AP and Committee Draft

November 21, 2018

Note: FW30 will be updated for Council Mailing

Framework 30 to the Scallop FMP

Including a Draft Environmental Assessment (EA), an Initial Regulatory Flexibility Analysis and Stock Assessment and Fishery Evaluation (SAFE Report)

Initial Council Meeting: June 13, 2018
Final Council Meeting:
Submission of Decision Document:
Submission of Preliminary EA:
Submission of Final EA:

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1.0 EXECUTIVE SUMMARY

Framework 30 includes the draft Environmental Assessment (EA), which presents and evaluates management measures and alternatives to achieve specific goals and objectives for the Atlantic sea scallop fishery. This document was prepared by the New England Fishery Management Council and its Scallop Plan Development Team (PDT) in consultation with the National Marine Fisheries Service (NMFS, NOAA Fisheries) and the Mid-Atlantic Fishery Management Council (MAFMC). This framework was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, M-S Act) and the National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ). This document also addresses the requirements of other applicable laws (See Section 8.0).

Framework 30 (FW30) 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).

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3.0 BACKGROUND AND PURPOSE

3.1 Background

This framework to the Scallop Fishery Management Plan (FMP) sets fishery specifications for fishing year (FY) 2019 and default measures for FY 2020. The New England Fishery Management (Council) decided to develop a one-year action only, including default measures for Year 2 only (FY2020).

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 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 (FW30) 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, and to streamline the specifications setting process and facilitate predictable outcomes for stakeholders.

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 2019 fishing year, as well as default measures for FY2020 that are expected to be replaced by a subsequent action.

Table 1 - Description of Framework 30 Purpose and Need

Need	Purpose	Section(s)
To achieve the objectives of the Atlantic Sea Scallop FMP to prevent overfishing and improve yield-per recruit from the fishery.	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 2019 fishing year, as well as default measures for FY2020 that are expected to be replaced by a subsequent action.	4.1, 4.2, 4.3, 4.4, 4.5
To streamline the specifications setting process and facilitate predictable outcomes for stakeholders.	To standardize the approach to setting default measures for open-area DAS and LAGC IFQ allocations.	4.6

3.3 Summary of Scallop Fishery Management Plan

3.3.1 Summary of Past Actions

3.3.2 Summary of Scallop Area Rotation Plan

3.3.3 Summary of Scallop Fishery Specifications and Annual Catch Limits

Amendment 15 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).

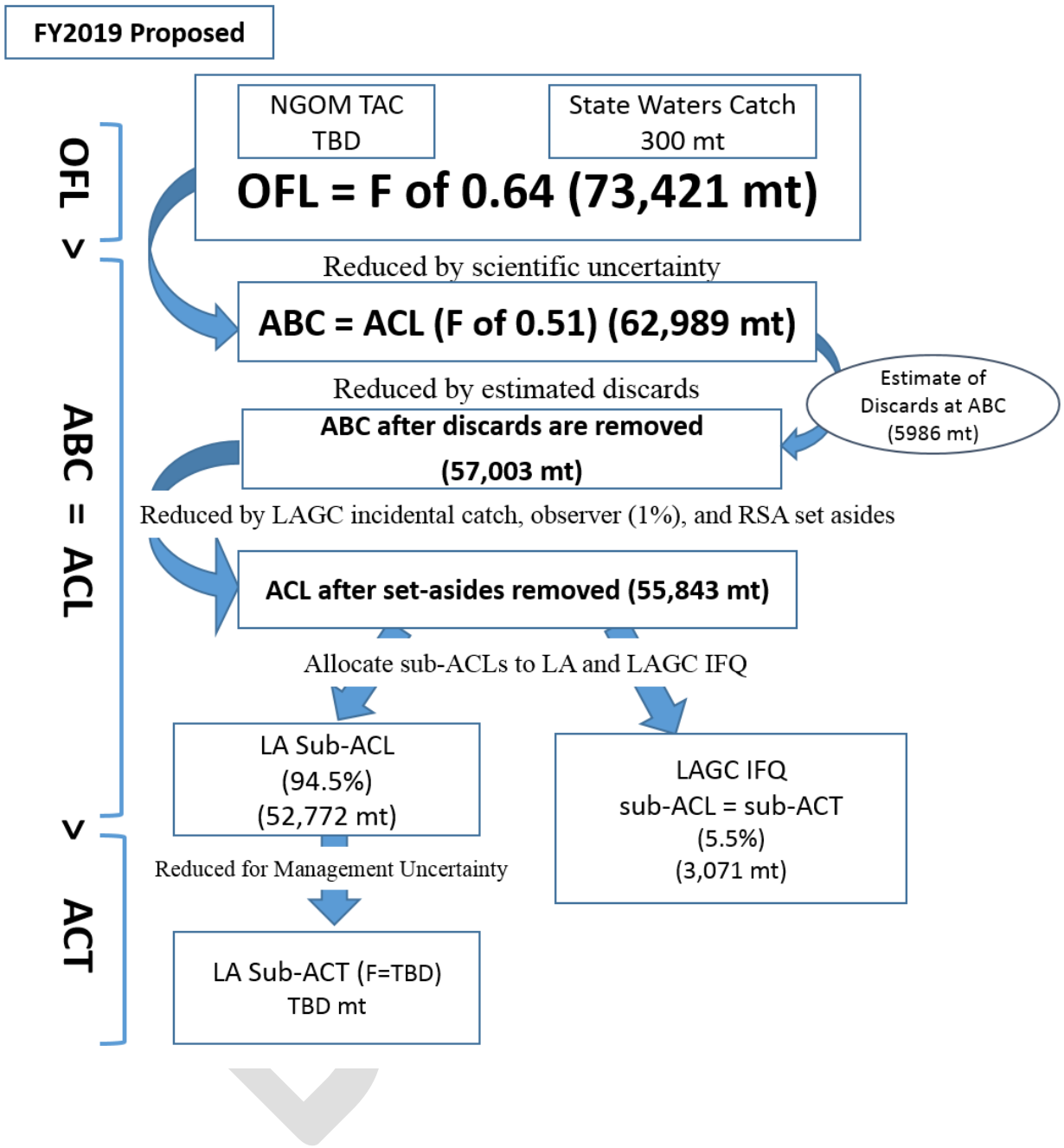
The OFL is specified as the level of landings and associated fishing mortality rate (F) that, above which, overfishing is occurring. The OFL will account for landings of scallops in state waters by vessels without Federal scallop permits. In 2018, SARC 65 approved an OFL equivalent to F = 0.64. To account 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 catch 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 exceed the ABC/ACL). The major sources of management uncertainty in the LA fishery are carryover provisions including the 10 DAS carryover provision, and the ability to fish unused access area allocation within the first 60 days of the following fishing year. The F associated with the LA ACT is F = 0.46. 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 2018 specifications is anticipated to result in an overall F=0.175.

Finally, catch from the NGOM is established at the ABC/ACL level, but is not subtracted from the ABC/ACL. Since the NGOM portion of the scallop fishery is not part of the scallop assessment, the catch will be added and specified as a separate Total Allowable Catch (TAC), in addition to ABC/ACL.

Figure 1 - Scallop ACL-Flowchart with proposed 2019 OFL and ABC values.



4.0 MANAGEMENT MEASURES UNDER CONSIDERATION

4.1 Overfishing Limit and Acceptable Biological Catch

4.1.1 Alternative 1 – No Action for OFL and ABC

Under "No Action", the overall OFL and ABC would be equivalent to default 2019 values adopted in Framework 29 (Table 2) that were calculated for FY2018 and FY2019 based on survey and fishery data through 2017. These would remain in place until a subsequent action replaced them. 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 discard mortality. Therefore, when the fishery specifications are set based on these limits, the estimate of discard mortality is removed first and allocations are based on the remaining ABC available (Table 2, column to the far right).

Table 2 - Summary of OFL and ABC FY 2018 (default) values approved by the SSC in Framework 28 (in mt).

Fishing Year	OFL (including discards at OFL)	ABC (including discards)	Discards (at ABC)	ABC available to fishery (after discards removed)
2019	69,678	56,992	13,850	43,142

Table 3 - Summary of default ACL related values for the scallop fishery based on 2019 OFL and ABC approved through Framework 29.

Catch limits	2019 (mt)
Overfishing Limit	69,633
Acceptable Biological Catch/ACL (discards removed)	45,805
Incidental Catch	23
Research Set-Aside (RSA)	567
Observer Set-Aside	458
ACL for fishery	44,757
Limited Access ACL	42,295
LAGC Total ACL	2,462
LAGC IFQ ACL (5% of ACL)	2,238
Limited Access with LAGC IFQ ACL (0.5% of ACL)	224
Limited Access ACT	37,843
Limited Access Closed Area 1 Carryover**	n/a
APL***	*
Limited Access Projected Landings (94.5% of APL)	*
Total IFQ Annual Allocation (5.5% of APL)	1,050
LAGC IFQ Annual Allocation (5% of APL)	955
Limited Access with LAGC IFQ Annual Allocation (0.5% of APL)	95

*The catch limits for the 2019 fishing year are subject to change through a future specifications action or framework adjustment. This includes the setting of an APL for 2019 that will be based on the 2018 annual scallop surveys.

**As a precautionary measure, the 2019 IFQ annual allocations are set at 75% of the 2018 IFQ Annual Allocations.

***The APL value reflects the Council's preferred alternatives for specifications from FW29.

4.1.2 Updated OFL and ABC for FY 2019 and FY 2020 (default)

Alternative 2 would specify OFLs and ABCs for FY 2019 and set default values for FY 2020 based on the SSC recommendation. 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. The table below summarizes the various ACL allocations for the fishery based on decisions made in Amendment 15 when ACLs were implemented.

Table 4 – Summary of proposed OFL and ABC values for FY 2019 and FY 2020 (default).

Fishing Year	OFL (including discards at OFL)	ABC (including discards)	Discards (at ABC)	ABC available to fishery (after discards removed)
2019	73,421	62,989	5,986	57,003
2020	59,447	50,943	4,915	46,028

Table 5 - Summary of ACL related values for the scallop fishery based on 2019 and 2020 OFL and ABC approved by the Council's SSC.

Catch limits	2019 (mt)	2020 (mt)
Overfishing Limit	73,421	59,447
Acceptable Biological Catch/ACL (discards removed)	57,003	46,028
Incidental Catch	23	23
Research Set-Aside (RSA)	567	567
Observer Set-Aside	570	460
ACL for fishery	55,843	44,978
Limited Access ACL	52,772	42,504
LAGC Total ACL	3,071	2,474
LAGC IFQ ACL (5% of ACL)	2,792	2,249
Limited Access with LAGC IFQ ACL (0.5% of ACL)	279	225
Limited Access ACT (F=0.46)	47,598	38,337
APL***	*	*
Limited Access Projected Landings (94.5% of APL)	*	*
Total IFQ Annual Allocation (5.5% of APL)	*	*
LAGC IFQ Annual Allocation (5% of APL)	*	*
Limited Access with LAGC IFQ Annual Allocation (0.5% of APL)	*	*

*The catch limits for the 2019 fishing year are subject to change through a future specifications action or framework adjustment. This includes the setting of an APL for 2019 that will be based on the 2018 annual scallop surveys.

**As a precautionary measure, the 2019 IFQ annual allocations are set at 75% of the 2018 IFQ Annual Allocations.

***The APL value reflects the Council's preferred alternatives for specifications from FW30.

Rationale: Alternative 2 utilizes the most recent scallop survey data, and represents the best scientific information available.

4.2 Northern Gulf of Maine Management Area

The Council approved measures in Framework 29 to enable the tracking of total removals from the Northern Gulf of Maine management area. Addressing Northern Gulf of Maine Management was also identified as a multi-year work priority for 2018.

4.2.1 Alternative 1 – No Action (Default measures from Framework 29)

The total NGOM hard TAC would be set at 135,000 pounds, which is based on fishing the Stellwagen Bank portion of the management area at a F=0.18 in FY 2018 and FY 2019. The overall TAC would be split between the LA and LAGC, with 32,500 pounds available to support RSA compensation fishing (LA share), and 102,500 pounds available for harvest by the LAGC component. The area would open on April 1, 2019 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 6 - No Action (default measures) NGOM TAC

Year	**2019**
Overall TAC	135,000
LA (RSA) TAC	32,500
LAGC TAC	102,500

Rationale: Specifying the NGOM TAC at 135,000 pounds is consistent with default measures set through FW29, and the Council's approach to fully understand the total removals from the management area.

4.2.2 Alternative 2 – NGOM TAC split first 70,000 lbs to LAGC, then 50/50 split, LA share harvested as RSA compensation fishing.

The NGOM hard TAC would be set by applying a fishing mortality rate to the projected exploitable biomass on areas where fishing is anticipated for 2019 and 2020. Removals for all fishery components (General Category and Limited Access permit holders) would be capped at specified TAC. There would be no change to how the LAGC component currently operates in the area. 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 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 2017 problem statement of fully understanding total removals from the management area.

Making the LA share of the NGOM TAC available for RSA compensation fishing would be a short-term solution to utilize a small LA TAC in the NGOM with the expectation that a more formal allocation and harvest strategy would be developed in a future amendment. 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.

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 a future action can be developed to address NGOM issues more holistically. The first 70,000 pounds to the LAGC, then 50/50 split between LA and LAGC is not intended to be permanent.

4.2.2.1 Sub-Option 1 – Set NGOM TAC at F=0.20

The overall NGOM TAC would be set by applying a fishing mortality rate of F=0.20 on scallops on Stellwagen Bank (North of 42° 20'), in federal waters in Ipswich Bay, and Jeffreys Ledge. The calculation of the overall NGOM TAC would omit survey results from Platts Bank because this area is not expected to be fished in 2019 or 2020. The FY 2019 overall TAC would be set at 205,000 lbs, and the FY 2020 default TAC would be set at 170,000 lbs. The LAGC share of the FY 2019 NGOM TAC would be 137,500 lbs, while the LA/RSA share would be set at 67,500 lbs.

4.2.2.2 Sub-Option 2 – Set NGOM TAC at F=0.25

The overall NGOM TAC would be set by applying a fishing mortality rate of F=0.25 on Stellwagen Bank (North of 42° 20'), in federal waters in Ipswich Bay, and Jeffreys Ledge. The calculation of the overall NGOM TAC would omit survey results from Platts Bank because this area is not expected to be fished in 2019 or 2020. The FY 2019 overall TAC would be set at 250,000 lbs, and the FY 2020 default TAC would be set at 200,000 lbs. The LAGC share of the FY 2019 NGOM TAC would be 160,000 lbs, while the LA/RSA share would be set at 90,000 lbs.

Table 7 - Comparison of FY2019 and FY2020 NGOMT TAC options under consideration in FW30.

FW 30 Alternative	FW 30 Section	F	2019 TAC (lbs)	2020 TAC (lbs)
1	4.2.1		135,000	0
2, Sub-Option 1	4.2.2.1	0.20	205,000	170,000
2, Sub-Option 2	4.2.2.2	0.25	250,000	200,000

Table 8 - Comparison of FY2019 NGOM TAC options, including LA and LAGC TAC shares

FW 30 Alternative	FW 30 Section	F	2019 TAC (lbs)	LA/RSA Share (lbs)	LAGC Share (lbs)
Alternative 1	4.2.1		135,000	32,500	102,500
2, Sub-Option 1	4.2.2.1	0.20	205,000	67,500	137,500
2, Sub-Option 2	4.2.2.2	0.25	250,000	90,000	160,000

4.3 Fishery Specifications

The LA and LAGC IFQ sub-ACLs are specified in Section 4.1, Overfishing Limit and Acceptable Biological Catch. The sub-ACLs are derived from ABC/ACL calculations that consider all exploitable biomass in the projection model. Therefore, these values do not change with each specification alternative.

The LA and LAGC IFQ allocations are now based on Annual Projected Landings or APL. The APL represents the biomass of exploitable scallops that are available for harvest under each alternative. The anticipated APL values for both the LA and LAGC IFQ are described in each alternative below, and in Table 5.

Table 9 - Anticipated Annual Projected Landings, including Limited Access and LAGC IFQ allocations

Alternative	Section	DAS	Scenario	Total Landing	APL	LA Share (94.5%)	IFQ-only (5%)	LA with IFQ (0.5%)
a	b	c	d	e	f	f x 0.945	f x 0.05	f x 0.005
Alternative 1 - No Action	4.3.1	18 DAS (F=0.18)	One MAAA at 18k	22,925,871	20,369,236	19,248,928	1,018,462	101,846
Alternative 2	4.3.2	26 DAS (F=0.25)	7 trips at 15k	57,569,310	55,012,675	51,986,978	2,750,634	275,063
Alternative 3	4.3.3.1	26 DAS (F=0.25)	1 CAI FLEX trip, 7 trips at 18k	64,194,201	61,637,566	58,247,500	3,081,878	308,188
	4.3.3.2	24 DAS (F=0.23)	1 CAI FLEX trip, 7 trips at 18k	62,542,939	59,986,304	56,687,057	2,999,315	299,932
Alternative 4	4.3.4	24 DAS (F=0.23)	1 CAI FLEX trip at 15k, 6 trips at 18k	61,486,925	58,930,290	55,689,124	2,946,514	294,651
Alternative 5 – Status Quo	4.3.5	F=0.295 (30 DAS)	For Comparison Only	63,045,593	60,488,958	57,162,065	3,024,448	302,445
FW29 Pref. (2018)		FW29: 24 DAS	For Comparison Only	60,062,739	57,506,104	54,343,268	2,875,305	287,531

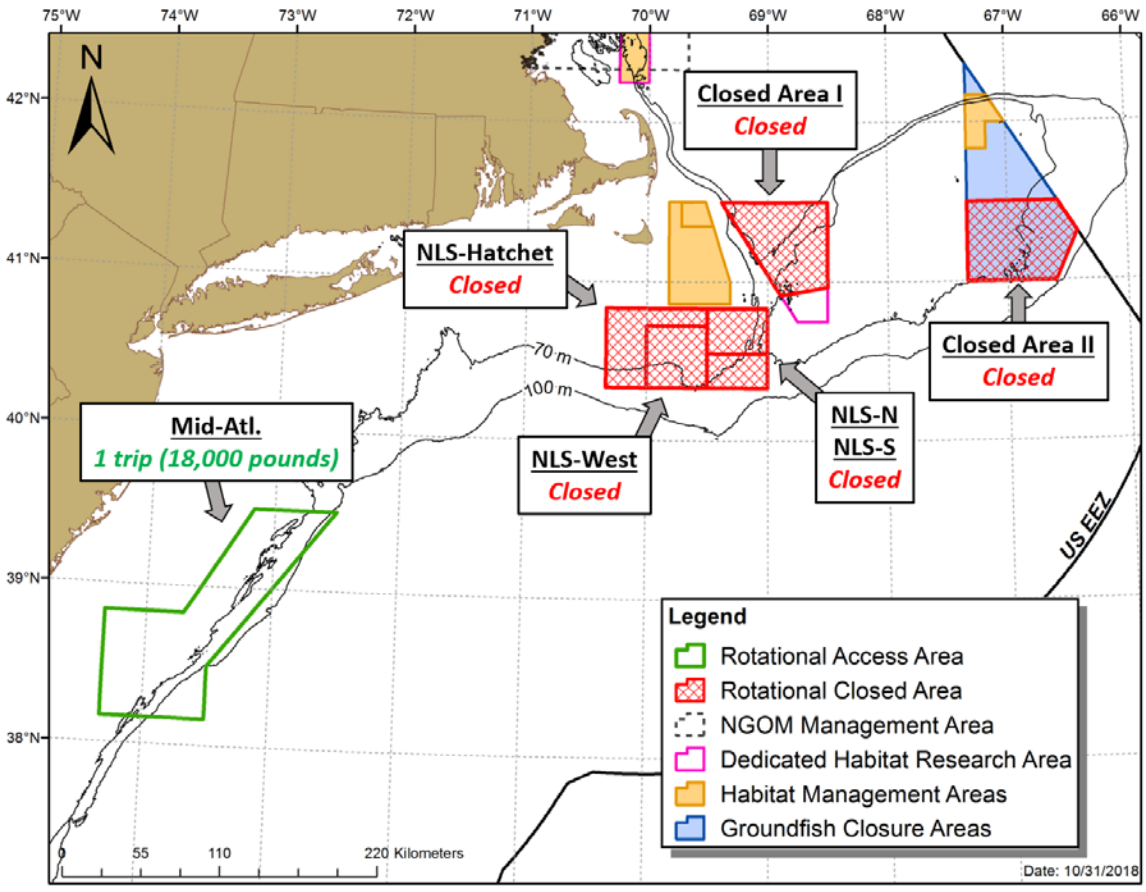
4.3.1 Alternative 1 – No Action (Default Measures from FW29)

Under Alternative 1 – No Action, the default specifications approved in Framework 29 would remain in place for the 2019 fishing year. There would be no allocations specified for the 2020 fishing year. Default measures approved in Framework 29 include full-time Limited Access DAS set at 18, which are 75% of the projected DAS for FY2018. 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, the equivalent of one 18,000 pound trip for FT vessels (Figure 2).

Under the FW29 default measures for FY 2019 the LAGC IFQ allocation would be 1,050 mt (1,865,111 lbs) for LAGC IFQ and LA with LAGC IFQ quota. This allocation is equivalent to 5.5% of the annual projected landings (APL) for FY2018 from FW29. LAGC IFQ vessels would also have access in the Mid-Atlantic Access Area on April 1, 2019 under default measures, with a fleet wide maximum of 558 trips from the area.

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

Figure 2 - Spatial management configuration under Alternative 1—No Action (Default Measures from FW29).



4.3.2 Alternative 2 – Seven trips at 15,000 pounds, open area F=0.25 (26 DAS)

The specific allocations associated with Alternative 2 – Seven trips at 15,000 pounds, open area F=0.25 (26 DAS) are:

- The FY2019 Annual Projected Landings (APL) for this alternative are 57.6 million lbs (DAS at F=0.25). The APL after accounting for the scallop research set-aside (1.25 million lbs), the observer set-asides (1.26 million lbs), and LAGC incidental TAC (50,000 lbs) would be 55 million lbs.
- Alternative 2 would set FT LA DAS at 26 (Open area F=0.25).
- Access areas open to the fishery under this scenario are: The Mid-Atlantic Access Area (3 FT LA trip), Closed Area I Access Area (1 FT LA trip), and the Nantucket Lightship West Access Area (3 FT LA trips). Each full-time limited access vessel would be allocated a total of 105,000 access area pounds (15,000 per access area trip). The FT LA trip limit would be set at 15,000 lbs.
- LA PT and Occasional access area allocations would be set at 42,000 pounds for PT and 8,700 pounds for occasional vessels. LA PT trip limit would be set at 14,000 lbs, and PT vessels would receive one (1) CAI trip, one (1) NLS-West trip, and one (1) Mid-Atlantic access area trip. Occasional vessels would be allocated one 8,700 lb trip that would be eligible to in any access area open to the fishery.
- The LAGC incidental target TAC would be set at 50,000 lbs.
- The LAGC IFQ APL (5.5%) would be set at 3,025,697 lbs. The LAGC IFQ only (5% of APL) would be set at 2,750,634 lbs.
- Allocated Limited Access access area trips would be available in the same access areas defined by Framework 30 for the first 60 days of FY 2020, even if the area is scheduled to close in FY 2020 (Figure 4). Vessels planning to fish 2019 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, 2020. For example, trips allocated to the Nantucket Lightship-West access area could only be fished in the access area boundary defined by FW30 in the first 60 days of FY 2020.
- FY 2020 Default Measures: Alternative 2 would set FY 2020 DAS allocations at 75% of FY 2019 values, or 19.5 DAS for FT LA vessels (see Table 7). FT LA vessels would be allocated two (2) 15,000 lbs access area trips: one (1) trip to the Mid-Atlantic Access Area, and one trip to the Nantucket Lightship West Access Area, as defined by Framework 30. The LAGC IFQ allocations (5.5%) would be set at 75% of the FY2019 quota, which would be 2,269,273 lbs in FY 2020. The LAGC IFQ component would also receive access area trips to the NLS-W and MAAA, proportional to 5.5% of the default access area allocations to each area (476 trips to the NLS-W, and 476 trips to the MAAA).

Table 10 - Alternative 2 (Section 4.3.2) Access Area Allocations)

Open Access Areas	Allocation	Where Can Trips Be Fished?
Closed Area I	One 15,000 lb trip	• Closed Area I Only
Nantucket Lightship West	Three 15,000 lb trips	• NLS-West Only
Mid-Atlantic Access Area	Three 15,000 lb trips	• MAAA Only

Table 11 – Limited Access open area DAS associated with Alternative 2.

Section	F rate	Full Time DAS		Part Time DAS		Occasional DAS	
		FY 2019	FY 2020	FY 2019	FY 2020	FY 2019	FY 2020
4.3.2	F=0.25	26	19.5	10.40	7.8	2.17	1.63

Figure 3 – Spatial management configuration under Alternative 2 – Seven trip option with 15,000 lb trip limit.

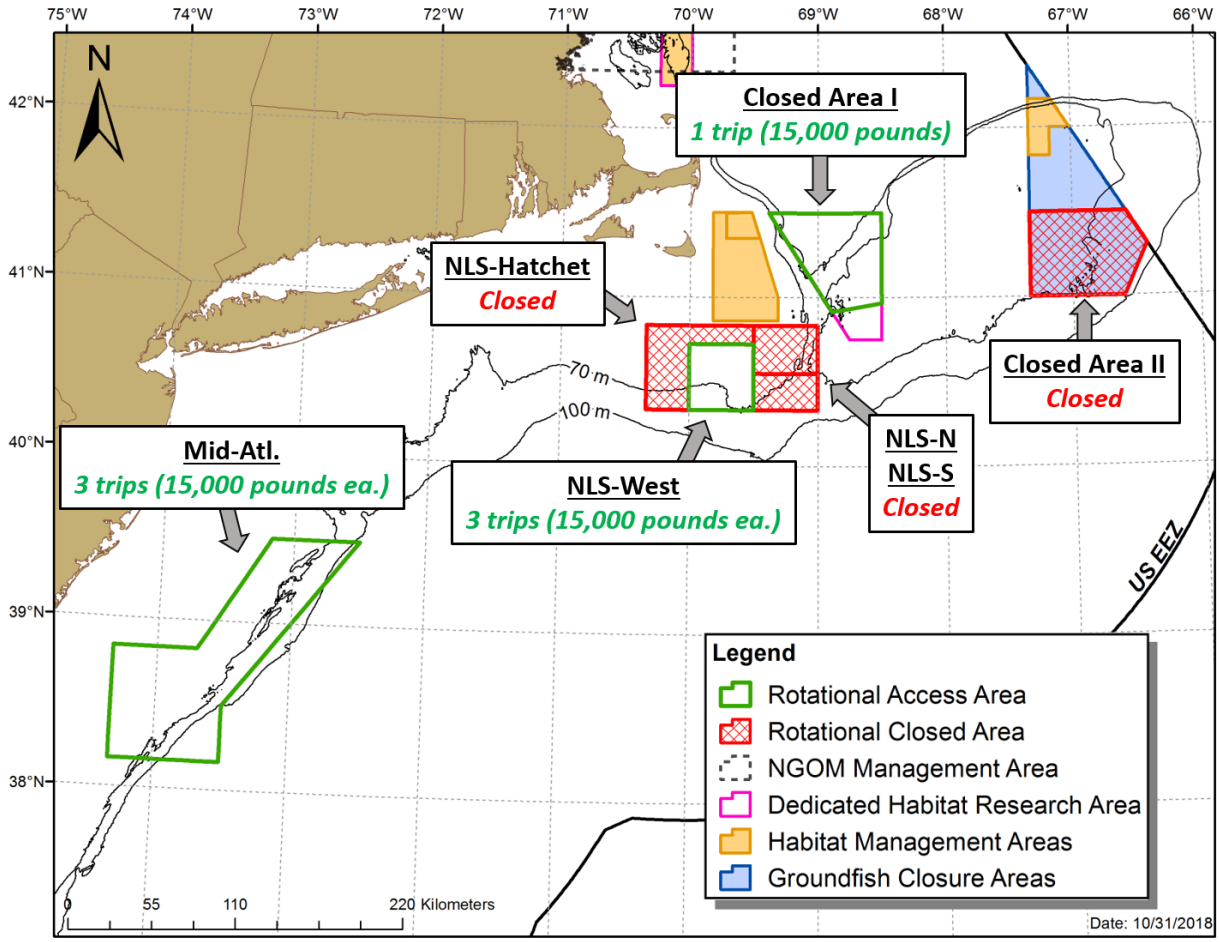
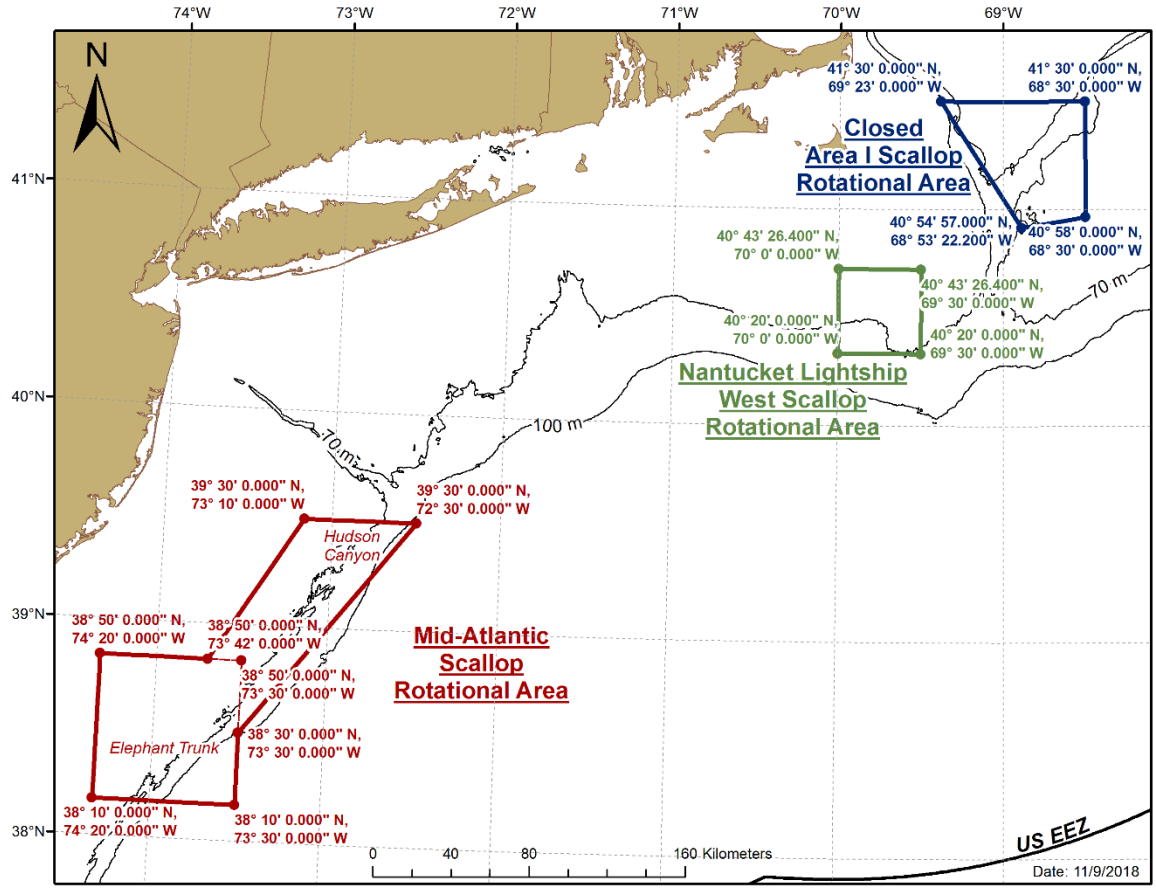


Figure 4 – Proposed Rotational Management Configuration in Framework 30. Access area trips may be fished within the defined boundaries of FW30 for the first 60 days of FY 2020.



