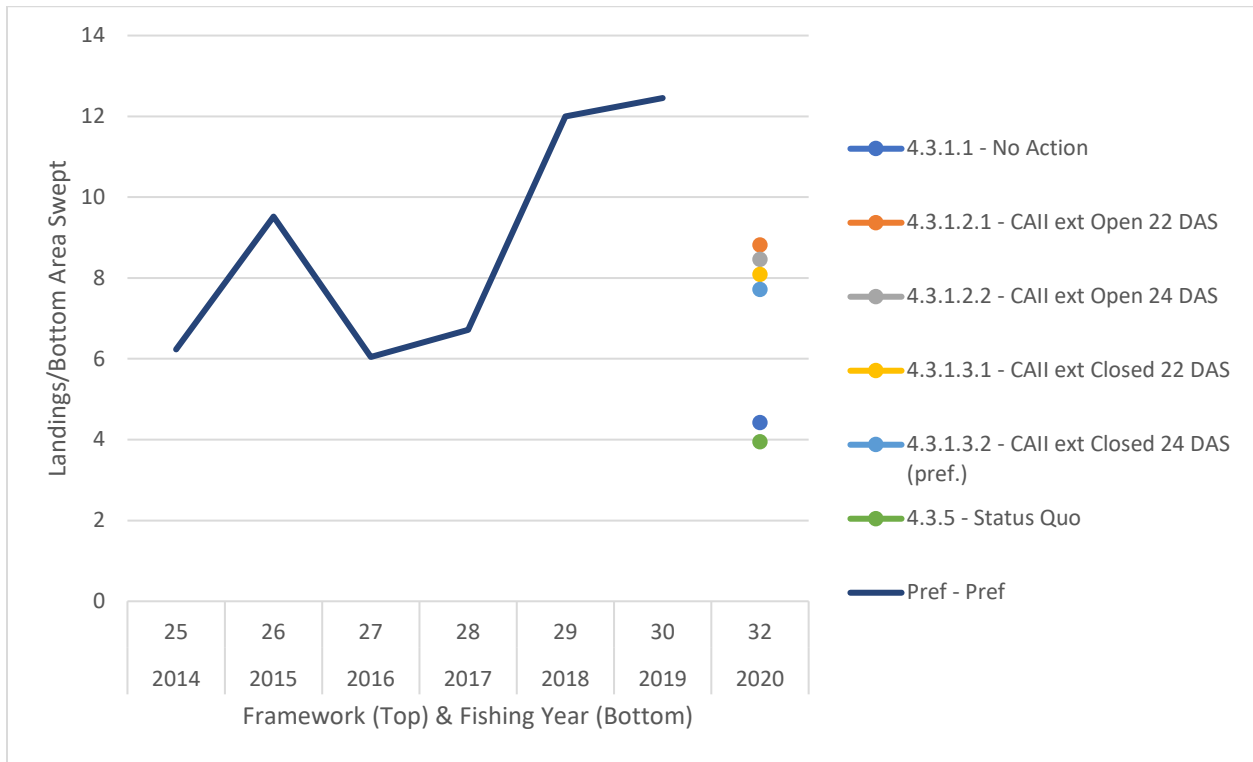


Figure 38 - Comparison of relative habitat efficiency of fishing (landings in mt divided by area swept in km²) for FW32 specification alternatives. The higher the ratio, the more habitat efficient an alternative is. Estimates from recent Council actions are shown for reference. Pref. indicates Council preference.



6.5.3.2 Full Time Limited Access Trip Exchanges (*Alternative 2 is Preferred Alternative*)

The Council is considering modifying current regulations governing FT LA trip exchanges. Both options under consideration (Alternatives 1 and 2) would not change overall allocations or expected landings from access areas. Since area swept estimates are based on projected LPUE in each access area, these trip exchange alternatives are not expected change overall fishery impact conclusions described above in the specifications section, and are administrative in nature since they will not, in and of themselves, have a direct impact non-target species. The alternatives are summarized below.

- Under Alternative 1, there would be no change to the current trip exchange regulations. This would mean that access area allocations could only be exchanged on a one-for-one basis at the increment of the possession limit (i.e. 18,000 pounds). Under this option, 9,000-pound trips in the NLS-North and CAI could not be exchanged.
- Alternative 2 would allow pound for pound exchanges to all areas in increments of 9,000 pounds (the lowest allocation in FW32). There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (12,000 lbs for part time).
- Alternative 3 would allocate a split trip to the NLS-North and CAI using a random, non-regional lottery system. Half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half of the FT LA fleet would receive one, 18,000-pound “flex” trip to CAI. CAI

“flex” allocation could be fished in either CAI or the MAAA. One-for-one trip exchanges would be permitted for all access area trips at increments of the possession limit (i.e. 18,000 pounds)

6.5.4 Action 4 - Access Area Trip Allocations to the LAGC IFQ Component (*Alternative 2 is Preferred Alternative*)

The LAGC IFQ fishery is allocated a fleet wide total number of access area trips. Individual vessels are not required to take trips in specific areas. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year. This action is considering two options for allocating fleet wide trips to the LAGC IFQ fishery and two options related to the maximum number of trips per area.

Alternative 1 (No Action) would use the default number of trips allocated in FW30 (571 total trips in MAAA starting on April 1, and 571 trips in NLS-West starting on April 1). Under Alternative 2, there would be 2,855 total access area trips allocated to the LAGC component. These trips would be distributed across the NLS-N (571 trips), CA-I (571 trips), the NLS-S-deep (571 trips), and MAAA (1,142 trips). Both the LA and LAGC fisheries have the same proportion of their allocations coming from open vs. access areas.

Since LAGC fishermen can choose whether to harvest their IFQ from access or open areas, options that afford greater flexibility to make this choice based on current fishery conditions are expected to have marginally lower impacts to EFH. This relies on the assumption that fishermen will opt to fish in areas that have more abundant or larger scallops whenever possible. Fishing more efficiently is expected to reduce gear/seabed contact and thus reduce impacts to EFH. Swept area estimates for access areas are generally lower than open areas. Thus, Alternative 2 has lower impacts to EFH as compared to Alternative 1.

6.5.5 Action 5 – Additional Measures to Reduce Fishery Impacts

6.5.5.1 RSA Compensation Fishing (*Alternative 2 is Preferred Alternative*)

There are two alternatives are under consideration related to RSA compensation fishing in access areas. Alternative 1 would prohibit vessels from fishing RSA compensation in access areas. Alternative 2 would allow vessels to fish an RSA compensation trips in only the Mid-Atlantic Access Area and the Northern Gulf of Maine management unit (up to the LA TAC). Vessels would not be able to fish RSA compensation pounds in the Closed Area II AA, Closed Area I AA, NLS-N AA, and NLS-S-deep AA, and only vessels receiving allocations of NGOM RSA compensation would be able to fish their awards in the NGOM management area. Vessels would be able to access high density areas in the Mid-Atlantic Access Area.

Overall impacts of either alternative are expected to be negligible since RSA compensation fishing is not a large contributor to overall fishing mortality. Adjusting the areas where RSA compensation trips can be fished is not likely to have a large influence on fishery impacts to EFH. Restrictions on RSA compensation fishing in the NGOM are to control mortality in the area and could be expected to have a slight positive impact on EFH in the NGOM.

Alternative 2 could be expected to have a low positive impact on EFH relative to Alternative 1 since it would enable vessels to direct fishing effort to areas with higher concentrations of animals, specifically in the Nantucket Lightship West and Mid-Atlantic Access Areas.

6.5.5.2 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

6.5.5.2.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the existing seasonal closure to protect flatfish in Closed Area II, which currently runs from August 15th – November 15th annually. Overall impacts of Alternative 1 are expected to be negligible since fishing CAII over a two week window in November is not a large contributor to overall fishing mortality. Adjusting the when the area can be fished is not likely to have a large influence on fishery impacts to EFH.

6.5.5.2.2 Alternative 2 - Alternative 2 – Extend Seasonal Closures of Closed Area II Access Area through November 30th in FY 2020 (*Preferred Alternative*)

Under Alternative 2, the closed season would be extended through November 30th. This may force effort in the access area into other seasons, but this is not expected to have a substantial impact on the magnitude of EFH impacts relative to Alternative 1. In this area, November 15-30 is not a period of especially high meat yields and fishing is generally avoided during this timeframe. Overall impacts of Alternative 2 are expected to be negligible since fishing CAII over a two week window in November is not a large contributor to overall fishing mortality. Adjusting the when the area can be fished is not likely to have a large influence on fishery impacts to EFH.

6.6 ECONOMIC AND SOCIAL IMPACTS

6.6.1 Economic Impacts

The following sections analyze the economic impacts of the management alternatives considered in Framework 32 and compare these with two baselines, No Action alternative and Status Quo scenario. The objective of the cost-benefit analysis is to evaluate the net economic benefits arising from changes in consumer and producer benefits that are expected to occur with implementation of a regulatory action. As the NMFS Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007)¹² state “the proper comparison is ‘with the action’ to ‘without the action’ rather than to ‘before and after the action,’ since certain changes may occur even without action and should not be attributed to the regulation.” The guidelines also state that “No Action alternative does not necessarily mean a continuation of the present situation, but instead is the most likely scenario for the future, in the absence of other alternative actions”¹³. Even without action, the scallop stock abundance in open and access areas will be different, and as a result, landings, scallop prices, fishing costs, revenues and benefits from the fishery would change compared to the present levels. The Status Quo scenario as projected in this Framework action reflects this reality and, in addition to the No Action alternative, is used as one of the baselines to assess economic impacts of the proposed measures especially for the purposes of E.O.12866.

¹² Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions, March 2007, http://www.nmfs.noaa.gov/sfa/domes_fish/EconomicGuidelines.pdf

¹³ Ibid, p.12

While NMFS 2007 guidelines indicate “The No Action alternative should be the basis of comparison for other alternatives”, it very often uses the terms “No Action” and “Status Quo” interchangeably¹⁴. The economic analyses presented in this section make a distinction in the definition of those terms, however, with “No Action” referring to a “regulatory” baseline and “Status Quo” referring to a state with no changes from the present allocations for open area DAS and access area trips. The definition of “No Action” here refers to the most likely future scenario absent action; i.e., the default measures that are specified in Framework 30 until the next Framework action is implemented.

However, default measures are temporary in nature and as such, allocations under those measures are usually set at considerably lower levels than the allocations either in the current (in 2019) or the projected allocations in the next fishing year (2020) to prevent fishing effort exceeding the sustainable levels due to the delays in the implementation of the proposed measures in next Framework Action. As a result, the projections for landings, revenues and economic benefits under the No Action alternative are considerably lower than the current levels and the levels that are expected under the proposed measures. Because of this, if economic benefits of the proposed alternatives were estimated using No Action as the baseline, the impacts on the economy would be overstated in the short-term compared to the present circumstances.

For these reasons, the economic analyses in this framework also include a Status Quo scenario (*SQ*) to provide an assessment of how landings, revenues and total economic benefits from the scallop fishery would change if the current regulations were continued in 2020 but taking into account the impacts of projected changes in the productivity and the spatial distribution of the scallop resource on landings, revenues and total economic benefits. From that perspective, *SQ* is a more realistic baseline to assess the impacts of the proposed measures on the economy from the perspective of E.O.12866.

As the Guidelines for Economic Analysis of Fishery Management Actions specify, “benefits and costs are measured from the perspective of the Nation, rather than from that of private firms or individuals. Benefits enjoyed by other nations are not included, although tax payments by foreign owners, and export revenues, are benefits to the Nation.”

Because fishery management actions in general result in short-term costs for the industry in terms of foregone revenue, “choosing a period of analysis that is too short may bias the analysis toward costs, where costs are incurred in the short-term and benefits are realized later.” Similarly, the Office of Management and Budget (OMB, 2003) indicated that the analyses should “present the annual time stream of benefits and costs expected to result from the rule,” and state that “the beginning point for your stream of estimates should be the year in which the final rule will begin to have effects” and “the ending point should be far enough in the future to encompass all the significant benefits and costs likely to result from the rule.”¹⁵ For these reasons, guidelines indicate that “a reasonable attempt should be made to conduct the analysis over a sufficient period of time to allow a consideration of all expected effects.”

Furthermore, the economic impacts of the proposed regulations over the long-term should be evaluated by the discounted cumulative present value of the stream of benefits since benefits or costs that occur sooner are generally more valuable (or have a positive time preference). Discount rate is the interest rate used in calculating the present value of expected yearly benefits and costs.

This section examines the economic impacts of the proposed regulations in Framework 32. Although Framework 32 is a one-year action, it will have impacts on the future yield from scallop resources, on

¹⁴For example, see p. 15 of 2007 NMFS guidelines: “For economic analysis of regulatory actions, changes in net benefits are measured by the difference in the present value of the discounted stream of net benefits of regulatory action, as compared to the status quo. In this context, a positive result means that the net present value of the regulatory action exceeds that of the status quo.”

¹⁵ OMB Circular A-4 (September 17, 2003), http://www.whitehouse.gov/omb/circulars_a004_a-4/

scallop revenues and total economic benefits. The short- and the long-term economic impacts of the specification alternatives are analyzed in Section 6.6.1.3. The present value of long-term benefit and costs of the specification alternatives are estimated using both a 3% and a 7% discount rate. The higher discount rate (7%) provides a more conservative estimate and a lower bound for the economic benefits of alternatives compared with the benefits predicted using a lower discount rate (3%).

6.6.1.1 Action 1 - Overfishing Limit and Acceptable Biological Catch

6.6.1.1.1 Alternative 1 – No Action for OFL and ABC

The MSA requires the SSC to set an acceptable biological catch (ABC), or maximum catch level that can be removed from the resource taking into account all sources of biological uncertainty. The Council is prohibited from setting catch limits above that level. 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 ABC. This should help prevent overfishing and optimize yield on a continuous basis.

Under No Action, the ABC for FY 2020 (after discards are removed, 46,028 mt.) would remain unchanged from the default set through Framework 30 and be about 1% higher than the ABC under Alternative 2 (45,414 mt.). There would be no ABC set for FY2021.

The economic impacts of Alternative 1 are likely negligible to low negative. Since the ABC under No Action and Alternative 2 are very similar and are not expected to constrain the fishery, the impacts of the No Action ABC on economic benefits for FY2020 is likely to be negligible compared to Alternative 2. However, since Alternative 1 would not set a default OFL or ABC for FY 2021, the start of FY 2021 could be delayed (from April 1, 2021) if there is a delay in setting specifications next year. Therefore, the overall short-term impacts of Alternative 1 are likely to be negative compared to Alternative 2. In the long term, Alternative 1 is likely to have low negative stock benefits (Section 6.2.1.1). If this leads to more restrictive regulations, the potential impacts of the “No Action” ABC on economic benefits are negative.

6.6.1.1.2 Alternative 2– Updated OFL and ABC for FY 2020 and FY 2021 (Default) (Preferred Alternative)

Alternative 2 would specify OFL and ABC for FY 2020 and FY 2021 and set default values for FY 2021 based on SSC recommendations (in October 2019). The ABC (45,414 mt after discards are removed) for FY2020 would be about 1% lower than the default ABC under No Action. The OFL and ABC values in recent years are driven by the growth of large year classes the Nantucket Lightship area and the Mid-Atlantic Access Area, which were considered exceptional when they were first observed.

The economic impacts of Alternative 2 are likely negligible to low positive. Since the ABC under No Action and Alternative 2 are very similar and are not expected to constrain the fishery, the impacts of the Alternative 2 ABC on economic benefits for FY2020 is likely to be negligible relative to No Action. Since Alternative 2 would set a default OFL or ABC for FY 2021, the start of FY2021 would not be delayed (from April 1, 2021) if there is a delay in setting specifications next year. Therefore, the overall short-term impacts of Alternative 2 are likely to be positive compared to No Action. Overall, using these estimates to set fishery specifications should have positive economic impacts over the long-term because the ABC values were determined based on the recent surveys and best available science to prevent overfishing and optimize yield from the of the scallop resource. If this leads to less restrictive regulations, there may be positive long-term economic impacts.

6.6.1.2 Action 2 - Northern Gulf of Maine Management Measures

6.6.1.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

6.6.1.2.1.1 Alternative 1 - No Action

Under Alternative 1, LAGC and LA vessels would be able to fish Stellwagen Bank in fishing year 2020. There would be no change to the overall NGOM TAC, just changes to where scallop fishing can occur. The 2019 dredge survey of this area detected high densities of scallop small scallops that were mixed with larger animals that were targeted by the fishery during the 2019 season. The scallops on Stellwagen are expected to be some of the largest in the management area and would likely be targeted by fishermen first under the option. These animals are mixed with high densities of recruits. While the smaller animals have not recruited to the 4" ring, directed scallop fishing for larger scallops on Stellwagen Bank could be expected to result in discard and incidental mortality of smaller animals. Since recruitment events in the Gulf of Maine region have been episodic over several decades, not protecting this recruitment event could have low negative economic impacts on this portion of the fishery over the long term.

6.6.1.2.1.2 Alternative 2- Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (Preferred Alternative)

Alternative 2 would close part of Stellwagen Bank north of 42°20'N to directed scallop fishing in the NGOM Management Area for two years to protect small scallops that were observed in 2019 dredge surveys of this area. The closure would cover roughly 71 square miles on Stellwagen Bank and would protect a substantial number of small scallops that have not recruited into the fishery.

Stellwagen Bank has supported directed scallop fishing in the Northern Gulf of Maine Management Area for the last four fishing years (FY 2016 – FY 2019). While the 2019 surveys detected high densities of scallop small scallops, the survey also detected larger animals that were targeted by the fishery in 2019. The directed scallop fishing could be expected to north and west of the closure boundaries.

Alternative 2 would have low positive economic impacts relative to No Action as the closure is expected to improve yield-per-recruit, and lead to higher landings in the future.

6.6.1.2.2 Northern Gulf of Maine TAC Setting

The LAGC share is calculated by applying the first 70,000 pounds to LAGC TAC, and then splitting the remaining pounds 50/50 between the LAGC and LA component (Table 65). Under both Alternative 1 and Alternative 2, the LAGC and LA (RSA) shares would operate under separate TACs (Table 66).

Table 65. Northern Gulf of Maine TAC Setting for FY 2020 and FY2021 (TAC in pounds)

Alternative in FW32	F _{TARGET}	FY2020 TAC	FY2021 TAC (default)
A1 (No Action)		170,000	
A2, Sub1	F=0.18	310,000	240,000
A2, Sub2	F=0.20	350,000	265,000

Table 66. Northern Gulf of Maine TAC Setting for LAGC and LA/RSA in FY2020

FW 32 Alternative	FW 32 Section	F rate	2020 TAC (lbs.)	LA/RSA Share (lbs.)	LAGC Share (lbs.)
A1 (No Action)	4.2.2.1		170,00	50,000	120,000
A2, Sub-Option 1	4.2.2.2.1	0.18	310,000	120,000	190,000
A2, Sub-Option 2	4.2.2.2.2	0.20	350,000	140,000	210,000

6.6.1.2.2.1 Alternative 1 - No Action

The total NGOM hard TAC would be set at 170,000 pounds, which is based on fishing Ipswich Bay, Stellwagen Bank, and Jeffreys Ledge portions of the management area at a F=0.20 in FY 2020 and FY 2021. The overall TAC would be split between the LA and LAGC, with 50,000 pounds available to support RSA compensation fishing (LA share), and 120,000 pounds available for harvest by the LAGC component. The area would open on April 1, 2020 with no change to the current management program.

Estimated scallop revenue for the LAGC NGOM fleet would be about \$1.15 million under this alternative using an estimated price of \$9.59 per pound and assuming landings will be equivalent to 120,000 pounds. Fishing costs are estimated to be about \$0.31 million and net revenue would be about \$0.84 million for the LAGC NGOM fleet¹⁶ (Table 67).

No Action (Alternative 1) could have some negative economic impacts on the overall NGOM portion of the fishery compared to Alternative 2. This alternative would result in lower revenues relative to Alternative 2.

¹⁶ Scallop revenue and cost estimates are based on the following assumptions and data. The assumed price per pound of scallops, \$9.59, is roughly equivalent to the average estimated price (in 2019 dollars) for all market categories of scallops. Trip costs estimates are based on cost function estimated using observer data for 1991-2019 and corresponds to estimated fuel, oil, water, food, ice, supply costs per trip for the NGOM fishery. Trip costs that were initially estimated in 2018 dollars were later adjusted by cost inflation to estimate costs in terms of 2019 dollars. Note that the observed trip costs in FY2018 has increased by about 12.78 percent compared to the trip cost estimates in FY2017. This cost inflation rate was taken into consideration while estimating the trip costs (in 2019 dollars) in FR32 economic analysis. Total DAS for the NGOM fleet was estimated by dividing TAC with the 200 lb. possession limit.

Table 67. NGOM TAC, Scallop revenue and costs under Alternative 1, No Action (Monetary values are in 2019 dollars)

Data and Values	Estimated values for 2020
Overall TAC (lbs.)	170,000
LA (RSA) TAC	50,000
LAGC (NGOM) TAC	120,000
Economic Impacts on the LAGC (NGOM) share:	
• Estimated LAGC scallop revenue	\$1,150,800
• DAS	600
• Trip costs (\$514.91/DAS)	\$308,946
• Net revenue	\$841,854

6.6.1.2.2.2 Alternative 2 – Set 2020 and 2021 NGOM TAC, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (Sub-Option 2 is Preferred Alternative)

Alternative 2 would allow a higher amount of scallop landings to occur in the NGOM area relative to the No Action (Alternative 1) by setting the overall 2020 TAC either at 310,000 lb. under Sub-Option 1 (F=0.18) or 350,000 lb. under Sub-Option 2 (F=0.20). The TAC would be higher in 2021 as well, at either 240,000 lb. under Sub-Option 1 (F=0.18) or 265,000 lb. under Sub-Option 2 (F=0.20) (See Table 68).

Table 68. Economic Impacts of Potential NGOM TAC for LA (RSA) and LAGC (monetary values are in 2019 dollars)

Data and Values	FY2020		FY2021 (Default)	
	ALT2	ALT 2	ALT 2	ALT 2
	Sub-option 1	Sub-option 2	Sub-option 1	Sub-option 2
	(F=0.18)	(F=0.20)	(F=0.18)	(F=0.20)
LA/RSA share - scallop pounds	120000	140000	85000	97500
LAGC share - scallop pounds	190000	210000	155000	167500
Total Pounds	310000	350000	240000	265000
Estimated LA RSA value				
Impacts on the LAGC NGOM:				
• Estimated LAGC scallop revenue	\$1,822,100	\$2,013,900	\$1,486,450	\$1,606,325
• DAS	950	1050	775	838
• Trip costs (\$514.91 per DAS)	\$489,165	\$540,656	\$399,055	\$431,495
• Net revenue	\$1,332,935	\$1,473,244	\$1,087,395	\$1,174,830
• Net revenue net of No Action	\$491,081	\$631,390	\$245,541	\$332,976

Alternative 2, Sub-Option 1 would result in a higher TAC (190,000 lbs.) for the LAGC component compared to Alternative 1 – No Action (120,000 lbs.) for the 2020 fishing year and is expected to have an estimated revenue of \$1,822,100. Net revenue for Sub-Option 1 would be around \$1,332,935, which is \$491,081 higher than No Action. Gross and net revenue estimates for the 2020 fishing year are calculated using a price estimate of \$9.59 per pound (in 2019\$).¹⁷

Alternative 2 sub-option 2 yields the highest net revenue estimated at \$1,473,244 in FY2020. The net benefit (net of No Action) for this sub-option is estimated to be \$631,390 which is higher than the sub-option 1 by \$140,309. Therefore, under Alternative 2 sub-option 2 scallop revenues and economic benefits for the NGOM fishery would be higher compared to sub-option 2 and the No Action.

Separate caps on the LAGC and LA components are expected to reduce the negative impacts associated with derby-style fishing between LAGC and LA vessels and result in positive economic benefits of the participants of the LAGC NGOM fishery. The LA share of the NGOM TAC would be available for RSA compensation fishing only to support research projects in the NGOM, but not in addition to the 1.25 million pounds set-aside for the RSA program. When more research takes place in this area, it will help to increase understanding of removals from the NGOM management area. This, in turn, will lead better management of the NGOM resource with positive economic impacts over the long-term on both LAGC and LA vessels.

¹⁷ These estimates will be replaced by the estimated prices for the preferred specification alternative in 2020 and 2021 after Council's vote in December.

6.6.1.3 Action 3 - Economic impacts of the proposed specification alternatives

Open area DAS and access area trip allocations are updated based on the recent estimates for the overfishing limit and acceptable biological catch. Alternatives considered in Framework 32 are described below for a full-time limited access vessel. No Action corresponds to the default measures in Framework 30 and Status Quo “Status Quo” refers to a state with no changes from the present allocations in Framework 30 for open area DAS and access area trips.

Table 69. Summary of Specification alternatives under consideration in FW 32.

FW32 Alternative	Description	Run	Sum of FTDAS
4.3.1.1	No Action	NA	18
4.3.1.2.1	CAII ext Open 22 DAS	xop22	22
4.3.1.2.2	CAII ext Open 24 DAS	xop24	24
4.3.1.3.1	CAII ext Closed 22 DAS	xcl22	22
4.3.1.3.2 (preferred)	CAII ext Closed 24 DAS (preferred alternative)	xcl24	24
4.3.1.4	Status Quo	SQ	18

6.6.1.3.1 Summary of economic impacts

Short-term (FY2020) impacts (Table 70):

- In the short run, the specification alternative in Section 4.3.1.2.2 (xop24) that allocates 24 DAS for full-time limited access vessels and gives access to CAII extension area has the highest landings, revenues and total economic benefits in 2020.
- Total revenues under the economically highest-ranking specification alternative in Section 4.3.1.2.2 (xop24) is estimated to exceed the status quo (SQ) scenario by \$54.7 million in 2020. Except in “No Action (NA)” alternative (Section 4.3.1.1), revenues for all specification alternatives are higher compared to the SQ alternative. They range from a little over \$436 mil under Alternative 4 in Section 4.3.1.4 (SQ) to a little over \$491 million for Alternative 2 Sub-Option 2 in Section 4.3.1.2.2 (xop24). Revenue difference from SQ ranges from about \$38.7 million higher revenue under Alternative 3 Sub-Option 2 in Section 4.3.1.3.1 (xcl22) and by \$54.7 million higher under Alternative 2 Sub-Option 2 in Section 4.3.1.2.2 (xop24).
- Total economic benefits (a sum of producer and consumer surpluses) under all alternatives except NA are estimated to be over \$374 million in 2020. It is highest for the alternative in Section 4.3.1.2.2 (xop24) at about \$432 mil and least for the SQ alternative in Section 4.3.1.4 at \$374 million. Total economic benefits net of SQ values are estimated to be about \$58 million with the alternative in Section 4.3.1.2.2 (xop24). It would be higher under other options as well compared to SQ levels, i.e., the total economic benefits net of SQ are about \$54 million, \$46 million and \$42 million with the alternatives in Section 4.3.1.3.2 (xcl24), Section 4.3.1.2.1 (xop22) and Section 4.3.1.3.1 (xcl22), respectively.
- The preferred specifications alternative (Section 4.3.1.3.2) is expected to have higher revenues (by \$50.7 million) and consumer and producer surpluses in 2020 compared to the Status Quo scenario. Total economic benefits for the preferred alternative are expected to be higher by \$53.7 million compared to SQ, thus, having positive impacts on the overall economy (Table 70). The

preferred alternative (Section 4.3.1.3.2) would rank second after the highest ranking alternative (Section 4.3.1.2.2) in terms of total scallop revenues, producer and consumer surpluses, and net economic benefits, however, the differences are small.

- It is important to note that actual values of prices, revenues and total economic benefits, however, will differ from these estimates depending on the actual landings, size composition of landings, and values of variables that effect prices including import prices, disposable income of consumers and imports of scallops from countries such as Canada and Japan that are a close substitute for the large domestic scallops. When estimating prices, it was assumed that the values of these variables will not change from the current levels and that actual landings will equal to the projected landings from the biological model. For these reasons, the numbers provided in the Tables should be mainly used to compare one alternative with another rather than to predict future values.

