Joint Omnibus Alternative Gear-Marking Framework Adjustment

Including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

September 12, 2025

Prepared by the
National Marine Fisheries Service
In consultation with the
New England Fishery Management Council and
Mid-Atlantic Fishery Management Council

DRAFT DOCUMENT

Framework Adjustment 71 to the Northeast Multispecies Fishery Management Plan

Framework Adjustment 3 to the Atlantic Deep-Sea Red Crab Fishery Management Plan

Framework Adjustment [X] to the Monkfish Fishery Management Plan

Framework Adjustment [X] to the Northeast Skate Complex Fishery Management Plan

Framework Adjustment [X] to the Spiny Dogfish Fishery Management Plan

Framework Adjustment [X] to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan

Proposed Action: Provide alternative surface marking provisions for fixed-gear fisheries in the Greater Atlantic Region to allow the use of fixed gear without a persistent buoy line and reconcile fishery management plan regulations with recent and potential future changes to Marine Mammal Protection Act regulations.

The National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office has prepared this Environmental Assessment (EA) for the Joint Omnibus Alternative Gear-Marking Framework Adjustment in compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.) and NOAA's Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities: Companion Manual for NOAA Administrative Order 216-6A (June 30, 2025).

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1.5 Acronyms

ABC	Acceptable Biological Catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limit
AM	Accountability Measure
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission

ASSRT	Atlantic Sturgeon Status Review Team
BDTRP	Bottlenose Dolphin Take Reduction Plan
BiOp, BO	Biological Opinion, a result of a review of potential effects of a fishery on Protected Resource species
CEA	Cumulative effects analysis
CEQ	Council on Environmental Quality
CPUE	Catch per unit of effort
DAS	Days-at-sea
EA	Environmental Assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EIS	Environmental Impact Statement
EM	Electronic monitoring
EO	Executive Order
ESA	Endangered Species Act
F	Fishing mortality rate
FMAT	Fishery Management Action Team
FMP	Fishery management plan
GAR	Greater Atlantic Region
GARFO	Greater Atlantic Regional Fisheries Office
GB	Georges Bank
GOM	Gulf of Maine
GSIRA	Great South Channel Restricted Area
HAPC	Habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
HPTRT	Harbor Porpoise Take Reduction Plan
LMA	Lobster Management Area
LOA	Letter of Authorization
LOF	List of Fisheries
MA	Mid-Atlantic
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRA	Massachusetts Restricted Area
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NEFMC	New England Fishery Management Council
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OLE	Office for Law Enforcement (NMFS)
OSP	Optimum Sustainable Population
PBR	Potential Biological Removal
PDT	Plan Development Team
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act

SIRA	South Island Restricted Area
SNE	Southern New England
STDN	Sea Turtle Disentanglement Network
STDN	Sea Turtle Disentanglement Network
TRP, ALWTRP	Atlantic Large Whale Take Reduction Plan
TRT, ALWTRT	Atlantic Large Whale Take Reduction Team
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VEC	Valued ecosystem component
VMS	Vessel monitoring system
WNA	Western North Atlantic

2 SUMMARY

This action includes alternatives that would allow additional methods to mark fixed gear in Federal waters of the Greater Atlantic Region (GAR), which includes Federal waters off the coast of Maine through Cape Hatteras, North Carolina. These additional marking methods would apply to all fixed-gear fisheries in the GAR, including Council-managed fixed-gear fisheries and the American lobster/Jonah crab fishery. Thus, this framework adjustment considers the impacts of Federal fixed-gear gear-marking regulation changes for fisheries managed by the New England and Mid-Atlantic Fishery Management Councils under the Magnuson–Stevens Fishery Conservation and Management Act and for American lobster which is managed collaboratively, with states, through the Atlantic States Marine Fisheries Commission. The alternatives considered in this action would result in consistent gear marking requirements across GAR fisheries and could allow for the use of gear without persistent vertical buoy lines, such as on-demand or timed-retrieval rigged fishing gear. This action alone would not allow the immediate use of on-demand or timed-retrieval rigged fishing gear; however, it would allow for future use. Specifically, before on-demand or timed-retiral gear could be used, additional research would be needed to develop all aspects of an operational on-demand or timed-retiral fishery. In addition, gear marking methods would need to be approved before use (see Section 4.3). The use of persistent buoy lines is currently required by Federal fixed-gear fishery regulations, which require the use of surface markers such as radar reflectors, pennants, highflyers, and buoys (see Appendix II for relevant gear-marking regulations). Currently, for fishermen to fish with gear without physical surface markers, they must acquire an Exempted Fishing Permit (EFP). Certain alternatives in this action would allow fishermen to use approved gear-marking alternatives without needing an EFP. None of the alternatives considered in this action would require fishermen to use these additional methods to mark gear if they are fishing in areas where persistent buoy lines are permissible. Allowing fishermen to fish with gear-marking alternatives would allow for future use of alternative gear marks in areas that are closed to persistent buoy lines, such as those created by the Atlantic Large Whale Take Reduction Plan, if and when these systems are approved for use.

Action Alternatives

There are two sets of alternatives in this action. Alternative Set 1[1] considers allowing the use of approved gear-marking alternatives and Alternative Set 2 considers requiring a Letter of Authorization and demonstration of knowledge to use gear-marking alternatives. The alternatives in Sets 1 and 2 are as follows:

Alternative 1A: No Action. This alternative would not allow for alternative gear marking and would maintain current surface marking requirements (radar reflectors, highflyers, etc.).

Alternative 1B: Region-wide alternative gear marking. This alternative would allow the use of alternative gear marking for fixed-gear fishing in all Federal waters within the Greater Atlantic Region.

[1] Note that none of these alternatives would allow the immediate use of on-demand or timed-retrieval rigged fishing gear; however, Alternatives 1B, 1C, and 1D would allow for their future use.

Alternative 1C: Spatially and temporally limited alternative gear marking. This alternative would allow alternative gear marking during, and within, persistent buoy line restricted areas established by the TRP.

Alternative 1D: Spatially limited alternative gear marking. This alternative would allow alternative gear marking within persistent buoy line restricted areas established by the TRP during restriction periods and in the same geographical areas when restriction periods are not in place.

Alternative 2A: No Action. This alternative would not require a person to obtain a Letter of Authorization or demonstrate knowledge of any approved gear-marking alternatives in order to use approved alternative gear markings.

Alternative 2B: Letter of Authorization and Demonstration of Knowledge Requirement. This alternative would require a person to obtain a Letter of Authorization documenting that they have demonstrated knowledge of how to mark gear with an approved gear-marking alternative.

Alternative 2C: Letter of Authorization Only. This alternative would require a person to obtain a Letter of Authorization to use a gear-marking alternative but would not require the demonstration of knowledge to obtain the Letter of Authorization.

Table 1 - Summary of impacts of the alternatives. The following table summarizes the alternatives' impacts by valued ecosystem component (VEC), relative to current conditions. A minus sign (–) signifies a negative impact and a plus sign (+) signifies a positive impact. “Mod” refers to a moderate impact and “Sl” refers to a slight impact. “0” means there are no direct or indirect impacts. None of the impacts are expected to be significant. All expected impacts are described in detail in (Section 6)

Alternatives		**Direct and indirect impacts**			
		Fishery Resources	**Habitat/ Essential Fish Habitat**	**Protected Resources**	**Human communities**
Alternative Set 1: Authorization of approved gear-marking alternatives	**1A:** No Action	0	0	Mod – to Sl +	– to 0
	1B: Region-wide alternative gear marking	0	0	Mod – to Mod +	Sl – to +
	1C: Spatially and temporally limited alternative gear marking	0	0	Mod – to Mod +	+
	1D: Spatially limited alternative gear marking	0	0	Mod – to Mod +	Sl – to +
Alternative Set 2: Requirements to use approved gear-marking alternatives	**2A:** No Action	0	0	Sl indirect – to 0	0
	2B: Letter of Authorization and demonstration of knowledge	0	0	0 to Sl indirect +	Sl – to 0

	2C: Letter of Authorization Only	0	0	Sl indirect – to 0	Sl – to 0

3 BACKGROUND AND PURPOSE

3.1 Background

This framework adjustment is intended to provide fixed-gear fishermen additional harvest opportunities and greater flexibility in their business operations if and when alternative gear markings are approved for use. To provide additional fishing opportunities for fixed-gear fishermen, this framework adjustment would modify current gear-marking regulations to provide increased access to areas where traditional fixed gear with persistent buoy lines is restricted, such as those created by the Atlantic Large Whale Take Reduction Plan (ALWTRP; referred to in this document as TRP) described below. By allowing for alternatives to traditional gear marking to be approved for use, this framework adjustment would provide fishermen with increased gear options.

Section 118 of the Marine Mammal Protection Act (MMPA) mandates that NOAA's National Marine Fisheries Service (NMFS) develop and implement Take Reduction Plans (TRPs) that prevent the depletion and assist in the recovery of certain marine mammal stocks that are killed or seriously injured by commercial fishing gear. The MMPA requires a TRP to: (1) reduce mortality and serious injury to less than a marine mammal stock's Potential Biological Removal (PBR) level within six months of the plan's implementation date, and (2) establishes a long-term goal of reducing serious injury and mortality to insignificant levels approaching a zero mortality and serious injury rate within five years. The MMPA defines PBR as the maximum number of animals, excluding natural mortalities, which may be removed from a stock while allowing that stock to reach or maintain its optimum sustainable population. In accordance with the MMPA, NMFS implemented the TRP in 1997 to reduce deaths and serious injuries of large whales (specifically, right, humpback, and fin whales) from incidental entanglement in U.S. fixed-gear (i.e., tap/pot and gillnet) commercial fisheries. NMFS receives recommendations from the Atlantic Large Whale Take Reduction Team (TRT) on measures to bring fisheries covered by the TRP into compliance with the MMPA.

The TRP has amended in 2021 (86 FR 51970; September 17, 2021) and 2024 (89 FR 8333, February 7, 2024) to reduce risk of serious injury and mortality to North Atlantic right whales caused by entanglement in the Northeast American lobster and Jonah crab trap/pot fisheries. Measures included:

- Increasing the minimum number of traps per trawl based on area fished and distance fished from shore in the Greater Atlantic Region;
- Modifying existing restricted areas for the American lobster and Jonah crab fisheries from seasonal fishing closures to seasonal closures to fishing with persistent vertical buoy lines (i.e., fishing with on-demand/ropeless gear is allowed);
- Expanding the geographic extent of the Massachusetts Restricted Area to include Massachusetts state waters north to the New Hampshire border; in 2024, further expanding the Massachusetts Restricted Area to include Federal waters between the state and 2021 Federal waters restricted areas;
- Establishing two new restricted areas (i.e., LMA 1 and South Island) that are seasonally closed to fishing for American lobster or Jonah crab with persistent buoy lines;

- Requiring modified buoy lines to incorporate rope engineered to break at no more than 1,700 pounds (lb) (771.1 kilograms (kg)) or weak-insertion configurations that break at no more than 1,700 lb (771.1 kg); and
- Requiring additional marks on buoy lines to differentiate vertical buoy lines by principal port state, including unique marks for Federal waters, and expanding requirements into areas previously exempt from gear marking.

Despite these efforts, incidental deaths and serious injuries from U.S. commercial fishing gear continue to exceed the North Atlantic right whale's PBR level, and therefore, pursuant to the MMPA, NMFS is examining new information to determine what measures are necessary to comply with the MMPA. In 2022, the TRT began developing additional recommendations for take reduction measures in all East Coast fixed-gear fisheries managed under the TRP, which includes gillnet and trap/pot fisheries from Maine to Florida. Later in 2022, Congress passed the Consolidated Appropriations Act, 2023, which deemed the 2021 rule (described above) sufficient for the authorization of American lobster and Jonah crab trap/pot fisheries to be in full compliance with the MMPA and Endangered Species Act (ESA) until December 31, 2028. The Consolidated Appropriations Act also requires NMFS to issue ". . . new regulations for the American lobster and Jonah crab fisheries consistent with the [MMPA and ESA] . . . utilizing existing and *innovative gear technologies* [emphasis added], as appropriate" that "take effect by December 31, 2028." The TRT plans to meet in 2026 to begin developing recommendations to meet Congress's deadline.

The TRT plans to meet to develop a suite of recommendations to reduce entanglement risk. The TRT will consider various measures, which may include additional areas and times that restrict the use of persistent buoy lines. There are many possible forms of persistent vertical buoy line restricted areas. For example, they can vary in time and space, such as with seasonal or dynamic closures, and by type of gear allowed, such as allowing no or one persistent buoy line per trawl or set. Current TRP persistent buoy line restricted areas only apply to the American lobster and Jonah crab trap/pot fishery. TRP closure areas for other fisheries are closed to all fixed-gear fishing, even if the gear does not have a persistent vertical buoy line. However, future modifications to the TRP could transition these closures to be persistent buoy line restricted areas instead.

As mentioned above, the changes to the TRP in 2021 allow American lobster and Jonah crab trap/pot fishing without persistent vertical buoy lines in seasonal restricted areas. However, no changes to regulations concerning non-lobster trap/pot or gillnet fishing were made in 2021. As such, the TRP gillnet closures remain closed to all gillnet fishing, irrespective of whether the gear has a persistent buoy line. Thus, gillnet fishermen could not use gear without persistent buoy lines in the gillnet closures, unless the TRP was modified. Future modifications to the TRP could lead to additional areas and times that restrict the use of persistent buoy lines and/or transition these closures to be persistent buoy line restricted areas instead.

The 2021 changes were partly intended to allow for research on fishing methods that do not use persistent buoy lines, with the eventual goal being to allow the fishing industry opportunity to operate in areas where persistent buoy lines are prohibited. However, trap/pot fishermen cannot take advantage of the opportunity to fish in these areas due to surface gear-marking regulations promulgated under the Magnuson-Stevens Act (MSA). Currently, in the Greater Atlantic Region,

Fishery Management Plan (FMP) measures for the Northeast multispecies fishery require bottom-tending fixed gear to be marked with surface buoys, tetrahedral radar reflectors, and/or pennants (50 CFR 648.84(b)). Regional prohibitions extend these gear-marking requirements to any person fishing with bottom-tending fixed gear (50 CFR 648.14(k)(10)). In addition, red crab regulations require buoys on trap trawls to be marked with fishery and vessel identification marks, high flyers, and radar reflectors (50 CFR 648.264(a)(5)). Other fishery management plans (black sea bass and scup) suggest the use of buoys. Similarly, Atlantic Coastal Fisheries Cooperative Management Act regulations require lobster trap trawls of three or fewer traps to be attached to and marked with a single buoy, and require lobster trap trawls consisting of more than three traps to have a radar reflector and a flag or pennant (50 CFR 697.21(b)). See Appendix II for relevant gear-marking regulations.

Because of these surface-marking requirements, fixed gear without a persistent buoy line can only be fished in the GAR with an EFP or letter of acknowledgment, with the latter acknowledging certain activities as scientific research when conducted from a scientific research vessel. In addition, if future modifications to the TRP include additional persistent buoy line restricted areas, (including areas that could be limited to one persistent buoy line or temporary restricted areas due to persistent aggregations of right whales[2]) fixed-gear fishermen could lose access to currently fished areas because of the incompatibility with existing fishery gear-marking regulations. To allow fishermen the opportunity to fish in persistent buoy line restricted areas, current fixed-gear fishery regulations (in 50 CFR 648 and 50 CFR 697) would need to be changed to allow alternatives to the current surface marking requirements.

The American lobster and Jonah crab fisheries are managed by the Atlantic States Marine Fisheries Commission (ASMFC), which coordinates interstate management and may recommend that NOAA Fisheries issues Federal regulations compatible with its Interstate FMP when applicable. However, the Federal lobster gear-marking regulations mentioned above are not in the Interstate FMP for American Lobster. As such, the Commission does not need to modify its Interstate FMP for American Lobster. If the Mid-Atlantic and New England Fishery Management Councils choose an alternative other than no action for Alternative Set 1 in this framework adjustment, then NMFS would consider also changing the gear-marking regulations in CFR 697 for American lobster. This would improve consistency in gear-marking regulations for fixed-gear fisheries in the GAR.

Some of the alternatives in this action could provide a means for fixed-gear fishermen to access fishing grounds that restrict the use of persistent buoy lines by fishing with gear rigged with on-demand or timed-retrieval devices. It's important to note that this would only occur if and when gear-marking alternatives are approved for use. Instead of a persistent buoy line to connect a trap/pot trawl or gillnet string to a surface buoy, an on-demand device uses acoustic technology to activate a retrieval mechanism such as a pop-up buoy, an inflatable lift bag, or a buoyant rope spool. Timed-retrieval devices are designed to function similarly, except they utilize a timer or galvanic link to activate a device retrieval mechanism (on-demand and timed-retrieval rigged fishing gear is further described in Section 5.4.4.3). These devices do not necessarily eliminate the use of rope in fishing gear. Rather, they minimize the duration of time the rope is in the water

[2] In the case of persistent aggregations of right whales, future TRP measures could include requirements that fishermen remove one or more vertical buoy lines if gear removal is impractical.

column to the time that a fisherman is on-site to retrieve the gear, greatly reducing entanglement risk. There is ongoing research to support the development of on-demand and timed-retrieval gear systems and for their use alongside other fishing methods such as traditionally marked fixed-gear and mobile-gear fishing. In addition, ongoing research is focused on developing and improving gear marking and visualization technologies. By using this type of gear as a component of an approved functionally equivalent gear-marking alternative, fixed-gear fishermen could gain access to areas where traditional fishing gear with persistent buoy lines is restricted, currently or in the future.

3.2 Purpose and Need

3.2.1 Alternative Set 1: Authorization of approved gear-marking alternatives

Purpose: The purpose of Alternative Set 1 of this framework adjustment is to establish optional surface marking provisions for fixed-gear fisheries in the Greater Atlantic Region. This regulatory modification would allow for the use of fixed gear without a persistent buoy line if and when alternative gear markings are approved for use in the Greater Atlantic Region.

Need: The need for Alternative Set 1 of this framework adjustment is to provide fishermen opportunities to fish with additional gear-marking methods and allow them to do so in areas that restrict the use of persistent buoy lines, if and when gear-marking alternatives are approved for use.

3.2.2 Alternative Set 2: Requirements to use approved gear-marking alternatives

Purpose: The purpose of Alternative Set 2 of this framework adjustment is to promote the accuracy of alternative gear-marking location information.

Need: The need for Alternative Set 2 of this framework adjustment is to allow for monitoring and oversight of the use of alternative gear-marking and reduce the likelihood of inaccurate gear location marking which could lead to gear conflict, unsuccessful gear retrievals, and reduced fishermen safety.

4 ALTERNATIVES UNDER CONSIDERATION

The Councils considered the alternatives in this section respective to their fisheries and fishery management plans, which included the flowing: Northeast Multispecies; Atlantic Deep-Sea Red Crab; Monkfish; Northeast Skate Complex; Spiny Dogfish; Bluefish; and Summer Flounder, Scup, and Black Sea Bass. NMFS is considering extending the recommended alternatives to the lobster/Jonah crab fishery. The considered alternatives represent a reasonable range of alternatives to address the purpose and need for the action described in Section 3.2.

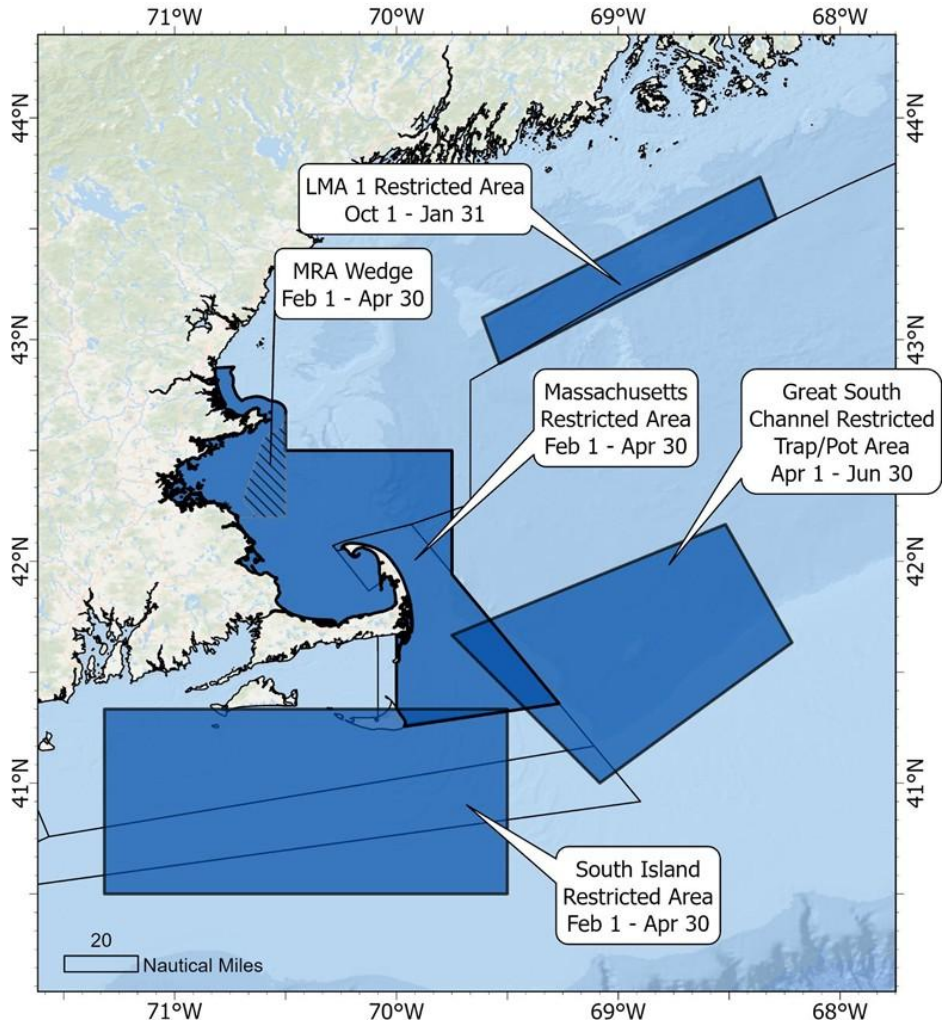
4.1 Alternative Set 1: Authorization of approved gear-marking alternatives

Alternative 1A: No Action. This alternative would not allow for alternative gear marking and would maintain current surface marking requirements (radar reflectors, highflyers, etc.).

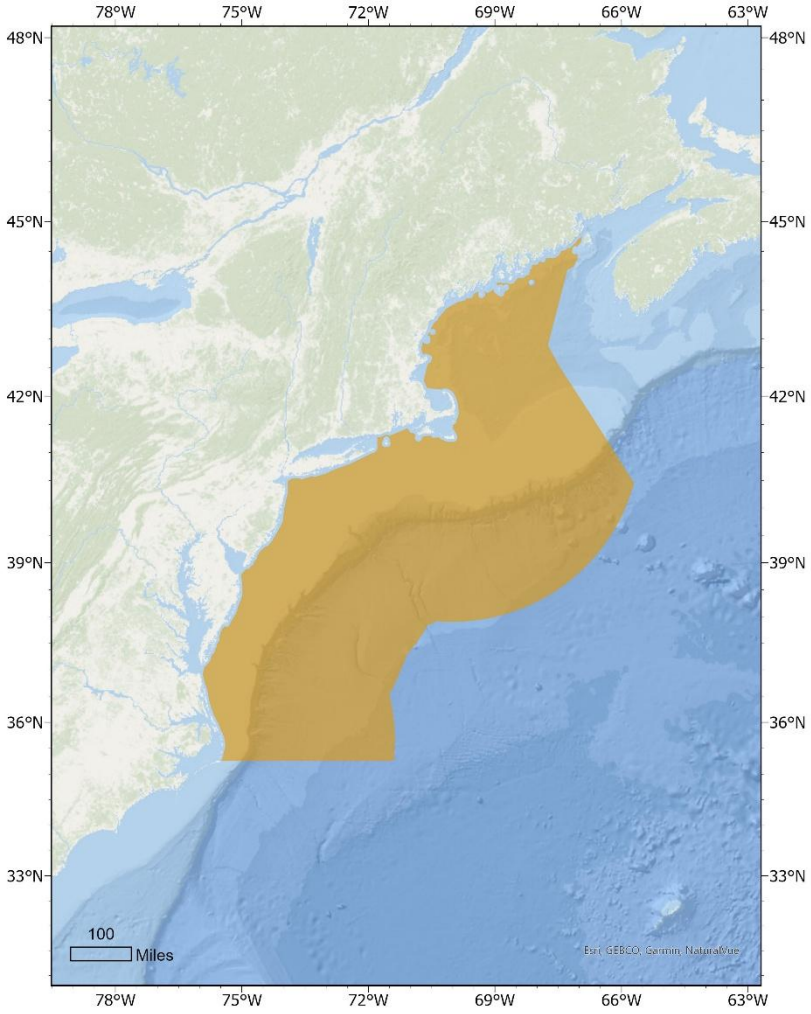
Alternative 1B: Region-wide alternative gear marking. This alternative would allow the use of alternative gear marking for fixed-gear fishing in all Federal waters within the Greater Atlantic Region.

Alternative 1C: Spatially and temporally limited alternative gear marking. This alternative would allow alternative gear marking during, and within, persistent buoy line restricted areas established by the TRP.

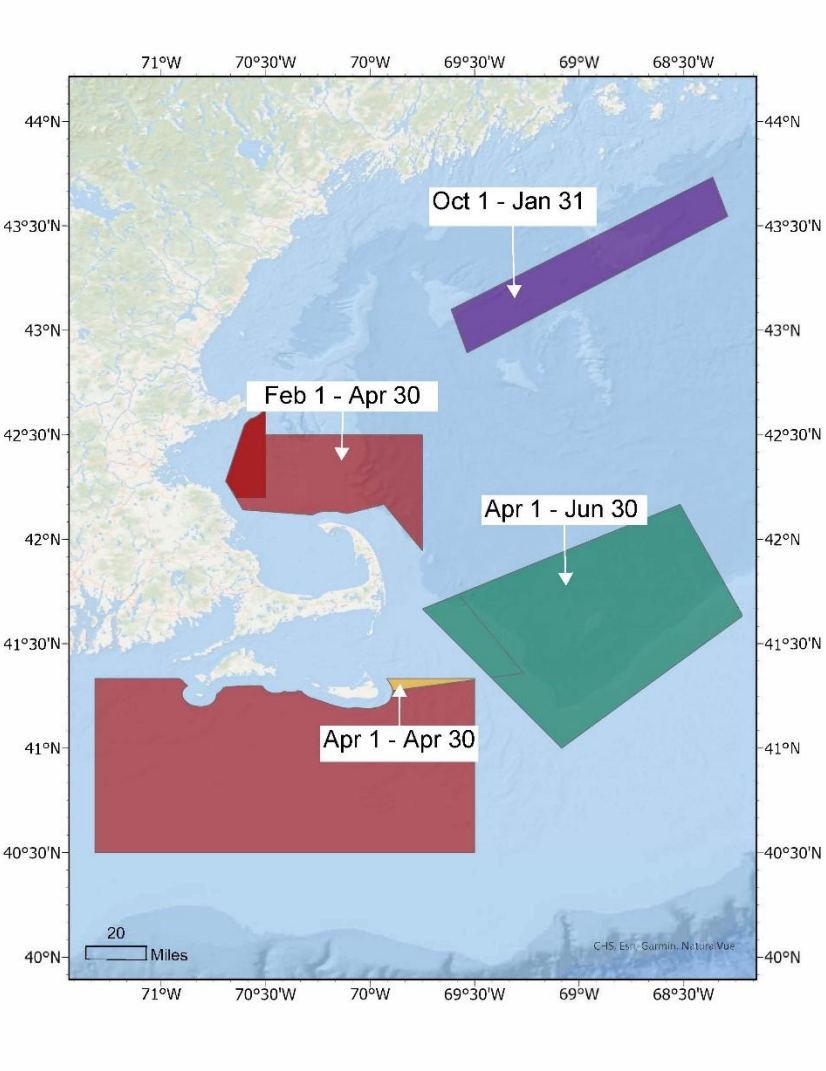
Alternative 1D: Spatially limited alternative gear marking. This alternative would allow alternative gear marking within persistent buoy line restricted areas established by the TRP during restriction periods and in the same geographical areas when restriction periods are not in place.



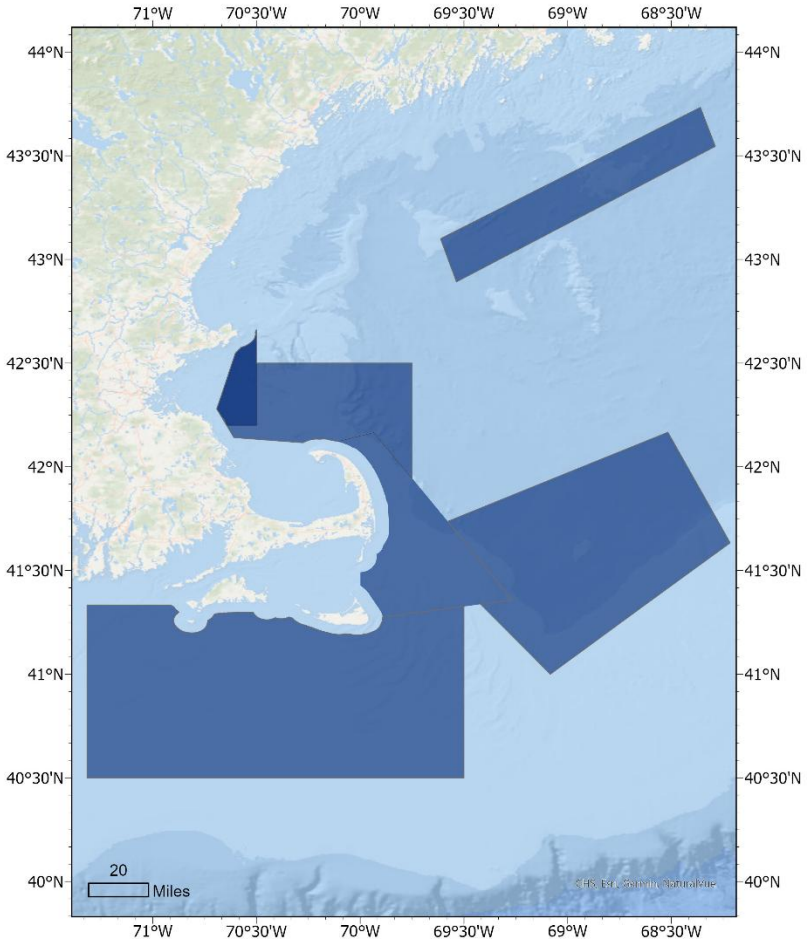
Map 1 – ALWTRP persistent buoy line restricted areas.



Map 2 – Geographical scope of Alternative 1B.



Map 3 – Current geographical scope of Alternative 1C. This map shows the areas and times that federally permitted lobstermen could be able to use gear-marking alternatives based on the current TRP persistent buoy line restricted areas and the Outer Cape Area seasonal closure. Each color represents a specific time frame when gear-marking alternatives would be allowed.



Map 4 - Geographical scope of Alternative 1D.

Discussion: Under **Alternative 1A (No Action)**, fixed-gear fishermen will not be allowed to use gear that does not meet a fishery's current surface marking requirements. This will continue to prohibit fishermen from using alternatively marked gear, including on-demand and timed-retrieval rigged fishing gear. In addition, in areas that allow fixed-gear fishing but prohibit the use of persistent buoy lines, fishermen would remain prohibited from fishing with fixed-gear in these areas because they would not be able to comply with current fishery gear-marking requirements without using a persistent buoy line.

Under **Alternatives 1B**, **1C**, or **1D** fixed-gear fishermen could have the option of fishing in current and future areas that allow fixed-gear fishing but restrict persistent vertical buoy lines. However, before fishermen could fish in these areas, gear-marking alternatives would need to be approved (see Section 4.3). These areas could include various types of restricted areas such as seasonal, dynamic, or one-end-ropeless areas. If **Alternative 1B**, **1C**, or **1D** was adopted for the lobster fishery, it could allow fishermen who hold a Federal Northeast lobster/Jonah crab permit to fish in the trap/pot persistent buoy line restricted areas that are currently in place through the

TRP. If **Alternative 1B**, **1C**, or **1D** was adopted for Council managed fisheries, it would not allow increased fishing access in TRP restricted areas (as explained below). However, for all fisheries under consideration, these alternatives could provide fishermen a means to continue to fish in areas that are persistent buoy line restricted in the future. Map 1 shows the current TRP persistent vertical buoy line closures. It is important to note that the TRP restricted areas and any alternative gear-marking requirements do not supersede other fishery specific closures defined in fishery management plans. Thus, for example, the Outer Cape Lobster Conservation Management Area remains closed to lobster fishing while the closure is in effect, consistent with the Atlantic States Marine Fisheries Commission's Interstate Fishery Management Plan for American Lobster.

Alternative 1B could allow approved gear-marking alternatives in the entire Greater Atlantic Region (GAR) (Map 2) and their use would not be restricted to the times or geographical scope of TRP areas. If Alternative 1B was adopted for the lobster fishery, federally permitted lobster vessels could fish with approved alternative gear anywhere in the GAR, including in the TRP persistent buoy line restricted areas: Lobster Management Area 1, Great South Channel, South Island, and Massachusetts and Massachusetts Wedge (See Map 1 and Section 5.5 for Restricted Area maps). If Alternative 1B was adopted for Council managed fisheries, fixed-gear fishermen could fish with approved alternative gear outside the TRP restricted areas. It is important to clarify that current TRP gillnet closures are not persistent buoy line restricted areas – specifically, the Cape Cod Bay and Great South Channel Restricted Areas. Instead, these closures restrict all gillnet fishing. Thus, none of the alternatives in this action would allow gillnet fishing in the TRP gillnet closures unless the TRP was modified. For both the lobster fishery and Council-managed fisheries, this alternative would not necessarily result in gear-marking alternatives being allowed in the entire GAR as future approval would be needed and could be area specific (see Section **Error! Reference source not found.**4.3).

Alternative 1C would only allow alternative gear marking *in areas where* and *during times when* TRP persistent buoy line restricted areas are in effect (Map 3). This would apply to all restricted areas that are in place at any given time. Thus, if the current restricted areas change in location or season, fishermen's ability to use gear-marking alternatives would also change in location and season. If new persistent buoy line restricted areas are created or current ones are removed, fishermen would also gain or lose the ability to use gear-marking alternatives in those areas. Currently, TRP persistent buoy line restricted areas only apply to the Northeast lobster/Jonah crab fishery. As such, if the Councils recommended Alternative 1C, fishermen in fisheries under Council jurisdiction would only gain additional fishing access if current TRP gillnet or other trap/pot closures are changed from fishing closures to persistent buoy line restricted areas or new persistent buoy line restricted areas are created. Whereas, if Alternative 1C was applied to the lobster fishery, lobstermen could gain access to persistent buoy line restricted areas that are currently in place and have access to any new persistent buoy line restricted areas that are developed in the future.

Alternative 1D would allow the use of alternative-gear marking *within* the geographical bounds of persistent buoy line restricted areas (in the same manner as **Alternative 1C**) but would also expand access to allow the use of gear-marking alternatives all year, even when restricted areas are not in effect (Map 4). As with **Alternative 1C**, if restricted areas are changed, removed, or created, the location of where alternative gear markings could be used would also shift.

Alternatives 1B, **1C**, or **1D** would not require the use of alternative gear markings, nor would they limit the use of traditional fishing gear with persistent buoy lines. Allowing gear-marking alternatives could provide increased fishing opportunities for lobstermen in the GAR by providing access to current TRP persistent buoy line restricted areas, and for all fixed-gear fishermen for any future areas that may restrict the use of persistent buoy lines. Allowing the use of gear-marking alternatives in the entire GAR (**Alternative 1B**) would provide the most flexibility for fishermen to fish with their preferred gear in both restricted and non-restricted areas. However, as described in Section 4.3, for **Alternatives 1B**, **1C**, or **1D**, gear-marking alternatives would need to be approved before they could be used. The alternatives in this action only apply to Federal waters and would not change state gear-marking requirements. None of the alternatives would supersede any other fishery specific closures, such as the Outer Cape Area seasonal closure.

4.2 Alternative Set 2: Requirements to use approved gear-marking alternatives

Alternative 2A: No Action. This alternative would not require a person to obtain a Letter of Authorization or demonstrate knowledge of any approved gear-marking alternatives in order to use approved alternative gear markings.

Alternative 2B: Letter of Authorization and Demonstration of Knowledge Requirement. This alternative would require a person to obtain a Letter of Authorization documenting that they have demonstrated knowledge of how to mark gear with an approved gear-marking alternative.

Alternative 2C: Letter of Authorization Only. This alternative would require a person to obtain a Letter of Authorization to use a gear-marking alternative but would not require the demonstration of knowledge to obtain the Letter of Authorization.

Discussion: This alternative set would only be considered if an alternative other than **Alternative 1A (No Action)** was chosen for Set 1. **Alternative 2A (No Action)** would not create a requirement to obtain a Letter of Authorization (LOA) or require that individuals demonstrate they understand how to use a gear-marking alternative prior to use. **Alternatives 2B** and **2C** would require all federally permitted fishermen to obtain an LOA issued by NOAA Fisheries to be authorized to fish with an approved gear-marking alternative in Federal waters. **Alternative 2B** would require knowledge demonstration as part of the LOA application process and **Alternative 2C** would not.

LOAs help ensure that NOAA Office of Law Enforcement and partner agencies have the information they need to evaluate whether the requirements of specific regulatory programs are complied with, such as fishing with certain gear types, possessing specific species in specific size ranges or amounts, or fishing in certain areas. Individuals apply for LOAs through the web-based system Fish Online. LOAs often require adherence to specific conditions and reporting requirements and often have a limited validity period, requiring renewal to maintain the LOA. The Greater Atlantic Regional Fisheries Office currently issues LOAs for several fisheries such as the Raised Footrope Trawl Whiting Fishery. This LOA allows a vessel fishing with gear capable of catching groundfish to temporarily fish with gear specifically exempted by the Northeast Multispecies FMP from the minimum mesh size restrictions when fishing for whiting

or offshore hake in the Raised Footrope Trawl Whiting Fishery Exemption Area. To participate in this exemption program a vessel must comply with certain requirements such as a minimum mesh size and use of a raised footrope trawl. Additional information on the LOA process, and a list of the LOAs that are currently available from the Permits Office of the Greater Atlantic Region, can be found on NOAA Fisheries' Greater Atlantic Region Forms and Applications Summary webpage and Letters of Authorization Programs in the Greater Atlantic Region webpage, which summarizes the requirements for each LOA program.

Alternatives 2B and **2C** would require vessel owners, on an annual basis, to obtain an LOA from NOAA. Vessel owners or operators fishing with approved alternatively marked gear would need to maintain the LOA onboard the vessel when fishing with such gear to document that the use of such gear is permitted. The LOA would include the following information:

- Owner Name(s),
- Vessel Identification (Federal permit number, State Registration or USCG Official Number
- Location information where fishing with alternatively marked gear would take place,
- Any other information determined by the (GARFO) Regional Administrator.

Requiring an LOA to use gear-marking alternatives would result in a list and number of vessels authorized to use gear-marking alternatives. This could be a useful resource for law enforcement and managers to understand how many vessels are using gear-marking alternatives, generally where gear-marking alternatives are being used, and track compliance with any future approvals of alternatively marked gear.

Alternative 2B would require that issuance of an LOA be, in part, contingent on a vessel operator satisfying an educational requirement. After meeting any conditions and obtaining an LOA, the vessel operator would be authorized to fish with a gear-marking alternative. The concept of a requirement to demonstrate some level of knowledge and/or experience with gear-marking alternatives to be authorized to use them is drawn from similar requirements in other fisheries. **Alternative 2B** is focused on the demonstration of relevant knowledge in contrast to some form of training as the goal of this alternative set is to have accurate location markings. The method by which fishermen learn to mark their gear is not as important. What is essential is that they know how to mark gear location accurately, and requiring knowledge demonstration supports fishermen having this knowledge prior to using gear-marking alternatives. Examples of how such a requirement could be structured can be drawn from the Harbor Porpoise Take Reduction Plan's (HPTRP) pinger training program, the Highly Migratory Species' shark endorsement program, and the electronic monitoring (EM) program in the groundfish, Atlantic herring, or Atlantic Mackerel fisheries. Each is briefly described below.

- **The Harbor Porpoise Take Reduction Plan's (HPTRP) pinger training program:** Under the HPTRP, gillnet gear used in specific areas during specific times is required to be equipped with pingers. The operator of a vessel may not fish with, set, or haul back sink gillnets or gillnet gear, or allow such gear to be in closed areas where pingers are required unless the operator has satisfactorily completed the pinger training program and possesses on board the vessel a valid pinger training authorization issued by NOAA Fisheries. After completing training, the pinger training authorization does not expire.

The relevant regulatory text is located at 50 CFR 229.33(c). More information can be found on the HPTRP webpage and training requirements are described on page 4 of the HPTRP: New England.