4.3.3 Alternative 3 – Seven trip 18,000 Closed Area I Flex Option

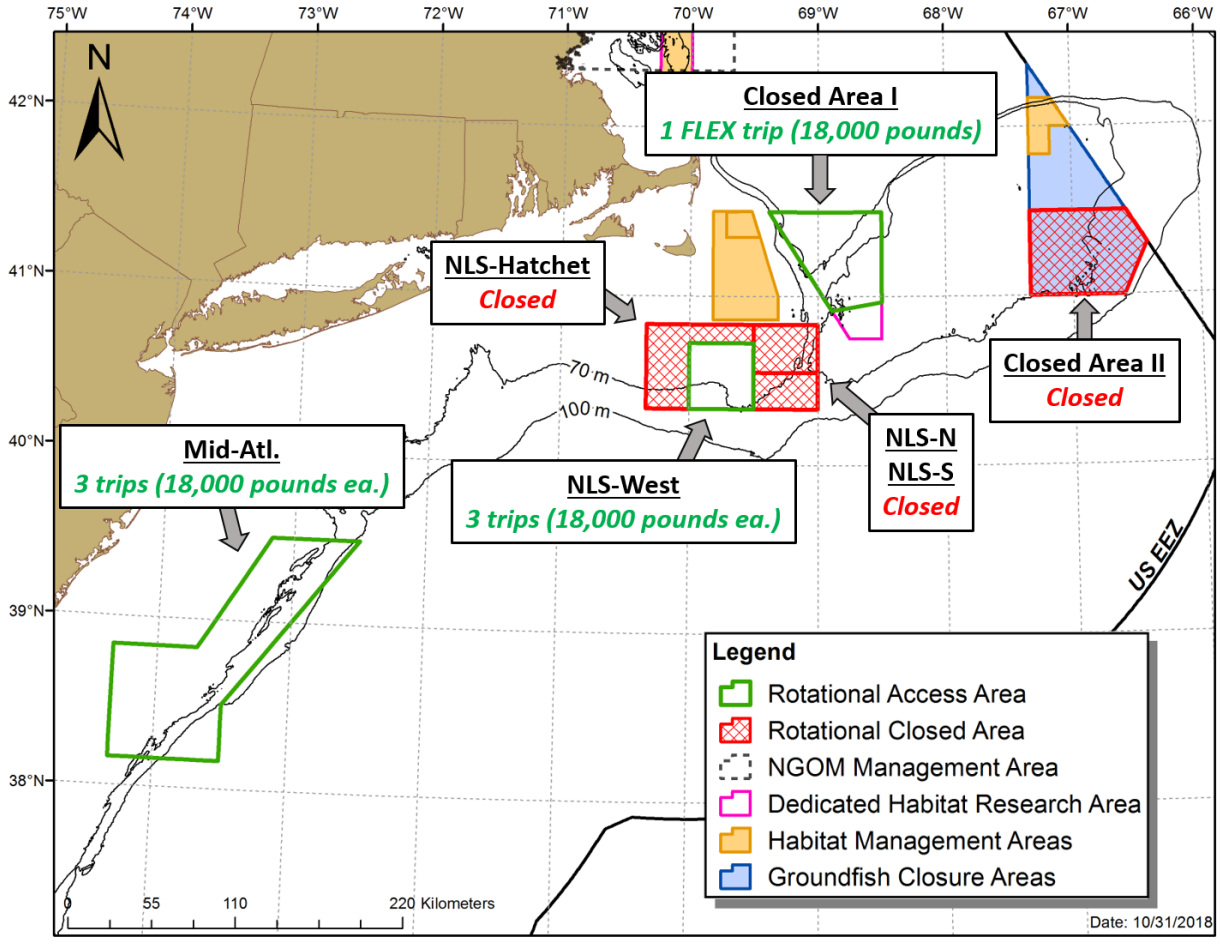
The specific allocations associated with Alternative 3:

- The FY2019 Annual Projected Landings (APL) for this alternative are 64.2 million lbs (DAS at F=0.25), or 62.5 million lbs (F=0.23) before set-asides are accounted for (RSA, observer).
- Access areas open to the fishery under this scenario would be: The Mid-Atlantic Access Area (3 FT LA trips), Closed Area I Access Area (up to 1 FT LA FLEX trip), and the Nantucket Lightship West Access Area (3 FT LA trips). Each full-time limited access vessel would be allocated a total of 126,000 access area pounds (one 18,000 CAI FLEX trip, and six 18,000 lb trips). The FT LA trip limit would be set at 18,000 lbs in Closed Area I, the Mid-Atlantic Access Area, and Nantucket Lightship West.
- The FLEX trip allocation (18,000 pounds) could be fished within any of the available access areas: Closed Area I, the MAAA, or NLS-West (see Table 8). This option would allow LA vessels to broadly distribute effort in the event that Closed Area I biomass projections are overly optimistic. The 2018 surveys suggest that the dominant cohort in CAI will be 9 years old in 2019, and the projection model suggests that the area would need to be fished at an F>0.60 to achieve a full trip in this area.
- LA PT and Occasional access area allocations would be set at 51,000 pounds for PT and 10,500 pounds for occasional vessels. LA PT trip limit would be set at 17,000 lbs, and PT vessels would receive one (1) CAI-FLEX trip, one (1) NLS-West trip, and one (1) Mid-Atlantic access area trip. Occasional vessels would be allocated one 10,500 lb CAI-Flex trip that would be eligible to in any access area open to the fishery.
- 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 30 for the first 60 days of FY 2020, even if the area is scheduled to close in FY 2020 (Figure 4). Vessels planning to fish 2019 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, 2020. For example, trips allocated to the Nantucket Lightship-West access area could only be fished in the access area boundary defined by FW30 in the first 60 days of FY 2020.
- FY 2020 Default Measures: FT LA vessels would be allocated two (2) 18,000 lbs access area trips: one (1) trip to the Mid-Atlantic Access Area, and one trip to the Nantucket Lightship West Access Area, as defined by Framework 30. The LAGC IFQ component would also receive access area trips to the NLS-W and MAAA, proportional to 5.5% of the default access area allocations to each area (571 trips to the NLS-W, and 571 trips to the MAAA). LAGC IFQ and LA DAS allocations associated with Alternative 3 vary depending on the sub-option, and are show in sections 4.3.3.1 and 4.3.3.2 below.

Table 12 - Alternative 3 (Section 4.3.3) Access Area Allocations

Open Access Areas	Allocation	Where Can Trips Be Fished?
Closed Area I	One 18,000 lb FLEX Trip	FLEX trip allocation can be fished within any of the following access areas: • Closed Area I • NLS-West • MAAA
Nantucket Lightship West	Three 18,000 lb trips	• NLS-West Only
Mid-Atlantic Access Area	Three 18,000 lb trips	• MAAA Only

Figure 5 – Spatial management configuration under Alternative 3, Sub-Options 1 and 2 – Seven trips at 18,000 lbs each with a Closed Area I Flex trip option.



4.3.3.1 Sub-Option 1 – Open area fishing at F=0.25 (26 DAS)

Sub-Option 1 would set the FT LA DAS at 26, which is expected to result in an average F=0.25 in open areas. The specific allocations associated with Alternative 3 – Seven trip 18,000 lb Closed Area I Flex Option:

- The APL after set-asides are removed would be 61,637,566 lbs.
- The LAGC IFQ APL (5.5%) would be set at 3,390,066 lbs. The LAGC IFQ only (5% of APL) would be set at 3,081,878 lbs. The FY 2020 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2019 value, which would be 2,542,550 lbs.

4.3.3.2 Sub-Option 2 – Open area fishing at F=0.23 (24 DAS)

Sub-Option 2 would set the FT LA DAS at 24, which is expected to result in an average F=0.23 in open areas. The specific allocations associated with Alternative 3 – Seven trip 18,000 lb Closed Area I Flex Option:

- The APL after set-asides are removed would be 59,986,304 lbs.
- The LAGC IFQ APL (5.5%) would be set at 3,299,247 lbs for FY 2019. The LAGC IFQ only (5% of APL) would be set at 2,999,315 lbs for FY 2019. The FY 2020 default LAGC IFQ quota (5.5%) would be set at 75% of the FY 2019 value, which would be 2,474,435 lbs.

Table 13 - LAGC IFQ allocations associated with sub-Options 1 & 2.

Section	Sub-Option	LAGC IFQ Quota (5%)	
		FY 2019	FY 2020
4.3.3.1	Sub-Option 1	3.1 mil lbs	2.3 mil lbs
4.3.3.2	Sub-Option 2	3.0 mil lbs	2.25 mil lbs

Table 14 - Limited Access DAS allocations associated with sub-Options 1 & 2.

Section	Sub-Option	F rate	Full Time DAS		Part Time DAS		Occasional DAS	
			FY 2019	FY 2020	FY 2019	FY 2020	FY 2019	FY 2020
4.3.3.1	1	F=0.25	26	19.5	10.40	7.8	2.17	1.63
4.3.3.2	2	F=0.23	24	18	9.60	7.20	2.00	1.50

4.3.4 Alternative 4 - Seven trip Closed Area I Flex Option (Mixed Trip Limits), open area F=0.23

The specific allocations associated with Alternative 4:

- The FY2019 Annual Projected Landings (APL) for this alternative are 61.5 million lbs (DAS at F=0.23). The APL after accounting for the scallop research set-aside (1.25 million lbs), the observer set-asides (1.26 million lbs), and LAGC incidental TAC (50,000 lbs) would be 58.9 million lbs.
- Alternative 2 would set FT LA DAS at 24 (Open area F=0.23).
- Access areas open to the fishery under this scenario would be: The Mid-Atlantic Access Area (3 FT LA trips), Closed Area I Access Area (up to 1 FT LA FLEX trip), and the Nantucket Lightship West Access Area (3 FT LA trips). Each full-time limited access vessel would be allocated a total of 123,000 access area pounds (one 15,000 CAI FLEX trip, and six 18,000 lb trips). The FT LA trip limit would be set at 15,000 lbs in Closed Area I, and 18,000 lbs in the Mid-Atlantic Access Area and Nantucket Lightship West.
- The FLEX trip allocation (15,000 pounds) could be fished within any of the available access areas: Closed Area I, the MAAA, or NLS-West. The FLEX option would allow LA vessels to broadly distribute effort in the event that Closed Area I biomass projections are overly optimistic. The 2018 surveys suggest that the dominant cohort in CAI will be 9 years old in 2019, and the projection model suggests that the area would need to be fished at an F>0.60 to achieve a full trip in this area.
- LA PT and Occasional access area allocations would be set at 48,000 pounds for PT and 10,250 pounds for occasional vessels. LA PT trip limit would be set at 15,000 lbs for one (1) CAI-FLEX trip, 17,000 lbs for one (1) NLS-West trip and one (1) Mid-Atlantic access area trip. Occasional vessels would be allocated one 10,250 lb CAI-Flex trip that would be eligible to in any access area open to the fishery.
- The LAGC incidental target TAC would be set at 50,000 lbs.
- The FY 2019 LAGC IFQ APL (5.5%) would be set at 3,025,697 lbs. The LAGC IFQ only (5% of APL) would be set at 2,750,634 lbs.
- Allocated Limited Access access area trips would be available in the same access areas defined by Framework 30 for the first 60 days of FY 2020, even if the area is scheduled to close in FY 2020 (Figure 4). Vessels planning to fish 2019 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, 2020. For example, trips allocated to the Nantucket Lightship-West access area could only be fished in the access area boundary defined by FW30 in the first 60 days of FY 2020.
- FY 2020 Default Measures: Alternative 4 would set FY 2020 DAS allocations at 75% of FY 2019 values, or 18 DAS for FT LA vessels (see Table 11). FT LA vessels would be allocated two (2) 18,000 lbs access area trips: one (1) trip to the Mid-Atlantic Access Area, and one trip to the Nantucket Lightship West Access Area, as defined by Framework 30. The LAGC IFQ allocations (5.5%) would be set at 75% of the FY2019 quota, which would be 2,430,874 lbs in FY 2020. The LAGC IFQ component would also receive access area trips to the NLS-W and MAAA, proportional to 5.5% of the default access area allocations to each area (571 trips to the NLS-West, and 571 trips to the MAAA).

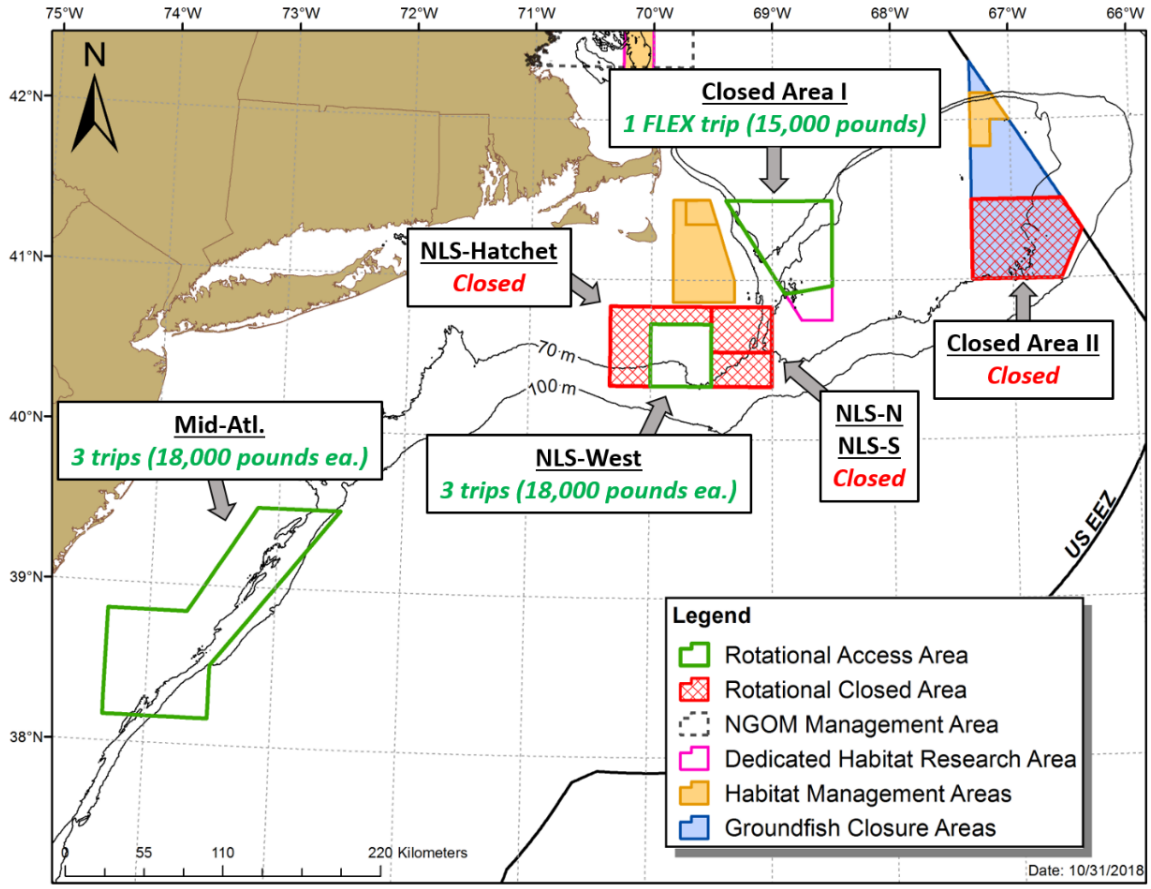
Table 15 – Alternative 4 access area allocations

Open Access Areas	Allocation	Where Can Allocated Trips Be Fished?
Closed Area I	One 15,000 lb FLEX Trip	FLEX trip allocation can be fished within any of the following access areas: • Closed Area I • NLS-West • MAAA
Nantucket Lightship West	Three 18,000 lb trips	• NLS-West Only
Mid-Atlantic Access Area	Three 18,000 lb trips	• MAAA Only

Table 16 - Limited Access open area DAS associated with Alternative 4.

Section	F rate	Full Time DAS		Part Time DAS		Occasional DAS	
		FY 2019	FY 2020	FY 2019	FY 2020	FY 2019	FY 2020
0	F=0.23	24	18	9.60	7.20	2.00	1.50

Figure 6 – Spatial management configuration under Alternative 4 – Seven trip option with three trips to the MAAA (18,000 lbs each), three trips to the NLS-W (18,000 lbs each), and one Closed Area I Flex trip (15,000 lbs).



4.3.5 Alternative 5 – Status Quo Allocations from Framework 29

The allocations and spatial management measures that were approved for FY 2018 though Framework 29 are presented for a "status quo" comparison with updated spatial management alternatives (Alternatives 4.3.2, 0, and 0). The NEPA analyses presented in this action in Section 7.0 consider the impacts of "no change" to the spatial management scenarios, which is a more realistic comparison than "no action" which only captures trade-offs between the default measures approved in FW29, which are partial allocations. A description of the Framework 29 preferred measures is provided in the alternatives section of Framework 30 to provide continuity and context for the reader.

In Framework 29 the Council's preferred alternative included: Six (6) 18,000 access area trips for full-time limited access vessels, with open area DAS set by fishing at F=0.295. Access area allocations included: one (1) trip to Closed Area I plus LA CAI carryover, one (1) trip to Nantucket Lightship-South access area, two (2) trips to the NLS-W access area, and two (2) trips to the MAAA for full time vessels. This alternative also allocated carryover trips to Closed Area I to account for unharvested trips that were allocated through a lottery in FY2013, but were not harvested because the trips were not economically feasible. Fishing the open bottom at an F=0.295 would result in an allocation of 30 DAS in FY 2019 (vs. 24 DAS in FY 2018). Applying status quo spatial management in FY 2019 would be expected to result in total APL of 57.2 million pounds, which is slightly less than the 58.4 million lb APL associate with the same spatial management and open area F applied for FY 2018.

4.4 Fishery Allocations to the LAGC IFQ Component

4.4.1 Alternative 1 – No Action (Default Measures from FW29)

Alternative 1 would set LAGC IFQ access area trips at 558 trips, which is the number of trips specified through default measures in Framework 29. 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 29 specified a set number of LAGC IFQ access area trips in default measures.

4.4.2 Alternative 2 – Total trips based on 5.5% of the total Access Area Allocations, allocate trips proportionally to each area, and allocation Flex trips to Closed Area I.

This option is based on applying the same allocation value for the overall ABC/ACL/APL, which is 5.5% for the LAGC fishery. 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 0), 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 7 trip 15,000 lbs access area allocations for FY2019, the LAGC IFQ component would receive 3,331 trips. When 5.5% is applied to the 7 trip 18,000 lbs access area allocations for FY2019, the LAGC IFQ component would receive 3,997 total trips. When 5.5% is applied to six 18,000 lb trip and a 15,000 lb trip allocation (7 total trips) the LAGC IFQ component would receive 3,902 trips. This method has been used in previous actions.

This option would allocate LAGC IFQ access are trips proportional to the LA allocations in each access area (Table 12). For alternatives that allocate a trip to Closed Area I, this alternative would allocate LAGC IFQ trips proportionally to the LA potential harvest in Closed Area I. The LAGC IFQ access area trip allocations for FY 2019 would be based on the Council's preferred alternative is Section 0. FY 2020 default LAGC access area allocations are specified in Section 4.3.

Rationale: Under Alternative 2, allocations would follow the 94.5% and 5.5% split, as specified in Amendment 11. The LAGC IFQ component would be afforded proportional access to Closed Area I.

Table 17 – Potential LAGC IFQ Access Area Trips by Area for FY 2019.

Specs. Alt.	Description	LAGC IFQ Trips	Closed Area I	NLS-West	MAAA
		Total Trips	Allocated LAGC Trips to Each Access Area		
4.3.1 - Alt. 1	No Action	558			558
4.3.2 - Alt. 2	7 trips at 15k	3,331	476	1427	1427
4.3.3 - Alt. 3	7 trips at 18k	3,996	571	1713	1713
4.3.4 - Alt 4	1 trip at 15k 6 trips at 18k	3,902	476	1713	1713

4.5 Additional Measures to Reduce Fishery Impacts

4.5.1 Alternative 1 – No Action

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.

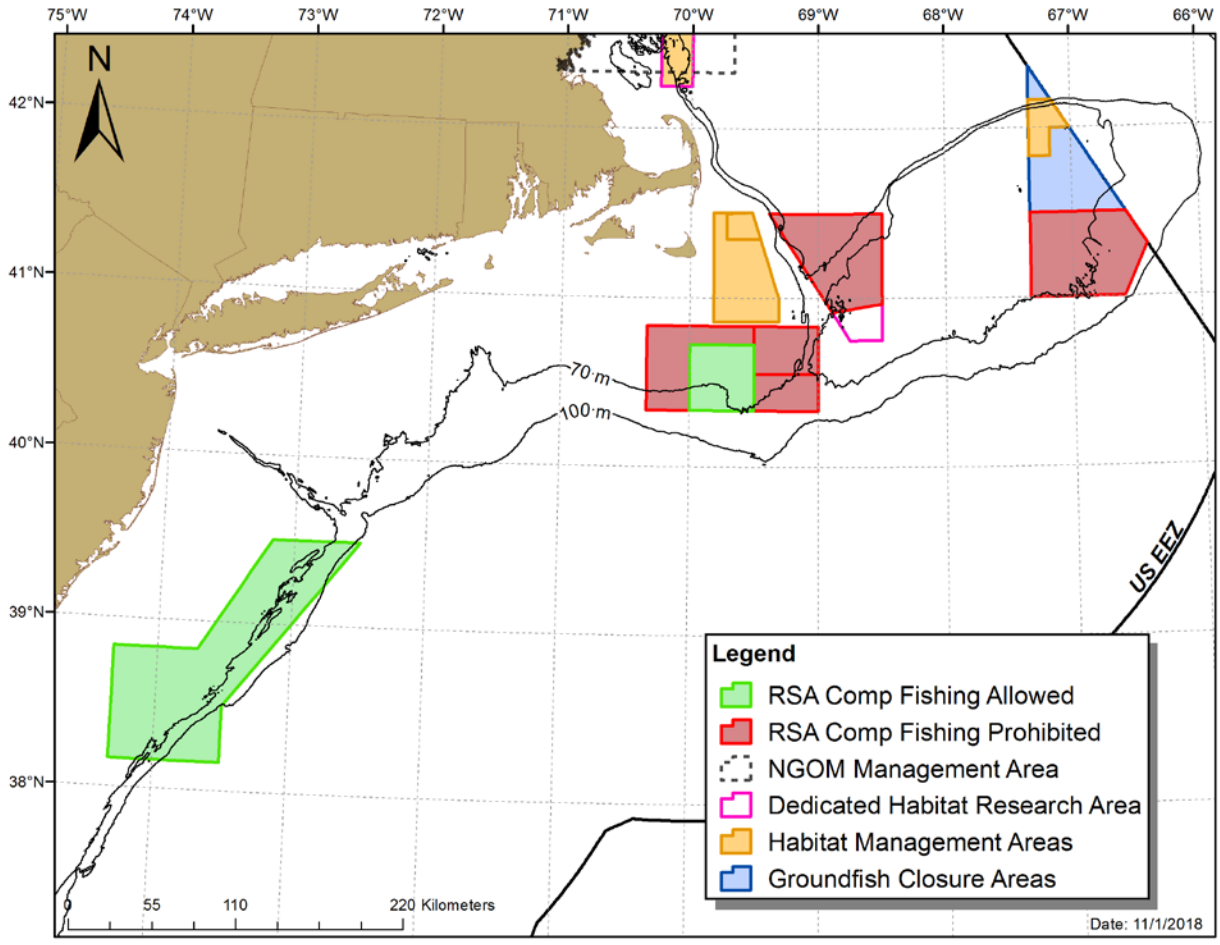
4.5.2 Alternative 2 – Allow RSA compensation fishing in open access areas, with limited RSA compensation fishing in the NGOM Management Area.

RSA compensation fishing would be permitted only in the Mid-Atlantic Access Area, the Nantucket Lightship-West (Figure 7), 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.

RSA compensation fishing would be permitted in the NGOM management area, per NGOM alternatives in Section 0. RSA compensation fishing would be permitted in the NGOM management area up to the poundage specified in the Council's preferred alternative, and only by vessels that are awarded NGOM RSA compensation pounds. RSA compensation fishing would be allowed in all other open access areas and open areas.

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 open access areas; 3) reduce impacts on small scallops and overall mortality in an area.

Figure 7 – Rotational areas where RSA compensation fishing can (shaded green) and cannot (shaded red) occur under Alternative 2.



4.6 Standard Default Measures

The Council may select a preferred alternative for Section 4.6.1 and 4.6.2.

4.6.1 Default Specifications

The Scallop FMP allocates fishery specifications on an annual basis including open-area DAS and access area trips for the limited access component, IFQ to qualifying LAGC IFQ vessels, and access area trips to the LAGC IFQ fleet. Default specifications have been developed in this annual process so that the fishery may continue to operate at a conservative level if updated specifications are not in place by April 1 (start of the fishing year). This action proposes standardizing the process for developing default measures.

4.6.1.1 Alternative 1 – No Action

Under Alternative 1 (No Action), default specifications for the LA and LAGC components would continue to be specified in the annual specifications process. For the Limited Access component, default open-area DAS and access area allocations would be specified for full time, part time, and occasional permits. Default IFQ and fleetwide access area trip allocations would be specified for the LAGC IFQ component.

Rationale: Allocation to the scallop fishery varies from year to year and is dependent on changing resource conditions and rotational management of the scallop fishery. The dynamic nature of the resource is a main driver for both the annual specifications process and for developing conservative default measures. Because the scallop resource is generally surveyed on an annual basis, the Council is able to consider the most recent survey information and adjust specifications.

4.6.1.2 Alternative 2 - Standardize default open-area DAS for the LA component and LAGC IFQ quota allocation at 75% of the preferred alternative for the previous Fishing Year allocation.

Under Alternative 2, each limited access permit type would receive 75% of Fishing Year 1 open-area DAS to begin the subsequent fishing year, and the LAGC IFQ component would receive 75% of Fishing Year 1 quota allocation. This alternative would not allocate default access area trips for the LA or LAGC IFQ component. Alternative 2 would establish default specifications for Fishing Year 2 as a fixed percentage of the Council's preferred specifications alternative for Fishing Year 1.

Rationale: Embedding standard default measures in the specifications process would reduce the number of decisions made by the Council at Final Action, and workload for PDT and staff to develop default measures on an annual basis that have predictable outcomes. Standardizing this process would also provide predictable outcomes for stakeholders. Further, this alternative does not preclude the Council from adjusting default measures each year.

Allocating default DAS and LAGC IFQ quota at 75% of the preferred allocation for Fishing Year 1 would allow the fishery to continue operating at a conservative level if there was a gap between the end of a fishing year and the implementation of updated fishery specifications. The Council changed the start of the fishing year to April 1st through Amendment 19, meaning implementation of updated specifications are expected to occur on or close to the beginning of the fishing year; therefore, it is unlikely that the fishery will need to operate under default

measures for a sizeable portion of the fishing year. Alternative 2 is also expected to streamline the Council process and therefore increase the likelihood of April 1st implementation.

4.6.2 LAGC IFQ allocations to access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, a maximum number of trips are 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. The level of allocation can vary and is specified in each framework action.

4.6.2.1 Alternative 1 – No Action

Under Alternative 1, the Council would continue to set the overall LAGC IFQ access area allocation in each specifications action. Each year, the Council would consider the total access area allocation for the fishery, and develop measures to allocate a portion of access area allocations to the LAGC IFQ component, and a corresponding number of fleet-wide trips.

Rationale: The Council is able to consider the most recent assessment of the resource and adjust LAGC IFQ access area allocations because the resource is surveyed on an annual basis.

4.6.2.2 Alternative 2 - Standardize LAGC IFQ access area allocations as 5.5% of the total expected access area harvest

Alternative 2 would standardize overall access area allocations to the LAGC IFQ component by allocating the equivalent to 5.5% of total projected access area harvest by the Limited Access and LAGC IFQ components. The total projected harvest would be set by:

1. Multiplying the number of full time access area trips by the FT LA access area possession limit and the number of FT equivalent permits in the fishery (327).
2. Dividing the expected LA access area harvest by 0.945 to calculate total expected access area harvest.
3. The number of access area trips allocated to the LAGC IFQ fleet would be calculated by dividing 5.5% of total expected access area harvest by the LAGC IFQ possession limit.

Table 13 shows examples of how this calculation would be done for different levels of total expected access area harvest. This alternative does not standardize where LAGC IFQ access area trips are allocated to.

Table 18 - An example of how LAGC IFQ access area allocations are calculated based on total expected access area harvest.

	a	b	c	d	e	f	g	h
	Example Scenario	FT Access Area Trips	Possession Limit (lbs)	LA FT equivalent	LA AA Landings (lbs)	TOTAL AA Landings (lbs)	LAGC IFQ share (lbs)	LAGC Trips
					(b*c*d)	(e/0.945)	(f*0.055)	(g/600)
1	4 AA trips	4	18,000	327	23,544,000	24,914,286	1,370,286	2,284
2	5 AA trips	5	18,000	327	29,430,000	31,142,857	1,712,857	2,855
3	6 AA trips	6	18,000	327	35,316,000	37,371,429	2,055,429	3,426
4	7 AA trips	7	18,000	327	41,202,000	43,600,000	2,398,000	3,997

Rationale: In recent years (i.e. FY2013-FY2018), the Council has used the same basic approach described in this alternative to determine LAGC IFQ access area allocations. By embedding LAGC IFQ access area allocations in the specifications process, the number of decisions made by the Council at Final Action and number of alternatives analyzed in each action would be reduced. Standardizing this process would also provide predictable outcomes for stakeholders. Furthermore, by streamlining the decision-making process, it is expected that Alternative 2 may increase the likelihood of specifications being implemented prior to the start of the fishing year. Alternative 2 would not prevent the Council from using an ad hoc approach to adjust LAGC IFQ access area allocations in the future.