Table 70 - Economic Impacts for 2020: Estimated landings (Mill.lb.), revenue and economic benefits (Mill. \$, in 2019 dollars), and price (in 2019\$/lb)

	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	SQ
Landings mil lbs	27.6	50.4	52.0	50.0	51.6	44.9
Price	\$10.15	\$9.51	\$9.44	\$9.51	\$9.44	\$9.73
Revenue	\$280.1	\$479.0	\$491.4	\$475.4	\$487.4	\$436.7
Revenue Difference from SQ	-\$156.6	\$42.3	\$54.7	\$38.7	\$50.7	\$0.0
Producer Surplus	\$201.7	\$378.5	\$388.5	\$374.9	\$384.5	\$341.1
Consumer Surplus	\$9.2	\$41.0	\$43.3	\$40.8	\$43.1	\$32.8
Total Benefits	\$210.9	\$419.5	\$431.8	\$415.7	\$427.6	\$374.0
Total Benefits Difference from SQ	-\$163.1	\$45.5	\$57.8	\$41.8	\$53.7	\$0
Rank	6	3	1	4	2	5

Long-term impacts– 2020 to 2034

- The results are expected to be similar over the long-term and the differences in economic benefits of various specification alternatives would be small both in the short- (Table 70) and long-term (Table 71 and Table 72). Except for Alternative 1 (No Action), the maximum difference in net economic benefit after SQ is \$16 million between the highest and lowest ranking specification alternatives in the short run, but \$13.48 million in the long run. The Council's preferred alternative is expected to result in higher revenues and economic benefits compares to No Action and Status Quo over the long run.
- The ranking of alternatives in Section 4.3.1.2.2 (xop24) and Section 4.3.1.3.1 (xcl22) remain the same (rank 1st and 4th, respectively) both in the short- and long term. However, the alternative in Section 4.3.1.2.1 (xop22) that ranked 2nd in the short run ranks to 3rd in the long term, and the

preferred alternative in Section 4.3.1.3.2 (xcl24) that ranked 3rd in the short run ranks 2nd in the long term.

- Present value of the cumulative economic benefits net of SQ would be higher for all the specification alternatives and No Action whether the long-term benefits are discounted at 7% or 3% .
- Present value of the estimated total revenues net of SQ values would range from \$23.26 million for the alternative in Section 4.3.1.3.1 (xcl22) to \$36.91 million for the alternative in Section 4.3.1.2.2 (xop24) at 3% discount rate.
- Present value of the cumulative net economic benefits would range from \$21.47 million for the alternative in Section 4.3.1.3.1 (xcl22) to \$34.95 million for the alternative in Section 4.3.1.2.2 (xop24) using a discount rate of 3%.
- A higher discount rate at 7%, do not alter the rank of alternatives although the cumulative present value of revenues and total economic benefits would be lower due to the discounting the long-term benefits at a higher rate.
- Higher revenues and economic benefits expected from specifications alternatives with the CAII-ext open (Section 4.3.1.2) compared to specifications alternatives with the CAII-ext closed (Section 4.3.1.3). The increase in revenues and economic benefits can be attributed to opening of CAII extension at various DAS allocations.

Table 71 - Long-term Economic Impacts (2020-2034): Cumulative present value of revenues, producer surplus and total economic benefits net of Status quo values (million \$ in 2019 dollars, 7% Discount rate)

	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	SQ
Landings mil lbs	1011.89	1020.12	1020.45	1019.35	1019.60	1016.54
Price \$/lb	8.79	8.78	8.78	8.78	8.78	8.79
Revenue	\$5700.59	\$5830.93	\$5835.80	\$5820.41	\$5824.75	\$5797.17
Revenue Difference from SQ	-96.58	33.76	38.63	23.24	27.58	0.00
Producer Surplus	4517.85	4635.48	4639.21	4626.05	4629.27	4605.26
Consumer Surplus	694.43	687.14	686.94	684.74	684.43	683.82
Total Benefits	5212.28	5322.63	5326.15	5310.79	5313.71	5289.09
Total Benefits Difference from SQ	-76.81	33.54	37.06	21.70	24.62	0.00
Rank	6	2	1	4	3	5

Table 72 – Long-term Economic Impacts (2020-2034): Cumulative present value of revenues, producer surplus and total economic benefits net of Status quo values (million \$ in 2019 dollars, 3% Discount rate).

	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	SQ
Landings mil lbs	1,011.89	1,020.12	1,020.45	1,019.35	1,019.60	1,016.54
Price \$/lb	\$8.79	\$8.78	\$8.78	\$8.78	\$8.78	\$8.79
Revenue	\$7,217	\$7,340	\$7,345	\$7,331	\$7,335	\$7,308
Revenue Difference from SQ	-\$90.67	\$32.64	\$36.91	\$23.26	\$26.98	\$0.00
Producer Surplus	\$5,725	\$5,836	\$5,839	\$5,828	\$5,830	\$5,807
Consumer Surplus	\$868.73	\$857.69	\$857.29	\$855.52	\$855.00	\$854.84
Total Benefits	\$6,593	\$6,694	\$6,697	\$6,683	\$6,685	\$6,662
Total Benefits Difference from SQ	-\$68.40	\$32.13	\$34.95	\$21.47	\$23.68	\$0.00
Rank	6	2	1	4	3	5

The results of these analyses should be interpreted with caution and should be used solely to compare one alternative with another rather than to predict future values. The costs and the benefits of the alternatives were analyzed based on the biological projections of landings, DAS and LPUE and the available information about the vessel costs and characteristics and price model. Actual value of landings, size composition and other biological variables are likely to be different, at least to some extent, than the projected values due to scientific and management uncertainties. Price projections are derived from the price model that estimated the impact of landings and size composition on prices after taking into account the impact of exogenous variables including the import prices, per capita disposable income and scallop imports from Japan and Canada as a proxy of changes in international markets for large scallops. Future price projections hold all the exogenous explanatory variables constant in order to estimate the economic impacts of alternative management measures on landings, scallop size composition, LPUE and effort. Actual prices will be different than estimated depending on the differences in actual landings and in size composition from projected values as well as due to changes inflation, consumer demand, price, composition of imports, etc.

6.6.1.3.2 LAGC IFQ allocations

LAGC IFQ fishery is allocated 5.5% of the annual projected landings (APL), those with IFQ permits receiving 5% and those with both IFQ and LA permits receiving 0.5% of the total APL. Under No Action (Section 4.3.1.1), allocations would be equivalent to FW30 default measures for FY 2020, meaning the overall LAGC IFQ allocation would be 631 mt (or 1,391,069 pounds). Under Alternative 1 (No Action, default measures), LAGC IFQ vessels would also have access in the Mid-Atlantic Access Area and Nantucket Lightship West on April 1, 2020, with a fleet wide maximum of 571 trips from each the area.

Table 73. Impacts of the LAGC IFQ TAC for 2020 fishing year

Section	Description	Run	LAGC IFQ Share (pounds)	LAGC IFQ Share (mt)	Revenue (2019 \$ mil)	Percent change in revenue relative to SQ
4.3.1.1	No Action	NA	1,391,069	631	\$14.1	-37.13%
4.3.1.2.1	CAII ext Open 22 DAS	xop22	2,642,897	1,199	\$25.1	11.91%
4.3.1.2.2	CAII ext Open 24 DAS	xop24	2,736,021	1,241	\$25.8	15.00%
4.3.1.3.1	CAII ext Closed 22 DAS	xcl22	2,621,921	1,190	\$24.9	11.02%
4.3.1.3.2	CAII ext Closed 24 DAS (pref)	xcl24	2,712,497	1,231	\$25.6	14.01%
4.3.1.4	Status Quo	SQ	2,341,944	1,063	\$22.5	0.00%

Table 73 presents the LAGC IFQ share (5.5% of APL) and estimated revenues for all specification alternatives including SQ and NA options. LAGC IFQ share for the SQ alternative is 2,341,944 pounds. The share for the specification alternatives ranges from 2,621,921 pounds in Alternative 4.3.1.3.1 (xcl22) to a high of 2,736,021 pounds in Alternative 4.3.1.2.2 (xop24). Alternative 4.3.1.4 is the Status Quo scenario for comparison purposes of the relative economic benefits. Under this scenario, allocations for the LAGC IFQ fishery would be set at the same level as in FW30, at 2,341,944 lbs. Alternative 4.3.1.2.2 (xop24) has the highest LAGC IFQ allocation, at 2,736,021 pounds with an expected revenue of \$25.8 million (in 2019 dollars). The differences in revenue with SQ across alternatives range from about \$2.4 to \$3.3 million. The highest-ranking option in terms of revenue is Alternative 4.3.1.2.2 (xop24), with 15 percent more revenue than what is expected for the LAGC IFQ allocation under Status Quo. The Council's preferred alternative (xcl24) could be expected to result in higher landings and revenues for the LAGC IFQ component relative to all alternatives under consideration in FW32, with the exception of one (xop24).

6.6.1.3.3 Landings and size composition

Projected landings under all specifications alternatives (except for No Action) range from roughly 44 million to 52 million pounds in FY 2020. While projections suggest that landings could reach close to 80 million pounds in FY 2022 to FY2024 (Table 74), the Council plans to revisit its rotational management strategy again next year using different assumptions. However, over the long-term (FY 2025 to FY2034), the projected landings for each specifications alternative (including No Action) are expected to stabilize around 66 million pounds.

The short- and long-term projected landings of U10s are shown in Table 75 and the proportion of projected landings that are U10s are shown in Table 77. Under the specifications alternatives being considered in this action (except for No Action), the proportion of overall landings that are U10s is

estimated to vary from 16.83% to 17.65% in 2020 and is anticipated to stabilize around 14% in the long-term (FY 2025 to FY 2034).

Table 74. Estimated landings (Million lb., Average per fishing year)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	27.59	50.35	52.05	49.97	51.62	44.88
2021	80.02	73.26	72.61	68.71	68.06	75.19
2022-24	79.14	77.34	77.13	78.72	78.51	77.05
2025-34	66.68	66.45	66.44	66.45	66.44	66.53

Table 75. Projected landings of U10 scallops per year (Mill.lb.)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	2.89	8.66	8.76	8.82	8.93	7.8
2021	17.24	13.99	13.91	13.91	13.82	15.1
2022-24	13.03	11.85	11.82	11.75	11.71	11.76
2025-34	9.66	9.54	9.53	9.53	9.53	9.57

Table 76. Historical landings of scallops by size category (in pounds)

FISHYEAR	'U10'_landing	'U1120'_landing	'U2130'_landing	U31+ landing	'UNK'_landing	Grand Total
2009	8,426,450	35,799,075	12,193,737	172,283	1,327,049	57,918,594
2010	8,770,955	36,052,201	10,831,759	63,244	939,048	56,657,207
2011	8,543,436	45,260,311	3,256,836	306,256	1,339,491	58,706,330
2012	10,485,521	41,587,639	3,486,843	63,484	1,234,715	56,858,202
2013	8,666,779	24,780,078	5,564,030	125,631	1,076,312	40,212,830
2014	8,046,766	19,084,369	4,079,070	286,378	873,788	32,370,371
2015	6,115,533	21,138,141	7,719,681	170,252	772,211	35,915,818
2016	4,720,193	18,774,077	14,691,792	2,202,112	1,141,890	41,530,064
2017	10,186,798	29,399,041	12,655,069	388,708	979,780	53,609,396
2018	10,857,391	41,363,933	6,929,958	65,768	875,675	60,092,725

Table 77. Biological projections - Percentage share of U10 scallops in total landings

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)
Fish Years	NA	xop22	xop24	xcl22	xcl24
2020	10.47%	17.20%	16.83%	17.65%	17.30%
2021	21.54%	19.10%	19.16%	20.24%	20.31%
2022-24	16.46%	15.32%	15.32%	14.93%	14.92%
2025-34	14.49%	14.36%	14.34%	14.34%	14.34%

Table 78. Historical data: Percentage composition of scallop landings by size categories

FISHYEAR	'U10'_landing	'U1120'_landing	'U2130'_landing	U31+ landing	'UNK'_landing
2009	14.55%	61.81%	21.05%	0.30%	2.29%
2010	15.48%	63.63%	19.12%	0.11%	1.66%
2011	14.55%	77.10%	5.55%	0.52%	2.28%
2012	18.44%	73.14%	6.13%	0.11%	2.17%
2013	21.55%	61.62%	13.84%	0.31%	2.68%
2014	24.86%	58.96%	12.60%	0.88%	2.70%
2015	17.03%	58.85%	21.49%	0.47%	2.15%
2016	11.37%	45.21%	35.38%	5.30%	2.75%
2017	19.00%	54.84%	23.61%	0.73%	1.83%
2018	18.07%	68.83%	11.53%	0.11%	1.46%

Table 79. Scallop landings pounds per DAS (LPUE)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	2659	2980	2956	2957	2931	2906
2021	2867	2774	2768	2764	2758	2798
2022-24	2940	2916	2916	2917	2918	2912
2025-34	2945	2943	2943	2943	2944	2944

6.6.1.3.4 Prices and Revenue

Prices are estimated using the ex-vessel price model that takes into account the impacts of changes in domestic landings, exports, import prices, income of consumers, composition of landings by market category (i.e., size of scallops), and changes in international markets for large scallops using imports of Japanese and Canadian scallops as proxy variables (Appendix I. Price Model).

The price estimates in Framework 32 correspond to the price model outputs assuming that the import prices will be constant at their recent two year average value (i.e., import price for 2017 to 2018 at about \$6 per pound); scallop exports will constitute about 22% of the domestic landings; disposable income and the ratio of Japanese and Canadian imports to total scallops imported will be constant at their current levels in 2018; and only the effects of the reduction in and changes in the size composition of landings could be identified. In addition, price estimates reflect real (as opposed to nominal) prices since they are expressed in 2019 constant prices assuming inflation will be zero in future years. Therefore, actual real or nominal prices could be higher (lower) than the estimated prices depending on the import prices, exports, and(or) disposable income increased (decreased) in future years. Nominal prices will probably be higher in the future as well since it is unusual for the inflation to remain at zero. In addition, ex-vessel prices could be underestimates of true values because the biological model underestimates the proportion of U10s in landings and it does not have a separate category for U12 scallops.

Although the absolute values for revenues, producer and consumer surpluses, and total economic benefits would change with the value of estimated prices, the differences of these values for all the alternatives to the No Action or Status Quo scenarios would not change in any substantial way. Higher realized prices than estimated prices would increase the short-term positive impact of all alternatives on revenues

compared to No Action and SQ, while lower realized prices would reduce this impact. Increase in import prices leads to higher ex-vessel prices and revenues.

In short, absolute values of short- and long-term revenues and economic benefits will be greater with higher prices and smaller with lower prices, but the ranking of alternatives are not expected to change.

Table 80. Estimated ex-vessel prices (in 2019 dollars)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	\$10.15	\$9.51	\$9.44	\$9.51	\$9.44	\$9.73
2021	\$8.35	\$8.63	\$8.65	\$8.76	\$8.78	\$8.55
2022-24	\$8.45	\$8.51	\$8.52	\$8.48	\$8.48	\$8.52
2025-34	\$8.80	\$8.80	\$8.80	\$8.80	\$8.80	\$8.80

Table 81. Scallop revenue per fishing year (undiscounted, Million \$, in 2019 dollars)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	\$280	\$479	\$491	\$475	\$487	\$437
2021	\$625	\$591	\$587	\$562	\$558	\$601
2022-24	\$547	\$539	\$538	\$546	\$545	\$537
2025-34	\$315	\$314	\$314	\$314	\$314	\$315

6.6.1.3.5 Estimated impacts on DAS, fishing costs and open area days and employment

Total effort in terms of DAS used as a sum total of all areas will be lower in the short-term in FY 2020 for all the alternatives compared to the SQ scenario, which allocates fewer DAS and access trips. Changes in the employment level in the scallop fishery as measured by CREW*DAS will be proportional to total effort under all alternatives compared to No Action and SQ. Because overall annual DAS per FT vessel will increase under all alternatives compared to the levels under SQ conditions in 2020, employment is also expected to increase by about 9% for the alternatives in Section 4.3.1.3.1 and Section 4.3.1.2.1 (xcl22 and xop22) and about 14% for the alternatives in Section 4.3.1.2.2 and Section 4.3.1.3.2 (xop24 and xcl24). Under No Action (Section 4.3.1.1) DAS and employment levels would be anticipated to decrease by about 31% compared to Status Quo conditions in FY 2020. However, over the long-term, total effort and employment is expected to be about same compared to SQ under all alternatives. Even though employment in terms of CREW*DAS would be lower under some options and higher on others, it is uncertain to what extent this would lead to a reduction or increase in the actual numbers of crew employed.

Fleet-wide trip costs for all the alternatives are expected to be slightly higher than SQ levels in 2020 by roughly \$3 to \$4 million dollars, but have small differences in magnitude relative to one another (as well as compared to SQ). However, trip costs are expected to increase noticeably over the long-term.

Table 82. Projected DAS per FT vessel per year (including open and access areas)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	29.1	47.37	49.36	47.4	49.4	43.3
2021	78.2	74.03	73.53	69.7	69.2	75.3
2022-24	75.5	74.35	74.15	75.7	75.4	74.2
2025-34	63.5	63.3	63.29	63.3	63.3	63.4

Table 83. Percentage change in total DAS from SQ levels (open and access areas)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
Fishing year	NA	xop22	xop24	xcl22	xcl24	SQ
2020	-32.80%	9.42%	14.02%	9.42%	14.04%	0.00%
2021	3.85%	-1.73%	-2.39%	-7.51%	-8.18%	0.00%
2022-24	1.70%	0.22%	-0.05%	1.97%	1.68%	0.00%
2025-34	0.19%	-0.09%	-0.11%	-0.11%	-0.14%	0.00%

Table 84. Trip costs per year for the scallop fleet (Undiscounted, in million 2019 dollars)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	\$22.26	\$36.25	\$37.78	\$36.26	\$37.79	\$33.13
2021	\$59.87	\$56.66	\$56.28	\$53.33	\$52.94	\$57.66
2022-24	\$57.75	\$56.90	\$56.75	\$57.90	\$57.74	\$56.78
2025-34	\$48.58	\$48.45	\$48.44	\$48.44	\$48.43	\$48.50

6.6.1.3.6 Present Value of Producer Surplus, Consumer Surplus and Total Economic Benefits

Producer surplus (benefits) for a fishery shows the net benefits to harvesters, including vessel owners and crew, and is measured by the difference between total revenue and costs including operating costs and opportunity costs of labor and capital. In technical terms, the producer surplus (PS) is defined as the area above the supply curve and the below the price line of the corresponding firm and industry (Just, Hueth & Schmitz (JHS)-1982). The supply curve in the short-run coincides with the short-run marginal cost above the minimum average variable cost. This area between price and the supply curve can then be approximated by various methods depending on the shapes of the marginal and average variable cost curves. All alternatives except No Action have higher producer surplus relative to the SQ alternative both in the short- and long run; however, the specifications alternative in Section 4.3.1.2.2 (xop24) has the largest producer surplus (Table 85).

The economic analysis presented in this section used the most straightforward approximation of producer surplus, which was defined as the excess of total revenue (TR) over the total variable costs (TVC) minus the opportunity costs of labor and capital. The fixed costs were not deducted from the producer surplus since the producer surplus is equal to profits plus the rent to the fixed inputs. More information about the producer surplus estimates and opportunity costs are provided in the Appendix for the Economic Model.

It must also be emphasized that the empirical results of the economic analyses should be used to compare alternatives with each other and with No Action or Status Quo rather than to estimate the absolute values since the later will be change according to the several external variables that affect prices, revenues and costs including changes in import prices, exports of scallops, disposable income of consumers, size composition of scallop landings, oil prices and inflation.

Consumer surplus for a fishery is the net benefit that consumers gain from consuming fish based on the price they would be willing to pay for them. Consumer surplus will increase when fish prices decline, and/or the amount of fish harvested goes up. Present value of the consumer surplus (using a 7% discount rate), and the cumulative present values net of Status Quo levels are summarized in Table 86. The alternative in Section 4.3.1.4 (SQ) has higher consumer surplus relative to the alternatives in Section 4.3.1.2.1 (xop22), Section 4.3.1.2.2 (xop24), and Section 4.3.1.3.2 (xcl24), but about same as the alternative in Section 4.3.1.3.1 (xcl22) in the short run. However, the SQ alternative has higher consumer surplus relative to the alternatives in Section 4.3.1.2.2 (xop24), Section 4.3.1.3.1 (xcl22), and Section 4.3.1.3.2 (xcl24), but about same as the alternative in Section 4.3.1.2.1 (xop22) in the long run (Table 86).

Economic benefits include the benefits both to the consumers and to the fishing industry and are equal the sum of benefits to the consumers and producers. The cumulative present value of the total benefits and economic benefits net of Status Quo (SQ) levels are shown in Table 87. The cumulative present value of economic benefits is also estimated at a 7% discount rate. Discounting future benefits at a lower level resulted in higher benefits for all options without changing the ranking of the alternatives in terms of magnitude of benefits.

Total economic benefits would be largest under the specification alternative in Section 4.3.1.2.2 (xop24) and lowest under the specifications alternative in Section 4.3.1.3.1 (xcl22), but all alternatives are higher compared to SQ in FY 2020 as well as in the long-term (Table 87). The differences between those alternatives on different economic indicators are small within the broader group of alternatives (i.e. alternatives in Section 4.3.1.2 and Section 4.3.1.3) but are noticeably different in comparison to one another in the short- and the long-term.

Table 85. Present value of producer surplus (using 7% discount rate, Million \$, in 2019 dollars)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	202	378	388	375	385	341
2021	496	467	464	443	440	475
2022-24	1311	1290	1287	1307	1305	1286
2025-34	2509	2500	2500	2501	2500	2503
Grand Total	4518	4635	4639	4626	4629	4605
Producer Surplus net of SQ values (% Change)						
2020	-40.76%	10.85%	13.78%	9.97%	12.90%	0.00%
2021	4.42%	-1.68%	-2.32%	-6.74%	-7.37%	0.00%
2022-24	1.94%	0.31%	0.08%	1.63%	1.48%	0.00%
2025-34	0.24%	-0.12%	-0.12%	-0.08%	-0.12%	0.00%
Grand Total	-1.89%	0.65%	0.74%	0.46%	0.52%	0.00%

Table 86. Present value of consumer surplus (CS) using 7% discount rate (in 2019 dollars, Million \$)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	9	41	39	43	37	43
2021	100	81	75	73	67	80
2022-24	234	218	225	222	233	217
2025-34	351	347	347	347	348	347
Grand Total	694	687	685	684	685	687
Percent change from SQ						
2020	-79.07%	-4.65%	-9.30%	0.00%	-13.95%	0.00%
2021	25.00%	1.25%	-6.25%	-8.75%	-16.25%	0.00%
2022-24	7.83%	0.46%	3.69%	2.30%	7.37%	0.00%
2025-34	1.15%	0.00%	0.00%	0.00%	0.29%	0.00%
Grand Total	1.02%	0.00%	-0.29%	-0.44%	-0.29%	0.00%

Table 87. Present value of total economic benefits (TB) using 7% discount rate (in 2019 dollars, Mill. \$)

Values/ RUN	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	4.3.1.4
Fish Years	NA	xop22	xop24	xcl22	xcl24	SQ
2020	211	419	432	416	428	374
2021	596	548	544	517	512	562
2022-24	1545	1508	1504	1531	1527	1502
2025-34	2860	2847	2847	2847	2847	2851
Grand Total	5212	5323	5326	5311	5314	5289
Percent change from SQ						
2020	-43.58%	12.03%	15.51%	11.23%	14.44%	0.00%
2021	6.05%	-2.49%	-3.20%	-8.01%	-8.90%	0.00%
2022-24	2.86%	0.40%	0.13%	1.93%	1.66%	0.00%
2025-34	0.32%	-0.14%	-0.14%	-0.14%	-0.14%	0.00%
Grand Total	-1.46%	0.64%	0.70%	0.42%	0.47%	0.00%

6.6.1.4 Full Time Limited Access Trip Exchanges (Alternative 2 is Preferred Alternative)

The Council considered modifying the current regulations governing FT LA trip exchanges. None of the options would change overall allocations to the FT LA fleet or expected landings from access areas. The alternatives are summarized below.

- Under Alternative 1, there would be no change to the current trip exchange regulations. This would mean that access area allocations could only be exchanged on a one-for-one basis at the increment of the possession limit (i.e. 18,000 pounds). Under this option, 9,000-pound trips in the NLS-North and CAI could not be exchanged.
- Alternative 2 (Council’s preferred) would allow pound for pound exchanges to all areas in increments of 9,000 pounds (the lowest allocation in FW32). There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (12,000 lbs for part time).
- Alternative 3 would allocate a split trip to the NLS-North and CAI using a random, non-regional lottery system. Half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half of the FT LA fleet would receive one, 18,000-pound “flex” trip to CAI. CAI “flex” allocation could be fished in either CAI or the MAAA. One-for-one trip exchanges would be permitted for all access area trips at increments of the possession limit (i.e. 18,000 pounds)

Since economic impacts estimates are based on projections in each access area, these trip exchange alternatives are not expected change overall fishery impact conclusions described above in the specifications section (Section 6.6.1.3). No Action and Alternative 3 may provide some low positive benefits to the fishery. Alternative 2 would provide additional flexibility to vessel owners to exchange trips, which could lead to a reduction in trip costs (ex: trading ½ trips to make whole trips, and catching the allocation on a single trip), or the ability to exchange trip so that vessels can fish more allocation closer to their homeport. Therefore, Alternative 2 could have a positive economic impact overall, and relative to No Action and Alternative 3.

6.6.1.5 Action 4 - Access Area Trip Allocations to the LAGC IFQ Component

6.6.1.5.1 Alternative 1 - No Action

Under No Action, LAGC IFQ vessels would be allocated 571 trips to the MAAA access area and 571 trips to the NLS-West access area starting on April 1. This is equivalent to default number of trips from FW30. Under No Action a small percentage of the LAGC IFQ catch could come from access areas, with the rest coming from open areas. However, the cost of fishing could be higher in the open areas compared to fishing in access areas which are expected to have a higher abundance of exploitable scallops. Usually, larger scallops have a price premium compared to smaller ones and if larger scallops are more abundant in access areas, not being able to fish in those areas could affect the revenues negatively as well. Thus, this option could have negative economic impacts on the LAGC IFQ vessels overall, and compared to Alternative 2.

6.6.1.5.2 Alternative 2 - LAGC IFQ Access Area Trips (*Preferred Alternative*)

The preferred alternative (Alternative 2 in Section 4.4) would allocate a total of 2,855 trips, which would be allocated to the MAAA, Closed Area I, Nantucket Lightship North, and Nantucket Lightship South Deep. This option would distribute 1,142 access area trips to the MAAA, and 571 trips to each of the other three access areas (Closed Area I, Nantucket Lightship North, Nantucket Lightship South Deep). Since this option would allow directed scallop fishing on larger animals in high densities, it could result in lower trip costs compared to open area fishing. Access to larger scallops in access areas could have positive effect on revenues. Moreover, this alternative would allocate higher trips compared to No Action. Thus, Alternative 2 could have positive economic impacts on LAGC IFQ vessels compared to Alternative 1.

6.6.1.6 Action 5 – Additional Measures to Reduce Fishery Impacts

6.6.1.6.1 RSA Compensation Fishing

6.6.1.6.1.1 Alternative 1 - No Action

Under Alternative 1 (No Action), RSA compensation fishing would be restricted to open areas only. Vessels with RSA poundage would not be allowed to harvest RSA compensation from access areas. The cost of fishing could be higher in the open areas compared to fishing in access areas which are expected to have a higher abundance of exploitable scallops. This alternative is expected to have negligible economic impacts on the scallop fishery as a whole compare to Alternative 2.

6.6.1.6.1.2 Alternative 2 - No Action (*Preferred Alternative*)

Under Alternative 2, RSA compensation fishing would be permitted only in the Mid-Atlantic Access Area, the NGOM Management Area, and in open areas. RSA compensation fishing would not be permitted in Closed Area I, Closed Area II, Nantucket Lightship-North, and Nantucket Lightship-South-deep. RSA compensation fishing would be permitted in the NGOM management area by vessels that are awarded NGOM RSA compensation pounds as described in Section 4.2.2, not to exceed the LA share of the NGOM TAC.

This provision will help accurately account for scallop removals in the NGOM by restricting RSA compensation fishing to vessels that receive a portion of the LA TAC, will facilitate access to high densities of scallops in available access areas, and reduce impacts on small scallops and overall mortality in Closed Area II. Therefore, this alternative could have low positive impacts on the scallop yield and negligible to low positive economic benefits over the long-term for the scallop fishery. Since this option would allow directed scallop fishing on larger animals in high densities of the MAAA, it could result in lower trip costs compared to open area fishing. Access to larger scallops in access areas could have

positive effect on revenues, which is an important part of the RSA program. Alternative 2 could be expected to have low positive economic impacts relative to Alternative 1.