- **The Highly Migratory Species' shark endorsement program:** To fish for sharks, a vessel owner must obtain a shark endorsement on their Highly Migratory Species permit. To obtain the endorsement, a vessel owner must watch an educational video and complete an accompanying quiz. The vessel owner is prompted to do this during the completion of the permit application. The quiz does not require a set score to pass and is only intended to educate the permit applicant. The relevant regulatory text is located at 50 CFR 635.4(j)(4). Similarly, Atlantic shark dealers are required to complete an identification workshop before they can purchase sharks (50 CFR 635.8(b)). More information and the above-mentioned video can be found on Atlantic Highly Migratory Species Permits webpage and the Fishery Compliance Guides webpage.
- **Electronic Monitoring (EM) Program:** Amendment 23 to the Northeast Multispecies Fishery Management Plan approved EM technologies as an alternative to human at-sea monitors. Regulations at 50 CFR 648.11(l)(10)(i) establish EM system requirements for vessels, including the need for a vessel monitoring plan (§648.11(l)(10)(i)(B)). GARFO's annual sector operations plan guidance provides additional information on vessel operator and vessel monitoring plan requirements and roles and responsibilities. Among these is a requirement to demonstrate competency with the EM equipment after installation, and before usage, by completing one "burn-in" trip that demonstrates that the vessel's EM system is fully operational (i.e., the system is working properly, camera views are adequate, and the captain and crew are familiar with and capable of complying with the catch handling requirements). Additional "burn-in" trips may be required, if necessary, to sufficiently demonstrate the system is fully operational and/or to demonstrate that the crew understands how to handle catch. Northeast Fisheries Science Center staff ensure that the electronic monitoring data collected are sufficient to meet data collection standards and approve vessel monitoring plans.

The procedure for how an individual would demonstrate knowledge has yet to be developed. However, the above examples provide a range of possibilities for how the knowledge demonstration requirement could be structured. The intention of requiring knowledge demonstration is to promote the accurate location marking of alternatively marked gear. Improper gear marking could lead to gear conflict and result in lost or damaged gear. Alternative gear marking is a developing technology, and some decisions have yet to be made regarding how approved gear-marking alternatives will operate on a larger scale in the GAR. For instance, while automatic marking of on-demand gear or timed-retrieval gear at the time of deployment is technologically feasible, it is not currently a requirement. If automatic marking was required along with the use of cloud-based location sharing, there may be minimal, or no, information that fishermen would need to demonstrate regarding their ability to accurately mark gear locations. The specifics of the knowledge demonstration requirement of **Alternative 2B** are, in part, dependent upon the further development of alternative gear marking technology and future management decisions. In addition, manufacturer provided educational materials or user manuals could provide an adequate amount of information for fishermen to be able understand how to mark gear with a high degree of accuracy. The procedure for how knowledge demonstration would be conducted would be guided by its purpose of increasing accuracy of location

information. Achieving this would be balanced with the aim of being minimally burdensome to both fishermen and those administering any educational components. It would be counter to the goals of this action for any educational components or knowledge demonstration to be so burdensome as to hamper the adoption of gear-marking alternatives.

4.3 Input on Functional Equivalence and Approval Process

Through Alternative Sets 1 and 2, the New England and Mid-Atlantic Fishery Management Councils are recommending to NOAA Fisheries where and when approved, functionally equivalent gear markings should be allowed. The Councils can also provide input on this section, which describes two additional aspects of gear-marking alternatives: its approval process and the elements that make alternatively marked gear functionally equivalent to gear with surface markers. While this action considers *allowing* the use of gear-marking alternatives, the Greater Atlantic Regional Administrator would still need to *approve* gear-marking alternatives before these gears would be authorized for use. Note that, in the above description, the word "could" is often used, instead of "would," to describe whether fishermen would gain access to persistent buoy line restricted areas. Unless, and until, the Regional Administrator approves gear-marking alternatives, fishermen would still be required to affix surface markers to their fixed gear.

Upon written request, the Regional Administrator would review and consider for approval the devices and technologies that are needed for gear without a persistent buoy line to perform as a functionally equivalent alternative to current gear markings. These devices and technologies, combined, would need to allow for the deployment, retrieval, and location marking, sharing, and displaying of fixed gear without physical surface markings. The Regional Administrator may approve individual devices and technologies or may approve a combination of devices and technologies that function together. For example, an on-demand gear manufacturer may produce an on-demand system that allows for the deployment, retrieval, and location marking of fixed-gear but does not provide a means for the gear's location to be broadly shared with or visualized by other ocean users. In this case, the Regional Administrator could approve this manufacturer's on-demand system. However, this system would need to be used in conjunction with an approved method for sharing and visualizing gear. A list of approved gear-marking alternatives would be posted on the NMFS Greater Atlantic Regional Fisheries Office website. This list would be intended to clearly convey to fishermen what devices and technologies are approved gear-marking alternatives and, thus, what could be used in lieu of physical surface markings.

When reviewing a request, the Regional Administrator would consider whether a potential gear-marking alternative is functionally equivalent to current physical surface markings. The seven elements that constitute a functional equivalent are detectability, retrievability, identification, enforceability, viewing distance, set direction, and timing. Each of these elements is described below. These elements were determined to be key functions of current physical surface markers. They are intended to be widely applicable but may be applied differently depending on the specific conditions of a location where the gear-marking alternatives are being considered for approval. While not all surface markers perform all of these functions under all conditions, these elements are intended to describe the functions that alternative gear markers should reproduce. In addition, when developing these elements, the Plan Development Team/Fishery Management Action Team (PDT/FMAT) for this action acknowledged that the elements of viewing distance, set direction, and timing are not always critical in the determination of whether a gear-marking

alternative is functionally equivalent. As such, there may be certain circumstances where the Regional Administrator would approve a gear-marking alternative that does not meet these three elements. However, the PDT/FMAT also highlighted that these elements could be critical in some circumstances and should be considered in the approval process. Furthermore, these elements could be further refined through stakeholder input.

Detectability: Ocean users can locate the gear. An application requesting approval must provide a description of how gear locations would be available visually or virtually and any required specialized equipment to detect the gear. While there may be several methods or platforms that allow gear to be located and/or visualized, there must be at least one method that is accessible to all ocean users. For example, if the only method to locate gear was to pay for a subscription service that then granted the subscriber the ability to locate gear, this would not meet the detectability element of a functional equivalent.

Retrievability: Gear has an identified means of retrieval. Traditionally marked fixed gear (i.e., fixed gear fished with buoys, pennants, or radar reflectors) includes a persistent buoy line that connects the surface markers to the gear below, which enables hauling of the gear from the ocean floor. A vessel must have a means to retrieve its gear, and that method must be identified. Such information would be critical to enforcement or others needing to haul the gear.

Identification: Gear is marked with identifying information that emulates what is currently required. Different fisheries require fixed gear to be marked with various identifying information. For example, lobster gear must be marked with a trap tag. Scup traps or pots must be marked with an identification code. Black sea bass traps or pots must be marked with the vessel's United States Coast Guard (USCG) documentation number or state registration number. Buoys on the end of red crab trawls must be marked with the vessel's permit number, the total number of trawls used by the vessel, and the letters "RC." Also, all persons must adhere to the groundfish gear-marking requirements which specify that fixed gear must have the name of the owner or vessel or the official number of that vessel permanently affixed to the gear so that it is visible on the surface of the water. In addition, the TRP requires specific surface buoy markings. To be a functional equivalent, a gear-marking alternative would need to replicate all applicable identification marking requirements. For example, while gear may no longer have the owner or vessel number affixed to gear at the water's surface, that information would need to be easily accessible by ocean users on alternatively marked gear such as when they are viewing virtual gear markings on a navigational display.

Enforceability: Enforcement is able to locate, retrieve, and redeploy the gear. If applicable, an application must describe the means by which law enforcement can locate, retrieve, and redeploy the gear and any necessary equipment and/or training needed to accomplish those tasks.

Viewing distance: Gear can be detected/located from a similar minimum distance as current surface markings. This action does not specify any specific maximum or minimum viewing distance. While, throughout the development of this action, it was noted that it may be undesirable to allow alternatively marked gear to be viewable by all people from shore, it was determined that setting a maximum viewing distance is outside the scope of this action. For safety and gear conflict avoidance, a minimum viewing distance may be highly desirable. However, traditional, physical surface markers can be seen from varying distances depending on

the type of markings (such as buoys versus flags/pennants and radar reflectors), weather, time of day, and other conditions. Considering this, it is impractical for alternatively marked gear to replicate the distances that physical surface markers are viewable in all situations. As such, setting one standard minimum viewing distance may be desirable from a practical operational standpoint. However, it was determined that doing so would not be necessary for a gear-marking alternative to be a functional equivalent to current physical surface markings. Nevertheless, the Regional Administrator would consider the distances that gear-marking alternatives are viewable by other ocean users when determining their functional equivalence.

Set direction: The set direction of the gear string or trawl is identifiable. Some gear-marking regulations require that the eastern-most and the western-most ends of trawls be marked differently, thus providing a means to identify set direction of fixed gear. While not all fixed gear is currently required to indicate set direction, these types of markings can be very useful in conveying the location and orientation of gear on the ocean floor. Similarly, while set direction for virtually marked gear may not be essential to replicate all current marking requirements, it is highly beneficial in conveying the location of fixed gear. Thus, it is recommended that set direction be included as an element of functional equivalence.

Timing: Gear location information is accessible by others at the time of deployment and while the gear persists in the water. If other ocean users are accessing gear location information through the cloud, fishermen who are setting alternatively marked gear would need to share gear location data via an internet connection at the time of gear deployment. In addition, gear location information needs to be updated when the gear is retrieved to indicate that the gear is no longer in the water. Real-time location marking and sharing may not be necessary in all situations such as where the potential for gear conflict is low. However, because there are many areas throughout the GAR where fishermen fish in close proximity to each other's gear, real-time marking was determined to be an important consideration when evaluating an alternative gear marking's functional equivalence. Also, when considering timing as an element of functional equivalence, it is important to note that physical surface markings are not always visible due to tides, weather, lighting, or other reasons. As such, gear-marking alternatives could increase the ocean users' ability to detect and locate fixed-gear in various conditions, as compared to traditional surface markings.

In addition to reviewing the gear-marking alternative's functional equivalence, the Regional Administrator would also consider *where* each gear-marking alternative should be approved for use as part of the approval process. For example, some alternatives may be more appropriate for fishing in shallower, nearshore waters versus deeper, offshore waters, or for fishing in areas of high fishing density versus low fishing density. This aspect of the approval process is important specifically when considering **Alternative 1B**. Even though **Alternative 1B** would allow alternative gear marking to be approved in the entire GAR, the Regional Administrator might not approve a particular alternative or any alternative in certain locations. This also applies to **Alternatives 1C** and **1D**; however, their geographical scope is more restricted than **Alternative 1B** and thus there may not be as many situations where the use of an alternative gear marking would need to be further geographically restricted.

The approval process for gear-marking alternatives is intended to be flexible enough to respond in a timely manner to changes in gear-marking technology. As such, the process described

above, if implemented, could be iterated upon to respond to changing needs or further technological developments. By considering functional equivalence and the location of use, gear-marking alternatives should replicate the essential functions of current surface markers, where appropriate.

5 AFFECTED ENVIRONMENT

5.1 Introduction

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

5.2 Affected Species

5.2.1 Atlantic Bluefish

Atlantic bluefish (*Pomatomus saltatrix*) is a migratory pelagic species found in most temperate and tropical marine waters throughout the world. Along the U.S. Atlantic coast, bluefish commonly are found in estuarine and continental shelf waters. Bluefish are a schooling species that migrate in response to seasonal changes, moving north and inshore during spring and south and offshore in the late autumn. The Atlantic bluefish fishery exploits what is considered to be a single stock of fish.

Based on the most recent stock assessment in 2025, bluefish are not overfished and overfishing is not occurring (NEFSC 2023). The 2025 assessment used the analytical state-space Woods Hole Assessment Model (WHAM) assessment model and reference points through 2024.

The Mid-Atlantic Fishery Management Council began developing the Atlantic Bluefish Fishery Management Plan (FMP) in 1979 in response to a petition by concerned fishermen reacting to developments in international markets for bluefish. The final FMP was adopted as a joint plan between the Mid-Atlantic Council and the Atlantic States Marine Fisheries Commission in 1989. The FMP was approved and implemented in 1990. Amendment 1 to the FMP was developed in response to the Sustainable Fisheries Act amendments to the Magnuson-Stevens Act and implemented in 2000 and established a plan to rebuild the stock within 7 years using a constant fishing mortality strategy. In order to come into compliance with the revised Magnuson-Stevens Act, the Mid-Atlantic Council developed an Annual Catch Limit (ACL) and Accountability Measure (AM) Omnibus Amendment for all of its FMPs. The ACL/AM Omnibus Amendment (Amendment 3 to Atlantic Bluefish FMP) implemented ACLs and AMs for this fishery. Implemented in 2014, Amendment 4 to the FMP modified the AMs for the Council's recreational fisheries. Amendment 7, approved in 2021, to the FMP revised the allocation of annual quota between the commercial and recreational sectors, reallocated the commercial quota between the states, and implemented a 7-year rebuilding plan. In 2023, NMFS implemented Framework 6 to the FMP which revised the process for setting recreational management measures and recreational accountability measures for bluefish.

The primary gear types used in the commercial fisheries that land bluefish include gillnets, rod and reel, and otter trawls, although there are small, localized fisheries, such as the beach seine fishery that operates along the Outer Banks of North Carolina that also catch bluefish. Other gear, including fixed gears are authorized in the fishery. Recreational fishing, which dominates

the catch of bluefish, is almost exclusively rod and reel, and includes shoreside recreational anglers, party/charter boats, and private recreational boats. There is substantial seasonality to both the commercial and recreational fisheries for bluefish due to the migratory nature of the species.

For additional information on bluefish, the FMP, and fishery, see the 2024-2025 Bluefish Specifications.

5.2.2 Atlantic Deep-Sea Crab

The Atlantic deep-sea red crab (*Chaceon quinquedens*) is a deep-water brachyuran crab that occurs in a patchy distribution on the continental shelf and slope from Nova Scotia to Florida. Though the species is found primarily within a 200-1,800 meter depth band along the continental shelf and slope, red crabs have also been located in some deep-water canyons along the coast and can also be found in the Gulf of Maine. Preferred depth depends, in part, on the characteristics of individual crabs. Young crabs dwell in considerably deeper water than adults and males are typically found deeper than females. The red crab is a slow-growing species that may not spawn annually. It is long-lived, with some individuals surviving for up to 15 years. These characteristics make it particularly susceptible to depletion by overfishing.

Despite red crab being a data poor stock, it was most recently assessed in a 2023 management track assessment. The fishery is not experiencing overfishing, while the overfished status is unknown. Recent fishery information, including landings, landing per unit of effort, port samples, discard information, economic data, and the small number of limited access vessels targeting red crabs suggest there has been no change in the size of the red crab stock since Amendment 3 was implemented in 2011.

There has been a small, directed fishery off the coast of New England and in the Mid-Atlantic for red crab since the early 1970s. Though the size and intensity of this fishery has fluctuated, it has remained consistently small relative to more prominent New England fisheries such as groundfish, sea scallops, and lobster. Landings increased substantially after 1994, when implementation of Amendment 5 to the Northeast Multispecies FMP may have led some fishing effort to redirect onto “under-exploited” fishery resources such as red crab. In 1999, at the request of members of the red crab fishing industry, the New England Council began development of an FMP to prevent overfishing of the red crab resource and address a threat of overcapitalization of the red crab fishery. NMFS implemented emergency regulations to prevent overfishing of the resource during the time the FMP was being developed. The FMP was implemented in 2002. The primary management control was to establish a limited access permit program for qualifying vessels with documented history in the fishery. Other measures implemented under the FMP included days-at-sea (DAS) limits, trip limits, gear restrictions, and limits on processing crabs at sea. Framework Adjustment 1 provided for a 3-year, rather than annual, specification-setting process. Amendment 3 was implemented in 2011 to bring the FMP into compliance with the revised Magnuson-Stevens Act by implementing ACLs and AMs. Amendment 3 also revised the management measures, by eliminating DAS and the vessel trip limit. The directed, limited access red crab fishery is a male-only fishery, that is currently managed with a “hard” quota (i.e., the fishery is closed when the quota is reached), gear restrictions, and limits on processing crabs at sea. Since Amendment 3, the New England

Council's red crab actions have set multi-year specification, including the 2024-2027 specifications which establish a total allowable landing (TAL) of 2,000 mt.

The targeted red crab fishery is prosecuted with pot/trap gear.

For additional information on the Atlantic Deep-Sea Red Crab FMP and fishery, see the 2024-2027 red crab fishery specifications.

5.2.3 Monkfish

The monkfish (*Lophius americanus*, also known as goosefish) is a member of the anglerfish family Lophiidae, fishes distinguished by an appendage on the head known as the illicium which has a fleshy end (esca) that acts as a lure to attract prey to within range of its large mouth. Monkfish have a large, bony head and are harvested for their livers and the tender meat in their tails. The species is distributed widely throughout the Northwest Atlantic, from the northern Gulf of St. Lawrence to Cape Hatteras, NC, and is known to inhabit waters from the tide-line to depths as great at 840 meters across a wide range of temperatures. Adults have been found on a variety of substrate types including hard sand, gravel, broken shell, and soft mud. Spawning occurs in May and June from Cape Hatteras to southern New England. Mature females, which are slightly larger than males, produce a non-adhesive, mucoid egg raft or veil which can reach 20-40 feet in length and ½-5 feet in width. During spawning, this large mass of eggs can account for up to 50 percent of a female's body mass. Monkfish are managed as two stocks, a northern stock from Maine to Cape Cod, MA, and a southern stock from Cape Cod to North Carolina.

The most recent stock assessment was the 2022 Management Track Assessment, which assessed both the Northern and Southern stocks of monkfish. The assessment updated fishery catch from all sources through 2021 and evaluated fishery-independent survey indices. However, no analytical assessment is available for monkfish due to the lack of reliable aging technology. As a backup method for providing catch advice, an empirical method known as Ismooth (previously planBsmooth) was updated and used to provide catch advice. In 2022, stock status for both stocks of monkfish was changed from not subject to overfishing and not overfished to unknown overfishing and overfished statuses.

During the early 1990s, fishermen and dealers in the monkfish fishery addressed both the New England and Mid-Atlantic Councils with concerns about the increasing amount of small fish being landed, the increasing frequency of gear conflicts between monkfish vessels and those in other fisheries, and the expanding directed trawl fishery. In response, the Councils developed a joint FMP that was implemented in 1999. The FMP was designed to stop overfishing and rebuild the stocks through a number of measures, including: limits to the number of vessels with access to the fishery and DAS allocations to those vessels; trip limits for vessels fishing for monkfish; minimum fish size limits; gear restrictions; mandatory time out of the fishery during the spawning season; and a framework adjustment process. The Monkfish FMP has been modified by multiple amendments and framework adjustment actions since 1999. Amendments have implemented more substantial changes to the FMP, while framework adjustments implement less substantive revisions to existing measures or specify annual catch levels. Amendment 2, implemented in 2005, included restrictions on otter trawls in certain areas, made the minimum fish size consistent in all areas, closed two offshore canyons to monkfish fishing, created a monkfish research DAS set-aside program, and created new permit categories for fishing in

designated areas, among other measures. In 2011, Amendment 5 implemented a process to establish acceptable biological catch (ABC) amounts and annual catch limits (ACLs), along with accountability measures (AMs) to prevent overfishing if such catch limits are exceeded, to bring the FMP into compliance with the Magnuson-Stevens Reauthorization Act. Various framework adjustments have generally specified appropriate fishing measures (days at sea and trip limits) for each management area to achieve, but not exceed, annual catch targets. Finally, and most recently, Framework 15 was developed in conjunction with the Mid-Atlantic Fishery Management Council, to establish measures to reduce bycatch of Atlantic sturgeon in the monkfish and spiny dogfish large-mesh gillnet fisheries.

The northern and southern areas have distinctions in terms of gear type. Since at least 1980, monkfish landings in the NFMA have largely been by vessels using trawls, 84% on average since 2012. In the SFMA, landings were primarily by vessels using dredges and trawls from 1980 to the early 1990s. Through the 1990s and to today, gillnets have been the predominant gear for vessels landing monkfish, 72% on average since 2012. Scallop dredges also catch monkfish, but in much smaller amounts (less than 5 percent of reported landings). No other gear types account for more than trace landings of monkfish. There is no recreational component to this fishery (NEFMC 2023).

For additional information on monkfish, the FMP, and fishery, see Framework 15 to the Monkfish FMP.

5.2.4 Northeast Multispecies

Sixteen species of groundfish are managed under this FMP. Thirteen species are managed as part of the large-mesh complex, based on fish size and type of gear used to harvest the fish, and three species are included in this FMP as the small-mesh complex but are managed under a separate small-mesh multispecies program. While these sixteen groundfish species exhibit unique body types, behaviors, and habitat preferences, all are demersal, living near the bottom and feeding on benthic organisms. Groundfish are found throughout New England waters, from the Gulf of Maine to southern New England.

Table 2 – NOAA Fisheries large- and small-mesh multispecies stock status determinations.

Stocks	Overfishing?	Overfished?
Gulf of Maine Cod*	Yes	Yes
Georges Bank Cod*	Yes	Yes
Georges Bank Haddock	No	No
Gulf of Maine Haddock	No	No
Georges Bank Yellowtail Flounder	Unknown	Yes
Southern New England/Mid-Atlantic Yellowtail Flounder	No	Yes
Cape Cod/Gulf of Maine Yellowtail Flounder	No	No
American Plaice	No	No
Witch Flounder	Unknown	Yes
Georges Bank Winter Flounder	No	No
Gulf of Maine Winter Flounder	No	Unknown

Stocks	Overfishing?	Overfished?
Southern New England/Mid-Atlantic Winter Flounder	No	No
Acadian Redfish	No	No
White Hake	No	No
Pollock	No	No
Northern Windowpane Flounder	No	Yes
Southern Windowpane Flounder	No	No
Ocean Pout	No	Yes
Atlantic Halibut	Unknown	Yes
Atlantic Wolffish	No	Yes
Northern Silver Hake (Whiting)	No	No
Southern Silver Hake	No	No
Offshore Hake	Unknown	Unknown
Northern Red Hake	No	No

*The Council is considering modifications to its cod stocks. If the Council makes recommendations to modify the cod stocks in the FMP and NOAA Fisheries approves those modifications, future status determinations would be made

While groundfish has been managed in some form since the 1980s, today's large-mesh management regime is largely influenced by Amendments 13 and 16 to the Northeast Multispecies FMP. Amendment 13, implemented in 2004, established a system of effort controls (i.e., categories of days at sea); enabled the Council to create/allow "special access programs" for healthy stocks; allowed sectors of the groundfish fishing industry to develop their own sector allocation plan; included an adaptive approach for rebuilding groundfish stocks that requires biennial adjustments to management measures; and implemented several provisions of the U.S./Canada Resource Sharing Understanding. Since Amendment 13 was implemented, several framework adjustments have been developed to modify, fully implement, and/or comply with various provisions of Amendment 13. Amendment 16 was implemented May 1, 2010 and provided major changes in the realm of groundfish management. Notably, it greatly expanded the sector program and implemented ACLs in compliance with 2006 revisions to the Magnuson-Stevens Act. As a result of this amendment, about 95 percent of the fishery chose to operate in a form of cooperative referred to as a sector, subject to strict limits on catch. These vessels are not subject to trip limit or days-at-sea controls. This management system drastically changed the way the fishery operates. Possession of some species was prohibited to reduce catches (ocean pout, windowpane flounder, wolffish, Southern New England/Mid-Atlantic winter flounder). Today, the FMP manages several non-allocated stocks with either a zero-possession limit (ocean pout, wolffish, windowpane flounder) or restricted possession (Atlantic halibut). The amendment also included a host of mortality reduction measures for "common pool" (i.e., non-sector) vessels and the recreational component of the fishery. The New England Council developed Amendment 19 with the goal of bringing the small-mesh multispecies portion of the NE Multispecies FMP into compliance with the ACL and AM requirements of the reauthorized Magnuson-Stevens Act, following the ACL framework implemented by NMFS in a Secretarial Amendment. Amendment 19 also modified other management measures for the small-mesh multispecies fishery. More

recently, a rebuilding program for southern red hake was adopted as part of Framework 62 to address the overfished condition of the stock. The NE Multispecies FMP has been modified through a number of framework adjustments designed to achieve fishing mortality targets or to fulfill the requirement for annual adjustments to management measures. Frameworks 32, 35, 37, 38, and 62 each instituted additional changes to management of the small-mesh fishery, including several new small-mesh gear exemption areas and elimination of default rebuilding measures.

There are a variety of fishing gears used in the commercial groundfish fishery. Otter trawls are the primary gear type used for all species in both the large-mesh and small-mesh complexes and flatfish and silver hake are caught almost exclusively with otter trawls. In recent years, otter trawls have accounted for approximately 50-60 percent of trips. Gillnets have accounted for just over 35-40 percent of trips. Other gears identified with landings of groundfish include handlines, longlines, and fish pots (NEFMC 2025). Recreational fishing for groundfish is conducted by shore-based anglers and anglers with private boats, as well as by anglers aboard party/charter vessels.

For additional information on the large mesh component of the Northeast Multispecies FMP and fishery, please see Framework 69 to the Northeast Multispecies FMP. For information on the small-mesh component, please see the Small-Mesh Fishery Specifications for Fishing Years 2024-2026.

5.2.5 Northeast Skate Complex

There are seven species included in the Northeast skate complex: barndoor skate, clearnose skate, little skate, rosette skate, smooth skate, thorny skate, and winter skate. The Northeast skate complex is distributed along the coast of the northeastern United States from near the tide line to depths exceeding 700 meters. Within the complex, the ranges of the individual species vary. The center of distribution for little and winter skates is Georges Bank and southern New England. Barndoor skate is most common in the offshore Gulf of Maine, on Georges Bank, and in southern New England. Thorny and smooth skates are commonly found in the Gulf of Maine. Clearnose and rosette skates have a more southern distribution, and are found in southern New England and the Chesapeake Bight. Skates are not known to undertake large-scale migrations, but they do move seasonally in response to changes in water temperature, moving offshore in summer and early autumn and returning inshore during winter and spring.

The most recent assessment of the skate complex was completed in 2023, which re-estimated commercial fishery catch data, updated survey biomass indices, added recreational catch to total catch, and updated reference points. Currently, only thorny skate is overfished. The other six skate stocks are not overfished, and none of the stocks are subject to overfishing.

A Northeast Skate Complex FMP was developed by the New England Council and was implemented in 2003. The initial regulations under the FMP included the following: permit requirements for vessels possessing skates and dealers purchasing skates; reporting requirements; a possession limit for skate wings; an exemption from the wing possession limit for vessels fishing only for skates for the bait market; and prohibitions on the possession of smooth skates from or in the Gulf of Maine and barndoor and thorny skates throughout their range. The original FMP also incorporated a baseline of management measures implemented under other FMPs

(Northeast Multispecies, Sea Scallops, and Monkfish) that directly or indirectly control fishing effort on skates. Amendment 3 to the Skate FMP was implemented in 2010 to establish ACLs and AMs for the skate complex, as required by the re-authorized Magnuson-Stevens Act, and to implement measures to rebuild overfished skate stocks. Most recently, in 2024, Framework Adjustment 12 implemented specifications for the wing and bait fisheries.

Trawl, gillnet, longline, handline, dredge, and rod and reel are all authorized gears in the skate fishery. In general, skates are mostly harvested incidentally in otter trawl and gillnet fisheries targeting groundfish, monkfish, and, sometimes, scallops. In 2018, otter trawl was the primary gear used in the bait fishery (99 percent of bait-only landings), while more skates were landed in the wing fishery with gillnet gear (81 percent of wing-only landings). Overall, gillnets are responsible for approximately 66 percent of skate catch, and trawls comprise about 32 percent. Skates are also consistently caught with traps, hook gear, and scallop dredges; although landings from these gears are relatively insignificant; about 2 percent of all landings combined (NEFMC 2020).

For additional information on the Skate Complex FMP and fishery, see Framework Adjustment 12 to the Skate Complex FMP.

5.2.6 Spiny Dogfish

Spiny dogfish are the most abundant sharks in the western North Atlantic, and range from Labrador to Florida, although they are most abundant from Nova Scotia to Cape Hatteras, North Carolina. Spiny dogfish are highly migratory, often traveling in large troops, and they move northward in the spring and summer and southward in the fall and winter. Spiny dogfish are known to be opportunistic predators, consuming whatever prey are readily abundant in their environment, including pelagic and benthic invertebrates and fishes. Although dogfish have a varied diet, most of what they eat are invertebrates (ctenophores in particular) and a recent study of 40,000 stomachs found that less than 1 percent of their diet was composed of principal groundfish species (Link et al. 2002). In spite of their large numbers and opportunistic feeding, spiny dogfish, like many elasmobranchs, suffer from several reproductive constraints. Females may take 7-12 years to reach maturity, growing more than one-third larger than their mature male counterparts before becoming sexually mature. Fertilization and egg development are internal, and gestation takes roughly 2 years, resulting in litters that usually average 6-7 dogfish "pups."

The spiny dogfish stock was officially declared to be rebuilt in 2010. Based on the 2023 Spiny Dogfish Management Track Assessment, the spiny dogfish stock was neither overfished nor experiencing overfishing in 2025. Biomass (spawning output) in 2022 was estimated to be at 101 percent of the reference point/target, despite being relatively near its all-time low. Fishing mortality in 2022 was 81 percent of the overfishing threshold, the first time in the last decade without overfishing (MAFMC 2024a.)

The Mid-Atlantic and New England Councils jointly manage spiny dogfish, with the original FMP being partially approved in 1999 and implemented in 2000. Management measures included an overall commercial quota, allocated into two semiannual periods; restrictive trip limits; a prohibition on finning; an annual quota adjustment process; and permit and reporting requirements. Framework Adjustment 1 to the FMP, implemented in 2006, provided for a multi-

year, rather than annual, specification-setting process. Framework Adjustment 2, implemented in 2009, adjusted the FMP to allow for more efficient implementation of new scientific information on stock status and biological reference points. Amendment 2 was implemented in 2011 to bring the FMP into compliance with the revised Magnuson-Stevens Act by implementing ACLs and AMs. In 2014, Amendment 3 established a new Research Set-Aside program and rollover of specifications from one year to the next, as well as eliminated the seasonal allocation of quota. Framework 3 established a process for setting constant multi-year ABC limits and clarified the process for setting ABCs. Additional Council actions have set and/or revised multi-year specifications.

In the commercial spiny dogfish fishery, gillnet, trawl, hook and line, rod and reel, spear, and dredge are all authorized gear; though gillnets, hook and line (e.g., longline, handline), and bottom trawls are the most commonly used gears. Gillnets are the primary gear in the directed spiny dogfish commercial fishery, responsible for approximately 77 percent of landings in 2023. The other most prevalent gear in the spiny dogfish fishery is bottom longline (14 percent of catch). The remaining spiny dogfish (about 8 percent) are caught with other or unknown gear (MAFMC 2024b). There is a small spiny dogfish recreational fishery where handline, rod and reel, and spear are all authorized recreational gears.

For additional information on the Spiny Dogfish FMP and fishery, see the 2024-2026 Spiny Dogfish Specifications.

5.2.7 Summer Flounder, Scup, Black Sea Bass

Summer flounder, scup, and black sea bass are three demersal finfish species that occur primarily in the Middle Atlantic Bight from Cape Cod, MA, to Cape Hatteras, NC. Summer flounder range from Nova Scotia to Florida; scup range from the Bay of Fundy to Florida; and black sea bass range from southern Nova Scotia to southern Florida and into the Gulf of America. All three species exhibit seasonal movement or migration patterns. Summer flounder move inshore to shallow coastal and estuarine waters during warmer months and move offshore during colder months. Scup is a schooling species that undertakes extensive migrations between the coastal waters in the summer and outer continental shelf waters in the winter. Black sea bass are most often found in association with structured habitats, and they migrate offshore and to the south as waters cool in the fall, returning north and inshore to coastal areas and bays as waters warm in the spring.

The 2025 summer flounder stock assessment concluded that the stock is not overfished and overfishing is not occurring. This was a change from the 2023 assessment which determined that the stock was not overfished and overfishing was occurring. A 2025 scup assessment determined that scup was not overfished and overfishing was not occurring, similar to the results of a 2023 assessment. A 2025 black sea bass assessment determined that the stock was not overfished and overfishing was not occurring, similar to the results of a 2023 assessment.

The FMP was developed by the Mid-Atlantic Council, initially just for summer flounder, and approved in 1988. The first major amendment, Amendment 2, was implemented in 1993 and it established much of the current management regime, including a commercial quota allocated to the states, a recreational harvest limit, minimum size limits, gear restrictions, permit and reporting requirements, and an annual review process to establish specifications for the coming

fishing year. Although initially intended to be separate FMPs, work on the development of the Scup FMP and the Black Sea Bass FMP was folded into the Summer Flounder FMP, which was broadened to incorporate management measures for scup and black sea bass through Amendments 8 and 9, respectively. These amendments included management measures for scup and black sea bass such as commercial quotas and quota periods, commercial fishing gear requirements, minimum fish size limits, recreational harvest limits, and permit and reporting requirements. Both amendments were implemented in 1996. Amendment 12, partially approved and implemented in 1999, was developed to bring the FMP into compliance with the provisions of the Sustainable Fisheries Act, which included revised overfishing definitions for all three species, established rebuilding programs, addressed bycatch and habitat issues, and established a framework adjustment procedure for the FMP to allow relatively minor changes to management measures to be implemented through a streamlined process. In order to come into compliance with the revised Magnuson-Stevens Act, the Mid-Atlantic Council developed an omnibus amendment for all of its FMPs. The ACL/AM Omnibus Amendment (Amendment 15 to the Summer Flounder, Scup, and Black Sea Bass FMP) implemented ACLs and AMs for these three fisheries. In 2013, Amendment 19 modified the AMs for the Council's recreational fisheries. Commercial issues for the summer flounder commercial state quota allocation system and FMP goals and objectives were addressed in Amendment 21, in 2020. Amendment 22, the Commercial/Recreational Allocation Amendment revised the commercial and recreational sector allocations for all three species in 2023. Finally, in 2024, Amendment 23 implemented a measure for the black sea bass fishery that allows a buffer before triggering a closure to the coastwide commercial fishery to address negative economic impacts of coastwide closures on states that have not fully harvested their commercial black sea bass state allocations.

All three of these species support significant recreational as well as commercial fisheries. For the commercial fishery, trawl, longline, handline, trap/pot, gillnet, and dredge are all authorized gears. For the recreational fishery, rod and reel, handline, pot, trap, and spear are authorized gears. Otter trawls are the predominant gear type used in the commercial fisheries for all three species. Pots/traps are also used to catch black sea bass and scup in the commercial fishery. Recreational fishing for these species is enjoyed by shore-based anglers, private recreational boat anglers, and anglers on party and charter vessels.

For additional information on summer flounder and scup, please see 2024-2025 Summer Flounder and Scup Specifications. For additional information on black sea bass, see the 2025 Black Sea Bass Specifications.

5.2.8 Tilefishes

The golden tilefish is the largest and longest lived of all the tilefish species, and in U.S. waters ranges from Georges Bank to Key West, FL and throughout the Gulf of America. Golden tilefish occupy a fairly restrictive band along the outer continental shelf and are most abundant in depths of 100-240 meters. Temperature may also constrain their range, as they are most abundant near the 15° C isotherm. Although this species occupies a variety of habitats, it is somewhat unique in that they create and modify existing vertical burrows in the sediment as their dominant habitat in U.S. waters. Blueline tilefish are found from Maine to Campeche, Mexico on the outer continental shelves, shelf breaks, and upper slopes. The blueline tilefish fishery in the Greater Atlantic Region of the U.S. is managed from Maine through Virginia, with the majority of the

fishery concentrated between Nantucket Island, Massachusetts, south to Cape May, New Jersey, more specifically between Hudson and Veatch Canyons.

The most recent assessment for golden tilefish was conducted in 2024 and determined that golden tilefish is experiencing overfishing, but is not overfished. A 2017 benchmark stock assessment of the blueline tilefish population along the entire East Coast was conducted through the Southeast Data, Assessment, and Review process. It is not known whether overfishing is occurring, nor if blueline tilefish is overfished.

The Tilefish FMP was developed by the Mid-Atlantic Council to implement management measures for the tilefish fishery north of the Virginia/North Carolina border intended to address the overfished status of the species. The FMP was implemented in 2001. Amendment 1 to the Tilefish FMP, implemented in 2009, eliminated the limited access permit categories and adopted an IFQ program. Each year, 95 percent of the TAL is allocated to the IFQ fishery. The remaining five percent is allocated to the incidental fishery. Amendment 3 implemented the Mid-Atlantic Council's 2011 ACL/AM Omnibus Amendment. Blueline tilefish was added to the FMP in 2017, through Amendment 6, which established blueline tilefish management measures including: the ACL process, sector allocations, possession limits, fishing seasons, permitting, and reporting requirements. In 2022, the Council approved a multi-year golden tilefish specifications framework and also made minor process-related modifications to the golden tilefish management system intended to improve the administration of the golden tilefish management system. Additional council action has included routine, multi-year specifications actions for both species.

The commercial golden tilefish fishery is relatively small, with only a dozen vessels participating in the IFQ fishery. Golden tilefish are primarily caught with bottom longlines. The commercial fishery for blueline tilefish predominantly uses longline gear, although handline, rod and reel, and trawl gear are also authorized. There is a minimal recreational fishery for this species. The recreational blueline tilefish fishery has no gear restrictions, but rod and reel and spear are the most common gears used based on the authorized possession limits.

For additional information on golden tilefish, see the 2025-2027 Golden Tilefish Specifications. For additional information on the blueline tilefish, see the 2025 Blueline Tilefish Specifications.

5.2.9 American Lobster

American lobsters are found in the northwest Atlantic Ocean from Labrador to Cape Hatteras. It is a long-lived species known to reach more than 40 pounds (18 kg) in body weight (Wolff 1978). It is a bottom-dwelling, marine crustacean characterized by a shrimp-like body and ten legs, two of which are enlarged to serve as crushing and gripping appendages. Lobsters are encased in a hard external skeleton that provides body support and protection. Periodically, this skeleton is cast off to allow body size to increase and mating to take place. Lobster growth and reproduction are linked to the molting cycle. The American lobster range extends from Newfoundland south to the Mid-Atlantic region. In U.S. waters, the species is most abundant from the inshore waters of Maine to Cape Cod, Massachusetts, and the abundance declines from north to south (ASMFC 2015a).

The most recent peer-reviewed stock assessment for American lobster was approved by the Commission in October 2020. The Gulf of Maine/Georges Bank stock was determined to be not

depleted, with overfishing not occurring. The Southern New England stock was determined to be depleted, with overfishing not occurring.

American lobsters are managed from Maine to North Carolina under dual state and Federal regulatory authorities, whereby individual states manage the resource within their state waters (0-to-3 nautical miles from the shoreline) and the Federal government has primary jurisdiction over the resource in waters 3-to-200 nautical miles from the shoreline (also known as the Exclusive Economic Zone, or EEZ) through the Atlantic Coastal Fisheries Cooperative Management Act. The states and Federal Government manage lobster collaboratively and cooperatively through the Atlantic States Marine Fisheries Commission, a state entity organized under Interstate Compact. The Commission's American Lobster Management Board, which is comprised of states and Federal Government, develops management measures for lobster that it then recommends back to the states and Federal Government for implementation. The Interstate Lobster FMP manages the American lobster fishery in a unique way, allowing each of the seven Lobster Conservation Management Areas to help develop management measures to help achieve the goals of a particular Commission action. This approach has resulted in differing regulations between the management Areas. Federal actions in the recent past have centered on responding to the decline of the Southern New England stock, including reductions of exploitation and establishing the trap transferability program in a subset of Areas, which allowed vessels to scale their businesses to the size of the stock. Additional coastwide measures included the implementation of mandatory harvester reporting through GARFO's electronic vessel trip report.

For additional information on American lobster and its fishery, see the 2022 Environmental Assessment for various management measures.

5.2.10 Jonah Crab

Like lobster, Jonah crabs, *Cancer borealis*, are managed under the Atlantic States Marine Fisheries Commission's Interstate Fishery Management Plan for Jonah Crab and three addenda. Little is known about the species' biology, distribution, and relative abundance. Also known as the rock crab and the bull crab, Jonah crabs are found from Newfoundland to Florida, mainly in offshore, rocky habitats. Based off limited studies, it is theorized that Jonah crab reach maturity at a size between four and five inches (ASMFC 2015b).

A 2023 stock assessment conducted by the Commission established four stocks, and generally determined that while overall populations remain above historic lows, declining catch per unit effort (CPUE) raises concerns about future stock health. According to the stock indicators, conditions in three of the stocks were neutral or positive during 2019-2021 relative to historical periods. Indicators generally agree across these stocks that abundance has not been depleted compared to the historic low abundance observed in the 1980s and 1990s. There are no reliable abundance indicators for the fourth stock, so no determination about the condition of this stock's abundance could be made.

The Commission developed the Interstate FMP for Jonah crab in 2015. Because the fishery was predominantly a bycatch fishery prosecuted by lobster trap harvesters, the Commission's FMP allows lobster trap license holders to continue to harvest Jonah crabs. Additionally, the FMP set forth basic size and possession requirements. Through Addenda I and II, the Commission revised incidental possession and claw-only fishery requirements. Addenda III and IV address harvester

catch reporting and vessel position reporting requirements. NOAA Fisheries issued complementary regulations to measures in the Commission's Interstate Jonah Crab FMP in 2019.