5.0 CONSIDERED AND REJECTED ALTERNATIVES

6.0 AFFECTED ENVIRONMENT

6.1 Atlantic Sea Scallop Resource

6.1.1 Benchmark Assessment

The sea scallop resource had a benchmark assessment in 2018 (SARC 65, 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 Fsmy, and the stock is considered overfished if biomass is less than ½ Bmsy. SARC 65 updated reference points and increased F_{MSY} to 0.64 and increased B_{MSY} to 116,766 mt (½ B_{MSY} = 58,383 mt).

Figure 8 - 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.

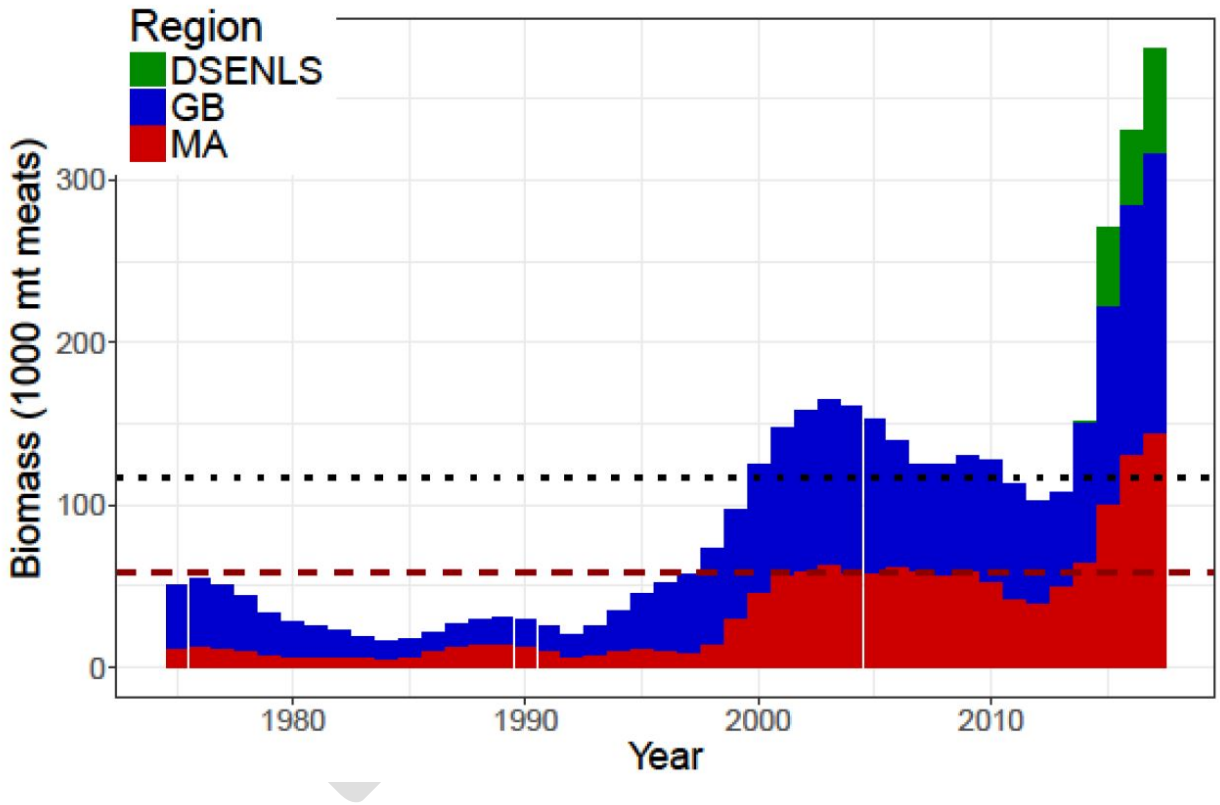
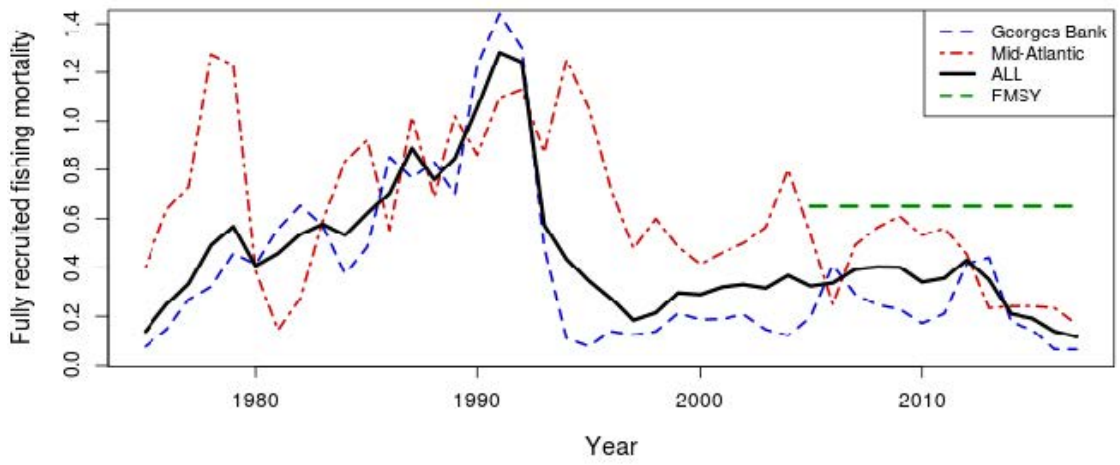


Figure 9 - Fully recruited annual fishing mortality rate for scallop from 1975 - 2017



Note that trends are different for partially recruited scallops because of changes in commercial size selectivity. SARC65 Fmsy (F=0.64) is shown with green dashed line for the most recent period; Fmsy would have been smaller in past years when selectivity was different.

Table 19 - 2017 Atlantic sea scallop stock status.

	Total 2017 Estimate	Stock Status Reference Points
Biomass (in 1000 mt)	133	½ Bmsy = 58,383
F	0.12 (SE of 0.01)	OFL = 0.64
In 2017, overfishing was not occurring, and the resource was not overfished.		

6.1.2 Northern Gulf of Maine

In 2018, the School for Marine Science and Technology surveyed parts of the Gulf of Maine using a drop camera. The survey was conducted on a 0.5 nmi^2 grid and covered Stellwagen Bank, southern Jeffreys Ledge, Ipswich Bay, and Platts Bank. Some smaller scallops were observed on Jeffreys Ledge while most of the adult biomass was concentrated on Stellwagen Bank and in Ipswich Bay. SMAST coverage did not include stations in the deeper water along the edge of Stellwagen Bank where most NGOM fishing occurred in April and May. Projection estimates were calculated using areas specific SH/MW relationships based on scallops collected through the 2016 ME DMR dredge survey.

Table 20 - NGOM Biomass, exploitable biomass, and TAC (F=0.2) estimates by survey area. Catch in mt.

Stellwagen Bank			
Year	Bms	Ebms	Catch (F=0.2)
2018	296.6	266.8	
2019	275	257.9	46.76
2020	257.9	191.5	34.71
Jefferys Ledge			
Year	Bms	Ebms	Catch (F=0.2)
2018	93.7	62.9	
2019	104.5	80.2	14.5
2020	87.5	76.3	13.8
Ipswich Bay			
Year	Bms	Ebms	Catch (F=0.2)
2018	204.6	148.1	
2019	219.4	175	31.73
2020	178.6	158.8	28.79
Platts Bank			
Year	Bms	Ebms	Catch (F=0.2)
2018	80.4	69.2	
2019	77	70.7	12.82
2020	57	54.3	9.85

Table 21 - NGOM Biomass, exploitable biomass, and TAC (F=0.25) estimates by survey area. Catch in mt.

Stellwagen			
Year	Bms	Ebms	Catch (F=0.25)
2018	296.6	266.8	
2019	275	257.9	57.06
2020	189.3	182.1	40.29
Jefferys Ledge			
Year	Bms	Ebms	Catch (F=0.25)
2018	93.7	62.9	
2019	104.5	80.2	17.74
2020	83.2	72.6	16.06
Ipswich Bay			
Year	Bms	Ebms	Catch (F=0.25)
2018	204.6	148.1	
2019	219.4	175	38.71
2020	169.9	151.1	33.42
Platts Bank			
Year	Bms	Ebms	Catch (F=0.25)
2018	80.4	69.2	
2019	77	70.7	15.65
2020	54.2	51.7	11.43

6.1.3 Summary of 2018 Surveys

6.1.3.1 Overview of the 2018 Surveys

The Atlantic sea scallop resource was surveyed by the following groups/methods in 2018: the Virginia Institute of Marine Science (VIMS) dredge survey of the Mid-Atlantic Bight, Nantucket Lightship Area, Closed Area I, and Closed Area II; the University of Massachusetts Dartmouth School for Marine Science and Technology (SMAST) high-resolution drop camera survey the Nantucket Lightship, Closed Area I, the Great South Channel, and the Gulf of Maine; the Woods Hole Oceanographic Institute (WHOI) HabCam survey of Closed Area II North, the open area along the northern flank of Georges Bank, and the Mid-Atlantic Bight; the Coonamessett Farm Foundation (CFF) HabCam survey of the Nantucket Lightship; and the Northeast Fisheries Science Center (NEFSC) dredge survey of Georges Bank and HabCam survey 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. 2018 SAMS area boundaries are shown in Figure 10 for Georges Bank and Figure 11 for the Mid-Atlantic Bight.

Figure 10 - 2018 Georges Bank SAMS areas (in red) relative to FY2018 scallop rotational management areas.

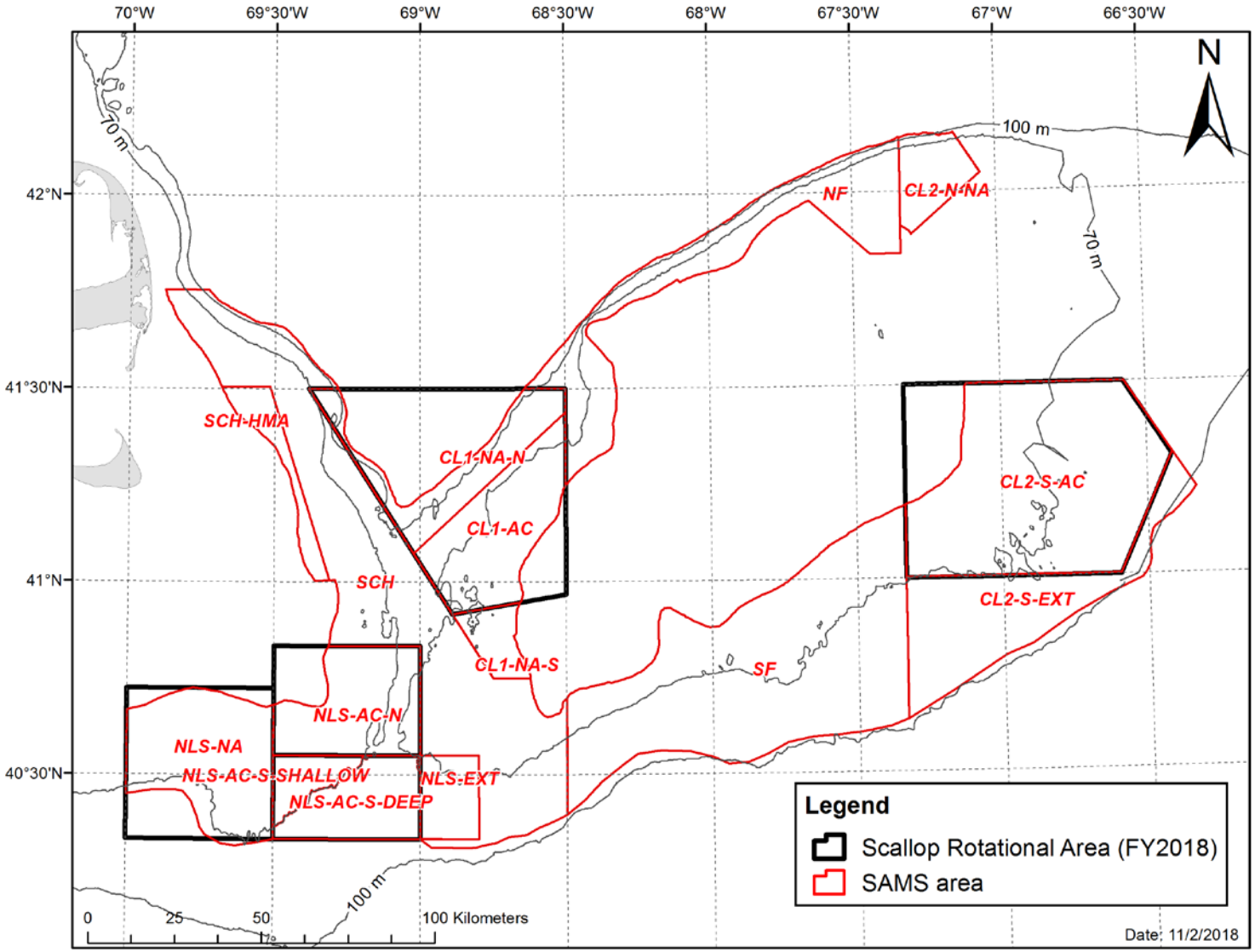
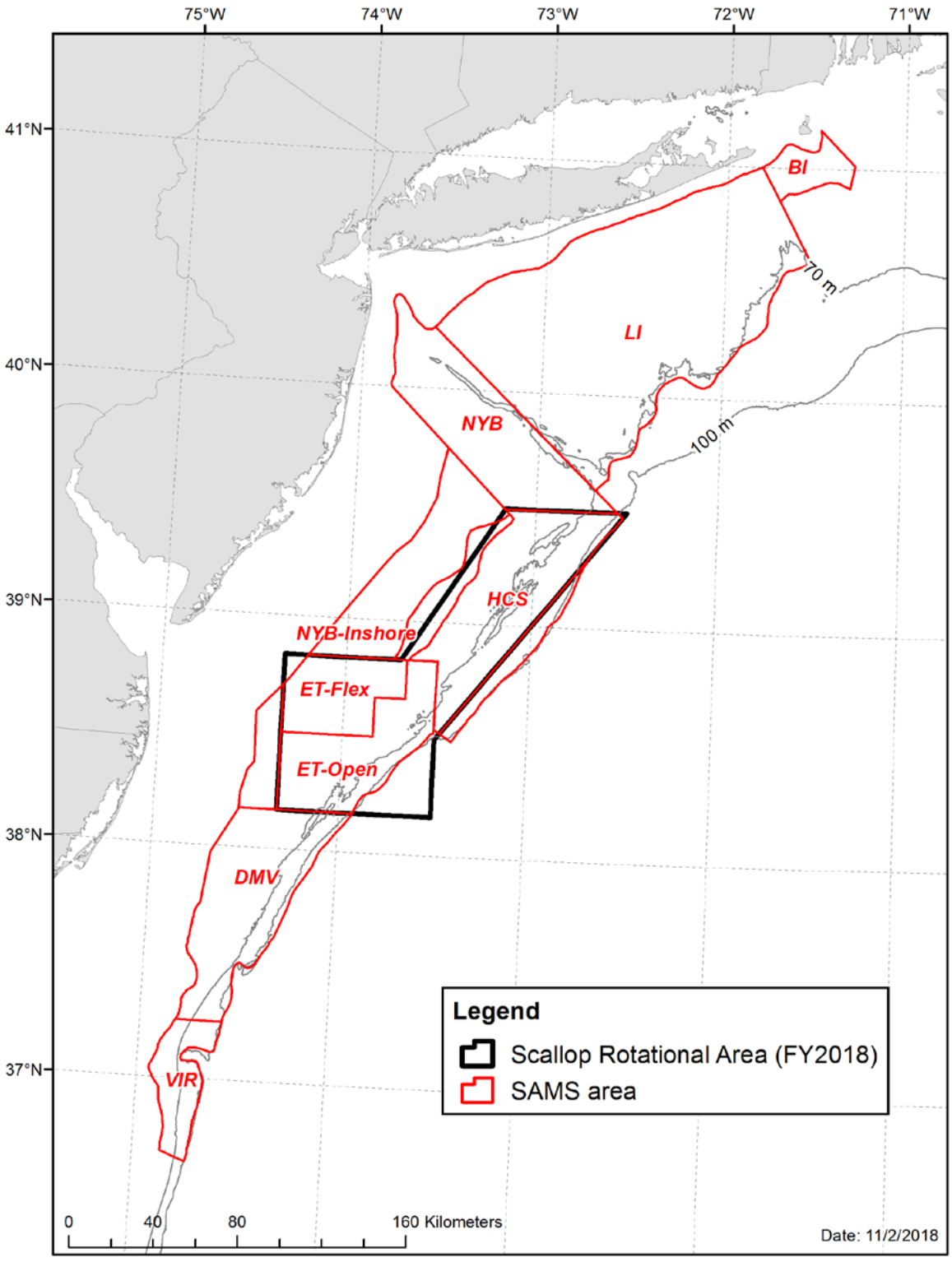


Figure 11 - 2018 Mid-Atlantic Bight SAMS areas (in red) relative to FY2018 scallop rotational management areas.



6.1.3.2 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 2018, VIMS completed 450 stations in the Mid-Atlantic Bight (MAB), 189 stations in the Closed Area I and Closed Area II survey domain, and 130 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).

Fifteen SHMW samples were taken at each station that had scallops, equating to 5,413 samples in the MAB, 1,971 samples in the CAI and CAII survey domain, and 1,831 samples in the NLS. SH:MW samples were used to construct a model to predict meat weight based on a suite of potential covariates (i.e. shell height, depth, SAMS area, sex, disease, etc.). A trend of increasing meat weight at length was seen in the MAB SAMS areas; predicted relationships were similar to estimates for the MAB in 2017. SHMW relationships were significantly different for all SAMS areas in the NLS. A greater relationship was seen in the southern CAI SAMS area relative to the north. SHMW curves from the SF and CAII-S-EXT SAMS were lower than CAII-S-AC (i.e. the traditional CAII access area).

Length frequency information suggested some recruitment had occurred in the BI, LI, NYB, and NYB-Inshore SAMS areas. In the NLS, some recruitment was observed in the NLS-N SAMS area along with the same three year classes observed in the 2017 survey. No recruitment was evident in other NLS SAMS areas. As was the case in the 2016 and 2017 surveys, the uncharacteristically slow growing animals in NLS-S-Deep did not seem to grow over the past year. Minimal growth was seen in NLS-AC-W relative to last year. Signals of recruitment were observed to some extent in all SAMS areas within the CAI and CAII survey domain, with mean shell-height estimated at approximately 100 mm.

In the MAB survey domain, the majority of adult biomass was observed in the Elephant Trunk and Hudson Canyon. In the NLS, “Peter Pan” scallops in the deep water (> 70 m) of NLS-S made up the majority of recruit biomass observed (i.e. 35-75 mm), while the majority of adult biomass was observed in the NLS-W and in the shallow portion of the NLS-S. In CAI, one station along the western edge of CL1-AC-N made up almost all of observed recruit biomass, while larger animals were seen along the CAI ‘sliver’. In CAII, both recruit biomass and adult biomass were spread across the open area of the SF and CAII-ext SAMS areas as well as the eastern part of CAII-S-AC.

6.1.3.3 SMAST drop camera survey

Between early May and mid-June of 2018, SMAST completed high resolution drop camera surveys in the NLS, CAI, Great South Channel, and the Gulf of Maine. SMAST estimates of abundance, biomass, mean meat weight, and mean shell height were based on quadrat still images from the Imperex high-resolution digital still camera (which was integrated into the survey design in 2017). SARC 65 SHMW parameter estimates were used in biomass and mean meat weight calculations for each SAMS area.

Some pre-recruits (<35 mm) and recruits (35-75 mm) were observed in the northern part of the SCH and in between CAI and NLS. Some recruit sized animals were also seen in NLS-W and in the deep water of NLS-S; however, these animals were observed in previous years as well. There

was a bimodal size distribution of scallops seen in the SCH SAMS area indicating two year classes being present.

There was a decrease of density mean SH in the NLS-N compared to the 2017 survey estimates. A decline in density was also seen in the NLS-S between 2017 and 2018.

6.1.3.4 WHOI HabCam survey

WHOI conducted a survey of the Northern Flank of Georges Bank, Closed Area II HAPC, and the Mid-Atlantic Bight using HabCam v2. Approximately 3 million images were collected throughout the survey and around 200,000 images were annotated (~ 1:15 annotation rate). Roughly 50% of collected images were annotated at sea, while the remainder were annotated in the lab. Biomass was calculated using SARC 65 SHMW equations for Georges Bank and the Mid-Atlantic respectively and abundance, expanded number at length, and biomass were estimated for each SAMS area.

The NF SAMS area was very patch in terms of exploitable scallops, but some were observed adjacent to CL2-NA-N. The density of larger, older animals in CL2-NA-N seemed to have decreased since the 2017 survey suggesting some mortality. Some recruits were seen in CL2-NA-N.

6.1.3.5 CFF HabCam survey

The Coonamessett Farm Foundation surveyed the NLS using HabCam v3 in mid-July of 2018. CFF HabCam tracks were spaced east to west at roughly 2 to 3 nmi increments, resulting in a total survey area of approximately 725 nmi^2. Roughly 2.9 million HabCam images were collected, of which 7,143 were annotated (~1:400 annotation rate).

The CFF HabCam v3 survey did not observe many prerecruits (< 35 mm) in the NLS area but did see some higher densities of 35-75 mm animals in NLS-S-deep (i.e. mostly made up of the 60-70 mm slow growing “Peter Pan” scallops that were observed in previous years). Animals 75 mm and larger were most dense in the NLS-W and NLS-S-shallow.

As other survey groups suggested, growth in the NLS-W appeared be far slower than expected between the 2017 and 2018 surveys, possibly due to some density dependent dynamic occurring. A similar trend of slower than expected growth was apparent in other NLS SAMS areas as well.

CFF HabCam relative density estimates appeared to decrease in the NLS-S-deep between the 2017 and 2018 surveys, suggesting some mortality may have occurred in this area in the absence of fishing.

6.1.3.6 NEFSC dredge and HabCam survey

The 2018 NEFSC sea scallop survey used HabCam v4 and a survey dredge to assess the sea scallop resource. The dredge component of the survey was focused specifically to the Georges Bank region, completing 117 stations between late May and mid-June of 2018. The HabCam component of the survey covered most of Georges Bank during this time. HabCam tracks were also conducted in the DMV SAMS area (i.e. Mid-Atlantic Bight region) during mid-May of 2018. HabCam efforts by the NEFSC, WHOI, and CFF collectively surveyed 1,797 nmi and collected approximately 6 million images, of which roughly 272,000 were annotated.

The dredge survey observed both prerecruits (< 35 mm) and recruits (35-75 mm) in the SCH SAMS area and in the Northern Edge. An older cohort was also observed in the SCH which will likely be harvestable size in 2019.

Figure 12 -Length frequencies by SAMS area from the Mid-Atlantic portions of the 2018 VIMS dredge survey.

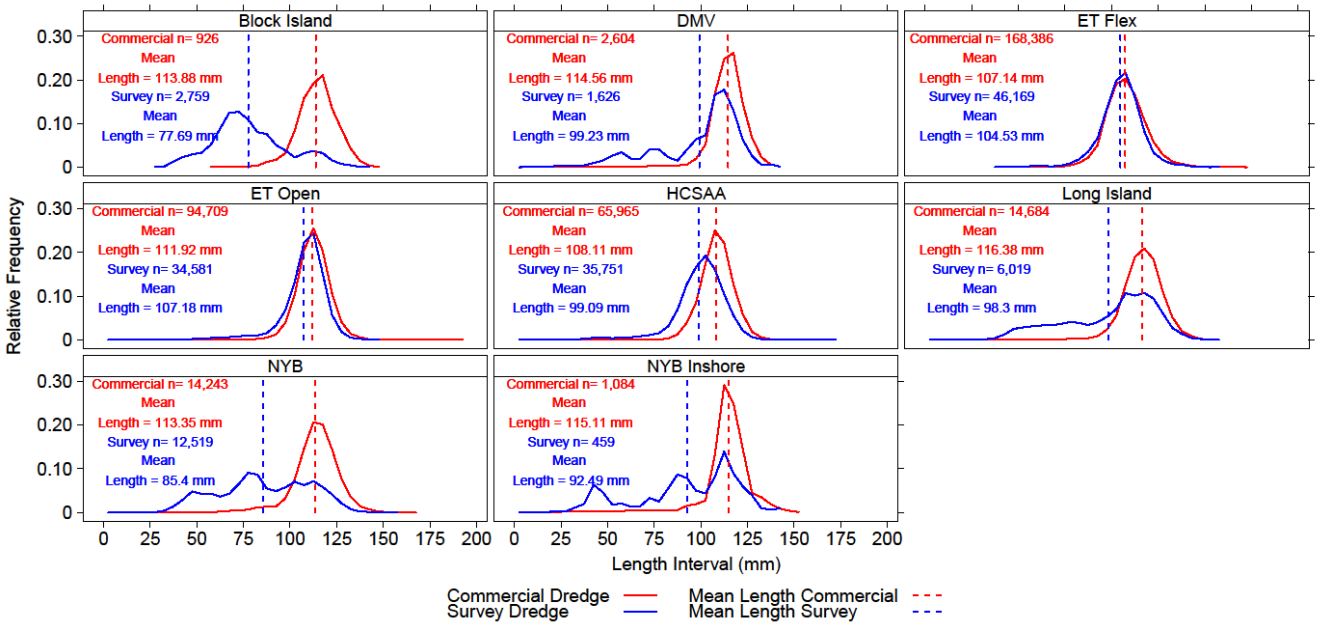


Figure 13 - Length frequencies by SAMS area from the NLS portion of the 2018 VIMS dredge survey.

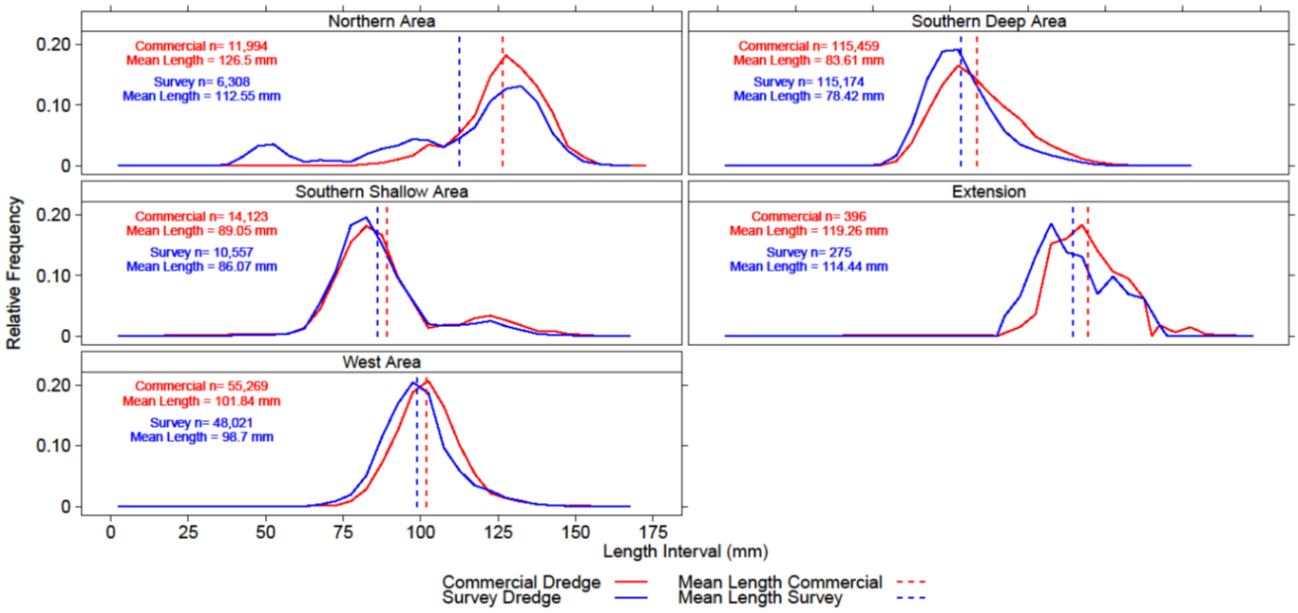


Figure 14 - Length frequencies by SAMS area from the CAI and CAII portion of the 2018 VIMS dredge survey.

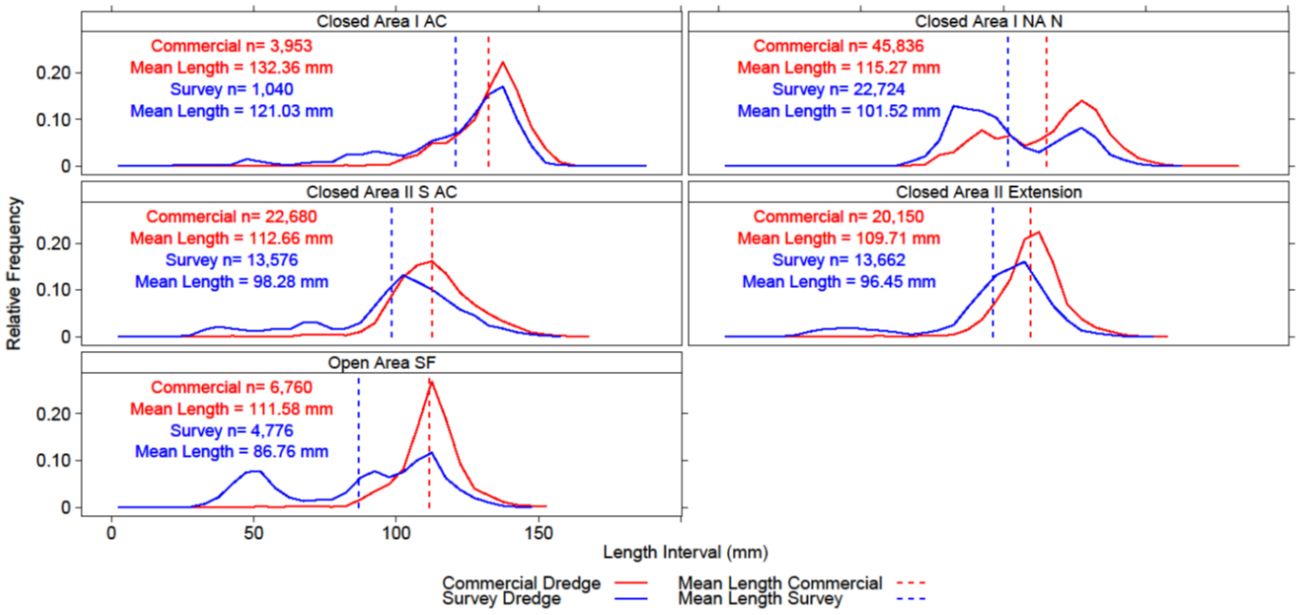


Figure 15. Scallop catch per tow of 35-75 mm animals (left) and > 75 mm animals (right) from the 2018 VIMS survey dredge in the Mid-Atlantic Bight.