6.6.1.7 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

6.6.1.7.1 Alternative 1 – No Action

Under Alternative 1, there would be no change to the existing seasonal closure to protect flatfish in Closed Area II, which currently runs from August 15th – November 15th annually. The scallop fishery accesses CAII AA periodically when the scallop resource is strong enough to support rotational harvest by the LA component. Landings during this two-week window were low last time the area was open in 2017 (Figure 32). This alternative is expected to have negligible economic impacts on the scallop fishery as a whole compare to Alternative 2.

6.6.1.7.2 Alternative 2 - Alternative 2 – Extend Seasonal Closures of Closed Area II Access Area through November 30th in FY 2020 (*Preferred Alternative*)

Under Alternative 2, the existing seasonal closure in Closed Area II Access Area would be extended an additional two weeks, meaning the duration of the closure would be August 15th through November 30th. This will shift effort that would have been fished in Closed Area II Access Area between November 16th and November 30th into in other times of the year when the seasonal closure is not in place; however, the shift in effort is not expected to have a substantial impact on the magnitude of economic impacts overall since there will be no change to the overall harvest from Closed Area II Access Area.

6.6.1.8 Uncertainties and risks

The economic impacts presented in the above sections are analyzed using the price model, costs, revenues and total net benefits as described in the economic model provided in Economic Appendix I (forthcoming). The estimated fishing costs are used in calculating producer surplus for the proposed alternatives, which shows total revenue net of variable costs minus the opportunity costs of labor and capital. The costs and the benefits of the proposed alternatives were analyzed based on the biological projections of landings, DAS and LPUE and the available information about the vessel costs and characteristics, crew shares and prices. The numerical results of these analyses should be interpreted with caution due to uncertainties about the likely changes in:

- factors affecting scallop resource abundance
- fishing behavior
- fixed costs
- variable costs
- import prices and imports from Canada and Japan that are close substitutes for large domestic scallops.
- demand for scallop exports
- bycatch and revenues from other fisheries
- the crew share system
- change in the number of active vessels
- structural changes in ownership
- changes in the composition of fleet in terms of tonnage, HP and crew size of the active vessels
- disposable income and preferences of consumers for scallops.

The estimated values of the economic cost/benefit analysis should be used solely in comparing preferred action with the other alternatives since the uncertainties related to landings and prices are expected to affect all alternatives in the same direction.

The landings projections and estimates of DAS and LPUE were obtained from the biological model, which is based on fishing mortality by area and the inputs are not fishery-based in terms of DAS, etc. The biological simulations do not model individual vessels or trips; it models the fleet as a whole. The output of the biological model and the landings streams were used to estimate the costs and benefits of the preferred action and alternatives. The results for economic impacts would change if the actual landings, size composition of landings and LPUE are different than the forecasted values from the biological model.

The prices are estimated using the ex-vessel price model described in Appendix I (forthcoming). This model takes into account the impacts of changes in meat count, domestic landings, exports, price of imports, income of consumers, and composition of landings by market category (i.e., size of scallops) including a price premium on U10 scallops.

The important changes in external factors, such as exports, imports, the value of the dollar, and export and import prices had some unpredictable impacts on scallop prices in the past, first resulting an increase to over \$9.70 per pound (in terms of 2017 dollars) in 2005, then a consequent decline to about \$7.86 per pound (in terms of 2017 dollars) in 2006 as import prices declined but without a significant increase in scallop landings in 2006 (about 56 million lb.) compared to 2005 (about 54 million lb.). During the fishing years from 2010 to 2016, however, the decline in the value of the dollar, a strong demand for scallops, especially from European countries, and a diminished supply from Japan and other competing, scallop-producing nations, resulted in much higher prices than anticipated in the previous frameworks. However, in 2017 as scallop landings reached nearly 50 million lb. and proportion of U10 and 11-to-20 count scallops increased, the average annual ex-vessel price declined to \$9.70 from over \$12 in 2016. The decrease in import prices and an increase in imports from Japan and Canada relative to total imports played a role in this decline as well (See Price Model section in the Economic Model provided in the Appendix I.). Recent scallop trade information is described in Section 5.6.1.6. Thus, any change in the external factors that affect price, such as in import prices or the differences between the actual and projected landings will result in differences in the actual and estimated prices.

In addition, the prices were estimated by holding the values of the all the variables that impact prices, such as import prices and disposable income, at the recent levels. For example, disposable income per capita and import prices are assumed to stay constant at the 2019 levels for the economic analyses of this framework action. This is because it is not possible to accurately predict the changes in the future values of the explanatory variables and also because the goal of the analyses is to determine the response in scallop prices to the change in landings and the composition in terms of market category given other variables are held constant. Therefore, future prices could be higher (or lower) than what is predicted depending on the values of the explanatory variables.

For these reasons, the empirical results of the economic analyses should be used to compare alternatives with each other and with No Action or Status Quo, rather than to estimate the absolute values, since a change in the variables listed above will change the numerical results in the same direction. For example, an increase in import prices would lead to a rise in ex-vessel prices and revenues for all alternatives above the levels estimated in the sections above. An increase in the price of oil, on the other hand, would increase the variable costs and reduce the cost savings under all options. While these changes would affect the absolute values of net economic benefits, the ranking of alternatives in terms of their impacts on revenues, costs, and net benefits are not expected to change.

6.6.2 Social Impacts

The social impact factors outlined below help describe the scallop fishery, its sociocultural and community context and its participants. These factors or variables are considered relative to the management alternatives and used as a basis for comparison between alternatives. Use of these kinds of factors in social impact assessment is based on NMFS guidance (NMFS, 2007) and other texts (e.g., Burdge, 1998). Longitudinal data describing these social factors region-wide and in comparable terms are limited. While this analysis does not quantify the impacts of the management alternatives relative to the social impact factors, qualitative discussion of the potential changes to the factors characterizes the likely direction and magnitude of the impacts. The factors fit into five categories:

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

General impacts of scallop fishery specifications on human communities

Reauthorization of the MSA requires the SSC to set an acceptable biological catch (ABC), or maximum catch level that can be removed from the resource taking into account all sources of biological uncertainty. The Council is prohibited from setting catch limits above that level. 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 ABC. This should help prevent overfishing and optimize yield on a continuous basis. Increasing the scallop ABC (and associated catch limits, as contemplated in this action) would likely have positive short-term impacts on fishing communities. Likewise, lowering allowable harvests could result in short-term revenue reductions, which may, in turn, have negative impacts on employment and the size of the scallop fishery within fishing communities. Additionally, declines in fishing earnings may decrease job satisfaction among fishermen (e.g., Pollnac & Poggie, 2008; Pollnac, Seara, & Colburn, 2015), which may reduce the well-being of fishermen, their families, and their communities (e.g., Pollnac et al., 2015; Smith & Clay, 2010). In the long term, ensuring continued, sustainable harvest of the resource benefits all fisheries.

The specific communities that may be impacted by this action are identified in Section 5.6.2. This includes 11 primary ports (e.g., New Bedford, Cape May, Hampton/Seaford) and 12 secondary ports for the scallop fishery (Table 56). The communities more involved in the scallop fishery are likely to experience more direct impacts of this action, though indirect impacts may be experienced across all the key communities. As these specifications largely affect stock-wide harvest levels, impacts would likely occur across the communities that participate in the scallop fishery, proportional to their degree of participation.

6.6.2.1 Action 1 – Overfishing Limit and Acceptable Biological Catch

6.6.2.1.1 Alternative 1 – No Action for OFL and ABC

Under No Action, the ABC for FY 2020 (after discards are removed, 46,028 mt.) would remain unchanged from the default set through Framework 30 and be about 1% higher than the ABC under Alternative 2 (45,414 mt.). There would be no ABC set for FY2021.

The social impacts of No Action are likely negligible to low negative. In FY2020, a positive scenario for the fishery could continue. With no change in the FY 2020 ABC, there would be a degree of constancy and predictability for fishing industry operations and a steady supply to the market. The size of the fishery-related workforce would likely be unchanged, as would the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights). However, fishermen could perceive the use of default specifications for sea scallops as a fishery management failure. The SSC determined (in October 2019) that the ABC should be lower to sustain the resource, so selecting No Action might cause distrust in management among the industry, and a feeling that managers are not making use of the best available science in a timely manner. This may lead to negative impacts on the attitudes of stakeholders towards management. The social impacts could be negative in the long term, because the default ABC for FY 2021 = 0 mt (i.e., there would be no fishery), unless the Council takes a future action to set the ABC that is implemented on-time.

6.6.2.1.2 Alternative 2 – Updated OFL and ABC for FY 2020 and FY 2021 (Default) (Preferred Alternative)

Alternative 2 would specify OFL and ABC for FY 2020 and FY 2021 and set default values for FY 2021 based on SSC recommendations (in October 2019, Table 58). The ABC (45,414 mt after discards are removed) for FY2020 would be about 1% lower than the default ABC under No Action. The OFL and ABC values in recent years are driven by the growth of large year classes the Nantucket Lightship area and the Mid-Atlantic Access Area, which were considered exceptional when they were first observed.

The social impacts of Alternative 2 are likely negligible to low positive. In the short term, a positive scenario for the fishery could continue. There would likely be similar employment opportunities and the size of the fishery-related workforce could be maintained. The historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights) could be sustained. Relative to Alternative 1, Alternative 2 provides essentially the same fishing opportunities for participants in the scallop fishery for FY 2020. Using the SSC recommendation would likely cause more trust in management among the industry relative to No Action, and a feeling that managers are making use of the best available science in a timely manner. This may lead to positive impacts on the attitudes of stakeholders towards management. The industry could realize the benefits of yield that is supported by the best available science. With a default ABC for 2021, there is more assurance under Alternative 2 that the fishery will continue, providing a degree of predictability for fishing industry operations into the future, leading to long-term positive social impacts.

6.6.2.2 Action 2 – Northern Gulf of Maine Management

6.6.2.2.1 Partial Closure of Stellwagen Bank to Protect Small Scallops

6.6.2.2.1.1 Alternative 1 – No Action

The social impacts of No Action are likely low negative overall. In the short term, impacts would be negligible to low positive. Vessels would still have access to all Stellwagen Bank, so would continue to have flexibility in choosing where and how they fish. This would have positive impacts in terms of the lifestyle, health and safety of fishermen. However, No Action may lead to bycatch and discarding of small scallops (seen in the recent surveys, Section 5.2.2), which could lead to negative attitudes

towards management if fishermen feel that scallops are being insufficiently protected for future harvests. If fishermen perceive that managers are not making use of the best available science in a timely manner, their attitudes, beliefs, and values towards management could be negatively impacted. In the long term, impacts would be low negative, as continued fishing on small scallops could result in declines in the resource and in reduced fishery earnings. This may decrease job satisfaction among fishermen, which may reduce the well-being of fishermen, their families, and their communities.

6.6.2.2.1.2 *Alternative 2 - Partial Closure of Stellwagen Bank to directed scallop fishing, within the Northern Gulf of Maine Management Area (Preferred Alternative)*

Under Alternative 2, part of Stellwagen Bank would close to directed scallop fishing in the NGOM Management Area for two years (FY2020-2021) to protect small scallops (Map 2). The social impacts of Alternative 2 are likely low positive overall and more positive than No Action. In the short term, impacts would be negligible to low negative. Vessels would have only partial access to Stellwagen Bank over the next two years, so would have flexibility in choosing where and how they fish. This would have negative impacts in terms of the lifestyle, health and safety of fishermen. However, Alternative 2 may lead to less bycatch and discarding of small scallops relative to No Action, which could lead to positive attitudes towards management if fishermen feel that scallops are being sufficiently protected for future harvests. If fishermen perceive that managers are making use of the best available science in a timely manner (i.e., recent surveys), their attitudes, beliefs, and values towards management could be positively impacted. In the long term, impacts would be low positive, as less fishing on small scallops could result in future increases in the resource and in fishery earnings. This may decrease job satisfaction among fishermen, which may reduce the well-being of fishermen, their families, and their communities.

6.6.2.2.2 Northern Gulf of Maine TAC Setting

6.6.2.2.2.1 *Alternative 1 - No Action*

Under No Action, the NGOM TAC would be set at 170,000 pounds, which is based on fishing Ipswich Bay, Stellwagen Bank, and Jeffreys Ledge portions of the management area at a $F=0.20$ in FY 2019 and FY 2020. The overall TAC would be split between the LA and LAGC, with 50,000 pounds available to support RSA compensation fishing (LA share), and 120,000 pounds available for harvest by the LAGC component.

The social impacts of No Action are likely positive but low negative relative to Alternative 2. With no change in the TAC (from the FY 2020 default value set through Framework 30), the fishery would continue to benefit from fishing in the NGOM, and there would be a degree of constancy and predictability for fishing industry operations and a steady supply to the market. The size of the fishery-related workforce would likely be unchanged, as would the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights). In terms of resource surveys, the NGOM area is data-poor relative to the rest of the scallop resource, but survey data and projections indicate that fishing under a higher TAC than allowed under No Action is likely sustainable. Selecting No Action might cause distrust in management among the industry, and a feeling that managers are not making use of the best available science in a timely manner. This may lead to negative impacts on the attitudes of stakeholders towards management. Although there would likely be long-term positive social benefits of No Action, additional benefits may be realized under Alternative 2.

6.6.2.2.2.2 *Alternative 2 - Set 2020 and 2021 NGOM TAC, with first 70,000 lbs to LAGC, then 50/50 split between LA and LAGC (Sub-Option 2 is Preferred Alternative)*

Under Alternative 2, the NGOM TAC would be set by applying a fishing mortality rate to the projected exploitable biomass from Ipswich Bay, and Jeffreys Ledge. Higher scallop landings could occur in the NGOM area relative to No Action by setting the TAC either at 310,000 lb. (Sub-Option 1; F=0.18) or 350,000 lb. (Sub-Option 2; F=0.20) in FY 2020 (Table 9). The FY 2021 TAC would be 240,000 lb. (Sub-Option 1; F=0.18) or 265,000 lb. (Sub-Option 2; F=0.20; Table 10).

The social impacts of Alternative 2 are likely positive and low positive relative to No Action. The fishery would continue to benefit from fishing in the NGOM and Alternative 2 could provide additional fishing opportunities in this area for the LACG component. If an increase in quantity supplied is realized, employment opportunities and the size of the fishery-related workforce could increase. The historical dependence on and participation in the fishery (structure of fishing practices, income distribution and access privileges) could be sustained, but would not necessarily change from increasing the TAC alone. With no change in the TAC setting method, benefits would continue to accrue to both fishery components (LA and LAGC). In terms of resource surveys, the NGOM area is data-poor relative to the rest of the scallop resource, but the survey data and projections indicate that fishing under a higher TAC than allowed under No Action is likely sustainable. Selecting Alternative 2 would likely cause more trust in management among the industry relative to No Action, and a feeling that managers are making use of the best available science in a timely manner. This may lead to positive impacts on the attitudes of stakeholders towards management. The industry could realize the benefits of additional yield that is supported by the best available science. With a default TAC for 2021, there is more assurance under Alternative 2 that the fishery will continue. Though there would likely be long-term positive social benefits of No Action, additional benefits may be realized under Alternative 2. With a higher TAC, Sub-Option 2 would have low positive social impacts relative to Sub-Option 1.

6.6.2.3 Action 3 – Fishery Specifications & Trip Exchanges

6.6.2.3.1 Fishery Specifications (Alternative 3 Sub-Option 2 is Preferred Alternative)

This section sets specifications for open area DAS and access area trip allocations. The alternatives here are based on Alternative 2 for OFL and ABC (Section 4.1.2). No Action is the default measures for FY 2020 set through Framework 30. Status Quo (Alternative 4) is a state with no changes from the FY 2019 specifications for open area F and access area trips.

6.6.2.3.1.1 Alternative 1 – No Action (Default Measures)

Under No Action, the default spatial management measures, approved for FY 2020 (through Framework 30) would remain in place, and there would be none specified for FY 2021. The APL (after set-asides removed) would be 25.3M lbs. Open area DAS would be set at 18 (75% of the projected DAS for FY2019) and one trip (18,000 lbs) for FT vessels would be allowed to the Mid-Atlantic Access Area and one to the Nantucket Lightship West area (Map 3). Part-time limited access vessels would receive 7.20 DAS, and occasional limited access vessels would be allocated 1.5 DAS.

The LAGC IFQ allocation would be 1,122 mt (2,473,587 lbs) for LAGC IFQ and LA with LAGC IFQ quota. LAGC IFQ vessels would also have access in the Mid-Atlantic Access Area and Nantucket Lightship West areas, with a fleet wide maximum of 571 trips to each area. The target TAC for vessels with a LAGC Incidental permit would be 50,000 pounds.

The social impacts of No Action are likely low negative relative to Status Quo (i.e., FY 2019 allocations) and Alternatives 2 and 3. While fishing would be allowed for all vessels in the open areas, fishing in the rotational access areas would be limited to two areas. Thus, fishing would be substantially constrained from FY2019 conditions. Revenue is expected to be about 36% lower than

Status Quo and between 41% and 43% under Alternatives 2 and 3. As implementation of updated specifications are expected to occur on or close to the beginning of the fishing year, it is unlikely that the fishery will need to operate under default measures for a sizeable portion of the fishing year.

No Action would provide less fishing opportunities. Employment and the size of the fishery-related workforce would likely decrease. The historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights) would likely change, though it is difficult to predict specifically how. However, fishermen could perceive the selection of No Action as a fishery management failure and it might cause distrust in management among the industry, and a feeling that managers are not making use of the best available science which indicates that scallop fishing would be sustainable in additional areas and using more DAS. This may lead to negative impacts on the attitudes of stakeholders towards management. The industry could not realize the benefits of yield that is supported by the best available science. The social impacts could be negative in the long term, because no access would be specified for FY 2021, unless the Council takes a future action to set the ABC.

6.6.2.3.1.2 *Alternative 2 – Six Access Area Trips, Closed Area II-ext open*

Under Alternative 2, specifications for access to the open areas and rotational access areas would be set for FY 2020 and default measures for FY 2021. Sub-Options 1 and 2 would set open area fishing at $F=0.27$ (22 DAS) and $F=0.30$ (24 DAS), respectively. The APL (after set-asides removed) would be 48.1M lbs. and 49.7M lbs, respectively.

The social impacts of Alternative 2 are likely positive relative to No Action and negligible relative to Alternative 3 and the Status Quo (i.e., FY 2019). Revenue is expected to be like Alternative 3, but greater than Status Quo by 10% to 13%; however, the range is narrow enough that the size of the fishery-related workforce would likely be unchanged. Any change to the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights) would be minor, and it is difficult to predict specifically how. Alternatives 2 and 3 use a “FLEX trip” approach for the LA vessels for some of their rotational area access, which allows more flexibility of fishing operations relative to No Action. Alternatives 2 and 3 would increase the crew limit by two for fishing in NLS-S-deep, which would have generally positive social impacts.

Scallops in NLS-S-deep are generally small, so trips to this area would likely be longer to harvest the 18,000 lb trip limit. Under Alternative 2, a vessel could take two additional crew members to shorten trip length. This would allow for a small employment increase for the fishery, though these scallops may have a lower ex-vessel value. Alternative 2 would provide flexibility in business operations for how to fish in this area, resulting in generally positive impacts for the fishery.

6.6.2.3.1.3 *Alternative 3 – Six Access Area Trips, Closed Area II-ext closed to open bottom fishing (Sub-Option 2 is Preferred Alternative)*

Under Alternative 3, specifications for access to the open areas and rotational access areas would be set for FY 2020 and default measures for FY 2021. Sub-Options 1 and 2 would set open area fishing at $F=0.30$ (22 DAS) and $F=0.33$ (24 DAS), respectively. The APL (after set-asides removed) would be 47.7M lbs. and 49.3M lbs, respectively.

The social impacts of Alternative 3 are likely positive relative to No Action and negligible relative to Alternative 2 and the Status Quo (i.e., FY 2019). Revenue is expected to be like Alternative 2 and between 9% to 12% greater than Status Quo; however, the range is narrow enough that the size of the fishery-related workforce would likely be unchanged. Any change to the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights) would be minor, and it is difficult to predict specifically how. Alternatives 2 and 3 employ a “FLEX trip”

approach for the LA vessels for some of their rotational area access, which allows more flexibility of fishing operations relative to No Action.

Scallops in NLS-S-deep are generally small, so trips to this area would likely be longer to harvest the 18,000 lb trip limit. Under Alternative 3, a vessel could take two additional crew members to shorten trip length. This would allow for a small employment increase for the fishery, though these scallops may have a lower landed value. Alternative 3 would provide flexibility in business operations for how to fish in this area, resulting in generally positive impacts for the fishery.

6.6.2.3.2 Full Time Limited Access Trip Exchanges

6.6.2.3.2.1 *Alternative 1 - No Action*

Under No Action, trip exchange regulations would be unchanged. Access area allocations would only be exchangeable on a one-for-one basis at the increment of the possession limit (i.e., 18,000 pounds). If Alternative 2 or 3 of the fishery specifications is selected (Section 4.3.1), trips to CAI and NLS-N would only be 9,000 lb and would not be exchangeable.

The social impacts of No Action are likely low positive. No Action would provide stability and predictability in business operations, as the current trip exchange approach has been in place since 2004. No Action would create inefficiency in fishing operations for the full-time LA vessels (only allowed 9,000 lbs in two access areas), with potentially negative outcomes.

6.6.2.3.2.2 *Alternative 2 - Allow pound-for-pound exchanges at 9,000 pounds for FT LA vessels (Preferred Alternative)*

Under Alternative 2, pound-for-pound exchanges would be allowed of full-time access area allocations in all areas at increments of 9,000 pounds. If Alternative 2 or 3 of the fishery specifications is selected (Section 4.3.1), the 9,000 lb. trips to CAI and NLS-N could be exchanged between vessels, so that one vessel could make a full trip (18,000 lb.) to CAI (or the MAAA) and the other vessel would take a full trip in NLS-N.

The social impacts of Alternative 2 are likely low positive and more positive than No Action. Alternative 2 would create efficiency in fishing operations for the full-time LA vessels relative to No Action. Vessels would have more operational flexibility. For example, a vessel based closer to the MAAA could trade with a vessel based in the north closer to NLS-N, reducing costs for both vessels. The social impacts would be more positive than under the lottery system in Alternative 3, which has the potential to be advantageous to a sub-set of vessels that gain a full trip to CAI and/or the NLS-N. Alternative 2 would have positive impacts on the non-economic social aspects of the fishery if a sense of fairness is perpetuated among fishery participants.

6.6.2.3.2.3 *Alternative 3 - Lottery for Closed Area I and NLS-N trips*

Under Alternative 3, and if Alternative 2 or 3 of the fishery specifications is selected (Section 4.3.1), half of the FT LA fleet would receive one 18,000-pound trip to the NLS-North and the other half would receive one, 18,000-pound “flex” trip to CAI (which could be fished in the MAAA). These trips would be allocated using a lottery system.

The social impacts of Alternative 3 are likely low positive and more positive than No Action. Alternative 3 would create efficiency in fishing operations for the full-time LA vessels relative to No Action. However, impacts would be less positive than Alternative 2. Vessels would not have the operational flexibility afforded under Alternative 2. A lottery could create inequity because the resulting allocations can be advantageous for some vessels but not others. Alternative 3 could have low negative impacts on the non-economic social aspects of the fishery in a sense of inequity is created among fishery participants.

6.6.2.4 Action 4 - Access Area Trip Allocations to the LAGC IFQ Component

6.6.2.4.1 Alternative 1 - No Action

Under No Action, LAGC IFQ vessels would be allocated 571 trips to the MAAA access area and 571 trips to the NLS-West access area starting on April 1. This is equivalent to default number of trips from FW30. Under No Action, a small percentage of the LAGC IFQ catch could come from access areas, with the rest coming from open areas.

The social impacts of No Action are likely negative relative to Status Quo (i.e., FY 2019) and Alternative 2. For FY 2019, there were 3,997 access area trips for this fishery component, so No Action would result in a substantial reduction from present conditions. Fishing in the rotational access areas would be limited to two areas. LAGC IFQ vessels would still be allowed to fish in open areas, but the scallop resource is generally less dense in open areas, so fishing operations tend to be less efficient. No Action would provide less fishing opportunities. Employment and the size of the fishery-related workforce would likely decrease. The historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights) would likely change, though it is difficult to predict specifically how. However, fishermen could perceive the selection of No Action as a fishery management failure and it might cause distrust in management among the industry, and a feeling that managers are not making use of the best available science which indicates that scallop fishing would be sustainable in additional areas and using more DAS. This may lead to negative impacts on the attitudes of stakeholders towards management. The industry could not realize the benefits of yield that is supported by the best available science. No Action may lead to a perception among LAGC IFQ fishermen of management unfairness if their effort in the access areas are substantially constrained while the LA effort continues. The social impacts could be negative in the long term, because no access would be specified for FY 2021, unless the Council takes a future action to set the ABC. As implementation of updated specifications are expected to occur on or close to the beginning of the fishing year, it is unlikely that the fishery will need to operate under default measures for a sizeable portion of the fishing year, so social impacts of No Action are likely minimal.

6.6.2.4.2 Alternative 2 - LAGC IFQ Access Area Trips (*Preferred Alternative*)

Under Alternative 2, the number of total access area trips allocated to the LAGC IFQ component under this option would be dependent upon the APL associated with each specification run (Section 4.3.1), and is driven by the number of access area trips that are allocated to the FT LA component and overall rotational harvest. When 5.5% is applied to the FT LA access area allocations for FY2020 (i.e. four 18,000-pound allocations and two 9,000-pound allocations), the LAGC IFQ component would receive 2,855 trips. This method has been used in previous actions. Alternative 2 would allocate LAGC IFQ access area trips proportional to the LA allocations in each access area (Table 20) and would distribute the LAGC IFQ CA II trip allocation to CAI and the NLS- North. This would result in the following LAGC access areas trips: 571 to CA I, 571 to the NLS-North, 1,142 to the MAAA, and 571 trips to the NLS-S-deep access area.

The social impacts of Alternative 2 are likely positive relative to No Action and negligible relative to the Status Quo (i.e., FY 2019). This approach leads to more opportunity for the LAGC IFQ to harvest scallops from access areas relative to No Action. Employment opportunities, the size of the fishery-related workforce could, and the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights) could be sustained, but would not necessarily change relative to current conditions. Access would be allowed in multiple access areas, so vessels based in a wider geographic range of ports could benefit from fishing in the access areas relative to No Action. Alternative 2 would likely lead to a perception among LAGC IFQ fishermen of management fairness, relative to No Action, as their effort in the access areas could continue along

with that of the LA effort (under Alternative 2-4 in Section 4.3). This may lead to more positive impacts on the attitudes of stakeholders towards management.

6.6.2.5 Action 5 – Additional Measures to Reduce Fishery Impacts

6.6.2.5.1 RSA Compensation Fishing

6.6.2.5.1.1 Alternative 1 – No Action

Under No Action, RSA compensation fishing would be restricted to open areas only. Vessels with RSA poundage would not be allowed to harvest RSA compensation from access areas.

The social impacts of No Action are likely low positive, as RSA compensation fishing could continue, but low negative relative to Alternative 2, because the fishery would not have the opportunity harvest compensation pounds from access areas, which generally have higher densities of exploitable scallops. Fishing operations could be less efficient relative to Alternative 2. As RSA compensation fishing represents a small portion to total fishing effort, No Action would likely have negligible impacts on employment, the size of the fishery-related workforce, or the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights).

6.6.2.5.1.2 Alternative 2 – No Action (Preferred Alternative)

Under Alternative 2, RSA compensation fishing would be permitted only in the Mid-Atlantic Access Area, the NGOM Management Area, and in open areas. RSA compensation fishing would not be permitted in Closed Area I, Closed Area II, Nantucket Lightship-North, and Nantucket Lightship-South-deep. RSA compensation fishing would be permitted in the NGOM management area by vessels that are awarded NGOM RSA compensation pounds as described in Section 4.2.2, not to exceed the LA share of the NGOM TAC.

This provision will help accurately account for scallop removals in the NGOM by restricting RSA compensation fishing to vessels that receive a portion of the LA TAC, will facilitate access to high densities of scallops in available access areas, and reduce impacts on small scallops and overall mortality in Closed Area II.

The social impacts of Alternative 2 are likely positive and low positive relative to No Action, because the fishery would have the opportunity harvest compensation pounds from certain access areas, which generally have higher densities of exploitable scallops than open areas. Fishing operations could be more efficient relative to No Action. As RSA compensation fishing represents a small portion to total fishing effort, Alternative 2 would likely have negligible impacts on employment, the size of the fishery-related workforce, or the historical dependence on and participation in the fishery (structure of fishing practices, income distribution and rights). Alternative 2 may incentivize additional vessels to participate in compensation fishing.