For additional information on Jonah crabs and its fishery, see the 2022 Environmental Assessment for various lobster management measures.

5.3 Protected Species

Protected species are those afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. Table 3 provides a list of protected species under NMFS jurisdiction that occur within the affected environment of the proposed action; however, not all species have the potential to be impacted (e.g., become entangled or caught) by the operation of fixed gear (i.e., pot/trap, gillnet) fisheries. Identification of protected species potentially impacted by the proposed action was based upon 1) the species' degree of overlap with the fixed-gear fishery; and 2) observed or documented records of protected species interactions with pot/trap and/or gillnet gear. Appendix III provides detailed information used to evaluate these criteria, as well as our assessment of impacts to protected species provided in Section 6.3.

Table 3 - Species protected under the ESA and/or MMPA that may occur in the affected environment.

Species	Status	Potentially impacted by this action?
Cetaceans		
North Atlantic right whale (Eubalaena glacialis)	***Endangered***	***Yes***
Humpback whale, West Indies DPS (*Megaptera novaeangliae)*	Protected (MMPA)	Yes
Fin whale (Balaenoptera physalus)	***Endangered***	***Yes***
Sei whale (Balaenoptera borealis)	***Endangered***	***Yes***
Blue whale (Balaenoptera musculus)	***Endangered***	***No***
Sperm whale (Physeter macrocephalus	***Endangered***	***No***
Minke whale (*Balaenoptera acutorostrata*)	Protected (MMPA)	Yes
Pilot whale (Globicephala spp.)[2]	Protected (MMPA)	Yes
Pygmy sperm whale (*Kogia breviceps*)	Protected (MMPA)	No
Dwarf sperm whale (*Kogia sima*)	Protected (MMPA)	No
Risso's dolphin (*Grampus griseus*)	Protected (MMPA)	Yes
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected (MMPA)	Yes
Short Beaked Common dolphin (*Delphinus delphis*)	Protected (MMPA)	Yes
Atlantic Spotted dolphin (*Stenella frontalis*)	Protected (MMPA)	No
Striped dolphin (*Stenella coeruleoalba*)	Protected (MMPA)	No
Bottlenose dolphin, Western North Atlantic (WNA) Offshore Stock (*Tursiops truncatus*)	Protected (MMPA)	Yes
Bottlenose dolphin WNA Northern Migratory Coastal Stock (Tursiops truncatus)	***Protected (MMPA)***	***Yes***
Bottlenose dolphin, WNA Southern Migratory Coastal Stock (Tursiops truncatus)	***Protected (MMPA)***	***Yes***
Harbor porpoise (*Phocoena phocoena*)	Protected (MMPA)	Yes
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*)	Threatened	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS	Threatened	Yes

Species	Status	Potentially impacted by this action?
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Giant manta ray (*Manta birostris)*	Threatened	Yes
Oceanic whitetip shark (*Carcharhinus longimanus*)	Threatened	No
Atlantic salmon (*Salmo salar*)	Endangered	Yes
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected (MMPA)	Yes
Gray seal (*Halichoerus grypus*)	Protected (MMPA)	Yes
Harp seal (*Phoca groenlandicus*)	Protected (MMPA)	Yes
Hooded seal (*Cystophora cristata*)	Protected (MMPA)	Yes
Critical Habitat		
North Atlantic Right Whale	ESA Designated	No
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA Designated	No

Notes: Marine mammal species italicized and in bold are considered MMPA strategic stocks.[1]

[1] A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the potential biological removal level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).

[2] 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*.

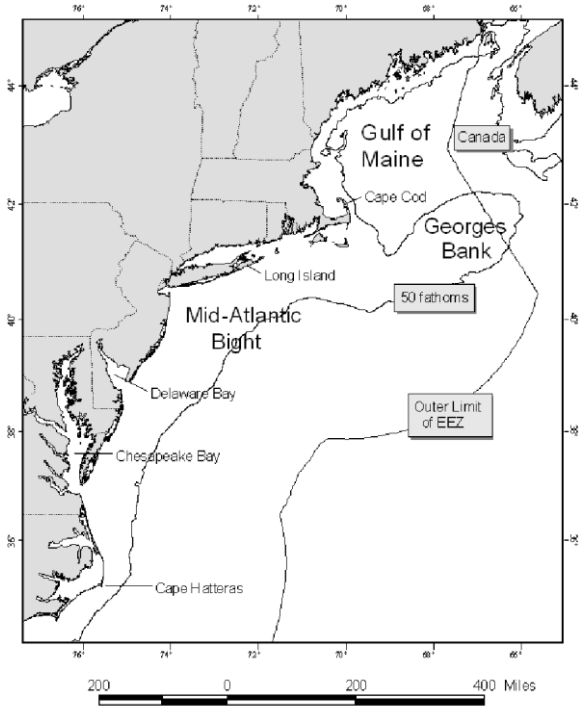
5.4 Physical Environmental and Essential Fish Habitat

5.4.1 Physical Environment

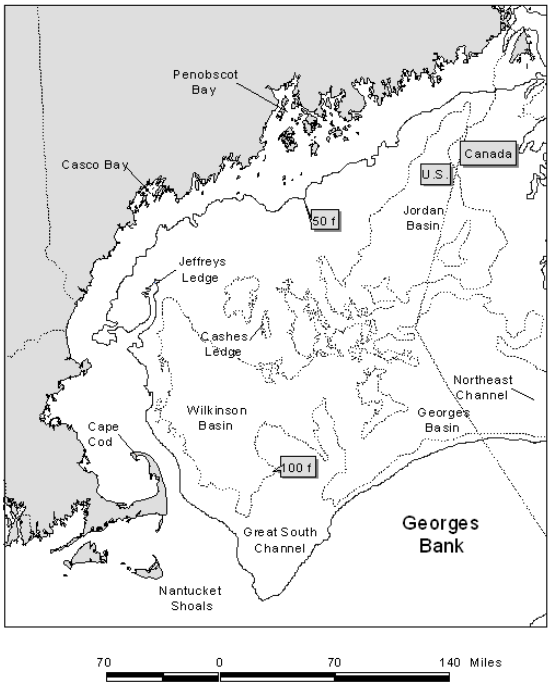
The Northeast U.S. Shelf Ecosystem includes the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, encompassing the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf, out to a depth of 2,000 m. Four distinct sub-regions comprise the NOAA Fisheries Greater Atlantic Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope (Map 5, Map 6).

The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom. Pertinent

physical characteristics of the sub-regions that could potentially be affected by this action are described in this section. Information in this document is from Stevenson et al. (2004).



Map 5 - Northeast U.S. Continental Shelf Large Marine Ecosystem



Map 6 - Gulf of Maine

5.4.1.1 Gulf of Maine

The Gulf of Maine (GOM) is bounded on the east by Browns Bank, on the north by the Nova Scotian (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank. The GOM was glacially derived, and is characterized by a system of deep basins, moraines, and rocky protrusions with limited access to the open ocean. This geomorphology influences complex oceanographic processes that result in a rich biological community.

The GOM is topographically unlike any other part of the continental border along the U.S. Atlantic coast. The GOM's geologic features, when coupled with the vertical variation in water properties, result in a great diversity of habitat types. It has twenty-one distinct basins separated by ridges, banks, and swells. The three largest basins are Wilkinson, Georges, and Jordan. Depths in the basins exceed 250 m, with a maximum depth of 350 m in Georges Basin, just north of Georges Bank. The Northeast Channel between Georges Bank and Browns Bank leads into Georges Basin and is one of the primary avenues for exchange of water between the GOM and the North Atlantic Ocean.

High points within the Gulf include irregular ridges, such as Cashes Ledge, which peaks at 9 m below the surface, as well as lower flat-topped banks and gentle swells. Some of these rises are

remnants of the sedimentary shelf that was left after most of it was removed by the glaciers. Others are glacial moraines and a few, like Cashes Ledge, are outcroppings of bedrock. Very fine sediment particles created and eroded by the glaciers have collected in thick deposits over much of the GOM, particularly in its deep basins. These mud deposits blanket and obscure the irregularities of the underlying bedrock, forming topographically smooth terrains. Some shallower basins are covered with mud as well, including some in coastal waters. In the rises between the basins, other materials are usually at the surface. Unsorted glacial till covers some morainal areas, as on Sewell Ridge to the north of Georges Basin and on Truxton Swell to the south of Jordan Basin. Sand predominates on some high areas and gravel, sometimes with boulders, predominates on others.

Coastal sediments exhibit a high degree of small-scale variability. Bedrock is the predominant substrate along the western edge of the GOM north of Cape Cod in a narrow band out to a depth of about 60 m. Rocky areas become less common with increasing depth, but some rock outcrops poke through the mud covering the deeper sea floor. Mud is the second most common substrate on the inner continental shelf. Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Many of these basins extend without interruption into deeper water. Gravel, often mixed with shell, is common adjacent to bedrock outcrops and in fractures in the rock. Large expanses of gravel are not common but do occur near reworked glacial moraines and in areas where the seabed has been scoured by bottom currents. Gravel is most abundant at depths of 20 - 40 m, except in eastern Maine where a gravel-covered plain exists to depths of at least 100 m. Bottom currents are stronger in eastern Maine where the mean tidal range exceeds 5 m. Sandy areas are relatively rare along the inner shelf of the western GOM, but are more common south of Casco Bay, especially offshore of sandy beaches.

5.4.1.2 Georges Bank

Georges Bank is a shallow (3 - 150 m depth), elongate (161 km wide by 322 km long) extension of the continental shelf that was formed by the Wisconsinian glacial episode. It is characterized by a steep slope on its northern edge and a broad, flat, gently sloping southern flank. The Great South Channel lies to the west. Natural processes continue to erode and rework the sediments on Georges Bank. Erosion and reworking of sediments will likely reduce the amount of sand available to the sand sheets and cause an overall coarsening of the bottom sediments (Valentine and Lough 1991).

Glacial retreat during the late Pleistocene deposited the bottom sediments currently observed on the eastern section of Georges Bank, and the sediments have been continuously reworked and redistributed by the action of rising sea level, and by tidal, storm and other currents. The strong, erosive currents affect the character of the biological community. Bottom topography on eastern Georges Bank is characterized by linear ridges in the western shoal areas; a relatively smooth, gently dipping sea floor on the deeper, easternmost part; a highly energetic peak in the north with sand ridges up to 30 m high and extensive gravel pavement; and steeper and smoother topography incised by submarine canyons on the southeastern margin.

The central region of the Bank is shallow, and the bottom is characterized by shoals and troughs, with sand dunes superimposed upon them. The two most prominent elevations on the ridge and trough area are Cultivator and Georges Shoals. This shoal and trough area is a region of strong currents, with average flood and ebb tidal currents greater than 4 km/h, and as high as 7 km/h.

The dunes migrate at variable rates, and the ridges may also move. In an area that lies between the central part and Northeast Peak, Almeida et al. (2000) identified high-energy areas as between 35 - 65 m deep, where sand is transported daily by tidal currents, and a low-energy area at depths > 65 m that is affected only by storm currents.

The Great South Channel separates the main part of Georges Bank from Nantucket Shoals. Nantucket Shoals is similar in nature to the central region of the Bank. Currents in these areas are strongest where water depth is shallower than 50 m. This type of traveling dune and swale morphology is also found in the Mid-Atlantic Bight, and further described below. Sediments in this region include gravel pavement and mounds, some scattered boulders, sand with storm generated ripples, and scattered shell and mussel beds. Tidal and storm currents range from moderate to strong, depending upon location and storm activity.

5.4.1.3 Mid-Atlantic Bight

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream. Like the rest of the continental shelf, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations caused by past ice ages. The shelf's basic morphology and sediments derive from the retreat of the last ice sheet, and the subsequent rise in sea level. Since that time, currents and waves have modified this basic structure.

Shelf and slope waters of the Mid-Atlantic Bight have a slow southwestward flow that is occasionally interrupted by warm core rings or meanders from the Gulf Stream. On average, shelf water moves parallel to bathymetry isobars at speeds of 5 - 10 cm/s at the surface and 2 cm/s or less at the bottom. Storm events can cause much more energetic variations in flow. Tidal currents on the inner shelf have a higher flow rate of 20 cm/s that increases to 100 cm/s near inlets.

The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 - 200 m water depth and deeper) at the shelf break. In both the Mid-Atlantic and on Georges Bank, numerous canyons incise the slope, and some cut up onto the shelf itself. The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales. Most of these structures are relic except for some sand ridges and smaller sand-formed features. Shelf valleys and slope canyons were formed by rivers of glacier outwash that deposited sediments on the outer shelf edge as they entered the ocean. Most valleys cut about 10 m into the shelf, except for the Hudson Shelf Valley that is about 35 m deep. The valleys were partially filled as the glacier melted and retreated across the shelf. The glacier also left behind a lengthy scarp near the shelf break from Chesapeake Bay north to the eastern end of Long Island. Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

Some sand ridges are more modern in origin than the shelf's glaciated morphology. Their formation is not well understood; however, they appear to develop from the sediments that erode from the shore face. They maintain their shape, so it is assumed that they are in equilibrium with modern current and storm regimes. They are usually grouped, with heights of about 10 m, lengths of 10 - 50 km and spacing of 2 km. Ridges are usually oriented at a slight angle towards

shore, running in length from northeast to southwest. The seaward face usually has the steepest slope. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Swales occur between sand ridges. Since ridges are higher than the adjacent swales, they are exposed to more energy from water currents, and experience more sediment mobility than swales. Ridges tend to contain less fine sand, silt and clay while relatively sheltered swales contain more of the finer particles. Swales have greater benthic macrofaunal density, species richness and biomass, due in part to the increased abundance of detrital food and the physically less rigorous conditions.

Sand waves are usually found in patches of 5 - 10 with heights of about 2 m, lengths of 50 - 100 m and 1 - 2 km between patches. Sand waves are primarily found on the inner shelf, and often observed on sides of sand ridges. They may remain intact over several seasons. Megaripples occur on sand waves or separately on the inner or central shelf. During the winter storm season, they may cover as much as 15% of the inner shelf. They tend to form in large patches and usually have lengths of 3 - 5 m with heights of 0.5 - 1 m. Megaripples tend to survive for less than a season. They can form during a storm and reshape the upper 50 - 100 cm of the sediments within a few hours. Ripples are also found everywhere on the shelf, and appear or disappear within hours or days, depending upon storms and currents. Ripples usually have lengths of about 1 - 150 cm and heights of a few centimeters.

Sediments are uniformly distributed over the shelf in this region. A sheet of sand and gravel varying in thickness from 0 - 10 m covers most of the shelf. The mean bottom flow from the constant southwesterly current is not fast enough to move sand, so sediment transport must be episodic. Net sediment movement is in the same southwesterly direction as the current. The sands are mostly medium to coarse grains, with finer sand in the Hudson Shelf Valley and on the outer shelf. Mud is rare over most of the shelf but is common in the Hudson Shelf Valley.

One notable feature is the mud patch located just southwest of Nantucket Shoals and southeast of Long Island and Rhode Island. Tidal currents in this area slow significantly, which allows silts and clays to settle out. The mud is mixed with sand and is occasionally resuspended by large storms. This habitat is an anomaly of the outer continental shelf. Occasionally relic estuarine mud deposits are re-exposed in the swales between sand ridges. Fine sediment content increases rapidly at the shelf break, which is sometimes called the “mud line,” and sediments are 70 - 100% fines on the slope. On the slope, silty sand, silt, and clay predominate.

Artificial reefs are another significant Mid-Atlantic habitat, formed much more recently on the geologic time scale than other regional habitat types. These localized areas of hard structure have been formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle & Zetlin 2000). While some materials have been deposited specifically for use as fish habitat, most have an alternative primary purpose; however, they have all become an integral part of the coastal and shelf ecosystem. It is expected that the increase in these materials has had an impact on living marine resources and fisheries, but these effects are not well known. In general, reefs are important for attachment sites, shelter, and food for many species, and fish predators such as tunas may be attracted by prey aggregations or may be behaviorally attracted to the reef structure.

5.4.2 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defines essential fish habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (MSA section 3). The MSA requires that Councils describe and identify EFH for managed species and "minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat" (MSA section 303 (a)(7)).

The broad definition of EFH has led the Mid-Atlantic and the New England Fishery Management Councils to identify EFH throughout most of the Northeast U.S. Shelf Ecosystem, ranging from areas out to the shelf break to wetlands, streams, and rivers. EFH designations for all species managed by the New England Fishery Management Council were updated in April 2018 as part of the NEFMC Omnibus EFH Amendment 2 (NEFMC 2016). The Council began a review of its EFH designations in 2023; a timeline for a fishery management action or actions to update these designations has not yet been established. EFH maps and descriptions are available for viewing via NMFS' Essential Fish Habitat Mapper. Table 4 summarizes EFH within the affected area of this action for federally-managed species and life stages that are vulnerable to fixed gear.

Table 4 - Summary of 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 the Greater Atlantic region, as of October 2019.

Species	Life Stage	Geographic Area	Depth (meters)	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
	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
	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: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay	Mean high water-120	Structurally-complex intertidal and sub-tidal habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna
	Adults	Gulf of Maine, Georges Bank, Southern New England, and the Mid-Atlantic to Delaware Bay, including the following	30-160	Structurally complex sub-tidal hard bottom habitats with gravel, cobble, and boulder substrates

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
		estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay		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 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
	Juveniles	U.S. waters north of 41˚N latitude and east of 71˚W longitude	70-184	Sub-tidal benthic habitats
	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
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
	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
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
	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
	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
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
	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
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

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
				eelgrass, macroalgae, and un-vegetated habitats
	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
	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
	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
	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
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
	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
	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
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
	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

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
				boulder reefs in the southwest Gulf of Maine
Offshore hake	Juveniles	Outer continental shelf and slope from Georges Bank to 34° 40'N	160-750	Pelagic and benthic habitats
	Adults	Outer continental shelf and slope from Georges Bank to 34° 40'N	200-750	Pelagic and benthic habitats
Red hake	Juveniles	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including Passamaquoddy Bay to Cape Cod Bay in the Gulf of Maine, Buzzards Bay and Narragansett Bay, Long Island Sound, Raritan Bay and the Hudson River, and lower Chesapeake Bay	Mean high water-80	Intertidal and sub-tidal soft bottom habitats, especially those that that provide shelter, such as depressions in muddy substrates, eelgrass, macroalgae, shells, anemone and polychaete tubes, on artificial reefs, and in live bivalves (e.g., scallops)
	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
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
	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
Smooth skate	Juveniles	Offshore Gulf of Maine, some coastal bays in Maine and New Hampshire, and on the continental slope from Georges Bank to North Carolina	100-400 offshore Gulf of Maine, <100 inshore Gulf of Maine, to 900 on slope	Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine
	Adults	Offshore Gulf of Maine and the continental slope from Georges Bank to North Carolina	100-400 offshore Gulf of Maine, to 900 on slope	Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine
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 on the slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
	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 on the slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
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

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
	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
Winter skate	Juveniles	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries from eastern Maine to Chincoteague Bay, Virginia, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic	0-90	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud
	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
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
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
	Adults	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-40	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
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
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)
	Larvae	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	No information	Inshore and offshore pelagic and benthic habitats: pelagic larvae ("spat"), settle on variety of hard surfaces, including shells, pebbles, and gravel and to macroalgae and other benthic organisms such as hydroids
	Juveniles	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Benthic habitats initially attached to shells, gravel, and small rocks (pebble, cobble); later free-swimming juveniles found in same habitats as adults

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
	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
Deep-sea red crab	Eggs	Outer continental shelf and slope throughout the region, including two seamounts	320-640	Benthic habitats attached to female crabs
	Juveniles	Outer continental shelf and slope throughout the region, including two seamounts	320-1300 on slope and to 2000 on seamounts	Benthic habitats with unconsolidated and consolidated silt-clay sediments
	Adults	Outer continental shelf and slope throughout the region, including two seamounts	320-900 on slope and up to 2000 m on seamounts	Benthic habitats with unconsolidated and consolidated silt-clay sediments
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
	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
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
	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
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
Golden tilefish	Juveniles and adults	Outer continental shelf and slope from U.S.-Canada boundary to the Virginia-North Carolina boundary	100-300	Burrows in semi-lithified clay substrate, may also utilize rocks, boulders, scour depressions beneath boulders, and exposed rock ledges as shelter
Blueline tilefish	Juveniles and adults	Outer continental shelf from eastern Georges Bank to the Virginia / North Carolina boundary	46 to 256	Horizontal or vertical burrows in sediments composed of silt, clay, and sand
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
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
	Female sub-adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
	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
	Female adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
	Male adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Atlantic surfclam	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
Ocean quahog	Juveniles and adults	Continental shelf from southern New England and Georges Bank to Virginia	9-244	In substrate to depth of 3 ft

5.4.3 Lobster Habitat

Juvenile and adult American lobsters occupy a wide variety of benthic habitats from the intertidal zone to depths of 700 meters. They are most abundant in relatively shallow coastal waters. Shelter is a critical habitat requirement for lobsters.

Once released into the water column, the American Lobster larvae remain planktonic for four life-stages before settling to the sea floor (ASMFC 2000). The time larvae spend between hatching and stage IV also varies, largely with the ocean temperature, ranging from approximately 10 days at 23°C to nearly two months at 10°C. During settlement, 4th stage post-larvae exhibit strong habitat selection behavior and seek small shelter-providing substrates (Hudon 1987; Wahle and Steneck 1991, 1992; Incze et al. 1997; Palma et al. 1999). The highest abundance of newly settled lobster is in cobble beds (Wahle and Steneck 1991; Cobb and Wahle 1994; Palma et al. 1999) but they have been found at low densities in marsh grass root mats in southern New England (Able et al.1988). Young of the year lobster are rare or absent from sediment substrates and eel grass habitats although early benthic phase lobster (Steneck 1989; Wahle and Steneck 1991 for lobster < 40 mm CL) are not.

Early benthic phase lobster is cryptic and quite restricted in habitat use (Wahle and Steneck 1991; Lawton and Lavalli 1995). They usually do not emerge from their shelters until reaching about 25 mm CL (Wahle 1992; Cobb and Wahle 1994). Larger, but still immature, adolescent phase lobster are found on a variety of bottom types, usually characterized by an abundance of potential shelters. Inshore, they are found in greatest abundance in boulder areas (Cooper and Uzmann 1980) but they also seek shelter under large algae such as kelp (Bologna and Steneck 1993). Adolescent-phase lobster also live on relatively featureless substrate where juvenile population densities are generally low (Palma et al.1999). Juvenile densities are high in shallow water, (0-30 ft) on sand, and mud substrate in inshore Massachusetts waters (Estrella, personal communication).

The following description of lobster habitats in the Northeast region of the U.S. (Maine to North Carolina) is based primarily on a report prepared by Lincoln (1998) from a variety of primary source documents. This information has been supplemented by the addition of some more recent research results. Table 5 summarizes information on lobster densities by habitat type. Unless

otherwise noted, the information noted below was originally provided by Cooper and Uzmann (1980).

5.4.3.1 Inshore Lobster Habitats

Estuaries

- *Mud base with burrows* – These occur primarily in harbors and quiet estuaries with low current speeds. Lobster shelters are formed from excavations in soft substrate. This is an important habitat for juveniles, and densities can be very high, reaching 20 animals per square meter.
- *Rock, cobble and gravel* – Juveniles and adolescents have been reported on shallow bottom with gravel and gravely sand substrates in the Great Bay Estuary, NH, on gravel/cobble substrates in outer Penobscot Bay, ME (Steneck and Wilson 1998), and in rocky habitats in Narragansett Bay, RI (Lawton and Lavalli 1995). Densities in Penobscot Bay exceeded 0.5 juveniles and 0.75 adolescents/m^2. According to unpublished information cited by Lincoln (1998), juvenile lobsters in Great Bay prefer shallow bottoms with gravely sand substrates.
- *Rock/shell* – Adult lobsters in the Great Bay Estuary use sand and gravel habitats in the channels but seem to prefer a rock/shell habitat more characteristic of the high temperature, low salinity regimes of the central bay.

Salt Marshes/Peat

Lobster shelters are formed from excavations cut into peat. Reefs form from blocks of salt marsh peat that break and fall into adjacent marsh creeks and channels and seem to provide moderate protection for small lobsters from predators (Barshaw and Lavalli 1988). Densities are high (up to 5.7/m^2).

Kelp beds

Kelp beds in New England consist primarily of *Laminaria longicruris* and *L. saccharina*. Lobsters were attracted to transplanted kelp beds at a nearshore study site in the mid-coast region of Maine, reaching densities that were almost ten times greater than in nearby control areas (Bologna and Steneck 1993). Lobsters did not burrow into the sediment but sought shelter beneath the kelp. Only large kelp (> 50 cm in length) was observed sheltering lobsters and was used in the transplant experiments.

Eelgrass

Lobsters have been associated with eelgrass beds in the lower portion of the Great Bay Estuary in New Hampshire (Short et al. 2001). Eighty percent of the lobsters collected from eelgrass beds were adolescents. Average density was 0.1/m^2, greater than reported by Barshaw and Lavalli (1988). In mesocosm experiments, Short et al. reported that lobsters showed a clear preference for eelgrass over bare mud. This research showed that adolescent lobsters burrow in eelgrass beds, use eelgrass as an overwintering habitat, and prefer eelgrass to bare mud.

Intertidal Zone

Research in Maine has demonstrated the presence of early settlement, postlarval, and juvenile lobsters in the lower intertidal zone (Cowan 1999). Two distinct size classes were consistently present: 3-15 mm CL and 16-40 mm CL. Monthly mean densities during a five-year period

ranged from 0-8.6 individuals/m^2 at 0.4 m below mean low water. Preliminary results indicate that areas of the lower intertidal zone serve as nursery grounds for juvenile lobster.

Below is a list of additional inshore lobster habitats:

- *Sand base with rock* – This is the most common inshore rock type in depths > 40 m. It consists of sandy substrate overlain by flattened rocks, cobbles, and boulders. Lobsters are associated with abundant sponges, Jonah and rock crabs. Shelters are formed by excavating sand under a rock to form U-shaped, shallow tunnels. Densities of sub-adult lobsters are fairly high (Table 5).
- *Boulders overlaying sand* – This habitat type is relatively rare in inshore New England waters. Compared to other inshore rocky habitats, densities are low (Table 5).
- *Cobbles* – Lobsters occupy shelters of varying size in the spaces among rocks, pebbles, and boulders. Densities as high as 16 lobsters/m^2 have been observed, making this the most densely populated inshore rock habitat for lobsters in New England.
- *Bedrock base with rock and boulder overlay* – This rock type is relatively common inshore from low tide to depths of 15-45 m. Shelters are formed by rock overhangs or crevices. Encrusting coralline algae and attached organisms such as anemones, sponges, and mollusks cover exposed surfaces. Green sea urchins and starfish are common. Cunner, tautog, sculpin, sea raven, and redfish are the most abundant fish. Lobster densities are low (Table 5).
- *Mud-shell/rock substrate* – This habitat type is usually found where sediment discharge is low and shells make up the majority of the bottom. It is best described off Rhode Island. Densities are low.

5.4.3.2 Offshore Habitat Types

- *Sand base with rocks* – Although common inshore (see above), this habitat is rather restricted in the offshore region except along the north flank of Georges Bank.
- *Clay base with burrows and depressions* – This habitat is common on the outer continental shelf and slope. Lobsters excavate burrows up to 1.5 m long. There are also large, bowl-like depressions that range in size from 1 to 5 m in diameter and may shelter several lobsters at a time. Minimum densities of 0.001 lobsters/m^2 have been observed in summer (Table 5).
- *Mud-clay base with anemones* – This is a common habitat for lobsters on the outer shelf or upper slope. Forests of mud anemones (*Cerianthus borealis*) may reach densities of 3 or 4 per square meter. Depressions serve as shelter for relatively small lobsters at minimum densities of 0.001/m^2 (Table 5).
- *Mud base with burrows* – This habitat occurs offshore mainly in the deep basins, in depths up to 250 m. This environment is extremely common offshore. Lobsters occupy this habitat, but no density estimates are available.

Submarine Canyons

There are more than 15 submarine canyons that cut into the shelf edge on the south side of Georges Bank. These canyons were first surveyed in the 1930s, but they were not fully explored until manned submersibles were used extensively in the 1980s. Detailed information on canyon habitats for American lobster is available primarily for Oceanographer Canyon but is generally

applicable to other major canyons on Georges Bank. These canyons present a diverse group of habitat types. Concentrations of adolescents and adult lobsters are substantially greater in submarine canyons than in nearby areas that are occupied mostly by adults (Cooper et al. 1987). The following information on lobster habitats is extracted from Cooper and Uzmann (1980) and Cooper et al. (1987).

- *Canyon rim and walls* – Sediments consist of sand or semi-consolidated silt with less than 5% overlay of gravel. The bottom is relatively featureless. Burrowing mud anemones are common. Lobster densities are low (Table 5).
- *Canyon walls* – Sediments consist of gravely sand, sand, or semi-consolidated silt with more than 5% gravel. The bottom is relatively featureless. Burrowing mud anemones are common, as are Jonah crabs, ocean pout, starfish, rosefish, and squirrel hake. Lobster densities are a little greater than in substrates that contain less gravel (see above).
- *Rim and head of canyons at base of walls* – Sand or semi-consolidated silt substrate is overlain by siltstone outcrops and talus up to boulder size. The bottom is very rough and is eroded by animals and current scouring. Lobsters are associated with rock anemones, Jonah crabs, ocean pout, tilefish, starfish, conger eels, and white hake. Densities are highly variable but reach up to 0.13 lobsters/m^2 (Table 5).
- *Pueblo villages* – This habitat type exists in the clay canyon walls and extends from the heads of canyons to middle canyon walls. It is heavily burrowed and excavated. Slopes range from 5 to 70 degrees, but are generally >20 and <50 degrees. Juvenile and adult lobsters and associated fauna create borings up to 1.5 m in width, 1 m in height, and 2 m or more in depth. Lobsters are associated with Jonah crabs, tilefish, hermit crabs, ocean pout, starfish, and conger eels. This habitat may well contain the greatest densities of lobsters found offshore.

Table 5 – American lobster habitats and densities.

Habitat	Lobster Densities (nos/square meter)	Lobster Sizes (carapace length = CL)	Source
ESTUARIES			
Mud base with burrows	Up to 20	Small juveniles	Cooper & Uzmann 1980
	< 0.01	Adults	Cooper & Uzmann 1980
Rock, cobble & gravel	> 0.5	Juveniles	Steneck & Wilson 1998
Rock/shell	> 0.75	Adolescents	Steneck & Wilson 1998
SALT MARSHES			
Peat	Up to 5.7		Barshaw & Lavalli 1988
INSHORE HABITATS			
Kelp beds	1.2-1.68	Adolescents (51-61 mm)	Bologna & Steneck 1993
Eelgrass	< 0.04	Juveniles and adolescents	Barshaw & Lavalli 1988
Eelgrass	0.1	80% adolescents	Short et al. 2001
Intertidal zone	0-8.6	Juveniles and adolescents	Cowan 1999
Sand base with rock	3.2	Avg 40 mm	Cooper & Uzmann 1980
Boulders overlaying sand	0.09-0.13		Cooper & Uzmann 1980

Habitat	Lobster Densities (nos/square meter)	Lobster Sizes (carapace length = CL)	Source
Cobbles	Up to 16		Cooper & Uzmann 1980
Bedrock base with rock and boulder overlay	0.1-0.3		Cooper & Uzmann 1980
Mud-shell/rock substrate	0.15		Cooper & Uzmann 1980
Sediment	0.01-0.04	≥50 mm	Geraldi et al. 2009
Cobbles	0.08-0.14	≥50 mm	Geraldi et al. 2009
Ledge	0.04-0.12	≥50 mm	Geraldi et al. 2009
OFFSHORE HABITATS			
Sand base with rock	Not available	Not available	
Clay base with burrows and depressions	Minimum 0.001		Cooper & Uzmann 1980
Mud-clay base with anemones	Minimum 0.001	50-80 mm in depressions	Cooper & Uzmann 1980
SUBMARINE CANYONS			
Canyon rim and walls	0-0.0002	Adolescents and adults	Cooper et al. 1987
Canyon walls	Up to 0.001	Adolescents and adults	Cooper et al. 1987
Rim and head of canyons and at base of walls	0.0005-0.126	Adolescents and adults	Cooper et al. 1987
Pueblo villages	0.0005-0.126	Adolescents and adults	Cooper et al. 1987

Note: For this table, Juvenile lobsters are < 40 mm CL; adolescents 40-70 mm CL; adults >70 mm CL.

5.4.4 Gear Types and Interactions with Habitat

This section discusses the characteristics of fixed gear, as well as the typical impacts to the physical habitat associated with fixed gear.

5.4.4.1 Traps and Pots

Trap/pot gear consists of the trap, buoy/surface line, groundline, buoys, and/or highflyers. The traps rest on or near the bottom and may or may not be baited. Buoy line(s) connect to the trap and rise vertically to the surface. Traps/pots may be set singly with each trap having its own surface line and buoy or fished in trawls consisting of two or more traps per trawl. A trawl consists of two or more traps attached to a single groundline, with at least one, but most often two, surface lines and buoys. The surface lines are typically at an end of a series of traps to mark the location of the gear. Trap gear configuration regulations differ based on jurisdiction. Offshore gear includes additional line at or near the surface to connect a radar reflector highflyer to one of the buoys to aid in the relocation and "visibility" of the gear. Traps/pots must also comply with the gear regulations in the ALWTRP (50 CFR 229.32), including buoy and groundline, storage, weak link, and traps per trawl requirements. Trap/pot gear sits on or near the ocean floor and, therefore, can cause habitat disturbance. However, each trap has a limited and minimal footprint on the bottom and the gear is often fished in areas where the habitat has been previously disturbed by other fishing activities

The Federal lobster regulations at 50 CFR 697.21(e) establish the maximum size for traps that can be fished, based on Lobster Conservation Management Area, with larger traps being allowed in the offshore. Traps fished in Federal waters must be set in strings of multiple traps, called a

trawl. While the lobster regulations at § 697.21(b)(3) establish the maximum length of trap trawls, the Atlantic Large Whale Take Reduction Plan regulations at § 229.32(c)(2)(iv) establish the minimum number of traps per trawl that can be fished. These trawl lengths generally increase with distance from shore. Regulations also include escape vent, ghost panel and identification and marking requirements.

Other traps/pots (black sea bass, fish, red crab, etc.) function similarly to lobster pots. A non-lobster trap could be a trap that is configured with small mesh or small entrances that effectively exclude lobsters, or a floating trap that is fished off the bottom. If a fish pot or trap is configured in such a way that it is not capable of catching lobster, then NMFS would not consider it to be a lobster trap, and the vessel would not be subject to the lobster trap gear specifications. For example, NMFS has determined that the floating Norwegian fish pots are not lobster traps. Black sea bass regulations include gear marking and ghost panel requirements (§ 648.144(b)). Scup regulations include marking/identification, degradable hinge, and escape vent requirements (§ 648.125(b)). Red crab traps/pots have restrictions on parlors, a maximum size, and gear marking requirements (§ 648.264).

5.4.4.2 Gillnet Gear

A bottom gillnet is a large wall of netting equipped with floats at the top and lead weights along the bottom. Bottom gillnets are anchored or staked in position. Fish are caught while trying to pass through the net mesh. The meshes of individual gillnets are uniform in size and shape, and therefore are highly selective for a particular size of fish (Jennings et al. 2001). Bottom gillnets are fished in two different ways, as "standup" and "tiedown" nets (Williamson 1998). Standup nets typically catch Atlantic cod, haddock, pollock, and hake and are soaked (duration of time the gear is set) for 12 - 24 hours. Tiedown nets are set with the floatline tied to the leadline at 6-ft (1.8 m) intervals, so that the floatline is close to the bottom and the net forms a limp bag between each tie. They are left in the water for 3-4 days and are used to catch flounders and monkfish. Individual sink/anchor gillnets are about 295 ft. (90 m) long. They are usually fished as a series of 5 - 15 nets attached end-to-end. A vast majority of “strings” consist of 10 gillnets. Gillnets typically have three components: the leadline, webbing, and floatline. In New England, leadlines are approximately 66 lbs/net (30 kg/net). Webs are monofilament, with the mesh size depending on the species of interest. Nets are anchored at each end using materials such as pieces of railroad track, sash weights, or Danforth anchors, depending on currents. Anchors and leadlines have the most contact with the bottom. For Northeast groundfish, gillnets are tended daily to semiweekly (NEFSC 2002).

5.4.4.3 On-Demand and Timed-Retrieval Devices

Both trap/pot and gillnet gear can be fished with an on-demand or a timed-retrieval device instead of using a persistent vertical line that connects the trawl or gillnet string to a surface buoy. An on-demand device uses acoustic technology to activate a retrieval mechanism. Timed-retrieval devices are designed to function similarly, except they utilize a timer or galvanic link to activate a device retrieval mechanism. Retrieval mechanisms include, but are not limited to the following:

> Pop-up Buoy: The line is coiled in a cage that is on the seafloor. When a signal is received, it triggers the release of a buoy or buoyant cage top. This floats to the surface, allowing the line to uncoil, providing a means to retrieve the gear.

Inflatable Lift Bag: A deflated lift bag is attached to a cage that is on the seafloor. When a signal is received, the lift bag inflates bringing the cage to the surface, providing a means to retrieve the gear.

Buoyant Spool: Line wrapped around a buoyant spool is tethered to a weight on the seafloor. When a signal is received, the spool is released. As the spool ascends, the line unwinds from the spool and rises to the surface, providing a means to retrieve the gear.

A string or trawl rigged with an on-demand or timed-retrieval device could replace both buoy lines or replace one buoy line with the other end either having no retrieval mechanism or having a traditional buoy line (also known as “hybrid rigging” or “one-end ropeless”). Due to the very similar manner in which on-demand and timed-retrieval rigged fishing gear is fished, as compared to traditional gear, they have very similar impacts on the physical habitat.

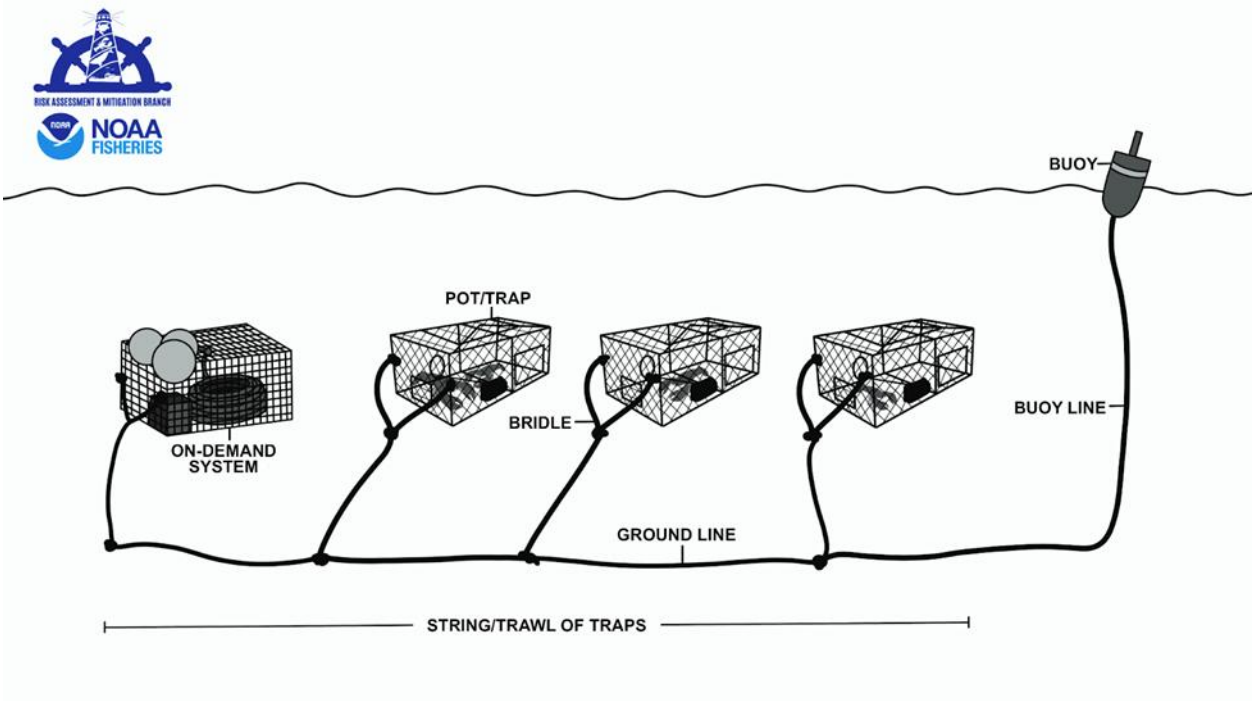


Figure 1 - An on-demand device deployed on a trap trawl using hybrid rigging. Graphic credit: NOAA Fisheries/Megan Amico.