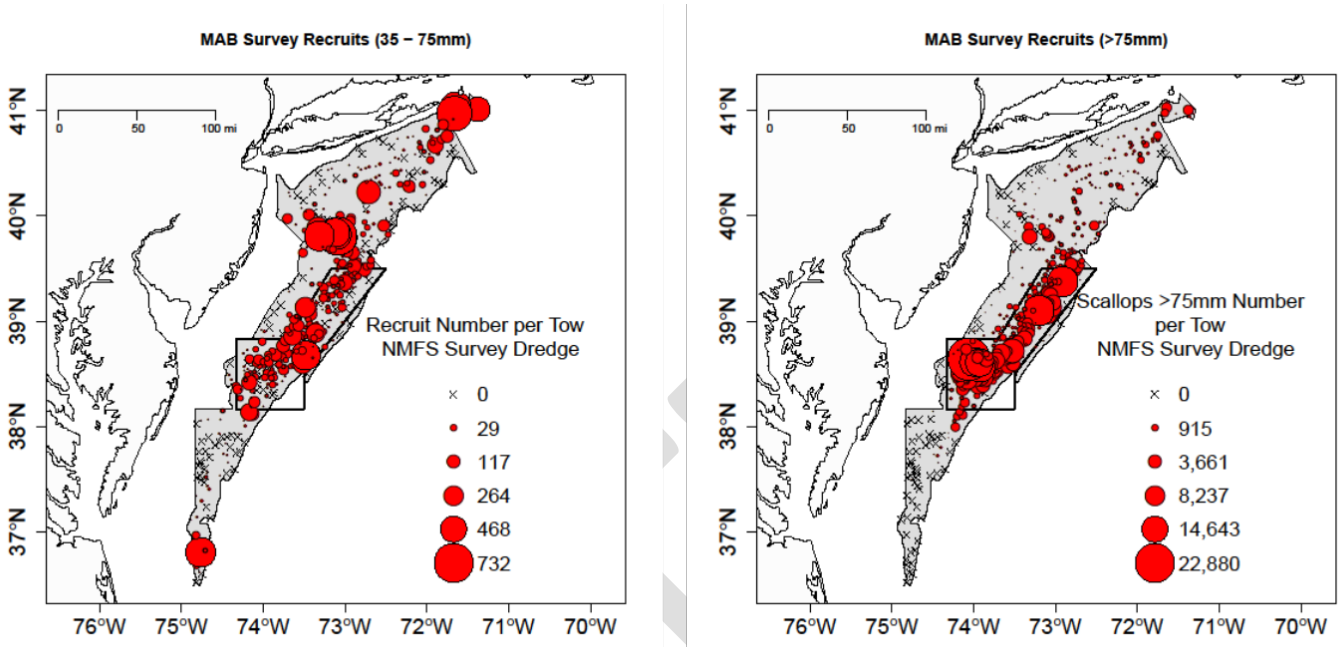


Figure 16. Scallop catch per tow of 35-75 mm animals (left) and > 75 mm animals (right) from the 2018 VIMS survey dredge in the NLS.

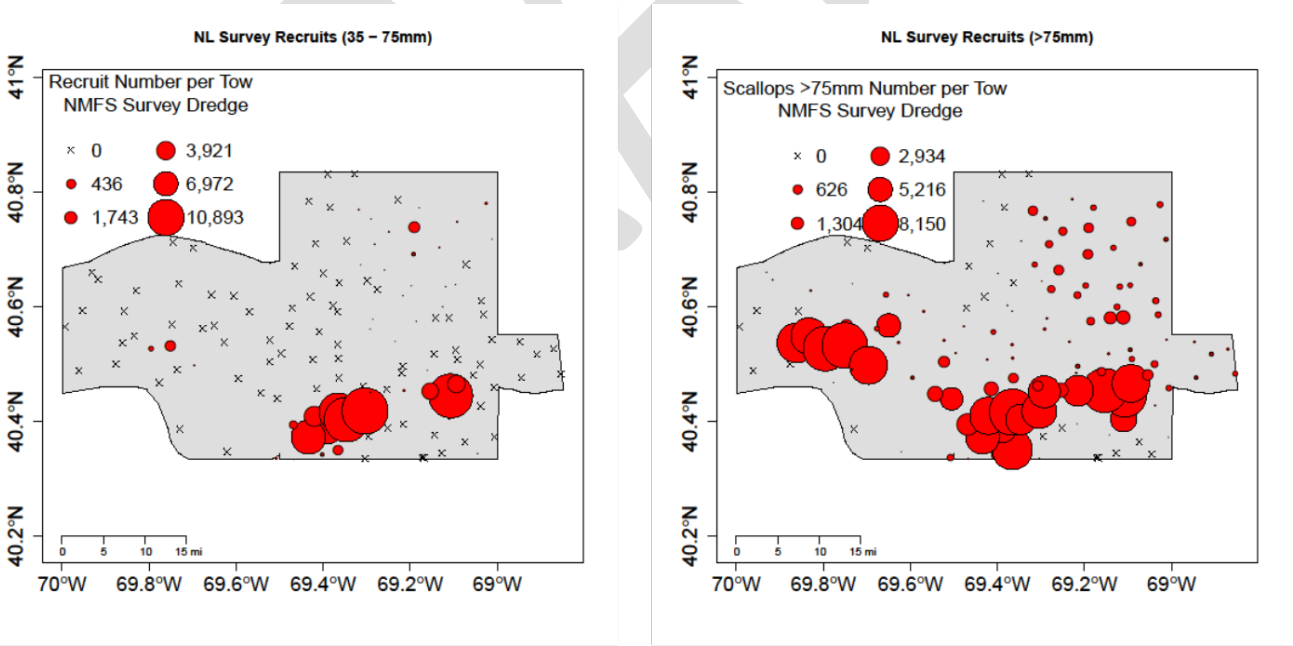


Figure 17. Scallop catch per tow of 35-75 mm animals (left) and > 75 mm animals (right) from the 2018 VIMS survey dredge in CAI and CAII.

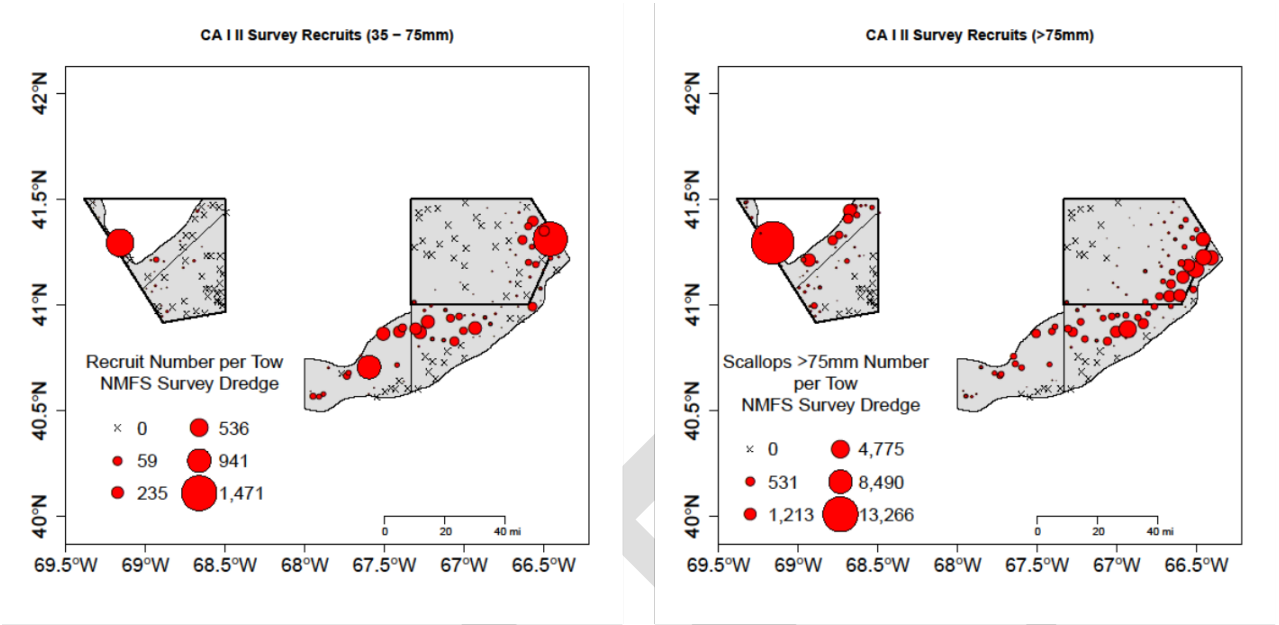


Figure 18. Observed scallop density (m^{-2}) by the 2018 SMAST drop cam survey of the NLS, GSC, and CAI.

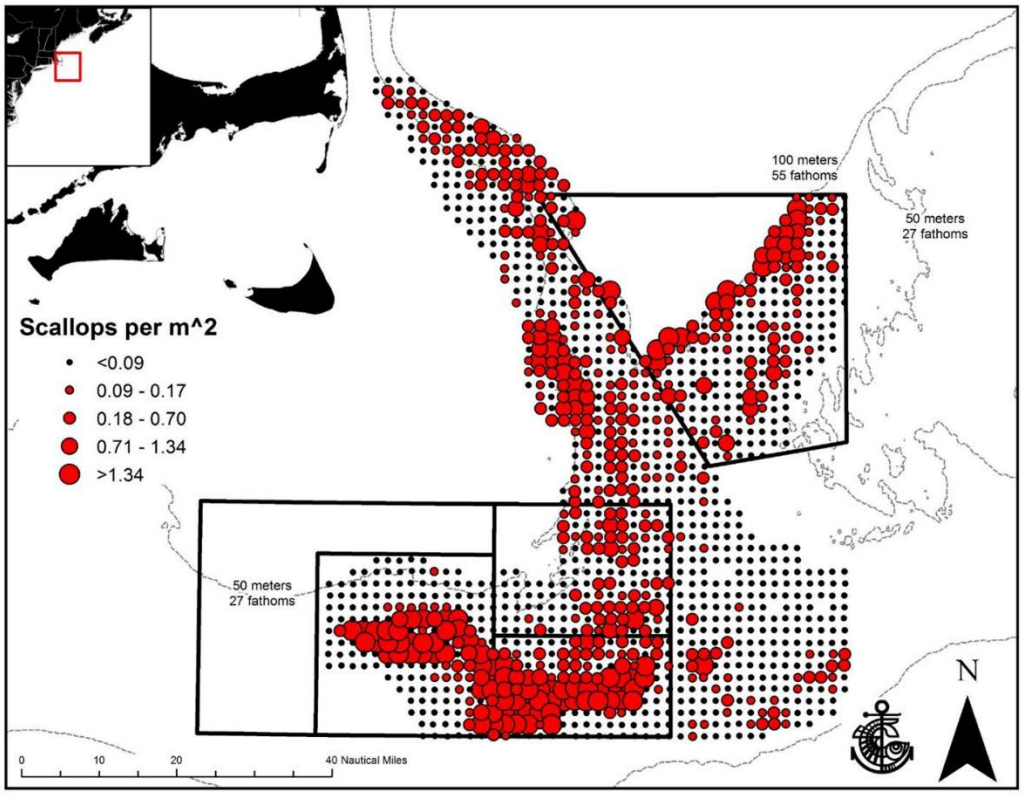


Figure 19. Observed length frequencies from the 2018 SMAST drop cam survey of the SCH SAMS area.

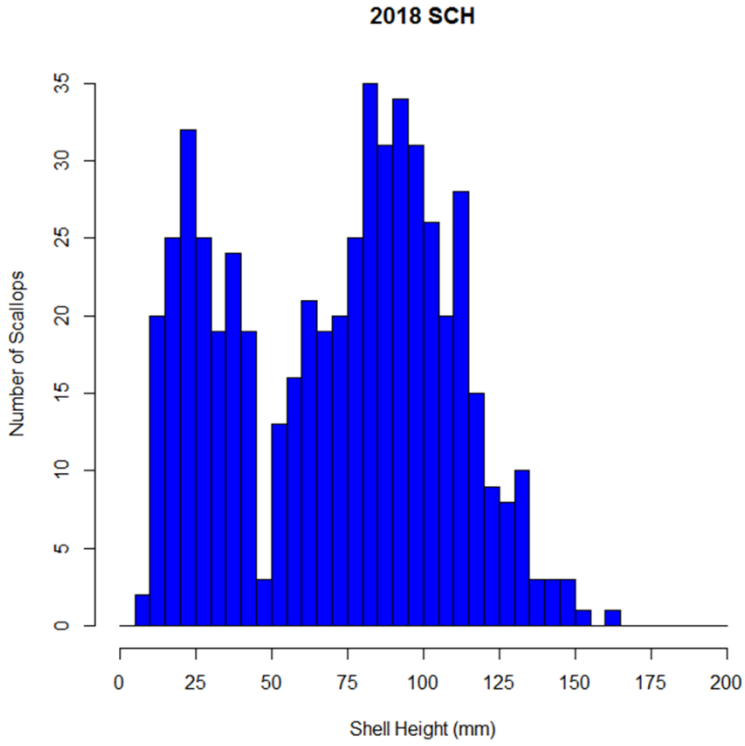


Figure 20. Relative length frequencies observed by the 2018 HabCam surveys of Closed Area II HAPC (left) and Northern Flank of GB (right).

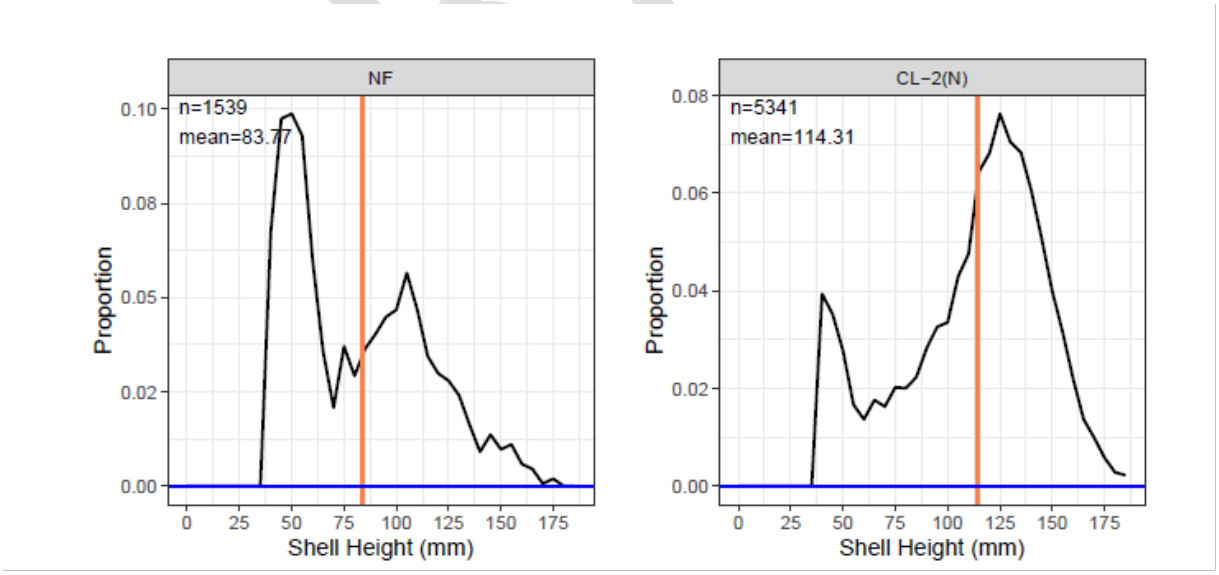


Figure 21. Relative length frequencies from the 2018 CFF HabCam survey of the Nantucket Lightship by SAMS area.

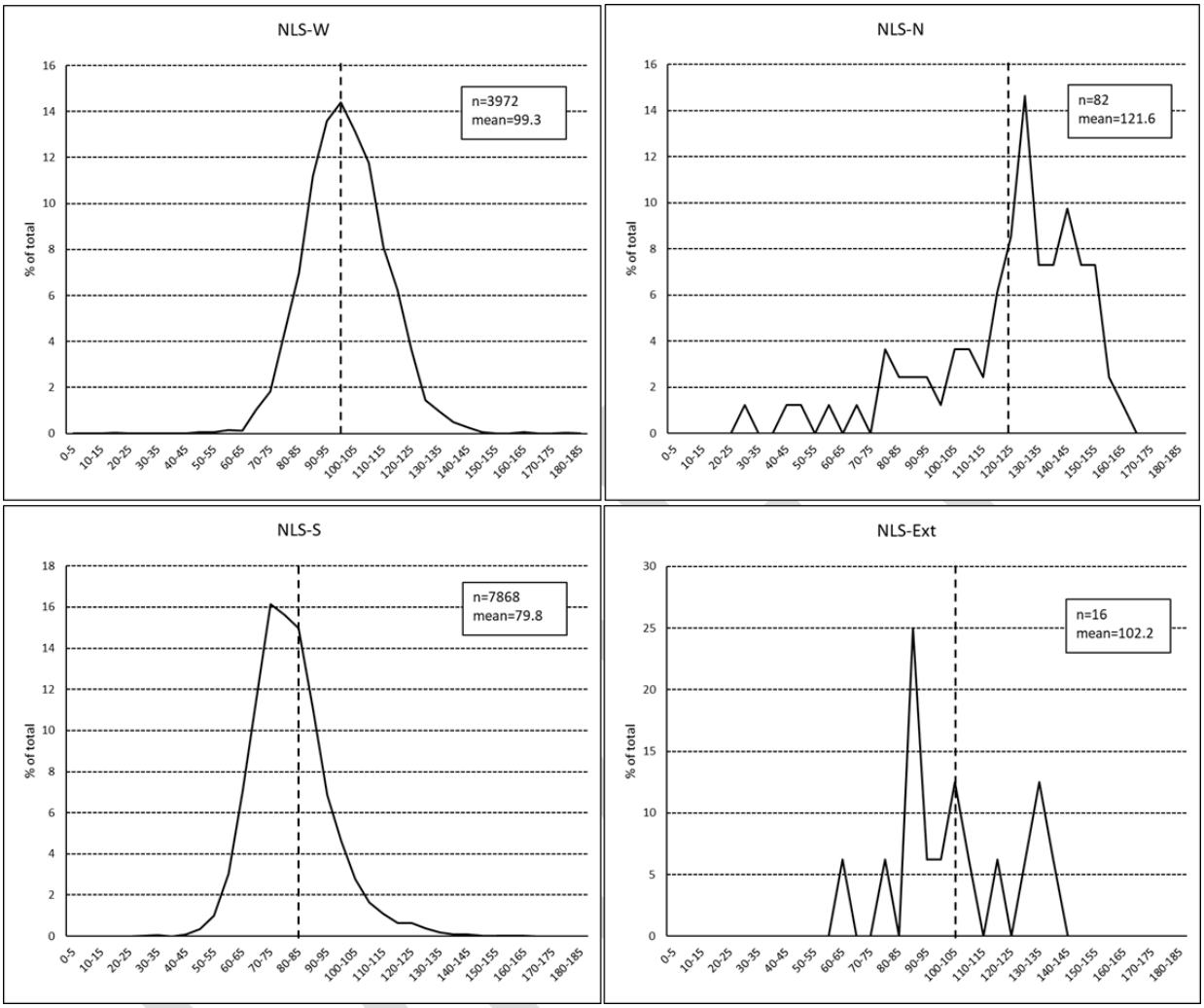


Figure 22. Biomass estimate 'heat map' from the 2018 CFF HabCam survey of the Nantucket Lightship.

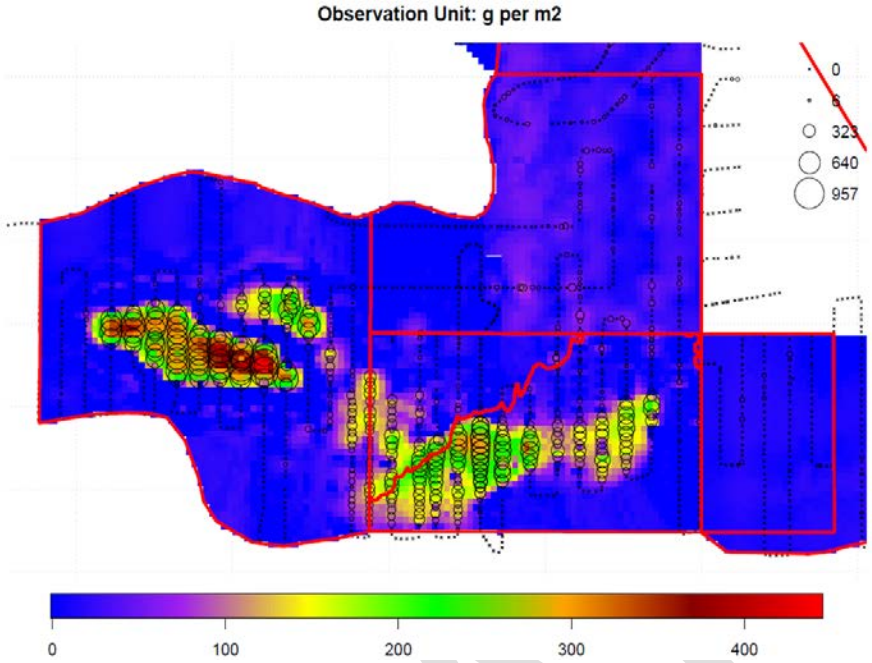
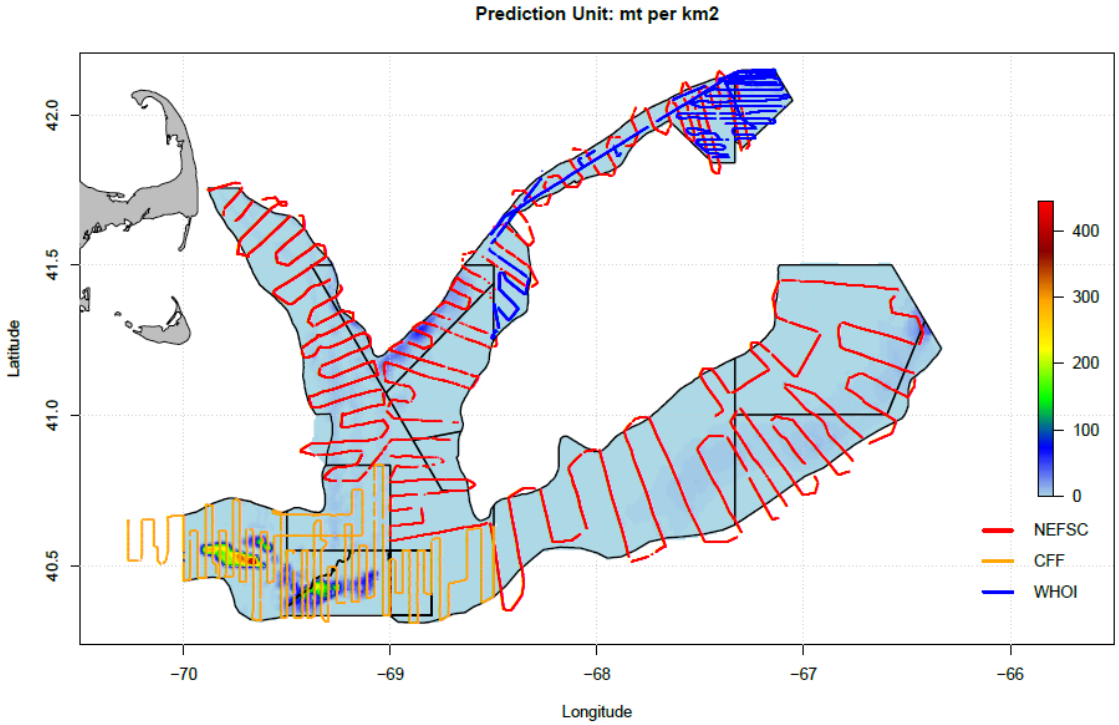


Figure 23. 2018 HabCam survey tracks on Georges Bank conducted by NEFSC, WHOI, and CFF with resulting biomass estimates (mt per km^2).



6.1.4 2018 Combined Biomass Estimates

Results from all available surveys of the resource (see Section 6.1.2) were combined to estimate 2018 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 2018 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 2018 to better encapsulate the unique characteristics of animals within the NLS. Combined 2018 biomass by SAMS area is shown in Table 15.

Table 22 – Biomass estimates from the 2018 surveys (i.e. Dredge, Drop Cam, Habcam) and the combined mean estimate of all surveys (i.e. Mean) by region and SAMS area.

		Dredge				DropCam				Habcam				Mean			
Region	Subarea	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt
GB	CL1ACC	26.4	1137	138	43.2	82	2700	550	33	31.0	796	8	25.5	46.6	1544	189	33.1
GB	CL1NA	325.0	8889	1432	26.2	358	10850	2150	30	353.0	14843	2089	42.1	345.4	11527	1107	33.4
GB	CL-2(N)	380.2	7461	2927	19.6					154.0	5400	341	35.1	267.1	6431	1473	24.1
GB	CL-2(S)	344.3	8875	688	25.8					260.0	7125	907	27.4	302.2	8000	569	26.5
GB	CL2Ext	375.2	7230	688	19.3					332.0	7956	1131	24.0	353.6	7593	662	21.5
GB	NLSAccN	107.7	3607	192	33.5	127	3855	602	30.3	112.0	3585	17	32.0	115.6	3682	211	31.9
GB	NLSAccS-Shallo	196.3	2111	426	10.8	330	4120	2122	12.5	374.0	4964	36	13.3	300.1	3732	722	12.4
GB	NLSAccS-Deep	3743.8	30963	935	8.3	5442	40709	7596	7.5	3686.0	31790	1681	8.6	4290.6	34487	2612	8.0
GB	NLS-W	2395.2	44790	1806	18.7	3482	58500	12550	16.8	2262.0	41155	2568	18.2	2713.1	48148	4312	17.7
GB	NLSExt	4.2	137	13	32.3	93	2188	1836	23.5	13.0	321	20	24.7	36.7	882	612	24.0
GB	NF	46.4	502	312	10.8					57.0	1466	200	25.8	51.7	984	185	19.0
GB	SCH	648.6	9453	2153	14.6	453	6150	550	13.6	351.0	9130	254	25.6	484.2	8244	746	17.0
GB	SCH-45	0.2	7	2	41.1					3.0	96	0	34.0	1.6	52		32.2
GB	SF	274.4	4403	513	16.0					297.0	7048	887	23.7	285.7	5726	512	20.0
GB	**TOTAL**	**8867.9**	**129565**	**4576**	**14.6**					**8285.0**	**135675**	**4110**	**16.4**	**9594.2**	**141032**	**5604**	**14.7**
MAB	BI	217.8	2572	244	23.7					61.0	942	36	15.4	139.4	1757	123	12.6
MAB	LI	428.2	8813	471	13.4					827.0	20597	3383	24.9	627.6	14705	1708	23.4
MAB	NYB	512.7	6667	771	28.9					354.0	5779	148	16.3	433.4	6223	392	14.4
MAB	MA inshore	50.4	931	170	45.8					86.0	766	3	8.9	68.2	849	85	12.4
MAB	HCSAA	786.6	13529	853	15.8					583.0	13109	923	22.5	684.8	13319	628	19.4
MAB	ET Open	714.7	15126	710	11.7					776.0	17936	716	23.1	745.4	16531	504	22.2
MAB	ET Flex	887.6	18018	1197	16.6					1013.0	27486	1682	27.1	950.3	22752	1032	23.9
MAB	DMV	63.0	1150	161	35.0					50.0	1168	70	23.2	56.5	1159	88	20.5
MAB	VIR	65.7	86	19	55.7									65.7	86	19	1.3
MAB	**TOTAL**	**3726.9**	**66891**	**1896**	**17.9**					**3750.0**	**87783**	**3958**	**23.4**	**3771.3**	**77380**	**2194**	**20.5**
TOTAL	**TOTAL**	**12595**	**196456**	**4953**	**15.6**					**12035**	**223458**	**5706**	**18.6**	**13366**	**218412**	**6018**	**16.3**

6.2 Physical Environment and Essential Fish Habitat

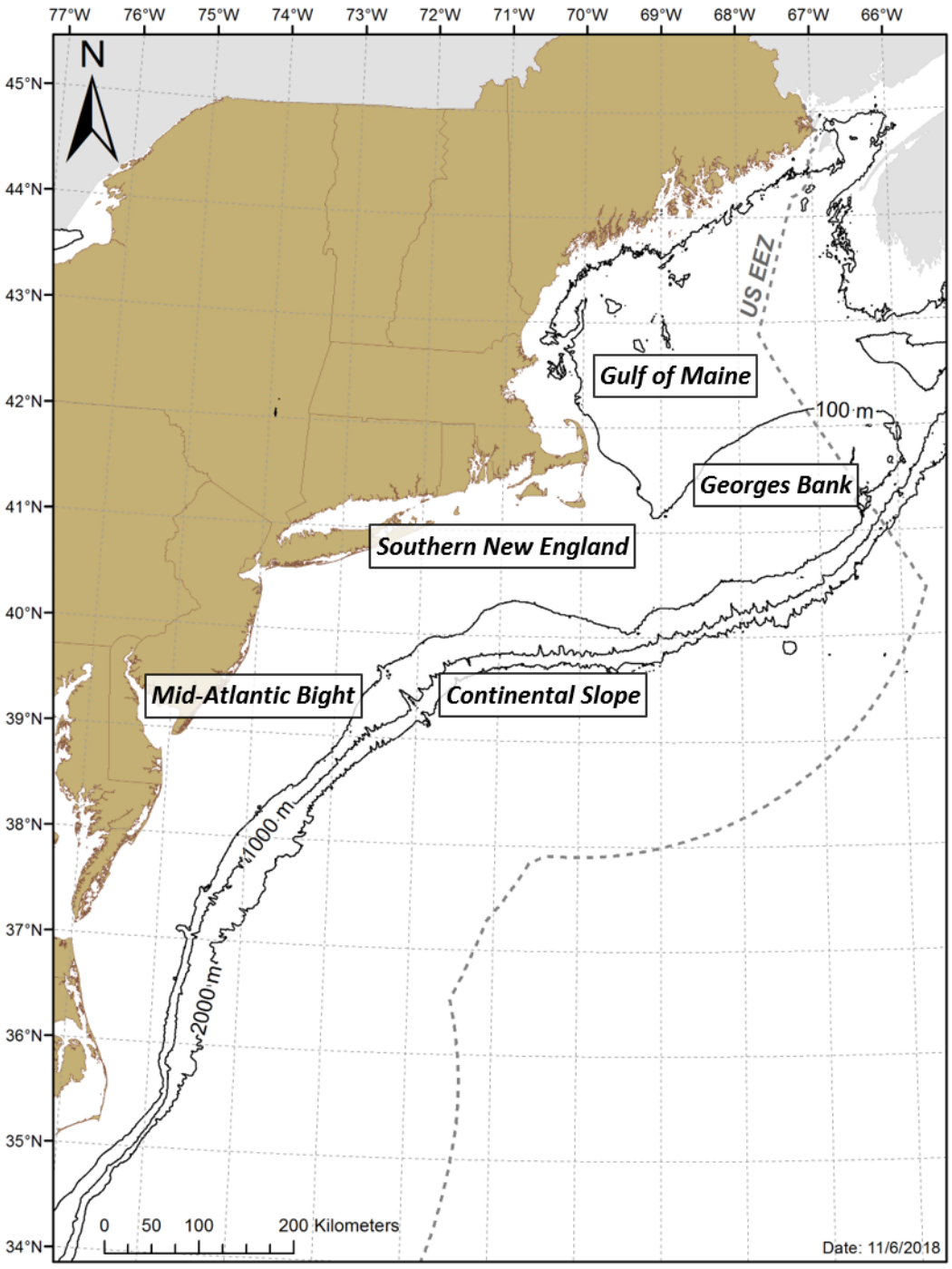
The Northeast U.S. Shelf Ecosystem includes the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream to a depth of 2,000 m (Figure 24, Sherman et al. 1996). Four distinct sub-regions 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 et al. 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 16 describes information on the geographic area, depth, and EFH description for each applicable life stage of these species. Figure 25 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.