6.6.2.5.2 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on Georges Bank Yellowtail Flounder and Northern Windowpane Flounder

6.6.2.5.2.1 Alternative 1 – No Action

Under No Action, there would be no change to when scallop vessels could access the Closed Area II Access Area. The existing seasonal closure to protect flatfish would remain in place from August 15 – November 15 of each year.

The social impacts of No Action are likely low positive. The existing seasonal closure of Closed Area II Access Area is targeted around a time of year when GB yellowtail bycatch rates are known to be relatively high. Continuing this closure would help the fishery remain within its bycatch limits, sustaining the season of the scallop fishery with positive effects on fishermen and communities.

6.6.2.5.2.2 Alternative 2 – Extend Seasonal Closure of Closed Area II Access Area through November 30th in FY 2020 (preferred alternative)

Under Alternative 2, the existing Closed Area II Access Area seasonal closure would extend by two weeks in November, making the newly configured area closed from August 15 until November 30, as a means to further reduce bycatch of Georges Bank yellowtail flounder and Northern windowpane flounder (Map 10). Closed Area II Access Area would re-open to access area fishing on December 1, 2020. This measure would be in place for one year and expire after FY 2020.

The social impacts of Alternative 2 are likely positive and more positive than No Action. Shifting effort towards summer months when bycatch is typically lower would help the fishery remain within its bycatch limits and more so relative to No Action. As there could be positive impacts on the groundfish and skate stocks caught as bycatch, there could be positive long-term outcomes for their directed fisheries.

6.7 CUMULATIVE IMPACTS

6.7.1 Introduction

A cumulative effects assessment (CEA) is a required part of an EIS or EA according to the Council on Environmental Quality (CEQ; 40 CFR part 1508.7) and NOAA policy and procedures for NEPA, found in NOAA Administrative Order 216-6A (Companion Manual, January 13, 2017). The purpose of the CEA is to integrate into the impact analyses, the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the alternatives in this action together with past, present, and reasonably foreseeable future actions that affect the human environment. The predictions of potential synergistic effects from multiple actions, past, present and/or future are generally qualitative.

Valued Ecosystem Components (VEC)

The valued ecosystem components for the Atlantic sea scallop fishery are generally the “place” where the impacts of management actions occur, and are identified as in Section 6.0:

1. Target species (Atlantic sea scallops, Section 6.2);
2. Non-target species (Section 6.3);
3. Protected species (Section 6.4);
4. Physical environment and essential fish habitat (Section 6.5); and
5. Economic Impacts (Section 6.6.1) and Social Impacts (Section 6.6.2).

The CEA identifies and characterizes the impact on the VECs by the alternatives under consideration when analyzed in the context of other past, present, and reasonably foreseeable future actions. To enhance clarity and maintain consistency, terms are as defined in Table 57.

Temporal Scope of the VECs

While the effects of historical fisheries are considered, the temporal scope of past and present actions for Atlantic sea scallop stock, non-target species, habitat and the human environment is primarily focused on actions that have taken place since implementation of the initial FMP in 1982. An assessment using this timeframe demonstrates the changes to resources and the human environment that have resulted through management under the Council process and through U.S. prosecution of the fishery, rather than foreign fleets. For protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ.

The temporal scope of future actions for all VECs extends about five years (2025) into the future beyond the analyzed time frame of the alternatives described in this document. The dynamic nature of resource management for this species and lack of information on projects that may occur in the future make it difficult to predict impacts beyond this timeframe with any certainty. The impacts discussed in this section are focused on the cumulative effects of the proposed action (i.e., the suite of preferred alternatives) in combination with the relevant past, present, and reasonably foreseeable future actions over these time scales.

Geographic Scope of the VECs

The geographic scope of the impacts to species is the range each in the western Atlantic Ocean, as described in the Affected Environment (Section 6.0). The physical environment, including habitat and EFH, is bounded by the range of the Atlantic sea scallop fishery, which extends across the Northeast Shelf ecosystem from the Gulf of Maine through Cape Hatteras. For protected species, the geographic range is the Northwest Atlantic Ocean. The geographic range for human communities focuses on the Mid-Atlantic and Northeast U.S.

Analysis of Total Cumulative Effects

A cumulative effects assessment ideally makes effect determinations based on the combination of: 1) impacts from past, present and reasonably foreseeable future actions; 2) the baseline condition of the VECs (the combined effects from past, present and reasonably foreseeable future actions plus the present condition of the VEC; and 3) impacts of the alternatives under consideration for this action.

6.7.2 Past, Present, and Reasonably Foreseeable Future Actions

A synopsis of the most applicable past, present, and reasonably foreseeable future actions that have the potential to interact with the current action is in Table 88. The detailed past, present, and reasonably foreseeable future actions for each VEC are described in more detail in Section 7.6.2 of Amendment 19, and Section 7.6.2 of Framework 30 to the Atlantic sea scallop FMP. In summary, there have been numerous actions taken in the past, present, and likely in the near future as well that have has a range of impacts on the Atlantic sea scallop resource, other biological aspects of the ecosystem, as well as human communities.

Fishing Effects – Past and Present Actions

Most of the actions affecting the VECs come from fishery-related activities (e.g., Federal fishery management actions), which have straightforward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. The reason for this is the statutory basis for Federal fisheries management, - the reauthorized Magnuson-Stevens Act (SFA 1996). That legislation was enacted to promote long-term positive impacts on the environment in the context of fisheries activities. More specifically, the MSA stipulates that management comply with a set of National Standards that collectively serve to optimize the conditions of the human environment. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the VECs should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, constraining fishing effort frequently results in

negative short-term socioeconomic impacts on fishery participants. However, these impacts are usually necessary to bring about the long-term sustainability of a given resource, and as such, should, in the long term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource. Generally, these actions have had low negative impacts on habitat due to continued fishing operations; however, some actions have had direct or indirect long-term positive impacts on habitat through designating or protecting important habitats. FMP actions have also had a range of impacts on protected species, including generally low negative impacts on ESA-listed species, and a range of impacts on non-ESA listed marine mammals from low negative to low positive, depending on the species.

The FMPs that has had the greatest impact on scallop fishery VECs, other than the Scallop FMP, is the Northeast Multispecies because of the spatial overlap of the fisheries, and the incidental catch of groundfish in the scallop fishery.

Past and Present Actions

Scallops. Amendment 15 to the Scallop FMP implemented ACLs and AMs for the scallop fishery. It also included updates to EFH, biological reference points, the research set-aside program, and other measures to improve the limited access general category fishery. FW29 (April 2018) set scallop fishery specifications, including DAS allocations, for FY 2018; set new management measures in the Northern Gulf of Maine (NGOM) scallop management area for FY 2018 and 2019 including prohibiting the limited access fleet from accessing the NGOM while participating in the DAS program; the annual NGOM total allowable catch was divided between the limited access fleet while on research set-aside trips and limited access general category fleets for the 2018 and 2019 (default) fishing year; revised the limited access allocations and trip possession limits for scallop access areas; modified one-for-one area access allocation exchanges for limited access vessels; and adjusted flatfish accountability measures. FW30 (April 2019) set FY 2019 specifications and default measures for 2020, set landing limits for the LA and LAGC components in the NGOM area based on exploitable biomass, and standardized the approach to setting default measures for open-area DAS and LAGC IFQ allocations.

Northeast Multispecies. Amendment 16 to the NE Multispecies FMP (May 2010) greatly expanded the sector management program and set specifications for FY 2010 and 2011. Notably, effort in the NE multispecies fishery has decreased in recent years, evident by the decrease in number of active vessels and groundfish trips since FY 2011 (<https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/h/nemultispecies.html>).

Framework 57 (May 2018) set FY 2018 shared U.S./Canada quotas for Georges Bank (GB) yellowtail flounder and eastern GB cod and haddock, set 2018-2020 catch limits for 20 groundfish stocks, revised the common pool trimester total allowable catch (TAC) allocations for several stocks, revised AMs for Atlantic halibut for vessels issued any Federal permit, revised the AMs for southern windowpane flounder for non-groundfish trawl vessels, revised the trigger for the scallop fishery AM for southern New England/Mid-Atlantic yellowtail flounder, and granted the Regional Administrator the authority to adjust recreational measures for GB cod. FW58 (July 2019) set FY 2019 shared U.S./Canada quotas for GB yellowtail flounder and eastern GB cod and haddock, set 2019-2020 catch limits for four of the 20 multispecies stocks, implemented new or revised rebuilding plans for five stocks, revised the trigger for the scallop fishery accountability measures for GB yellowtail flounder, and implemented an exemption from the U.S. minimum fish size for groundfish species for vessels fishing exclusively in the NAFO Regulated Area.

Essential Fish Habitat. The EFH Omnibus Amendment 2 (April 2018) reviewed and updated EFH designations, identified Habitat Areas of Particular Concern, and updated the status of current knowledge of gear impacts. It also implemented new management measures for minimizing the adverse impact of fishing on EFH that affect all species managed by the NEFMC. The Council is also working on an

omnibus clam dredge framework that would identify areas within the Habitat Management Area that are currently fished or contain high energy sand and gravel that could be suitable for a hydraulic clam dredging exemption. The final submission of the Clam Dredge Framework Adjustment to the habitat plan occurred on July 23, 2019, and the proposed rule was published on September 17. The final rule remains pending. This action would allow surfclam and mussel dredging under restrictive conditions in the Great South Channel Habitat Management Area (GSC HMA). The preferred alternative proposed three exemption areas for both surfclam and mussel dredges (McBlair, Old South, and Fishing Rip. Old South) that would be closed for six months (Nov 1 – Apr 30) to reduce overlaps between clam dredging and cod spawning activities. Vessels would need to comply with revised monitoring requirements outlined in the framework document. The Council also recently developed a deep-sea coral amendment to protect deep-sea coral habitats throughout New England from the negative impacts of fishing gears. The proposed rule published on August 26, 2019, and NMFS approved the amendment on November 20, 2019. The proposed rule was published on January 2, 2020. Once implemented, the amendment will designate a broad coral zone between the US/Canada EEZ boundary, the boundary between the NEFMC and MAFMC regions, and the seaward boundary of the US EEZ, with the landward boundary at the 600 m contour. The zone will be a closure to all bottom-tending gears, with an exemption for the red crab pot fishery. The deep-sea coral zones are not expected to have direct impacts on any of the managed resources.

Reasonably Foreseeable Future Actions

Atlantic Sea Scallops. Amendment 21, initiated in February 2019, would address the Northern Gulf of Maine Management Area measures, the Limited Access General Category (LAGC) individual fishing quota (IFQ) possession limits, and the ability for Limited Access vessels with LAGC IFQ to transfer their quota to vessels that only hold these permits. FW33 will establish scallop specifications for fishing years 2021 and 2022 and may consider other management measures for the 2021 fishing year.

Northeast Multispecies. FW59 would set 2020 TACs for U.S./Canada management units of Eastern GB cod, Eastern GB haddock, and GB yellowtail flounder stock, set 2020-2022 specifications for 15 other groundfish stocks, address commercial/recreational allocation issues if needed, and revise the GB cod incidental catch TAC. Amendment 23 (under development since February 2017), intends to implement measures to improve reliability and accountability of catch reporting and to ensure a precise and accurate representation of catch (landings and discards).

Non-Fishing Effects: Past, Present and Reasonably Foreseeable Future Actions

Non-fishing activities that occur in the marine environment and connected watersheds can cause the loss or degradation of habitat and/or affect the species that reside therein. The impacts of most nearshore human-induced non-fishing activities tend to be localized in the nearshore areas and marine project areas where they occur. The following discussion of impacts is based on past assessments of activities and assume these activities will likely continue as projects are proposed.

Examples of these activities include point and non-point source pollution, shipping, dredging, storm events, wind energy development, oil and gas development, and construction. The impacts from these non-fishing activities primarily stem from habitat loss due to human interaction and alteration or natural disturbances. These activities are widespread and can have localized impacts on habitat related to the accretion of sediments from at-sea disposal areas, oil and mineral resource exploration, aquaculture, construction of at-sea windfarms, bulk transportation of petrochemicals, and significant storm events. For protected species, primary concerns associated with non-fishing activities include vessel strikes, dredge interactions (especially for sea turtles and sturgeon), and underwater noise. These activities have both direct and indirect impacts on protected species. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the sustainability of managed species, non-target species, and protected species. Decreased habitat suitability

tends to reduce the tolerance of these VECs to the impacts of fishing effort. Direct negative impacts that have been observed to target, non-target, and protected species resulting from non-fishing activities include shifting distributions, decreased reproductive ability and success, disrupted or modified food web interactions, and increased disease. The overall impact on the affected species and their habitats on a population level is unknown, but likely to have no impact to low negative impacts.

Non-fishing activities permitted under other federal agencies (e.g. beach nourishment, offshore wind facilities, etc.) require examinations of potential impacts on the VECs. The MSA imposes an obligation on other Federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH (50 CFR 600.930). NMFS and the eight regional fishery management councils engage in this review process by commenting on and recommending federal and state actions that may affect habitat for their managed species and by commenting on actions likely to adversely impact EFH. This helps minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS jurisdiction. In addition to guidelines mandated by the MSA, NMFS reviews some non-fishing effects during the review process required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by Federal, state, and local authority. Non-fishing activities must also meet the mandates under the ESA, specifically Section 7(a)(2)¹⁸, which ensures that agency actions do not jeopardize the continued existence of endangered species and their critical habitat.

Energy Exploration. Offshore wind energy development is being considered in parts of the outer continental shelf that overlap with the Atlantic sea scallop resource, specifically in the Mid-Atlantic Bight and southern New England regions (Map 14). The fishery has been active in areas of southern New England and the Mid-Atlantic Bight (Map 12) at present and is expected to be for the near future. Map 14 displays the management units that are used to develop scallop allocations (SAMS estimation areas) relative to BOEM wind energy lease and planning areas. The southeastern portion of the MA WEA was leased in three sections during December 2018. As of February 2020, the areas to be offered for leases in the NY Bight remain to be determined; however, BOEM's primary recommendations are shown in dark green shading. BOEM has recently begun a planning process for the Gulf of Maine via a regional, intergovernmental renewable energy task force (<https://www.boem.gov/Gulf-of-Maine>). It is not clear where development might occur in the Gulf of Maine.

Offshore wind energy is expected to have a negative impact on the scallop resource due to disruption of scallop habitat during construction. There are also potentially negative impacts on the resource if turbines change and(or) disrupt water circulation patterns such that larval dispersal is affected, or if scour reduces the amount of available scallop habitat on the seafloor. The social and economic impact of offshore wind energy could be expected to be negative due to the overlap of wind energy areas with productive scallop fishing grounds. For example, an analysis of vessel trip reports (VTRs)¹⁹ estimated that fishing grounds off of Long Island, NY (i.e. which overlap with New York Bight wind energy call areas) supported a considerable level of overall scallop fishery landings and revenues between 2012 and 2016 (Map 15). It is worth noting that this analysis represents only a rough approximation of potential affects from the NY Bight Call Areas; however, because this productive region of the resource would be expected to support scallop fishing in the future in the absence of offshore wind energy development, any restriction of

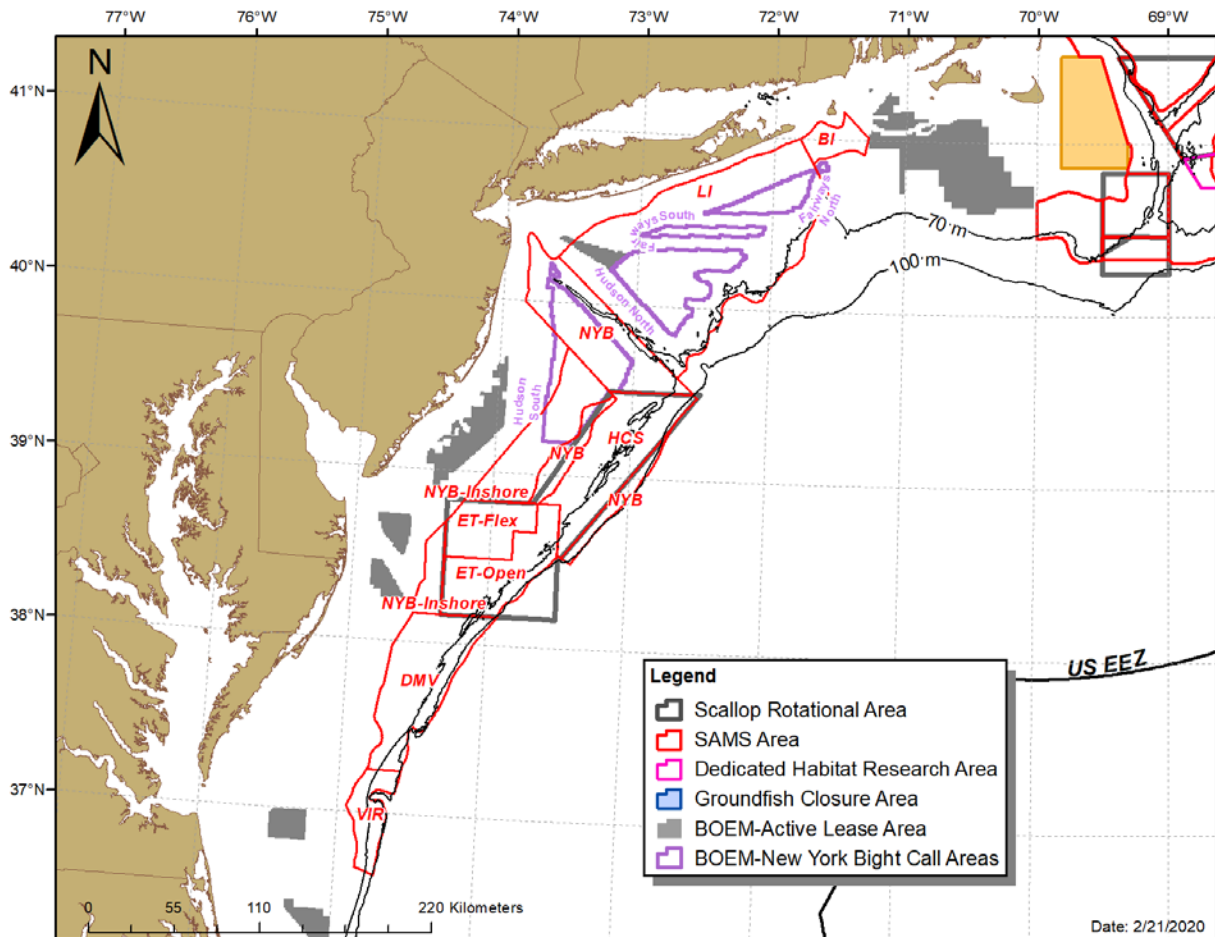
¹⁸ “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an “agency action”) is unlikely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat.”

¹⁹ See NOAA Fisheries response to BOEM's Call for Information re: Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight. June 7th, 2018. http://www.mafmc.org/s/NY-Bight-Call-For-Information_NMFS-Comments_June-2018.pdf

fishing access to this region as a result of offshore wind energy development would be perceived as a negative overall effect to the fishery.

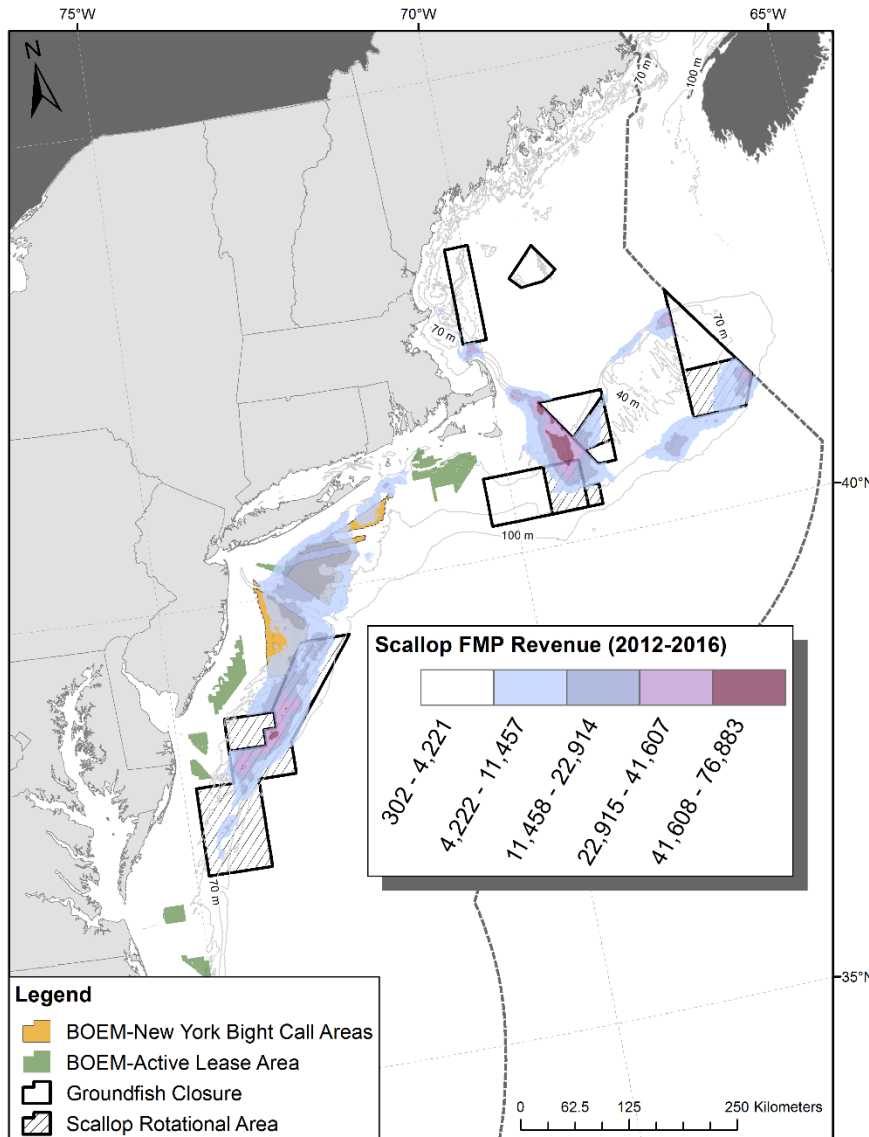
It remains unclear how fishing or transiting to and from fishing grounds might be affected by the presence of a wind farm. While there are no efforts to exclude fishing vessels from wind turbine arrays, it could be difficult for operators to dredge or transit amongst the wind turbines, depending on the spacing and orientation of the array. The United States Coast Guard has considered transit and safety issues related to the Massachusetts and Rhode Island lease areas in a recent port access route study²⁰, and has recommended uniform 1 mile spacing between turbines to facilitate access for fishing, transit, and search and rescue operations.

Map 14 – FY 2020 Scallop rotational areas and SAMS estimation areas relative to offshore wind energy call areas in the Mid-Atlantic/Southern New England region.



²⁰ <https://www.federalregister.gov/documents/2020/01/29/2020-01522/port-access-route-study-the-areas-offshore-of-massachusetts-and-rhode-island>

Map 15 – Sum of Sea Scallop FMP revenues (2012-2016) relative to wind energy call areas and active lease areas. Approximate revenues are based on VTR data.



For oil and gas, this timeframe would include leasing and possible surveys. Seismic surveys impact the acoustic environment within which marine species live and have uncertain effects on fish behaviors that could cumulatively lead to negative population level impacts. The science on this is uncertain. However, exposure to elevated levels of sound especially during construction and operation and seismic surveys can have both direct and indirect impacts on marine life, particularly protected species. Depending on the sound frequency and level, noise impacts to protected species may be direct or indirect. Exposure to underwater noise can directly affect species via behavioral modification or injury (sound exposure results in internal damage to hearing structures or internal organs). Indirect effects are likely to result from changes to the acoustic environment of the species, which may affect the completion of essential life functions (e.g., migrating, breeding, communicating, resting, foraging. If marine resources are affected by seismic surveys, then the fishermen targeting these resources would be affected. However, there would be an economic component in the form of increased jobs where there may be some positive effects on human

communities. The overall impacts of offshore wind energy and oil and gas exploration on the affected species and their habitats on a population level is unknown, but likely to range from no impact to moderate negative, depending on the number and locations of projects that occur, as well as the effects of mitigation efforts.

Climate Change. Global climate change will affect all components of marine ecosystems, including human communities. Physical changes that are occurring and will continue to occur to these systems include sea-level rise, changes in sediment deposition, changes in ocean circulation, increased frequency, intensity and duration of extreme climate events, changing ocean chemistry, and warming ocean temperatures. Emerging evidence suggests that these physical changes may have direct and indirect ecological responses within marine ecosystems which may alter the fundamental production characteristics of marine systems (Stenseth & Mysterud, 2002). Climate change could potentially worsen the stresses imposed by fishing and other non-fishing human activities and stressors (described in this section).

Results from the Northeast Fisheries Climate Vulnerability Assessment (Hare et al., 2016) indicate that climate change could have impacts on all VECs that range from negative to positive depending on the species, their climate vulnerability, potential for distribution change, and other factors. However, future mitigation and adaptation strategies to climate change may mitigate some of these impacts as more information becomes available to predict, evaluate, monitor, and categorize these changes.

Table 88 - Summary of effects from past, present, and reasonably foreseeable future actions on the VECs

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
	A	B	C	A+B+C
Atlantic Sea Scallop Resource	Positive Controlled effort and provided a sustainable fishery on a rebuilt resource	Positive Current regulations continue to manage for a sustainable stock	Positive Future actions will likely strive to maintain a sustainable stock	Positive Scallop resource is rebuilt; Stock are being managed for sustainability
Non-Target Species	Mixed Gear modifications & time/area closures to reduce bycatch; reactive AMs in place; bycatch concerns remain for GF stocks	Low Positive Current regulations continue to implement and expand measures to reduce bycatch; bycatch concerns remain for GF stocks	Low Positive Future actions will likely improve monitoring and further address bycatch issues	Low Positive Gear modifications & time/area closures to reduce bycatch; reactive AMs in place; some stock remain in poor condition
Protected Resources	Low Positive Gear modifications and Reduced effort and thus fewer interactions with protected resources	Low Positive Current regulations continue to implement gear modifications and control effort, thus reducing opportunities for interactions. Fishery is anticipated to have some level of interactions with protected resources.	Mixed Future actions will likely maintain gear modifications and control effort. Fishery is anticipated to have some level of interactions with protected resources	Low Positive Continued use of gear modifications and effort controls along with past regulations will likely help stabilize protected species interactions at low levels.
Physical Environment	Mixed	Mixed	Positive	Positive

and Essential Fish Habitat	Decreased effort and improved habitat protection; fishing activities and non-fishing activities has reduced habitat quality	Effort reductions and better control of non-fishing activities have been positive. Fishing activities and non-fishing activities continue to reduce habitat quality	Future regulations will likely control effort and thus habitat impacts.	Continued management of physical environment and EFH for an increased quality of habitat. Fishing activities and non-fishing activities continue to reduce habitat quality
Human Communities (Social and Economic)	Positive Effort controls and rotational management are maintained or strengthened	Positive Continue to manage for a sustainable stock, effort controls and rotational management provides additional yield for fishery	Positive As effort controls and rotational management are maintained or strengthened, economic impacts likely to be positive	Positive Continued fisheries management will likely control effort for a sustainable fishery and thus fishery and non-fishery related activities will continue

6.7.3 Baseline Conditions for Resources and Human Communities

The CEA baseline conditions for resources and human communities is the combined effects of the past, present, and reasonably foreseeable future actions (Section 6.7.2; Table 88), plus the present condition of the VECs (Table 89). In general, straightforward quantitative metrics of the baseline conditions are only available for the managed resources, non-target species, and protected resources. The conditions of the habitat and human communities VECs are complex and varied, and described in Sections 6.5 and 6.6.2., respectively.

Table 89 - Baseline condition of the VECs.