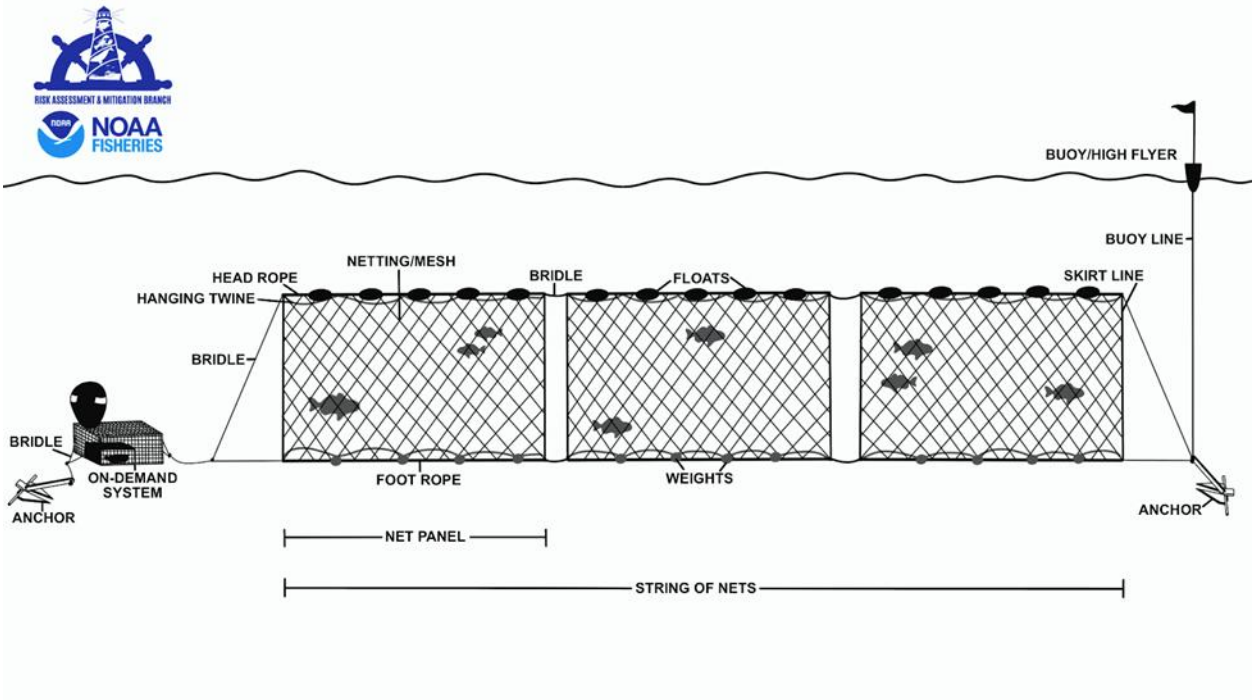


Figure 2 - An on-demand device deployed on a gillnet string using hybrid rigging. Graphic credit: NOAA Fisheries/Megan Amico.

5.5 Human Communities

This action could affect fixed-gear fisheries including Council-managed fisheries and the Federal lobster fishery that operate in Federal waters and may have an impact on mobile-gear fleet operations. Coastal fishing communities from Maine to North Carolina could be impacted by this action. In this section we provide both qualitative and quantitative descriptions of affected communities at the county level, and we also provide seafood landing information for major ports in the communities. Potentially affected communities are identified by looking at the ports of landings, fishing gear, and species. Appendix IV provides a list of social economic profiles for all affected communities in each state. Each profile consists of community location, community involvement in fisheries, demographic attributes, and a series of social indicators that describe the well-being of communities and social phenomena over time. Table 6 gives a summary description of the fixed-gear fisheries (trap/pot and gillnet) and mobile-gear fisheries (trawl and dredge) for each state. All landing data for this section are from the Atlantic Coastal Cooperative Statistics Program's (ACCSP) 2023 dealer report data.

Table 6 - Summary description of the marine fisheries from Maine to North Carolina (ACCSP 2023 dealer data).[3, 4]

		TRAP/POT	GILLNET	TRAWLS	DREDGE	NOT CODED	OTHERS	TOTAL
ME	Vessels	3,804	22	110	438	39	721	5,134
	Dollars	$485,180,881	$1,362,603	$6,568,179	$9,896,412	$3,347,924	$125,938,356	$632,294,355
NH	Vessels	160	6	6	5	4	94	275
	Dollars	$39,792,008	$757,232	$323,270	$32,271	$104,727	$2,050,061	$43,059,569
MA	Vessels	690	63	180	390	766	1,807	3,896
	Dollars	$99,816,315	$4,166,463	$31,528,687	$128,668,948	$263,554,499	$46,488,539	$574,223,451
RI	Vessels	179	33	107	15	385	662	1,381
	Dollars	$11,098,945	$3,630,198	$24,521,827	$5,150,870	$32,676,727	$10,777,411	$87,855,978
CT	Vessels	99	34	42	9	65	87	336
	Dollars	$1,828,114	$108,270	$3,862,614	$257,258	$6,129,490	$333,284	$12,519,030
NY	Vessels	152	121	105	8	146	556	1,088
	Dollars	$2,373,859	$680,751	$7,298,583	$88,938	$13,733,898	$4,036,794	$28,212,822
NJ	Vessels	105	43	69	93	49	61	420
	Dollars	$12,146,376	$1,726,282	$15,588,710	$47,982,413	$6,115,719	$9,945,334	$93,504,834
DE	Vessels	74	17	0	18	2	17	128
	Dollars	$11,292,575	$73,612	$239,236	$1,617,678	$1,099,716	$144,047	$14,466,864
MD	Vessels	563	143	5	811	24	2,432	3,978
	Dollars	$22,066,329	$2,665,318	$1,141,002	$14,204,598	$958,506	$31,486,387	$72,522,140
VA	Vessels	765	339	33	205	206	700	2,248
	Dollars	$41,209,797	$6,110,518	$3,083,987	$21,623,966	$97,967,900	24,425,635	$194,421,803
NC	Vessels	545	1001	286	91	2	1,534	3,459

[3] The same vessel could use multiple types of gear within a season, therefore the number of vessels under each gear type are not mutually exclusive. Therefore, the numbers in the "total" column could be counting a single vessel multiple times.

[4] A certain number of trips in various states do not have any gear information, so those trips are all assigned to the NOT CODED category. Based on the species caught from those trips we make assumptions about the gear used. For example, American lobsters were typically caught in trap/pot fishery and sea scallops were mainly harvested in the dredge fishery. See the main text for more details.

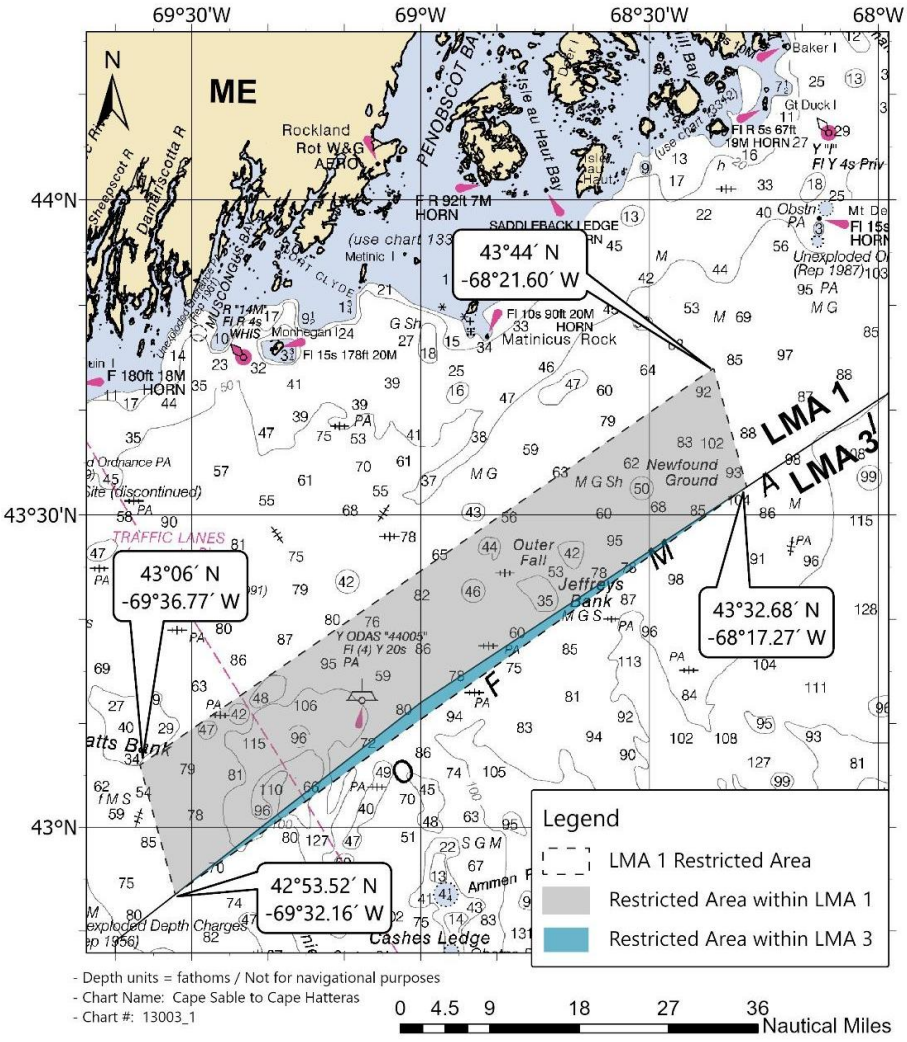
Dollars	$20,919,376	$11,964,652	$17,572,416	$1,142,246	$1,736	$22,487,155	$74,087,581

Data source: dealer reports from ACCSP (Atlantic Coastal Cooperative Statistics Program) 2023 Confidential Data Wearhouse

5.5.1 Maine

Lobster fishery: The trap/pot lobster fishery contributed the highest landing value to Maine's fishing industry. In 2023, about 3,800 vessels landed $485 million in lobsters, making up 77 percent of Maine's $632 million total seafood landing value.

Currently there is one seasonal lobster restricted area limiting the use of persistent buoy lines that is located offshore in Maine lobster Zone C, D, and E from October 1 to January 31 (Map 7). From the economic analysis of the 2021 Atlantic Large Whale Take Reduction Plan Rule Amendment (NMFS 2021), it is estimated that about 60 vessels fished in this restricted area, with about another 60 vessels fishing outside the restricted area over the 12 nm line.



Map 7 - Lobster Management Area 1 Restricted Area. This map depicts the boundaries of the Lobster Management Area One Restricted Area in effect annually from October 1 to January 31. Source: NOAA Fisheries, 2022. https://www.fisheries.noaa.gov/resource/map/lma-1-restricted-area

The communities that have close proximity to the restricted area are Hancock, Knox, Lincoln, and Sagadahoc Counties. The top landing ports in these communities are Stonington (Hancock County), Vinalhaven (Knox County), Friendship (Knox County), Boothbay Harbor (Lincoln County), South Bristol (Lincoln County), and Georgetown (Sagadahoc County). Common characteristics of these communities are high commercial engagement and commercial reliance scores[5], with relatively limited alternative employment opportunities.

[5] Commercial engagement measures the presence of commercial fishing through fishing activity as shown through permits and vessel landings. A high rank indicates more engagement. Commercial reliance measures the presence of commercial fishing in relation to the population of a community through fishing activity. A high rank indicates more reliance.

Council-managed fisheries: About 20 gillnet vessels landed $1.4 million worth of seafood, likely under the management of the groundfish, monkfish, skate, and spiny dogfish FMPs. The mobile-gear fleet, primarily trawls (110 vessels) and dredge (438 vessels), contributed $6.6 million and $10 million respectively. These vessels likely are participating in the Northeast multispecies, monkfish, skate, spiny dogfish, and scallop fisheries.

5.5.2 New Hampshire

Lobster fishery: The lobster trap fishery is the most valuable fishery in New Hampshire. In 2023, 160 New Hampshire lobster vessels produced about $40 million of value, which constituted 93 percent of its total seafood landing value. The majority of New Hampshire lobster came from offshore waters in Lobster Management Area 3 (LMA 3).

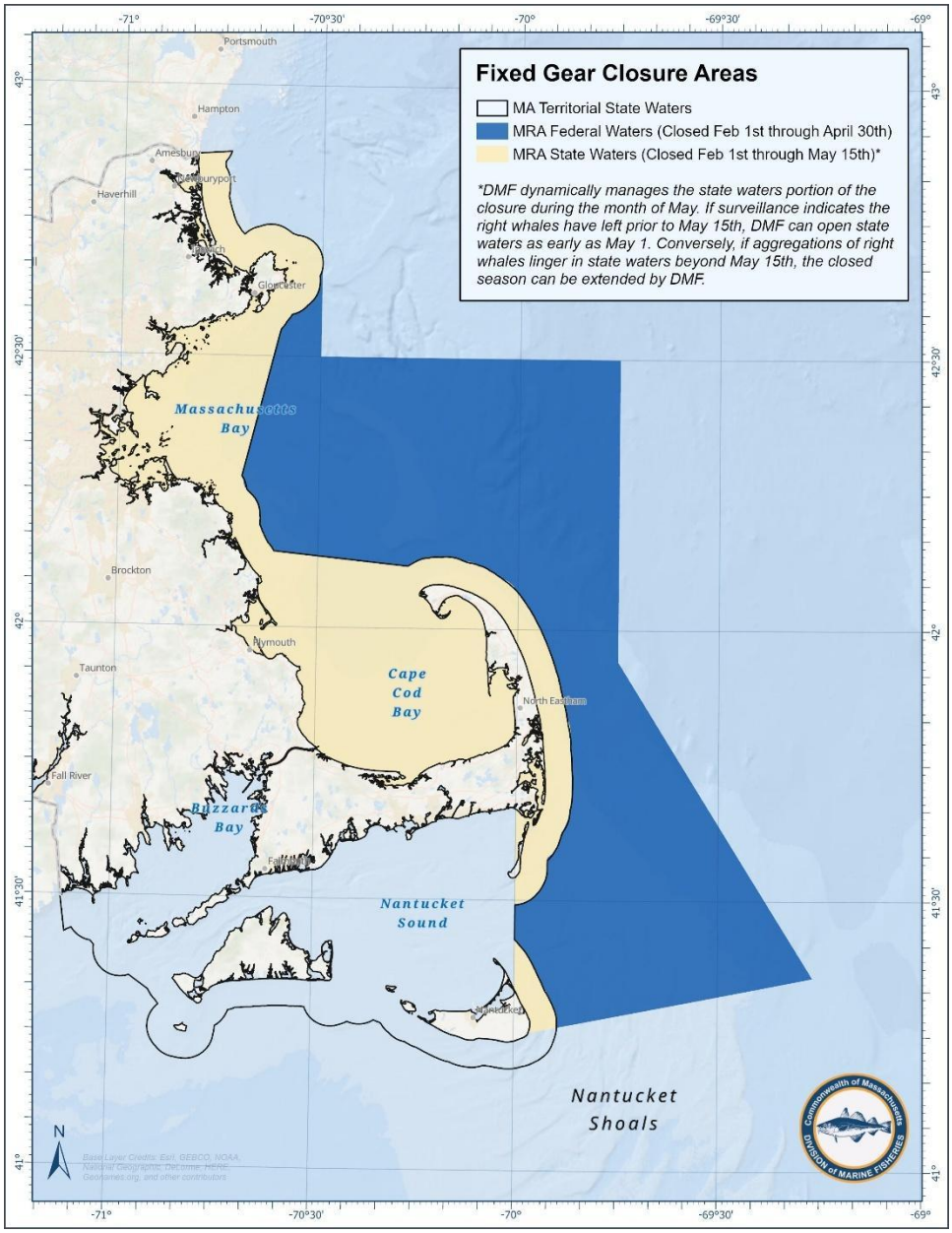
Rockingham and Strafford are the two coastal counties in New Hampshire. Rockingham landed considerably more lobster than Strafford, with Newington being the top landing port, followed by Portsmouth, Seabrook, Rye, and Hampton. These ports all have very high commercial engagement scores, and Newington has a much higher commercial reliance score than the others.

Council-managed fisheries: A few gillnet, trawl, and dredge vessels also produced about $1 million worth of seafood. These vessels likely are participating in the Northeast multispecies, monkfish, skate, spiny dogfish, and scallop fisheries.

5.5.3 Massachusetts

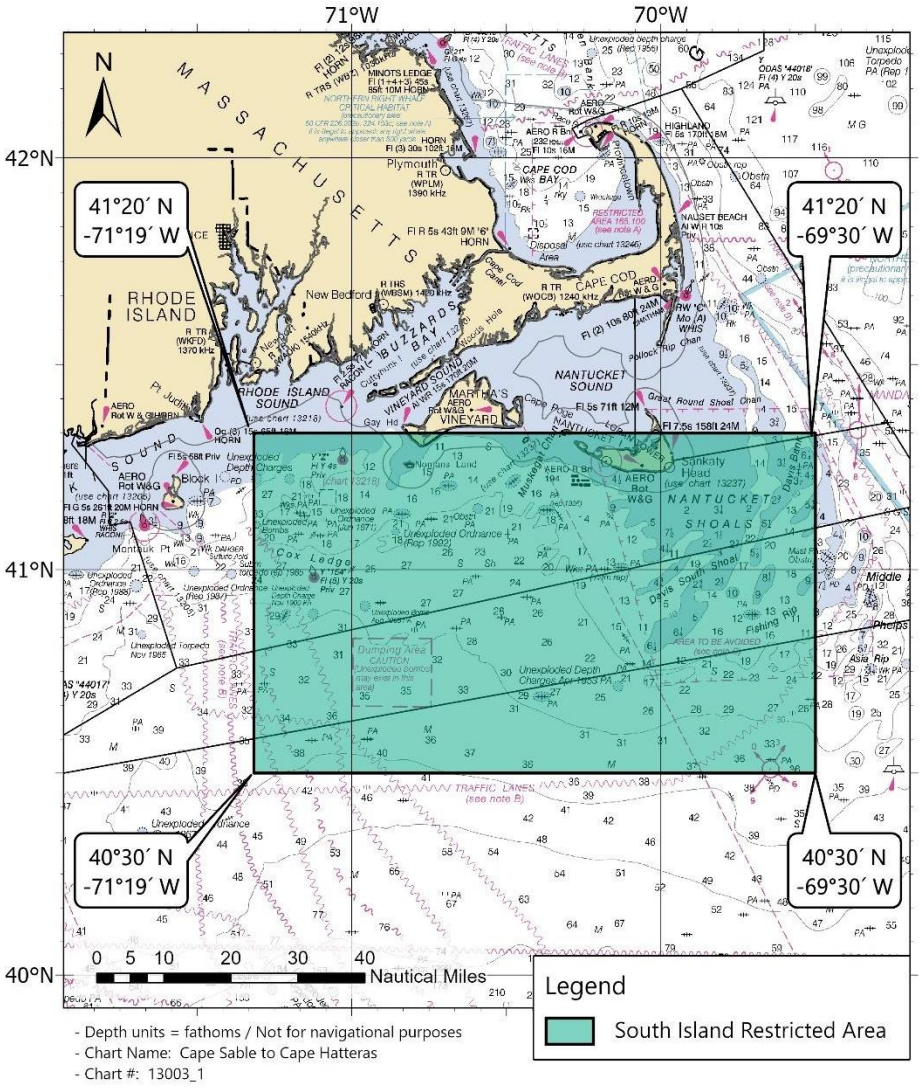
Lobster fishery: Massachusetts has a diverse trap/pot fishery that produces lobster, Jonah crab, red crab, conch/whelk, hagfish, and finfish. About 700 trap/pot vessels landed about $100 million worth of seafood in Massachusetts in 2023, of which lobster contributed about $83 million and Jonah crab about $6 million.

Three restricted areas that limit the use of persistent buoy lines could affect Massachusetts lobstermen: Massachusetts Restricted Area (MRA, Map 8), South Island Restricted Area (SIRA, Map 9), and Great South Channel Restricted Area (GSCRA, Map 10). The MRA starts on February 1 and ends on April 30, with a flexible extension to May 15 in state waters if right whales continue to stay after April 30. Lobstermen from Essex, Suffolk, Norfolk, Plymouth, and Barnstable Counties could be affected by this restricted area. The SIRA starts on February 1 and ends on April 30. Lobstermen from Barnstable, Dukes, Nantucket, and Bristol Counties could be affected. GSCRA starts on April 1 and ends on June 30. Lobstermen from all coastal communities could be affected.

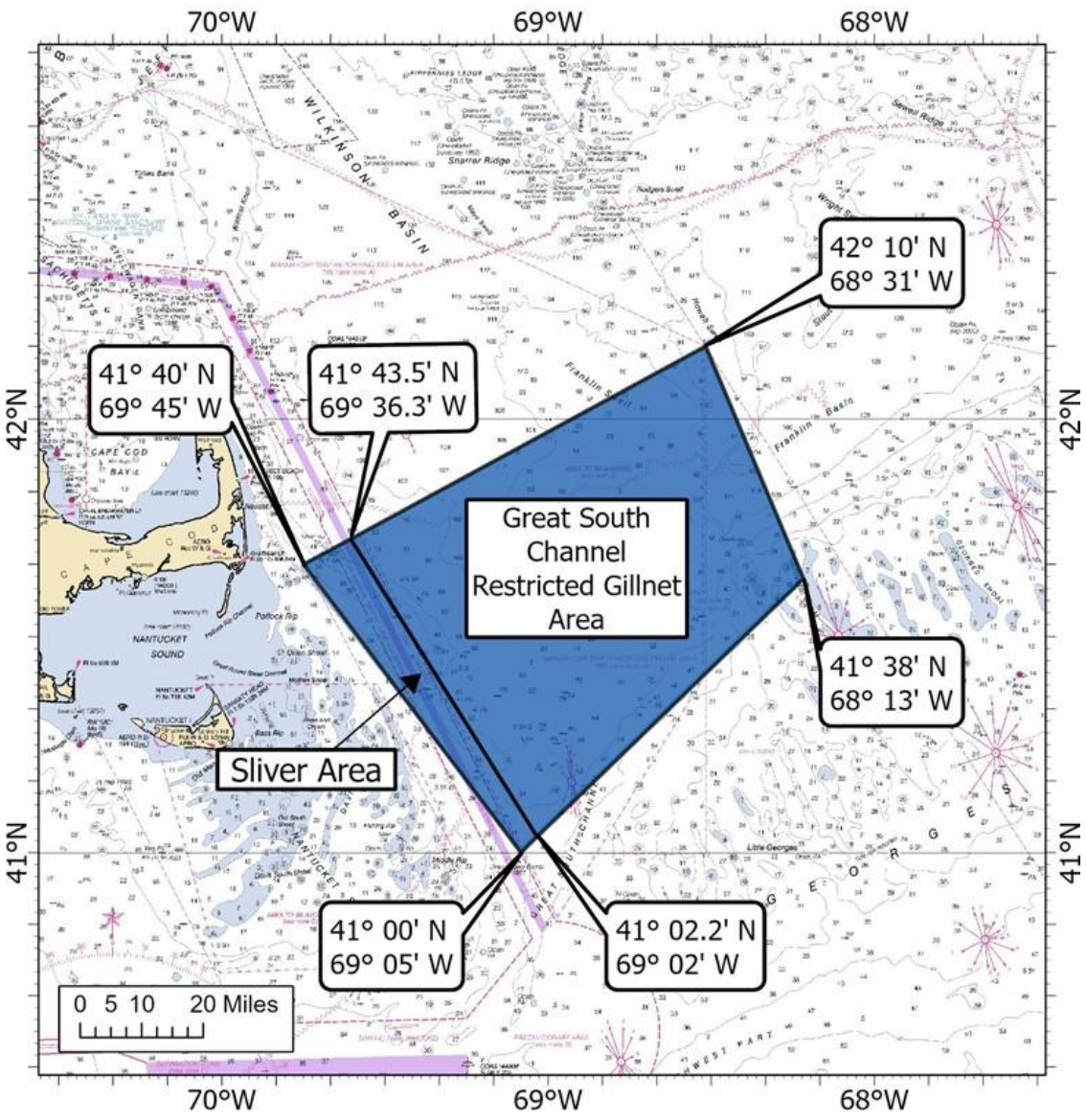


Map 8 - Massachusetts Restricted Area with State Waters Expansion and Wedge Area. This map depicts the boundaries of the Massachusetts Restricted Area in effect annually from February 1 to April 30.

Source: Massachusetts Division of Marine Fisheries, 2025. https://www.mass.gov/doc/42925-right-whale-fixed-gear-closure-areas-2025/download



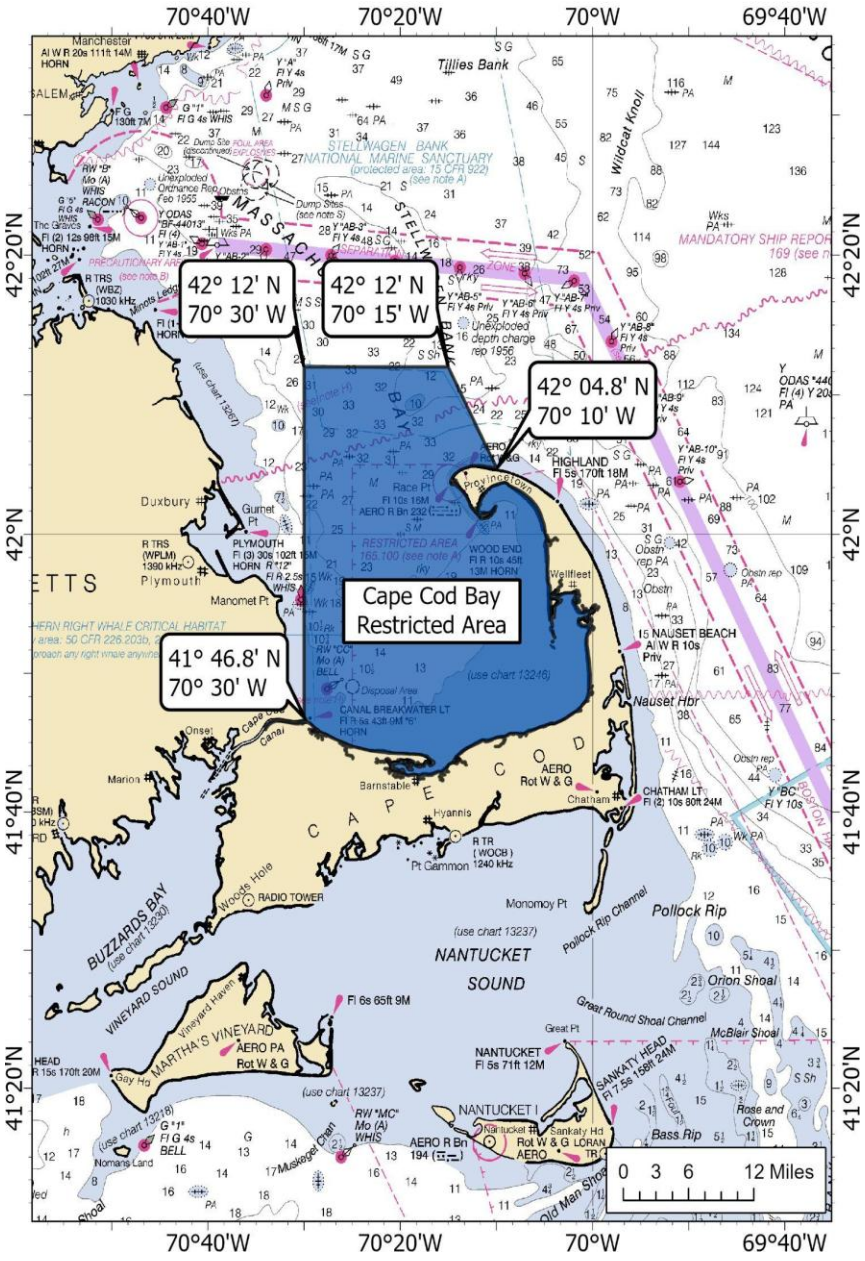
Map 9 - South Island Restricted Area. This map depicts the boundaries of the South Island Restricted Area in effect annually from February 1-April 30. Source: NOAA Fisheries, 2022. https://www.fisheries.noaa.gov/resource/map/south-island-restricted-area



Map 10 - Great South Channel Restricted Area. This map depicts the boundaries of the Great South Channel Restricted Area in effect from April 1 through June 30 annually. Trap/pot fishing that uses persistent (traditional buoy lines) is restricted within the Great South Channel Restricted Area and Sliver Area April 1 through June 30. Gillnet fishing is prohibited within the Great South Channel Restricted Area, excluding the Sliver Area, April 1 through June 30.

Council-managed fisheries: The Massachusetts gillnet fishery has 63 vessels that produced $4 million worth of seafood in 2023. Skates, monkfish, and dogfish were the top landing species. A total of 180 trawl vessels produced $6.7 million worth of seafood including lobster, groundfish, monkfish, squid, and a mix of other species. The dredge fishery in Massachusetts created the highest landing value of $129 million ($98 million from sea scallop, as well as an additional $216 million from sea scallop which were listed under “not coded” gear, but which are likely from the dredge fishery). In addition, the Atlantic deep-sea red crab trap/pot fishery largely operates out of Massachusetts. Historically, three to four vessels have been active in the fishery, with a 2022 value of just over $5 million.

The ALWTRP includes two restricted areas that currently function as fishery closures. The Great South Channel Restricted Gillnet Area, depicted in Map 10, overlaps in time and space with the trap/pot restricted area. In addition, the Cape Cod Bay Restricted Area is closed seasonally to gillnet fishing from January 1 through May 15. While gillnet fishing without persistent buoy lines is not allowed in these areas, the Take Reduction Team may consider converting these areas to persistent buoy lines closures.



Map 11 – Cape Cod Bay Restricted Areas. This map depicts the boundaries of the Cape Cod Bay Restricted Area, which is closed to gillnet fishing annually from January 1 through May 15.

Top landing ports in Massachusetts are New Bedford (Bristol County) with a $363 million landing value in 2023, Gloucester (Essex County) with $55 million, Boston (Suffolk County) with $17 million, and Chatham (Barnstable County) with $15 million. New Bedford and Gloucester have very high commercial engagement scores but relatively low commercial reliance scores. Boston also has a high commercial engagement score but a very low commercial reliance score, while Chatham has high scores for both indicators.

5.5.4 Rhode Island

Lobster fishery: In 2023, 179 trap/pot vessels landed about $11 million worth of seafood, with lobster and Jonah crab landing comprising the majority of this revenue. Lobstermen from Point Judith, Newport, and Little Compton could be affected by the SIRA (Map 9).

Council-managed fisheries: About 33 gillnet vessels landed $3.6 million, and 107 trawl vessels contributed the greatest landing value of $25 million ($14 million in squid as well as $6 million in summer flounder, scup, and black sea bass landings which were listed under "not coded" gear but which were likely from trawl fisheries). The dredge fishery landed about $5 million (as well as an additional $7.5 million in sea scallop landings listed under "not coded" gear but which could be from dredge fishery).

Three coastal communities could be impacted by this action. Washington County lands the most seafood, with a focus on the mobile-gear fishery and, to a lesser extent, the lobster trap fishery. Newport County primarily focuses on the lobster and Jonah crab trap/pot fishery. It also has a gillnet fleet that targets skates and monkfish. Bristol County has a small fleet that works in the conch/whelk pot fishery. The top landing ports in Rhode Island are Point Judith (Washington County), Newport (Newport County), Little Compton (Newport County), Tiverton (Newport County), and Bristol (Bristol County). Point Judith has very high commercial engagement and commercial reliance scores, Newport and Little Compton have relatively high commercial engagement scores and low commercial reliance scores, and other ports have both low commercial engagement and reliance scores. Trap/pot fishermen from all three communities could be affected by the SIRA.

5.5.5 Connecticut

Lobster fishery: Connecticut has almost 100 trap/pot vessels with most of them working in the Long Island Sound exempt waters[6]. Combined, they landed about $1.8 million worth of seafood.

Council-managed fisheries: A total of 42 trawl vessels landed $3.9 million worth of seafood (as well as an additional $3 million of summer flounder, scup, black sea bass, and squid landings listed under "not coded" gear, which were likely from the trawl fishery). Nine dredge vessels landed $0.26 million worth of seafood (as well as an additional $2 million in sea scallop landings listed under "not coded" gear). There were 34 gillnet vessels in the dealer data but the total landing value was not significant.

Four coastal communities are identified to be potentially impacted by this action: Southeastern, Lower Connecticut, South Central, and Greater Bridgeport Planning Regions. Stonington

[6] Based on 2023 GARFO permit data, only five vessels in CT have Federal lobster permits.

(Southeastern) and New London (Southeastern) are the two major landing ports that have high commercial engagement scores, but their commercial reliance scores are not high. In general, Connecticut has a small fixed- and mobile-gear fleet that has participated in Federal water fisheries in recent years.

5.5.6 New York

Lobster fishery: New York based vessels prosecute a relatively small lobster and Jonah trap/pot fishery with only $0.9 million landing value in 2023.

Council-managed fisheries: Suffolk County landed $27 million worth of seafood in 2023, most of which were from the trawl fishery. The major landed species were black sea bass, scup, summer flounder, butterfish, mackerel, and squid. Other revenue ($300,000) was generated from inshore pot/trap fisheries, including blue crab and tautog. Seaford and Freeport are the two major ports in Nassau County, and Freeport has a high commercial engagement score.

Montauk and Hampton Bays are the two major landing ports in Suffolk County. Montauk has very high commercial engagement and reliance scores, while Hampton Bays only has a high commercial engagement score.

5.5.7 New Jersey

Lobster fishery: The trap/pot fishery landed about $12 million worth of seafood in 2023, of which $8.4 million was from blue crabs, $1.3 million from Jonah crabs, $1.8 million from lobsters, and about $0.3 million from conch and whelk.

Council managed fisheries: The gillnet fishery landed about $1.7 million worth of seafood including dogfish, skates and monkfish. The trawl fishery landed $15.6 million in seafood, of which $6.8 million was from black sea bass, scup, and summer flounder, $6.2 million from squid, and $1.7 million from sea scallops. Dredge is the major fishery in New Jersey with $48 million of landing value from surf clam, quahog, and sea scallop.

Ocean County has a large mobile fleet that landed $27 million worth of seafood from its dredge fishery and $7.3 million from its trawl fishery. Its trap/pot fishery generated $2.6 million in landings and its gillnet fishery generated $1.5 million in landings. Cape May County generated $8.5 million in landings from its dredge fishery and $7.4 million from its trawl fishery. Of the $2.3 million in landings from the trap/pot fishery, about $1 million was from blue crabs and $1 million was from lobsters and Jonah crabs. The gillnet fishery landed about $1.5 million worth of seafood. The dredge fishery accounted for 95 percent of seafood landings in Atlantic County. In 2023, Atlantic County landed $12 million in surf clams. Other impacted coastal communities include Monmouth County and Cumberland County. The major landing ports in New Jersey are Point Pleasant (Ocean County), Cape May (Cape May County), Barnegat Light (Ocean County), and Atlantic City (Atlantic County). Point Pleasant has low commercial engagement and reliance scores, while Barnegat Light has high scores for both indicators. Cape May has a very high commercial engagement score and a medium reliance score. Atlantic City has a medium commercial engagement and a low reliance score.

5.5.8 Delaware

Council-managed fisheries: Delaware has a relatively small marine fishery with a total landing value of $14 million in 2023. Landings from trap/pot and dredge gear made the greatest contributions to landing value. The trap/pot fishery landed $11.3 million worth of seafood, of which $10.5 million was from blue crabs, and $0.5 million was from whelks. The dredge fishery landed $1.58 million worth of seafood, of which $0.18 million were blue crabs, $0.5 million were oysters, and $0.9 million were whelks. The major landing ports are Lewes and Rehoboth Beach from Sussex County, and Bowers from Kent County. Only Lewes has a high commercial engagement score.

5.5.9 Maryland

Maryland landed $72.5 million worth of seafood in 2023, predominantly from the Chesapeake Bay. Significant fisheries include the blue crab trap/pot fishery, the striper gillnet fishery, the oyster dredge fishery, and the black sea bass, scup, and summer flounder trawl fishery. The only community in Maryland that has an ocean-going fishery is Worcester County. Worcester County has a trawl fishery that landed $1.5 million in seafood. It also has a trap/pot fishery that landed $1.5 million in lobsters and whelks in 2023. Ocean City is the major landing port with a medium commercial engagement score and a low commercial reliance score.

5.5.10 Virginia

Council-managed fisheries: Virginia landed about $194 million in seafood in 2023. The trawl fishery landed $2.6 million worth of black sea bass, scups, and summer flounders (as well as an additional $5.5 million listed under “not coded” gear). The dredge fishery landed $0.7 million of quahogs (as well as $29.5 million in landings listed under “not coded” gear) and $2.7 million sea scallops (as well as $6.2 million in landings listed under “not coded” gear). Gillnet gear landed about $1.5 million with a focus on dogfish.

Revenue from other species included menhaden which made the greatest contribution to total landings of any species with value of $55 million. Although there is no gear information available in the dealer data for this species in Virginia, menhaden are traditionally caught in the purse seine fishery in the Mid-Atlantic area. The dredge fishery landed a total of $17.5 million of oysters (as well as $48 million in landings listed under “not coded” gear). The trap/pot fishery landed about $38 million of blue crabs (as well as an additional $38 million listed under “not coded” gear), $1.6 million of conchs and whelks (with an additional $1.8 million in landings listed under “not coded” gear.

Three communities are identified to have ocean-going fleets: Accomack County, Northampton County, and Virginia Beach City. Accomack County and Northampton County landed a large number of blue crabs with trap/pot gear, quahogs and oysters with dredge gear, and striped bass with gillnet. Most of these fisheries were inside the Chesapeake Bay. The ocean-going fishery includes some trawling with a focus on black sea bass, scup, and summer flounder, some gillnet fishing targeting dogfish, and some conch and whelk pot fishing. Accomack and Cape Charles are the major landing ports with a high commercial engagement score. Cheriton is another major port but with a low commercial engagement and reliance scores. Virginia Beach City has more ocean-going fisheries. It landed $0.8 million of dogfish with gillnet and $0.85 million of conch

and whelk with pots. The city of Virginia Beach is the major port in the county with a high commercial engagement score.

5.5.11 North Carolina

Council-managed fisheries: While within the management unit of several Greater Atlantic Region FMPs, few North Carolina-based vessels and a relatively small portion of revenue are the result of regional FMPs. North Carolina has about 545 trap/pot vessels, most of which are in the blue crab fishery in the bay, with a small landing of black sea bass and whelks in the ocean. About 1,000 gillnet vessels landed about $12 million worth of seafood that included $1.8 million in Atlantic cutlassfish, $1.4 million in Spanish mackerel, $1.3 million in kingfishes, and a few other inshore species. 286 trawl vessels landed about $13.7 million in shrimp and $3.5 million in flounders. The dredge fishery landed $0.5 million in sea scallops and $0.6 million in clams and oysters.

Dare County, Hyde County, and Pamlico County could be affected by this action. Dare County landed about $20 million worth of seafood in 2023. The gillnet fishery landed about $5.6 million in Atlantic cutlassfish, mackerels, and other inshore species. The trap/pot fishery generated a landed value of $3.7 million, predominantly from blue crabs. The trawl fishery landed about $1.8 million in shrimp and flounders. Hyde County has a large trawl fishery that landed $4.6 million in shrimp and flounders. Pamlico County also landed $2.9 million in shrimp and flounders from its trawl fishery. Major landing ports include Wanchese (Dare County), Swan Quarter (Hyde County), and Stonewall (Pamlico County).

6 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

6.1 Introduction

The impacts of the alternatives under consideration are evaluated relative to each of the valued ecosystem components (VECs) described in Section 5. This action evaluates the potential impacts described in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high) based on the guidelines shown in Table 7.

Table 7 - Guidelines for defining the direction and magnitude of the impacts of alternatives on the VECs.

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

		fishermen and/or communities		fishermen and/or communities
	Magnitude of Impact			
A range of impact qualifiers is used to indicate any existing uncertainty	Negligible	To such a small degree to be indistinguishable from no impact		
	Slight, as in slight positive or slight negative)	To a lesser degree / minor		
	Moderately positive or negative	To an average degree (i.e., more than "slight", but not "high")		
	High, as in high positive or high negative	To a substantial degree (not significant unless stated)		
	Significant	Affecting the resource condition to a great degree (Companion Manual for NAO 216-6A, June 30, 2025)		
	Likely	Some degree of uncertainty associated with the impact		
*Actions that will substantially increase or decrease stock size, but do not change a stock status may have different impacts depending on the particular action and stock. Meaningful differences between alternatives may be illustrated by using another attribute aside from the MSA status, but this must be justified within the impact analysis.				

6.2 Impacts on Fishery Resources

This section describes the expected impacts of each alternative on fishery resources. Impacts are based on expected changes in fishing effort and fishing mortality under each alternative.

6.2.1 Alternative Set 1

Alternative 1A (No Action) is not expected to have an impact on fishery resources. The fisheries would continue to operate as they currently do and **Alternative 1A** would not result in a change in any of the following: fishing location, timing, effort, authorized gear types, access to fishery resources or harvest levels. **Alternatives 1B**, **1C**, and **1D** are also not expected to impact fishery resource stocks or populations as they would not allow for increased fishing effort or harvest levels for any species. **Alternatives 1B**, **1C**, and **1D** would allow additional ways for fixed-gear to be marked but this would not change the manner in which fishery resources are harvested in any way that would impact fishery stocks or populations.