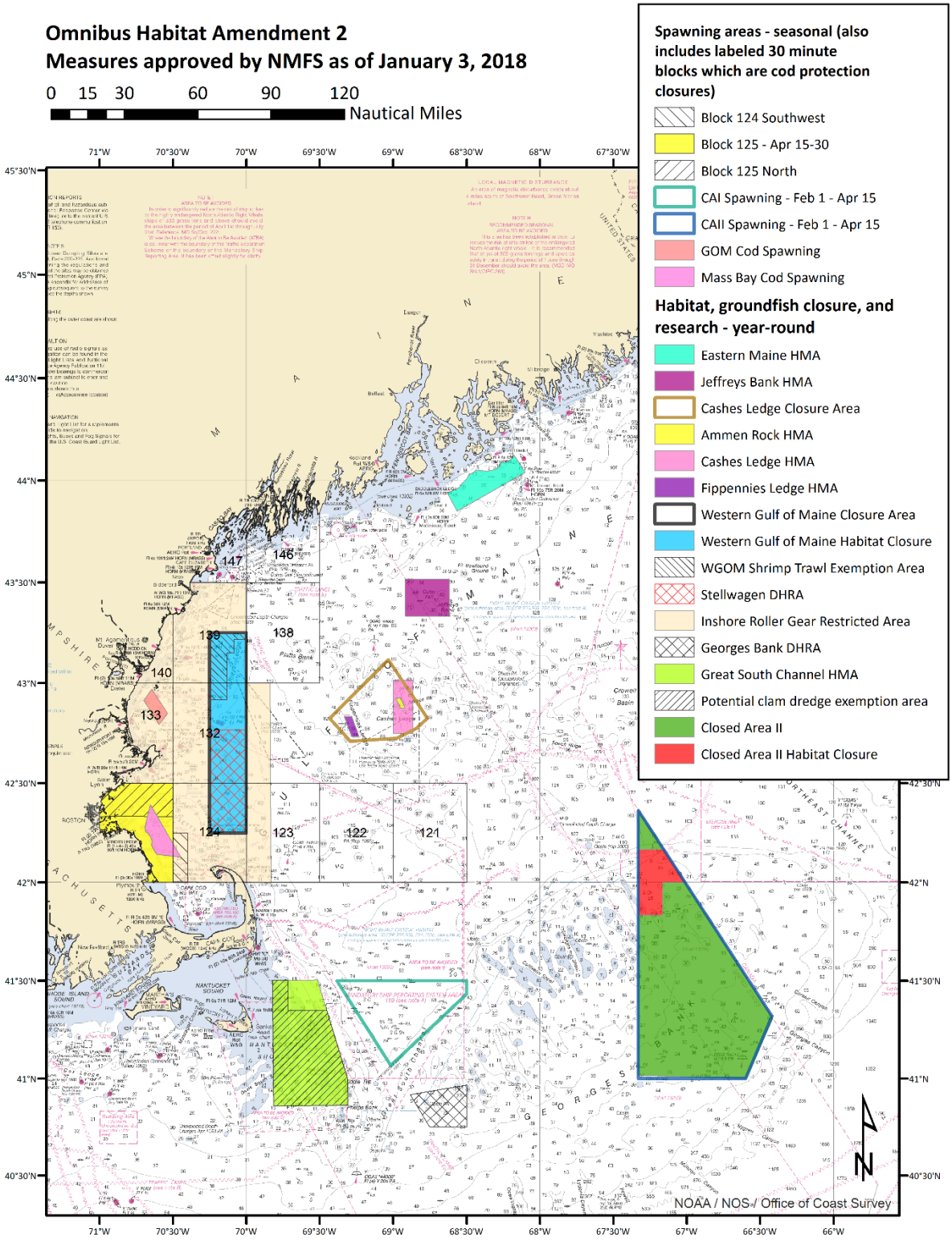
Figure 24 - Northeast U.S. Shelf Ecosystem and geographic extent of the US sea scallop fishery.



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 anticipated to occur in early spring of 2018. A summary of the Council's preferred recommendations can be found at www.nefmc.org, and Figure 25 is included below with the approved habitat management areas and seasonal spawning areas.

Figure 25 - 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.



Map credit - New England Fishery Management Council, January 4, 2018

Table 23 - 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
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:	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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
		Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay		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
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	No information	Inshore and offshore pelagic and benthic

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
		banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay		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
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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
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
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,	0-40	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
		Chesapeake Bay, and Delaware Bays		
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
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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
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
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
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,	Mean high water-80	Intertidal and sub-tidal soft bottom habitats, esp those that that provide shelter, such as depressions in muddy substrates, eelgrass, macroalgae, shells, anemone and polychaete tubes, on

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
		Raritan Bay and the Hudson River, and lower Chesapeake Bay		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
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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
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
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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
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
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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
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
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,	0-90	Sub-tidal benthic habitats on sand and

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
		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		gravel substrates, are also found on mud
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

Species	Life Stage	Geographic Area	Depth (m)	Habitat Type and Description
* 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				

6.3 Protected Resources

The following protected species are found in the environment in which the sea scallop fishery is prosecuted. A number of them 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 is provided in Table 17 to facilitate consideration of the species most likely to interact with the scallop fishery relative to the preferred alternative.

Table 24 – Protected species that may occur in the affected environment of the sea scallop fishery.

Species	Status	Potentially affected by this action?
Cetaceans		
North Atlantic right whale (*Eubalaena glacialis*)	Endangered	No
Humpback whale, West Indies DPS (*Megaptera novaeangliae*)	Protected (MMPA)	No
Fin whale (*Balaenoptera physalus*)	Endangered	No
Sei whale (*Balaenoptera borealis*)	Endangered	No
Blue whale (*Balaenoptera musculus*)	Endangered	No
Sperm whale (*Physeter macrocephalus*	Endangered	No
Minke whale (*Balaenoptera acutorostrata*)	Protected(MMPA)	No
Pilot whale (*Globicephala spp.*)[1]	Protected(MMPA)	No
Risso's dolphin (*Grampus griseus*)	Protected(MMPA)	No

Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected(MMPA)	No
Short Beaked Common dolphin (*Delphinus delphis*)	Protected(MMPA)	No
Spotted dolphin (*Stenella frontalis*)	Protected(MMPA)	No
Striped dolphin (*Stenella coeruleoalba*)	Protected(MMPA)	No
Bottlenose dolphin (*Tursiops truncatus*)[2]	Protected(MMPA)	No
Harbor porpoise (*Phocoena phocoena*)	Protected(MMPA)	No
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Yes
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Yes
Green sea turtle, North Atlantic DPS (*Chelonia mydas*) (*Chelonia mydas*)	Threatened	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Atlantic salmon (*Salmo salar*)	Endangered	No
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes
Alewife (*Alosa pseudoharengus*)	Candidate	Yes
Blueback herring (*Alosa aestivalis*)	Candidate	Yes
Cusk (*Brosme brosme*)	Candidate	Yes
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected(MMPA)	No
Gray seal (*Halichoerus grypus*)	Protected(MMPA)	No
Harp seal (*Phoca groenlandicus*)	Protected(MMPA)	No
Hooded seal (Cystophora cristata)	Protected(MMPA)	No
Critical Habitat		
North Atlantic Right Whale	Protected (ESA)	No

Northwest Atlantic DPS of Loggerhead Sea Turtle	Protected(ESA)	No

***Notes*:**

[1] There are 2 species of pilot whales: short finned (*G. melas melas*) and long finned (*G. macrorhynchus*). Due to the difficulties in identifying the species at sea, they are often just referred to as *Globicephala spp*.

[2] This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins.

In Table 17, please note that cusk, alewife, and blueback herring are a NMFS "candidate species" under the ESA, occurs 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, these species will not be discussed further in this section. However, for additional information on cusk, alewife, and blueback herring please visit:

http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm

6.3.1 Species and Critical Habitat Not Likely to be Affected by the Alternatives Under Consideration

Based on available information, it has been determined that this action is not likely to affect 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. In the case of critical habitat, this determination has been made because the scallop fishery will not affect 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. 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).

Species Potentially Affected by the Alternatives Under Consideration

As noted in Table 17, ESA listed species of sea turtles and Atlantic sturgeon occur in the affected environment of the scallop fishery and have the potential to be affected by this fishery and the proposed Alternatives. 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.

6.3.1.1 Sea Turtles

6.3.1.1.1 Occurrence and 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 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 (NMFS and USFWS 1995; Hirth 1997; Turtle Expert Working Group [TEWG] 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b; Conant *et al*. 2009; NMFS and USFWS 2013; NMFS and USFWS 2015; Seminoff *et al*. 2015), and recovery plans for the loggerhead sea turtle (Northwest Atlantic DPS; NMFS and USFWS 2008), leatherback sea turtle (NMFS and USFWS 1992, 1998a), Kemp's ridley sea turtle (NMFS *et al*. 2011), and green sea turtle (NMFS and USFWS 1991, 1998b).

- **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 (Braun-McNeill *et al*. 2008; Braun & Epperly 1996; Epperly *et al*. 1995; Mitchell *et al*. 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 ≥11°C are most favorable (Epperly *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; Braun-McNeill & Epperly 2004; Griffin *et al*. 2013; Hawkes *et al*. 2006; Hawkes *et al*. 2011; Mansfield *et al*. 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 (Braun-McNeill & Epperly 2004; Epperly *et al*. 1995; 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 (Epperly *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 *et al*. 2014; James *et al*. 2005; James *et al*. 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; James *et al*. 2005; Murphy *et al*. 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; James *et al*. 2005; James *et al*. 2006).

6.3.1.1.2 Gear Interactions

As described in section 6.3.1.1.1, 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 (Shoop and Kenney 1992; Epperly *et al.* 1995a, 1995b; Braun and Epperly 1996; Mitchell *et al.* 2003; Braun-McNeill *et al.* 2008; TEWG 2009; Braun-McNeill and Epperly 2004; Morreale and Standora 2005; Griffin *et al.* 2013; NMFS and USFWS 1992; James *et al.* 2005, 2006; Dodge *et al.* 2014). 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 (Henwood and Stuntz 1987; Lutcavage and Lutz 1997; Epperly *et al*. 2002; Sasso and Epperly 2006; Haas *et al*. 2008; Murray 2011; Warden 2011 a,b; NMFS 2012b).

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.[1] 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 (NMFS NEFSC FSB 2015, 2016; Murray 2015a). Two regulations have been implemented to reduce serious injury and mortalities to sea turtles resulting from interactions with sea scallop dredges:

[1] To date, there has been one loggerhead observed in trawl gear (top landed species was sea scallop), and two Kemp's ridleys observed in dredge gear; these observed interactions occurred on Georges Bank.

- (1) **Chain mat modified dredge** (71 FR 50361, August 25, 2006; 71 FR 66466, November 15, 2006; 73 FR18984, 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. NMFS continues to monitor the sea scallop fishery and its effects on sea turtles; however, to date, available data does indicate that since implementation of these regulations, sea turtle interactions with sea scallop dredge gear have decreased.

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 23). 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 equivalents[2]; Table 18)." 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).

[2] Adult equivalence considers the reproductive value of the animal (Warden 2011; Murray 2013), providing a "common currency" of expected reproductive output from the affected animals (Wallace *et al*. 2008), and is an important metric for understanding population level impacts (Haas 2010).

Table 25 - 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).

	Interactions		**Interactions**	
Time Period	Hard-shelled (including loggerheads)	AE	Loggerhead	AE
(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-Atlantic[3] 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.[4] 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-Atlantic[5] was 231 (CV=0.13, 95% CI=182-298; this equates to approximately 33 adult equivalents (Murray 2015b). These latter estimates are a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated to be 616 sea turtles (CV=0.23, 95% CI over the nine-year period: 367-890). Based on data collected by observers for reported sea turtle captures in bottom otter trawl gear from 2005-2008, Warden (2011b), using species landed, also estimated total

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

[4] 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.

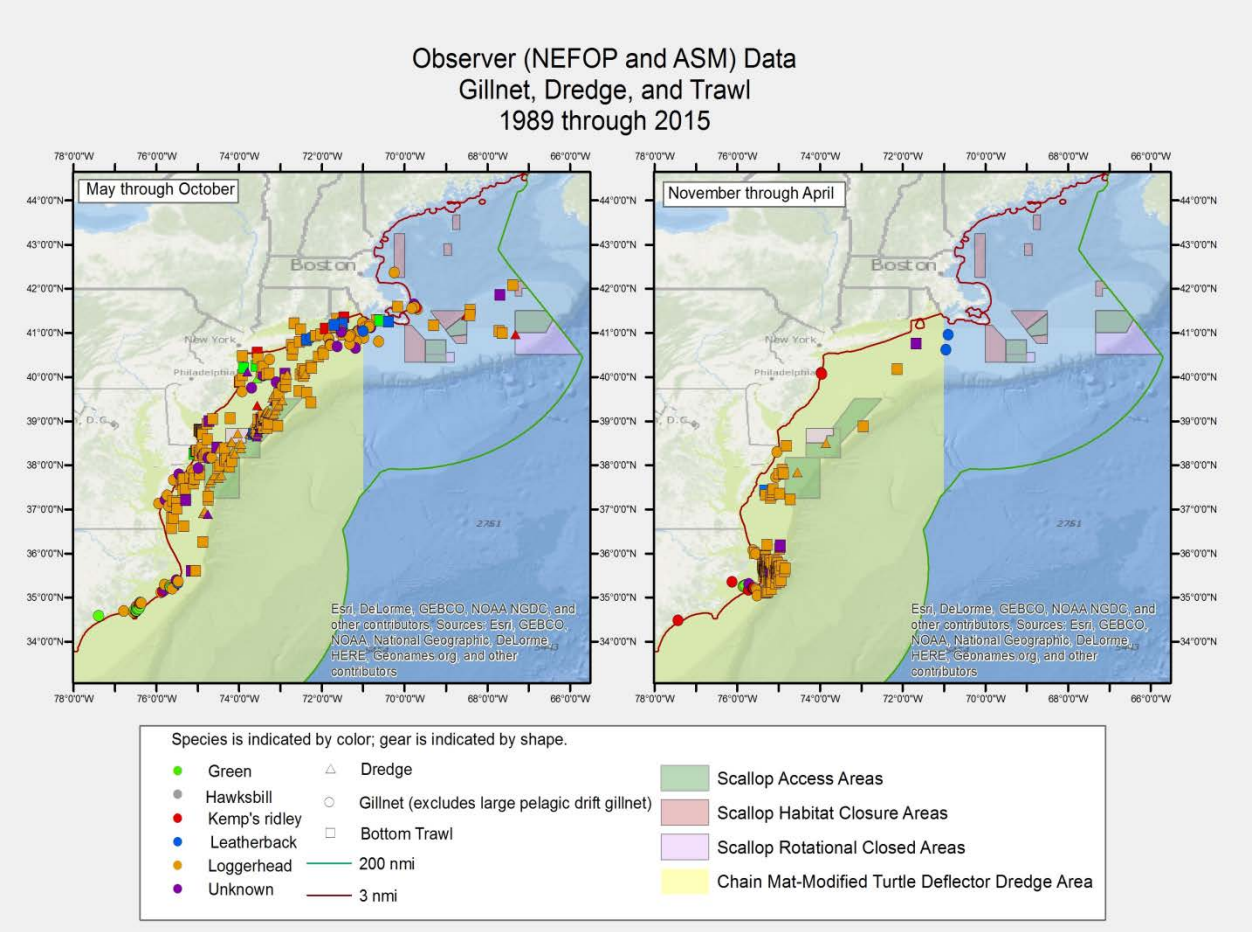
[5] Murray 2015b defined the Mid-Atlantic as the boundaries of the Mid-Atlantic Ecological Production; roughly waters west of 71ºW to the North Carolina/South Carolina border)

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 23 provides a depiction of 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 1989-2015 during the months of May-October and November through April (a period of lower to no sea turtle occurrence in the Northeast Region. For additional information, please see Section 4.3 of Framework 26 of the Scallop FMP.

Figure 26 – Observed location of turtle interactions in bottom tending gears in the Northeast Region (1989-2015)



6.3.1.2 Atlantic Sturgeon

6.3.1.2.1 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 (ASSRT 2007; ASMFC 2017; Dovel and Berggren 1983; Dadswell *et al*. 1984; Kynard *et al*. 2000; Stein *et al*. 2004a; Dadswell 2006; Laney *et al*. 2007; Dunton *et al*. 2010, 2012, 2015; Erickson *et al*. 2011; Wirgin *et al*. 2012, 2015a,b; Waldman *et al.* 2013; O'Leary *et al*. 2014;). In fact, several genetic studies, have been conducted to address DPS distribution and composition in marine waters (Wirgin *et al*. 2012; Dunton et al. 2012; Waldman *et al*. 2013; O'Leary *et al.* 2014; Wirgin *et al*. 2015a,b). 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 (Wirgin *et al*. 2012; Wirgin *et al*. 2015a,b;Waldman *et al*. 2013; O'Leary *et al*. 2014; Dunton *et al*. 2012; Damon-Randall *et al*. 2013). 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 (Stein *et al*. 2004 a,b; Erickson *et al*. 2011; Dunton *et al*. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein *et al.* 2004a,b; Dunton *et al*. 2010; Erickson *et al*. 2011)). 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.

6.3.1.2.2 Gear Interactions

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 1989-2014 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 (NMFS NEFSC FSB 2015, 2016, 2017).

6.4 Fishery Performance

Table 26 - Scallop Fishery OFL and ABC/ACL values

FY	OFL	ABC/ACL	Annual Projected Landings
2011	71,401,113	60,117,854	52,300,000
2012	75,799,335	63,848,076	57,200,000
2013	69,566,867	46,305,894	38,216,741
2014	67,062,415	45,816,467	38,463,656
2015	83,910,142	55,891,593	47,400,000
2016	150,835,870	83,449,375	46,932,006
2017	166,415,938	103,037,447	45,230,038
2018	158,854,083	101,302,409	57,748,612*
2019	161,865,597	125,670,103	*TBD*
**includes APL after set-asides are removed, plus CAI carryover.*			

Table 27 - Scallop Annual Projected Landings compared with actual total landings, 2011 - 2017.

FY	**Total APL (lb)**	**Total Landings (lbs)**	**Landings/APL (%)**
2011	52,300,000	58,461,465	112%
2012	57,200,000	57,098,684	100%
2013	38,216,741	39,807,589	104%
2014	38,463,656	32,020,980	83%
2015	47,400,000	36,974,195	78%
2016	46,932,006	42,423,177	90%
2017	45,230,038	51,325,269	113%

Table 28 - LAGC IFQ (5.5%) ACL vs. IFQ Landings for FY 2011 - FY 2017.

FY	IFQ ACL (lb)	IFQ Landings (lbs)	Landings/ACL (%)
2011	3,201,880	3,046,245	95%
2012	3,405,000	3,331,284	98%
2013	2,449,856	2,414,256	99%
2014	2,423,145	2,089,589	86%
2015	2,971,831	2,353,787	79%
2016	4,473,180	3,483,689	78%
2017	5,538,012	2,821,411	51%

Table 29 - Limited Access ACT compared to LA Landings for FY 2011 - FY 2017

FY	LA ACT	LA Landings (lbs)	Landings/ACT (%)
2011	47,247,267	53,929,369	114%
2012	51,910,044	52,274,515	101%
2013	33,783,637	35,743,247	106%
2014	34,319,360	28,544,694	83%
2015	42,617,560	32,818,998	77%
2016	40,322,555	36,821,068	91%
2017	85,149,139	48,879,324	57%

Table 30 - Scallop observer set-aside (1% of ACL) compared with observer set-aside utilization for FY 2011 - FY 2017.

FY	Observer Set-Aside (lbs)	Observed Set-Aside Utilization (lbs)	Utilization/Set-aside
2011	601,170	228,370	38%
2012	638,470	263,700	41%
2013	463,059	384,545	83%
2014	458,562	390,579	85%
2015	559,974	432,679	77%
2016	835,552	676,622	81%
2017	1,029,559	684,855	67%

Table 31 - Incidental Landings Target (LAGC Category C) compared to actual incidental landings for FY 2011 - FY 2017.

FY	Incidental Landings Target (lbs)	Actual Landings (lbs)	Landings/Target (%)
2011	50,000	38,700	77%
2012	50,000	61,869	124%
2013	50,000	47,337	95%
2014	50,000	42,107	84%
2015	50,000	29,395	59%
2016	50,000	74,341	149%
2017	50,000	18,383	37%

6.5 Economic and Social Trends in the Sea Scallop Fishery

6.6 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. Based on a report presented by NEFSC (2009), the following species have more than 5% of total estimated catch from discards in the scallop fishery: monkfish, skate (overall), and windowpane flounder. The status of these species is listed in Table 25.

Assessment data show that the scallop fishery caught more than 5% of the bycatch (compared to overall catch) for some multispecies stocks by region. Georges Bank (GB) and Southern New England (SNE) yellowtail flounder were caught in amounts greater than 5%, but Cape Cod/Gulf of Maine yellowtail only has occasional spikes over 5%. The Skate Data-poor Working Group identified the greatest bycatch for the scallop fishery as little and winter skates. See Table 25 for the current status of these species, which has been updated based on assessment results summarized in the NEFSC operational Groundfish assessment through 2016 (NEFSC 2017), Skate FW3 (see section 6.1.2), and Monkfish FW9 (see section 6.1.2).

Table 32 - Status of non-target species known to be caught in scallop fishing gear, updated with assessment results through 2017.

Species or FMP	***Stock***	***Overfished?***	***Overfishing?***
Summer flounder (fluke)	Mid-Atlantic Coast	No	Yes
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	No
Multispecies	*Windowpane - SNE/MA	No	No
Multispecies	Winter flounder - GB	No	No
Multispecies	Winter flounder - GOM	Unknown	No
Multispecies	Winter flounder - SNE/MA	Yes	No
Multispecies	Yellowtail flounder - CC/GOM	Yes	Yes
Multispecies	*Yellowtail flounder - GB	Unknown	Unknown
Multispecies	*Yellowtail flounder - SNE/MA	Yes	Yes
Atlantic Surfclam	Mid-Atlantic Coast	No	No
Ocean Quahog	Atlantic Coast	No	No

* stock has scallop fishery sub-ACL.

Updates available through NMFS's Status of U.S. Fisheries Quarterly Reports

http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm

6.6.1 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 describes a summary of multispecies catch from the scallop fishery from FY 2013 – FY 2017, as well as projected catch and allocations for FY 2018. Note that the range given for FY2018 projections is specific to the range of alternatives selected as preferred by the Council based on the possible outcome of OHA2. 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 33 - Comparison of recent scallop bycatch estimates and estimated catch, with 2018 projections. Values are shown in mt.

FY		GBYT	SNE/MA YT	SWP	NWP
2013	Allocated	41.5	43.6	183	
	Projected	85.3	66	N/A	
	Actual	37.5	48.6	129.1	
2014	Allocated	50.9	66	183	
	Projected	62.4 - 103.7	61.1 - 67.7	74.4	
	Actual	59	63	136	
2015	Allocated	38	66	183	n/a
	Projected	27.9 - 48.6	54	134	45 - 94
	Actual	29.8	34.6	210.6	114.6
2016	Allocated	42	32	209	n/a
	Projected	26.3	40.4	179.2	88.1
	Actual	2	10.8	84.4	n/a
2017	Allocated	32	34	209	36
	Projected	62.8 - 63.2	10.66 - 11.9	77.85 - 85.08	102.1 - 103.33

	Actual (YTD)	49	4.9	210.8	43.2
2018	Allocated	33	5	158	18
	Projected	11.72	4.2	261.74	50.68
	Actual				

7.0 IMPACTS

7.1 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 curbed F 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 27, the updated OFL for 2019 is nearly 30% greater than ABC/ACL for the fishery, while the actual allocations to fishery are less than half of the total ABC (~126 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.

7.1.1 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 34 - Comparison of the No Action OFL/ABC (default 2019 from FW29) and updated OFL and ABC estimates for 2019 and 2020 (Alt. 2).

	FY	OFL	ABC including discards	Discards	ABC with discards removed
Alt. 1 – No Action	2019	69,633	58,126	12,321	45,805
Alt. 2 – Updated OFL and ABC	2019	73,421	62,989	5,986	57,003
	2020	59,447	50,943	4,915	46,028

7.1.1.1 Alternative 1 – No Action

Under "No Action", the overall OFL and ABC would be set at the default values for FY 2019, which were adopted by the Council through FW29. The No Action ABC including discards is 58,126 mt or about 128 million pounds. The OFL and ABC values for No Action and Alternative 2 are very similar (~4,800 mt difference). The estimated discards in 2019 decreased from the No Action because the estimate of discard mortality was reduced in SARC 65. The proposed ABC for FY2019 including discards is 62,989 mt or 138.8 million pounds. This is an increase (10 million lb) 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.

7.1.1.2 Alternative 2 – Updated OFL and ABC for FY 2019 and FY 2020

The FY 2019 and FY 2020 OFL and ABC values that were approved by the Council are summarized in Table 27. The updated ABC estimate including discards is 62,989 mt or 138.8 million pounds for FY2019. This is about 4,863 mt, or about 10 million pounds, higher 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 OFL and ABC increased in 2019 relative to No Action, the 2020 default values decline, reflecting anticipated *F* and *M* in high density areas of the Nantucket Lightship West and in the Mid-Atlantic Access Areas.

Overall, the values in Alternative 2 are based on the most updated survey information and model configurations; therefore, there should be positive impacts on the scallop resource from setting fishery limits with updated data. 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.

7.1.2 Northern Gulf of Maine

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 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 (SMAST drop camera and CFF HabCam), after the area was closed to fishing. In 2018, the SMAST drop camera survey covered Stellwagen Bank, Jeffreys Ledge, Ipswich Bay, and Platts Bank.

The 2019 and 2020 TACs considered in Alternative 2 (F=0.2 and F=0.25) were developed using 2018 survey data and projecting exploitable biomass for the coming years on Stellwagen Bank, Jeffreys Ledge, and Ipswich Bay.

All NGOM TAC options under consideration 135,000 lbs (Alt. 1 – FW 29 Default), 205,000 (F=0.20), 250,000 lbs (F=0.25) could be considered conservative given the projections of biomass and exploitable biomass in the management area. Harvest associated with any of the alternatives could be expected to result in low negative to neutral impacts on the scallop resource in the management area.

Figure 27 - Length frequency comparison of all scallops in Ipswich Bay (NGOM) with animals observed in federal waters.