VEC		Status/Trends	Effects of Past, Present Reasonably Foreseeable Future Actions	Combined CEA Baseline Conditions
		A	B	A+B
Target species		Not overfished, not subject to overfishing, but probability that could change if recruitment does not improve	Positive Stocks are being managed for sustainability	Positive Stocks are being managed for sustainability and adjustments are being made to help prevent overfishing
Non-target species	GB Yellowtail flounder	Overfished, overfishing	Low Positive Gear modifications & time/area closures to reduce bycatch; reactive AMs in place	Mixed Gear modifications & time/area closures to reduce bycatch; reactive AMs in place; non-target stocks remain in poor status.
	SNE yellowtail flounder	Overfished, overfishing		
	GOM/GB Windowpane	Overfished, overfishing		
	SNE/MA windowpane	Overfished, overfishing		
Protected resources	Sea Turtles	Endangered or threatened		

	Atlantic Sturgeon	Endangered or threatened	Positive Continued use of gear modifications and effort controls along with past regulations will likely help stabilize protected species interactions at low levels.	Mixed Stocks are being managed for sustainability, but some in poor status. Reduced gear encounters through effort reductions and additional management actions taken under the ESA and MMPA.
Physical Environment and EFH		Fishing impacts are complex/variable and typically adverse; Non-fishing activities have had negative but site-specific habitat effects	Mixed Continued management of physical environment and EFH for an increased quality of habitat. Fishing activities and non-fishing activities continue to reduce habitat quality	Mixed Reduced habitat disturbance by fishing gear; impacts from non-fishing activities, could increase and have negative impact.
Human Communities (Economic Impacts and Social Impacts)		Fishery resources have been rebuilt to support profitable industries and communities.	Positive Continued fisheries management will likely control effort for a sustainable fishery and thus fishery and non-fishery related activities will continue	Positive Sustainable resources should support viable communities and economies

6.7.4 Impacts from Framework 32 Alternatives

The Framework 32 alternatives would modify the Atlantic Sea Scallop FMP by: 1) implementing fishery specifications for FY 2020-2021, 2) Adopt measures for NGOM area management, 3) mitigate impacts on Georges Bank yellowtail flounder and Northern windowpane flounder. The measures are designed to maintain the sustainability of the scallop resource, and reduce impacts on non-target species. The impacts of the alternatives under consideration are in Section 6.0 and summarized in Table 90.

6.7.5 Cumulative Effects Analysis

To determine the magnitude and extent of cumulative impacts of the alternatives, the incremental impacts of the direct and indirect impacts should be considered, on a VEC-by-VEC basis, in addition to the effects of all actions (those effects identified and described relative to the past, present, and reasonably foreseeable future actions of both fishing and non-fishing actions). Table 90 summarizes likely effects of the management alternatives contained in this action. The CEA baseline (Table 88), represents the sum of the past, present, and reasonably foreseeable future (identified hereafter as “other”) actions and conditions of each VEC. When an alternative has a positive effect on a VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with the other actions that were also designed to increase stock size. In contrast, when an alternative has a negative effect on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the “other” actions. The resultant positive and negative cumulative effects are described below for each VEC.

Target Species – Atlantic Sea Scallops

When the direct and indirect effects of the proposed action are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects would likely yield non-significant positive impacts on the scallop resource.*

Past fishery management actions taken through the Atlantic herring FMP and the annual specifications process (e.g. catch limits and commercial quotas) ensure that stocks are managed sustainably and that measures are consistent with the objectives of the FMP under the guidance of the MSA. The impacts of annual specification of management measures are largely dependent on how effective those measures are in meeting the objectives of preventing overfishing and achieving optimum yield, and on the extent to which mitigating measures (e.g. Area sub-ACL closures, AMs) are effective. These actions have generally had a positive cumulative effect on Atlantic sea scallops.

As noted in Table 88, the combined impacts of past federal fishery management actions have rebuilt the scallop resource and increased scallop biomass. The actions proposed by FW 32 are expected to have low positive impacts and continue the sustainability of the scallop resource. The proposed ABC and fishery specifications in this action are well below the OFL and are expected to prevent overfishing. Setting sustainable ACLs and specifications based on the spatial management will have positive impacts on the scallop resource over the long-term. The other measures proposed in this action are expected to have primarily negligible to positive impacts on the scallop resource.

The future management actions described in Section 6.7.2 will likely have additional indirect positive effects on the managed resources by reducing and monitoring bycatch, protecting habitat, and protecting the ecosystem on which the productivity of the Atlantic sea scallop resource depends. Overall, the past, present, and reasonably foreseeable future actions in the scallop fishery have had positive cumulative effects.

Table 90 – Summary of Framework 32 impacts expected on each VEC.

FW32 Alternatives		Scallop Resource	Non-target species	Protected Resources	Physical Env. (EFH)	Human Communities	
						Economic	Social
OFL/ABC	No Action (Alt. 1)	No direct impacts	Negligible, No direct impacts	Low -	No direct impacts	Negligible to Low -	Negligible to Low -
	Alt. 2 (pref.)	No direct impacts, indirect low +	Negligible, No direct impacts	Negligible	No direct impacts	Negligible to Low +	Negligible to Low +
Partial Closure of NGOM Area (Stellwagen)	No Action (Alt.1)	Low -	Negligible	Low -	Low -	Low -	Low -
	Alt. 2 (pref.)	Low +	Negligible	Low -	Low +	Low +	Low +
NGOM TAC Setting	No Action	Low +	Negligible	Low - to Negl.	Low -	Low -	+
	Alt 2. Sub-Option 1	Low +	Negligible	Low - to Negl.	Low -	Low +	+
	Alt 2. Sub-Option 2 (pref)	Low +	Negligible	Low - to Negl.	Low -	Low +	+
Fishery Specifications	No Action (Alt. 1)	Low +	Low +	Low -	Low -	Low -	Low -
	Alt 2. Sub-Option 1	Low +	Negl. to Low -	Low -	Low -	Low +	Low +
	Alt 2. Sub-Option 2	Low +	Negl. to Low -	Low -	Low -	Low +	Low +
	Alt 3. Sub-Option 1	Low +	Negl. to Low -	Low -	Low -	Low +	Low +
	Alt 3. Sub-Option 2 (pref)	Low +	Negl. to Low -	Low -	Low -	Low +	Low +
FT LA Trip Exchanges	No Action (Alt. 1)	Administrative	Administrative	Administrative	Administrative	Low +	Low +
	Alt 2. (Lb for Lb exchanges)	Administrative	Administrative	Administrative	Administrative	+	+
	Alt 3. (Lottery)	Administrative	Administrative	Administrative	Administrative	Low +	Low +
AA Trip Allocations to LACG IFQ	No Action (Alt.1)	Negligible	Negligible	Low -	Low -	-	-
	Alt. 2 (pref.)	Low + to Negligible	Low + to Negligible	Low -	Negligible	+	+
RSA Compensation Fishing	No Action (Alt.1)	Negligible	Negligible	Low -	Negligible	Negligible	Negligible
	Alt. 2 (pref.)	Low + to Negligible	Low + to Negligible	Low -	Negligible	Low +	Low +
Seasonal Closure of CAII AA to protect flatfish	No Action (Alt.1)	Negligible	Low + to Negligible	Negligible	Negligible	Negligible	Low +
	Alt. 2 (pref.)	Negligible	Positive	Negligible	Negligible	Negligible	+

Non-Target Species

When the direct and indirect effects of the proposed action are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), the cumulative effects would likely yield *non-significant negligible to low positive impacts on non-target species*.

The combined impacts of past federal fishery management actions on non-target species have been mixed, as decreased effort and reduced catch of non-target species continue, though some stocks are in poor status (Table 89). Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species. As noted in Section 7.6.4, the actions proposed by Framework 32 would likely continue this trend. Future actions are anticipated to continue rebuilding non-target species stocks and limit the take of incidental catch/bycatch in the scallop fishery, particularly through ACL management with AMs. The other measures proposed in this action would likely have primarily low positive to low negative impacts on non-target species. Continued management of directed stocks will also control catch of non-target species. In addition, the effects of non-fishing activities on bycatch are potentially negative.

While some groundfish stocks remain overfished, or subject to overfishing, actions in the NE Multispecies FMP (e.g., Amendment 16) are attempting to control mortality on these stocks. Monkfish, spiny dogfish, and skates are no longer overfished (except for thorny skate) or experiencing overfishing. Mortality and effort controls such as NE Multispecies, Monkfish, and Scallop DAS, and scallop rotational management collectively help reduce bycatch of non-target species. Impacts to non-target species from the proposed action were found to range from low positive to low negative, and the proposed action would not result in any significant cumulative direct or indirect impacts. The actions proposed by Framework 32 are expected to continue this trend; for example, the Council has recommended extending time/area closures to protect key flatfish stocks.

Protected Resources

When the direct and indirect effects of the proposed action are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects would likely yield non-significant low negative to negligible impacts (related to interaction risk)*.

The preferred alternatives in Framework 32 would likely reduce current levels of fishing effort in terms of the overall amount of effort, timing, and location. The proposed action is expected to have impacts on protected species that range from negligible to low negative, depending on the species.

For sea turtles, changes to both their marine and terrestrial environment due to climate change pose a challenge. Recent studies suggest that warming temperatures at nesting beaches could have the strongest impacts on sea turtle populations due to reduced nest success and recruitment [Santidrian-Tomillo et al. 2012; Saba et al. 2012]. Additionally, increased severity of extreme weather events may create erosion and damage to turtle nest and nesting sites [Goldenberg et al 2001; Webster et al 2005, IPCC 2007], resulting in a further reduction in nest success and recruitment. These potential declines in the success of nesting could have profound effects on the abundance and distribution of sea turtles. Moreover, warming air temperature can also affect the demography of sea turtle populations because the sex ratio of hatchling sea turtles is determined by the temperature during incubation in nesting beaches. Female offspring are produced at warmer temperatures and thus climate change could lead to a lower ratio of males in the population. Changes in water circulation near nesting beaches could affect the early life history stages of sea turtles by transporting passively-drifting hatchlings to waters that may have increased predation rates [Shillinger et al. 2012]. Furthermore, prey availability and quality may also be affected by climate change, but these projections are far less certain.

Fish are also sensitive to changes in water temperature due to climate change. Changes in water temperature could impact spawning activities of Atlantic sturgeon, including cues for migration and timing of spawning. Foraging behavior of Atlantic sturgeon may also be impacted by changes in water

temperature because of changes in food (forage fish) distribution. Changes in salinity in riverine spawning areas could impact spawning activities and survivability of juvenile Atlantic sturgeon who are sensitive to salinity levels. Atlantic salmon are also sensitive to changes in temperature across life stages. Water temperatures can affect growth of juvenile salmon and the final weight of individual salmon if conditions in overwintering grounds are affected.

Historically, the implementation of FMPs has resulted in reductions in fishing effort and as a result, past fishery management actions are thought to have had a slightly positive impact on strategies to protect protected species. Gear entanglement continues to be a source of injury or mortality, resulting in some adverse effects on most protected species to varying degrees. One of the goals of future management measures will be to decrease the number of protected species interactions with commercial fishing operations. The cumulative result of these actions to meet mortality objectives will be slightly positive for protected resources. The effects from non-fishing actions are expected to be low negative as the potential for localized harm to VECs exists. The combination of these past actions along with future initiatives to reduce protected species interactions when considered with the proposed action would not result in significant cumulative impacts

Physical Environment/Habitat/EFH

When the direct and indirect effects of the proposed action are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects would likely yield non-significant low negative impacts (related to interaction of mobile bottom tending gear with habitat).*

The management measures described above in the NE Multispecies, Scallop, Monkfish, and Skate FMPs, largely have positive effects on habitat due to reduced fishing efforts, consequently reducing gear interaction with habitat. The other FMP actions that reduce fishing effort generally result in fewer habitat and gear interactions, resulting in low positive effects on habitat. The ALWTRP resulted in low negative to negligible effects on habitat due to the possibility of groundline sweep on the bottom and “ghost gear.” The proposed TED requirements would possibly have negative effects on habitat due to potential slight increases in towing time. However, this gear is still being tested.

The cumulative effect of past, present, and reasonably foreseeable future fishing actions has resulted in low positive effects on habitat. Climate change is expected to impact the physical characteristics and habitat aspects of marine ecosystems, and possibly change the very nature of these ecosystems. Increased frequency and intensity of extreme weather events, like hurricanes, may change the physical structure of coastal areas. Water circulation, currents, and the proportion of source waters/freshwater intrusion have been observed to be changing (NEFSC, 2019) which influences salinity, water column stratification, transport of nutrients, and food web processes. All these factors, in addition to others like ocean acidification and changes to water chemistry [Rebuck et al. in prep], threaten living elements of the marine environment, such as corals and shellfish, and may be related to the observed shifts in the planktonic community structure that forms the basis of the marine food web (ecosystem status report). While the impact analysis in this action is focused on direct and indirect impacts to the physical environment and EFH, there are several non-fishing impacts that must be considered when assessing cumulative impacts. Many of these activities are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. Other non-fishing factors such as climate change and ocean acidification are also thought to play a role in the degradation of habitat. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat.

The proposed action would likely have low negative impacts on the physical environment and EFH, because of interactions of mobile bottom tending gear with habitat. The preferred alternatives are unlikely to significantly increase levels of fishing effort (Section 6.5). Therefore, when considering the cumulative

effects of this action in combination with past, present, and reasonably foreseeable future actions, impacts will remain low negative and no significant impacts to the physical environment, habitat or EFH from the proposed action are expected.

Human Communities (Economic Impacts and Social Impacts)

When the direct and indirect effects of the proposed action are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects would likely yield non-significant low positive impacts on human communities overall.*

Past fishery management actions taken through the FMP and annual specifications process such as catch limits and commercial quotas have had both positive and negative cumulative effects. In general, actions that prevent overfishing have long-term economic benefits on businesses and communities that depend on those resources. Some actions that limit participation, such as the limited entry program that was adopted under Amendment 4 and Amendment 11 for the general category fishery had distributional impacts on individuals and ports that participated in the scallop fishery at that time. While short-term negative impacts may follow an action that reduces effort, past and present actions had positive cumulative impacts on vessel owners, crew and their families in the scallop fishery by increasing their fishing revenues, incomes and standard of living. The impacts of these past and present actions were also positive for the related sectors including dealers, processors, primary suppliers to the vessels that sell them gear, engines, boats, etc. The increases in gross profits for scallop vessels and in crew incomes have had positive economic benefits on these sectors indirectly through the multiplier impacts. Total landings have increased, catch per unit of effort has generally increased, and price has steadily increased as well. Future actions are expected to maintain or increase landings, LPUE, and price

Management measures designed to benefit protected resources and restrict fishing effort have low negative effects on the human communities. However, the implementation of annual catch limits achievement of the long-term goals of fishing scallops at sustainable rates and rebuilding the stock have helped increase revenue and positive economic impacts.

By providing revenue and contributing to the overall functioning of and employment in coastal communities, the Atlantic sea scallop fishery has both direct and indirect social impacts. As previously described, the preferred alternatives are unlikely to result in a substantial change to levels of fishing effort or the character of that effort relative to the current conditions. Through implementation of this action, the Council seeks to achieve the primary objectives of the scallop FMP and meet MSA requirements.

7.0 APPLICABLE LAWS/EXECUTIVE ORDERS

7.1 MAGNUSON STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

7.1.1 National Standards

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery management plans (FMPs) contain conservation and management measures that are consistent with the ten National Standards:

(1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The OFL/ABC/ACLs developed in this action are consistent with the ACL structure adopted under Amendment 15 to prevent overfishing and achieve optimum yield. Specifically, OFL is set at F_{MSY} (0.64 based on the most recent benchmark assessment – SARC 65) and the ABC control rule sets ABC at the F rate estimated to have a 25% change of exceeding OFL (0.51). In the Scallop FMP, ACL is equivalent to ABC, after removing discard and incidental mortality, and the overall fishery allocations are set at or below the fishing level estimated to have a 25% chance of exceeding ABC (i.e. ACT), which is currently 0.46 for this fishery.

This action included five overall specification alternatives including No Action. They are all very similar in terms of their projected landings, with only slight differences in days-at-sea allocations for the limited access component of the fishery and the configuration of spatial management boundaries.

The preferred alternative, Alternative 4.3.1.3.2, would allocate a total of (6) access area trips to full-time limited access vessels, including two (2) 18,000-pound trips to the Mid-Atlantic Access Area, one (1) 18,000-pound trip to Closed Area II Access Area, one (1) 18,000-pound trip to the Nantucket Lightship South Deep, one (1) 9,000-pound trip to the Nantucket Lightship North, and one (1) 9,000-pound “flex” trip that can be fished in Closed Area I Access Area or the Mid-Atlantic Access Area.

This alternative would set open area DAS at $F=0.33$, equivalent to 24 DAS for full-time limited access vessels, and has an estimate of overall fishing mortality (F) of 0.182. Since this level is well below the thresholds set in this plan, these specifications are expected to prevent overfishing and achieve optimum yield on a continuing basis. The preferred alternative projects roughly 52 million pounds in total landings for FY 2020, which is higher than No Action.

The LAGC IFQ allocation associated with the preferred specifications alternative (Section 4.3.1.3.2) amounts to 2.7 million pounds, which is comparable to recent quotas for this component of the fishery.

The preferred alternative for the Northern Gulf of Maine Management Area would set the overall TAC at 350,000 pounds and divide it into separate shares for the LAGC (210,000 pounds) and LA (140,000 pounds) components. The LA share of the NGOM TAC would be only be available as NGOM RSA compensation awards. The Council’s preferred alternative addresses the NGOM problem statement and could be expected to result in conservative fishing mortality relative to the OFL and ABC in the federal fishery, because total removals from this part of the resource will be capped and total removals will be understood. The overall biomass estimate for Jeffreys Ledge and Ipswich Bay, which are the parts of the NGOM that are expected to be fished in FY 2020, is 790 mt (see Section 5.2.2).

Section 5.2 includes a brief summary of the most recent stock assessment which occurred in 2018 (SARC 65), the status of the fishery, and updated results for the 2019 surveys of the scallop resource. SARC 65 estimated total biomass to be 317,334 mt in 2017 and overall F was estimated at 0.12. That biomass estimate is well above the overfishing threshold of 58,383 mt, and estimated F is well below the overfished threshold of 0.64 (OFL). Therefore, overfishing is not occurring, and this resource is not overfished.

(2) Conservation and management measures shall be based upon the best scientific information available.

This document uses information of known quality from sources acceptable to the relevant scientific and technical communities. Several sources of data were used in the development of this document. These data sources include, but are not limited to: permit data, landings data from vessel trip reports, data from the dealer purchase reports, scallop survey data, data from at-sea observers, and data from vessel

monitoring systems (VMS). Although there are some limitations to the data used in the analysis, these data are considered to be the best available.

In addition, biological projections used to assess the status of the scallop resource are based on the CASA model. This model uses information from all available sources, including surveys conducted outside of the NMFS federal scallop survey. Specifically, results from three other scallop surveys were integrated into the overall CASA model: optical drop camera survey by SMAST, a fine-scale dredge survey from VIMS, and optical survey from HabCam (multiple groups). The CASA model was reviewed and approved for use in management at the 2007 scallop assessment. The CASA model was updated again in the 2018 benchmark assessment (SARC 65). The Scallop Area Management Simulator (SAMS) model is a forward projection model that is used to develop annual specifications. The parameters of the SAMS model were updated for Framework 32 based on the results of 2019 surveys. The Swept Area Seabed Impact (SASI) model used for habitat analysis is another peer-reviewed model that helps inform impacts on habitat.

Lastly, the Council's SSC reviewed and approved the Acceptable Biological Catch (ABC) for this fishery for 2020 and 2021 (default) based on updated analyses of biological uncertainty in the parameters used to assess the scallop resource. The CASA model was recently updated at SARC 65, and was used in 2018 for status determination and development of new reference points during the 2018 Stock Assessment Workshop in Woods Hole, MA (NEFSC, 2018). The data and results presented in Framework 32 are considered the best available science to set maximum sustainable yield in order to prevent overfishing.

(3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

Under the Atlantic Sea Scallop FMP, the target fishing mortality rate and stock biomass are applied to the scallop resource from NC to the US/Canada boundary. This encompasses the entire range of scallop stocks under Federal jurisdiction. See Section 5.2 for a description of the scallop resource.

(4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The management measures proposed in this action do not discriminate between residents of different states. Although Framework 32 includes allocation measures, limited access vessels are relatively mobile and are expected to fish in various access areas. Limited access vessels are also permitted to trade access area trips with other vessels; if an area is far from their homeport and they do not want to fish in that area, they can trade for a trip to an area closer to their homeport. In 2020, access areas are expected to open on Georges Bank and in the Mid-Atlantic. The full-time limited access fishery would have two trips in the Mid-Atlantic (MAAA), and four trips on Georges Bank (one in the Nantucket Lightship South Deep, one in Closed Area II, a half trip in the Nantucket Lightship North, and a half trip in Closed Area I).

Limited access general category vessels are not allocated individual trips into scallop access areas; instead, there is a fleet-wide allocation of trips that are available to the entire segment of the fishery. Thus, general category vessels may decide to participate in any access area program or not. If a vessel is relatively small and it is not practical to fish farther offshore or travel great distances to fish in an access area, that vessel may fish its quota allocation in open areas. In 2020, the preferred alternative for LAGC access area trips includes access in the MAAA, Nantucket Lightship North, and Closed Area I.

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The preferred allocation alternative will promote efficiency in the utilization of fishery resources by allocating effort in areas with higher catch rates. In general, area rotation promotes efficiency by increasing catch rates and reducing area swept, which reduce fishing time and increase profits for the fishery overall. This approach is also expected to reduce overall bycatch by the scallop fishery.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The Proposed Action takes into account variations among and contingencies in fisheries, fishery resources, and catches. This action enhances the ability of the FMP to adapt to changing resource conditions. The access program is expected to allow the FMP to stabilize fishing effort in open areas, and potentially allow the FMP greater flexibility to achieve optimum yield through rotational area management in the future. Natural resources vary and adjusting fishery specifications on a regular basis allows for relatively rapid changes to adjust to varying resource conditions. Variations in annual catch and allocations are still to be expected under area rotation, a system that is designed to optimize yield from variable recruitment patterns by area and year.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The Council considered the costs and benefits associated with the Proposed Action when developing this action. The proposed action does not introduce any new measures that duplicate measures already in place. Limited access and DAS controls were implemented in 1994; the full area rotation program was implemented in June 2004. Both of these measures are necessary components of the FMP to achieve the annual mortality targets and prevent the stock from becoming overfished. The increase in the average size of scallops landed, a primary objective of both the FMP and the proposed action, continues to be a major factor that minimizes harvesting costs. The management measures proposed in this action are not duplicative and were developed in close coordination with NMFS and the Mid-Atlantic Fishery Management Council.

(8) 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 by utilizing economic and social data that meet the requirements of paragraph (2), 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.

In the Amendment 10 FEIS, the characteristics and participation of fishing communities involved in the scallop fishery were discussed in Section 7.1.1.3, and the impacts of rotation area management were discussed in Section 8.8. This document includes an update of fishery and community information in Section 5.6. The economic and social impacts, which affect fishing communities, are analyzed and discussed in Section 6.6.1 and Section 6.6.2, respectively. The proposed action will not change these impacts anticipated under Amendment 10.

The proposed action is not expected to jeopardize the sustained participation of fishing communities that have depended on the scallop resource. The area rotation and DAS adjustments are expected to continue to ensure a healthy resource that will be able to support historical levels of participation by fishing communities.

The aggregate economic impacts of the preferred alternative on net economic benefits are expected to be positive in the short-term compared to No Action, and comparable to Status Quo levels. Under the preferred alternative, scallop landings are estimated to be about 52 million pounds and result in revenues of about \$487.4 million. The total economic benefits of the preferred alternative would exceed the No Action levels by \$217 million, and would exceed SQ levels by \$53.7 million in the 2020 fishing year in terms of current (2019) prices. (See Table 70 in the economic section). The present value of the cumulative revenues, producer surplus, and total economic benefits, would be positive under the preferred

alternative (Section 4.3.1.3.2, Alternative 3 Sub-Option 2) over the long-term from 2020 to 2032 compared to the Status Quo values and the No Action scenario.

Overall, the long-term net economic benefits of the preferred alternative (Section 4.3.1.3.2) would be roughly \$23.7 million greater than Status Quo benefits, using a 7% discount rate, and \$92 million higher than No Action using the same discount rate. If the long-term benefits were discounted less using a 3% rate, the long-term economic benefits would be slightly higher compared to Status Quo levels.

The economic impacts on the LAGC fishery vary between the specification alternatives considered because the IFQ allocation would be linked to projected landings associated with the specification alternatives. The IFQ quota allocation associated with the preferred specifications alternative for the 12-month fishing year would be 2.7 million lbs.

One aspect of the final specifications proposed that takes into account the importance of fishery resources to fishing communities are the access area allocations for LAGC vessels. The preferred alternative includes the flexibility for LAGC IFQ vessels to fish quota in access areas in the Mid-Atlantic or Georges Bank. Access area trips for the LAGC IFQ component are divided roughly 20% to the Nantucket Lightship North, 20% to the Nantucket Lightship South Deep, 20% to Closed Area I, and 40% to the Mid-Atlantic Access Area. About 40% of LAGC vessels are homeported in New England coastal communities. Some of those vessels are not expected to travel to the MAAA because it is not practical to do so, while some vessels homeported near the MAAA are not expected to travel to Georges Bank for similar reasons. Providing some access in both the Georges Bank rotational areas and the MAAA is expected to help sustain the LAGC fishery overall by providing some opportunity to LAGC vessels throughout the range of the fishery to fish in productive areas. The preferred alternative takes National Standard 8 into consideration because providing access in areas with higher catch rates for LAGC vessels is expected to help sustain participation in more fishing communities and reduce overall economic and social hardships on LAGC IFQ vessels.

(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Section 6.1.10 in the Amendment 10 FSEIS discusses the effect of current scallop management and of rotation area management on safety. This action does not propose any new measures that would change the findings in Amendment 10.

7.1.2 Other Required Provisions of the M-S Act

Section 303 of the Magnuson-Stevens Fishery Conservation and Management Act contains 14 additional required provisions for FMPs, which are discussed below. Any FMP prepared by any Council, or by the Secretary, with respect to any fishery, shall:

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;

Since the domestic scallop fishery is capable of catching and processing the allowable biological catch (ABC), there is no total allowable level of foreign fishing (TALFF), and foreign fishing on sea scallops is not permissible at this time.

(2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any;

The fishery and fishery participants are described in detail in Section 4.4 of Amendment 15 to the Scallop FMP. Section 5.6 in this document describes the scallop permits by category as well as the active scallop vessels by permit type that could be affected by this action. The number of trips and average scallops landed per category are also included in that section as well.

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from the fishery, and include a summary of the information utilized in making such specification;

The present and probable future condition of the resource and estimates of MSY and OY are given in Section 8.2.2.2 of Amendment 10 to the Scallop FMP.

The SSC reviewed the most recent work on assessing this resource and determined that acceptable biological catch be set at 45,414 mt in 2020 and 36,435 mt in 2021 (default). Acceptable Biological Catch (ABC) is defined as the maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan.

This level was recommended by the Science and Statistical Committee (SSC) and various sources of scientific uncertainty were considered when setting this value. ABC calculations were based on the overfishing definition approved in Amendment 15, spatially averaged $F = 0.64$ as of SARC 65. The control rule for target catches used for the limited access fishery in the Scallop FMP is that the spatially combined target fishing mortality must be no higher than that which gives a 25% probability of exceeding the ABC. This current estimate is a maximum of 0.46 for the limited access ACT in the Scallop FMP. Target fishing mortalities can be set below these limits but not above them. Under these principles, the probable future condition of this fishery is sustainable.

Current domestic landings and processing capabilities are around 50-60 million lb. Total landings have been above that level in some years since 2004, and are projected to be ~52 million pounds for 2020 for the proposed action (Section 4.3.1.3.2). However, the actual landings could be higher or lower than this amount depending on the availability of exploitable scallops in the open areas.

(4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States;

The US fishery is expected to harvest 100% of OY and domestic processors are expected to be able to process 100% of OY.

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, charter fishing, and fish processing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight

thereof, areas in which fishing was engaged in, time of fishing, number of hauls, economic information necessary to meet the requirement and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;

The FMP and existing regulations specify the type of reports and information that scallop vessel owners and scallop dealers must submit to NMFS. These data include, but are not limited to, the weight of target species and incidental catch which is landed, characteristics about the vessel and gear in use, the number of crew aboard the vessel, when and where the vessel fished, and other pertinent information about a scallop fishing trip. Dealers must report the weight of species landed by the vessel, the date of landing, and the ex-vessel price for each species and/or size grade. Important information about vessel characteristics, ownership, and location of operation is also required on scallop permit applications. Dealers are also surveyed for information about their processing capabilities.

All limited access scallop vessels and general category vessels are required to operate vessel monitoring system (VMS) equipment to record the location of the vessel for monitoring compliance with DAS regulations. An at-sea observer is also placed on scallop vessels at random to record more detailed information about the catch, including size frequency data, the quantity of discards by species, detailed gear data, and interactions with protected species.

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery;

The action proposed in this framework does not alter any adjustments made in the Scallop FMP that address opportunities for vessels that would otherwise be prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fisheries. No consultation with the Coast Guard is required relative to this issue.