Alternatives 1B, **1C**, and **1D** could change when and where fishermen choose to fish. Specifically, lobstermen may decide to fish with approved alternative gear markings in ALWTRP seasonal restricted areas instead of their current fishing locations if and when gear-marking alternatives are approved for use. If lobstermen are allowed to fish in these seasonal restricted areas, this may also affect when they choose to fish. Thus, **Alternatives 1B**, **1C**, and **1D** may impact the timing and location of fixed-gear fishing effort. However, it is not expected that this potential shift in fishing location and time would have an impact on any fishery stocks

or populations and it would not affect harvest control measures. As described in Section 4.1, current ALWTRP vertical line restricted areas only apply to the lobster/Jonah crab fishery. Thus, **Alternatives 1B**, **1C**, and **1D** would only provide lobstermen additional geographical fishing access in current restricted areas, unless persistent buoy line restricted areas were created that applied to other fixed-gear fisheries. As such, **Alternatives 1B**, **1C**, and **1D** are not expected to result in gillnet or other trap/pot fishermen shifting when or where they fish. If or when persistent buoy line closures are added for Council-managed fisheries, similar impacts could be expected to Council-managed fishery resources as the lobster resource described above.

6.2.2 Alternative Set 2

Alternatives 2A (No Action), **2B**, and **2C** are not expected to impact fishery resources as they would not affect fishing effort, operations, species targeted, or areas fished. **Alternatives 2A (No Action)**, **2B**, and **2C** deal entirely with administrative mechanisms whereby Federal permit holders in commercial fisheries would be required to obtain a Letter of Authorization (LOA) before being able to fish with gear-marking alternative and, in the case of **Alternative 2B**, demonstrate knowledge as part of acquiring an LOA.

6.3 Impacts on Protected Species

The alternatives in this Framework Adjustment are evaluated for their impacts on species protected under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. As a result, for ESA-listed species, any action that results in interactions or take is expected to have some level of negative impacts, including actions that reduce interactions. Actions expected to result in positive impacts on ESA-listed species include only those that contain specific measures to ensure no interactions (i.e., no take). The stock conditions for marine mammals not listed under the ESA varies by species; however, all are in need of protection. Specifically, there are MMPA-protected species in good condition (i.e., marine mammal stocks whose PBR level have not been exceeded) and in poor condition (i.e., marine mammal stocks that have exceeded their PBR levels). For marine mammal stocks that have their PBR level reached or exceeded, some level of negative impacts would be expected from alternatives that result in the potential for interactions between fisheries and those stocks. For species that are at more sustainable levels (i.e., PBR levels have not been exceeded), alternatives not expected to change fishing behavior or effort relative to current operating conditions in the fishery may have some level of positive impacts by maintaining takes below the PBR level and approaching the zero-mortality rate goal (Table 7).

Alternatives 1B, **1C**, and **1D** could provide fishermen the option to use an alternative to a persistent buoy line to mark fixed gear. Buoy lines (i.e., the line that hangs vertically in the water column, connected from a surface flotation device to fixed gear set on the ocean floor) have been identified as an entanglement threat to protected species of sea turtles and marine mammals (Section 5.3). As such, the focus of this assessment considers not only the implication of each alternative's potential changes in fishing effort (e.g., amount of gear fished, gear soak or tow duration, number of active vessels) and behavior (e.g., area fished), but also how each alternative may or may not potentially decrease the interaction risk (e.g., entanglement, vessel strike, noise) to protected species by allowing alternative gear marking. These are important considerations as the risk of an interaction is strongly associated with the amount of gear in the water, the duration

of time the gear is in the water (e.g., soak duration), the presence of protected species in the same area and time as the gear, and the strength of the persistent buoy line. Risk of an entanglement increases with an increase of any of these factors.

6.3.1 Alternative Set 1

6.3.1.1 Alternative 1A (No Action)

Alternative 1A (No Action) would continue to allow fixed-gear (i.e., gillnet and pot/trap) surface marking with persistent vertical buoy lines. Relative to current operating conditions, changes in fixed-gear fishing effort (e.g., number of gillnet strings or pot/trap trawls) or behavior (e.g., area fished) are not expected and, therefore, the number and distribution of persistent buoys lines fished is not expected to change. As a result, **Alternative 1 (No Action)** is not expected to introduce new or elevated interaction risks to protected species; support for this determination is provided below.

Impacts to MMPA-Protected Species (Not ESA Listed)

Review of the information provided in Section 5.3 and Appendix III indicates that there are non-listed marine mammal stocks/species whose populations may or may not be at optimum sustainable levels. Specifically, Table 3 identifies the WNA Northern and Southern Migratory Coastal Stocks of bottlenose dolphins as strategic under the MMPA, and therefore, these stocks/populations are not at an optimum sustainable level. As a result, any potential for an interaction is a detriment to the species'/stock's ability to recover from this condition. As provided above, the risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., soak duration), and the presence of protected species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. As provided in Appendix III, there have been observed or documented interactions between pot/trap and gillnet gear and the WNA Northern or Southern Migratory Coastal Stocks of bottlenose dolphins. As fixed-gear fishing effort under **Alternative 1A** is expected to remain similar to current operating conditions in the fishery, impacts to these bottlenose dolphin stocks in poor condition are expected to range from negligible to slight negative.

As provided in Section 5.3 and Appendix III, there are also a number of non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in interaction levels that are unlikely to impair the stocks/species ability to remain at an optimum sustainable level. These fishery management measures, therefore, have resulted in indirect slight positive impacts to these non-ESA listed marine mammal species/stocks. Should future fishery management actions maintain similar operating conditions as they have over the past several years, it is expected that these slight positive impacts would remain. Given the information above, as well as the fact that the risk of interacting with gear types used in fixed-gear fisheries varies between non-ESA listed marine mammal species in good condition [e.g., there have been no recently observed or documented interactions between pot/trap gear and small cetaceans [(exception WNA Northern or Southern Migratory Coastal Stocks of bottlenose dolphins)], impacts of **Alternative 1A** to

non-ESA listed species of marine mammals in good condition are expected to range from negligible to slight positive.

Taking into consideration the above, the overall impacts of **Alternative 1A** on non-ESA listed species of marine mammals are likely to range from slight negative to slight positive, depending on the species/stock.

Impacts to ESA-Listed Species
As previously stated, any interactions with ESA-listed species, even under status quo, are considered to have some level of negative impacts to these species. Interaction risks to protected species are strongly associated with the amount of gear in the water, gear soak or tow duration, as well as the area of overlap, either in space or time, of the gear and a protected species. Fixed-gear fishing effort under Alternative 1A is expected to remain at levels similar to recent years. Given the information above, the status of the species provided in Section 10.2, as well as the fact that the risk of interacting with gear types used in fixed-gear fisheries varies between ESA-listed species (e.g., there have been no observed or documented interactions between Atlantic sturgeon and pot/trap gear; interactions have been observed in gillnet gear; see Appendix III) the impacts of **Alternative 1A** on ESA-listed species are expected to be negligible to moderate negative, depending on the species.

6.3.1.2 Alternative 1B
Relative to current operating conditions in fixed-gear fisheries, **Alternative 1B** could lead to a reduced number of persistent buoy lines, and therefore entanglement risk, if fishermen choose to use gear with alternative gear markings as opposed to traditional gear markings. However, removing persistent buoy lines does not remove the risk of entanglement in gillnet panels or groundlines between traps/pots. As a result, even if the persistent buoy lines of gillnet gear are removed, there is still a slight to moderate risk of entanglement for some protected species with gillnet panels.

Additionally, gear using alternative markings could still pose an entanglement risk to protected species as there could be (depending on the type of retrieval mechanism used) a period of time in which vertical lines are present in the water column, specifically, after a release mechanism has been triggered but before the gear has been retrieved. Or, vertical lines in the water could result from untimely releases of buoy lines.

Relative to status quo conditions, **Alternative 1B** could have a negative impact on protected species if there is an increase in pot/trap fishing effort in specific areas and times previously closed to persistent buoy lines associated with this gear type. Specifically, **Alternative 1B** could result in an increase in pot/trap fishing effort in current ALWTRP lobster/Jonah crab pot/trap seasonal restricted areas, which are closed to persistent buoy lines. However, incentive for pot/trap vessels to shift effort into ALWTRP pot/trap seasonal restricted areas is dependent on whether the vessel's operating profit can support on-demand gear costs (see Section 6.5). As such, the degree to which effort will increase is likely to vary based on the vessel's size, revenue, operating profit, and gear costs (see Section 6.5). As a result, the degree of potential negative impacts will also vary. If fishermen choose to fish with pot/trap gear with alternative gear marking in seasonal restricted areas, it's possible that this would reduce fishing effort in other areas where they were using traditional surface markers with persistent buoy lines. Thus, there is

the potential for some level of negative impacts to protected species in areas that currently do not have persistent buoy lines and positive impact to protected species in areas where fishermen would no longer be fishing. However, this assumption may not be completely accurate as some fishermen may increase fishing effort in seasonal restricted areas without reducing effort elsewhere. In addition, because the seasonal restricted areas have a high occurrence of large whales, the magnitude of negative impacts resulting from potential changes in pot/trap fishing effort in these seasonally restricted areas may be equal to, or greater, in these areas than the magnitude of potential positive impacts seen elsewhere. However, as described in Section 4.1, current ALWTRP vertical line restricted areas only apply to the lobster/Jonah crab fishery. Thus, **Alternative 1B** (as well as **1C** and **1D**) would not allow fishing by other fixed-gear fisheries in current restricted areas unless persistent buoy line restricted areas were created that applied to these other fisheries. As such, **Alternatives 1B**, **1C**, and **1D** are not expected to result in gillnet or other trap/pot fishermen shifting when or where they fish or substantially increasing fishing effort. However, if other fisheries had persistent buoy line restricted areas implemented, fishermen in these fisheries may change their fishing practices in a similar manner as is described here for lobstermen. Because fishermen outside of the lobster fishery would not be gaining fishing access by using gear-marking alternatives, it is not expected that they would switch to using alternative marking methods.

A shift in fishing effort from lobstermen may lead mobile-gear fishermen to relocate their effort to areas of less fixed gear. For example, if there is a large increase in fixed-gear fishing in ALWTRP pot/trap seasonal restricted areas, mobile fishermen may shift their fishing effort outside of these areas. If there is an overall reduction in vessel activity in some areas due to this shift, it could decrease interaction risk of vessel strikes in these areas. However, increased vessel activity in other areas could then increase, leading to increased risk of vessel strikes. The magnitude of impact of interaction risk due to any change in vessel activity would be dependent on the level of marine mammal cooccurrence in these areas. Overall, it is unknown whether and to what degree **Alternative 1B** (and **Alternative 1C** and **1D**) would impact vessel activity/presence and thus vessel strike risk.

Some gear-marking alternatives use acoustic signaling to localize gear and to trigger device retrieval mechanisms. Acoustic signaling from on-demand devices is characterized as intermittent and low energy. Acoustic emissions from regular communication and signaling activity are not expected to exceed marine animal harassment thresholds outside of the immediate vicinity of the signaling devices.

The magnitude of impact for **Alternative 1B** would depend on the scale and scope of the factors (e.g., vessel size and operating profit, shifts in effort) that are described above. Because fishermen would not be required to use alternative gear markings, it is difficult to predict the number of persistent buoy lines that would be replaced and the location of where gear would be moved from or to. Currently, NOAA Fisheries' Greater Atlantic Regional Fisheries Office issues EFPs to authorize vessels to replace some of their existing trawls with trawls using alternative gear markings. It is possible that more fishermen would choose to use gear-marking alternatives if they did not need to acquire an EFP to fish with them. And, increasing advances in on-demand system technology could draw greater interest in its use. Thus, the magnitude of any impact caused by the use of alternative gear markings would likely grow over time with its increased adoption.

Overall, impacts from **Alternative 1B** on protected species is expected to be moderate negative to moderate positive.

6.3.1.3 Alternative 1C

Alterative 1C is expected to have the same impacts as **Alternative 1B** (and **Alternative 1D**) that pertain to the use of alternative gear marking within and during persistent buoy line restricted areas, but not outside of them. **Alternative 1C** would only allow gear-marking alternatives in areas where, and during time when, the use of persistent buoy lines is not allowed. Therefore, only lobstermen, and no other fixed-gear fishermen, would be able to use gear-marking alternatives and gain access to additional fishing areas by using them, if and when gear-marking alternatives are approved for use. This is because, currently, persistent buoy line restricted areas only apply to the lobster/Jonah crab fisheries. However, if other fisheries had persistent buoy line restricted areas implemented then fishermen in these fisheries could also fish in those new areas by using gear-marking alternatives. Thus, under **Alternative 1C**, lobstermen could shift their fishing effort to the persistent buoy line restricted areas or utilize latent fishing effort to increase fishing effort in these areas and times. However, they would not be able to replace their traditional fishing gear outside of these areas and times with gear-marking alternatives. Because fishermen's ability to replace traditional gear markings with alternatives would be more limited, it is likely fewer fishermen would use gear-marking alternatives, and, therefore, there would be a smaller reduction in overall entanglement risk than there would be for **Alternative 1B** (and **Alternative 1D**) but a greater reduction than **Alternative 1A (No Action)**. In addition, **Alternative 1C** is not expected to have any additional or increased negative impacts compared to **Alternative 1B** or **1D** because of **Alternative 1C's** more limited scope.

Overall, impacts from **Alternative 1C** on protected species is expected to be moderate negative to moderate positive.

6.3.1.4 Alternative 1D

Alterative 1C is expected to have the same impacts as **Alternative 1B** and **Alternative 1C** that pertain to the use of alternative gear marking in areas that restrict the use of persistent buoy lines. As with **Alternative 1B** and **1C**, **Alternative 1D** could reduce negative interactions in areas where fishermen have reduced the presence of persistent buoy lines, fishing effort, and vessel activity. It could also increase interactions in areas that have increased presence of persistent buoy lines, fishing effort, and vessel activity. The magnitude of possible impact would be substantially reduced as compared to **Alternative 1B** but would be increased compared to **Alternative 1C** because of the difference in geographical and temporal scope of where gear-marking alternatives could be allowed. Specifically, under **Alternative 1D**, lobstermen could fish in the same geographical areas throughout the year without having to switch between gear that has traditional markings and alternative markings. This increased flexibility may lead to more fishermen using gear-marking alternatives throughout the course of a year, which, as discussed previously, could lead to fewer overall persistent buoy lines and reduced entanglement risk as compared to **Alternative 1C** and **Alternative 1A (No Action)**.

Overall, impacts from **Alternative 1C** on protected species is expected to be moderate negative to moderate positive.

6.3.1.5 Overall Summary of Alternatives Set 1 Impacts on Protected Species

Relative to **Alternative 1A (No Action)**, **Alternatives 1B**, **1C**, and **1D** could reduce the magnitude of the negative impact of fixed gear on protected species if fishermen choose to use gear with alternative gear markings as opposed to traditional gear markings that use persistent buoy lines. Fewer persistent buoy lines equate to reduced risk of incidental entanglement and, therefore, fewer injuries and mortalities to protected species. It is expected that **Alternative 1B** would provide the most benefit to protected species because it would allow for the most widespread use of gear-marking alternatives and, thus, the most reduction in persistent buoy lines and entanglement risk. **Alternative 1D** would provide the second most benefit to protected species, followed by **Alternative 1C**, because it is assumed that there would be less use of alternative gear markings if it was allowed in fewer areas and during shorter periods of time. **Alternative 1A (No Action)** would provide no additional benefit to protected species.

6.3.2 Alternative Set 2

Alternatives 2A (No Action), **2B**, and **2C** are not expected to have direct impacts on protected species as they are administrative in nature. However, **Alternative 2A (No Action)** and **Alternative 1C** could have a slight indirect negative impact to protected species from entanglement with ghost gear that resulted from improper location marking and gear conflict. However, this conclusion is speculative as it assumes that by not requiring fishermen to, in some manner, prove they are proficient with alternative gear marking (as required by **Alternative 2B**), some would mark gear inaccurately. Conversely, **Alternative 2B** could have indirect benefits. **Alternative 2B** is intended to promote reliability of location information for alternative gear markings. This could reduce the amount of gear conflict, which can lead to ghost gear that then poses an entanglement risk to protected species.

6.4 Impacts on Physical Environment and Essential Fish Habitat

This section describes the expected impacts of each alternative on the physical environment and Essential Fish Habitat (EFH). Since 1996, the MSA has included a requirement to evaluate the potential adverse effects of fisheries on EFH. A general description of the physical environment and EFH is in the Affected Environment (Section 5.4). The EFH regulations specify that measures to minimize impacts should be enacted when adverse effects that are "more than minimal" and "not temporary in nature" are anticipated.

The Essential Fish Habitat (EFH) impacts discussion below focuses on changes in the amount or location of fishing that might result from the implementation of the various alternatives. This approach to evaluating adverse effects to EFH is based on two principles: (1) seabed habitat vulnerability to fishing effects varies spatially, due to variations in seabed substrates, energy regimes, living and non-living seabed structural features, etc., between areas and (2) the magnitude of habitat impacts is based on the amount of time that fishing gear spends in contact with the seabed. To the extent that adoption of a management alternative would shift fishing to more vulnerable habitats, and/or increase seabed area fished, adoption would be expected to cause an increase in adverse habitat impacts as compared to no action. If adoption of an alternative is expected to reduce seabed area fished or cause fishing effort to shift away from more vulnerable into less vulnerable habitats, a decrease in habitat impacts would be expected. The magnitude of an increase or decrease in adverse effects relates to the proportion of total

fishing effort affected by an alternative. Bearing in mind that both the direction and magnitude of changes are difficult to predict, because changes in fishing behavior in response to management actions can be difficult to predict, potential shifts in adverse effects are described for each alternative under consideration.

6.4.1 Alternative Set 1

Alternative 1A (No Action) is not expected to have an impact on the physical environment because current gear markings do not interact with the physical environment in a meaningful way.

For **Alternatives 1B**, **1C**, and **1D**, the removal of persistent buoy lines from fixed gear in and of itself would not impact the physical environment or EFH because removing a persistent buoy line would not result in any physical interactions with the seafloor. However, these alternatives could allow fishermen to fish with fixed gear in ALWTRP seasonal restricted areas, which are closed to persistent buoy lines. Fishermen may choose to do so as opposed to fishing in other areas and/or during other times. However, because current ALWTRP persistent buoy lines restricted areas only apply to the lobster/Jonah crab fishery, only lobstermen would be able to fish in these restricted areas. Thus, these seasonal restricted areas may experience more habitat disturbance from fixed-gear fishing throughout the year as a result of **Alternatives 1B**, **1C**, or **1D**, due to lobstermen changing their fishing behavior. However, fixed-gear fishing typically has a lesser degree of impact than mobile-gear fishing and mobile gear is allowed in these seasonal restricted areas. Furthermore, these seasonal restricted areas have been and continue to be fished with fixed-gear when the closures are not in effect. As such, if there were an impact to the physical environment and EFH by allowing fishermen to fish in these seasonal restricted areas while they were in effect, it would be expected to be negligible.

It is not anticipated that **Alternatives 1B**, **1C**, or **1D** would result in different magnitudes of impact because all three could allow fixed gear to be used in seasonal restricted areas. In addition, it is not expected that allowing alternative gear marking in a larger geographical area, outside of areas closed to persistent buoy lines, would have an impact on the physical environment or EFH as it is not expected to impact where fishing occurs or the amount of fishing. In addition, because the impacts of **Alternatives 1B**, **1C**, and **1D** are expected to be negligible and **Alternative 1A (No Action)** is expected to have no impact, there is a negligible difference between the impacts that the alternatives in Set 1 would have on the physical environment and EFH.

6.4.2 Alternative Set 2

Alternatives 2A (No Action), **2B**, and **2C** would not impact the physical environment or essential fish habitat as they would not change any of the following: fishing location, timing, effort, authorized gear types, access to fishery resources, or harvest levels. There are no expected differences between the alternatives for impacts on the physical environment or EFH.

6.5 Impacts on Human Communities

This section discusses the economic impacts of this action on human communities in the Greater Atlantic Region.

6.5.1 Alternative Set 1

Methodology

To estimate the economic impact, this analysis identifies the number of vessels that could fish within the restricted areas. Because restricted areas that prohibit the use of persistent buoy lines are limited to the Northeast lobster/Jonah crab fleet, only lobster vessels would immediately benefit from this action. Then, we estimate their probability and profitability to switch to alternative gear marking. A precise evaluation of the economic impacts is challenging due to several factors: a dynamic fishing environment (e.g., changing fish stocks, weather patterns, and ocean conditions), a highly volatile seafood market, and the uncertain future cost of on-demand gear marking devices. Therefore, this analysis uses a simplified method, calculating the economic benefit of alternative gear marking as a set percentage of the operating profit from potential participants.

Step 1: Estimate the number of potential participants. Direct observation of fishing activity is not possible when the restricted areas are closed. To estimate the number of potential participants, this analysis uses vessel trip report (VTR) data from vessels that fished inside the restricted areas during the shoulder months (the months immediately preceding and following a seasonal restricted period) and from vessels that fished outside, but within the three-mile buffer zone, of the restricted areas. As presented in Table 8, LMA1 restricted area had 159 vessels in September and February. The MRA had about 90 vessels that fished during the winter season. This area typically attracts fishermen due to its close proximity to shore and higher winter lobster prices. In contrast, the GSCRA is located far offshore, so only 11 unique vessels were observed there. Finally, 51 unique vessels fished in the SIRA during January and May throughout the years. A variety of data sources and year of data were used, depending on the circumstance of each restricted area, as discussed below.

Table 8 - The numbers of unique vessels inside or around the restricted areas during shoulder months.

AREA	CLOSURE MONTHS	SHOULDER MONTHS	NUMBER OF VESSELS
LMA1 RA	Oct-Jan	Sep and Feb	159
MRA	Feb-Apr	Jan and May	90
GSCRA	Apr-Jun	Mar and Jul	11
SIRA	Feb-Apr	Jan and May	51

Data source: LMA1 RA data use 2023 Maine DMR logbook data (the most recent year with 100 percent logbook coverage). Other restricted areas use 2021 to 2024 NMFS VTR data (VTR data were pooled to ensure adequate coverage, as data from any single year is incomplete).

Step 2: Categorize the potential vessels by size class. Vessel size is a critical factor for estimating profitability; accordingly, this step categorizes potential participants by size class. The detailed size distribution for each restricted area during the shoulder months is presented in Table 9. For LMA1 RA and MRA, about 69 percent of vessels ranged between 35 to 44 ft, and about eight percent of vessels were below 35 ft. About eight percent of the vessels are above 55 ft in LMA1 RA, while only two percent of the vessels are over 55 ft in the MRA. In the GSCRA, about 54 percent of vessels were above 55 ft, with 45 percent below 45 ft. In the SIRA, about 14

percent of vessels were over 55 ft; 20 percent ranged between 45 to 54 ft; 53 percent of vessels ranged between 35 to 44 ft; and 14 percent were under 35 ft.

Table 9 - Vessel distribution by size category in each restricted area based on 2021-2024 VTR data.

SIZE CLASS	LMA1 RA	MRA	GSCRA	SIRA
BELOW 35 FT	8%	12%	18%	14%
35 TO 44 FT	69%	68%	27%	53%
45 TO 54 FT	15%	18%	0%	20%
55 FT AND ABOVE	8%	2%	54%	14%

Data source: 2021 to 2024 NMFS VTR data.
Note: All unique vessels from 2021 to 2024 VTR data were identified, then pooled.

Step 3: Simulate vessel revenue and operating profit during the closure months. To simulate the revenue for vessels that use alternative gear markings within the restricted areas during closure periods, this analysis uses the average revenue per vessel from adjacent locations as a proxy, where each restricted area is represented by its primary statistical area. Table 10 presents these simulated average revenue figures, categorized by vessel size class, for each restricted area.

Table 10 - Average revenue per vessel during closure months for each restricted area by size class.

SIZE CLASS	LMA1 RA	MRA	GSCRA	SIRA
BELOW 35 FT	$55,301	$10,645	$6,525	$1,130
35 TO 44 FT	$112,332	$18,795	$14,867	$10,972
45 TO 54 FT	$199,196	$68,542	$0	$132,372
55 FT AND ABOVE	$149,945	$207,105	$33,116	$170,744

Data source: 2023 NMFS CAMS data and 2022 NEFSC cost survey data.
Note: Federal trip data from statistical areas surrounding each restricted area is used to estimate the vessel revenue in the restricted area during the closure months. LMA1 RA: 512 and 513; MRA: 514; GSCRA: 521 and 522; SIRA: 526, 537, and 539.

Data from the 2022 Northeast Fisheries Science Center (NEFSC) cost survey[7] was used to estimate the operating profit rate.[8] This rate was then applied to the simulated revenue to calculate the potential operating profit per vessel in the restricted areas during closure months, as detailed in Table 11. Note that these profit figures account for crew payments, but do not include

Table 11 - Potential operating profit per vessel in each restricted area by size class.

SIZE CLASS	LMA1 RA	MRA	GSCRA	SIRA
BELOW 35 FT	$11,433	$2,201	$1,349	$234
35 TO 44 FT	$25,443	$4,257	$3,367	$2,485
45 TO 54 FT	$88,429	$30,428	$0	$58,764

[7] The operating profit rate (crew payment not deducted from profit) for vessels below 35 ft is 30 percent, for vessels from 35 to 44 ft it is 32 percent, for vessels from 45 to 54 ft it is 63 percent, and for vessels above 55 ft it is 31 percent.
[8] (fishing revenue-variable trip cost)/fishing revenue.

55 FT AND ABOVE	$32,501	$44,890	$7,178	$37,009

Step 4: Evaluate the total economic impact for all vessels. To estimate gear costs, this analysis uses a stowed rope system as a representative example. Based on data from the Northeast Fishery Science Center (NEFSC) gear team, a deck unit is estimated to cost $5,900 and a release unit $3,900. A vessel that fishes 600 traps with 30 traps per string will need one deck unit and 40 sets of release units (2 units per string). Using a 10-year lifespan and a 4.4% discount rate, the annualized gear cost for such a vessel is calculated to be $29,100.[9]

With a 10-year lifespan and 4.4 percent discount, Table 11 indicates that no vessels under 45 ft could have enough operating profit to support the cost of on-demand gear. On the other hand, most vessels over 45 ft, except for those in GSCRA, have the potential to support the cost of on-demand gear. Combining all of the previous vessel and cost data, Table 12 shows that the total economic benefits from fishing in the existing persistent buoy line restricted areas is about $1.9 million per year[10]. When comparing these costs with the potential operating profit (Table 11), it is clear that vessels under 45 ft would likely not generate sufficient profit to support the investment in on-demand gear. However, most vessels over 45 ft appear profitable enough to adopt the technology, with the exception of those in the GSCRA. Combining previous vessel and cost data, the final analysis in Table 12 estimates the total potential economic benefit of this alternative to be approximately $1.9 million per year. [11]

Table 12 - Total economic benefit for vessels that could potentially fish in the restricted areas with alternative gear marking.

SIZE CLASS	LMA1 RA	MRA	SIRA	TOTAL
45 TO 54 FT	$1,414,985	$21,508	$302,568	$1,739,061
55 FT AND ABOVE	$43,260	$28,423	$56,471	$128,154
TOTAL	$1,458,245	$49,931	$359,039	$1,867,215

Alternative 1A would not allow for alternative gear marking and would continue to require current surface markings (buoys, pennants, radar reflectors, high flyers, etc.).

Lobster fishery: Lobstermen would continue their current fishing practices, either removing their gear from the water or relocating their gear to areas outside the restricted areas. There would be negligible or no economic impact on fishing communities.

Council-managed fisheries: Similarly, for Council-managed fisheries, fishermen would continue their current fishing practices, either removing their gear from the water or relocating their gear

[9] The cost could be reduced by 10% or more in the future with mass production. Also, other systems could have higher or lower unit prices. This cost includes a $300 annual maintenance cost, but does not include the internet cost as internet is not exclusively used for alternative gear marking.

[10] Other economic benefits could include the savings from a few gear transporting trips at the beginning and end of closures.

[11] Additional economic benefits could include the cost savings from eliminating trips to transport gear at the beginning and end of each closure period.

to areas outside restricted areas that prohibit fishing. Thus, there would be negligible or no economic impact on fishing communities.

Alternative 1B would allow the use of alternative gear marking anywhere within the Greater Atlantic Region (Maine through Cape Hatteras, North Carolina).

Lobster fishery: Following the methodology discussed above, Table 12 shows that the total economic benefits from fishing in the existing persistent buoy line restricted areas is about $1.9 million per year[12]. These vessel owners have the greatest incentive to adopt alternatively marked gear, namely to regain access areas that function as fishery closures. Because **Alternatives 1B** could allow gear-marking in the entire Greater Atlantic Region, other Federally permitted lobster vessels that do not fish in restricted areas may decide to use gear-marking alternatives. **Alternative 1B**'s widespread allowance of alternatively marked gear would allow lobstermen to decide how to mark their gear (i.e., traditionally or with approved marking systems) and may decide to use gear-marking alternatives for a variety of reasons. They may do so to increase profits, reduce costs, or simply due to personal preference for a certain type of gear. For example, in areas where surface marking systems are frequently lost due to weather or other gear/vessel interactions, using on-demand gear may present a cost savings due to less lost gear. Additionally, long-term economic benefits could include a seafood premium generated through the use of these environmentally friendly fishing practices. However, it could take a long time to build consumer awareness and a functioning sustainable seafood market for seafood caught using alternative gear markings. While such incentives may exist or develop, it is difficult to assess the decision for other lobstermen to switch to on-demand gear. Thus, it is difficult to quantify the economic benefit of such decisions. The methodology and results presented above also indicate that, at present, smaller vessels may not have enough operating profit to support on-demand gear costs. While this could create equity of access concerns. However, there may be many solutions to address these concerns, such as the Regional Administrator not granting approval to certain areas, the development of a lending library (where gear can be accessed at a reduced cost), or the development of lower cost technologies. These may help to mitigate potential negative impacts of unequal access.

Council-managed fisheries: Because existing gillnet and other trap/pot restricted areas currently prohibit fishing, no gillnet or other trap/pot permit holders would stand to regain access to an area. Therefore, these vessels' decisions to use alternatively marked gear follow a similar logic to lobster vessels outside of the restricted areas, as described above. It is difficult to predict or assess the incentives to switch to using gear that does not have a persistent buoy line, thus, it is difficult to quantify the economic benefits of these decisions.

This alternative may create the most costs for the mobile-gear fleet. While area-specific approval of alternatively marked gear is expected, the most widespread allowance of alternative gear marking suggests that more mobile-gear fleets may need to equip their vessels with certain technology to avoid gear conflicts, if their vessels are not already equipped with the technology

[12] Other economic benefits could include the savings from a few gear transporting trips at the beginning and end of closures.

needed to detect alternatively marked fishing gear. While these vessels are not directly regulated by this action, these costs are acknowledged.

Alternative 1C would allow alternative gear marking within the areas and seasons of persistent buoy line restricted areas established by the Atlantic Large Whale Take Reduction Plan[13], but year-round.

Lobster fishery: Following the methodology discussed above, Table 12 shows that the total economic benefits from fishing in the existing persistent buoy line restricted areas is about $1.9 million per year[14].

Council-managed fisheries: Because existing gillnet and other trap/pot restricted areas currently prohibit fishing, no immediate economic benefit would result from this action. However, should existing gillnet or other trap/pot areas be converted to persistent buoy line restricted areas or new persistent buoy line restricted areas be created for this gear type, some economic benefit may accrue for vessels able to support the cost of on-demand gear.

This alternative may create cost for the mobile gear fleet. If alternative gear marking is allowed within the restricted areas, the mobile gear fleet that fishes in the areas and during the seasons of the restricted areas may need to equip their vessels with certain technology to avoid gear conflicts, if their vessels are not already equipped with the technology needed to detect alternatively marked fishing gear. While these vessels are not directly regulated by this action, these costs are acknowledged.

Alternative 1D would allow alternative gear marking within the areas persistent buoy line restricted areas established by the Atlantic Large Whale Take Reduction Plan, but year-round.

Lobster fishery: Following the methodology described above and similar to **Alternative 1B**, Table 12 shows that the total economic benefits from fishing in the existing persistent buoy line restricted areas is about $1.9 million per year[15]. Additionally, vessels may benefit from the ability to use this gear year-round, given potential time savings under this alternative of not having to switch surface markers seasonally, though this benefit is difficult to quantify.

Council-managed fisheries: Because existing gillnet and other trap/pot restricted areas currently prohibit fishing, no immediate economic benefit would result from this action. However, should existing gillnet or other trap/pot areas be converted to persistent buoy line restricted areas or new persistent buoy line restricted areas be created for this gear type, some economic benefit may accrue for vessels able to support the cost of on-demand gear.

This alternative may create cost for the mobile gear fleet. If alternative gear marking is allowed within the restricted areas year-round, the mobile gear fleet that fishes in the restricted areas may

[13] We only include the federal portion of the restricted areas in this analysis, but the three-mile buffer zone around the restricted areas may cover some state waters.
[14] Other economic benefits could include the savings from a few gear transporting trips at the beginning and end of closures.
[15] Other economic benefits could include the savings from a few gear transporting trips at the beginning and end of closures.

need to equip their vessels with certain technology to avoid gear conflicts, if their vessels are not already equipped with the technology needed to detect alternatively marked fishing gear.

6.5.2 Alternative Set 2

Alternative 2A would create no new requirements for the fishing industry. No additional burden would be associated with this alternative for either the lobster or Council-managed fisheries.

Alternative 2B would require a vessel operator intending to use alternatively marked gear to obtain a Letter of Authorization documenting that they have demonstrated knowledge of how to mark gear with an approved gear-marking alternative. The primary economic impact of this alternative for both the lobster and Council-managed fishery participants would be associated with the additional time needed to complete the requirements and associated paperwork. Some potential but unquantifiable benefit may result to the mobile gear fisheries in that the demonstration of knowledge may result in more accurately marked gear. More accurately marked gear may be easier for mobile gear vessels to navigate around, thus decreasing some gear conflicts.

Alternative 2C would require a vessel operator intending to use alternatively marked gear to obtain a Letter of Authorization to use a gear-marking alternative, but would not require the demonstration of knowledge to obtain the Letter of Authorization. The economic impact of this alternative for both the lobster and Council-managed fisheries would be limited to the time associated with completing the required paperwork to obtain a Letter of Authorization.

6.6 Cumulative Effects Analysis

6.6.1 Introduction

The purpose of the CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective. Rather, the intent is to focus on those effects that are truly meaningful. The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed fisheries relevant to this action.

A cumulative effects assessment makes effect determinations based on a combination of: 1) impacts from past, present, and reasonably foreseeable future actions; 2) the baseline conditions of the VECs (the combined effects from past, present, and reasonably foreseeable future actions plus the present condition of the VEC); and 3) impacts of the alternatives under consideration for this action. To enhance clarity and maintain consistency, terms are as defined in Table 7.

6.6.1.1 Valued Ecosystem Components (VEC)

The valued ecosystem components are generally the “place” where the impacts of management actions occur and are identified in Section 5.

- Fishery resources;
- Physical environment / Essential Fish Habitat;
- Protected species; and

- Human Communities (including economic and social effects on the fishery and fishing communities).

The CEA identifies and characterizes the impacts on the VECs by the alternatives under consideration when analyzed in the context of other past, present, and reasonably foreseeable future actions.

6.6.1.2 Geographic Scope

The geographic scope considered for analysis of impacts to fishery resources, the physical environment/EFH, and protected resources is the Western Atlantic Ocean to the limit of the U.S. EEZ, from the U.S./Canadian maritime boundary through North Carolina. The geographic scope for the assessment of socio-economic effects is defined as those U.S. fishing communities directly involved in the harvest or processing of the managed resources, which were found to occur in the coastal states from Maine through North Carolina.

6.6.1.3 Temporal Scope

The temporal scope of actions for fisheries resources, the physical environment/EFH (habitat), protected resources, and socio-economic cumulative effects assessment, is primarily focused on actions that occurred after 1976, when fisheries management began under MSA. An assessment using this timeframe demonstrates the changes to resources and the human environment that have resulted through management under the Council process and through U.S. prosecution of fisheries. For protected species, the temporal range is focused on the 1980s and 1990s (when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ) through the present.

The temporal scope of future actions for all VECs extends about five years (2031) into the future beyond the implementation of this action. The dynamic nature of resource management for these species and lack of information on projects that may occur in the future make it difficult to predict impacts beyond this timeframe with any certainty. The impacts discussed in Section 6.6.4 are focused on the cumulative effects of the proposed action (i.e., the suite of alternatives) in combination with the relevant past, present, and reasonably foreseeable future actions over these time scales.

6.6.2 Relevant Action Other Than Those Proposed in this Document

This section describes past, present, and future foreseeable actions that have effects on the valued ecosystem components (VECs) evaluated in this framework adjustment.

6.6.2.1 Fishery Management Actions

6.6.2.1.1 Fishery Resources

There are many FMPs and associated fishery management actions that impact the VECs that are considered in this action. These include FMPs managed by the Mid-Atlantic Fishery Management Council, New England Fishery Management Council, Atlantic States Marine Fisheries Commission, and to a lesser extent, the South Atlantic Fishery Management Council. A summary of past and present management actions for the species most relevant to this action are described in Section 5.2.

Impact Summary

Together, these actions would likely have positive impacts for fishery resources because they aim to directly manage those fisheries in a sustainable way either by maintaining or improving stock status. These actions would likely have slight negative impacts to the physical environment and protected species, and positive impacts for human communities.

6.6.2.1.2 Protected Species

Past and Present Actions

Fishery Biological Opinion: On May 27, 2021, the NMFS completed formal consultation pursuant to section 7 of the ESA of 1973, as amended, and issued a biological opinion (2021 Opinion) on the authorization of eight FMPs, two interstate fishery management plans, and the implementation of the New England Fishery Management Council's Omnibus Essential Fish Habitat (EFH) Amendment 2. On September 13, 2023, NMFS issued a 7(a)(2)/7(d) memorandum that reinitiated consultation on the 2021 Biological Opinion; this memorandum was replaced with an updated 7(a)(2)/7(d) memorandum issued by NMFS on January 8, 2025. Consultation is currently ongoing; additional information on the reinitiation is provided in Section 8.5 of Appendix I.

ALWTRP Actions: In response to the continued serious injury and mortality of large whales from entanglement in vertical lines (or buoy lines) of commercial fishing gear, we implemented the ALWTRP in 1997 to reduce the risk of vertical line entanglements in areas and times where abundance of large whales and high trap/pot gear density overlap. Since then, NOAA Fisheries made modifications to gear requirements (including requiring sinking groundline) and added time/area closures to protect North Atlantic right whales. The ALWTRP was last amended in 2021 (86 FR 51970; September 17, 2021) and 2024 (89 FR 8333, February 7, 2024) to reduce risk of serious injury and mortality to North Atlantic right whales caused by entanglement in the Northeast American lobster and Jonah crab trap/pot fisheries. Measures included:

- Increasing the minimum number of traps per trawl based on area fished and distance fished from shore in the Greater Atlantic Region;
- Modifying existing Northeast trap/pot restricted areas from seasonal fishing closures to seasonal closures to fishing with persistent buoy lines (i.e., fishing with on-demand/ropeless gear is allowed but only under select EFPs);
- Expanding the geographic extent of the Massachusetts Restricted Area to include Massachusetts state waters north to the New Hampshire border; in 2024, further expanding the Massachusetts Restricted Area to include Federal waters between the state and 2021 Federal waters restricted areas;
- Establishing two new restricted areas that are seasonally closed to fishing for lobster or Jonah crab with persistent buoy lines;
- Requiring modified buoy lines to incorporate rope engineered to break at no more than 1,700 pounds (lb) (771.1 kilograms (kg)) or weak insertion configurations that break at no more than 1,700 lb (771.1 kg); and
- Requiring additional marks on persistent buoy lines to differentiate lines by principal port state, including unique marks for Federal waters, and expanding requirements into areas previously exempt from gear marking.

Modifications to the ALWTRP that closes Federal waters adjacent to the Massachusetts Restricted Area: Following emergency actions in 2022 and 2023, on February 7, 2024, NOAA

Fisheries published a ALWTRP amendment rule (89 FR 8333) to expand the boundaries of the seasonal Massachusetts Restricted Area to include the wedge between state and Federal waters, known as the Wedge. Substantial observational evidence had documented the consistent presence of right whales within the Wedge from February through April and aerial surveys have similarly documented the presence of aggregated fixed gear in the Wedge during this same time period. Due to the co-occurrence of whales and persistent buoy lines, both in high densities in this area during the specified times of year, this entanglement risk was expected to recur annually. This action addressed a gap in protection between seasonally closed state and Federal waters to reduce the incidental mortality and serious injury of right whales, fin whales, and humpback whales in commercial trap/pot fisheries. On March 14, 2024 the U.S. District Court for the District of Massachusetts ruled that the Consolidated Appropriation Act, 2023, bars the Wedge Rule until December 31, 2028. However, on January 30, 2025 the U.S. First Circuit Court of Appeals overruled the District Court, holding that the Wedge Rule (89 FR 8333) was lawful and enforceable under an exception in the Consolidated Appropriation Act, 2023.

Bottlenose Dolphin and Harbor Porpoise Take Reduction Plans: NOAA Fisheries has also implemented regulations, pursuant to the Harbor Porpoise Take Reduction Plan, Bottlenose Dolphin Take Reduction Plan to reduce serious injury and mortality of specific marine mammal species in commercial gillnet fisheries.