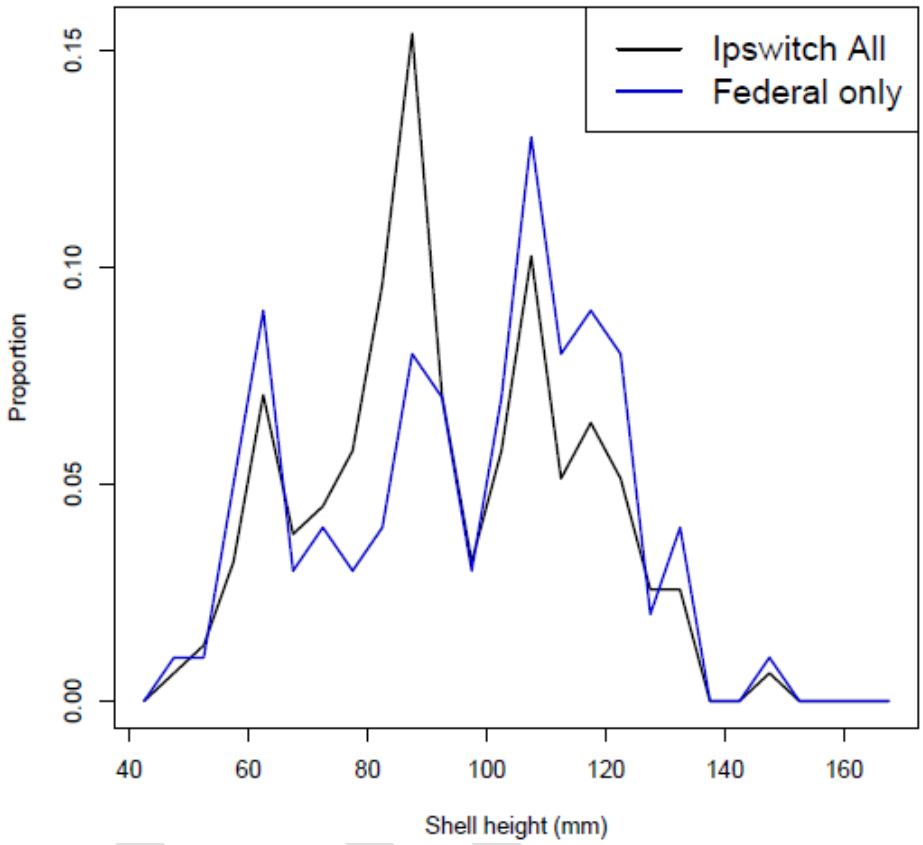
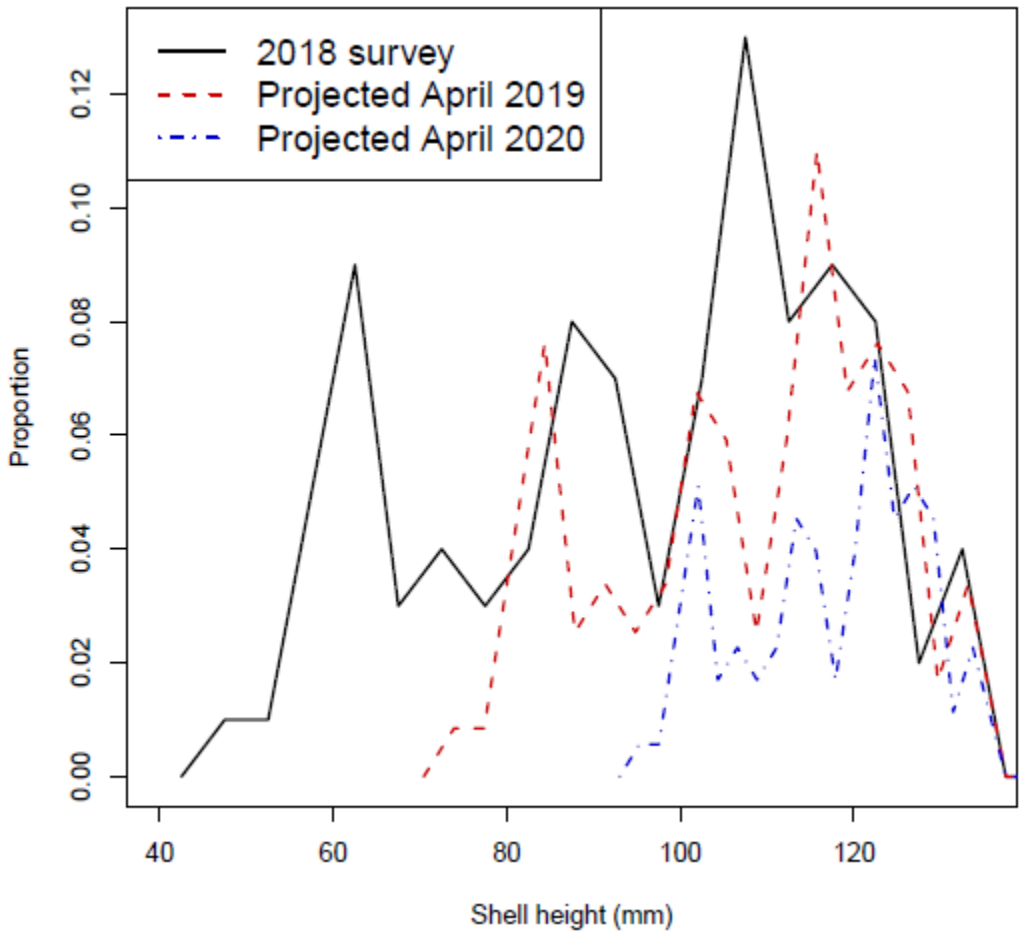


Figure 28 - Projected length frequency of scallop in federal waters in Ipswich Bay (2018 - 2020).



7.1.2.1 Alternative 1 – No Action (Framework 29 Default Measures)

Under No Action, the total NGOM hard TAC would be set at 135,000 pounds, which is based on 2017 survey data and fishing the Stellwagen Bank portion of the management area at a F=0.18 in FY 2019. The overall TAC would be split between the LA and LAGC, with 32,500 pounds available to support RSA compensation fishing (LA share), and 102,500 pounds available for harvest by the LAGC component. The area would open on April 1, 2019 with no change to the current management program.

The average length of observed scallops on Stellwagen Bank in the 2018 SMAST drop camera survey was 114.5 mm, and the average weight was estimated at 39.6 grams. The average size on scallops observed in federal waters in Ipswich Bay and Jeffreys Ledge were 88.6 and 39.5 respectively. Given the size distribution of the animals in the NGOM management area, it would be reasonable to expect that almost all fishing under Alternative 1 would occur on Stellwagen Bank in the area that was fished by the LAGC IFQ component in FY 2018. If all directed scallop fishing in the NGOM occurred on Stellwagen Bank, the corresponding F on the population on Stellwagen Bank alone could be expected to be less than F=0.3. This is a relatively conservative F for animals that will likely be six or seven years old in 2019.

All NGOM TAC options under consideration 135,000 lbs (Alt. 1 – FW 29 Default), 205,000 (F=0.20), 250,000 lbs (F=0.25) could be considered conservative given the projection biomass in the management area. Overall, Alternative 1 could be expected to have a low positive impact on the scallop resource relative to the Alternative 2 sub-options since it would be expected to result in a F well below F=0.2 or F=0.25.

7.1.2.2 Alternative 2 – NGOM NGOM TAC split first 70,000 lbs to LAGC, then 50/50 split, LA share harvested as RSA compensation fishing

As explained in Section 7.1.2, 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 will be predictable with this approach, since Alternative 2 would establish separate TACs and reporting requirements for both the LA and LAGC.

7.1.2.2.1 Sub-Option 1 - Set NGOM TAC at F=0.20

Setting the NGOM TAC using exploitable biomass from Stellwagen Bank, Ipswich Bay, and Jeffreys Ledge and fishing at F=0.2 would result in an overall TAC of 205,000 lbs for FY 2019, and a default TAC of 170,000 lbs in FY 2020.

Alternative 2 sub-option 1 is likely to result in a higher F than Alternative 1 (No Action) and therefore greater impacts on the scallop resource in this management area. Relative to Sub-Option 2 (F=0.25), fishing at F=0.2 could be expected to result in fewer biological impacts since there would be fewer overall removals. For example, fishing at F=0.20 over the three areas (Stellwagen, Ipswich, and Jeffreys) is less likely to result in harvest of animals in Ipswich Bay that will just be recruited to the dredge and still have growth potential than Alternative 2 sub-option 2.

7.1.2.2.2 Sub-Option 2 - Set NGOM TAC at F=0.25

Setting the NGOM TAC using exploitable biomass from Stellwagen Bank, Ipswich Bay, and Jeffreys Ledge and fishing at F=0.20 would result in an overall TAC of 250,000 lbs for FY 2019, and a default TAC of 200,000 lbs in FY 2020.

Alternative 2 sub-option 2 is likely to result in a higher F than Alternative 1 (No Action) and therefore greater impacts on the scallop resource in this management area. Relative to Sub-Option 1 (F=0.2), fishing at F=0.25 could be expected to result in greater biological impacts since there would be higher overall removals that would include animals with additional growth potential. For example, fishing at F=0.25 over the three areas (Stellwagen, Ipswich, and Jeffreys) is more likely to result in harvest of animals in Ipswich Bay that will just be recruited to the dredge and still have growth potential than Alternative 2 sub-option 1.

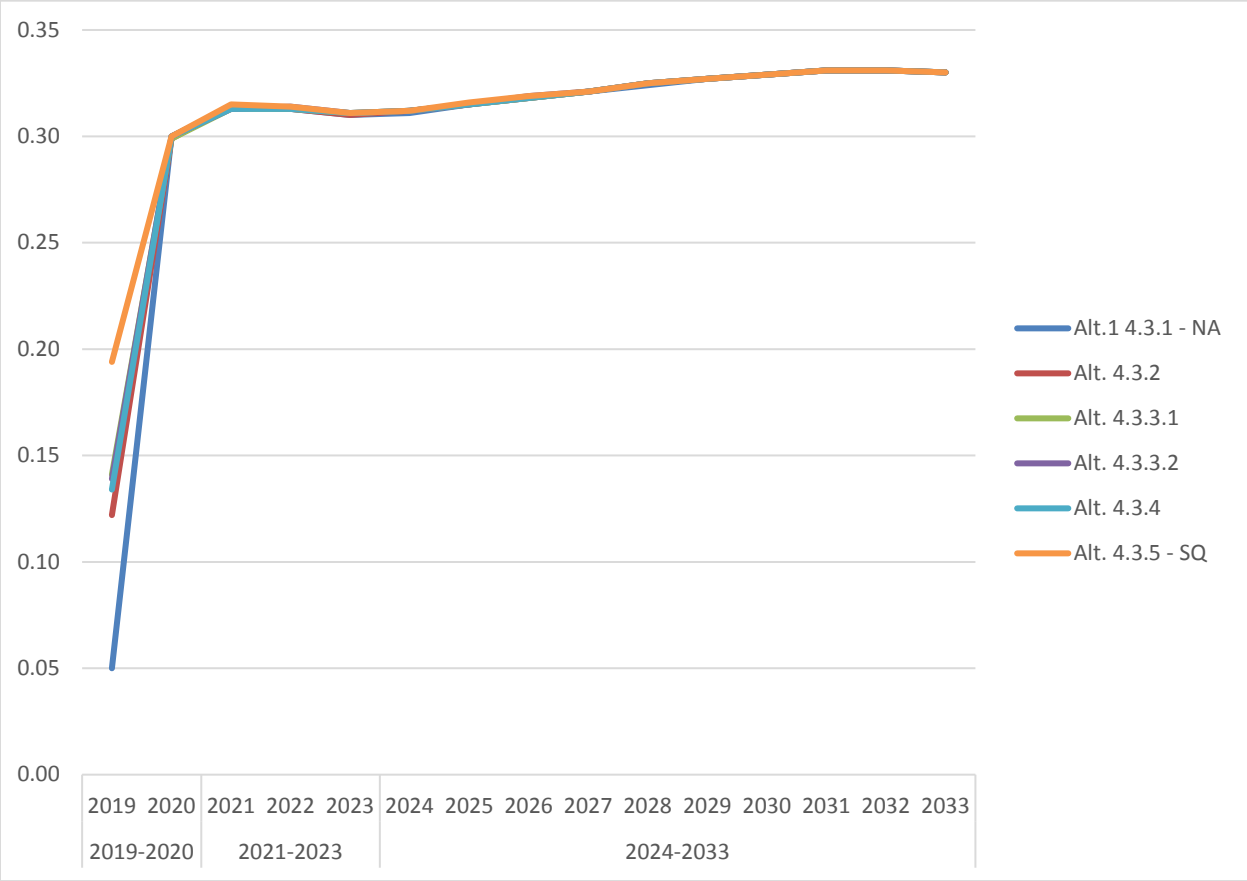
7.1.3 Summary of Relevant Biological Information

The short-term (ST) and long-term (LT) impacts should be considered for each 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.

7.1.3.1 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 0.05 (Alternative 1 - No Action) and a high of 0.14 for options that would allocate 7 total access area trips with a 18,000 lb trip limit and fish open areas at F=0.25.
- The total fishing mortality is constrained by the fishing target principle that does not enable average fishing mortality to increase above Fmsy 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 30 that would set open area F at the upper bound of F=0.64. Alternatives in Section 4.3 consider open area F at 0.23 (24 DAS) and 0.25 (26 DAS). Setting open area F lower than the maximum target reduces overall fishing mortality.
- Therefore, the risk of overfishing is relatively low for all of the alternatives under consideration since the projected F rates are well below 0.46. However, the 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.

Figure 29 -Comparison of overall fishing mortality for each specification scenario.



7.1.3.2 Projected Total Biomass

Overall, the projected biomass for the various alternatives are similar in the long and short-term (Figure 30). In 2019 the projected biomass is nearly the same for all runs. In the ST (2019 and 2020) the No Action run has higher biomass because effort levels were assumed to be lower in 2019. Since the partial approval of OHA2 in 2018, all alternatives now assume that former EFH areas that hold scallops will open. The result is that all alternatives have lower projected biomass over the long term. 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. For example, in case where the NLS-West area, the recruitment assumption in that area is low because it has not historically been a productive scallop area.

Figure 30 - Comparison of projected total scallop biomass for each specification scenario.

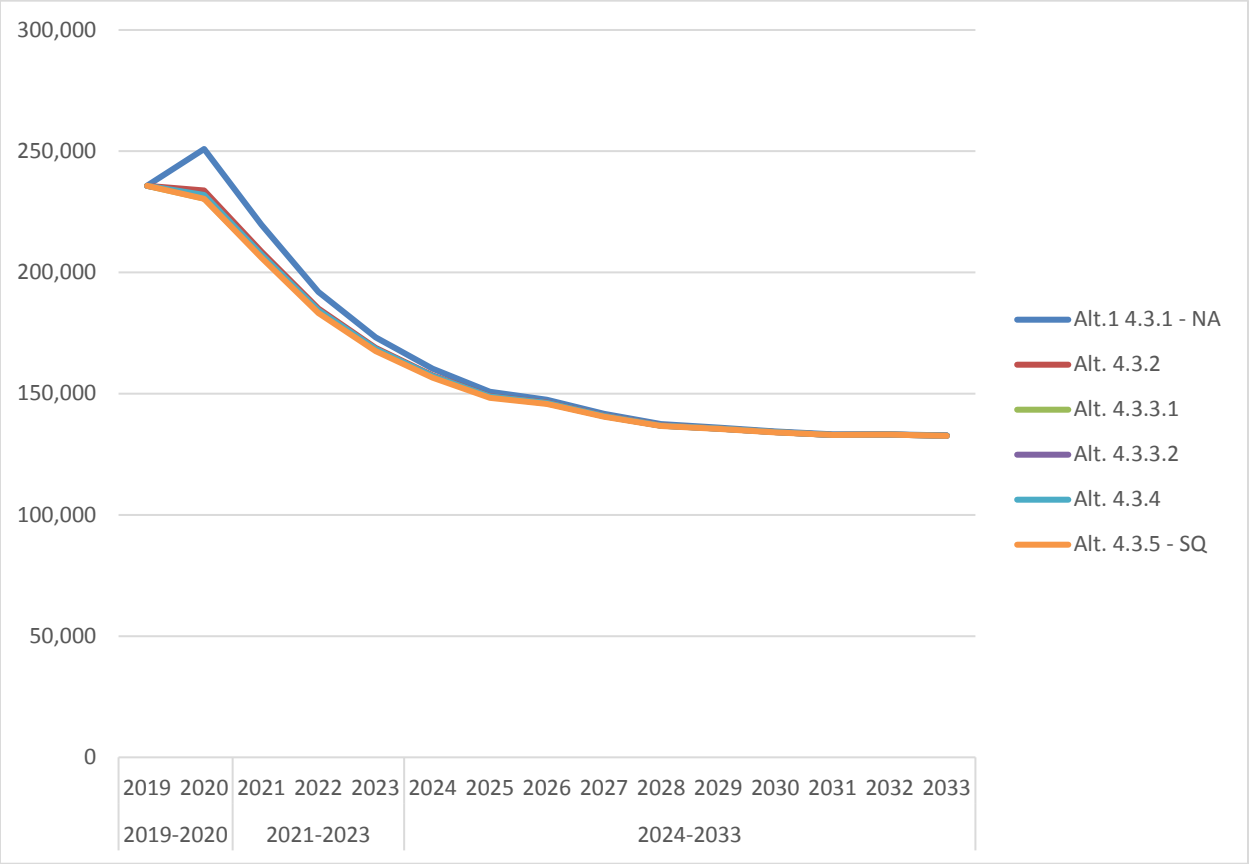


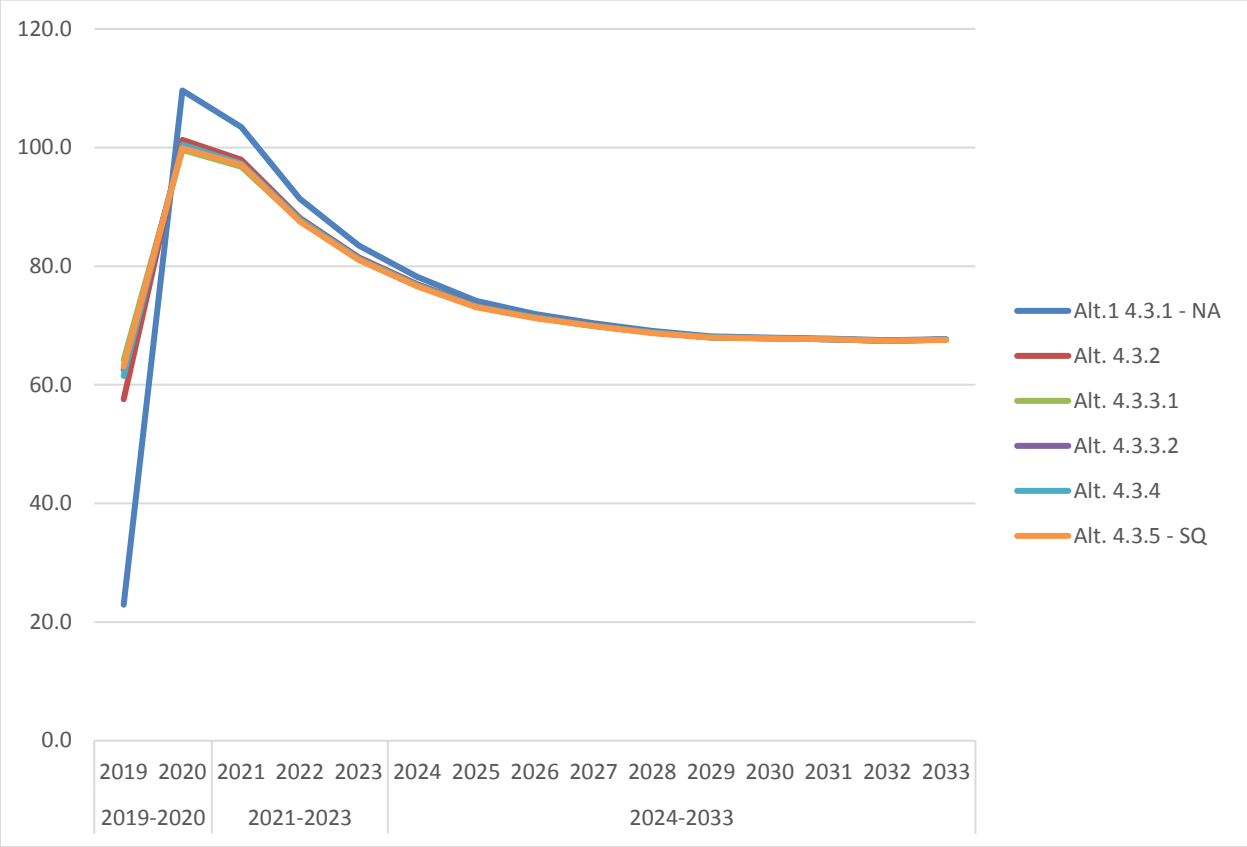
Table 35 - Comparison of LPUE, Area Swept, Days Fished associated with specification alternatives under consideration in FW30

Alt.	Section	Scenario	Open Area F	FT LA DAS	AreaSwept (sq nm)	Average LPUE	Open Area LPUE	MA LPUE	GB LPUE	Total Days (AA + DAS)	APL after set-asides
Allternative 1	4.3.1	NA	0.18	18	1361	2707	2425	2544	2974	8469	20,369,236
Allternative 2	4.3.2	F25_7at15k	0.25	26	2336	2999	2381	2805	3168	19194	55,012,675
Allternative 3	4.3.3.1	F25FLEX18k	0.25	26	2443	3040	2381	2945	3125	21118	61,637,566
Allternative 4	4.3.3.2	24DASFlex18k	0.23	24	2278	3070	2395	2990	3141	20375	59,986,304
Allternative 5	4.3.4	24DASFlex15k	0.23	24	2251	3053	2394	2979	3119	20139	58,930,290
Allternative 6	4.3.5	SQ	0.295	30	2802	2865	2355	2638	3022	22003	60,488,958
FW29 Preferred. (2018)			0.295	24	2271	2837	2581	2471	3087	21170	57,506,104

7.1.3.3 Projected Landings

Overall the projected landings for the alternative runs under consideration are very similar – with the exception of status quo and No Action (Figure 31). Around 2/3^{rds} of the projected landings in Alternatives 2, 3, and 4 would come from the NLS-West and Mid-Atlantic access areas. The ACL for the fishery is anticipated to be 126 million lbs for FY2019. Therefore, total projected landings are likely to around 50% of the ACL. 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. The uncertainty in projected landings is lower for year 1, but increases for 2018 and beyond.

Figure 31 - Comparison of projected total scallop landings for each specification scenario



7.1.4 Fishery Specifications

The Council is considering four (4) specification alternatives in Framework 30, with different open area F values for Alternative 3 of these alternatives, for a total of five (5) allocation options. The information presented in Section 7.1.3, Summary of Relevant Biological Information for Specification Alternatives Under Consideration in this Action, is intended to support the Council's evaluation of each alternative in and of itself, and in comparison to each of the other 4 allocation options, plus the Status Quo (comparison only). The following figures and tables include information and data to support the Council's evaluation of each alternative and decision making process:

- Figure 29 -Comparison of overall fishing mortality for each specification scenario.
- Figure 30 - Comparison of projected total scallop biomass for each specification scenario.
- Figure 31 - Comparison of projected total scallop landings for each specification scenario
- Figure 32 - Comparison of relative habitat efficiency of fishing (landings/area swept) for specification alternatives. The higher the score, the more habitat efficiency.

7.2 Essential Fish Habitat

As in previous scallop frameworks, impacts to EFH for this action are evaluated considering the amount of fishing proposed, the location of that fishing with respect to habitat type, and the swept area expected to result from that fishing, based on estimates produced by the Scallop Area Management Simulator (SAMS) model. Since the inception of this FMP, a broad suite of measures have been employed to reduce fishing mortality and address habitat impacts. Through OHA2 and prior actions including Amendment 10 (2004), the Council has identified areas to prohibit scallop fishing in order reduce impacts on EFH. After a period of very high fishing mortality during the mid-1980's and early-1990's, rotational area management (formalized in Amendment 10) has improved meat yields and LPUE, while DAS reductions have curbed overall fishing mortality. Overall, the successful management of the scallop resource has generally mitigated impacts on EFH.

The measures considered in Framework 30 would result in continued scallop fishing activity in areas that have been continuously or sporadically fished using trawls and dredges, with continued access to areas that recently opened through the partial approval of OHA2. The alternatives in Framework 30 consider allocating access area trips to Closed Area I Access Area, the Nantucket Lightship West Access Area, and the Mid-Atlantic Access Area.

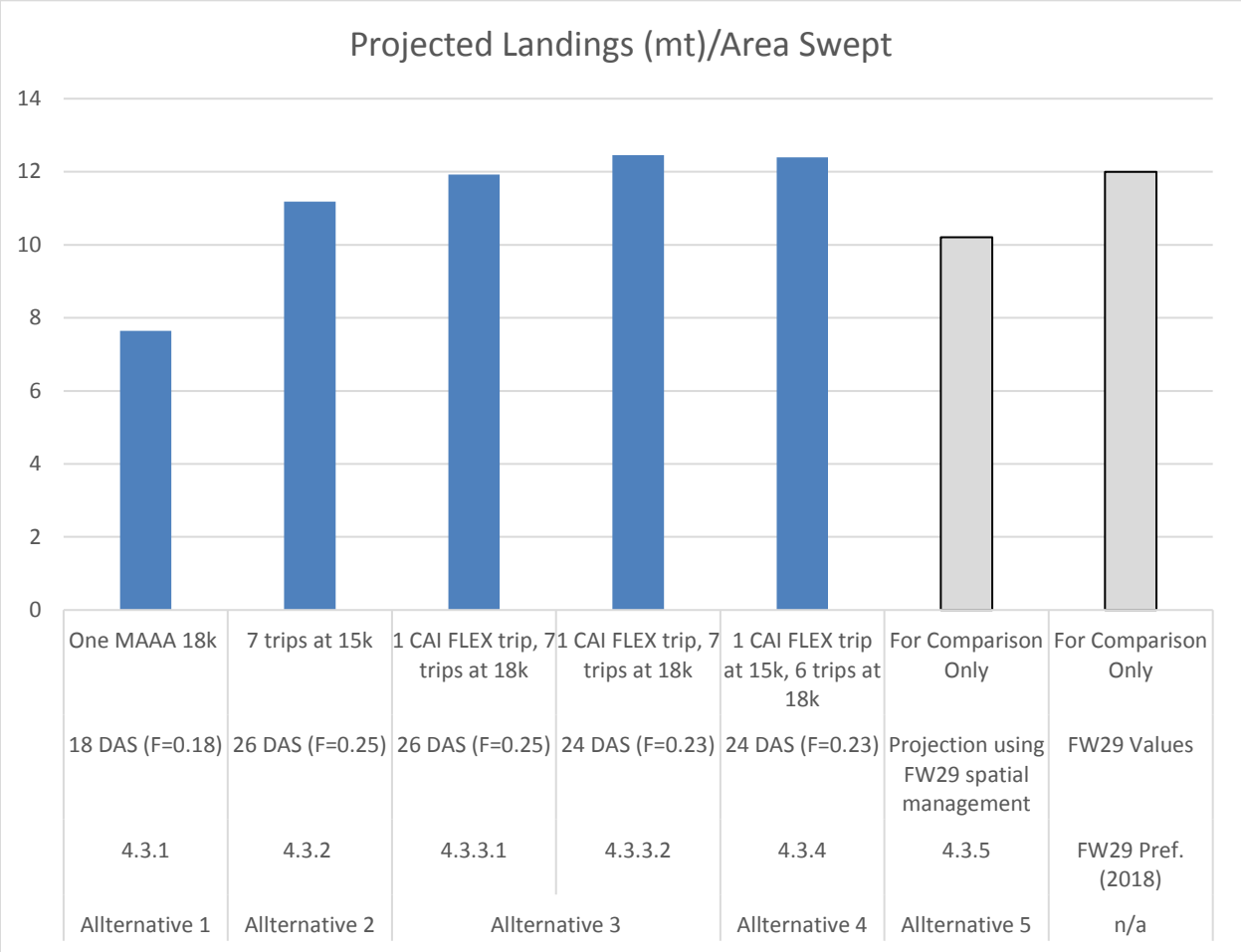
Recently opened habitat areas that were allocated in FY 2018 through Framework 29 include the former Closed Area I North Habitat Management Area (CAI-N-HMA) and most of the Nantucket Lightship Habitat Management Area. Through Scallop Framework 29 the Council established CAI-N-HMA part of the CAI access area, and developed the Nantucket Lightship West Access Area in the former NLS HMA south of 40°43'30" N. The dominant substrate in these areas generally sand (Figure XXX, Figure XXX), and these areas contain less complex habitat (i.e. less pebble and cobble substrates and associated epifauna) than adjacent areas where fishing already occurs as part of scallop rotational management (for example, the center of Closed Area I, or NLS-North).

The overall impacts of the fishery on EFH are expected to be slightly negative. This accounts for the access area changes and fishery allocations proposed in the framework, combined with the existence of habitat management areas to protect areas of particularly vulnerable EFH from scallop dredging. Framework 30 would have neutral to slightly positive impacts relative to No Action.

This action is not expected to introduce fishing effort or expand area swept in areas that are dissimilar from those previously fished and considered in previous EFH impact assessments. While OHA2 acknowledges that scallop dredges have the potential to impact EFH in ways that are more than minimal and more than temporary, these types of impacts generally accrue in complex habitat types with long-lived epifauna or geological structures vulnerable to impact, and not in sand-dominated habitat types. Thus, while the long closure period in these areas will have allowed for recovery of the benthic habitats therein, the habitats in these two areas are expected to recover relatively quickly from impacts associated with rotational fishing proposed in this framework because average, biological habitat features in high energy sand habitats are expected to recover within 1.5-2 years, and geological habitat features are expected to recover in less than one year (Grabowski et al. 2014).

Providing access to CAI and/or NLS-West would direct fishing effort to older and larger scallops that are in very high densities and mostly in sand substrate. Fishing on high densities of scallops while maintaining overall levels of harvest in the fishery results in less bottom contact as compared to fishing on moderate or lower densities.

Figure 32 - Comparison of relative habitat efficiency of fishing (landings/area swept) for specification alternatives. The higher the score, the more habitat efficiency.



7.2.1 Overfishing Limit and Acceptable Biological Catch

7.2.2 Northern Gulf of Maine Management Area

The Northern Gulf of Maine (NGOM) area is managed as a somewhat separate fishery, with its own TAC and a NGOM-specific permit. Last year, Framework 29 established measures for the NGOM that cap overall removals form the management area. These new measures, which were implemented on April 1, 2018, limit harvest for the LA and LAGC and prohibit the LA component from fishing DAS in the NGOM management area.

The alternatives considered in Framework 30 (Default FY 2019 TAC from FW29 and updating the NGOM TAC using 2018 survey data) are subject to the newly established harvest controls for both the LA and the LAGC. The Council is proposing using the temporary approach (formula) to calculates the LA and LAGC share of the NGOM TAC in FW30 that was used in FW29.

The 2017 and 2018 NGOM fishery was directed on a single cohort located on sand and gravel substrates on the top of Stellwagen Bank in water depths of 50 m or less. The 2018 NGOM survey, completed after the fishery closed, suggests that the majority of exploitable animals in the management area are from this cohort that has been fished in 2016, 2017, and 2018. Thus, it is reasonable to assume that the 2019 fishery will be prosecuted in areas that have already been fished on Stellwagen Bank. Figure 62 depicts the footprint of scallop fishing activity in the NGOM in FY 2017, which roughly indicates the distribution of this cohort.

The 2018 SMAST drop camera survey also detected scallops on Platts Bank, Jeffreys Ledge, and in Ipswich Bay. The

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

Under Alternative 1 (No Action) the total FY2019 NGOM hard TAC would be set at 135,000 pounds and would be split between the LA and LAGC components, with 32,500 pounds available to support RSA compensation fishing (LA share) and 102,500 pounds available for harvest by the LAGC component. The area would open on April 1, 2019 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 102,500 lb TAC available to the LACG fishery under Alternative 1 would be less than the TAC values in Alternative 2.

7.2.2.2 Alternative 2 – NGOM TAC split first 70,000 lbs to LAGC, then 50/50 split, LA share harvested as RSA compensation fishing

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. 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 split alternatives on EFH are expected to be neutral.

7.2.2.2.1 Sub-Option 1 – Set NGOM TAC at F=0.20

Setting the NGOM TAC at F=0.20 would result in an overall TAC of 205,000 lbs for FY 2019, 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=0.25), fishing at F=0.2 could be expected to result in fewer impacts to EFH since the overall TAC would be lower.

7.2.2.2.2 Sub-Option 2 – Set NGOM TAC at F=0.25

Setting the NGOM TAC at F=0.25 would result in an overall TAC of 250,000 lbs for FY 2019, 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=0.20), fishing at F=0.25 could be expected to result in greater impacts to EFH since the overall TAC would be higher.