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;

Essential fish habitat was defined in earlier scallop actions. This framework does not further address or modify those EFH definitions. There are no additional impacts to the physical environment or EFH expected from the action proposed in this framework.

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan;

Data and research needs for the Atlantic sea scallop and its associated fisheries are described in Section 5.1.8 of Amendment 10 and Section 4.1 of Amendment 15. Other data already collected include fishery dependent data described in Section 6.2.4 of Amendment 10 and Section 4.4 of Amendment 15, and fishery-independent resource surveys that provide an index of scallop abundance and biomass.

(9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on-- (A) participants in the fisheries and fishing communities affected by the plan or amendment; (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants; and (C) the safety of human life at sea, including weather and to what extent such measures may affect the safety of participants in the fishery;

The impacts of the scallop management program in general have been analyzed in previous scallop actions (Amendment 10, Amendment 11, Amendment 15, Amendment 19, Framework 16, and Frameworks 18 - 29). Any additional impacts from measures proposed in this action on fishery participants are summarized in Section 6.6.2. Safety in the scallop fishery was described in Section 8.1.5.6 of Amendment 10 and nothing proposed in this action will affect safety of human life at sea.

(10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery;

Overfishing reference points describing targets and thresholds for biomass and fishing mortality were updated in the most recent stock assessment (2018) and are presented and explained in Section 5.2 of this document. Under this overfishing definition, the overfishing threshold will be based on the spatially averaged $F = 0.64$. Acceptable Biological Catch (ABC) is defined as the maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan. ABC for this fishery is set by applying 0.51, the fishing mortality rate that has a 25% chance of exceeding the OLF. Finally, the ACT for the limited access fishery is set at a level that has an associated F with a 75-percent probability of remaining below the F associated with ABC/ACL (LA ACT = 0.46). The preferred alternative for this action has an overall spatially averaged fishing mortality of 0.182.

(11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided;

This action does not include changes to the current standardized bycatch reporting methodology (SBRM). This methodology is expected to assess the amount and type of bycatch in the scallop fishery and help identify ways the fishery can minimize bycatch and mortality of bycatch which cannot be avoided. The scallop fishery also has an industry funded observer set-aside program that provides additional funding (portion of total scallop catch set-aside) to put observers on scallop vessels.

(12) assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish;

The proposed action does not address recreational fishing regulations. There are no substantial recreational or charter fishing sections in the scallop fishery. Any recreational scallop fishing is likely conducted by diving, and harvest is by hand, meaning the survival of released scallops is maximized.

(13) include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery, including its economic impact, and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors;

A detailed description of the scallop fishery is included in Section 7.1 of Amendment 10, Section 4.4 in Amendment 11, Section 4.4 of Amendment 15, and Section 5.6 of this action. These sections provide information relative to scallop vessels, processors, and dealers.

(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate, taking into consideration the economic impact of the harvest restrictions or recovery benefits on the fishery participants in each sector, any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery; and

This action proposes slightly lower catch levels from FY2019. The measures included in this action are expected to have positive economic impacts in the short-term (2020) compared to the No Action alternative, and similar economic impacts in the short-term relative to the Status Quo scenario. The proposed measures are expected to have positive economic impacts over the long-term (2020-2034) compared to the No Action and Status Quo levels. The proposed specification measures will affect the vessels with limited access permits participating in the sea scallop fishery in similar proportions since each vessel within a permit category will receive the same number of open areas DAS and access area trip allocations, and the limited access general category IFQ vessels receive 5.5% of the total APL. As a result, the proposed specification measures will have proportionally similar impacts on revenues and profits of each vessel compared to No Action levels.

Section 6.6.1 provides a detailed examination of the expected economic impacts of this action. Harvest from the Atlantic sea scallop fishery will continue to be reviewed, established, and analyzed through the recurrent framework process. Recreational fishing for sea scallops is rare and does not affect the overall FMP or participants in the federal fishery.

(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

The proposed action includes catch limits for certain sectors of the scallop fishery, as well as effort controls for the rest of the fishery that is not under a direct TAC or quota. This action covers fishing years 2020 and 2021 (default) measures only. Measures have been set well below the fishing mortality threshold of 0.64, so overfishing is not expected to occur.

Amendment 15 was approved in 2011, which brought the Scallop FMP in compliance with new annual catch limits required under the reauthorized Magnuson-Stevens Act of 2007. The ABC was set in this action under the same principles and the respective values are: 45,414 mt in 2020 and 36,435 mt in 2021 (default). Fishery allocations under the proposed action are set at $F = 0.182$ overall; the annual projected landings from areas associated with that fishing mortality level is estimated to be around 52 million pounds in 2020.

7.2 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

7.2.1 Environmental Assessment

The required elements of an Environmental Assessment (EA) are specified in 40 CFR 1508.9(b). They are included in the document as follows:

- The need for this action is described in Section 3.2;
- The alternatives that were considered are described in Section 4.0 (alternatives including the proposed action);
- The environmental impacts of the proposed action are described in Section 6.0;
- A determination of significance is in Section 7.2.2; and,
- The agencies and persons consulted on this action are listed in Section 7.2.3 and Section 7.2.4.

While not required for the preparation of an EA, this document includes the following additional sections that are based on requirements for an Environmental Impact Statement (EIS).

- An executive summary can be found in Section 1.0;
- A table of contents can be found in Section 2.0;
- Background and purpose are described in Section 3.0;
- A summary of the document can be found in the executive summary, Section 1.0;
- A brief description of the affected environment is in Section 5.0;
- Cumulative impacts of the proposed action are described in Section 6.7;
- A list of preparers is in Section 7.2.3.

7.2.2 Finding of No Significant Impact

The Council on Environmental Quality (CEQ) Regulations state that the determination of significance using an analysis of effects requires examination of both context and intensity, and lists ten criteria for intensity (40 CFR 1508.27). In addition, the Companion Manual for National Oceanic and Atmospheric Administration Administrative Order 216-6A provides sixteen criteria, the same ten as the CEQ Regulations and six additional, for determining whether the impacts of a proposed action are significant. Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?

Response: The proposed action is not be expected to have significant impacts on the scallop resource, essential fish habitat, protected resources, or non-target species. The proposed action sets specifications for fishing years 2020 and 2021 (default) by modifying the rotational area management program implemented by Amendment 10. As discussed in Section 6.2, none of the modifications are expected to cause increases in fishing mortality above the overfishing threshold that would jeopardize the sustainability of the scallop resource. This action would result in continued scallop fishing activity in areas that have been continuously or sporadically fished using trawls and dredges, as well as targeted fishing on high densities of scallops in rotational areas that were made available through the implementation of the Omnibus Habitat Amendment 2 in 2018. Section 6.4 summarizes the impacts of the proposed action on endangered and threatened species. Overall, none of the proposed measures are expected to have a significant impact on these species as fishing behavior is not expected to change in a manner that would increase interactions. The proposed measures in Section 4.3.1.3.2 may result in lower

total area swept than Status Quo, which may result in fewer interactions with protected species. As discussed in Section 6.6, the proposed measures not expected to have significant socio-economic impacts because revenue, producer surplus, consumer surplus, and total economic benefits are anticipated to be very similar or the same as Status Quo.

2. Can the proposed action reasonably be expected to significantly affect public health or safety?

Response: The proposed action is not expected to significantly affect public health or safety. The proposed action is not expected to alter the manner in which the industry conducts fishing activities for the target species. Therefore, no changes in fishing behavior that would affect safety are anticipated. The overall effect of the proposed actions on the scallop fishery, including the communities in which they operate, will not adversely impact public health or safety.

3. Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?

Response: The proposed action is not expected to result in significant impacts to unique areas. The proposed action is not expected to alter fishing methods or activities or to substantially change fishing effort and area swept. Other types of commercial fishing already occur across the range of the fishery and although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to wrecks due to possible loss or entanglement of fishing gear.

4. Are the proposed action's effects on the quality of the human environment likely to be highly controversial?

Response: The measures contained in this action are not expected to be highly controversial. The impacts of the proposed measures on the human environment are described in Section 6.6. The proposed action facilitates access to areas that have been closed to fishing for many years. The scientific information upon which the annual catch and landings limits are based is the most recent information available, has been reviewed by fisheries experts, and is not considered highly controversial.

5. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: The proposed action is not expected to alter fishing methods or activities or to substantially increase fishing effort or the spatial and/or temporal distribution of scallop fishing in the region. The effects of fishing are well studied and the impacts to managed species, non-target species, and protected resources will continue to be monitored. The proposed action is not expected to have highly uncertain effects or to involve unique or unknown risks on the human environment.

6. Can the proposed action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: The proposed action is not expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. Framework 32 sets specifications for FY 2020 and default measures for FY 2021, establishes a closure to protect small scallops in the NGOM Management Area, sets the overall Northern Gulf of Maine Management Area TAC and how it is

apportioned to the LA and LAGC component, and establishes several measures to reduce fishery impacts on non-target species. This is not the first time a framework action has addressed specifications, Northern Gulf of Maine Management measures, or measures that reduce fishery impacts on small scallops and non-target species. Furthermore, the proposed action is explicit that Northern Gulf of Maine Management measures are not precedent setting.

7. Is the proposed action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?

Response: The CEA presented in Section 6.7.5 of this document considers the impacts of the proposed action in combination with relevant past, present, and reasonably foreseeable future actions and concludes that no significant cumulative impacts on the natural or physical environment are expected from the implementation of the proposed action. The proposed action would not have any significant impacts when considered in conjunction with any of the other actions presented in Section 6.0 (fishing related and non-fishing related).

8. Can the proposed action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

Response: There are shipwrecks in the area where scallop fishing occurs, including some registered or eligible to be registered on the National Register of Historic Places. However, vessels typically avoid fishing near known shipwrecks due to possible loss or entanglement of fishing gear. In fishing year 2017 there were unintended interactions and damage to a shipwreck in the Stellwagen Bank National Marine Sanctuary (SBNMS), likely caused by limited access vessels that were operating under DAS management in the NGOM management area and were not familiar with the location of the wrecks. In preparation for both the 2018 and 2019 Northern Gulf of Maine (NGOM) scallop fishery, NOAA Fisheries, in conjunction with NOAA Stellwagen Bank National Marine Sanctuary (Sanctuary), published a bulletin requesting that scallopers avoid shipwreck sites in the Sanctuary by keeping gear 360 feet away from each of the site locations listed in the bulletin. A chart was provided to show the area where these shipwrecks are located. Measures were implemented for fishing year 2018 and 2019 to limit effort in the NGOM, and no interactions with shipwrecks were reported. The proposed action for fishing year 2020 (i.e. this action, Framework 32) would close the area of Stellwagen Bank to protect a large recruitment event. Therefore, scallop vessels will not be operating in the vicinity of shipwrecks on Stellwagen Bank, and is it not likely that the proposed action would adversely affect the historic resources. Even with the proposed two-year closure, it is likely that vessels fishing in the area will have access to information about the location of shipwrecks that will help to inform future fishing in this area.

9. Can the proposed action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?

Response: The proposed action is not expected to have a significant impact on endangered or threatened species, or critical habitat of these species. Section 5.4 describes ESA listed species and critical habitat found in the affected environment of the scallop fishery. Section 6.4 summarizes the impacts of the proposed action on ESA listed species. Overall, none of the proposed measures are expected to have a significant impact on these species as fishing behavior is not expected to change in any substantial way. Generally, more access area effort is expected in the Georges Bank area under the preferred alternative than in the Mid-Atlantic where interactions have occurred. The preferred alternative would also reduce access area effort in the Mid-Atlantic relative to Status Quo. The preferred specifications alternative in

Section 4.3.1.3.2 would result in lower total area swept than Status Quo. When area swept is lower, fewer interactions with protected species are possible.

Given the above, this action falls within the range of impacts considered in the July 12, 2012, Scallop FMP Biological Opinion. However, in a memorandum dated February 19, 2020, GARFO's Protected Resources Division reinitiated consultation on the 2012 Biological Opinion. As part of the reinitiation, a memo issued by NMFS on March 4, 2020 determined that allowing this fishery to continue during the reinitiation period will not violate ESA sections 7(a)(2) and 7(d) because it 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 the 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 listed species of sea turtles or Atlantic sturgeon." Until replaced, the scallop FMP is currently covered by the March 4, 2020, memo.

As described in section 5.4, the proposed action is not likely to adversely affect any critical habitat designated for listed species. Given this, the scallop fishery will not adversely affect the essential physical and biological features of North Atlantic right whale or loggerhead (Northwest Atlantic DPS) critical habitat and therefore, will not result in the destruction or adverse modification of critical habitat for these species (NMFS 2012; NMFS 2014a; NMFS 2015a,b).

10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?

Response: The proposed action is not expected to alter fishing methods or activities such that they threaten a violation of Federal, state, or local law or requirements imposed for the protection of the environment. The proposed measures have been found to be consistent with other applicable laws (Sections 7.1 – 7.11).

11. Can the proposed action reasonably be expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act?

Response: The proposed action is not expected to adversely affect stocks of marine mammals as defined in the MMPA. Section 5.4 describes marine mammals that are found in the affected areas; however, despite the overlap of some marine mammal stocks and where the fishery is expected to operate, it has been determined that this action is not likely to affect any species of marine mammals 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.

12. Can the proposed action reasonably be expected to adversely affect managed fish species?

Response: The proposed action is not expected to jeopardize the sustainability of any managed fish species identified in Section 5.3. The preferred alternatives are not expected to result in the scallop fishery exceeding sub-ACLs two of the flatfish stocks it has allocations for (i.e. SNE/MA yellowtail, southern windowpane). While it is possible that the scallop fishery could exceed the sub-ACL's for GB

yellowtail and northern windowpane, the scallop fishery's catch of these stocks is not expected to result in the catch of all fisheries exceeding the OFL. As discussed in Section 6.3, there are several proposed measures in this action that are expected to reduce fishery impacts on these non-target stocks and are expected to result in less bycatch of GB yellowtail and northern windowpane than initially projected. Even still, the level of scallop fishery bycatch is not anticipated to have negative impacts on the stock status of either GB yellowtail or northern windowpane. The bycatch projections represent a reasonable approximation of catch that may occur and are highly dependent on projections of scallop biomass, assumptions of catch rates across the resource, and predictions of fishing behavior (e.g., where vessels will fish and at what time of year). As noted in section 6.3, in recent year bycatch projections have overestimated actual catch of GB yellowtail and Northern windowpane. Furthermore, the scallop FMP employs a range measures designed to reduce flatfish bycatch, such as time/area closures, as well as 10" twine tops and modified hanging ratios to improve escapement.

13. Can the proposed action reasonably be expected to adversely affect essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act?

Response: The proposed action is not expected to adversely affect essential fish habitat as defined under the M-S Act and described in Section 5.5. This action is expected to result in continued scallop fishing activity in areas that have been continuously or sporadically fished using trawls and dredges, including targeted fishing on high densities of scallops in rotational areas of Georges Bank and the Mid-Atlantic. Allocating scallop fishery effort to these high-density areas is expected to reduce overall swept area relative to No Action and Status Quo. Under the proposed measures, the scallop fishery would continue to be subject to existing habitat closures on Eastern Georges Bank and in the Great South Channel.

14. Can the proposed action reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

Response: The proposed action is not expected to have significant impacts on the natural or physical environment, including vulnerable marine or coastal ecosystems. The proposed action is not expected to alter fishing methods or activities or to substantially increase fishing effort or the spatial and(or) temporal distribution of current fishing effort. Atlantic sea scallops generally inhabit waters less than 20° C and depths that range from 30-110 m on Georges Bank, 20-80 m in the Mid-Atlantic, and are not found in deep coral ecosystems.

15. Can the proposed action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

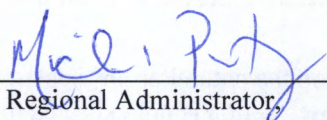
Response: The impacts of the scallop fishery on biodiversity and ecosystem functioning have not been assessed; however, the impacts to components of the ecosystem (i.e. non-target species, habitat, and protected species) have been considered and are described in Section 6.0. The proposed action is not expected to result in a change in the recent spatial and(or) temporal distribution of effort, and the fishery will continue to operate in areas that have been continuously or sporadically fished using trawls and dredges, and proposes to maintain fishing mortality at levels similar to those established in recent actions. Targeted fishing on high densities of scallops in rotational areas is not expected to result in fishing impacts that are appreciably different from scallop fishery impacts in other areas. The proposed measures are not expected to negatively impact the stock status of non-target species (Section 6.3), they are not likely to cause additional habitat damage beyond that previously caused by a variety of fisheries (Section 6.5), and they are not expected to jeopardize any protected species (Section 6.4).

16. Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

Response: The proposed action is not reasonably expected to result in the introduction or spread of a nonindigenous species. The only nonindigenous species known to occur in any substantial amount within the fishery areas is the colonial sea squirt (*Didemnum* sp.). This tunicate occurs on pebble gravel habitat, and does not occur on moving sand. NMFS and the WHOI HabCam have surveyed the area and studies are underway to monitor *Didemnum*'s growth and effect on scallops and their habitat. The proposed action is not expected to spread the species more than regular fishing activity would; however, the spread of invasive tunicates and fishing gear needs to be monitored closely.

FONSI STATEMENT:

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for Framework Adjustment 32 to the Atlantic Sea Scallop Fishery Management Plan, it is hereby determined that Framework Adjustment 32 will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not required.



Regional Administrator,
Greater Atlantic Regional Fisheries Office,
NOAA

March 11, 2020
Date

7.2.3 List of Preparers; Point of Contact

Questions concerning this document should be addressed to:

Mr. Thomas A. Nies, Executive Director
New England Fishery Management Council
50 Water Street, Mill 2
Newburyport, MA 10950
(978) 465-0492

Additional copies of this EA can be requested via the above contact or through the Council's website at <http://www.nefmc.org/scallops/index.html>

Framework Adjustment 32 was prepared and evaluated in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council. Members of the Scallop PDT prepared and

reviewed portions of analyses and provided technical advice during the development of the Environmental Assessment. The list of Scallop PDT members is included below:

Scallop Plan Development Team	
Sam Asci, NEFMC	Chad Keith, NEFSC, Observer Program
Carl Wilson, ME DMR	Dr. Dave Bethoney, SMAST
Dr. William DuPaul, College William & Mary	Dr. Cate O'Keefe, MA DMF
Travis Ford, GARFO, SFD	Danielle Palmer, GARFO, PRD
Benjamin Galuardi, GARFO APSD	Jonathon Peros, PDT Chair, NEFMC
Dr. Naresh Pradhan, NEFMC	Dr. David Rudders, VIMS
Dr. Dvora Hart, NEFSC, Population Dynamics	Tim Cardiasmenos, GARFO, NEPA
Dr. Rachel Feeney, NEFMC	Chris Parkins, RI DEM
Michael Kersula, ME DMR	

In addition, other individuals contributed data and technical analyses for the document. Jui-Han Chen (NEFSC), Shannah Jaburek, (GARFO, SFD), Cameron Hodgdon (UMaine), Jason Claremont (CFF), Dr. Liese Siemann, Dr. Jamie Cournane, Michelle Bachman, and Sherie Goutier from NEFMC staff assisted with various sections of this document.

7.2.4 Agencies Consulted

The following agencies were consulted in the preparation of this document:

- New England Fishery Management Council
- Mid-Atlantic Fishery Management Council
- National Marine Fisheries Service, NOAA, Department of Commerce

7.2.5 Opportunities for Public Comment

The proposed action was developed during the period of May 2019 through December 2019 and was discussed at the meetings listed in Table 91, below. Opportunities for public comment were provided at each of these meetings.

Table 91 – Summary of meetings with the opportunity for public comment during the development of FW32.

Meeting	Location	Date
Scallop Advisory Panel/PDT	Hilton Hotel, Providence, RI	5/21/2019
Scallop Advisory Panel	Hilton Hotel, Providence, RI	5/22/2019
Scallop Committee	Hilton Hotel, Providence, RI	5/23/2019
NEFMC Council Meeting	Double Tree by Hilton, So. Portland, ME	6/11/2019
Scallop PDT Conference Call		6/27/2019
Scallop PDT	Mariners House, Boston, MA	7/24/2019
Scallop PDT	J. Erik Jonsson Center, Woods Hole, MA	8/27/2019
Scallop PDT	J. Erik Jonsson Center, Woods Hole, MA	8/28/2019
Scallop PDT	Waypoint Event Center, New Bedford, MA	9/4/2019
Scallop PDT Conference Call		9/12/2019
Scallop Advisory Panel	Marriot Boston Logan, Boston, MA	9/18/2019
Scallop Committee	Marriot Boston Logan, Boston, MA	9/19/2019
NEFMC Council Meeting	Beauport Hotel, Gloucester, MA	9/26/2019
Scallop PDT Conference Call		10/1/2019
Scallop Advisory Panel/PDT	New Bedford Harbor Hotel, New Bedford, MA	10/23/2019
Scallop Committee	New Bedford Harbor Hotel, New Bedford, MA	10/24/2019
Scallop PDT Conference Call		11/5/2019
Scallop PDT Conference Call		11/12/2019
Scallop PDT Conference Call		11/15/2019
Scallop Advisory Panel	Hilton Hotel, Providence, RI	11/19/2019
Scallop Committee	Hilton Hotel, Providence, RI	11/20/2019
NEFMC Council Meeting	Hotel Viking, Newport, RI	12/5/2019

7.3 MARINE MAMMAL PROTECTION ACT

Section 5.4 describes marine mammals that are found in the affected environment of the scallop fishery; however, despite the overlap of some marine mammal stocks and where the fishery is expected to operate, it has been determined that this action is not likely to affect any species of marine mammals 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.

Given the above, the Council has concluded that the management actions proposed are consistent with the provisions of the MMPA and would not alter existing measures to protect the species likely to inhabit the management area of the subject fishery. A final determination of consistency with the MMPA will be made by the agency when Framework 32 is implemented.

7.4 ENDANGERED SPECIES ACT

On July 12, 2012, NMFS issued a Biological Opinion (Opinion) on the operation of scallop fishery, as authorized under the scallop FMP. The 2012 Opinion concluded that the operation of the scallop fishery may adversely affect, but would not jeopardize, the continued existence of Northwest Atlantic Ocean distinct population segment (DPS) loggerhead, leatherback, Kemp's ridley, and green sea turtles, as well as the five listed DPSs of Atlantic sturgeon. An Incidental Take Statement (ITS) for sea turtles (Northwest Atlantic DPS loggerheads, leatherbacks, Kemp's ridley, and green) and the five listed DPSs of Atlantic sturgeon was issued along with the Opinion exempting a level of annual take for Scallop FMP. On February 19, 2020, NMFS reinitiated consultation on the scallop Opinion due to new information indicating that the scallop fleet had exceeded the ITS trigger of a two-year average of 359,797 dredge hours for 2015-2016 and 2016-2017.

Section 7(d) of the ESA prohibits federal agencies from making any irreversible or irretrievable commitment of resources with respect to the agency action that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives during the consultation period. This prohibition is in force until the requirements of section 7(a)(2) have been satisfied. Section 7(d) does not prohibit all aspects of an agency action from proceeding during consultation; non-jeopardizing activities may proceed as long as their implementation would not violate section 7(d). Per the March 4, 2020 memo, it was concluded that allowing the scallop fishery to continue during the reinitiation period will not increase the likelihood of interactions with ESA listed species above the amount that would otherwise occur if consultation had not been reinitiated. Based on this, the memo concluded that the continuation of the scallop fishery during the reinitiation period would not be likely to jeopardize the continued existence of any ESA listed species of sea turtles or Atlantic sturgeon. Taking this, as well as our analysis of the proposed action into consideration, we do not expect the proposed action, in conjunction with other activities, to result in jeopardy to any ESA listed species.

This action does not represent any irreversible or irretrievable commitment of resources with respect to the FMP that would affect the development or implementation of reasonable and prudent measures during the consultation period. NMFS has discretion to amend its MSA and ESA regulations and may do so at any time subject to the Administrative Procedure Act and other applicable laws. As a result, the Council has preliminarily determined that fishing activities conducted pursuant to this action will not affect endangered and threatened species or critical habitat in any manner beyond what has been considered in prior consultations on this fishery.

7.5 ADMINISTRATIVE PROCEDURES ACT

Sections 551-553 of the Administrative Procedure Act established procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process, and to give public notice and opportunity for comment. The Council did not request relief from notice and comment rule making for this action, and the Council expects that NOAA Fisheries will publish proposed and final rule making for this action.

The Council has held 19 in person meetings and 9 conference calls open to the public on Framework 32 (Table 91). The Council initiated this action at the June 2019 Council meeting and approved final measures at the December 2019 meeting. After submission to NMFS, a proposed rule and notice of availability for Framework 32 under the M-S Act will be published to provide opportunity for public comment.

7.6 PAPERWORK REDUCTION ACT

The purpose of the Paperwork Reduction Act is to minimize paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. It also ensures that the Government is not overly burdening the public with requests for information. The amount that the proposed action would alter the burden hour estimates will be described and evaluated in an updated PRA analysis and public comments will be sought through Framework 32 proposed rulemaking.

7.7 COASTAL ZONE MANAGEMENT ACT

Section 307 of the Coastal Zone Management Act (CZMA) is known as the federal consistency provision. Federal Consistency review requires that “federal actions, occurring inside or outside of a state's coastal zone, that have a reasonable potential to affect the coastal resources or uses of that state's coastal zone, to be consistent with that state's enforceable coastal policies, to the maximum extent practicable.” The Council previously made determinations that the FMP was consistent with each state’s coastal zone management plan and policies, and each coastal state concurred in these consistency determinations (in Scallop FMP). Since the proposed action does not propose any substantive changes from the FMP, the Council has determined that this action is consistent with the coastal zone management plan and policies of the coastal states in this region. Once the Council has adopted final measures and submitted Framework 32 to NMFS, NMFS will request consistency reviews by CZM state agencies directly.

7.8 INFORMATION QUALITY ACT (IQA)

Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554, also known as the Data Quality Act or Information Quality Act) directed the Office of Management and Budget (OMB) to issue government-wide guidelines that “provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by federal agencies.” OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with the OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the Data Quality Act. Information must meet standards of utility, integrity and objectivity. This section provides information required to address these requirements

Utility of Information Product

The proposed document includes: A description of the management issues, a description of the alternatives considered, and the reasons for selecting the preferred management measures, to the extent that this has been done. These actions propose modifications to the existing FMP. These proposed modifications implement the FMP's conservation and management goals consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as well as all other existing applicable laws.

Utility means that disseminated information is useful to its intended users. “Useful” means that the content of the information is helpful, beneficial, or serviceable to its intended users, or that the information supports the usefulness of other disseminated information by making it more accessible or easier to read, see, understand, obtain or use. The information presented in this document is helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the proposed action, the measures proposed, and the impacts of those measures. A discussion of the reasons

for selecting the proposed action is included so that intended users may have a full understanding of the proposed action and its implications. The intended users of the information contained in this document are participants in the Atlantic sea scallop fishery and other interested parties and members of the general public. The information contained in this document may be useful to owners of vessels holding a Atlantic sea scallop permit as well as scallop dealers and processors since it serves to notify these individuals of any potential changes to management measures for the fishery. This information will enable these individuals to adjust their fishing practices and make appropriate business decisions based on the new management measures and corresponding regulations.

The information being provided in this action is based on landings and effort information through the 2018 and 2019 fishing years when possible. Information presented in this document is intended to support Framework 32 and the proposed specifications for the 2020-2021 fishing years, which have been developed through a multi-stage process involving all interested members of the public. Consequently, the information pertaining to management measures contained in this document has been improved based on comments from the public, fishing industry, members of the Council, and NOAA Fisheries.

Until a proposed rule is prepared and published, this document is the principal means by which the information herein is publicly available. The information provided in this document is based on the most recent available information from the relevant data sources, including detailed and relatively recent information on the skate resource and, therefore, represents an improvement over previously available information. This document will be subject to public comment through proposed rulemaking, as required under the Administrative Procedure Act and, therefore, may be improved based on comments received.

This document is available in several formats, including printed publication, and online through the NEFMC's web page (www.nefmc.org). The Federal Register notice that announces the proposed rule and the final rule and implementing regulations will be made available in printed publication, on the website for the Greater Atlantic Regional Fisheries Office (www.greateratlantic.fisheries.noaa.gov), and through the Regulations.gov website. The Federal Register documents will provide metric conversions for all measurements.