Framework Adjustment 15 to the Monkfish FMP and Framework Adjustment 6 to the Spiny Dogfish FMP: On December 18, 2024, NMFS issued a final rule implementing regulations for Framework Adjustment 15 to the Monkfish Fishery Management Plan/Framework Adjustment 6 to the Spiny Dogfish Fishery Management Plan, which the New England and Mid- Atlantic Fishery Management Councils jointly recommended and NMFS approved (89 FR 102834; December 18, 2024). The regulations establish area-based gillnet gear requirements in both fisheries in order to minimize bycatch of Atlantic sturgeon. Monkfish fishery regulations will start on January 1, 2026; spiny dogfish regulations started on May 1, 2025.

Reasonably Foreseeable Future Actions

Atlantic Large Whale Take Reduction Team Efforts: NOAA Fisheries is planning on amending the ALWTRP to reduce the risk of mortalities and serious injuries of North Atlantic right, fin, and humpback whales in U.S. East Coast gillnet and trap/pot fisheries. The ALWTRT will consider various measures to reduce entanglement risk, which may include additional or modified seasonal areas that restrict the use of persistent buoy lines, as well as areas where only one persistent buoy line per trawl or set would be allowed and areas that would be closed temporarily due to persistent aggregations of right whales. The moratorium on additional Marine Mammal Protection Act or Endangered Species Act regulations for the American lobster and Jonah crab fishery was put into place by Congress in the Consolidated Appropriations Act, 2023. The language in Division JJ-North Atlantic Right Whales, Section 101, requires NOAA Fisheries to implement "new regulations for the American lobster and Jonah crab fisheries consistent with the Marine Mammal Protection Act of 1972 (16 8 U.S.C. 1361 et seq.) and the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) that take effect by December 31, 2028, utilizing existing and innovative gear technologies, as appropriate." It is therefore expected that a final rule to amend the ALWTRP would have an implementation date of December 31, 2028.

Green Sea Turtle Critical Habitat: On July 19, 2023, NMFS issued a proposed rule to designate new areas of critical habitat and modify existing critical habitat for threatened and endangered distinct population segments (DPSs) of the green sea turtle, in areas under U.S. jurisdiction, pursuant to the ESA (88 FR 46572). The comment period on the proposed rule closed on October 17, 2023; rule making is currently ongoing.

Impact Summary
Together, the above measures, whether proposed or final, will have mixed effects on protected species. All of the measures would likely have some degree of positive impacts on these protected species by reducing the number of interactions with fishing gear, and therefore, reducing the risk of injury and mortality to these protected species, and/or adversely affecting habitat. However, as none of the measures eliminate interactions, some degree of negative impacts may still occur to protected species and/or designated critical habitat.

6.6.2.1.3 Physical Environment / EFH

Past and Present Actions
Mid-Atlantic Council Deep Sea Coral Amendment (Final Rule 2017): This action implemented management measures in the Mid-Atlantic to protect deep-sea corals from the effects of commercial fishing gear. This action was intended to protect deep-sea coral and deep-sea coral habitat while promoting the sustainable utilization and conservation of several different marine resources managed under the authority of the Mid-Atlantic Fishery Management Council.

New England Council Habitat Omnibus Amendment 2 (Final Rule 2018): This action implemented revised essential fish habitat and habitat area of particular concern designations, revised or created habitat management areas, including gear restrictions, to protect vulnerable habitat from fishing gear impacts, and established dedicated habitat research areas in waters off New England.

New England Council Omnibus Coral Amendment (Final Rule 2021): This action implements protections to deep-sea corals from the impacts of commercial fishing gear on Georges Bank and in the Gulf of Maine. These management measures are intended to reduce, to the extent practicable, the impacts of fishing gear on deep-sea corals in New England while balancing their costs to commercial fisheries.

Clam Dredge Framework (Final Rule 2020): This action adjusted surfclam and mussel dredging under certain restrictive conditions in the Great South Channel Habitat Management Area.

Southern New England Habitat Area of Particular Concern (Final Rule February 2024): We published a final rule (89 FR 7633) implementing the New England Fishery Management Council's Framework Adjustment that identifies a Habitat Area of Particular Concern offshore of southern New England. This rule adjusted the following fishery management plans: Northeast Multispecies; Atlantic Sea Scallop; Monkfish; Northeast Skate Complex; and Atlantic Herring. The Habitat Area of Particular Concern is within and around wind lease areas in southern New England, including Cox Ledge, to focus conservation recommendations on cod spawning habitats and complex benthic habitats that are known to serve important habitat functions to Council-managed fishery species.

Northeast Canyons and Seamounts Marine National Monument (Final Rule February 2024): NOAA Fisheries published a final rule (89 FR 12282) implementing commercial fishing regulations for the Northeast Canyons and Seamounts Marine National Monument. This action was necessary to conform U.S. fishing regulations to be consistent with Presidential Proclamations 9496 and 10287, which prohibited commercial fishing in the Northeast Canyons and Seamounts Marine National Monument and directed the Secretaries of Commerce and Interior to promulgate regulations necessary for the proper care and management of the Monument. The measures in the regulations are intended to define the boundary coordinates of the Monument area and clarify the prohibition on commercial fishing in the area in the Magnuson-Stevens Fishery Conservation and Management Act regulations.

Impact Summary

Together, these actions have had slight positive impacts to the physical environment because they have aimed at improving quality or quantity of habitat through targeted fishery closures protecting habitat that are essential for fish and corals. As a result, these actions would likely have had slight positive impacts fishery resources, uncertain for protected species given that shifts in effort were expected, and short-term negative impacts to human communities due to area closures, with the prospect for longer-term positive impacts through an increase in fish abundance and availability to harvesters.

6.6.2.1.4 Fishery Management Action Summary

Federal FMPs are developed to optimize yield in U.S. fisheries and to comply with the Magnuson-Stevens Act as reauthorized through 2007. The legislation promotes long-term positive impacts on the environment in the context of fisheries activities, stipulating that management plans must comply with a set of National Standards that collectively serve to optimize the conditions of the human environment. Specific goals of fishery management plans include improving or maintaining the stock structure and abundance of target species, improving economic and social outcomes, and minimizing incidental impacts, for example relative to protected resources and other non-target species. The cumulative impacts on the VECs of past, present, and reasonably foreseeable future Federal fishery management actions under the MSA should generally be associated with positive long-term outcomes because they constrain fishing effort and manage stocks at sustainable levels. Constraining fishing effort through regulatory actions can have negative short-term socioeconomic impacts. These impacts are sometimes necessary to bring about long-term sustainability of a resource, and as such should promote positive effects on human communities in the long-term.

6.6.2.2 Non-Fishing Impacts

6.6.2.2.1 Other Human Activities

Non-fishing activities that occur in the marine nearshore and offshore environments and connected watersheds can cause loss or degradation of habitat and/or affect the species that utilize those areas. The impacts of most nearshore, human-induced, non-fishing activities tend to be localized in the areas where they occur, although effects on highly mobile species could be felt throughout their populations. For offshore projects, some impacts may be localized while others may have regional influence, especially for larger projects. The following discussion of impacts is based on past assessments of activities and assumes these activities will continue as projects are proposed.

Examples of non-fishing activities include point source and non-point source pollution, shipping, dredging/deepening, wind energy development, oil and gas development, construction, and other activities. Specific examples include at-sea disposal areas, oil and mineral resource exploration, aquaculture, construction of offshore wind energy projects, and bulk transportation of petrochemicals. Episodic storm events and the restoration activities that follow can also cause impacts. The impacts from these activities primarily stem from habitat loss and alteration due to human interaction or natural disturbances. These activities are widespread and can have localized impacts on habitat related to accretion of sediments, pollutants, habitat conversion, and shifting currents and thermoclines. For protected species, primary concerns associated with non-fishing activities include vessel strikes, dredge interactions (especially for sea turtles and sturgeon), and underwater noise. These activities have both direct and indirect impacts on protected species. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the productivity of fishery resources and protected species. Decreased habitat suitability tends to reduce the tolerance of these VECs to the impacts of fishing effort. Non-fishing activities can cause fishery resources and protected species to shift their distributions away from preferred areas and may also lead to decreased reproductive ability and success (e.g., from current changes, spawning disruptions, and behavior changes), disrupted or modified food web interactions, and increased disease. While localized impacts may be more severe, the overall impact on the affected species and their habitats on a population level is unknown, but likely to have impacts that mostly range from no impact to slight negative, depending on the species and activity.

Non-fishing activities permitted by other Federal agencies (e.g., beach nourishment, offshore wind facilities) require examinations of potential impacts on the VECs. The MSA imposes an obligation on other Federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH (50 CFR 600.930). NMFS and the eight regional fishery management councils engage in this review process by making comments and recommendations on Federal or state actions that may affect habitat for their managed species. Agencies need to respond to, but do not necessarily need to adopt, these recommendations. Habitat conservation measures serve to potentially minimize the extent and magnitude of indirect negative impacts federally-permitted activities could have on resources under NMFS' jurisdiction. In addition to guidelines mandated by the MSA, NMFS evaluates non-fishing effects during the review processes required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by Federal, state, and local authorities. Non-fishing activities must also meet the mandates under the ESA, specifically Section 7(a)(2)[16], which ensures that agency actions do not jeopardize the continued existence of endangered species and their critical habitat.

In recent years, offshore wind energy and oil and gas exploration have become more relevant activities in the Greater Atlantic region. They are expected to impact all VECs, as described below.

[16] "Each Federal agency shall, in consultation with and with the assistance of the Secretary, ensure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat."

Impacts of Offshore Wind Energy Development on Fishery Resources, Protected Species, and the Physical Environment

Five offshore wind energy projects from southern New England through Virginia, with a cumulative total of up to 399 turbines once completed, are either operational or are currently undergoing construction. Over twenty additional projects in Federal waters are in various stages of the planning process but have not yet been fully permitted. Pursuant to the Executive Order, "Temporary Withdrawal of All Areas on the Outer Continental Shelf from Offshore Wind Leasing and Review of the Federal Government's Leasing and Permitting Practices for Wind Projects,"[17] permitting and development of those additional projects is not reasonably foreseeable in the short term.

Construction, operation, and eventual decommissioning of offshore wind energy projects may have both direct and indirect impacts on marine species. For example, changes in species distribution may result from habitat conversion and changes in oceanographic processes due to the addition of thousands of new hard structures in the ocean if all planned projects are built (i.e., turbine and offshore substation foundations, as well as external cable armoring where needed). Temporary behavior changes may occur for some species due to factors such as construction and operations noise and electromagnetic fields. Some species may experience injury or mortality (e.g., due to noise and physical impacts during construction). Changes in larval dispersal could result from changes in oceanographic conditions. Changes in physical and biological habitats could impact the distribution of predator and prey species. The impacts will vary by species based on their life history, migration patterns, and habitat use. Some species may benefit from the additional hard structures placed in the ocean, while others will be negatively impacted. Hogan et al. (2023) should be referenced for an in-depth synthesis of current and past scientific research examining the interactions between offshore wind, fisheries, and marine ecosystems. This report summarized the current state of scientific knowledge and data gaps for impacts including benthic habitat modification, physical habitat modification, offshore wind interactions with oceanographic processes, and ecosystem impacts on phytoplankton and zooplankton. Impacts could occur from changes to habitat in the areas of wind turbines, offshore substations, and cable corridors and increased vessel traffic to and from these areas.

Wind energy survey and construction activities, as well as operations throughout the life of the projects will substantially affect NMFS scientific research surveys, including stock assessment surveys for fisheries and protected species and ecological monitoring surveys. Disruption of these surveys could increase scientific uncertainty in survey results and may significantly affect NMFS' ability to monitor the health, status, and behavior of marine species (including protected species) and their habitat use within this region. Based on existing regional Fishery Management Councils' ABC control rule processes and risk policies (e.g., 50 CFR §§ 648.20 and 21), increased assessment uncertainty could result in lower commercial quotas and recreational harvest limits that may reduce the likelihood of overharvesting and mitigate associated biological impacts on fish stocks. However, this would also result in lower fishing revenues and reduced

[17] https://www.whitehouse.gov/presidential-actions/2025/01/temporary-withdrawal-of-all-areas-on-the-outer-continental-shelf-from-offshore-wind-leasing-and-review-of-the-federal-governments-leasing-and-permitting-practices-for-wind-projects/

recreational fishing opportunities, which could result in indirect negative impacts on fishing communities.

Socioeconomic Impacts of Offshore Wind Energy Development

The socioeconomic impacts of offshore wind energy on commercial fisheries could be generally negative due to the overlap of wind energy areas with productive fishing grounds. Fishing effort would be temporarily displaced during construction of wind projects. Restricted fishing access is not anticipated during the operational phase of any planned projects; however, some fishermen may choose not to operate within project areas due to safety concerns. Any reduced fishing access (either due to restrictions or safety concerns) as a result of offshore wind energy development would result in a negative overall effect to the fishery. In some cases, effort could be displaced to another area, which could partially compensate for potential economic losses if vessel operators choose not to operate in the wind energy areas.

There could also be social and economic benefits in the form of jobs associated with construction and maintenance, and replacement of some electricity generated using fossil fuels with renewable sources (AWEA 2020).

It remains unclear how fishing or transiting to and from fishing grounds will be affected by the presence of a wind energy project. While no offshore wind developers have expressed an intent to exclude fishing vessels from project areas once construction is complete, it could be difficult for operators to tow bottom-tending mobile gear or transit amongst the wind turbines, depending on the spacing and orientation of the array and weather conditions.[18] If vessel operators choose to avoid fishing or transiting within wind project areas, effort displacement and additional steaming time could result in negative socioeconomic impacts to affected communities, including increased user conflicts, decreased catch and associated revenue, safety concerns, and increased fuel costs. If vessels elect to fish within wind project areas, effects could be both positive and negative due to increased catch rates for some species with some gear types (e.g., recreational catches of structure orienting species such as black sea bass) and reduced catches and associated revenues for other species and gear types (e.g., mobile bottom tending gear), user conflicts, gear damage/loss, and increased risk of allision or collision.

Impacts of Oil and Gas Development on Biological and Socioeconomic Resources

The timeframe for potential impacts from oil and gas development activities considered in this document includes leasing and possible surveys, depending on the direction of the Bureau of Ocean Energy Management's 5-year planning process in the North and Mid-Atlantic regions. The Eleventh National Outer Continental Shelf Oil and Gas Leasing Program was announced in 2025. Seismic surveys to detect and quantify mineral resources in the seabed impact marine species and the acoustic environment within which marine species live. These surveys have uncertain impacts on fish behaviors that could cumulatively lead to negative population level impacts. For protected species (sea turtle, fish, small cetacean, pinniped, large whale), the

[18] The United States Coast Guard has considered transit and safety issues related to the Massachusetts and Rhode Island lease areas in a recent port access route study, and has recommended uniform 1 mile spacing in east-west and north-south directions between turbines to facilitate access for fishing, transit, and search and rescue operations. Future studies in other regions could result in different spacing recommendations (USCG 2020).

severity of these behavioral or physiological impacts is based on the species' hearing threshold, the overlap of this threshold with the frequencies emitted by the survey, as well as the duration of time the surveys would operate, as these factors influence exposure rate (Ellison et al. 2011, Ellison et al. 2018, Finneran 2015, Finneran 2016, Madsen et al. 2006, Nelms et al. 2016, Nowacek et al. 2007, Nowacek et al. 2015, NRC 2000, NRC 2003, NRC 2005, Piniak 2012, Popper et al. 2014, Richardson et al. 1995, Thomsen et al. 2006, Weilgart 2013). If marine species are affected by seismic surveys, then the fishermen targeting these species would be affected. However, such surveys could increase jobs, which may provide some positive effects on human communities (BOEM 2020). It is important to understand that seismic surveys for mineral resources are different from surveys used to characterize submarine geology for offshore wind installations, and thus these two types of activities are expected to have different impacts on marine species.

Offshore Energy Summary

The overall impact of offshore wind energy and oil and gas exploration on the affected species and their habitats at a population level is unknown, but likely to range from moderate positive to moderate negative, depending on the species and the number and locations of projects that occur. The individual project phases (site assessment, construction, operation, and decommissioning) as well as different aspects of the technology (foundation types, cables/pipelines, turbines) will have varying impacts on resources. Mitigation efforts, such as habitat conservation measures, time of year construction restrictions, layout modifications, and fishery compensation funds could lessen the magnitude of negative impacts. The overall socioeconomic impacts are likely slight positive to moderate negative (i.e., potentially positive due to a potential increase in jobs and recreational fishing opportunities, but negative due to displacement and disruption of commercial fishing effort).

6.6.2.2.2 Global Climate Change

Global climate change affects all components of marine ecosystems, including human communities. Physical changes that are occurring and will continue to occur to these systems include sea-level rise, changes in sediment deposition; changes in ocean circulation; increased frequency, intensity, and duration of extreme climate events; changing ocean chemistry; and warming ocean temperatures. The rates of physical and chemical changes in marine ecosystems have been most rapid in recent decades (Johnson et al. 2019). Emerging evidence demonstrates that these physical changes are resulting in direct and indirect ecological responses within marine ecosystems, which may alter the fundamental production characteristics of marine systems (Stenseth et al. 2002). The general trend of changes can be explained by warming causing increased ocean stratification, which reduces primary production, lowering energy supply for higher trophic levels and changing metabolic rates. Different responses to warming can lead to altered food-web structures and ecosystem-level changes. Shifts in spatial distribution are generally to higher latitudes (i.e., poleward) and to deeper waters as species seek cooler waters within their normal temperature preferences. Climate change will also potentially exacerbate the stresses imposed by fishing and other non-fishing human activities and stressors. Survival of marine species under a changing climate depends on their ability to adapt to change, but also how and to what degree those other human activities influence their natural adaptive capacity.

Results from the Northeast Fisheries Climate Vulnerability Assessment indicate that climate change could have impacts on Council-managed species that range from negative to positive, depending on the adaptability of each species to the changing environment (Hare et al. 2016).

Overall vulnerability results for additional Greater Atlantic species, including most of the species identified in this action, are shown in Figure 3 (Hare et al. 2016). While the effects of climate change may benefit some habitats and the populations of species through increased availability of food and nutrients, reduced energetic costs, or decreased competition and predation, a shift in environmental conditions outside the normal range can result in negative impacts for those habitats and species unable to adapt. This, in turn, may lead to higher mortality, reduced growth, smaller size, and reduced reproduction or populations. Thus, already stressed populations are expected to be less resilient and more vulnerable to climate impacts. Climate change is expected to have impacts that range from positive to negative depending on the species. However, future mitigation and adaptation strategies to climate change may mitigate some of these impacts. The science of predicting, evaluating, monitoring and categorizing these changes continues to evolve. The social and economic impacts of climate change will depend on stakeholder and community dependence on fisheries, and their capacity to adapt to change. Commercial and recreational fisheries may adapt in different ways, and methods of adaptation will differ among regions. In addition to added scientific uncertainty, climate change will introduce implementation uncertainty and other challenges to effective conservation and management.

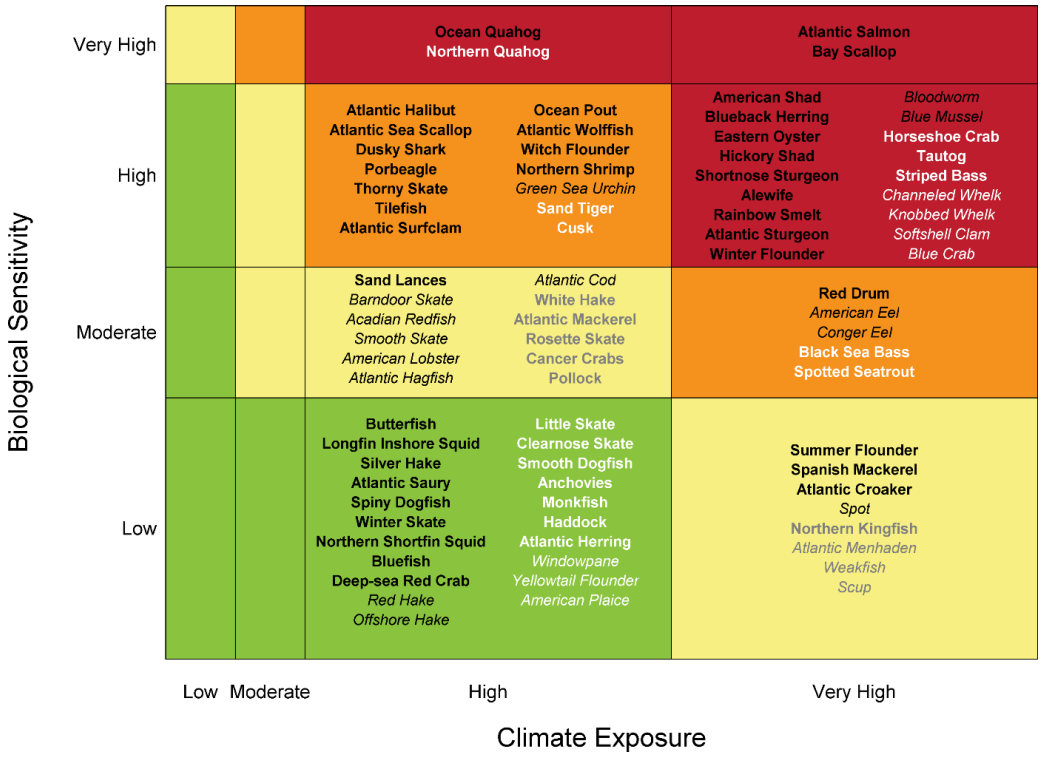


Figure 3 - Overall climate vulnerability score for Greater Atlantic species. Overall climate vulnerability is denoted by color: low (green), moderate (yellow), high (orange), and very high (red). Certainty in score is denoted by text font and text color: very high certainty (>95%, black, bold font), high certainty (90–

95%, black, italic font), moderate certainty (66–90%, white or gray, bold font), low certainty (<66%, white or gray, italic font). Source: Hare et al. 2016.

6.6.3 Summary of Effects of the Proposed Actions

The alternatives include the following:

- **Alternative 1A: No Action.** This alternative would not allow for alternative gear marking and would maintain current surface marking requirements (radar reflectors, highflyers, etc.).
- **Alternative 1B: Region-wide alternative gear marking.** This alternative would allow the use of alternative gear marking for fixed-gear fishing in all Federal waters within the Greater Atlantic Region.
- **Alternative 1C: Spatially and temporally limited alternative gear marking**. This alternative would allow alternative gear marking during, and within, persistent buoy line restricted areas established by the TRP.
- **Alternative 1D: Spatially limited alternative gear marking.** This alternative would allow alternative gear marking within persistent buoy line restricted areas established by the TRP during restriction periods and in the same geographical areas when restriction periods are not in place.
- **Alternative 2A: No Action.** This alternative would not require a person to obtain a Letter of Authorization or demonstrate knowledge of any approved gear-marking alternatives in order to use approved alternative gear markings.
- **Alternative 2B: Letter of Authorization and Demonstration of Knowledge Requirement**. This alternative would require a person to obtain a Letter of Authorization documenting that they have demonstrated knowledge of how to mark gear with an approved gear-marking alternative.
- **Alternative 2C: Letter of Authorization Only.** This alternative would require a person to obtain a Letter of Authorization to use a gear-marking alternative but would not require the demonstration of knowledge to obtain the Letter of Authorization.

The impacts of the proposed actions are described in Sections 6 of this EA.

6.6.4 Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative impacts of the alternatives, the incremental impacts of the direct and indirect impacts should be considered, on a VEC-by-VEC basis, in addition to the effects of all actions (those identified and discussed relative to the past, present, and reasonably foreseeable future actions of both fishing and non-fishing actions). Sections 6.2 through 6.5 provides a summary of likely impacts found in the various groups of management alternatives contained in this action. The CEA baseline represents the sum of past, present, and reasonably foreseeable future actions and conditions of each VEC. When an alternative has a positive impact on the VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with "other" actions that were also designed to increase stock size. In contrast, when an alternative has negative effects on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the other actions. The resultant positive and negative cumulative effects are described below for each VEC. As

previously described, non-fishing impacts on the VECs generally range from no impact to slight negative.

6.6.4.1 Magnitude and Significance of Cumulative Effects on Fishery Resources

As described in Section 5, the fishery resources relevant to this action are managed by the Mid-Atlantic and New England Fishery Management Councils and the Atlantic States Marine Fisheries Commission. Past fishery management actions taken through the respective FMPs ensure that stocks are managed sustainably and that measures are consistent with the objectives of the FMP under the guidance of the MSA. These actions have generally had a positive cumulative effect on these species. It is anticipated that future management actions will have additional positive effects on target species through actions which, among other measures, reduce and monitor bycatch, protect habitat, and protect the ecosystem services on which the productivity of these species depend. For non-targeted species, the combined impacts of past Federal fishery management actions have been mixed. Decreased effort on, and reduced catch of, non-target species continues; however, some stocks are in poor status. Current regulations continue to manage for sustainable stocks and thus control effort on direct and discard/bycatch species. Future actions are anticipated to continue rebuilding non-target species stocks and limit the magnitude of incidental catch/bycatch.

As noted previously in Section 6.2, none of the alternatives are expected to result in increased levels of fishing effort or changes to the character of that effort relative to current conditions. Therefore, impacts on fishery resources are not expected to change, relative to the current condition, under the alternatives.

When the direct and indirect effects of the alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant positive to no impacts on fishery resources.*

6.6.4.2 Magnitude and Significance of Cumulative Effects on Physical Environment

Past fishery management actions and annual specifications processes have had positive cumulative effects on habitat. The actions have constrained fishing effort both at a large scale and locally and have implemented gear requirements which may reduce impacts on habitat. EFH and Habitat Areas of Particular Concern have been designated for the managed resources. It is anticipated that the future management actions described in Section 6.6.2.1 will result in additional direct or indirect positive effects on habitat through actions which protect EFH and protect ecosystem services on which species' productivity depends.

Many additional non-fishing activities, as described above in Section 6.6.2.2, are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat. These impacts could be broad in scope. All the VECs are interrelated; therefore, the linkages among habitat quality, managed resources and non-target species productivity, and associated fishery yields should be considered. Some actions, such as coastal population growth and climate change may indirectly impact habitat and ecosystem productivity; however, these actions are beyond the scope of NMFS and Council management. Reductions in overall fishing effort and protection of sensitive habitats have mitigated some negative effects.

As noted previously in Section 6.4, none of the alternatives are expected to result in increased levels of fishing effort or changes to the character of that effort relative to current conditions. **Alternatives 1B**, **1C**, or **1D** may lead to lobstermen changing when and/or where they fish, however, the impact on the physical environment due to any change is expected to be negligible. The impacted areas have been fished for many years with many different gear types and therefore will not likely be further impacted by these measures, continued fishing effort will continue to impact habitats. Therefore, the impacts of the fishery on the physical environment are not expected to change relative to the current condition under the alternatives.

When the direct and indirect effects of the alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant no impact to slight negative impacts on the physical environment and EFH.*

6.6.4.3 Magnitude and Significance of Cumulative Effects on Protected Species

Taking into consideration the above information and information provided in Section 5.3 and Appendix III, past fishery management actions taken through the respective FMPs have had slight indirect positive cumulative effects on protected species. The actions have constrained fishing effort both at a large scale and locally, and have implemented, pursuant to the ESA, MMPA, or MSA, gear modifications, requirements, and management areas. These measures and/or actions have served to reduce interactions between protected species and fishing gear. It is anticipated that future management actions, described in Section 6 will result in additional indirect positive effects on protected species. These impacts could be broad in scope.

The alternatives would not substantially modify current levels of fishing effort in terms of the overall amount of effort, timing, and location. They would allow existing fishing effort to continue. As described in Section 6.3, the proposed action is expected to have impacts on protected species that range from moderate negative to moderate positive, depending on the species.

When the direct and indirect effects of the alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant slight negative to slight positive impacts.*

6.6.4.4 Magnitude and Significance of Cumulative Effects on Human Communities

Past fishery management actions taken through the respective FMPs have had both positive and negative cumulative effects on human communities. They have benefitted domestic fisheries through sustainable fishery management, but can also reduce participation in fisheries and impose management measures, such as catch limits and gear restrictions, which have limited potential revenues and impacted efficiency and costs.

It is anticipated that future management actions will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on some human communities could occur if management actions result in reduced revenues. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to human communities have had overall positive cumulative effects. Despite the

potential for negative short-term effects on human communities due to reduced revenue, positive long-term effects are expected due to the long-term sustainability of the managed stocks.

By providing revenues and contributing to the overall functioning of and employment in coastal communities, the fisheries related to this action have both direct and indirect positive social impacts. As previously described, the alternatives are unlikely to result in changes to levels of fishing effort or the character of that effort relative to current conditions.

When the direct and indirect effects of the alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant slight positive impacts.*

6.6.5 Proposed Action on all the VECs

The alternatives under consideration (i.e., the proposed action) are described in Section 4. The direct and indirect impacts of the proposed action on the VECs are described in Sections 6.2 through 6.5. The magnitude and significance of the cumulative effects, including additive and synergistic effects of the proposed actions, as well as past, present, and future actions, have been taken into account Section 6.6.4.

When considered in conjunction with all other pressures placed on the fisheries by past, present, and reasonably foreseeable future actions, the alternatives are not expected to result in any significant impacts, positive or negative.

The regulatory atmosphere within which Federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of managed species, habitat, and human communities. Consistent with NEPA, the MSA requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on all VECs from past, present and reasonably foreseeable future actions have generally been positive and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the VECs are not experiencing negative impacts, but rather that when considered as a whole and as a result of the management measure implemented in these fisheries, the overall long-term trend is positive.

There are no significant cumulative effects associated with the alternatives based on the information and analyses presented in this document (Table 13). Cumulatively, through 2031, it is anticipated that the alternatives will result in non-significant impacts on all VECs, ranging from slight negative to positive.

Table 13 - Summary of cumulative effects of the alternatives.

	Fishery Resources	**Habitat**	**Protected Resources**	**Human Communities**
Direct/Indirect Impacts of Alternatives	No impact (Section 6.2)	Negligible impact (Section 6.4)	Moderate negative to moderate	Slight negative to moderate positive (Section 6.5)

			positive (Section 6.3)	
Combined Cumulative Effects Assessment Baseline Conditions	Positive	Slight negative to slight positive	Slight negative to slight positive	Positive
Cumulative Effects (all non-significant)	Positive (Section 6.6.4.1)	Slight negative (Section 6.6.4.2)	Slight negative to slight positive (Section 6.6.4.3)	Slight positive (Section 6.6.4.4)

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8 Appendix I: Other Applicable Laws and Executive Orders

8.1 Magnuson-Stevens Fishery Conservation and Management Act (MSA)

8.1.1 National Standards

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires regulations implementing any fishery management plan or amendment be consistent with ten national standards. Below is a summary of how this action is consistent with the National Standards and other required provisions of the MSA.

National Standard 1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry.

The proposed action primarily considers modifying fishery gear-marking regulations. As discussed in greater detail in Section 6.2, the management measures associated with this action would have no impacts on fishery resources, and, therefore, would not result in overfishing nor negatively affect obtaining optimum yield in any fishery.

National Standard 2. Conservation and management measures shall be based upon the best scientific information available.

The analyses conducted in support of the proposed action were conducted using the best scientific information available. The data used in the analyses provides the best available information on the relevant fisheries, their stock status, as well as, permit, vessel trip report, and dealer data.

National Standard 3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The proposed action has no effect on the management units of any stocks of fish included in a Mid-Atlantic or New England Fishery Management Council or Atlantic States Marine Fisheries Commission FMP. This action seeks to add options for how the location of fixed gear may be marked within the Greater Atlantic Region.

National Standard 4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be: (1) Fair and equitable to all such fishermen. (2) Reasonably calculated to promote conservation. (3) Carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed action does not allocate or assign fishing privileges among various U.S. fishermen. The alternative gear marking measures associated with the proposed action would apply equally

to all federally-permitted commercial vessels in the Greater Atlantic Region, regardless of the state in which they operate.

National Standard 5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The action is intended to increase fishing access for fixed-gear fishermen. By allowing fishermen to fish in areas and during times that they might otherwise not be able to, this action could increase efficiency in the utilization of fixed-gear fisheries. Economic allocation was not a factor in the development of this action, nor of the selection of the proposed action from among the alternatives.

National Standard 6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The proposed action has no direct impact on any fishery, fishery resource, or catch. Variations among, and contingencies in, fisheries, fishery resources, and catches were considered to the extent that the development of the proposed action addressed the ways in which these variations and contingencies affect commercial operators and when and where gear-marking alternatives might be used.

National Standard 7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

This action considers allowing fixed-gear fishermen to fish in persistent buoy line restricted areas, which could increase profits and reduce costs associated with halting or relocating fishing operations. In addition, by considering multiple program designs for the Letter of Authorization and demonstration of knowledge alternative, NOAA Fisheries has strived to consider options that would minimize the costs to commercial operators associated with complying with the proposed action.

National Standard 8. Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to: (1) Provide for the sustained participation of such communities; and (2) To the extent practicable, minimize adverse economic impacts on such communities.

None of the measures in the proposed action are likely to diminish in any way the sustained participation of any fishing community. The alternatives in Set 1 of this action do not require fishermen to change their fishing operations and Alterative Set 2 only considers requirements for fishermen who choose to use gear-marking alternatives. This action's aim is to allow greater fishing access for fixed-gear fishermen in areas that are, or could be, closed to persistent vertical buoy lines.

National Standard 9. Conservation and management measures shall, to the extent practicable:

(1) Minimize bycatch; and (2) To the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

This action considers allowing the use of alternative marking methods for gear that does not have a persistent buoy line. If fishermen choose to use gear-marking alternatives, it could lead to reduced vertical lines in the water and reduce the risk of entanglements of protected species.

National Standard 10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The need for Alternative Set 2 of this framework adjustment is to allow for monitoring and oversight of the use of alternative gear-markings and reduce the likelihood of inaccurate gear location marking, which could lead to gear conflict, unsuccessful gear retrievals, and reduced fishermen safety. Thus, the Alternative 2B, through the demonstration of knowledge requirement, is intended to promote fishermen safety by increasing the likelihood that fishermen are proficient at using gear-marking alternatives before they are authorized to fish with them.

8.1.2 Other MSA Requirements

This action is also consistent with the fifteen additional required provisions for FMPs. Section 303 (a) of MSA contains required provisions for FMPs.

1. *Contain the conservation and management measures, applicable to foreign fishing …*

   The proposed action is focused on expanding options for how fixed gear may be marked within the Greater Atlantic Region (Maine through Cape Hatteras, North Carolina) and applies to Federally permitted fixed-gear vessels operating in the Region. Foreign fishing is not allowed by this action and so specific measures are not included to specify and control allowable foreign catch. For a description of the proposed action and expected impacts, please see Sections 4 and 6.

2. *Contain a description of the fishery …*

   Previous Amendments to the relevant FMPs are available at on the Mid-Atlantic Council (https://www.mafmc.org/fishery-management-plans), New-England Council (https://www.nefmc.org/management-plans), and Atlantic States Marine Fisheries Commission (https://asmfc.org/category/resources/management/management-plan/) websites. This action provides a summary of applicable fishery information in Section 5.

3. *Assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from the fishery …*

   The scope of the proposed action is limited to modifying gear-marking requirements and requirements to use specific forms of gear marking. Maximum sustainable yield and optimum yield of any fishery for which these gear-marking requirements are addressed in this action are not affected by the proposed management measures, but have been addressed in previous Amendments (http://www.mafmc.org/fishery-managementplans; https://www.nefmc.org/management-plans; https://asmfc.org/category/resources/management/management-plan/).

4. *Assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); etc.*

   The proposed action does not affect the capacity or extent to which fishing vessels of the U.S. would harvest the optimum yield of any fishery, the portion of such optimum yield which would not be harvested by U.S. fishing vessels and could be made available for foreign fishing, or the capacity and extent to which U.S. processors would process that portion of such optimum yield harvested by U.S. fishing vessels; therefore, a description of these aspects of the fisheries is not applicable to this action, but have been addressed in previous Amendments (http://www.mafmc.org/fishery-managementplans; https://www.nefmc.org/management-plans; https://asmfc.org/category/resources/management/management-plan/).

5. *Specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery …*

   Alternative Set 2 considers requiring a Letter of Authorization (LOA) to fish with approved gear-marking alternatives. For more information on the information that may be required in a LOA and thus submitted to the Secretary, see Section 4.2.

6. *Consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions…*

   The proposed action does not affect the access of any fishing vessel to any fishery because of weather, ocean conditions, or any other potential concern. However, allowing alternative-gear marking, as considered in Alternative Set 1 of this action, could lead to fixed gear using alternative markings being more easily detected and located, particularly in poor weather or ocean conditions. This is because the fixed gear could be viewable digitally on a tablet or displayed on a chart plotter even when weather or other conditions would prevent or limit visibility with line of sight or radar.

7. *Describe and identify essential fish habitat for the fishery…*

   A summary of the EFH can be found in Section 5.4.2. The proposed action makes no changes to any EFH of any species. Section 6.4 describes the effects the alternatives of the proposed action is likely to have on habitat, including EFH, of any fishery resources managed under a Mid-Atlantic or New England Fishery Management Council or Atlantic States Marine Fisheries Commission FMP.

8. *In the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan;*

   Scientific and research needs are not required for a framework adjustment action.

9. *Include a fishery impact statement for the plan or amendment …*

   Impacts on fishing communities from measures proposed in this action are evaluated in Section 6.5. of this document.

10. *Specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished …*

    The proposed action makes no changes or has any effect on the approved overfishing definitions for any fishery.

11. *Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery …*

    None of the measures in this framework are expected to increase bycatch beyond what has been previously considered in each of the respective fisheries applicable to this action.

12. *Assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish …*

    This action proposes no related measures.

13. *Include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery …*

    The description of the commercial, recreational, and charter fishing sectors is described in Section 5.5 and in Appendix IV. Additional details on fishing sectors are available in previous amendments (http://www.mafmc.org/fishery-managementplans; https://www.nefmc.org/management-plans; https://asmfc.org/category/resources/management/management-plan/)

14. *To the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery.*

    The proposed action includes no management measures that could reduce the overall harvest in a fishery. Therefore, the allocation of harvest restrictions or recovery benefits among the commercial, recreational, and charter fishing sectors, beyond any allocations of such already made in the FMPs, is not necessary.

15. *Establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.*

    The proposed action includes no measures related to catch limits.

8.2 Atlantic Coastal Fisheries Cooperative Management Act (ACA)

American lobster regulations are issued under the Atlantic Coastal Fisheries Cooperative Management Act in Title 50 of the Code of Federal Regulations, Part 697. These regulations under the Atlantic Coastal Act are in keeping with the regulatory standard set forth in the Atlantic Coastal Act: 1) That the regulations be consistent with the National Standards set forth in the Magnuson-Stevens Act; and 2) that the regulations be compatible with the Commission's Interstate Fishery Management Plan for American Lobster. Given that gear marking requirements are not prescribed in the Commission's Interstate Fishery Management Plan for

American Lobster, the measures evaluated in this EA are in keeping with the Atlantic Coastal Act regulatory standard to develop compatible regulations to the Commission's Lobster Plan and are consistent with the National Standards set forth in the Magnuson-Stevens Act.

8.3 National Environmental Policy Act (NEPA)

NEPA provides a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This Environmental Assessment (EA) is being prepared using the statutory requirements of NEPA, and considering the stated purpose and policy objectives contained therein, and utilizing NOAA policies and procedures for implementing NEPA consistent with applicable law. See NOAA Admin. Order 216-6A (Apr. 22, 2016); and NOAA, *Policy and Procedure for Compliance with the National Environmental Policy Act and Related Authorities: Companion Manual for NOAA Administrative Order 216-6A* (June 30, 2025).

8.3.1 Environmental Assessment

The required elements of an EA are specified in NAO 216-6A. They are included in this document as follows:

- The need for this action is in Section 3.2;
- The alternatives that were considered are in Section 4;
- A description of the affected environment is in Section 5
- The environmental impacts of the proposed action are in Section 6;
- Cumulative effects of the proposed action are in Section 6.6; and,
- The agencies and persons consulted on this action are in Sections 8.3.3.

While not required for the preparation of an EA, this document includes the following additional sections that are based on requirements for an Environmental Impact Statement (EIS).

- An executive summary is in Section 2;
- A table of contents is in Section 1;
- Background and purpose are in Section 3;
- A list of preparers is in Section 8.3.4.

8.3.2 Point of Contact

Questions concerning this document may be addressed to:

National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930

8.3.3 Agencies Consulted

The following agencies, in alphabetical order, were consulted in preparing this document:

- Atlantic States Marine Fisheries Commission
- Mid-Atlantic Fishery Management Council
- National Marine Fisheries Service, NOAA, Department of Commerce
- New England Fishery Management Council

8.3.4 List of Preparers

The following personnel participated in preparing this document:

- ***National Marine Fisheries Service***. Caroline Potter, Allison Murphy, Chao Zou, Danielle Palmer, Jennifer Goebel, Jerome Hermsen, Kaleigh Hill, Marianne Randall, and Nicole Morgan
- ***New England Fishery Management Council***. David McCarron, Emily Bodell, and Robin Frede
- ***Mid-Atlantic Fishery Management Council***. Hayden Dubniczki
- ***Atlantic States Marine Fisheries Commission***. Caitlin Starks

8.3.5 Opportunity for Public Comment

This action was developed through the Joint New England and Mid-Atlantic Council Omnibus Alternative Gear-Marking Framework Adjustment Plan Development Team/Fishery Management Action Team (PDT/FMAT). This action was initiated in April 2025, and there were several public meetings related to this action (Table 14). Opportunities for public comment occurred at Advisory Panel, Council, Working Group, Management Board, and PDT/FMAT meetings and a public engagement session.