7.2.3 Fishery Specifications

The Council is considering four specification alternatives in Framework 30, with different open area F values for Alternative 3 (4.3.3), for a total of five allocation options. The information on swept area estimates in the introduction to the EFH impacts section 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. The following figures and tables support the Council's evaluation of each alternative:

Table 36 - Comparison of Landing, overall LPUE, and Bottom Area Swept for Alternatives under consideration in FW30.

Alternative	Scenario	Year	Land (Mil. Lbs)	LPUE	Bottom Area Swept
4.3.1	No Action	2019	22. 9	2,707	1,361
4.3.2	F25_7at15k	2019	57.6	2,999	2,336
4.3.3.1	F25FLEX18k	2019	64.2	3,040	2,443
4.3.3.2	24DASFlex18k	2019	62.5	3,070	2,278
4.3.4	24DASFlex15k	2019	61.5	3,053	2,251
4.3.5	SQ	2019	63.0	2,865	2,802
FW29 Pref.	FW29 Pref.	2018	60.0	2,837	2,271

7.2.4 Fishery Allocations to the LAGC IFQ Component

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 FW29 (558 total trips in MAAA starting on April 1). Under Alternative 2, there would be 3,331 access area trips

allocated under the 7 trip 15,000 lb trip limit specification (Alt. 2), and 3,996 access area trips allocated under the 7 trip 18,000 lb trip limit specification (Alt.3), and 3,902 access area trips allocated under Alternative 4 (mixed trip limits). 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.

7.2.5 Additional Measures to Reduce Fishery Impacts

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 with two exceptions. Vessels would not be able to fish RSA compensation pounds in the Closed Area I Access Area (if allocated) 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 Nantucket Lightship South and/or West, and the Mid-Atlantic Access Area.

Overall, RSA compensation fishing is not a large contributor to overall fishing mortality, so adjusting the list of areas where RSA compensation trips can be fished is not likely to have a large influence on fishery impacts to EFH. In the case of Closed Area I, the projected F in this area around F=0.5 or higher, depending on the alternative. If RSA fishing occurred in this area in addition to allocated access area fishing, impacts on EFH may increase. Restrictions on RSA in the NGOM are to control mortality in the area.

7.2.6 Standard Default Measures

The standard default measures proposed in Framework 30 would establish a consistent starting point for future analyses and alternative development, but would not bind the Council to any future action. These measures would have no effect on the specifications or corresponding impacts considered in FW30 for FY 2019 (Sections 4.3 and 4.4). The impacts of these alternatives will be analyzed within specifications scenarios of future actions by incorporating the values associated with the standard default measures and LAGC IFQ allocations to access areas.

7.2.6.1 Default Specifications

The goal of each specifications cycle is to implement updated allocations by the start of the fishing year (April 1) so that the implementation of default specifications are not necessary. If the process runs as planned, the fishery will never operate under default specifications. Setting default specifications at 75% of FT LA DAS and the LAGC IFQ quota from the previous fishing year is consistent with the approach the Council has taken in recent years. The default specifications under consideration in Framework 30 would codify a standard approach within the

FMP for future actions. The Council may also recommend additional access area fishing in default measures, as is considered in FY 2019 specifications in Section 4.3.

7.2.6.1.1 Alternative 1 – No Action

The Council would continue to set default measures through a specification setting process on an annual or bi-annual basis. In the past the Council has set default specifications at some fraction of the DAS and IFQ quota available in the previous fishing year. Relative to

7.2.6.1.2 Alternative 2 - Standardize default open-area DAS for the LA component and LAGC IFQ quota allocation at 75% of the preferred alternative for the previous Fishing Year allocation.

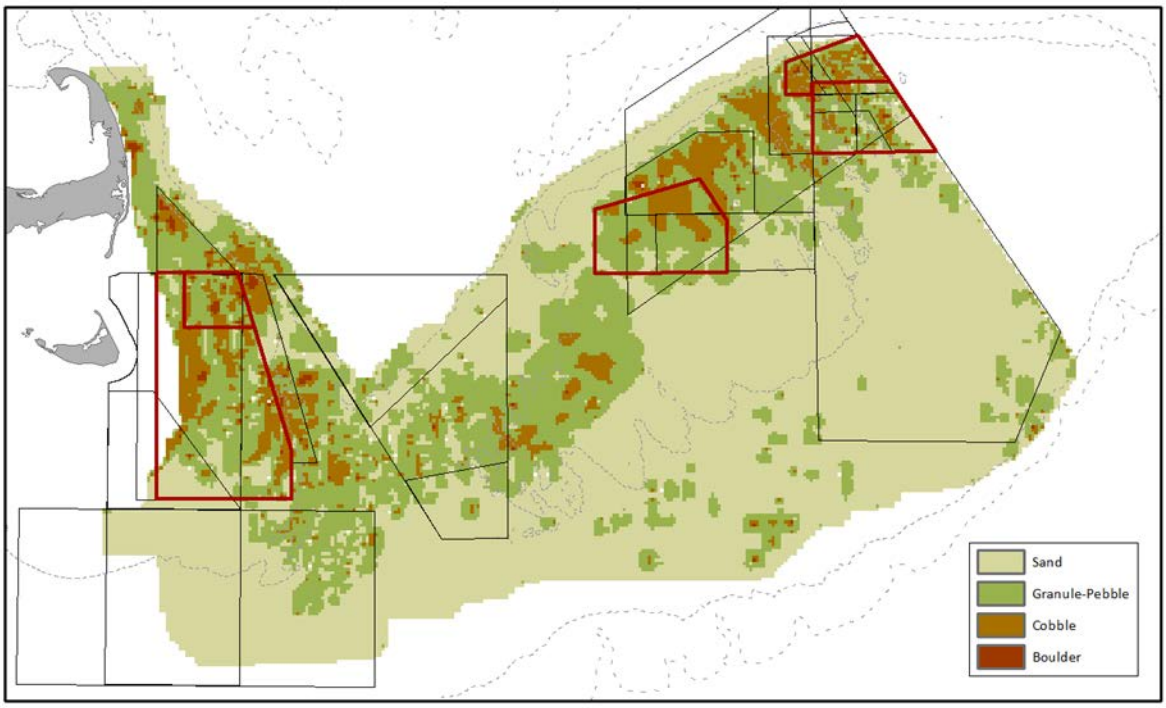
Under Alternative 2, standard default measures would be specified in the Scallop FMP for Limited Access DAS and LAGC IFQ at 75% of the previous year's DAS and IFQ allocations. Codifying these measures in the FMP will ensure that some level of harvest is available to the fishery in the event that there is a delay in the implementation of incoming specifications.

Setting DAS and the LAGC IFQ quota at 75% of the previous year's allocation is anticipated to result in more fishing effort than specifying default measures (fishery closure), but less overall effort and area swept compared to the specifications that will replace them the default measures.

7.2.6.2 LAGC IFQ Allocations to Access Areas

The LAGC IFQ component is allocated 5.5% of annual projected landings from open areas and access areas. Alternative 2 would standardize the approach the Council uses to calculate the number of access area trips available for the LAGC component as 5.5% of the total access area allocation. This is consistent with how the Council has approached setting the number of LAGC access area trips in the past. The Council could opt to change this approach at any time.

Figure 33 - Dominant sediment type (Harris and Stokesbury 2010). Red/brown indicates boulder, brown indicates cobble, green indicates granule-pebble, and beige indicates sand (Map 14 from OHA2 FEIS Vol. 4).



7.3 Protected Resources

7.3.1 Overfishing Limit and Acceptable Biological Catch

7.3.1.1 Alternative 1 – No Action

Under "No Action", the overall OFL and ABC would be at the default values for FY2019, which were adopted by the Council through FW29. The No Action ABC including discards is 58,126 mt or about 128 million pounds. The No Action OFL including discards is 69,633 mt or roughly 154 million pounds. The FY2019 OFL and ABC values for No Action and Alt. 2 are very similar, with the proposed FY2019 OFL (Alternative 2) being roughly 5% higher than No Action (Alternative 1) and the proposed FY2019 ABC (Alternative 2) being roughly 8% greater than No Action (Alternative 1) (Table 29). The proposed ABC for FY2019 including discards is 62,989 mt or approximately 139 million pounds, which is an increase of roughly 6.6 million pounds compared to 2018. This increase is primarily attributed to the continued growth of large year classes on both Georges Bank and in the Mid-Atlantic which make up the majority of total biomass and, with the exception of the slow growing deep-water scallops in the Nantucket Lightship South, are responsible for the majority of the population being considered exploitable.

Table 37 – Default FY2019 OFL and ABC values being considered in Alternative 1 relative to updated FY2019 and FY2020 (default) OFL and ABC values proposed in Alternative 2.

	FY	OFL	ABC including discards	Discards	ABC with discards removed
Alt. 1 – No Action	2019	69,633	58,126	12,321	45,805
Alt. 2 – Updated OFL and ABC	2019	73,421	62,989	5,986	57,003
	2020	59,447	50,943	4,915	46,028

Although the impacts to ESA listed species under this alternative are somewhat uncertain, as a quantitative analysis has not been performed, the analyses have qualitatively considered how the fishery has operated in regards to listed species from 2012, when TDD regulations became effective (77 FR 20728, April 6, 2012) in the scallop fishery, resulting in dual requirements (TDD and chain mat) in the fishery to reduce serious injury and mortality to sea turtles, and NMFS issued a biological opinion (Opinion) on the scallop fishery in 2012 (NMFS 2012). The Opinion issued on July 12, 2012, included an incidental take statement authorizing the take of specific numbers of ESA listed species of sea turtles and Atlantic sturgeon; this ITS was

amended on May 1, 2015[6] . The sea scallop fishery is currently covered by the incidental take statement authorized in NMFS 2012 Opinion.

The 2012 Opinions for the sea scallop fishery concluded that the fishery may affect, but will not jeopardize the continued existence of any ESA listed species of sea turtles or Atlantic sturgeon (NMFS 2012). In 2011, pursuant to the reauthorization of the Magnuson Act, and thus, to date, total landings for the sea scallop fishery have increased, decreased, or remained stable. 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. This increase does not necessarily equate to an increase in fishing effort relative to recent years. 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 0) are consistent with the range of removals that have been authorized by the fishery over the last 6 years (since 2012) and do not exceed the ABC and OFL values specified in Alternative 1 (No Action). As previously authorized ABC and OFL levels for the sea scallop fishery have not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2012 to present, and projected landings for FY2019 are consistent with scallop fishery harvests in recent years, the ABC and OFL levels for the fishery under Alternative 1 (No Action) are not expected to introduce any new risks or elevated (e.g., more gear, longer tow times) interaction risks to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2012). As a result, the ABC and OFL under Alternative 1 (No Action) are not, as concluded in the NMFS 2012 Opinion, expected to result in levels of take that would jeopardize the continued existence of ESA listed species. For these reasons, and since 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.

7.3.1.2 Alternative 2 – Updated OFL and ABC for FY2019 and FY2020 (default)

The OFL and ABC values approved by the SSC for FY2019 and FY2020 (default) are summarized in Table 29. The updated ABC estimate including discards is 62,989 mt or approximately 139 million pounds for FY2019. This is about 4,863 mt, or about 10.7 million pounds, higher than the No Action ABC for FY2019 (Alternative 1, default measures from FW29). Updated survey results suggest an increase in biomass, primarily driven by the growth of large year classes on Georges Bank and the Mid-Atlantic, which were considered above average when they were first observed.

While the OFL and ACB values for FY2019 under Alternative 2 are very similar to those approved for FY2018, the default OFL and ABC values for FY2020 under Alternative 2 represent a 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, with the exception of the slow growing deep-water scallops in the Nantucket Lightship, are responsible for the majority of the population being considered

[6] For the May 1, 2015, amended ITS for the scallop fishery, please see: https://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/biological_opinions.html

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 2019 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 FY2019 are greater than the range of the ABC and OFL values that were authorized by the fishery between 2012 and 2017 but are consistent with values authorized for 2018 through FW29. The increase in the ABC and OFL in FY2018 and FY2019 reflects the higher estimates of scallop biomass observed in recent surveys of the scallop resource. As a result, albeit higher than past years, the OFL and ABC are not a direct measure of the exploitable biomass or 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 similar to those assessed for Alternative 1; therefore, relative to Alternative 1, Alternative 2 is likely to result in neutral impacts on ESA listed species.

7.3.2 Northern Gulf of Maine Management Area

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

Under Alternative 1 (No Action) the total FY2019 NGOM hard TAC would be set at 135,000 pounds and would be split between the LA and LAGC components, with 32,500 pounds available to support RSA compensation fishing (LA share) and 102,500 pounds available for harvest by the LAGC component. The area would open on April 1, 2019 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.

On April 1st, 2018, the NGOM management area opened to fishing under updated specifications which capped landings from the LAGC and LA components separately based on their respective portions of the overall NGOM TAC. Between April 1st and May 2nd, 2018, approximately 40 LAGC vessels were active in the NGOM fishery and, similar to FY2017, directed effort almost entirely on Stellwagen Bank (Figure XXX). Upon determining the LAGC portion of the NGOM TAC was met, the NMFS closed the NGOM management area to LAGC vessels on May 2nd, 2018. Vessels eligible to harvest the LA share of the 2018 NGOM TAC opted to not to fish in the NGOM management area, meaning none of the LA share of the 2018 NGOM TAC that was available to support RSA compensation fishing was harvested.

2018 survey results suggest that there are harvestable densities of scallops in Ipswich Bay and Stellwagen Bank; however, the largest animals observed were on Stellwagen Bank meaning the majority of FY2019 fishing could be expected to occur there. Considering this, FY2019 fishing behavior in the NGOM management area under this Alternative is expected to be similar to FY2018 in terms of the spatial distribution of effort (i.e. predominantly on Stellwagen Bank).

Furthermore, Alternative 1 (No Action) represents a reduction in the overall NGOM TAC relative to 2018 meaning that, while the rate of harvest from the LAGC component is expected to be similar, the overall duration of the LAGC NGOM fishery is expected to be somewhat abbreviated relative to 2018. In other words, under Alterative 1 (No Action), the LAGC share of the NGOM TAC would likely be harvested by early May.

Since the LAGC 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 6.3, 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; James et al. 2005; 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. As such, 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 LAGC component for the entire year, it would indicate that fishing effort is low. With low levels of effort, gear quantity and(or) duration of tow times are not expected to increase relative to current operating conditions. As interactions with protected species are strongly associated with amount, time, and location of gear in the water, with vulnerability of an interaction increasing with increases of any or all of these factors, fishing behavior/effort is not expected to change any of these operating conditions therefore is not expected to elevate interaction risks. Further, hard-shelled sea turtle interactions with scallop fishing gear in GOM are non-existent (NMFS NEFSC FSB 2015, 2016, 2017; Murray and Orphanides 2013; Murray 2011, 2013, 2015a,b; Warden 2011 a,b; NMFS 2012). As hard-shelled sea turtles are less common in GOM, relative to the Mid-Atlantic, this trend in interactions is likely reflective of the low level of co-occurrence between hard-shelled sea turtles and gear in this sub-region. In regards to 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 (NMFS NEFSC FSB 2015, 2016, 2017), 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 are 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 1989-2016 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 (NMFS NEFSC FSB 2015, 2016, 2017). 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. XXX lbs) is indistinguishable when considered in terms of expected harvest from the scallop fishery as a whole (i.e. approximately 60 million pounds in FY2018), 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 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 and Alternative 2 on protected resources would be neutral.

7.3.2.2 Alternative 2 – NGOM TAC split first 70,000 lbs to LAGC, then 50/50 split, LA share harvested as RSA compensation fishing

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. 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 split alternatives on protected resources are expected to be neutral.

7.3.2.2.1 Sub-Option 1 – Set NGOM TAC at F=0.20

Setting the NGOM TAC at F=0.20 would result in an overall TAC of 205,000 lbs for FY 2019, which is likely to lead to more fishing and therefore greater impacts on protected resource species as compared to Alternative 1 (No Action). Relative to Sub-Option 2 (F=0.25), fishing at F=0.2 could be expected to result in fewer impacts to protected resources since the overall TAC would be lower. However, as stated previously, though Alternative 2 Sub-Option 1 represents a higher TAC than Alternative 1, the difference (i.e. XXX lbs) is indistinguishable when considered in terms of expected harvest from the scallop fishery as a whole (i.e. approximately 60 million pounds in FY2018), 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 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.

7.3.2.2.2 Sub-Option 2 – Set NGOM TAC at F=0.25

Alternative 2 Sub-Option 2 would set the NGOM TAC at F=0.25 and result in an overall TAC of 250,000 lbs for FY 2019, and is expected to result in more fishing effort relative to the TAC under Alternative 1 (No Action) and Alternative 2 Sub-Option 1 (F=0.20). In the scope of the NGOM fishery under Alternative 2 Sub-Option 2, there is a possibility that fishing at F=0.25 could result in a greater risk of interaction and therefore impact on protected resources relative to the other Alternatives considered. However, as stated previously, though Alternative 2 Sub-Option 2 represents a higher TAC than Alternative 1 and Alternative 2 Sub-Option 1, the difference (i.e. XXX lbs) is indistinguishable when considered in terms of expected harvest from the scallop fishery as a whole (i.e. approximately 60 million pounds in FY2018), 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 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.

7.3.3 Fishery Specifications

The Council is considering four (4) specification alternatives in Framework 30, with Sub-Options in Alternative 3 that consider different open area F values, for a total of five (5) allocation options. The information presented in Section 7.1.3, Summary of Relevant Biological Information for Specification Alternatives Under Consideration in this Action and the information on swept area estimates in the introduction to the EFH impacts section, are intended to support the Council's evaluation of each alternative in and of itself, and in comparison to each of the other 4 allocation options, plus the Status Quo (comparison only). The following figures and tables include information and data to support the Council's evaluation of each alternative and decision-making process:

- Figure 29 -Comparison of overall fishing mortality for each specification scenario.
- Figure 30 - Comparison of projected total scallop biomass for each specification scenario.
- Figure 31 - Comparison of projected total scallop landings for each specification scenario
- Figure 32 - Comparison of relative habitat efficiency of fishing (landings/area swept) for specification alternatives. The higher the score, the more habitat efficiency.

7.3.4 Fishery 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. 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 FW29 (558 total trips in the MAAA starting on April 1). Under Alternative 2, there would be 3,331 access area trips allocated under the 7 trip 15,000 lb trip limit specification (Alt. 2), and 3,996 access area trips allocated under the 7 trip 18,000 lb trip limit specification (Alt.3), and 3,902 access area trips allocated under Alternative 4 (mixed trip limits). 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 exists (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.

7.3.5 Additional Measures to Reduce Fishery Impacts

In general, RSA compensation fishing is considered as part of the previous impacts analysis. This is a small component of the overall fishery. 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 with two exceptions. Vessels would not be able to fish RSA compensation pounds in the Closed Area II Access Area (if allocated) and only vessels receiving allocations of NGOM RSA compensation would be able to fish their awards in the NGOM management area. Alternative 2 would also allow vessels to harvest RSA compensation pounds in high density areas in the Nantucket Lightship West and the Mid-Atlantic Access 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% this fishing year (1.25 million pounds out of ~60 million pounds projected for FY2018). Based on this, either alternative, when compared to the other, is expected to result in neutral impacts to protected species.

7.3.5.1 Alternative 1 – No Action

Under Alternative 1, RSA compensation fishing would be restricted to open areas only. 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.

7.3.5.2 Alternative 2 – Allow RSA compensation fishing in open access areas, with limited RSA compensation fishing in the NGOM Management Area.

Alternative 2 may have slightly negative impacts on protected resources, primarily because compensation fishing would be available in the MAAA, where the fishery is known to interact with hard-shell turtles. However, it is possible that RSA compensation fishing will be directed to parts of the resource away from the MAAA, like the Nantucket Lightship West because high densities of harvestable scallops exist in this area. 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 an area with low 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 and are expected to be neutral relative to Alternative 1.

7.3.6 Standard Default Measures

The standard default measures proposed in Framework 30 would establish a consistent starting point for future analyses and alternative development, but would not bind the Council to any future action. These measures would have no effect on the specifications or corresponding impacts considered in FW30 for FY 2019 (Sections 4.3 and 4.4). The impacts of these alternatives will be analyzed within specifications scenarios of future actions by incorporating the values associated with the standard default measures and LAGC IFQ allocations to access areas.

7.3.6.1 Default Specifications

The goal of each specifications cycle is to implement updated allocations by the start of the fishing year (April 1) so that the implementation of default specifications are not necessary. If

the process runs as planned, the fishery will never operate under default specifications. Setting default specifications at 75% of FT LA DAS and the LAGC IFQ quota from the previous fishing year is consistent with the approach the Council has taken in recent years. The default specifications under consideration in Framework 30 would codify a standard approach within the FMP for future actions. The Council may also recommend additional access area fishing in default measures, as is considered in FY 2019 specifications in Section 4.3.

7.3.6.1.1 Alternative 1 – No Action

The Council would continue to set default measures through a specification setting process on an annual or bi-annual basis. In the past the Council has set default specifications at some fraction of the DAS and IFQ quota available in the previous fishing year.

7.3.6.1.2 Alternative 2 - Standardize default open-area DAS for the LA component and LAGC IFQ quota allocation at 75% of the preferred alternative for the previous Fishing Year allocation.

Under Alternative 2, standard default measures would be specified in the Scallop FMP for Limited Access DAS and LAGC IFQ at 75% of the previous year's DAS and IFQ allocations. Codifying these measures in the FMP will ensure that some level of harvest is available to the fishery in the event that there is a delay in the implementation of incoming specifications.

Setting DAS and the LAGC IFQ quota at 75% of the previous year's allocation is anticipated to result in more fishing effort than specifying default measures (fishery closure), but are generally expected to result in less overall effort and area swept compared to the specifications that will replace them the default measures.

7.3.6.2 LAGC IFQ Allocations to Access Areas

The LAGC IFQ component is allocated 5.5% of annual projected landings from open areas and access areas. Alternative 2 would standardize the approach the Council uses to calculate the number of access area trips available for the LAGC component as 5.5% of the total access area allocation. This is consistent with how the Council has approached setting the number of LAGC access area trips in the past. The Council could opt to change this approach at any time.

7.4 Human Communities (Socio-Economic Impacts)

See Document 3c – provided to the AP and Committee on Nov. 20, 2018.

7.5 Non-target Species

This section primarily addresses the potential impact of scallop fishing on the four flatfish stocks that the scallop fishery has sub-ACLs for: GB yellowtail flounder, SNE/MA yellowtail flounder, GOM/GB windowpane flounder, and SNE/MA 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 2018 catch estimates for the four stocks with a scallop sub-ACL are shown in

Table 38 - FY2019 Scallop fishery bycatch projections for four allocated flatfish stocks.

Section	Scenario	FT LA DAS	NWP	SWP	SNE MA YT	GBYT	Total
Anticipated 2019 sub-ACL (GF FW58)			18 mt	158 mt	15 mt	17 mt	
4.3.1	No Action	18	5.69	36.88	1.43	9.39	53.39
4.3.2	7 trips at 15k, 26 DAS	26	8.77	63.38	2.86	13.15	88.16
4.3.3.1	7 trips at 18k, CAI FLEX, 26 DAS	26	8.55	67.5	3.05	13.01	92.11
4.3.3.2	7 trips at 18k, CAI FLEX, 24 DAS	24	8.02	64.03	2.9	11.48	86.43
4.3.4	7 trips, CAI FLEX 15k, 24 DAS	24	7.87	64.03	2.9	12.04	86.84
4.3.5	Status Quo (Comparison Only)	30 (F=0.295)	10.3	108.35	4.79	15.1	138.54

7.5.1 Overfishing Limit and Acceptable Biological Catch

The overfishing limit and acceptable biological catch are the absolute limits the fishery is not allowed to exceed. Since the fishery allocations under consideration in FW30 are well below the ABC allocations (No Action and updated values), these values are not expected to have a direct impact on non-target species. The direct impacts of the fishery allocations are assessed below in Section 7.5.3.

The No Action ABC is lower than the proposed ABC in this action because exploitable biomass has increased and biological reference points changed through SARC 65 (ABC is now set at F=0.51). However, the No Action ABC and the proposed ABC in FW30 are both well above fishery allocations contemplated in this action. Therefore, the potential impacts of the No Action ABC, as well as the updated ABC values under the preferred alternative are neutral and not expected to have direct impacts on non-target species. The proposed ABC may have low negative to neutral impacts compared to No Action since the limit is higher, but in reality, allocations are set well below these limits.

7.5.2 Northern Gulf of Maine Management Area

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.

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

Under Alternative 1 (No Action) the total FY2019 NGOM hard TAC would be set at 135,000 pounds and would be split between the LA and LAGC components, with 32,500 pounds available to support RSA compensation fishing (LA share) and 102,500 pounds available for harvest by the LAGC component. The area would open on April 1, 2019 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.

7.6 Cumulative Effects (Completed after Final Action)

8.0 COMPLIANCE WITH APPLICABLE LAWS

8.1 Magnuson-Stevens Fishery Conservation and Management Act

8.1.1 National Standards

8.1.2 Other Required Provisions of the M-S Act

8.2 NEPA

9.0 GLOSSARY

10.0 LITERATURE CITED

11.0 INDEX

1.1 Economic Trends[1] in the Sea Scallop Fishery

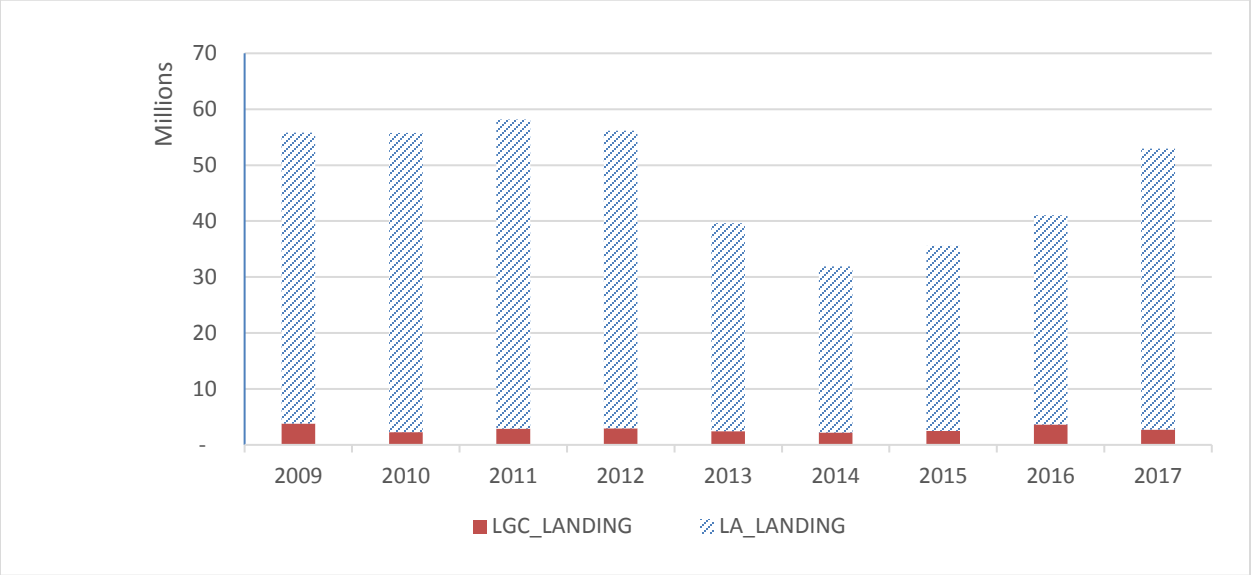
This section describes the economic trends of the scallop fishery, including trends in landings, revenues, prices, fishing efforts, production efficiencies, meat grades compositions and geographical concentration or distribution of scallop permits in the scallop fishery in recent years. It also analyzes major trading partners

1.1.1 Trends in landings, prices and revenues

During the fishing years 2009-2017, scallop landings ranged from about 32 to 58 million pounds. In 2017, the landing increased to about 53 million pounds, i.e., a 29 percent increase from 2016 landings. Limited access (LA) vessels attributed to majority of the scallop landings. In 2016, the LA vessels landed about 37 million pounds of scallops. It increased to about 50 million pounds in 2017 (Figure 1).

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) declined in 2017 to about 2.7 million pounds compared to 3.7 million pounds in 2016 (Figure 1).

Figure 1. Scallop landings (in mil lbs.) by permit category

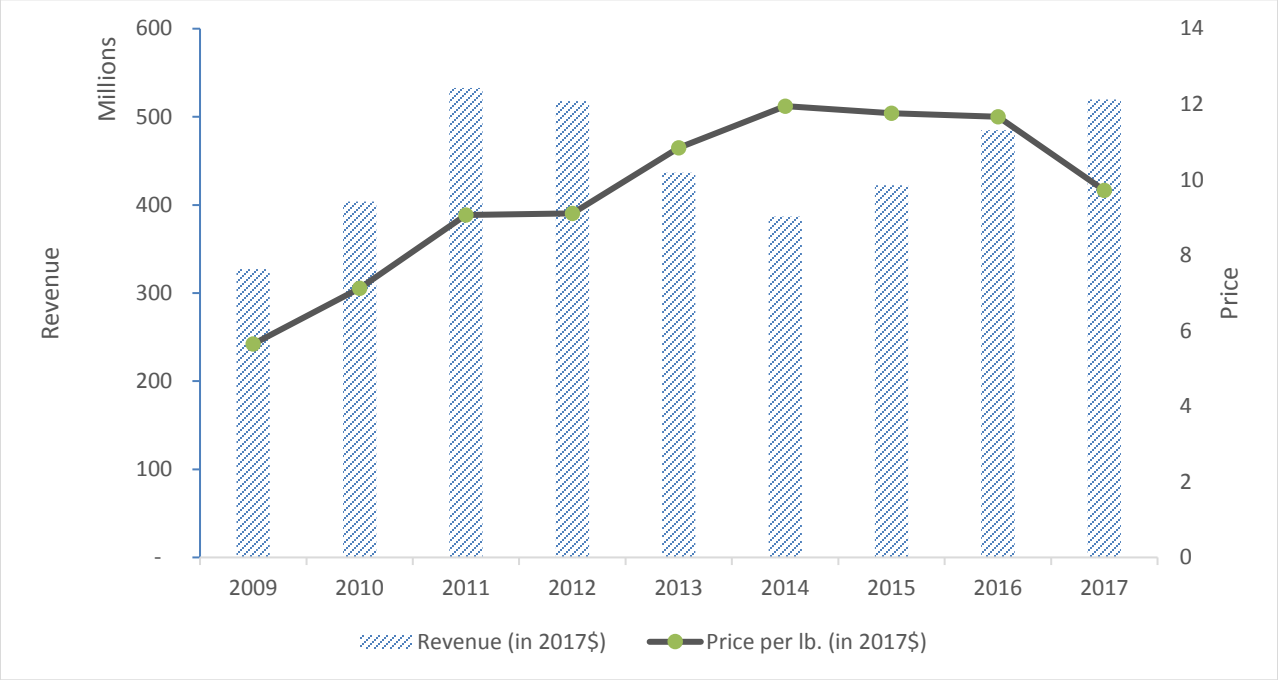


Scallop revenue (in 2017 dollars) peaked in 2011 to about $532 million. It declined during fishing years 2013-2015 but increased to about $520 million in 2017 (Figure 2). The ex-vessel prices of scallops (in 2017 dollars) increased significantly to over $9 per pound in 2011. The

[1] The economic trends in this section are primarily after the implementation of the Amendment 11. The data in the analyses are primarily from the GARFO's fishery database as of July 2018. Unless otherwise specified all time elements in this section are in fishing years.