Integrity of Information Product

Integrity refers to security – the protection of information from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification. Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NMFS adheres to the standards set out in Appendix III, “Security of Automated Information Resources,” of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity of Information Product

Objective information is presented in an accurate, clear, complete, and unbiased manner, and in proper context. The substance of the information is accurate, reliable, and unbiased; in the scientific, financial, or statistical context, original and supporting data are generated and the analytical results are developed using sound, commonly accepted scientific and research methods. “Accurate” means that information is within an acceptable degree of imprecision or error appropriate to the kind of information at issue and otherwise meets commonly accepted scientific, financial, and statistical standards.

For the Pre-Dissemination Review, this document is considered a “Natural Resource Plan.” Accordingly, the document adheres to the published standards of the MSA; the Operational Guidelines, Fishery Management Plan Process; the Essential Fish Habitat Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing NEPA. This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Several data sources were used in the development of this action, including, but not limited to, historical and current landings data from the Commercial Dealer and DMIS databases, vessel trip report (VTR) data, and fisheries independent data collected through the NMFS bottom trawl surveys. The analyses herein were prepared using data from accepted sources and have been reviewed by members of the Scallop Plan Development Team and by the SSC where appropriate.

The conservation and management measures considered for this action were selected based upon the best scientific information available. The analyses important to this decision used information from the most recent complete fishing years, generally through FY 2018. The data used in the analyses provide the best available information on the number of permits, both active and inactive, in the fishery, the catch (including landings and discards) by those vessels, the landings per unit of effort (LPUE), and the revenue produced by the sale of those landings to dealers, as well as data about catch, bycatch, gear, and fishing effort from a subset of trips sampled at sea by government observers.

Specialists (including professional members of plan development teams, technical teams, committees, and Council staff) who worked with these data are familiar with the most current analytical techniques and with the available data and information relevant to the Atlantic sea scallop fishery. The proposed action is supported by the best available scientific information. The policy choice is clearly articulated in Section 4.0, the management alternatives considered in this action.

The supporting science and analyses, upon which the policy choice was based, are summarized and described in Section 5.0 of this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency. The review process used in preparation of this document involves the responsible Council, the NEFSC, GARFO, and NOAA Fisheries Service Headquarters. The NEFSC’s technical review is conducted by senior-level scientists specializing in population dynamics, stock assessment, population biology, and social science.

The Council review process involves public meetings at which affected stakeholders have opportunity to comment on the document. Review by staff at GARFO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. The Council also uses its Scientific and Statistical Committee to review the background science and assessment to approve the Allocable Biological Catch (ABCs), including the effects those limits would have on other specifications in this document. The SSC is the primary scientific and technical advisory body to the Council and is made up of scientists that are independent of the Council. A list of current committee members can be found at: <https://www.nefmc.org/committees/scientific-and-statistical-committee>.

Final approval of the action proposed in this document and clearance of any rules prepared to implement resulting regulations is conducted by staff at NOAA Fisheries Service Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget. In preparing this action for the Northeast Skate Complex FMP, NMFS, the Administrative Procedure Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Information Quality Act, and Executive Orders 12630 (Property Rights), 12866 (Regulatory Planning), 13132 (Federalism), and 13158 (Marine Protected Areas). The Council has determined that the proposed action is consistent with the National Standards of the MSA and all other applicable laws..

7.9 EXECUTIVE ORDER 13158 (MARINE PROTECTED AREA)

Executive Order (EO) 13158 on Marine Protected Areas (MPAs) requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The EO directs federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the EO. The EO requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. A list of MPA sites has been developed and is available at: <http://marineprotectedareas.noaa.gov/nationalsystem/nationalsystemlist/>. No further guidance related to this EO is available at this time.

In the Northeast U.S., the only MPAs are the Stellwagen Bank National Marine Sanctuary (SBNMS), the Tilefish Gear Restricted Areas in the canyons of Georges Bank, and the National Estuarine Research Reserves and other coastal sites. The only MPA that overlaps the Atlantic sea scallop fishery footprint is the SBNMS.

This action is not expected to more than minimally affect the biological/habitat resources of the SBNMS MPA, which was comprehensively analyzed in the Omnibus Habitat Amendment 2 (NEFMC 2016). Fishing gears regulated by the Atlantic sea scallop FMP are unlikely to damage shipwrecks and other cultural artifacts because fishing vessel operators avoid contact with cultural resources on the seafloor to minimize costly gear losses and interruptions to fishing. Access to SBNMS will be limited in FY 2020 due to closure within the Northern Gulf of Maine Management Area.

In fishing year 2017 there were unintended interactions and damage to a shipwreck in the Stellwagen Bank National Marine Sanctuary (SBNMS), likely caused by limited access vessels that were operating under DAS management in the NGOM management area and were not familiar with the location of the wrecks. In preparation for both the 2018 and 2019 Northern Gulf of Maine (NGOM) scallop fishery, NOAA Fisheries, in conjunction with NOAA Stellwagen Bank National Marine Sanctuary (Sanctuary), published a bulletin requesting that scallopers avoid shipwreck sites in the Sanctuary by keeping gear 360 feet away from each of the site locations listed in the bulletin. A chart was provided to show the area where these shipwrecks are located. Measures were implemented for fishing year 2018 and 2019 to limit effort in the NGOM, and no interactions with shipwrecks were reported. The proposed action for fishing year 2020 (i.e. this action, Framework 32) would close the area of Stellwagen Bank to protect a large recruitment event. Therefore, scallop vessels will not be operating in the vicinity of shipwrecks on Stellwagen Bank, and is it not likely that the proposed action would adversely affect the historic resources. Even with the proposed two-year closure, it is likely that vessels fishing in the area will have access to information about the location of shipwrecks that will help to inform future fishing in this area.

7.10 EXECUTIVE ORDER 13132 (FEDERALISM)

The E.O. on federalism establishes nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. Previous scallop actions have already described how the management plan is in compliance with this order. Furthermore, this action does not contain policies with Federalism implications, thus preparation of an assessment under E.O. 13132 is not warranted. The affected states have been closely involved in the development of the proposed action through their representation on the Council (all affected states are represented as voting members of at least one Regional Fishery Management Council). No comments were received from any state officials relative to any federalism implications that may be associated with this action.

7.11 EXECUTIVE ORDER 12898 (ENVIRONMENTAL JUSTICE)

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations provides guidelines to ensure that potential impacts on these populations are identified and mitigated, and that these populations can participate effectively in the NEPA process (EO 12898 1994). NOAA guidance NAO 212-6, at Section 7.02, states that “consideration of EO 12898 should be specifically included in the NEPA documents for decision-making purposes.” Agencies should also encourage public participation, especially by affected communities, during scoping, as part of a broader strategy to address environmental justice issues. Minority and low-income individuals or populations must not be excluded from participation in, denied the benefits of, or subjected to discrimination because of their race, color, or national origin.

Although the impacts of this action may affect communities with environmental justice concerns, the proposed actions should not have disproportionately high effects on low income or minority populations. The proposed actions would apply to all participants in the affected area, regardless of minority status or income level. The existing demographic data on participants in the Northeast skate complex fishery (i.e., vessel owners, crew, dealers, processors, employees of supporting industries) do not allow identification of those who live below the poverty level or are racial or ethnic minorities. Thus, it is impossible to fully determine how the actions within this specification document may impact these population segments. The public comment process is an opportunity to identify issues that may be related to environmental justice, but none have been raised relative to this action. The public has never requested translations of documents pertinent to the Atlantic sea scallop fishery.

For primary port communities relevant to this action (Section 5.6.2), poverty and minority rate data (for 2010) at the state and county levels are in Table 92 (Hampton and Newport News, Virginia are independent cities). Minority rates are well below the state averages, except Hampton and Newport News, Virginia. Poverty rates are below or within 3% of state averages.

With respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. GARFO tracks these issues, but there are no federally recognized tribal agreements for subsistence fishing in New England federal waters.

Table 92 - Demographic Data for Atlantic Sea Scallop Fishing Communities (counties)

State/County	Minority Rate ^a	Poverty Rate ^b
<i>Massachusetts</i>	23.6%	10.5%
Barnstable	7.5%	7.5%
Bristol	13.6%	11.3%
<i>Rhode Island</i>	22.6%	12.2%
Washington	7.4%	7.4%
<i>Connecticut</i>	27.6%	10.1%
New London	20.6%	7.2%
<i>New Jersey</i>	39.4%	9.1%
Cape May	12.5%	9.2%
Ocean	13.4%	9.0%
<i>Virginia</i>	34.3%	10.3%
Hampton ^c	57.8%	12.6%
Newport News ^c	53.0%	13.5%
York	24.9%	3.9%

Source: U.S. Census Bureau, 2010:

https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

^a Persons other than those who report as White persons not Hispanic or Latino.

^b Persons below poverty level, 2006-2010.

^c An independent city.

7.12 EXECUTIVE ORDER 12866 (REGULATORY IMPACT REVIEW)

7.12.1 Introduction

The Regulatory Impact Review (RIR) provides an assessment of the costs and benefits of preferred alternatives and other alternatives in accordance with the guidelines established by Executive Order 12866. The regulatory philosophy of Executive Order 12866 stresses that in deciding whether and how to regulate agencies should assess all costs and benefits of all regulatory alternatives and choose those approaches that maximize the net benefits to the society.

The RIR also serves as a basis for determining whether any proposed regulations are a “significant regulatory action” under the criteria provided in Executive Order 12866 and whether the proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act of 2180 (RFA).

The Framework 32 document contains all the elements of the RIR/RFA, and the relevant sections are identified by reference to the document. Economic impacts of this action are summarized in Section 6.6.1 of this document.

7.12.2 Statement of the Problem/Goals and Objectives

The purpose of and the need for action are described in Section 3.2.

7.12.3 Management Alternatives and Rationale

The alternatives under consideration in this Framework are explained in Section 4.0.

7.12.4 Description of the Fishery

A description of the fishery is available in Section 5.0.

7.12.5 Summary of Economic Impacts

Section 6.6.1 evaluated economic impacts of Framework 32 proposed measures and alternatives considered by the Council. The combined impacts of the specification alternatives on scallop fishery, on consumers and total economic benefits to the nation are analyzed in Section 6.6.1.3 and subsections from Section 6.6.1.3.1 to Section 6.6.1.3.6. The economic impacts of the individual measures are discussed in Sections as indicated below.

Section 6.6.1.1 Acceptable Biological Catch

Section 6.6.1.2 Northern Gulf of Maine Management Area

Section 6.6.1.3 Economic impacts of the Framework 32 specification alternatives

Section 6.6.1.3.1 Summary of Short- and Long-Term Impacts

Section 6.6.1.3.2 Access Area Trip Allocations to the LAGC IFQ Component

Section 6.6.1.3.3 Landings and Size Composition

Section 6.6.1.3.4 Prices and Revenue

Section 6.6.1.3.5 Impacts on DAS and Employment

Section 6.6.1.3.6 Producer Surplus, Consumer Surplus, and Total Economic Benefits

Section 6.6.1.4 Full Time Limited Access Trip Exchanges

Section 6.6.1.5 Access Area Trip Allocations to the LAGC IFQ Component

Section 6.6.1.6 Additional measures to reduce fishery impacts

Section 6.6.1.7 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on George Bank Yellowtail Flounder and Northern Windowpane Flounder

Section 6.6.1.8 - Uncertainties and risks

The values for economic impacts are presented in terms of 2001 dollars in Section 7.1 and for the determination of the significant impacts, cumulative present value of the net economic benefits to the nation are also estimated in terms of 2001 dollars consistent with the guidelines in Circular A-4 (2003)²¹. The results of the economic impacts in 2001 dollars were summarized in Table 95, Table 96, and Table 97.

²¹ Page 32 of Circular A-4 (2003) states that: "In presenting the stream of benefits and costs, it is important to measure them in constant dollars to avoid the misleading effects of inflation in your estimates", and page 45 states that: "Please report all monetized effects in 2001 dollars. You should convert dollars expressed in different years to 2001 dollars using the GDP deflator".

7.12.5.1 Baseline for determination of significant impacts

Framework 32 is a one-year action that will be implemented for the 2020 fishing year. It also includes default measures for 2021 in case the next scallop framework action is delayed. This evaluation of the economic impacts of the proposed action compares projections for the current fishing year (2019) to the economic projections for scenarios that were considered for the upcoming fishing year in Framework 32 (2020). For the E.O. 12866 analysis, the economic impacts of the proposed measures are estimated relative to the management framework that was implemented for fishing year 2019 (i.e. FW30 preferred alternative) only. In this comparison, Limited Access DAS were based on a fishing mortality rate of $F=0.23$ in open areas, and each LA FT vessel was allocated 7 access area trips for FY 2019. The FW30 preferred alternative projection for FY 2019 is used to evaluate whether the action will have a significant economic impact on the economy under the requirements of E.O. 12866. Specification alternatives under considerations in FW32 are presented in Table 93.

Table 93. Specification alternatives under consideration in FW 32

Section	Description	Alternative	Run	FT DAS	Overall F in 2020	Open Area F in 2020
4.3.1.1	No Action	Alternative 1	NA	18	0.061	0.24
4.3.1.2.1	CAII ext Open 22 DAS	Alternative 2, sub-option 1	xop22	22	0.183	0.27
4.3.1.2.2	CAII ext Open 24 DAS	Alternative 2, sub-option 2	xop24	24	0.189	0.3
4.3.1.3.1	CAII ext Closed 22 DAS	Alternative 3, sub-option 1	xcl22	22	0.18	0.3
4.3.1.3.2	CAII ext Closed 24 DAS (Preferred Alternative)	Alternative 3, sub-option 2	xcl24	24	0.182	0.33
n/a	FW30 Baseline – 2019 management measures are included for comparison to past FY (Status Quo, only for this section)			24	0.139 (2019)	0.23

The Council and NOAA Fisheries have successfully used a hybrid system of DAS and rotational closures in the management of Atlantic sea scallops. This approach can result in increases and decreases in landings over time, depending on which rotational areas may be open for harvest or closed to protect small scallops and improve yield-per-recruit. Considering that rotational closures and rotational harvest are driven by underlying resource conditions (i.e. level of exploitable biomass), a major driver of scallop fishery allocations is recruitment. While recruitment has been unremarkable in recent years, two exceptional year classes (2012 & 2013) buoyed projected landings to over 60 million pounds in 2018 and 2019, with the majority of this harvest attributed to rotational areas. Considering the lack of incoming recruitment since 2012 and 2013 and that these year classes have continued to be harvested by the fishery

over several years, overall landings, and subsequent economic benefits are expected to decline. Therefore, the decline in projected landings between 2019 and 2020 could be expected.

Table 94. Projected and actual scallop landings during FY2011-FY2020.

FY	Total Landings (lbs.)	Projected Landings (lbs.)	Differences in Actual vs. Projected Landings (lbs.)	% Differences in Actual vs Projected Landings	Difference on Projected landings (lbs.) from Lag Year	% Difference on Projection from Lag Year
2011	58,461,465	52,300,000	6,161,465	11.78%	N/A	N/A
2012	57,098,684	57,200,000	-101,316	-0.18%	4,900,000	9.37%
2013	39,807,589	38,216,741	1,590,848	4.16%	-18,983,259	-33.19%
2014	32,020,980	38,463,656	-6,442,676	-16.75%	246,915	0.65%
2015	36,974,195	47,400,000	-10,425,805	-22.00%	8,936,344	23.23%
2016	42,423,177	46,932,006	-4,508,829	-9.61%	-467,994	-0.99%
2017	51,325,269	45,230,038	6,095,231	13.48%	-1,701,968	-3.63%
2018	58,100,342	57,748,612	351,730	0.61%	12,518,574	27.68%
2019	N/A	62,525,276		N/A	4,776,664	8.27%
2020	N/A	51,604,456		N/A	-10,920,820	-17.47%

Source: year-end catch reports, updated July 2019.

7.12.5.1.1 Summary of the economic impacts of the proposed measures

Economic impacts of the proposed measures in Framework 32 are evaluated relative to Framework 30's preferred alternative. The economic assessments are in terms of the differences in landings, revenues, producer surplus and total economic benefits between the two frameworks both in the short-run and long-run.

Short-run impacts:

- An economic assessment and comparison are made on the preferred alternatives for FY2019 (FW30) and for FY2020 (FW32). In the short run (FY2020), the aggregate economic impact of the preferred alternative in FY2020 (FW32) is expected to be negative compared to the preferred alternative in FY2019 (FW30) due to a projected drop in landing by about 11 million pounds in FY2020. Hence, scallop revenue, producer surplus and total economic benefits (in 2001 dollars) for the preferred alternative (Section 4.3.1.3.2) in FY2020 (FW 32) are expected to decline by \$71.63 million, \$65.35 million and \$91.80, respectively, compared to the preferred alternative projections for FY2019 (FW30) (Table 95).
- The economic impacts for the other three non-preferred alternatives in FY2020 (Framework 32) are also lower when compared to the preferred alternative in FY2019 (Framework 30) (Table 95).
- While the projected landings have been similar to the estimates from preceding fishing since 2011, wider swings in projected landings year-over-year can be expected occasionally due to the

nature of stock recruitment and other environmental conditions. Scallop landing projections have ranged between 38 and 63 million pounds over the eight-year period from 2011- 2020. During this period, projected landings increased by about 23% in FY2015 and 28% in FY2018 compared to previous year, but the projections also dropped with a similar magnitude in FY2013 and FY2020 by about 33% and 17% from their lag years, respectively (Table 94). The amount of year-over-year variations in projected landings and associated risks are, however, expected by stakeholders.

Table 95. Economic Impacts for 2020 compared with 2019 (Framework 30's Preferred Alternative projections): Estimated landings (Mil. lbs.), revenues, producer surplus and Total economic benefits (in 2001 constant dollars, Mil. \$)

Section	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (FW32 preferred)	FW30's Preferred Alternative (SQ)
Framework	FW32	FW32	FW32	FW32	FW32	FW30
Fishing Year	2020	2020	2020	2020	2020	2019
Description/Alternatives	No Action	CAII ext Open 22 DAS	CAII ext Open 24 DAS	CAII ext Closed 22 DAS	CAII ext Closed 24 DAS	Projected Values of FR30 Preferred Alternative for FY2019
	(Alt. 1)	(Alt. 2, sub-opt. 1)	(Alt. 2, sub-opt. 2)	(Alt. 3, sub-opt. 1)	(Alt. 3, sub-opt. 2)	
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	24DASFlex18000
Landings	27.6	50.4	52	50	51.6	62.543
Revenue	\$194.11	\$331.95	\$340.54	\$329.45	\$337.77	\$409.398
Producer Surplus	\$139.78	\$262.30	\$269.23	\$259.81	\$266.46	\$331.81
Total Economic Benefits	\$146.15	\$290.71	\$299.24	\$288.08	\$296.33	\$388.13
Net Values or Difference from FY2019 (FW30's Preferred Alternative projection) values:						
Landings	-34.94	-12.14	-10.54	-12.54	-10.94	0.00
Revenue	-\$215.29	-\$77.45	-\$68.86	-\$79.95	-\$71.63	\$0.00
Producer Surplus	-\$192.03	-\$69.51	-\$62.58	-\$72.00	-\$65.35	\$0.00
Total Economic Benefits	-\$241.98	-\$97.42	-\$88.89	-\$100.05	-\$91.80	\$0.00

Long-run impacts:

- In the long-run, cumulative present value of the economic benefits of the preferred alternative in FW32 (FY2020-2034) are lower compared to the preferred alternative in FW30 (FY2019-2033) (Table 96 and Table 97). Total economic benefits are expected to be lower for the preferred alternative (Alternative 3, sub-option 2; Section 4.3.1.3.2), which closes the CAII-extension on eastern Georges Bank compared to preferred alternative in FW30. The annualized decline in total economic benefits for the preferred alternative in FW32 over the long-term (over a period of 15 years) compared to the preferred alternative in FW30 are by \$87.46 million and \$79.35 million using a discount rate of 7% and 3%, respectively (Table 96 and Table 97, in 2001 dollars).
- The economic impacts for the other three non-preferred alternatives in the long-run for the FW32 (FY2020-2034) are also lower when compared to the preferred alternative with FW30 (FY2019-2033) at a discount rates of 7% and 3% (Table 96 and Table 97).

Table 96 - Long-term Economic Impacts(FY2020-2034): Cumulative present value of revenues and total economic benefits *net of Status Quo* values (Monetary values in Mill. \$, in 2001 constant dollars, 7% discount rate)

Section	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	FW30 Preferred Alt. (SQ)
Fishing Years	2020-2034	2020-2034	2020-2034	2020-2034	2020-2034	2019-2033
Description/Alternatives	No Action (Alt. 1)	CAII ext Open 22 DAS (Alt. 2, sub-opt. 1)	CAII ext Open 24 DAS (Alt. 2, sub-opt. 2)	CAII ext Closed 22 DAS (Alt. 3, sub-opt. 1)	CAII ext Closed 24 DAS (Alt. 3, sub-opt. 2)	24DASFlex18000
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	FW30 Pref.
Landings	1011.89	1020.12	1020.45	1019.35	1019.60	1127.698
Revenue	\$3,950.51	\$4,040.83	\$4,044.21	\$4,033.54	\$4,036.55	\$4,537
Producer Surplus	\$3,117.32	\$3,198.49	\$3,201.06	\$3,191.98	\$3,194.20	\$3,669
Total Benefits	\$3,612.11	\$3,688.58	\$3,691.02	\$3,680.38	\$3,682.40	\$4,479
Difference from FW30 Preferred Alternative Values:						
Revenue	(\$586.49)	(\$496.17)	(\$492.79)	(\$503.46)	(\$500.45)	\$0.00
Producer Surplus	(\$551.68)	(\$470.51)	(\$467.94)	(\$477.02)	(\$474.80)	\$0.00
Total Economic Benefits	(\$866.89)	(\$790.42)	(\$787.98)	(\$798.62)	(\$796.60)	\$0.00
Annualized and Annual Values:						
Annualized value =PMT(0.07,15,NetCPV\$)	-\$95.18	-\$86.78	-\$86.52	-\$87.68	-\$87.46	\$0.0

Table 97 - Long-term Economic Impacts(2020-2034): Cumulative present value of revenues and total economic benefits net of Status Quo values (Monetary values in Mill. \$, in 2001 constant dollars, 3% discount rate)

Section	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	FW30 Preferred Alt. (SQ)
Fishing Years	2020-2034	2020-2034	2020-2034	2020-2034	2020-2034	2019-2033
Description/Alternatives	No Action (Alt. 1)	CAII ext Open 22 DAS (Alt. 2, sub-opt. 1)	CAII ext Open 24 DAS (Alt. 2, sub-opt. 2)	CAII ext Closed 22 DAS (Alt. 3, sub-opt. 1)	CAII ext Closed 24 DAS (Alt. 3, sub-opt. 2)	24DASFlex18000
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	FW30 Pref.
Landings	1,011.89	1,020.12	1,020.45	1,019.35	1,019.60	1,127.698
Revenue	\$5,001.38	\$5,086.62	\$5,090.09	\$5,080.38	\$5,083.16	\$5,671
Producer Surplus	\$3,967.43	\$4,044.35	\$4,046.43	\$4,038.80	\$4,040.19	\$4,586
Total Benefits	\$4,568.95	\$4,638.94	\$4,641.02	\$4,631.32	\$4,632.71	\$5,580
Difference from FW30 preferred alternative Values;						
Revenue	(\$669.62)	(\$584.38)	(\$580.91)	(\$590.62)	(\$587.84)	\$0.00
Producer Surplus	(\$618.57)	(\$541.65)	(\$539.57)	(\$547.20)	(\$545.81)	\$0.00
Total Economic Benefits	(\$1,011.05)	(\$941.06)	(\$938.98)	(\$948.68)	(\$947.29)	\$0.00
Annualized and Annual Values:						
Annualized value =PMT(0.03,15,NetCPV\$)	-\$84.69	-\$78.83	-\$78.66	-\$79.47	-\$79.35	\$0.00

- The level of employment in the scallop fishery as measured by CREW*DAS will be lower for the preferred alternative in FW32 in 2020 compared to FY 2019 (FW30 Baseline). This is because there are fewer access area trips allocated, and subsequently lower landings and fewer overall DAS that are expected to be fished under the Framework 32 preferred alternative compared to FY 2019 (FW30 preferred alternative). Employment will be lower by 17.45 % in FY2020 for the preferred alternative (Section 4.3.1.3.2) compared to levels estimated for FY 2019 in FW30. Employment under the preferred alternative in FW32 (Section 4.3.1.3.2) will be lower over the long-term (FY2020-2034) as well by about 12.1% compared to estimates of FW30 (FY2019-2033) preferred alternative.
- The measures for the NGOM scallop fishery considered in this action are described in detail in Section 4.2.2 of Framework 32. Economic impacts of the NGOM alternatives are analyzed in Section 6.6.1.2 of the Framework documents. Preferred alternative (Alternative 2, Sub-option 2)

would allow a higher amount scallop landing (TAC 350,000 lbs.) to occur in the NGOM area relative to “No Action” (Alternative 1, TAC 170,000 lbs.). The preferred TAC represents an increase from FY 2019 levels, when the NGOM TAC was set at 205,000 lbs. As a result, the net revenue for the LAGC NGOM fishery is expected to increase by about 75% under the preferred measure compared to the “No Action” with positive impacts on the profits of NGOM LAGC entities. The first 70,000 pounds will be allocated to the limited access general category component of the fishery. The remaining poundage will be split 50/50 between the LAGC and limited access components of the fishery. The limited access share of the NGOM TAC can be utilized only for research set-aside (RSA) compensation fishing. Depending on the scallop resource productivity in the open areas, the cap and the requirement that Limited Access (LA) share would be harvested as RSA compensation fishing can have some marginally low negative impacts on the LA fishery due to effort displacement to other areas which may not be as productive as the NGOM scallop fishery. However, if more research takes place in this area, it will help to increase understanding of removals from the NGOM management area. This, in turn, will lead better management of the NGOM resource with positive biological and economic impacts over the long-term on both LAGC and LA vessels.

- Allocating 5.5% of the total allocations to LAGC vessels could result in a maximum of 4,521 trips (at 600 pound trip limit) under the preferred alternative (Section 4.3.1.3.2), would have positive economic impacts compared No Action which only provides a maximum of 2,318 trips as a default measure. In FY 2019, total allocations to LAGC vessels could result in a maximum of 5,498 trips (at 600 pound trip limit) under the preferred alternative in FY2019. The economic impacts on the LAGC-IFQ fishery will be negative due to fewer total trips (977 fewer) compared FY2019 projections.
- Allowing RSA compensation fishing in open access areas, with limited RSA compensation fishing in the NGOM Management Area will facilitate access to high densities of scallops in open access areas and could help accurately account for scallop removals in NGOM area. Therefore, this alternative could have low positive impacts on the scallop yield and negligible to low economic benefits over the long-term for the scallop fishery.
- The cumulative impacts of the measures from Framework 32 proposed measures, and the past actions including Amendment 10, Amendment 11, Amendment 15, and Framework 28 through 30 to the scallop FMP, are estimated to be positive over the long-term. Adjustment of the open area DAS allocations, implementation of trip limits and allocations for the access areas and rotation area management had positive impacts on the scallop industry by increasing the revenues, producer and consumer surpluses and net benefits in the past. However, the Framework 32 measures are estimated to have negative impacts on total economic benefits in both short- and long-run compared to Framework 30 projections.
- The preferred alternative in Framework 32 is expected to decrease economic benefits compared to the preferred alternative in Framework 30 both in the short-run and long-run.
 - The short-run (FY2020) total economic benefit for the FW32 preferred alternative is lower by about \$91 million (in 2001 dollars) compared to the preferred alternative in FW30 (FY2019).
 - Annualized long-term total economic benefit for the preferred alternative in FW32 (FY2020-2034) compared to the preferred alternative in FW30 (FY2019-2033) are lower by about \$87 million (at 7% discount rate) and \$79 million (at 3% discount rate) (Table 96 and Table 97). As a result, cumulative economic benefits over the long-term are expected to be negative.

7.12.5.2 Enforcement Costs

The enforcement costs and benefits of the proposed options for Framework 32 are within the range of impacts addressed in Section 8.9 of Amendment 10 FSEIS and Section 5.4.22 and Section 5.6.3 of Amendment 11 and Section 5.4.2 of Amendment 15. The qualitative analysis included a discussion of the pros and cons of the proposed alternatives from an enforcement perspective. The proposed measures by Framework 32 are very similar to the existing measures in Framework 30 in terms of the enforcement requirements, since they include the continuation of the area specific trip allocations, area closures, open area DAS allocations, measures for reducing bycatch, and the continuation of observer coverage program. The costs of implementing and enforcing the preferred alternative are not expected to compromise the effectiveness of implementation and enforcement of this action. Furthermore, there are several mechanisms and systems, such as VMS monitoring and data processing, already in place that will aid in monitoring and enforcement of this action. Therefore, the overall enforcement costs are not expected to change significantly from the levels necessary to enforce measures under the No Action regulations.