Table 14 – Public meetings related to this framework.

Date	Meeting Type	Location
February 19, 2025	PDT/FMAT	Webinar
March 12, 2025	PDT/FMAT	Webinar
April 9, 2025	MAFMC - Initiation	Galloway, NJ and Webinar
April 16, 2025	NEFMC - Initiation	Mystic, CT and Webinar
May 5, 2025	ASMFC American Lobster Management Board	Arlington, VA and Webinar
April 28, 2025	PDT/FMAT	Webinar
June 3, 2025	MAFMC	Virginia Beach, VA, and Webinar
June 26, 2025	NEFMC	Freeport, ME and Webinar
July 8, 2025	PDT/FMAT	Webinar
July 14, 2025	American Lobster Advisory Panel	Webinar
July 23, 2025	On-Demand Fishing Gear Conflict Working Group	Webinar
August 5, 2025	ASMFC American Lobster Management Board	Arlington, VA and Webinar
August 21, 2025	PDT/FMAT	Webinar

August 26, 2025	On-Demand Fishing Gear Conflict Working Group	Wakefield, MA and Webinar
August 26, 2025	Public Engagement Session	Wakefield, MA and Webinar
September 3, 2025	Joint Groundfish and Recreational Advisory Panel	Webinar
September 11, 2025	PDT/FMAT	Webinar
September 12, 2025	Scallop Advisory Panel	Webinar

8.4 Marine Mammal Protection Act (MMPA)

Section 5.3 and Appendix III describe the marine mammal species which occur in the affected environment of this action. As described in those sections, various marine mammal species have the potential to interact with the gear types used in fixed-gear fisheries operating in the Greater Atlantic Region. The impacts of the proposed measures on marine mammals (Section 6.3) are consistent with the provisions of the MMPA. Additionally, when these alternatives are considered with existing protective measures and regulations under the MMPA, the proposed action is not expected to result in impacts to marine mammal species that go above and beyond those previously considered by NOAA Fisheries.

For the lobster fishery, this action is consistent with, and complies with, the MMPA. Congress specified through the Consolidated Appropriations Act of 2023 that the American lobster and Jonah crab fisheries are in "full compliance" with the MMPA through 2028.

8.5 Endangered Species Act (ESA)

Section 7 of the ESA requires federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species and do not adversely affect designated critical habitat of listed species.

On May 27, 2021, NOAA Fisheries completed formal consultation pursuant to section 7 of the ESA of 1973, as amended, and issued a biological opinion (2021 Opinion) on the authorization of eight FMPs, two interstate FMPs, and the implementation of the New England Fishery Management Council's Omnibus EFH Amendment 2 (NMFS 2021).[19] The 2021 Opinion considered the effects of the authorization of these FMPs and the Omnibus EFH Amendment on ESA-listed species and designated critical habitat, and determined that those actions were not likely to jeopardize the continued existence of any ESA-listed species or destroy or adversely modify designated critical habitats of such species under NOAA jurisdiction. An Incidental Take Statement was issued in the 2021 Opinion. This included reasonable and prudent measures and their implementing terms and conditions, which NOAA Fisheries determined are necessary or

[19] The eight Federal FMPs considered in the May 27, 2021, Biological Opinion include: (1) Atlantic Bluefish; (2) Atlantic Deep-sea Red Crab; (3) Mackerel, Squid, and Butterfish; (4) Monkfish; (5) Northeast Multispecies; (6) Northeast Skate Complex; (7) Spiny Dogfish; and (8) Summer Flounder, Scup, and Black Sea Bass. The two interstate FMPs are American Lobster and Jonah Crab.

appropriate to minimize impacts of the incidental take in the fisheries assessed in the 2021 Opinion.

The 2021 Opinion was reinitiated on September 13, 2023. The federal actions to be addressed in this reinitiation of consultation include the authorization of the federal fisheries conducted under the aforementioned eight federal FMPs. The reinitiated consultation will not include the American lobster and Jonah crab fisheries, which are authorized under interstate FMPs. On December 29, 2022, President Biden signed the Consolidated Appropriations Act 2023, which included the following provision specific to NOAA Fisheries' regulation of the American lobster and Jonah crab fishery to protect right whales, "Notwithstanding any other provision of law ... for the period beginning on the date of enactment of this Act and ending on December 31, 2028, the Final Rule ... shall be deemed sufficient to ensure that the continued Federal and State authorizations of the American lobster and Jonah crab fisheries are in full compliance with the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.) and the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)." Given this, the American lobster and Jonah crab fisheries remain in compliance with the ESA through December 31, 2028.

On January 8, 2025, NOAA Fisheries issued a memorandum titled, "Section 7(a)(2) and 7(d) Determinations for the Extended Reinitiation Period for Endangered Species Act Section 7 Consultation on Eight Fishery Management Plans." This reinitiation memorandum determined that the authorization of these fisheries during the extended reinitiation period would not violate section 7(d) of the ESA and would not be likely to jeopardize the continued existence of ESA-listed large whales, sea turtles, Atlantic sturgeon, Atlantic salmon, or giant manta rays, or adversely modify designated critical habitat.

Given the information provided above, the we have determined that the proposed action does not entail making any changes to fixed-gear fisheries operating in the Greater Atlantic Region during the extended reinitiation period that would cause an increase in interactions with or effects to ESA-listed species or their critical habitat beyond those considered in NOAA Fisheries' January 8, 2025, reinitiation memorandum. Therefore, the proposed action is consistent with NOAA Fisheries' January 8, 2025, 7(a)(2) and 7(d) determinations.

For the lobster fishery, this action is consistent with, and complies with, the ESA. Congress specified through the Consolidated Appropriations Act of 2023 that the American lobster and Jonah crab fisheries are in "full compliance" with the ESA through 2028.

8.6 Administrative Procedure Act (APA)

Sections 551-553 of the Administrative Procedure Act established procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process, and to give public notice and opportunity for comment. The Council did not request relief from notice and comment rule making for this action and expects that NOAA Fisheries will publish proposed and final rule making for this action.

8.7 Paperwork Reduction Act (PRA)

The purpose of the Paperwork Reduction Act (PRA) is to minimize paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the

collection of information by or for the Federal Government. It also ensures that the Government is not overly burdening the public with information requests. The selected management actions in this EA contain new collection of information requirements subject to the PRA.

A paperwork reduction act analysis, including a revised Form 83i and supporting statement will be submitted to OMB along with the proposed rule for this action. This action would create a new reporting requirement for fixed gear vessels opting to fish with alternatively marked gear. A paperwork reduction act analysis, including a revised Form 83i and supporting statement will identify the expected increase in the public reporting burden, by annual response hours, and an estimated annual cost to the public.

8.8 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the CZMA of 1972, as amended, requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The CZMA includes measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. NMFS must determine whether this action is consistent, to the maximum extent practicable, with the CZM programs for each state (Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina). Letters documenting NMFS' determination will be sent to the coastal zone management program offices of each state.

8.9 Information Quality Act (IQA)

Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554, also known as the Data Quality Act or Information Quality Act) directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with the OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the Data Quality Act. Information must meet standards of utility, integrity and objectivity. This section provides information required to address these requirements.

Utility of Information Product

Utility means that disseminated information is useful to its intended users. "Useful" means that the content of the information is helpful, beneficial, or serviceable to its intended users, or that the information supports the usefulness of other disseminated information by making it more accessible or easier to read, see, understand, obtain or use. The information presented in this document is helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the proposed action, the measures proposed, and the impacts of those

measures. A discussion of the reasons for selecting the proposed action is included so that intended users may have a full understanding of the proposed action and its implications. The intended users of the information contained in this document are participants in Federal fixed-gear fisheries in the Northeastern United States and other interested parties and members of the general public. The information contained in this document may be useful to owners of vessels holding Federal permits for fixed-gear fisheries as well as manufacturers of gear that does not use a persistent vertical buoy line since it serves to notify these individuals of any potential management measure changes. This information will enable these individuals to adjust their fishing practices and make appropriate business decisions based on the new management measures and corresponding regulations.

Until a proposed rule is prepared and published, this document is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The development of this document and the decisions made by the Councils to propose this action are the result of a multi-stage public process. Thus, the information pertaining to management measures contained in this document has been improved based on comments from the public, the fishing industry, NMFS, and members of the Councils and ASMFC. This document will be subject to public comment through proposed rulemaking, as required under the Administrative Procedure Act and, therefore, may be improved based on comments received.

The Federal Register notice that announces the proposed rule and the final rule and implementing regulations will be made available in printed publication, on the website for the Greater Atlantic Regional Fisheries Office, and through the Regulations.gov website. The Federal Register documents will provide metric conversions for all measurements.

Integrity of Information Product

Integrity refers to security – the protection of information from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification. Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NOAA Fisheries adheres to the standards set out in Appendix III, "Security of Automated Information Resources," of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., Vessel Trip Reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity of Information Product

Objective information is presented in an accurate, clear, complete, and unbiased manner, and in proper context. The substance of the information is accurate, reliable, and unbiased; in the scientific, financial, or statistical context, original and supporting data are generated and the

analytical results are developed using sound, commonly accepted scientific and research methods. “Accurate” means that information is within an acceptable degree of imprecision or error appropriate to the *kind* of information at issue and otherwise meets commonly accepted scientific, financial, and statistical standards.

For purposes of the Pre-Dissemination Review, this document is considered to be a Natural Resource Plan. Accordingly, the document adheres to the published standards of the Atlantic Coastal Act, the Magnuson-Stevens Act; the Operational Guidelines, Fishery Management Plan Process; the Essential Fish Habitat Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6A, Environmental Review Procedures for Implementing the National Environmental Policy Act.

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. The policy choices are clearly articulated in the management alternatives considered in this action. The supporting data upon which the policy choices are based, are described in this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the responsible Councils and the Greater Atlantic Regional Fisheries Office. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, protected species, and compliance with the applicable law. Final approval of the action proposed in this document and clearance of any rules prepared to implement resulting regulations is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.10 Executive Order 13158 (Marine Protected Areas)

Executive Order (EO) 13158 on Marine Protected Areas (MPAs) requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The EO directs federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the EO. The EO requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. A list of MPA sites has been developed and is available at: http://marineprotectedareas.noaa.gov/nationalsystem/nationalsystemlist/. No further guidance related to this EO is available at this time.

8.11Executive Order 13132 (Federalism)

Executive Order 13132 on federalism established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. However, no federalism issues or implications have been identified relative to the measures proposed in this action, thus preparation of an assessment under EO 13132 is unwarranted. The affected states have been closely involved in the development of the proposed

action through their representation on the Councils; all affected states are represented as voting members of at least one Regional Fishery Management Council. No comments were received from any state officials relative to any federalism implications that may be associated with this action.

8.12 Regulatory Flexibility Act – Regulatory Flexibility Analysis

The purpose of the Regulatory Flexibility Analysis (RFA) is to reduce the impacts of burdensome regulations and record-keeping requirements on small businesses. To achieve this goal, the RFA requires government agencies to describe and analyze the effects of regulations and possible alternatives on small business entities. Based on this information, the RFA determines whether the preferred alternative would have a "significant economic impact on a substantial number of small entities."

For RFA purposes only, NMFS has established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing (see 50 CFR § 200.2). A business primarily engaged in commercial fishing (NAICS code 11411) is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $11 million for all its affiliated operations worldwide. The determination as to whether the entity is large or small is based on the average annual revenue for the five years from 2020 through 2024.

This document provides the factual basis supporting a certification that the proposed regulations will not have a "significant impact on a substantial number of small entities" and that an IRFA is not needed in this case. Certifying an action must include the following elements, and each element is subsequently elaborated upon below:

- A statement of basis and purpose of the rule
- A description and estimate of the number of small entities to which the rule applies
- Description and estimate of economic impacts on small entities, by entity size and industry
- An explanation of the criteria used to evaluate whether the rule would impose significant economic impacts
- An explanation of the criteria used to evaluate whether the rule would impose impacts on a substantial number of small entities
- A description of, and an explanation of the basis for, assumptions used

Basis and Purpose of the Rule

The basis and purpose of this action is set forth in Section 3.2 of this document and are incorporated herein by reference. A description of the action, the reason for consideration, and its legal basis are contained in Section 3 and 4 of this EA. This action considers revising gear marking requirements in Greater Atlantic Region fixed-gear fisheries to include alternatively marked gear. It also considers other requirements to promote the accuracy of alternative gear-marking location information.

Description of the Reasons Why Action is Being Considered

As described in Section 3, this action is intended to provide fixed-gear fishermen additional harvest opportunities and greater flexibility in their business operations if and when alternative gear markings are approved for use. To provide additional fishing opportunities for fixed-gear fishermen, this framework adjustment would modify current gear-marking regulations to provide increased access to areas where traditional fixed gear with persistent buoy lines is restricted, such as those created by the Atlantic Large Whale Take Reduction Plan described below. By allowing for alternatives to traditional gear marking to be approved for use, this framework adjustment would provide fishermen with increased gear options.

Description and Estimate of the Number of Small Entities to which the Rule Applies

This rule applies to federal fixed-gear fisheries in the Greater Atlantic Region. Based on the Northeast Fisheries Science Center (NEFSC) fishery business affiliates data and the Greater Atlantic Regional Fisheries Office (GARFO) Catch Accounting and Monitoring System (CAMS) data, it is estimated that approximately 1,843 entities (1,724 trap/pot and 119 gillnet entities) would be regulated under this rule, of which all but three are small entities with an annual revenue less than $11 million. Table 15 shows the number of regulated entities and their average revenues in 2024. In the trap/pot fishery, there are 1,569 active entities and 155 entities without revenue. Three large entities averaged $29.6 million, and the small active entities averaged $318,550 in 2024. The 119 gillnet entities are all small, averaging about $266,959 in 2024.

Table 15 - The number of directly regulated entities and their average revenues in 2024.

		Large entity	Small entity	Total
Trap pot	Number of active entities	3	1,566	1,569
	Number of no revenue entities	NA	155	155
	Average annual revenue from active entities	$29,576,338	$ 318,550	NA
Gillnet	Number of active entities	0	119	119
	Average annual revenue from active entities	NA	$266,959	NA

Data Source: 2024 NEFSC fishery business affiliates data and the 2024 GARFO dealer and CAMS data

Description and Estimate of Economic Impacts on Small Entities

This action is intended to provide fixed-gear fishermen additional harvest opportunities and greater flexibility in their business operations and considers a range of alternatives, consistent with National Environmental Policy Act requirements. Alternative 1A considers no changes to existing fixed-gear fishery gear marking requirements. As such, a fixed-gear vessel operator

would continue to mark their gear with buoys, pennants, and/or radar reflectors, as required by each fishery.

Alternative 1B considers allowing the use of alternative gear marking in all Federal waters within the Greater Atlantic Region. As discussed in greater detail in Section 6.5.1, there is greater incentive for entities operating in the restricted areas that prohibit persistent buoy lines to opt to fish with alternatively marked gear. Based on the NMFS CAMS data, about 311 vessels that fished around or inside the restricted areas one month before or after the restriction season would gain access to the restricted areas with alternative gear marking. This alternative could generate a total annual economic benefit of $1.87 million (Table 16), which is about $6,000 per vessel. Based on the GARFO fishing permit information, only one of the three large entities could potentially be impacted by this action, therefore the majority of these directly impacted entities are considered small. Few fixed-gear fishermen in open areas or open seasons would have an incentive to adopt alternative gear marking.

Table 16 - Number of impacted small entities and potential economic benefit.

Restricted Area	Number of Vessels	Economic Benefit
LMA1 RA	159	$1,458,245
MRA	90	$49,931
GSCRA	11	NA
SIRA	51	$359,039
Total	311	$1,867,215

Over the long term, this alternative could yield other positive outcomes, including reduced entanglement risks for large whales and other marine animals, as well as potential price premiums from environmentally friendly seafood. This alternative could also introduce additional costs, particularly for mobile gear fleets. If alternative gear marking is permitted year-round anywhere within the Greater Atlantic Region, mobile gear vessels that operate in those same areas may need to be equipped with specific detection devices to avoid gear conflicts.

Alternative 1C could permit the use of alternative gear marking within the persistent buoy line restricted areas established by the Take Reduction Plan. As described above, about 311 vessels that fished around or inside the restricted areas one month before or after the restriction season would gain access to the restricted areas with alternative gear marking. This alternative could generate a total annual economic benefit of $1.87 million (Table 16), which is about $6,000 per vessel. Based on the GARFO fishing permit information, only one of the three large entities could potentially be impacted by this action, therefore the majority of these directly impacted entities are considered small.

Over the long term, this alternative could yield other positive outcomes, including reduced entanglement risks for large whales and other marine species. This alternative could also introduce additional costs, particularly for mobile-gear fleets, though these costs are likely limited due to the limited geographic and temporal scope of this alternative.

Alternative 1D could permit the use of alternative gear marking year-round within the geographical boundaries of the persistent buoy line restricted areas established by the Atlantic Large Whale Take Reduction Plan. The economic impact of this alternative is expected to be similar to that of Alternative 1B and C. This is because using alternative markings when restricted areas are not in effect offers no immediate additional benefit to fishermen, and, therefore, a significant increase in participation is not anticipated in the short term. Over the long term, this alternative could yield other positive outcomes, including reduced entanglement risks for large whales and other marine animals, as well as potential price premiums from environmentally friendly seafood. This alternative could also introduce additional costs, particularly for mobile gear fleets. If alternative gear marking is permitted year-round within the restricted areas, mobile gear vessels that operate in those same areas may need to be equipped with specific detection devices to avoid gear conflicts.

An Explanation of the Criteria Used to Evaluate Whether the Rule would Impose Significant Economic Impacts

Based on the preliminary economic analysis, the economic impacts of the rule are much lower than the $100 million criteria of significant economic impacts from the E.O. 12866 updated in 2025. Therefore, this rule would not be considered to impose significant economic impacts.

An Explanation of the Criteria Used to Evaluate Whether the Rule would Impose Impacts on a Substantial Number of Small Entities

There are 1,726 regulated small entities and three regulated large entities in the Greater Atlantic Region under this action, and about 300 small entities and one large entity would be directly impacted. Therefore, this rule would not be considered to impose impacts on a substantial number of small entities.

A Description of, and an Explanation of the Basis for, Assumptions

A few assumptions are made to calculate the economic impacts:

- *The assumption on potential alternative gear marking participants*. Direct observation of fishing activity is not possible when the restricted areas are in effect. To estimate the number of potential participants, this analysis uses Vessel Trip Report data from the shoulder months (the months immediately preceding and following when the restricted area is in effect) to identify vessels that operated either directly within the restricted areas or in an adjacent three-mile buffer zone during these periods. We assume these vessels will have the highest probability to participate in alternative gear marking.
- *The assumption on vessel revenues*. To estimate the vessel revenue in the restricted area during the restricted period months, we assume the average revenue from vessels that fished in the major statistical areas surrounding each restricted area could represent the potential participants' revenue. LMA1 restricted area is represented by vessels from Statistical Area (SA) 512 and 513; MRA is represented by SA 514; GSCRA is represented by SA 521 and 522; SIRA is represented by SA 526, 537 and 539.
- *The assumption on vessel profitability*. The operating profit of participating vessels is calculated based on the 2022 NEFSC cost survey data. We assume vessels within the

same size category would have similar profitability based on the current and previous survey results.

Reporting, Record Keeping, and Other Compliance Requirements

Alternative Set 2 considers new reporting requirement for fixed gear vessels opting to fish with alternatively marked gear. If selected, vessel would be required to obtain and comply with requirements of a Letter of Authorization in order to deploy alternatively marked gear.

Duplication, Overlap, or Conflict with Other Federal Rules

This action does not duplicate, overlap, or conflict with any other federal laws.

8.13 Executive Order 12866 (Regulatory Planning and Review)

The purpose of E.O 12866 is to enhance planning and coordination with respect to new and existing regulations. For actions that are identified as or determined to be "significant," E.O. 12866 requires an agency to provide the text of the draft regulatory action and an assessment of the potential costs and benefits of the regulatory action to the Office of Management and Budget (OMB). This section represents the regulatory impact review (RIR), which includes an assessment of the costs and benefits of the proposed action in accordance with E.O. 12866.

A "significant regulatory action" means any regulatory action that is likely to result in a rule that may:

> (1) Have an annual effect on the economy of $100 million or more, or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities.
> (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.
> (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.
> (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

A more detailed discussion of economic impact is provided in Section 6.5. The discussion to follow provides a summary of those findings.

8.13.1 Objectives and Legal Basis of the Rule

This framework adjustment is intended to providing fishermen additional harvest opportunities and greater flexibility in their business operations by allowing gear to be marked without traditional surface markers (buoys, pennants, radar reflectors, etc.). To provide fishermen more fishing opportunities, this framework adjustment would modify current gear-marking regulations to allow the development of alternative gear-marking requirements, which would provide increased access to areas where traditional fixed-gear with persistent buoy lines is restricted, such as those created by the Take Reduction Plan in greater detail in Section 3. By allowing

additional types of surface marks to be approved for use, this framework adjustment would provide fishermen increased gear options at some time in the future.

The legal basis for the Council-related portion of this action is the Magnuson-Stevens Fishery Conservation and Management Act and measures recommended by the Mid-Atlantic and New England Fishery Management Councils and promulgated by NOAA Fisheries at 50 CFR 648. The legal basis for the lobster portion of this action is the Atlantic Coastal Fisheries Cooperative Management Act and promulgating Federal regulations at § 697.

8.13.2 Problem Addressed by the Rule

Fixed-gear fishermen are currently required to mark their gear with traditional surface markers (buoys, pennants, radar reflectors, etc.). These vessels are therefore unable to fish in areas where persistent buoy lines are restricted, such as those created by the TRP, unless using an exempted fishing permit or letter of acknowledgment specifying scientific research activities. This barrier could present additional limitations if future modifications to the TRP include additional persistent buoy line restricted areas, including areas that could be limited to one endline or temporary restricted areas due to persistent aggregations of right whales. For additional information on the problem addressed by this rule, please see Section 3.

8.13.3 Alternatives under Consideration

Alternative Set 1: Authorization of approved gear-marking alternatives

Alternative 1A: No Action. This alternative would not allow for alternative gear marking and would maintain current surface marking requirements (radar reflectors, highflyers, etc.).

Alternative 1B: Region-wide alternative gear marking. This alternative would allow the use of alternative gear marking for fixed-gear fishing in all Federal waters within the Greater Atlantic Region.

Alternative 1C: Spatially and temporally limited alternative gear marking. This alternative would allow alternative gear marking during, and within, persistent buoy line restricted areas established by the TRP.

Alternative 1D: Spatially limited alternative gear marking. This alternative would allow alternative gear marking within persistent buoy line restricted areas established by the TRP during restriction periods and in the same geographical areas when restriction periods are not in place.

Alternative Set 2: Requirements to use approved gear-marking alternatives

Alternative 2A: No Action. This alternative would not require a person to obtain a Letter of Authorization or demonstrate knowledge of any approved gear-marking alternatives in order to use approved alternative gear markings.

Alternative 2B: Letter of Authorization and Demonstration of Knowledge Requirement. This alternative would require a person to obtain a Letter of Authorization documenting that they have demonstrated knowledge of how to mark gear with an approved gear-marking alternative.

Alternative 2C: Letter of Authorization Only. This alternative would require a person to obtain a Letter of Authorization to use a gear-marking alternative but would not require the demonstration of knowledge to obtain the Letter of Authorization.

For a full discussion of these alternatives, please see Section 4.

8.13.4 Economic Baseline for Comparison and Time Horizon

The economic baseline for this action is the No Action Alternatives (Alternative 1A and 2A). Under these alternatives, vessels would continue to be required to fish with traditional surface markers (buoys, high flyers, and/or radar reflectors). Fixed-gear vessels would remain unable to access fishing grounds in Take Reduction Plan restricted areas closed to fishing with persistent buoy lines. Therefore, fixed-gear vessels in these areas do not have the economic opportunity of accessing these and potentially other areas, depending on the alternative selected.

The time horizon for this action is set to be 10 years as the life span for on-demand gear is assumed to be 10 years.

8.13.5 Benefit-Cost Framework

The benefits of this action include:

1. Access to restricted areas during restricted periods, generating extra profits;
2. Saving fishermen time and effort to relocate gear before and after restriction periods, therefore bringing them profits from extra trips;
3. Potential price premium from sustainable seafood market by promoting whale safe seafood;
4. Reducing entanglement risk to marine species by adopting gear without persistent buoy lines outside the restricted areas or outside the restriction periods.

The costs of this action include:

1. Initial purchasing or leasing cost (depending on the future economic model for accessing this gear) and potential periodical maintenance cost of the any additional gear that does not use a persistent buoy line to use along with alternative marking methods;
2. Time and effort to learn the skills of operating gear-marking alternatives;
3. Potential investment of acoustic detecting device and network fees for mobile-gear fishermen
4. Potential gear conflicts with fixed- and mobile-gear fishermen due to the lack of traditional gear markings.

8.13.6 Economic Analysis of the Alternatives

Alternative 1A: No Action. This alternative would not allow for alternative gear marking and would continue to require current surface markings (radar reflectors, high flyers, etc.). Lobstermen would continue their current fishing practices, either removing their gear from the water or relocating their gear to areas outside the restricted areas. There would be negligible or no economic impact on fishing communities. Similarly, for Council-managed fisheries,

fishermen would continue their current fishing practices, either removing their gear from the water or relocating their gear to areas outside restricted areas that prohibit fishing. Thus, there would be negligible or no economic impact on fishing communities.

Alternative 1C: Spatially and temporally limited alternative gear marking. This alternative would permit the use of alternative gear marking within the persistent buoy line restricted areas established by the Take Reduction Plan during their restriction periods. To estimate the economic impact, this analysis first identifies the number of vessels that could fish within these restricted areas during restricted periods (Table 17) and then estimates the likelihood that these vessels would switch to alternative gear marking and the potential profitability of doing so (Table 18), as described in Section 6.5.1.

Table 17 - The number of unique vessels inside or around the restricted areas during the shoulder months.

Area	Closure Months	Shoulder Months	Number of Vessels
LMA1 RA	Oct-Jan	Sep and Feb	159
MRA	Feb-Apr	Jan and May	90
GSC RA	Apr-Jun	Mar and Jul	11
SIRA	Feb-Apr	Jan and May	51

Data source: LMA1 restricted area: 2023 Maine state logbook data (most recent year with 100% coverage). Other restricted areas: NMFS VTR data (unique vessels from 2021-2024 were pooled to ensure adequate coverage, as data for any single year is incomplete).

A precise evaluation of the economic impacts is challenging due to several factors: a dynamic fishing environment (e.g., changing fish stocks, weather patterns, and ocean conditions), a highly volatile seafood market, and the uncertain future cost of gear, such as on-demand gear. Therefore, this analysis uses a simplified method by calculating the economic benefit of the alternative gear marking as a set percentage of the operating profit from potential participants. Analysis shows that the total economic benefit would be $1.9 million in year 1. The annualized benefit would be $2.2 million under a three percent discount rate and $2.7 million with a seven percent discount rate, assuming fishermen would receive the same amount of benefit each year throughout the time horizon. The net present value of the 10-year benefits would be $18.7 million (Table 18, also see Section 6.5 for detailed economic analysis).

Table 18 - The economic impact over the 10-year time horizon at three and seven percent discount rates (in 2023 USD).

	3% Discount rate	7% Discount rate
Year 1	$1,867,215	$1,867,215
Year 2	$1,923,231	$1,997,920
Year 3	$1,980,928	$2,137,774
Year 4	$2,040,356	$2,287,419
Year 5	$2,101,567	$2,447,538
Year 6	$2,164,614	$2,618,866
Year 7	$2,229,552	$2,802,186
Year 8	$2,296,439	$2,998,339

Year 9	$2,365,332	$3,208,223
Year 10	$2,436,292	$3,432,799
Net Present Value	$18,672,150	$18,672,150
Annualized Value	$2,188,946	$2,658,494

Data source: 2023 NMFS CAMS data and 2022 NEFSC cost survey data.

This alternative could also introduce additional costs, particularly for mobile-gear fleets. If alternative gear marking is permitted within the restricted areas, mobile-gear vessels operating in those same areas and seasons may need to be equipped with specific detection devices or visualization technology to avoid gear conflicts.

Alternative 1D: Spatially limited alternative gear marking. This alternative would permit the use of alternative gear marking year-round within the geographical boundaries of the persistent buoy line restricted areas established by the Take Reduction Plan. The economic impact of this alternative is expected to be similar to that of Alternative 1C. This is because using alternative gear markings during open periods offers no immediate additional benefit to fishermen, and therefore, a significant increase in participation is not anticipated in the short term. Over the long term, this alternative could yield other positive outcomes, including reduced entanglement risk for large whales and other marine species, as well as potential price premiums from the environmentally friendly seafood. However, this premium could only be realized over time, as it requires building widespread consumer awareness and establishing a well-functioning sustainable seafood market.

This alternative could also introduce additional costs, particularly for mobile-gear fleets. If alternative gear marking is permitted year-round within the restricted areas, mobile-gear and other fixed-gear vessels operating in those same areas may need to be equipped with specific detection devices or visualization technology to avoid gear conflicts.

Alternative 1B: Region-wide alternative gear marking. This alternative could allow the use of alternative gear marking in all Federal waters within the Greater Atlantic Region. Similar to Alternative 1D, few fixed-gear fishermen in open areas or open seasons would have an incentive to adopt alternative gear marking, while the other fleets may need to install or use additional equipment/technology to avoid gear conflicts.

Alternative 2A: No Action. This alternative would not require a person to demonstrate knowledge of any approved gear-marking alternatives, therefore there would not be any economic impact on fishing communities.

Alternative 2B: Letter of Authorization and Demonstration of Knowledge Requirement. Under this alternative, fishermen would be required to obtain a Letter of Authorization certifying that they have demonstrated sufficient knowledge of an approved alternative gear marking method. The primary economic impact would be the additional time fishermen would spend on demonstrating their knowledge and completing necessary paperwork, in addition to the economic impacts described in Alternative Set 1.

Alternative 2C: Letter of Authorization Only. This alternative would require fishermen to obtain a Letter of Authorization to use alternative gear marking but would not require a demonstration of knowledge. The economic impact is limited to the time spent on paperwork, in addition to the economic impacts described in Alternative Set 1.

8.13.7 Uncertainties of Economic Analysis Results

Due to the limitation of fishery related data availability and the uncertain nature of fishermen's behavior, we acknowledge the following uncertainties of this economic analysis:

1. We could only conduct quantitative analysis for the times and areas of the persistent buoy line restricted areas (i.e., Alternative 1C) because it is the most restrictive alternative with the least uncertainty; we provide qualitative description for all other alternatives;
2. The number of directly impacted fishing vessels for Alternative 1C are estimated based on VTR data and state logbook data. There could be missing data or errors during the reporting and data processing. The actual number of vessels could be more than we estimated.
3. The annualized cost of the on-demand gear is estimated based on a popular model with medium to high retail price. The future gear cost could be lower if a cheaper system is designed or when the current systems could realize production of scale.

8.13.8 Results of the Regulatory Impact Analysis

The results of this analysis show that this action could directly impact about 320 lobster trap/pot vessels around the restricted areas with an annual economic benefit of $1.9 million. However, this rule does not benefit all lobster vessels across the Greater Atlantic Region equally. Medium-sized lobster vessels that fish in offshore restricted areas could benefit the most from high landing values in the fall/winter season while maintaining medium to low operating costs. Inshore lobster vessels could not generate enough revenue to support the cost of current on-demand gear. It also creates the potential for gillnet and other trap/pot vessels to maintain access to existing fishing grounds, should the Take Reduction Plan be modified with additional persistent buoy line restricted areas in these fisheries. Additionally, allowing gear-marking alternatives could facilitate a price premium from the sustainable seafood market by promoting whale safe seafood. In the long run, this rule could create steady benefits for fixed-gear fishermen and reduce entanglement risk to large whales and other marine species.

9 Appendix II: Applicable Gear-Marking Regulations

9.1 Magnuson Stevens Act

General Prohibitions at § 648.14(k)(10): ***Gear marking requirement for all persons.*** It is unlawful for any person, including any owner or operator of a vessel issued a valid NE multispecies permit or letter under § 648.4(a)(1)(i), unless otherwise specified in § 648.17, to fail to comply with the gear-marking requirements of § 648.84.

Management Measures for the Northeast Multispecies and Monkfish Fisheries at 50 CFR 648.84: (b) Bottom-tending fixed gear, including, but not limited to gillnets or longline gear, must be marked so that the westernmost end (measuring the half compass circle from magnetic south through west to, and including, north) of the gear displays a standard 12-inch (30.5-cm) tetrahedral corner radar reflector and a pennant positioned on a staff at least 6 ft (1.8 m) above the buoy. The easternmost end (meaning the half compass circle from magnetic north through east to, and including, south) of the gear need display only the standard 12-inch (30.5-cm) tetrahedral radar reflector positioned in the same way.

Management Measures for Red Crab at § 648.264(a)(5): ***Gear markings.*** The following is required on all buoys used at the end of each red crab trawl:

i. The letters “RC” in letters at least 3 inches (7.62 cm) in height must be painted on top of each buoy.
ii. The vessel's permit number in numerals at least 3 inches (7.62 cm) in height must be painted on the side of each buoy to clearly identify the vessel.
iii. The number of each trap trawl relative to the total number of trawls used by the vessel (i.e., “3 of 6”) must be painted in numerals at least 3 inches (7.62 cm) in height on the side of each buoy.
iv. High flyers and radar reflectors are required on each trap trawl.

Management Measures for Black Sea Bass § 648.144(b)(1): ***Gear marking.*** The owner of a vessel issued a black sea bass moratorium permit must mark all black sea bass pots or traps with the vessel's USCG documentation number or state registration number.

Management Measures for Scup § 648.125(b)(3): ***Pot and trap identification***. Pots or traps used in fishing for scup must be marked with a code of identification that may be the number assigned by the Regional Administrator and/or the identification marking as required by the vessel's home port state.

9.2 Atlantic Coastal Act

Lobster Gear Marking at § 697.21(b) ***Deployment and gear configuration***. In the areas of the EEZ described in paragraph (b)(4) of this section, lobster trap trawls are to be displayed and configured as follows:

(1) Lobster trap trawls of three or fewer traps deployed in the EEZ must be attached to and marked with a single buoy.

(2) With the exception of Maine permitted vessels fishing in Maine Lobster Management Zones that can fish up to ten lobster traps on a trawl with one buoy line, lobster trap trawls consisting of more than three traps must have a radar reflector and a single flag or pennant on the westernmost end (marking the half compass circle from magnetic south through west, to and including north), while the easternmost end (meaning the half compass circle from magnetic north through east, to and including south) of an American lobster trap trawl must be configured with a radar reflector only. Standard tetrahedral corner radar reflectors of at least 8 inches (20.32 cm) (both in height and width, and made from metal) must be employed. (A copy of a diagram showing a standard tetrahedral corner radar reflector is available upon request to the Office of the Greater Atlantic Regional Administrator.)

10 Appendix III: Additional Information on Protected Species Affected Environment

Protected species are those afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. Table 19 provides a list of protected species under National Marine Fisheries Service (NMFS) jurisdiction that occur within with the affected environment of the proposed action; however, not all species have the potential to be impacted (i.e., become entangled or caught) by the operation of fixed gear (i.e., pot/trap, gillnet) fisheries.

Table 19 - Species protected under the ESA and/or MMPA that may occur in the affected environment.

Species	Status	Potentially impacted by this action?
Cetaceans		
North Atlantic right whale (Eubalaena glacialis)	***Endangered***	***Yes***
Humpback whale, West Indies DPS (*Megaptera novaeangliae)*	Protected (MMPA)	Yes
Fin whale (Balaenoptera physalus)	***Endangered***	***Yes***
Sei whale (Balaenoptera borealis)	***Endangered***	***Yes***
Blue whale (Balaenoptera musculus)	***Endangered***	***No***
Sperm whale (Physeter macrocephalus	***Endangered***	***No***
Minke whale (*Balaenoptera acutorostrata*)	Protected (MMPA)	Yes
Pilot whale (Globicephala spp.)[2]	Protected (MMPA)	Yes
Pygmy sperm whale (*Kogia breviceps*)	Protected (MMPA)	No
Dwarf sperm whale (*Kogia sima*)	Protected (MMPA)	No
Risso's dolphin (*Grampus griseus*)	Protected (MMPA)	Yes
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected (MMPA)	Yes
Short-Beaked Common dolphin (*Delphinus delphis*)	Protected (MMPA)	Yes
Atlantic Spotted dolphin (*Stenella frontalis*)	Protected (MMPA)	No
Striped dolphin (*Stenella coeruleoalba*)	Protected (MMPA)	No
Bottlenose dolphin, Western North Atlantic (WNA) Offshore Stock (*Tursiops truncatus*)	Protected (MMPA)	Yes
Bottlenose dolphin WNA Northern Migratory Coastal Stock (Tursiops truncatus)	***Protected (MMPA)***	***Yes***
Bottlenose dolphin, WNA Southern Migratory Coastal Stock (Tursiops truncatus)	***Protected (MMPA)***	***Yes***
Harbor porpoise (*Phocoena phocoena*)	Protected (MMPA)	Yes
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*)	Threatened	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Giant manta ray (*Manta birostris)*	Threatened	Yes
Oceanic whitetip shark (*Carcharhinus longimanus*)	Threatened	No
Atlantic salmon (*Salmo salar*)	Endangered	Yes
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes

Species	Status	Potentially impacted by this action?
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected (MMPA)	Yes
Gray seal (*Halichoerus grypus*)	Protected (MMPA)	Yes
Harp seal (*Phoca groenlandicus*)	Protected (MMPA)	Yes
Hooded seal (*Cystophora cristata*)	Protected (MMPA)	Yes
Critical Habitat		
North Atlantic Right Whale	ESA Designated	No
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA Designated	No

Notes: Marine mammal species italicized and in bold are considered MMPA strategic stocks.[1]

[1] A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the potential biological removal level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).

[2] 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*.

10.1 Species and Critical Habitat Not Likely Impacted by the Proposed Action

Based on available information, it has been determined that this action is unlikely to impact multiple ESA-listed and/or MMPA-protected species or designated critical habitat (Table 19). This determination has been made because either: 1) the occurrence of the species is not known to overlap with the area primarily affected by the action; and/or, 2) based on the most recent ten years of data, there has been no documented interactions between the species and fixed gear (i.e., gillnet, pot/trap) [Greater Atlantic Region (GAR) Marine Animal Incident Database, unpublished data; NMFS Marine Mammal Stock Assessment Reports (SARs) for the Atlantic Region; NMFS NEFSC observer/sea sampling database, unpublished data; NMFS NEFSC marine mammal (small cetacean, pinniped, baleen whale) serious injury and mortality reports; MMPA List of Fisheries (LOF); NMFS 2021a][20]. In the case of critical habitat, this determination has been made because the action will not affect the essential physical and biological features of critical habitat identified in Table 19 and therefore, will not result in the destruction or adverse modification of any species critical habitat (NMFS 2021a).

10.2 Species Potentially Impacted by the Proposed Action

To identify protected species of sea turtles, marine mammals, and fish (Table 19) potentially impacted by the proposed action, we considered:

(1) information on species occurrence in the affected environment; this helps to inform the degree of overlap between fixed-gear fishery and the species; and,

[20] For marine mammal species (ESA listed or MMPA protected), the most recent 10 years of information on estimated serious injury and mortality in commercial fisheries covers the timeframe between 2013-2022. For ESA-listed species of sea turtles and fish, information on observer or documented interactions with fishing gear is from 2014-2023.

(2) observed or documented records of protected species interactions with pot/trap and/or gillnet gear (regardless of fishery); this helps to inform potential interaction risks between fixed-gear fisheries and the species.

The following sections provide detailed information on each of the items above; however, in general, the following sources were referenced or queried to help identify MMPA or ESA-listed species potentially impacted by the action:

- MMPA species: NMFS Marine Mammal SARs for the Atlantic Region, MMPA List of Fisheries (LOF), NMFS (2021b), NMFS Northeast Fishery Science Center (NEFSC) observer/sea sampling database (unpublished data), and NMFS NEFSC marine mammal (small cetacean, pinniped, baleen whale) serious injury and mortality reports.
- ESA-listed species: NMFS NEFSC observer/sea sampling, Sea Turtle Disentanglement Network (STDN), the GAR Marine Animal Incident databases, and NMFS' May 27, 2021, Batched Fisheries Biological Opinion (NMFS 2021a).

10.2.1 Sea Turtles

Below is a summary of the status and trends, and the occurrence and distribution of sea turtles in the affected environment of the proposed action. More information on the range-wide status of affected sea turtle species, and their life history is in several published documents, including NMFS (2021a); sea turtle status reviews (Seminoff et al. 2015; NMFS & USFWS 2015, 2020, 2023), and recovery plans for the loggerhead (Northwest Atlantic DPS) sea turtle (Bolten et al. 2019), leatherback sea turtle (NMFS & USFWS 1992), Kemp's ridley sea turtle (NMFS et. al. 2011), and green sea turtle (North Atlantic DPS) (NMFS & USFWS 1991).