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 to about $12 per pound in 2014 due to the decline in landings by almost 44% from its peak in 2011. As a result, scallop revenue declined by a smaller percentage (32%) relative to the decline in landings from about $533 million in 2011 to $387 million in 2014 (in 2017 prices). Average scallop price remained around $12 per pound during 2014-2016, but it fell slightly below $10 per pound in 2017. However, scallop revenue increased to about $520 million in 2017 compared to $484 million in 2016 despite a scallop price fall (Figure 2).

Figure 2. Trends in total scallop revenue and ex-vessel price (in 2017 $) by fishing year (LA & LAGC fisheries)



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 2009-2017. The average scallop revenue per FT vessel reached about $1.6 million (in 2017 dollars) in 2011 as a result of higher landings combined with an increase in ex-vessel prices, but it declined to $1.2 million in 2014. For FT-SMD vessels, average revenue per vessel increased to over $1.28 million in 2011, but it declined to $0.7 million in 2014. The revenue decline in 2014 was due to the decline in landings for the fishing year (Figure 3, Figure 4). In 2017, average revenue per vessel for FT and FT-SMD vessels increased to $1.5 million and $1.3 million, respectively due to an increase in landings for both permit categories (Figure 4).

Figure 3. Trends in average scallop landings per full-time vessel by permit category.

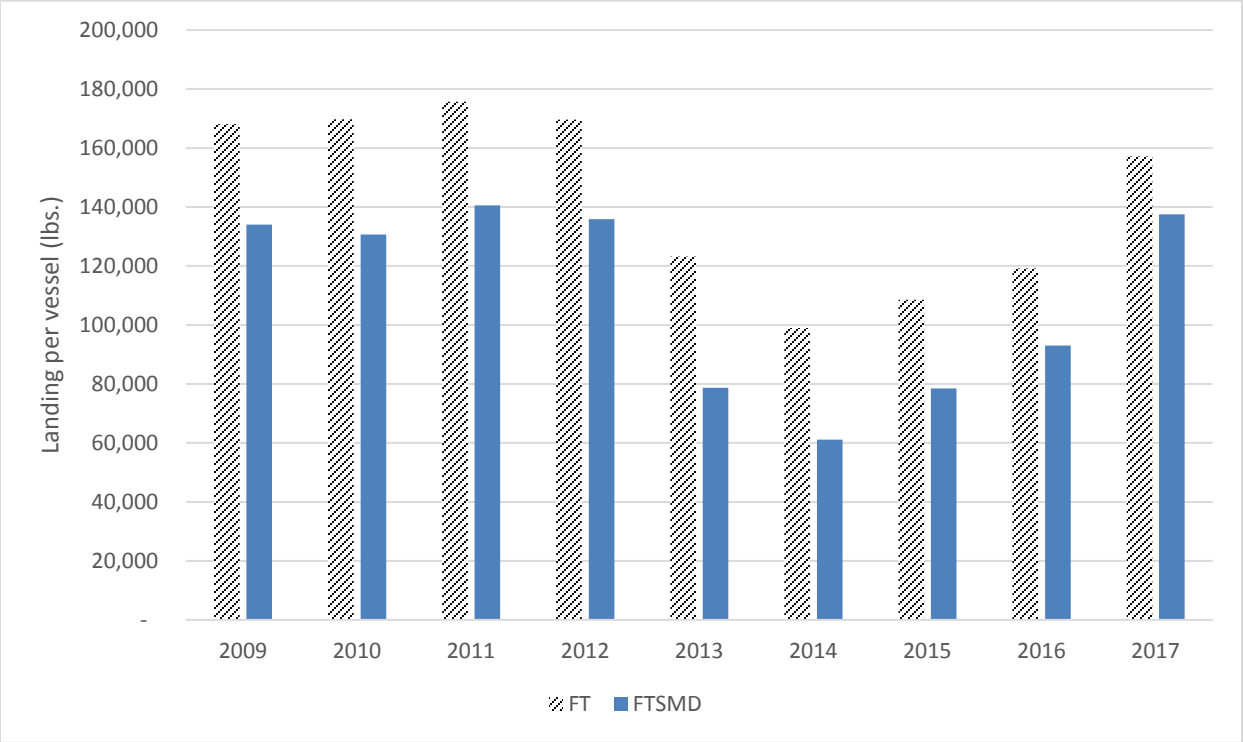
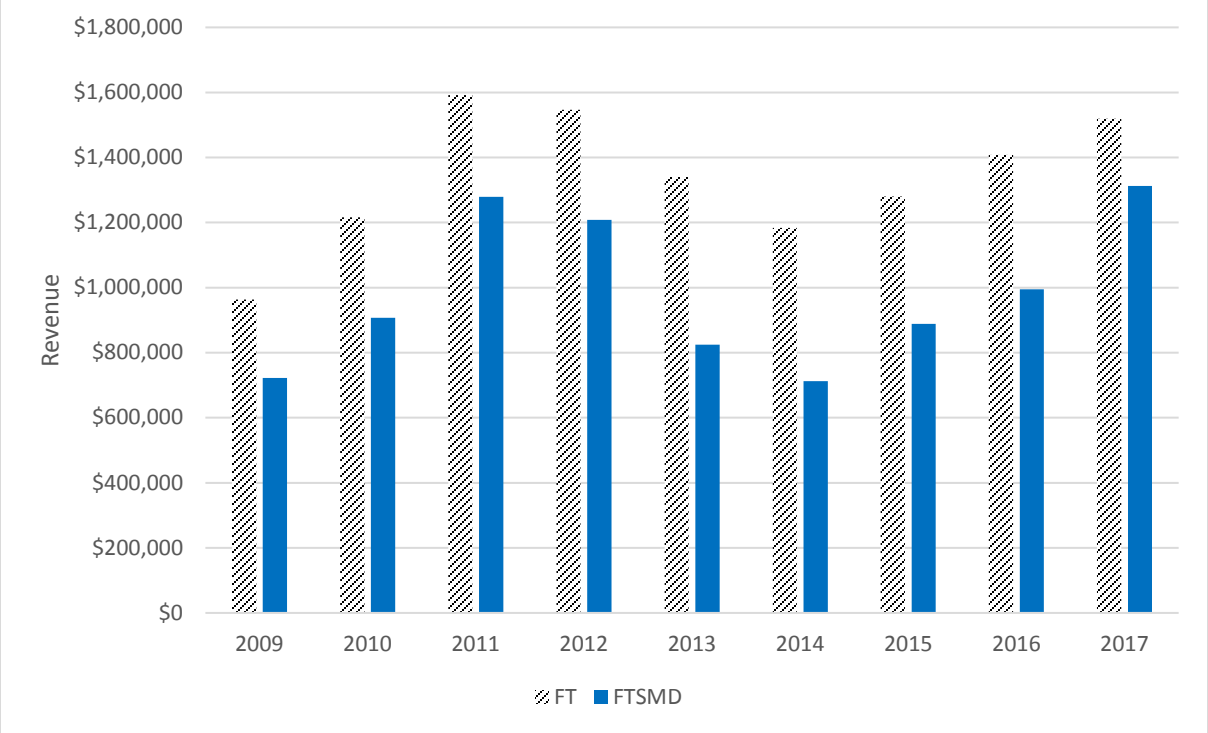
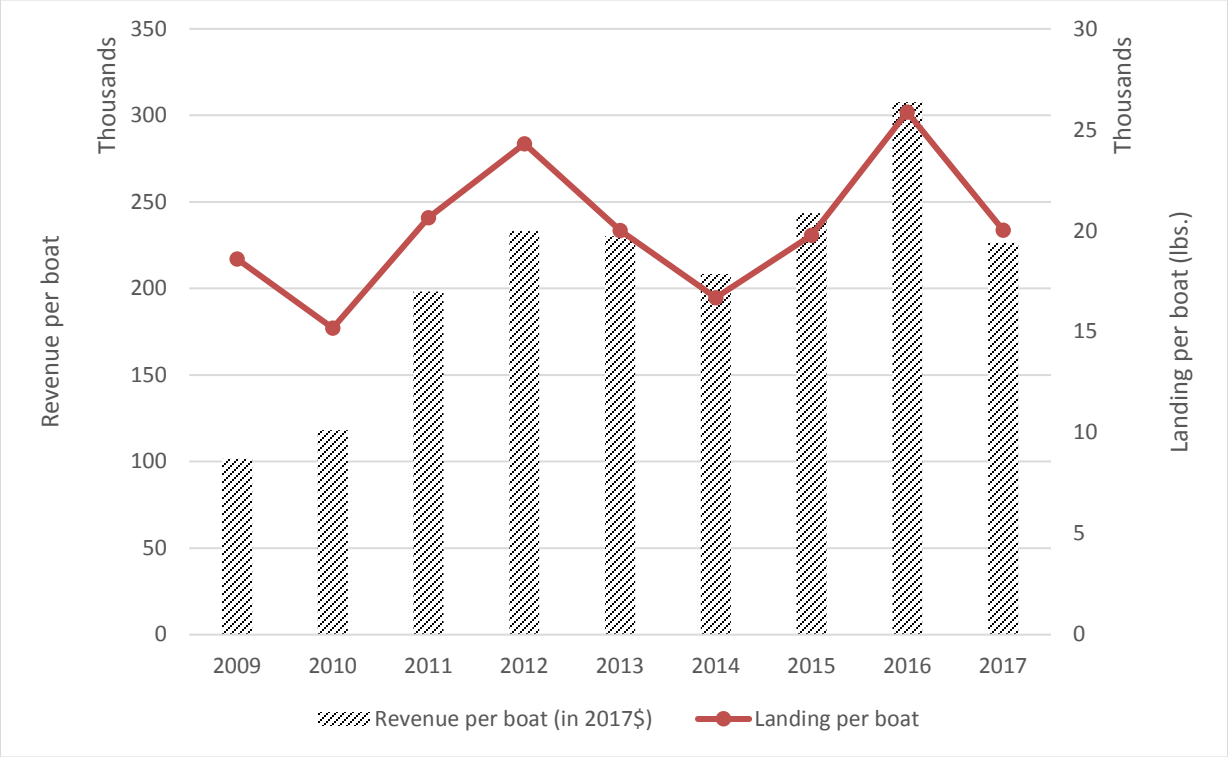


Figure 4. Trends in average scallop revenue per full-time vessel by permit category (in 2017 $)



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 by IFQs vessel has increased over time during 2009-2017. The revenue peaked to about $308,000 in 2016 but declined to around $226,000 in 2017 (Figure 5).

Figure 5. Average scallop landings and scallop revenue per vessel (in 2017 $) for IFQ boats



1.2.1 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. [2] 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 2016-2017 fishing years (Figure 6).

[2] 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 1. DAS and access area allocations per full-time vessel

Year	Action	DAS	AA trips	CA1	CAII	NLS	VB	HC	ETA	DMV	Poss. Limit
2008	FW19	35	5	Closed	Closed	1 trip		Closed	4 trips	Closed	18000
2009	FW19	42	5	Closed	1 trip	Closed		Closed	3 trips	1 trip	18000
2010	FW21	38	4	Closed	Closed	1 trip		Closed	2 trips	1 trip	18000
2011	FW22 and EA	32	4	1.5 trips	0.5 trips	Closed by emergenc y		1 trip	converted to open area	1 trip	18000
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 converte	18000
2013	FW24	33	2	118 trips***	182 trips	116 trips		210 trips	Closed	Closed	13000
2014	FW25	31	2	Closed	197 trips	116 trips		Closed	Closed	313 trips****	12000
2015	FW26	30.86	3 *****	Closed	Closed	Closed		Merged into one Mid-Atlantic AA, but inshore part of ETA closed			17000
2016	FW27	34.55	3	Closed	Closed	Closed ~		Merged into one Mid-Atlantic AA, but inshore part of ETA closed			17000
2017	FW28	30	4	1	1			1, plus another trip to ETA rotational area			18,000
2018	FW29	21	6	1	Closed	3		1			18,000

** 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 6).

Figure 6. Total DAS-used (Date landed – Date sailed from VTR data) and LPUE by all LA vessels

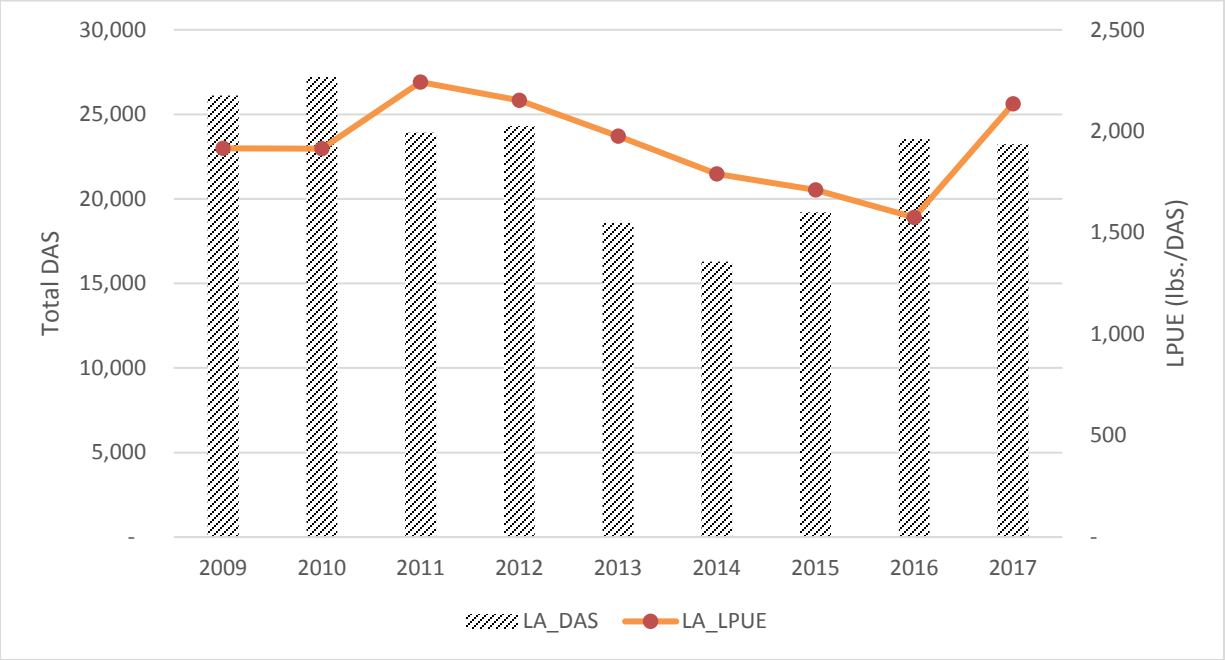


Figure **7** shows that LPUE for the full time dredge (FT) vessels was higher (about 2,200 lb. in 2013) than the LPUE for full time small dredge (FT-STD) vessels (about 1,330 lb. in 2013). In 2017, the LPUE for the FT and FT-SMD vessels were 2,303 lb. and 1,710 lb., respectively. They increased substantially from their lows during 2014-2016 (Figure **7**). DAS for LAGC-IFQ vessels declined substantially by about one third from its level at 7,507 in 2016 to 5,027 in 2017. LPUE for LAGC-IFQ vessels are lower during 2013-2017 than during 2009-2012. LPUE for the IFQ vessels increased from 478 lb. in 2016 to 587 lb. in 2017 (Figure 8).

Figure 7. LPUE for full-time vessels by permit category (VTR data, includes steam time)

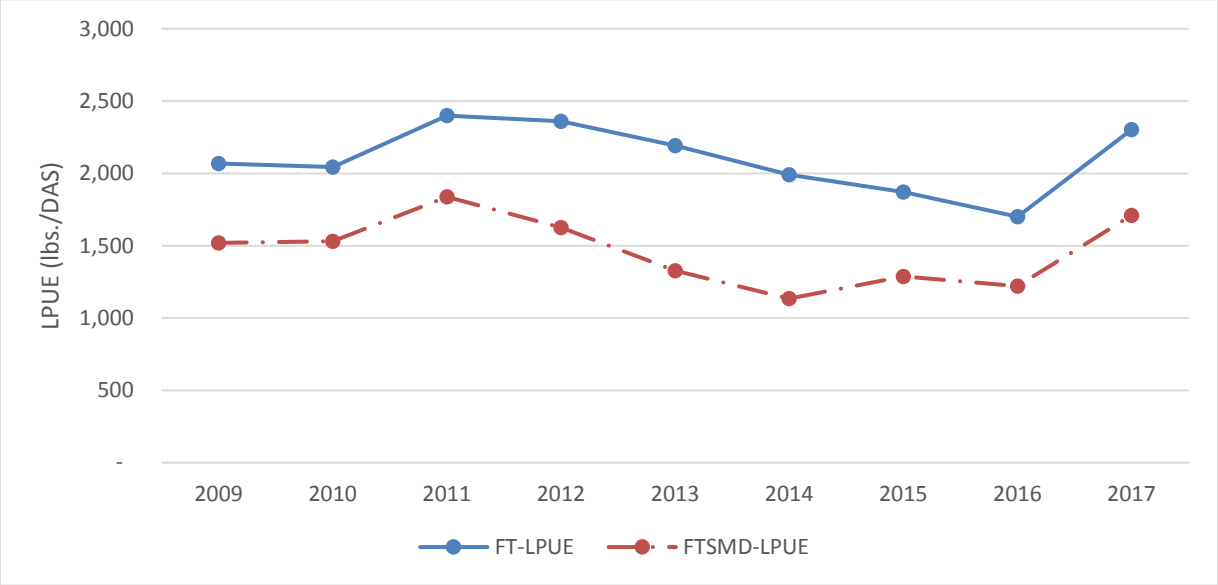
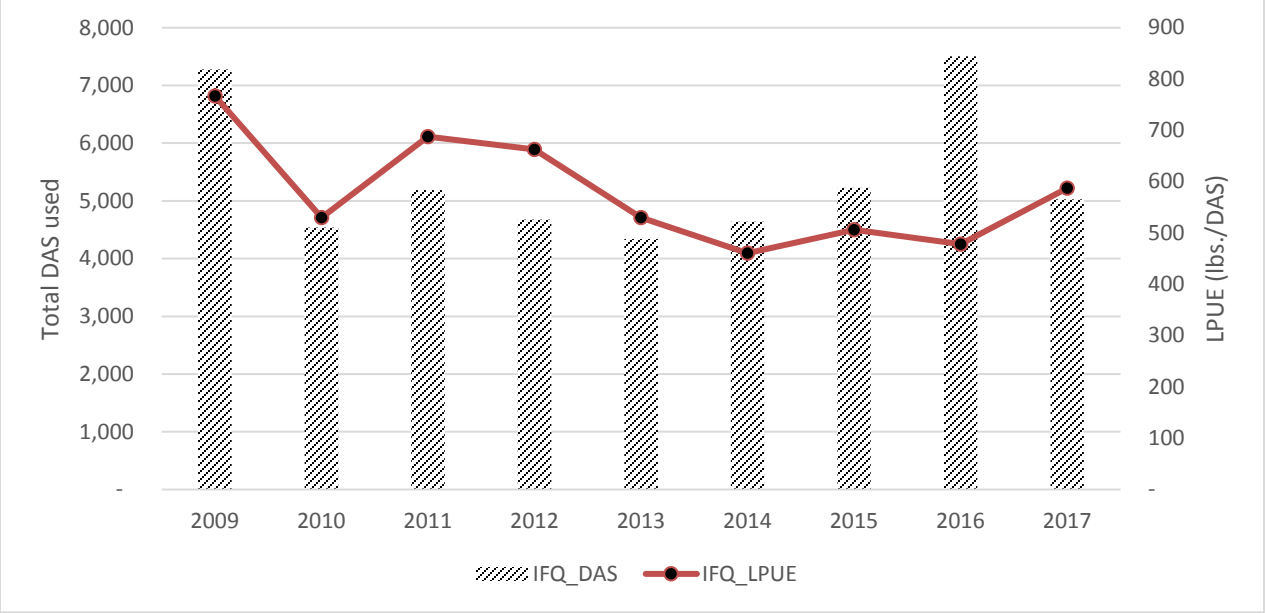


Figure 8. LPUE and DAS-used for LAGC-IFQ vessels (includes steam time, excludes LA vessels)



1.4.1 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 79% in 2011 to 45% in 2016 fishing year. On the other hand, the share of 21+ scallop counts increased from 6% in 2012 to about 41% in 2016. In 2017, the share of U10 landing nearly doubled from its level in 2016 rising from 11% to 19%; the share of U1120 landing increased from 45% to 55%; but the share of U21+ declined substantially from 41% to 24% (Table 3 and Table 4). Larger scallops fetched higher price than the smaller scallops which attributed to an increase in overall average scallop prices especially since 2010 (Table 5).

Table 2. Scallop landings by market category (lb.)

Fishyear	U10	11 to 20	21+	UNK	Grand Total
2009	8,426,450	35,798,675	12,366,020	1,326,240	57,917,385
2010	8,770,955	36,052,201	10,895,003	939,022	56,657,181
2011	8,543,436	45,260,311	3,563,092	1,339,517	58,706,356
2012	10,485,521	41,587,639	3,550,327	1,234,715	56,858,202
2013	8,666,779	24,780,078	5,689,661	1,076,312	40,212,830
2014	8,046,766	19,084,369	4,365,448	873,788	32,370,371
2015	6,115,533	21,138,141	7,889,933	771,342	35,914,949
2016	4,719,653	18,774,077	16,892,731	1,149,795	41,536,256
2017	10,162,331	29,351,318	13,010,332	944,255	53,468,236

Table 3. Size composition of scallops (in percent)

Fish Year	U10	11 to 20	21+	UNK
2009	14.55	61.81	21.35	2.29
2010	15.48	63.63	19.23	1.66
2011	14.55	77.10	6.07	2.28
2012	18.44	73.14	6.24	2.17
2013	21.55	61.62	14.15	2.68
2014	24.86	58.96	13.49	2.70
2015	17.03	58.86	21.97	2.15
2016	11.36	45.20	40.67	2.77
2017	19.01	54.89	24.33	1.77

Table 4. Composition of scallop revenue by size (percent of total scallop revenue)

Fish Year	U10	U1120	U21+	UNK
2009	18.10	59.37	20.35	2.18
2010	20.18	58.37	19.71	1.73
2011	14.93	76.48	6.36	2.22
2012	19.29	72.4	6.27	2.04
2013	23.17	60.43	14.16	2.25
2014	27.89	56.48	12.88	2.75
2015	21.04	56.67	20.36	1.94
2016	16.52	45.45	35.28	2.75
2017	25.2	50.24	22.54	2.02

Table 5. Price of scallop per pound by market category (in 2017 dollars)

Fish Years	U10	11 to 20	21+	UNK
2009	7.00	5.44	5.18	7.61
2010	9.44	7.20	7.45	8.84
2011	10.08	9.23	9.65	12.26
2012	10.20	9.22	9.37	14.83
2013	12.58	10.83	10.89	13.33
2014	13.96	11.86	11.53	13.64
2015	14.67	11.42	11.11	13.29
2016	16.76	11.84	10.33	12.66
2017	13.25	10.13	9.53	12.02

1.5.1 Trends in permits by permit plan and category

Table 6 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.[3] The number of LAGC permits held by LA vessels is shown in Table 7. The unique vessels with Right-ID Numbers are shown in Table 8 for 2008-2012. Only 347 out of 356 permits in 2008 belonged to unique vessels.

Table 6. 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	246	251	252	252	250	249	250	250	249	251
FT-NET	Full-time Trawl	12	11	11	11	11	12	11	11	11	12
FT-SMD	Full-time Small Dredge	54	52	52	51	52	53	51	51	51	54
FT	Full-time	*312*	*314*	*315*	*314*	*313*	*314*	*312*	*312*	*311*	*317*
PT	Part-time	2	2	2	2	2	2	2	2	2	0
PT-SMD	Part-time Small Dredge	30	32	32	31	30	32	31	32	31	31
PT	Part-time	*32*	*34*	*34*	*33*	*32*	*34*	*33*	*34*	*33*	*31*
SUM		344	348	349	347	345	348	345	346	344	348

Table 7. LAGC permits held by limited access vessels by permit category

CALENDAR_YEAR	'LA+IFQ'	'LA+NGOM'	'LA+INCI'
2009	41	26	112
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

[3] The permit numbers shown in the Table 6 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 8. Scallop Permits by unique right-id and category by application year

PERMIT CATEGORY	2008	2009 to 2017
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 9 shows that the number of LAGC permits, including 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 LA vessels that also have an LAGC permit, are shown in Table 10.

Table 9. LAGC permits (including the LA vessels with LAGC permits)

	No. of permits qualified under A11 program)		
Calendar Year	IFQ (including LA Permits)	NGOM	Incidental
2009	240	34	169
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	59	150

Table 10. LAGC permits after Amendment 11 implementation (excluding the LAGC permits held by LA)

Year	IFQ	INCI	NGOM
2009	199	57	8
2010	158	54	9
2011	141	55	7
2012	123	66	12
2013	118	61	22
2014	126	55	25
2015	123	45	26
2016	133	52	33
2017	127	37	32

The trends in the estimated number of active LA vessels are shown in Table 11 by permit plan. Table 12 shows the number of active LAGC vessels by permit category excluding those LA vessels which have both LA and LAGC permits.

Table 11. Active vessels by fishing year (Vessels that landed any volume of scallops)

FISHYEAR	'FT'	'PT'	'OC'	'FT-SMD'	'PT-SMD'	'FT-NET'	'PT-NET'	'OC-NET'
2009	245	2	-	54	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	-	-

Table 12. Number of active vessels with LAGC permits by permit category (excludes LA vessels with LAGC 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	52
2017	129	33	35

1.6.1 Trends in landings by permit category and state for limited access vessels

Table 13 and Table 14 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 11).[4] Table 14 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 79% 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 2017. 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 2009-2017.

Table 13. Scallop landings (lbs.) by limited access vessels by permit category

FISHYEAR	'FT'	'FT-SMD'	'FT-NET'	'PT'	'PT-SMD'	Total (lbs.)
2009	41,191,787	7,239,520	1,847,312	226,968	1,502,242	52,007,829
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	4,836,273	1,279,350	199,145	1,276,200	37,372,442
2017	39,613,491	7,150,418	1,740,087	218,980	1,551,776	50,274,752

[4] Majority of these vessels (10 out of 11 in 2010) landed scallops using dredge even though they had a trawl permit.
[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 14. Percentage of scallop landings (lb.) by limited access vessels by permit category

FISHYEAR	'FT'	'FT-SMD'	'FT-NET'	'PT'	'PT-SMD'	Total (lbs.) %
2009	79.20	13.92	3.55	0.44	2.89	100%
2010	79.96	12.70	3.34	0.45	3.56	100%
2011	79.77	13.22	3.50	0.38	3.12	100%
2012	80.32	13.27	3.30	0.40	2.71	100%
2013	82.73	11.00	3.30	0.42	2.56	100%
2014	83.59	10.70	2.96	0.36	2.39	100%
2015	81.79	12.34	2.82	0.43	2.62	100%
2016	79.69	12.94	3.42	0.53	3.41	100%
2017	78.79	14.22	3.46	0.44	3.09	100%

Majority of the LA vessels have home state and primary state of landing in MA followed by NJ, VA and NC (Table 15). The numbers of vessels in home port state and port of landing have remained about same across the years and geographies during 2009-2017.[6]

Table 15. Number of limited access permits (LA only) by home state (Permit data)

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

[6] 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 16. Number of limited access permits (LA only) by primary state (Permit data)

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

1.7.1 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.[7] Council's IFQ program report presented on June 2017 provides a detailed review of the trends of the IFQ fishery during 2010-2015.[8] Table 17 presents the number of IFQ only permits and the scallop landings during 2009-2017. Compared to 2016, the landings by IFQ vessels decreased in 2017 from about 3.5 million pounds to 2.6 million pounds.

Table 17. LAGC IFQ active vessels and landings (excluding LA vessels with IFQ permits)

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

The number of LAGC IFQ permits are summarized by both homeport state and primary port state as identified by the permit owner (Table 21 and Table 22).

[7] 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.

[8] http://s3.amazonaws.com/nefmc.org/3.170615_Draft_LAGC_IFQ_ProgramReview_wAppendicies.pdf

Table 18. Number of LAGC-IFQ permits (IFQ only) by home state (exclude LA vessels)

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

Table 19. Number of LAGC-IFQ permits (IFQ only) by primary state (excludes LA vessels)

PPST	2009	2010	2011	2012	2013	2014	2015	2016	2017
CT	3	2	1	2	3	4	3	4	4
DE	0	0	0	0	0	0	0	1	1
FL	2	2	0	0	0	0	0	0	0
GA	1	1	0	0	0	0	0	0	0
MA	60	45	44	38	37	41	42	45	47
MD	10	8	7	6	5	5	5	6	6
ME	9	5	3	4	3	3	5	3	6
NC	27	21	15	9	10	9	10	13	9
NH	4	1	2	2	1	1	0	0	0
NJ	55	48	45	41	40	44	40	43	39
NY	17	15	15	13	12	13	12	11	10
RI	6	6	6	6	6	4	4	4	4
VA	5	4	3	3	2	3	2	3	2

1.8.1 Trip and Fixed costs

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

1.9.1 Foreign trade of scallop in 2017 (import, export, and re-export)

Historically, Canada, China and Japan have been the major exporters of various scallop products to the U.S. In 2017, U.S. imported $264.46 million worth of scallop products primarily from Canada, China, Japan, and Argentina. Similarly, the top five destinations for the U.S. scallop exports have been Canada, Netherlands, France, Belgium, and United Kingdom. In 2017, the U.S. exported about $138.5 million worth of scallop products primarily to Canada, Netherland, France, Belgium, and United Kingdom. The U.S. also reexported some of its imports at reexport value of $29.16 million primarily to France (63%) and Canada (20%). Thus, the value of net import in 2017 was $235.3 million by accounting for the reexport value. Figure 9 presents the U.S. imports and exports of scallops with major countries in 2017.

Figure 9. U.S. trade of scallop products in 2017