7.12.6 Determination of Significant Regulatory Action

Executive order 12866 defines a “significant regulatory action” as one that is likely to result in:

1. an annual effect on the economy of \$100 million or more, or one which adversely affects in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;
2. a serious inconsistency or interference with an action taken or planned by another agency;
3. a budgetary impact on entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof;
4. novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in this executive order.

Framework 32 is not expected to constitute a “significant regulatory action” based on the economic analyses provided in Section 6.6.1.3 and summarized above:

The economic benefits are expected to decline between FY2019 and FY 2020 (see Table 95) as a result of declining allocations between these two fishing years. The preferred alternative in Framework 32 is expected to decrease economic benefits compared to the preferred alternative in Framework 30 both in the short-run and long-run. The short-run (FY2020) total economic benefit for the FW32 preferred alternative is lower by about \$91 million (in 2001 dollars) compared to the preferred alternative in FW30 (FY2019).

Over the long-term from 2020 to 2034 fishing years, the preferred alternative in FW32 is estimated to have negative impacts on the total economic benefits and on the economy compared to preferred alternative in FW30 (FY2019-2033) values by about \$87 million (\$79 million) using a discount rate of 7% (3%) measured in terms of 2001 dollars (Table 96 and Table 97).

The preferred alternative will not have an annual impact on the economy by more than \$100 million compared to 2019 projections (Framework 30) in the short- as well as in the long-term. While economic benefits may be declining, this is not unexpected, and the proposed alternatives will not adversely affect in a material way the economy, productivity, competition, public health or safety, jobs or state, local, or tribal governments or communities in the long run and will not raise novel legal and policy issues, other than those that were already addressed and analyzed in Amendment 10, Amendment 11 and Amendment 15. Instead preferred alternative could have low negative impacts on employment (measured in terms of total crew days) compared to FY 2019 levels in the short-term (17% decline in employment) as well as

long-term (12% decline in employment). The preferred alternative also does not interfere with an action planned by another agency, since no other agency regulates the level of scallop harvest. It does not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients.

7.13 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The purpose of the Regulatory Flexibility Analysis (RFA) is to reduce the impacts of burdensome regulations and record-keeping requirements on small businesses. To achieve this goal, the RFA requires government agencies to describe and analyze the effects of regulations and possible alternatives on small business entities. Based on this information, the Regulatory Flexibility Analysis determines whether the preferred alternative would have a “significant economic impact on a substantial number of small entities.”

An IRFA has been prepared, as required by section 603 of the Regulatory Flexibility Act (RFA). The IRFA consists of Framework 32 analyses, its draft IRFA, and the preamble to this action.

7.13.1 Statement of Objective and Need

This action proposes the management measures and specifications for the Atlantic sea scallop fishery for the 2020 fishing year, with 2021 default measures. A description of the action, why it is being considered, and the legal basis for this action, are contained in Framework 32 and the preamble of this proposed rule and are not repeated here.

The proposed regulations would affect all vessels with limited access (LA), limited access general category IFQ (LAGC IFQ), and limited access general category NGOM (LAGC NGOM) scallop permits. Framework 32 (Section 5.6) document and the LAGC IFQ Performance Evaluation (2017)²², provide extensive information on the number and size of vessels that would be affected by the proposed regulations, their home and principal state, dependency on the scallop fishery, and revenues and profits. There were 313 vessels that held full-time LA permits in 2018, including 249 dredge, 54 small-dredge, and 12 scallop trawl permits. In the same year, there were also 32 part-time LA permits in the sea scallop fishery. No vessels were issued occasional scallop permits in either 2017 or 2018. The NMFS issued 245 LAGC IFQ permits and 102 LAGC NGOM permits in 2018 (Section 5.6.1.4).²³ About 127 of the IFQ vessels and 41 NGOM vessels actively fished for scallops in 2018. The remaining IFQ permits likely leased out scallop IFQ allocations with their permits in Confirmation of Permit History.

On December 29, 2015, the NMFS issued a final rule establishing a small business size standard of \$11 million in annual gross receipts for all businesses primarily engaged in the commercial fishing industry (NAICS 11411) for Regulatory Flexibility Act (RFA) compliance purposes only. The \$11 million standard became effective on July 1, 2016. Thus, the RFA defines a small business in the shellfish fishery as a firm that is independently owned and operated with receipts of less than \$11 million annually. Individually permitted vessels may hold permits for several fisheries, harvesting species of fish that are regulated by several different fishery management plans, even beyond those impacted by the proposed action. Furthermore, multiple permitted vessels and/or permits may be owned by entities affiliated by stock ownership, common management, identity of interest, contractual relationships, or economic

²² http://s3.amazonaws.com/nefmc.org/Final-LAGC-IFQ-Report_July2014.pdf

²³ <https://www.greateratlantic.fisheries.noaa.gov/aps/permits/data/index2017.html>

dependency. For the purposes of this analysis, “ownership entities” are defined as those entities with common ownership as listed on the permit application.²⁴

On June 1 of each year, ownership entities are identified based on a list of all permits for the most recent complete calendar year. The current ownership dataset is based on the calendar year 2018 permits and contains average gross sales associated with those permits for calendar years 2016 through 2018. Matching the potentially impacted 2018 fishing year permits described above (LA and LAGC IFQ) to calendar year 2018 ownership data results in 167 distinct ownership entities for the LA fleet and 95 distinct ownership entities for the LAGC IFQ fleet (Table 98 and Table 99). Of these and based on the Small Business Administration (SBA) guidelines, 158 of the LA distinct ownership entities and 95 LAGC IFQ entities are categorized as small. The remaining 9 of the LA and none of the LAGC IFQ entities are categorized as large entities. There were 41 distinct small business entities with NGOM permits in 2018 permits (Table 100).

Table 98. Number of vessels and business entities in the scallop limited access fishery (revenues include both from LA and LAGC trips for vessels that hold both permits).

Business Size	Year	No. of Entities**	No. of Permits*	Total Affiliation Revenue	Total Scallop Revenue	Average Income from Fishing per Entity
Large	2016	9	103	\$158,673,162	\$135,372,181	\$15,041,353
	2017	9	103	\$173,447,090	\$144,078,578	\$16,008,731
	2018	9	103	\$201,109,190	\$158,549,107	\$17,616,567
Small	2016	156	239	\$329,061,716	\$297,345,798	\$1,906,063
	2017	157	240	\$358,025,822	\$326,606,053	\$2,080,293
	2018	158	241	\$369,513,086	\$341,325,220	\$2,160,286

* Number of permits refer to LA only permits who may also hold LGC permits. Affiliations could include several vessels with permits other than scallop as well as some LAGC IFQ permits.

** Number of entities will have at least one LA permit with scallop landing.

²⁴ Only permits with identical ownership are categorized as an “ownership entity.” For example, if five permits have the same seven persons listed as co-owners on their permit applications, those seven persons would form one “ownership entity,” that holds those five permits. If two of those seven owners also co-own additional vessels, that ownership arrangement would be considered a separate “ownership entity” for the purpose of this analysis.

Table 99. Number of active vessels and business entities with LAGC IFQ permits

Business Size	Year	No. of Entities**	No. of Permits*	Total Affiliation Revenue	Total Scallop Revenue	Average Income from Fishing per Entity
Small	2016	99	108	\$58,806,374	\$31,487,443	\$594,004
	2017	97	106	\$47,378,533	\$23,817,790	\$488,438
	2018	95	105	\$46,117,423	\$23,042,545	\$485,447

*Number of permits refer to LAGC IFQ only permits. Affiliations could include several vessels with permits other than scallop. Some of the active LAGC – IFQ permits belong to affiliations with LA permits and included in Table 98 above.

** Number of entities will have at least one LGC IFQ permit with scallop landing.

Table 100. Number of active vessels and business entities with LAGC NGOM permits

Business Size	Year	No. of Entities**	No. of Permits*	Total Affiliation Revenue	Total Scallop Revenue	Average Income from Fishing per Entity
Small	2016	33	35	\$9,727,647	\$1,836,304	\$294,777
	2017	35	37	\$8,180,375	\$1,246,342	\$233,725
	2018	41	41	\$8,971,033	\$2,024,554	\$218,806

*Number of permits refer to LAGC NGOM only permits. Affiliations could include several vessels with permits other than scallop.

** Number of entities will have at least one LGC NGOM permit with scallop landing.

7.13.1.1 Description of Projected Reporting, Recordkeeping, and other Compliance Requirements of the Proposed Rule

This action contains no new collection-of-information, reporting, or recordkeeping requirements. It does not duplicate, overlap, or conflict with any other Federal law.

7.13.1.2 Federal Rules which may Duplicate, Overlap or Conflict with this Proposed Rule

The proposed regulations do not create overlapping regulations with any state regulations or other federal laws.

7.13.1.3 Summary of the Proposed Action and Significant Alternatives

7.13.1.3.1 Framework 32 specification measures

Framework 32 is a one-year action that will be implemented for the 2020 fishing year.

The Council's preferred alternative (4.3.1.3.2) and other Framework 32 alternatives are summarized in Table 93 above. A detailed description of each alternative is provided in Section 4.3.1 of Framework 32. For the purposes of this RFA analysis, the Council's preferred alternative is evaluated relative to the FY 2019 projections for the Framework 30 preferred alternative (Status Quo).

Table 101 and Table 102 include No Action alternative as well as the FY 2019 projections, which are used as a baseline to compare the economic impacts of the Framework 32 alternatives. The definition of "No Action" (Section 4.3.1.1) follows a regulatory approach and refers to the default measures that are specified in the previous action, Framework 30, until the next Framework action is implemented in 2020. However, allocations under those measures have been determined at very precautionary low levels. The LA component would have some access to the Mid-Atlantic Access Area and Nantucket Lightship West areas, the equivalent of one 18,000-pound trip for FT vessels in each area and 18 open area DAS allocation for the 2020 fishing year. For 2021, default measures include One trip to the MAAA at 18,000 pounds. These correspond only to a fraction of allocations for the entire year and intended to be replaced with subsequent measures based on updated survey information. Therefore, the economic benefits of proposed action and alternatives will considerably exceed the benefits for the "No Action".

However, primary objective of Framework 32 is much broader in scope than just replacing the temporary default measures (No Action) set in the previous framework to prevent issues related to the delays in implementation. The FY 2019 (FW30) scenario reflects the landings and economic benefits that were projected in the scallop resource by implementing Framework 30 in FY 2019. The FY 2019 allocations included open area DAS set at $F=0.23$ and each FT vessel in specification alternatives was allocated 7 access area trips with total landings of 126,000 pounds. Therefore, FY 2019 estimates would be more reflective of changing conditions between 2019 and 2020. For these reasons, the FY 2019 (FW30) baseline is what is used to evaluate the impacts of the proposed measures on small business entities to address the requirements of the Regulatory Flexibility Act.

7.13.1.3.1.1 Summary of the Proposed Action

If the preferred alternative (Section 4.3.1.3.2) is approved, Framework 32 would allocate each FT limited access vessel 24 open area DAS and 6 access area trips (i.e., 1 CAII trip at 18,000 pounds, 1 NLS-S-Deep trip at 18,000 pounds, 2 trips to the MAAA at 18,000 pounds, 1 trip to NLS-North at 9,000 pounds, and 1 trip to Closed Area I, FLEX at 9,000 pounds) amounting to 90,000 pounds in FY2020. This is estimated to result in about 46.605 million pounds of landings for limited access fishery after the set asides (i.e. LA share of 94.5%) (Table 101). The LAGC IFQ share (5.5% allocation for both IFQ only and LA vessels with IFQ permits) will be about 2.713 million lbs. (Section 4.3.1, Table 102). Total landings, including set-asides to support research and observer coverage is projected to be about 51.6 million (Table 95).

Table 101. Net scallop revenue for limited access vessels in FY2020 and % change from the FY 2019 (revenues in 2019 dollars)

Section	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (FW32 preferred)	FW30 preferred
Description/Alternatives	No Action (Alt. 1)	CAII ext Open 22 DAS (Alt. 2, sub-opt. 1)	CAII ext Open 24 DAS (Alt. 2, sub-opt. 2)	CAII ext Closed 22 DAS (Alt. 3, sub-opt. 1)	CAII ext Closed 24 DAS (Alt. 3, sub-opt. 2)	24DASFle x 18000
FWs and Fish Years	FW32 FY2020	FW32 FY2020	FW32 FY2020	FW32 FY2020	FW32 FY2020	FW30 FY2019
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	
Landings (LA vessels, mill. lb.)	23.901	45.409	47.009	45.049	46.605	56.7
Total Scallop Net Rev. (LA vessels, mill. \$)	\$242.59	\$431.57	\$444.24	\$428.34	\$440.26	\$504.28
Net scallop Rev. per entity (mil. \$)	\$1.35	\$2.40	\$2.47	\$2.38	\$2.45	\$3.08
% change in net scallop revenue	-51.90%	-14.42%	-11.91%	-15.06%	-12.70%	0%

Preferred alternative (Section 4.3.1.3.2) is expected to have negative impacts on the net revenues and profits small entities regulated by this action in FY2020 (FW32) compared to FY2019 (FW30) scenario. The decline in revenue per entity between FY2019 levels and FY 2020 (see Table 95) is as a result of declining allocations between these two fishing years, i.e., lower projected landings by about 10.1 million pounds in the FW32 preferred alternative compared to FW30 preferred alternative. As described in the Economic Impacts Section 6.6.3, and summarized in Table 101 above, fleetwide net revenue for the limited access vessels including the LAGC IFQ vessels would be lower for the preferred alternative (Section 4.3.1.3.2) by about \$64 million compared to the preferred alternative in FW30. Net revenue for LA vessels in FY2020 for the FW32 preferred alternative would be lower by about \$0.63 million per entity as compared to FW30 preferred alternative in FY2019. Thus, the preferred alternative (Section 4.3.1.3.2) would have 12.70% lower net revenue compared to the FW30 preferred alternative.

Under the preferred alternative (Section 4.3.1.3.2), allocation for the LAGC IFQ fishery including the LA vessels with IFQ permits (2.712 million pounds) will be about 17.78% lower than the allocation that was implemented for FY 2019 under FW30. In terms of net revenue, this difference is expected to be of similar magnitude and negative for the preferred alternative relative to FY 2019 levels. Therefore, preferred alternative will have negative economic impacts on the LAGC IFQ fishery compared to FY 2019 levels (Table 102).

Table 102. Impacts of the LAGC IFQ Allocation for 2020 fishing year

Section	4.3.1.1	4.3.1.2.1	4.3.1.2.2	4.3.1.3.1	4.3.1.3.2 (preferred)	FY 2019
Description/Alternatives	No Action (Alt. 1)	CAII ext Open 22 DAS (Alt. 2, sub-opt. 1)	CAII ext Open 24 DAS (Alt. 2, sub-opt. 2)	CAII ext Closed 22 DAS (Alt. 3, sub-opt. 1)	CAII ext Closed 24 DAS (Alt. 3, sub-opt. 2)	FW30 Preferred Alt.
Values/ RUN	NA	xop22	xop24	xcl22	xcl24	FY 2019
Allocation for IFQ only vessels (lbs.)	1,264,608	2,402,634	2,487,292	2,383,564	2,465,907	2,999,315
Allocation for LA vessels with IFQ permits (lbs.)	126,461	240,263	248,729	238,356	246,591	299,932
Total Allocation for IFQ fishery (lbs.)	1,391,069	2,642,897	2,736,021	2,621,921	2,712,497	3,299,247
% Change in estimated scallop landings (and revenue) per business entity from Status Quo	-57.84%	-19.89%	-17.07%	-20.53%	-17.78%	0.00%

7.13.1.3.1.2 Description of Significant Alternatives to the Proposed Action

The proposed action would result in a lower allocation to the LA with LAGC IFQ fishery would result in lower revenues compared to FW30 preferred alternative in FY2019 (Table 101 and Table 102). The preferred alternative (Section 4.3.1.3.2) that allocates 24 DAS for full-time limited access vessels with 6 access area trips would have lower landings, hence, net revenues in FY2020 compared to FY2019. Net revenues per entity with LA permits under this alternative is estimated to be below FY 2019 levels by 12.70% in FY2020 (Table 101).

7.13.1.4 Northern Gulf of Maine Management (NGOM) Measures

The measures for the NGOM scallop fishery considered in this action are described in detail in Section 4.2.2 of Framework 32. Economic impacts of the NGOM alternatives are analyzed in Section 6.6.1.2 of the Framework documents. Preferred alternative (Alternative 2, Sub-option 2) would allow a higher amount scallop landing (TAC 350,000 lbs.) to occur in the NGOM area relative to No Action (Alternative 1, TAC 170,000 lbs.). As a result, the net revenue for the LAGC NGOM fishery is expected to increase by about 75% under the preferred measure compared to the No Action with positive impacts on the profits of NGOM LAGC entities. The first 70,000 pounds will be allocated to the limited access general category component of the fishery. The remaining poundage will be split 50/50 between the LAGC and limited access components of the fishery. For the 2020 fishing year, the overall shares for LAGC-NGOM

vessels will be 210,000 pounds and for LA/RSA share will be 140,000 pounds. The limited access share of the NGOM TAC can be utilized only for research set-aside (RSA) compensation fishing.

NGOM TAC for the LAGC component under the preferred alternative (Section 4.2.2.2.2, 210,000 lbs.), would be higher than No Action (Section 4.2.2.1, 120,000 lbs.) As a result, the net revenue for the LAGC NGOM fishery is expected to increase by about 75% under the preferred measure compared to the No Action with positive impacts on the profits of NGOM LAGC entities (Table 103).

7.13.1.4.1 Description of Significant Alternatives to the Proposed Action

The preferred alternative (Alternative 2, Sub-option 2) would have higher TAC (350,000 lbs.) compared to the Alternative 2 Sub-option 1, therefore resulting in higher revenues and economic benefits for entities in this fishery with an estimated increase in net revenues by about 75% compared to No Action (Table 103).

Table 103. Impacts of the Preferred Alternative 2 (sub-option 2) and other alternatives for NGOM scallop fishery (2019 fishing year and monetary values in 2019 dollar)

Alternatives/Values	Alt 1	Alt 2	Alt 2 (Preferred)
	No Action F=0.2	Sub-option 1 F=0.18	Sub-option 2 F=0.20
LA/RSA share-- scallop pounds	50,000	120,000	140,000
LAGC share – scallop pounds	120,000	190,000	210,000
Total pounds	170,000	310,000	350,000
Estimated LA RSA value	\$479,500	\$1,150,800	\$1,342,600
Net revenue (LAGC NGOM share)	\$841,854	\$1,332,935	\$1,473,244
Net revenue net of No Action	\$0	\$491,081	\$631,390
Net revenue net of No Action %	0%	58.33%	74.99%

The economic impacts of the preferred NGOM alternative on the limited access vessels would be positive. Depending on the scallop resource productivity in the open areas, the cap and the requirement that LA share would be harvested as RSA compensation fishing can have some marginally low negative impacts on the LA fishery due to effort displacement to other areas which may not be as productive as the NGOM scallop fishery. However, if more research takes place in this area, it will help to increase understanding of removals from the NGOM management area. This, in turn, will lead better management of the NGOM resource with positive biological and economic impacts over the long-term on both LAGC and LA vessels.

7.13.1.5 Full Time Limited Access Trip Exchanges

The preferred alternative (Section 4.3.2.2) would allow pound for pound exchanges to all areas in increments of 9,000 pounds (the lowest allocation in FW32). There would be no change to how part-time or occasional vessels can exchange trips – those exchanges would still be done as 1:1 at the possession limit for this action (12,000 lbs for part time). This alternative is intended to improve flexibility to individual vessels, allowing each vessel to pursue fishing opportunities that make the most sense for them. Allocating partial trips and allowing access area allocations to be exchanged at the lowest increment of allocation (i.e. 9,000 pounds) is viewed as an equitable, alternative approach to a lottery system. This measure is not expected to have a substantial impact on the magnitude of impacts to economic impacts overall, or change any conclusions.

7.13.1.6 LAGC IFQ Access Area Allocations

The preferred alternative (Section 4.4.2) would allocate 5.5% of the access area allocations to the IFQ component. The number of trips allocated under this option would be dependent upon the estimate total access area trips for the Limited Access component under each specification presented in Table 94.

When 5.5% is applied to the access area allocation for FY2020 (same for Alternatives 2 and 3), the LAGC IFQ component would receive 2,855 trips under the preferred alternative (Section 4.3.1.3.2). Alternative 1 (No Action) would allocate only 1,142 trips, which is the number of trips specified through default measures in FW30. As a result, the preferred alternative with 6 access area trips would have considerably higher economic benefits for the LAGC fishery by providing the opportunity for the IFQ vessels to fish in the relatively more productive access areas compared to Alternative 1.

7.13.1.6.1 Description of Significant Alternatives to the Proposed Action

The only alternative to the preferred measures is the default measures specified in Framework 30 (No Action) that would allocate a small fraction of access area trips (1,142) to LAGC fishery. Therefore, preferred alternative for LAGC access area allocations would have highest economic benefits for the small business entities in the LAGC IFQ fishery compared to both No Action as well as Status Quo allocations.

7.13.1.7 Additional Measures to Reduce Fishery Impacts

Research Set-Aside compensation fishing would be permitted only in the Mid-Atlantic Access Area, the Northern Gulf of Maine Management Area, and in open areas. RSA compensation fishing would not be permitted in the following access areas: Closed Area II Access Area, Closed Area I Access Area, Nantucket Lightship North Access Area, and the Nantucket Lightship South Deep Access Area. RSA compensation fishing would be permitted in the NGOM management area, per NGOM alternatives as specified in Section 4.2. RSA compensation fishing would be permitted in the NGOM management area up to the poundage specified in the Council's preferred alternative for the Limited Access share of the NGOM TAC, and only by vessels that are awarded NGOM RSA compensation pounds.

This provision will help accurately account for scallop removals in the NGOM by restricting RSA compensation fishing to vessels that receive a portion of the LA TAC, will facilitate access to high densities of scallops in open access areas and reduce impacts on small scallops and overall mortality in an area. Therefore, this alternative could have low positive impacts on the scallop yield and negligible to low economic benefits over the long-term for the scallop fishery.

7.13.1.8 Seasonal Closure of Closed Area II Access Area to Reduce Impacts on George Bank Yellowtail Flounder and Northern Windowpane Flounder

The existing seasonal closure in Closed Area II Access Area would be extended an additional two weeks, meaning the duration of the closure would be August 15th through November 30th. This will shift effort that would have been fished in CAII AA between November 16th and November 30th into in other times of the year when the seasonal closure is not in place. However, the shift in effort is not expected to have a substantial impact on the magnitude of impacts to economic impacts overall.

7.13.1.9 Summary and Conclusions

Economic impacts of Framework 32 preferred alternatives, including fishery specifications, access area trip allocations for the LA and LAGC IFQ fisheries, NGOM measures, and other measures to reduce fishery impacts are expected to be negative for the scallop vessels and small business entities compared to the FY 2019 baseline implemented through FW30.

8.0 GLOSSARY

Annual projected landings – The annual projected landings are the model-based estimate of scallop fishery landings for a given fishing year, accounting for the spatial management of the fishery (*see also* area based management *and* area rotation). The APL is equal to the combined projected landings by the limited access and LAGC IFQ fleets in both the open area and access areas, after set-asides (RSA and observer) and incidental landings are accounted for, for a given fishing year. Projected scallop landings are calculated by estimating the landings that will come from open and access area effort combined for both limited access and LAGC IFQ fleets.

Area based management – in contrast to resource wide allocations of TAC or days, vessels would receive authorization to fish in specific areas, consistent with that area’s status, productivity, and environmental characteristics. Area based management does not have to rotate closures to be effective.

Area rotation – a management system that selectively closes areas to fishing for short to medium durations to protect small scallops from capture by commercial fishing until the scallops reach a more optimum size. Closed areas would later re-open under special management rules until the resource in that area is similar to other open fishing areas. Area rotation is a special subset of area based management that relies on an area closure strategy to achieve the desired results when there are sufficient differences in the status of the management areas.

Biological Opinion – an ESA document prepared by either the NMFS or USFWS describing the impacts of a specific Federal action, including an FMP, on endangered or threatened species. The Biological Opinion concludes whether or not the NMFS/USFWS believe that the actions are likely to jeopardize the continued existence of any of the protected species, and provides recommendations for avoiding those adverse impacts.

Consumer surplus - The net benefit consumers gain from consuming fish based on the price they would be willing to pay for them. Consumer surplus will increase when fish prices decline and/or landings go up.

Critical habitat – an area that has been specifically designated under the ESA as an area within the overall geographical region occupied by an endangered or threatened species on which are found the physical or biological features essential to conservation of the species.

Day-at-sea (DAS) – is each 24-hour period that a vessel is on a scallop trip (i.e. not declared out of the day-at-sea program) while seaward of the Colregs line.

Endangered species – a species that is in danger of extinction throughout all or a significant portion of its range.

Exploitable biomass - the total meat weight of scallops that are selected by fishing, accounting for gear and cull size, at the beginning of the fishing year²⁵.

Fixed costs - These costs include expenses that are generally independent of the level of fishing activity, i.e., DAS-used, such as insurance, license, half of repairs, office expenses, professional fees, dues, utility, interest, dock expenses, bank, rent, store, auto, travel, and employee benefits.

²⁵ The **average exploitable biomass** is different and is defined as the total meat weight of scallops that are selected by fishing averaged over the fishing year, accounting growth, natural mortality, fishing mortality, and gear and cull size.

Incidental Take Statement – a section of a Biological Opinion that allows the take of a specific number of endangered species without threat of prosecution under the ESA. For the Scallop FMP, an incidental take statement has been issued for a limited number of sea turtles to be taken by permitted scallop vessels.

LPUE – Similar to catch per unit effort (CPUE), commonly used terminology in fisheries, LPUE in the Scallop FMP refers to the amount of landings per DAS a vessel achieves. This value is dependent on the scallop abundance and catch rate, but also depends on the shucking capacity of the crew and vessel, since most of the scallop catch must be shucked at sea. Since discard mortality for sea scallops is low, discards are not included as a measure of catch in the calculation of LPUE.

Meat yield – the weight of a scallop meat in proportion to the total weight or size of a scallop. Scallops of similar size often have different meat yields due to energy going into spawning activity or due to the availability of food.

Net economic benefits - Total economic benefits measure the benefits both to the consumers and producers and are estimated by summing consumer and producer surpluses. Net economic benefits show, however, the change in total economic benefits net of no action.

Nominal versus real economic values - The nominal value of fishing revenues, prices, costs and economic benefits are simply their current monetary values unadjusted for inflation. Real values are obtained, however, by correcting the current values for the inflation.

Open area – a scallop fishing area that is open to regular scallop fishing rules. The target fishing mortality rate is the resource-wide target.

Operating expenses or variable costs - The operating costs measures the expenses that vary with the level of the fishing activity including food, ice, water, fuel, gear, supplies and half of the annual repairs.

Opportunity cost - The cost of forgoing the next best opportunity. For example, if a fisher's next best income alternative is to work in construction, the wage he would receive from construction work is his opportunity cost.

PDT – Scallop plan Development Team; a committee of experts that contributed to and developed the technical analysis and evaluation of alternatives.

Producer surplus -Producer surplus for a particular fishery shows the net benefits to harvesters, including vessel owners and the crew, and is measured by the difference between total revenue and operating costs.

Recruitment – a new year class of scallops measured by the resource survey. Scallop larvae are pelagic and settle to the bottom after 30-45 days after spawning. The resource survey, using a lined dredge, is able to capture scallops between 20 – 40 mm, but more reliably at between 40 and 60 mm. Recruitment in this document refers to a new year class that is observable in the survey, at around two years after the eggs had been fertilized and spawned.

SAFE Report – A Stock Assessment and Fishery Evaluation Report, required by the Sustainable Fisheries Act. This report describes the present condition of the resource and managed fisheries, and in New England it is prepared by the Council through its Plan Development Teams (PDT) or Monitoring Committees (MC). The Scallop PDT is the MC for the Atlantic Sea Scallop FMP and prepares this report.

Shucking – a manual process of cutting scallop meats from the shell and viscera.

TAC – Total allowable catch is an estimate of the weight of scallops that may be captured by fishing at a target fishing mortality rate. The TAC could apply to specific areas under area based management rules.

Take – a term under the MMPA and ESA that means to harass, harm , pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct with respect to either a marine mammal or endangered species.

Ten-minute square – an approximate rectangle with the dimensions of 10-minutes of longitude and 10-minutes of latitude.

Threatened species – any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

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