10.2.1.1 Status and trends

Four sea turtle species could be impacted by the proposed action: Northwest Atlantic Ocean DPS of loggerhead, Kemp's ridley, North Atlantic DPS of green, and leatherback sea turtles (Table 19). Although stock assessments and similar reviews have been completed for sea turtles, none have been able to develop a reliable estimate of absolute population size. As a result, nest counts are used to inform population trends for sea turtle species.

For the Northwest Atlantic Ocean DPS of loggerhead sea turtles, there are five unique recovery units that comprise the DPS. Nesting trends for each of these recovery units are variable; however, Peninsular Florida nesting beaches comprise most of the nesting in the DPS (https://myfwc.com/research/wildlife/sea-turtles/nesting/beach-survey-totals/). Overall, short-term trends for loggerhead sea turtle nestings (Northwest Atlantic Ocean DPS) have shown increases; however, over the long-term, the DPS is considered stable (Bolten et al. 2019, NMFS and USFWS 2023).

For Kemp's ridley sea turtles, from 1980 through 2003, the number of nests at three primary nesting beaches (Rancho Nuevo, Tepehuajes, and Playa Dos) increased 15 percent annually (Heppell et al. 2005); however, due to recent declines in nest counts, decreased survival of immature and adult sea turtles, and updated population modeling, this rate is not expected to continue (NMFS and USFWS 2015; Caillouett et al. 2018). Nest numbers have fluctuated in recent years. In 2020, there were 20,205 nests (Burchfield et al. 2021), which was a bit lower than 2017, which had the highest number (24,587) of nests. While the nesting trend is

encouraging, given previous fluctuations in nesting and continued anthropogenic threats to the species, the overall trend is unclear.

The North Atlantic DPS of green sea turtle, overall, is showing a mixed trend in nesting. Green turtle nesting in Florida is increasing, with a record-breaking year in 2023 with 76,645 nests; Caribbean Mexico and Cuba nesting also continues to increase. However, a recent analysis of 51 years of nesting data shows a recent (beginning in 2009) downward trend in green turtle nesting at Tortuguero, the largest nesting assemblage for this DPS (Restrepo et al. 2023). As anthropogenic threats to this species continue, the differences in nesting trends will need to be monitored to verify the North Atlantic DPS' resiliency to future perturbations.

Leatherback turtle nesting in the Northwest Atlantic is showing an overall negative trend, with the most notable decrease occurring during the most recent time frame of 2008 to 2017 (NW Atlantic Leatherback Working Group 2018). The leatherback status review in 2020 concluded that leatherbacks are exhibiting an overall decreasing trend in annual nesting activity (NMFS and USFWS, 2020). Given continued anthropogenic threats to the species, according to NMFS (2021a), the species' resilience to additional perturbation both within the Northwest Atlantic and worldwide is low.

10.2.1.2 Occurrence and Distribution

Hard-shelled sea turtles - 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. 1995a,b; Mitchell et al. 2003; Shoop & Kenney 1992; TEWG 2009; Blumenthal et al. 2006; Braun-McNeill & Epperly 2002; 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). 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 2002; Epperly et al. 1995 a,b,c; 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 (i.e., November). By December, sea turtles have migrated south to waters off Cape Hatteras, North Carolina and further south, although it should be noted that hard-shelled sea turtles can occur year-round in waters off Cape Hatteras and south (Epperly et al. 1995b; Griffin et al. 2013; Hawkes et al. 2011; Shoop & Kenney 1992).

Leatherback sea turtles - Leatherbacks, a pelagic species, are known to use coastal waters of the U.S. continental shelf and to have a greater tolerance for colder water than hard-shelled sea turtles (James et al. 2005; Eckert et al. 2006; Murphy et al. 2006; NMFS and USFWS 2020; Dodge et al. 2014). Leatherback sea turtles engage in routine migrations between northern temperate and tropical waters (NMFS and USFWS 1992; James et al. 2005; James et al. 2006; Dodge et al. 2014). They are found in more northern waters (i.e., GOM) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (James et al. 2005; James et al. 2006; Dodge et al. 2014). The mid-Atlantic bight may serve as an important foraging ground for this species (Rider et al. 2024).

10.2.2 Large Whales

10.2.2.1 Status and Trends

Five large whale species have the potential to be impacted by the proposed action: humpback, North Atlantic right, fin, sei, and minke whales (Table 19). Linden (2024) indicates continued annual mortalities above recovery thresholds (i.e., the Potential Biological Removal Level) for North Atlantic right whale population; however, for fin, humpback, minke, and sei whales, it is unknown what the population trajectory is as a trend analysis has not been conducted. The NMFS Marine Mammal SARs for the Atlantic Region have more information on the status of humpback, North Atlantic right, fin, sei, and minke whales.

10.2.2.2 Occurrence and Distribution

North Atlantic right, humpback, fin, sei, and minke whales may be present in the affected environment of the proposed action throughout the year. Table 20 provides an overview of species occurrence and distribution in the affected environment of the proposed action; however, additional information on large whale occurrence and distribution in the Northwest Atlantic can be found in NMFS Marine Mammal SARs for the Atlantic Region.

Table 20 - Large whale occurrence, distribution, and habitat use in the affected environment.

Species	**Occurrence/Distribution/Habitat Use**
North Atlantic Right Whale	● Predominantly occupy waters of the continental shelf but, based on passive acoustic and telemetry data, are also known to make excursions into deep waters off the shelf. ● Visual surveys and acoustic monitoring have: ○ demonstrated broad-scale, year-round presence along the U.S. eastern seaboard, especially in the Gulf of Maine (GOM), southern New England (SNE), Mid-Atlantic; ○ shown the existence of areas where North Atlantic right whales congregate seasonally, including Cape Cod Bay and Massachusetts Bay; and, ○ shown high inter-annual variability in right whale use of habitat since 2010; acoustic and visual surveys indicate changes in habitat use patterns (e.g., some years with fewer detections in the Great South Channel, some years with year-round detections south of Martha's Vineyard and Nantucket Islands, some years with aggregations near the canyons, changes to the GOM).
Humpback	• Distributed throughout all continental shelf waters of the Mid-Atlantic (SNE included), GOM, and Georges Bank (GB) throughout the year. • New England waters (GOM and GB) = Foraging Grounds (~March-November); however, acoustic detections of humpbacks indicate year-round presence in New England waters, including the waters of Stellwagen Bank. • Mid-Atlantic waters: Increasing evidence that mid-Atlantic areas are becoming an important habitat for juvenile humpback whales.

Species	Occurrence/Distribution/Habitat Use
	• Since 2011, increased sightings of humpback whales in the New York-New Jersey Harbor Estuary, in waters off Long Island, and along the shelf break east of New York and New Jersey. • Increasing visual and acoustic evidence of whales remaining in mid- and high-latitudes throughout the winter (e.g., Mid- Atlantic: waters near Chesapeake and Delaware Bays, peak presence about January through March; Massachusetts Bay: peak presence about March-May and September-December).
Fin	• Distributed throughout all continental shelf waters of the Mid-Atlantic (SNE included), GOM, and GB; • Recent review of sighting data shows evidence that, while densities vary seasonally, fin whales are present in every season throughout most of the EEZ north of 30°N. • New England waters (GOM and GB) = Major Foraging Ground
Sei	• Habitat suitability analyses suggest that the recent distribution patterns of sei whales in U.S. waters appear to be related to waters that are cool (<10°C), with high levels of chlorophyll and inorganic carbon, and where the mixed layer depth is relatively shallow (<50m). • Often found in deep waters of the shelf edge; however, episodic incursions into shallow waters occurs. • During spring and summer, primarily occur within the U.S. Atlantic Exclusive Economic Zone (EEZ)—the Gulf of Maine and Georges Bank (northern, eastern, and southern margins of the shelf edge). • Recent acoustic detections peaked in northern latitudes in the summer, indicating feeding grounds ranging from Southern New England through the Scotian Shelf. • Persistent year-round detections in Southern New England and the New York Bight indicate this area to be an important region for sei whales. • The wintering habitat remains largely unknown.
Minke	• Widely distributed within the U.S. EEZ. • Spring to Fall: widespread (acoustic) occurrence on the continental shelf; most abundant in New England waters during this period of time. • September to April: high (acoustic) occurrence in deep-ocean waters.

Sources: Hayes et al. 2020 (humpback whale); Hayes et al. 2024.

10.2.3 Small Cetaceans

10.2.3.1 Status and Trends

Risso's, white-sided, short-beaked common, and bottlenose dolphins (Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal stocks); long and short - finned pilot whales; and harbor porpoise may be impacted by the proposed action (Table 19). A trend analysis has not been conducted for long-finned pilot whales, harbor porpoise, and Risso's, white-sided, and short-beaked common dolphins and, as a result, the population trajectory for these species is unknown (Hayes et al. 2024). For short-finned pilot whales, a generalized linear

model indicated no significant trend in the abundance estimates (Hayes et al. 2024). For the Western North Atlantic Offshore stock, no statistically significant trend in population size for this species has been documented; however, the high level of uncertainty in the estimates limits the ability to detect a statistically significant trend (Hayes et al. 2024). In regards to the Northern and Southern Migratory Coastal stocks of bottlenose dolphins (both considered a strategic stock under the MMPA), the most recent stock assessment for these stocks suggests a probable decline in stock size between 2010-2011 and 2016, concurrent with a large unexplained mortality event in the area; however, there is limited power to evaluate trends given uncertainty in stock distribution, lack of precision in abundance estimates, and a limited number of surveys (Hayes et al. 2021).

10.2.3.2 Occurrence and Distribution

Atlantic white-sided dolphins, short- and long-finned pilot whales, Risso's dolphins, short-beaked common dolphins, harbor porpoise, and several stocks of bottlenose dolphins are found throughout the year in the Northwest Atlantic Ocean (see NMFS Marine Mammal SARs for the Atlantic Region). Within this range, however, there are seasonal shifts in species distribution and abundance. Table 21 provides an overview of species occurrence and distribution in the affected environment of the proposed action; additional information on small cetacean occurrence and distribution in the Northwest Atlantic can be found in NMFS Marine Mammal SARs for the Atlantic Region.

Table 21 - Small cetacean occurrence and distribution in the affected environment.

Species	**Occurrence and Distribution**
Atlantic White-Sided Dolphin	• Distributed throughout the continental shelf waters (primarily to 100 m) of the Mid-Atlantic (north of 35°N), SNE, GB, and GOM; however, most common in continental shelf waters from Hudson Canyon (~ 39°N) to GB, and into the GOM. • **January-May**: low densities found from GB to Jeffreys Ledge. • **June-September**: large densities found from GB, through the GOM. • **October-December**: intermediate densities found from southern GB to southern GOM. • South of GB (SNE and Mid-Atlantic), particularly around Hudson Canyon, low densities found year-round, • Virginia (VA) and North Carolina (NC) waters represent southern extent of species range during winter months.
Short-Beaked Common Dolphin	• Regularly found throughout the continental shelf-edge-slope waters (primarily between the 100-2,000 m isobaths) of the Mid-Atlantic, SNE, and GB (esp. in Oceanographer, Hydrographer, Block, and Hudson Canyons). • Less common south of Cape Hatteras, NC, although pods have been reported as far south as the Georgia/South Carolina border.

Species	Occurrence and Distribution
	• **January-May**: occur from waters off Cape Hatteras, NC, to GB (35^{o} to 42^{o}N). • **Mid-summer-autumn**: occur in the GOM and on GB; *Peak abundance* found on GB in the autumn.
Risso's Dolphin	• **Spring through fall**: distributed along the continental shelf edge from Cape Hatteras, NC, to GB. • **Winter**: distributed in the Mid-Atlantic Bight, extending into oceanic waters. • Rarely seen in the GOM; primarily a Mid-Atlantic continental shelf edge species (can be found year-round).
Harbor Porpoise	• Distributed throughout the continental shelf waters of the Mid-Atlantic, SNE, GB, and GOM. • **July-September**: concentrated in the northern GOM (waters <150 meters); low numbers can be found on GB. • **October-December**: widely dispersed in waters from New Jersey (NJ) to Maine (ME); seen from the coastline to deep waters (>1,800 meters). • **January-March**: intermediate densities in waters off NJ to NC; low densities found in waters off New York (NY) to GOM. • **April-June**: widely dispersed from NJ to ME; seen from the coastline to deep waters (>1,800 meters). • Passive acoustic monitoring indicates regular presence from January through May offshore of Maryland.
Bottlenose Dolphin	**Western North Atlantic Offshore Stock** • Distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic from GB to Florida. • Depths of occurrence: 25 meters **Western North Atlantic Northern Migratory Coastal Stock** • Most common in coastal waters <20 m deep. • Warm water months (e.g., July-August): distributed from the coastal waters from the shoreline to about 25-m isobaths between the mouth of the Chesapeake Bay and Long Island, NY. • Cold water months (e.g., January-March): stock occupies coastal waters from Cape Lookout, NC, to the NC/VA border. **Western North Atlantic Southern Migratory Coastal Stock** • Most common in coastal waters <20 m deep. • **October-December**: appears stock occupies waters of southern NC (south of Cape Lookout)

Species	Occurrence and Distribution
	• **January-March**: appears stock moves as far south as northern FL. • **April-June**: stock moves north to waters of NC. • **July-August**: stock is presumed to occupy coastal waters north of Cape Lookout, NC, to the eastern shore of VA (as far north as Assateague).
Pilot Whales: *Short- and Long-Finned*	**Short- Finned Pilot Whales** • Except for area of overlap (see below), primarily occur south of 40°N (Mid-Atlantic and SNE waters); although low numbers have been found along the southern flank of GB, but no further than 41°N. • Distributed primarily near the continental shelf break of the Mid-Atlantic and SNE (i.e., off Nantucket Shoals). **Long-Finned Pilot Whales** • Except for area of overlap (see below), primarily occur north of 42°N. • Winter to early spring: distributed principally along the continental shelf edge off the northeastern U.S. coast. • Late spring through fall: movements and distribution shift onto GB and into the GOM and more northern waters. • Species tends to occupy areas of high relief or submerged banks. **Area of Species Overlap:** along the mid-Atlantic shelf break between Delaware and the southern flank of GB.

Sources: Hayes et al. 2021 ; Hayes et al. 2024.

10.2.4 Pinnipeds

10.2.4.1 Status and Trends

Harbor, gray, harp and hooded seals may be impacted by the proposed action (Table 19). Based on Hayes et al. (2019), Hayes et al. (2022), and Hayes et al. (2024), the status of the:

- Western North Atlantic harbor seal and hooded seal, relative to Optimum Sustainable Population (OSP), in the U.S. Atlantic EEZ is unknown;
- gray seal population relative to OSP in U.S. Atlantic EEZ waters is unknown, but the stock's abundance appears to be increasing in Canadian and U.S. waters; and,
- harp seal stock, relative to OSP, in the U.S. Atlantic EEZ is unknown, but the stock's abundance appears to have stabilized.

10.2.4.2 Occurrence and Distribution

Harbor, gray, harp, and hooded seals are found in the nearshore, coastal waters of the Northwest Atlantic Ocean. Depending on species, they may be present year-round or seasonally in some portion of the affected environment of proposed action. (Table 22) Additional information on

pinniped occurrence and distribution in the Northwest Atlantic can be found in NMFS Marine Mammal SARs for the Atlantic Region.

Table 22 - Pinniped occurrence and distribution in the affected environment.

Species	Occurrence and Distribution
Harbor Seal	• Year-round inhabitants of Maine; • **September through late May**: occur seasonally along the coasts from southern New England to Virginia.
Gray Seal	• New Jersey through Maine
Harp Seal	• Winter-Spring (approx. January-May): can occur in the U.S. Atlantic Exclusive Economic Zone. • Sightings and strandings have been increasing off the east coast of the United States from Maine to New Jersey.
Hooded Seal	• Highly migratory and can occur in waters from Maine to Florida. These appearances usually occur between January and May in New England waters, and in summer and autumn off the southeast U.S. coast.

Sources: Marine Mammal SARs for the Atlantic Region

10.2.5 Atlantic Sturgeon

10.2.5.1 Status and Trends

Atlantic sturgeon (all five DPSs) could be impacted by the proposed action (Table 19). Population trends for Atlantic sturgeon are difficult to discern; however, the most recent stock assessment report concludes that Atlantic sturgeon, at both coastwide and at the DPS level, are depleted relative to historical levels (ASSRT 2007; ASMFC 2017; NMFS 2021a; ASMFC 2024).

10.2.5.2 Occurrence and Distribution

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, although individuals are most likely to belong to the DPS in the same general region where they are found (Altenritter et al. 2017; ASMFC 2017; ASMFC 2024; ASSRT 2007; Breece et al. 2016, 2018; Dovel and Berggren 1983; Dadswell 2006; Dunton et al. 2010, 2015; Erickson et al. 2011; Hilton et al. 2016; Ingram et al. 2019; Kazyak et al. 2021; Kynard et al. 2000; Laney et al. 2007; Novak et al. 2017; O'Leary et al. 2014; Rothermel et al. 2020; Stein et al. 2004a; Waldman et al. 2013; Wippelhauser et al. 2017; Wirgin et al. 2012, 2015a,b).

Based on fishery-independent and fishery-dependent surveys, as well as data collected from genetic, tracking, and/or tagging studies in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour; however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Altenritter et al. 2017; Breece et al. 2016; 2018; Collins and Smith 1997; Dunton et

al. 2010; Erickson et al. 2011; Ingram et al. 2019; Novak et al. 2017; Rothermel et al. 2020; Stein et al. 2004a,b; Wippelhauser et al. 2017). Data from fishery-independent and fishery-dependent surveys, as well as data collected from genetic, tracking, and/or tagging studies also indicate that Atlantic sturgeon make seasonal coastal movements from marine waters to river estuaries in the spring and from river estuaries to marine waters in the fall; however, there is no evidence to date that all Atlantic sturgeon make these seasonal movements. Therefore, Atlantic sturgeon may be present throughout the marine environment throughout the year (Altenritter et al. 2017; Breece et al. 2018; Dunton et al. 2010; Erickson et al. 2011; Ingram et al. 2019; Novak et al. 2017; Rothermel et al. 2020; Wipplehauser 2012; Wippelhauser et al. 2017).

For additional information on the biology and range-wide distribution of each DPS of Atlantic sturgeon refer to: 77 FR 5880 and 77 FR 5914, the Atlantic Sturgeon Status Review Team's (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT 2007); the ASMFC's 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report (ASMFC 2017) and 2024 Atlantic Sturgeon Stock Assessment Update (ASMFC 2024), and NMFS (2021a).

10.2.6 Atlantic Salmon (Gulf of Maine DPS)

10.2.6.1 Status and Trends

Atlantic salmon (GOM DPS) could be impacted by the proposed action (Table 19). There is no population growth rate available for GOM DPS of Atlantic salmon; however, the consensus is that the DPS exhibits a continuing declining trend (NOAA 2016; USFWS and NMFS 2018; NMFS 2021a).

10.2.6.2 Occurrence and Distribution

The wild populations of Atlantic salmon are listed as endangered under the ESA. Their freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River, while the marine range of the GOM DPS extends from the GOM (primarily the northern portion of the GOM), to the coast of Greenland (NMFS and USFWS 2018; Fay et al. 2006). In general, smolts, post-smolts, and adult Atlantic salmon may be present in the GOM and coastal waters of Maine in the spring (beginning in April), and adults may be present throughout the summer and fall months (Baum 1997; Fay et al. 2006; USASAC 2013; Hyvarinen et al. 2006; Lacroix and McCurdy 1996; Lacroix et al. 2004, 2005; Reddin 1985; Reddin and Short 1991; Reddin and Friedland 1993; Sheehan et al. 2012; NMFS and USFWS 2018; Fay et al. 2006). For additional information on the biology and range-wide distribution of the GOM DPS of Atlantic salmon, refer to NMFS and USFWS (2018); Fay et al. (2006); and NMFS (2021a).

10.2.7 Giant Manta Ray

10.2.7.1 Status and Trends

Giant manta rays could be impacted by the proposed action (Table 19). While there is considerable uncertainty regarding the giant manta ray's current abundance throughout its range, the best available information indicates that, in areas where the species is not subject to fishing, populations may be stable (NMFS 2021a). However, in regions where giant manta rays are (or were) actively targeted or caught as bycatch, populations appear to be decreasing (Miller and Klimovich 2017; Marshall et al. 2022).

Occurrence and Distribution

Based on the giant manta ray's distribution, the species may occur in coastal, nearshore, and pelagic waters off the U.S. east coast from the Gulf of America north to Long Island, New York (Miller and Klimovich 2017; Farmer et al. 2022; NMFS 2024). They are most commonly detected along productive thermal front boundaries both nearshore and at the shelf edge (Farmer et al. 2022). Along the U.S. East Coast, giant manta ray occurrence appears primarily influenced by temperature; the species is usually found in water temperatures between 19 and 30°C, with a peak around 23°C (Miller and Klimovich 2017; Farmer et al. 2022). North Atlantic giant manta rays appear to exhibit a degree of migratory behavior coinciding with prey abundance, with distribution expanding northward as water temperatures warm during the summer months (Farmer et al. 2022). Occurrences north of Cape Hatteras peak during the months of June-October (Farmer et al. 2022). Limited size estimates suggest that smaller, younger animals more commonly occur in the southeastern U.S., while larger individuals can be observed in the northern portion of the species' range (Farmer et al. 2022). Given that the species is rarely identified in the fisheries data in the Atlantic, it may be assumed that populations within the Atlantic are small and sparsely distributed (Miller and Klimovich 2017).

10.3 Interactions Between Gear and Protected Species

Protected species are at risk of interacting (e.g., caught or entangled) with various types of fishing gear, with interaction risks associated with gear type, quantity, soak or tow duration, and degree of overlap between gear and protected species. Information on observed or documented interactions between gear and protected species is available from as early as 1989 (NMFS Marine Mammal SARs for the Atlantic Region; NMFS NEFSC observer/sea sampling database, unpublished data). As the distribution and occurrence of protected species and the operation of fisheries (and, thus, risk to protected species) have changed over the last 30 years, we use the most recent 10 years of available information to best capture the current risk to protected species from fishing gear. For marine mammals protected under the MMPA and/or the ESA, the most recent 10 years of observer, stranding, and/or marine mammal serious injury and mortality reports are from 2013-2022[21]. For ESA-listed species of sea turtles and fish, the most recent 10 years of data on observed or documented interactions is available from 2014-2023[22]. Available information on gear interactions with a given species (or species group) is provided in the sections below. The sections to follow are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on gear types used by fixed-gear fisheries operating in the affected environment of the proposed action (i.e., sink gillnet, pot/trap).

[21] GAR Marine Animal Incident Database, unpublished data; NMFS Marine Mammal SARs for the Atlantic Region; NMFS NEFSC protected species serious injury and mortality reports.

[22] ASMFC 2017; ASMFC 2024; Kocik et al. 2014; NMFS 2021a; GAR Marine Animal Incident Database, unpublished data; NMFS Marine Mammal SARs for the Atlantic Region; NMFS NEFSC protected species serious injury and mortality reports; NMFS NEFSC observer/sea sampling database, unpublished data; GAR Sea Turtle and Disentanglement Network, unpublished data; NMFS Sea Turtle Stranding and Salvage Network, unpublished data.

10.3.1 Sea Turtles

Gillnet Gear - Interactions between sink gillnet gear and green, Kemp's ridley, loggerhead, and leatherback sea turtles have been observed in the GAR since 1989 (NMFS NEFSC observer/sea sampling database, unpublished data). Specifically, sea turtle interactions with gillnet gear have been observed in the GOM, Georges Bank, and/or the Mid-Atlantic; however, most of the observed interactions have been observed south of the GOM (Murray 2009a,b; Murray 2013; Murray 2018; NMFS NEFSC observer/sea sampling database, unpublished data; NMFS 2021a). As few sea turtle interactions have been observed in the GOM, there is insufficient data available to conduct a robust model-based analysis and bycatch estimate of sea turtle interactions with sink gillnet gear in this region. As a result, the bycatch estimates and discussion below are for sink gillnet gear in the Mid-Atlantic and Georges Bank.

From 2017-2021, Murray (2023) estimated that sink gillnet fisheries operating from Maine to North Carolina[23] bycaught 142 loggerheads (CV=0.89, 95% CI overall years:15-376), 91 Kemp's ridleys (CV=0.62, CI overall years: 0-218), 49 greens (CV=1.01, 95% CI overall years: 0-177), 26 leatherbacks (CV=0.98, 95% CI overall years: 0-79), and 32 unidentified hard-shelled turtles (CV=0.59, 95% CI overall years: 0-75). Of these, mortalities were estimated at 88 loggerheads, 56 Kemp's ridleys, 30 greens, 16 leatherbacks, and 20 unidentified hard-shelled turtles (Murray 2023). Total estimated loggerhead (Northwest Atlantic DPS) interactions were equivalent to 2.5 adults (Murray 2023). The highest loggerhead turtle interaction rate occurred in the northern Mid-Atlantic strata in large mesh gear from July-October (Murray 2023). Relative to loggerheads, all other species' interaction rates were lower (Murray 2023).

Pot/Trap Gear - Leatherback, loggerhead, green, and Kemp's ridley sea turtles are at risk of interacting with trap/pot gear; however, review of data provided by the NEFSC Observer Program, VTR, and the NMFS Greater Atlantic Region (GAR) Sea Turtle Disentanglement Network (STDN), indicate that interactions between trap/pot gear and Kemp's ridley and green sea turtles are rare in the Greater Atlantic Region (NMFS 2021a). Sea turtle interactions with pot/trap gear are primarily associated with entanglement in vertical lines associated with this gear type; however, sea turtles can also become entangled in groundlines or surface system lines of pot/trap gear (STDN, unpublished data). Records of stranded or entangled sea turtles indicate that fishing gear can wrap around the neck, flipper, or body of the sea turtle and severely restrict swimming or feeding (Balazs 1985; STDN, unpublished data). As a result, sea turtles can incur serious injuries and, in some cases, mortality immediately or at a later time.

Given few trap/pot trips have been observed by the NEFSC Observer Program over the last 10 years, and VTR reporting of incidences of interactions with sea turtles are limited, most reports of sea turtle entanglements in the vertical lines of trap/pot gear are documented by the NMFS GAR (Maine through Virginia) STDN. Based on this, the STDN database, a component of the Sea Turtle Stranding and Salvage Network database, provides the most complete and best available dataset on sea turtle vertical line entanglements in the Greater Atlantic Region. Confirmed and probable entanglement cases in the GAR STDN database from 2015-2024 were reviewed. Over this timeframe, 194 sea turtle entanglements in vertical line gear (known and unknown fishery) were documented. Of the 194 cases assessed, 182 were leatherback sea turtles,

[23] This range was expanded from previous years to include the Gulf of Maine in addition to Georges Bank and the Mid-Atlantic Ecological Production Units (Murray 2023).

10 were loggerhead sea turtles, one was a Kemp's ridley sea turtle, and one was a sea turtle of unknown species.

10.3.2 Atlantic Sturgeon

Sink Gillnet Gear **-** The ASMFC (2017), Miller and Shepard (2011), NMFS (2021a), Boucher and Curti (2023) and the most recent ten years of NMFS observer data (i.e., 2013-2022; NMFS NEFSC observer/sea sampling database, unpublished data) describe the observed or documented interactions between Atlantic sturgeon and gillnet gear in the Greater Atlantic Region. For sink gillnets, higher levels of Atlantic sturgeon bycatch have been associated with depths under 40 m, mesh sizes over ten inches, and the months of April and May (ASMFC 2007). More recently, over all gears (i.e., sink gillnet and bottom trawl) and observer programs that have encountered Atlantic sturgeon, the distribution of haul depths on observed hauls that caught Atlantic sturgeon was significantly different from those that did not encounter Atlantic surgeon, with Atlantic sturgeon encountered primarily at depths under 20 meters (ASMFC 2017).

Boucher and Curti (2023) updated the estimate of Atlantic sturgeon bycatch that was presented in the ASMFC (2017) Atlantic sturgeon benchmark stock assessment for the annual Atlantic sturgeon interactions in fishing gear (e.g., otter trawl, gillnet). The assessment analyzed fishery observer and VTR data to estimate Atlantic sturgeon interactions in fishing gear in the Mid-Atlantic and New England regions from 2000-2021 (excluding 2020 due to COVID-related impacts on data collection). The total bycatch of Atlantic sturgeon from gillnets ranged from 1,031-1,268 fish. The estimated average annual bycatch during 2016-2021 of Atlantic sturgeon in gillnet gear is 1,125.4 individuals. However, the estimate of Atlantic sturgeon bycatch in Boucher and Curti (2023) for 2016-2021 includes take of all Atlantic sturgeon, including non-listed fish that originate in Canadian waters, but occur within the affected environment of this action. Partitioning out the fish that were likely of Canadian origin, NOAA fisheries concluded that the total bycatch of ESA-listed Atlantic sturgeon, only, during 2016-2021 in gillnet gear is 1,115 individuals.

Pot/Trap Gear **-** To date, there have been no documented pot/trap interactions with Atlantic sturgeon (NMFS NEFSC observer/sea sampling database, unpublished data; NMFS 2021a).

10.3.3 Atlantic Salmon

Sink Gillnet Gear **-** Northeast Fisheries Observer Program (NEFOP) data from 1989-2023 show records of incidental bycatch of Atlantic salmon in seven of the 34 years, with a total of 15 individuals caught, nearly half of which (seven) occurred in 1992 (NMFS NEFSC observer/sea sampling database, unpublished data).[24] Of the observed incidentally caught Atlantic salmon, 11 were documented in gillnet gear. Given the low number of observed Atlantic salmon interactions in gillnet gear, interactions with this gear type are believed to be rare in the Greater Atlantic Region (see also McAfee 2024).

[24] There is no information available on the genetics of these bycaught Atlantic salmon, so it is not known how many of them were part of the GOM DPS. It is likely that some of these salmon, particularly those caught south of Cape Cod, may have originated from the stocking program in the Connecticut River. Those Atlantic salmon caught north of Cape Cod and/or in the Gulf of Maine are more likely to be from the GOM DPS.

Pot/Trap Gear **-** To date, there have been no documented pot/trap interactions with Atlantic salmon (NMFS NEFSC observer/sea sampling database, unpublished data; NMFS 2021a).

10.3.4 Giant Manta Ray

Sink Gillnet Gear **-** Giant manta rays are potentially susceptible to capture by gillnet gear based on records of their capture in fisheries using this gear types (NMFS NEFSC observer/sea sampling database, unpublished data; NMFS 2021a). Review of the most recent 10 years of NEFOP data showed that between 2014-2023, two giant manta rays were observed in gillnet gear (NMFS NEFSC observer/sea sampling database, unpublished data). While there is currently no information on post-release survival, NMFS Southeast Gillnet Observer Program observed a range of 0 to 16 giant manta rays captured per year between 1998 and 2015 and estimated that approximately 89% survived the interaction and release (see NMFS reports available at: http://www.sefsc.noaa.gov/labs/panama/ob/gillnet.htm). Other sources, however, suggest that giant manta rays experience high at-vessel and post-release mortality because of they are obligate ram ventilators (Marshall et al. 2022; NMFS 2024). In the giant manta ray draft Recovery Plan, NMFS states that commercial gillnet fisheries pose a low threat to this species (NMFS 2024).

Pot/Trap Gear **-** To date, there have been no documented pot/trap interactions with giant manta rays (NMFS NEFSC observer/sea sampling database, unpublished data; NMFS 2021a).

10.3.5 Marine Mammals

Depending on species, marine mammals have been observed seriously injured or killed in gillnet and/or pot/trap gear. Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions). In the Northwest Atlantic, the 2024 LOF (89 FR 12257, February 16, 2024) categorizes commercial gillnet fisheries (Northeast and Mid-Atlantic) and the American lobster/Jonah crab pot/trap fisheries as Category I fisheries, and the Atlantic mixed species trap/pot fishery (e.g., scup, sea bass) as a Category II fishery.

10.3.5.1 Large Whales

Sink Gillnet and Pot/Trap Gear **-** Large whale interactions (entanglements) with fishing gear have been observed and documented in the waters of the Northwest Atlantic.[25] Information available on all interactions (e.g., entanglement, vessel strike, unknown cause) with large whales comes from reports documented in the GAR Marine Animal Incident Database (unpublished data). The level of information collected for each case varies, but may include details on the animal, gear, and any other information about the interaction (e.g., location, description, etc.). Each case is evaluated using defined criteria to assign the case to an injury/information category using all available information and scientific judgement. In this way, the injury severity and

[25] NMFS Atlantic Large Whale Entanglement Reports: For years prior to 2014, contact David Morin, Large Whale Disentanglement Coordinator, David.Morin@NOAA.gov; GAR Marine Animal Incident Database (unpublished data); NMFS Marine Mammal Stock Assessment Reports for the Atlantic Region; NMFS NEFSC Baleen Whale Serious Injury and Morality Determinations reports; MMPA List of Fisheries; NMFS 2021a,b.

cause of injury/death for the event is evaluated, with serious injury and mortality determinations issued by the NEFSC.[26]

Based on the best available information, the greatest entanglement risk to large whales is posed by fixed gear used in trap/pot or sink gillnet fisheries (Angliss and Demaster 1998; Cole and Henry 2013; Knowlton and Kraus 2001; Johnson et al. 2005; Knowlton et al. 2012; NMFS 2021a,b; Hamilton and Kraus 2019; Henry et al. 2020; Henry et al. 2021; Henry et al. 2022; Henry et al. 2023; Henry et al. 2024; Sharp et al. 2019; Pace et al. 2021; see NMFS Marine Mammal SARs for the Atlantic Region). Specifically, while foraging or transiting, large whales are at risk of becoming entangled in vertical endlines, buoy lines, or groundlines of gillnet and pot/trap gear, as well as the net panels of gillnet gear that rise into the water column (Baumgartner et al. 2017;; Cole and Henry 2013; Hamilton and Kraus 2019; Henry et al. 2020; Henry et al. 2021; Henry et al. 2022; Henry et al. 2023; Henry et al. 2024; Johnson et al. 2005; Knowlton and Kraus 2001; Knowlton et al. 2012; NMFS 2021a,b; see NMFS Marine Mammal SARs for the Atlantic Region).[27] Large whale interactions (entanglements) with these features of trap/pot and/or sink gillnet gear often result in the serious injury or mortality to the whale (Angliss and Demaster 1998; Cole and Henry 2013; Henry et al. 2020; Henry et al. 2021; Henry et al. 2022; Henry et al. 2023; Henry et al. 2024; Knowlton et al. 2012; Moore et al. 2021; NMFS 2021a,b; Pettis et al. 2021; Sharp et al. 2019; van der Hoop et al. 2017). In fact, according to NMFS (2021b), review of Atlantic coast-wide causes of large whale human interaction incidents showed that entanglement is the highest cause of mortality and serious injury for North Atlantic right, humpback, fin, and minke whales in those instances when cause of death could be determined. As many entanglements, and therefore, serious injury or mortality events, go unobserved, and because the gear type, fishery, and/or country of origin for reported entanglement events are often not traceable, the rate of large whale entanglement, and thus, rate of serious injury and mortality due to entanglement, are likely underestimated (Hamilton et al. 2023; Knowlton et al. 2012; NMFS 2021a,b; Pace et al. 2021).

As noted above, pursuant to the MMPA, NMFS publishes a LOF annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injurious and mortalities of marine mammals in each fishery. Large whales, in particular, humpback, fin, minke, and North Atlantic right whales, are known to interact with Category I and II fisheries in the Northwest Atlantic Ocean. As fin and North Atlantic right whales are listed as endangered under the ESA, these species are considered strategic stocks under the MMPA. Section 118(f)(1) of the MMPA requires the preparation and implementation of a Take Reduction Plan for any strategic marine mammal stock that interacts with Category I or II fisheries. In response to its obligations under the MMPA, in 1996, NMFS established the Atlantic Large Whale Take Reduction Team (ALWTRT) to develop a plan (Atlantic Large Whale Take Reduction Plan (ALWTRP)) to reduce serious injury to, or mortality of, large whales, specifically, humpback, fin, and North Atlantic right whales, due to incidental entanglement in U.S. commercial fishing gear.[28] In 1997, the ALWTRP was implemented;

[26] NMFS NEFSC Baleen Whale Serious Injury and Morality Determinations reports.
[27] Through the ALWTRP, regulations have been implemented to reduce the risk of entanglement in in vertical endlines, buoy lines, or groundlines of gillnet and pot/trap gear, as well as the net panels of gillnet gear. ALWTRP regulations currently in effect are summarized online.
[28] The measures identified in the ALWTRP are also beneficial to the survival of the minke whale, which are also known to be incidentally taken in commercial fishing gear.

however, since 1997, it has been modified several times as NMFS and the ALWTRT learn more about why whales become entangled and how fishing practices might be modified to reduce the risk of entanglement. In 2021 and 2024, adjustments to the ALWTRP were implemented and are summarized online.

The ALWTRP consists of regulatory (e.g., universal gear requirements, modifications, and requirements; area-and season- specific gear modification requirements and restrictions; time/area closures) and non-regulatory measures (e.g., gear research and development, disentanglement, education and outreach) that, in combination, seek to assist in the recovery of North Atlantic right, humpback, and fin whales by addressing and mitigating the risk of entanglement in gear employed by commercial fisheries, specifically trap/pot and gillnet fisheries. The ALWTRP recognizes trap/pot and gillnet Management Areas in Northeast, Mid-Atlantic, and Southeast regions of the U.S, and identifies gear modification requirements and restrictions for Category I and II gillnet and trap/pot fisheries in these regions; these Category I and II fisheries must comply with all regulations of the Plan.[29] For further details on the Plan, please refer to the ALWTRP.

10.3.5.2 Small Cetaceans and Pinnipeds

Sink Gillnet Gear - Reviewing marine mammal stock assessment and serious injury reports that cover the most recent 10 years data (i.e., 2013-2022), as well as the MMPA LOF's covering this time frame (i.e., issued between 2017 and 2024), Table 23 provides a list of species that have been observed (incidentally) seriously injured and/or killed by MMPA LOF Category I (frequent interactions) gillnet fisheries that operate in the affected environment of the proposed action. The most recent estimate (2022) of small cetacean and pinniped incidental take in gillnet gear, indicates that gray seals, followed by harbor seals, harbor porpoises, and short-beaked common dolphins are the most frequently incidentally caught small cetacean and pinnipeds in sink gillnet gear in the Greater Atlantic Region; bycatch of Risso's dolphins, white sided dolphins, and harp seals are observed to a lesser extent (Precoda 2024).

Table 23 - Small cetacean and pinniped species observed seriously injured and/or killed by Category I sink gillnet fisheries in the affected environment.

Fishery	Category	Species Observed or Reported Injured/Killed
Northeast Sink Gillnet	I	Bottlenose dolphin (Western North Atlantic (WNA) offshore)
		Bottlenose dolphin (Northern Migratory coastal)
		Harbor porpoise (Gulf of Maine (GME)/Bay of Fundy (BF))
		Atlantic white sided dolphin (WNA)
		Short-beaked common dolphin (WNA)

[29] The fisheries currently regulated under the ALWTRP include: Northeast/Mid-Atlantic American lobster trap/pot; Atlantic blue crab trap/pot; Atlantic mixed species trap/pot; Northeast sink gillnet; Northeast anchored float gillnet; Northeast drift gillnet; Mid-Atlantic gillnet; Southeastern U.S. Atlantic shark gillnet; and Southeast Atlantic gillnet.

		Risso's dolphin (WNA)
		Long-finned pilot whales
		Harbor seal (WNA)
		Hooded seal
		Gray seal (WNA)
		Harp seal (WNA)
Mid-Atlantic Gillnet	I	Bottlenose dolphin (Northern Migratory coastal)
		Bottlenose dolphin (Southern Migratory coastal)
		Bottlenose dolphin (Northern North Carolina (NC) estuarine system)
		Bottlenose dolphin (Southern NC estuarine system)
		Bottlenose dolphin (WNA offshore)
		Common dolphin (WNA)
		Harbor porpoise (GME/BF)
		Short-beaked common dolphin
		Harbor seal (WNA)
		Hooded seal (WNA)
		Harp seal (WNA)
		Gray seal (WNA)

Source: NMFS Marine Mammal SARs for the Atlantic Region; MMPA 2017-2024 LOFs.

To address the high levels of incidental take of harbor porpoise and bottlenose dolphins in sink gillnet fisheries, pursuant to section MMPA Section 118(f)(1), the Harbor Porpoise Take Reduction Plan (HPTRP) and the Bottlenose Dolphin Take Reduction Plan (BDTRP) were developed and implemented for these species.[30] Refer to NMFS HPTRP, NMFS BDTRP, or NMFS Atlantic Trawl Gear Take Reduction Strategy for addition information on each take reduction plan or strategy.

Pot/Trap Gear **-** In the absence of extensive observer data for these fisheries, stranding data provides the next best source of information on species interactions with trap pot gear. Based on stranding data provided in the NMFS Marine Mammal SARs for the Atlantic Region, a

[30] Although the most recent U.S. Atlantic and Gulf of America Marine Mammal SARs (Hayes et al. 2022) no longer designates harbor porpoise as a strategic stock, HPTRP regulations are still in place per the mandates provided in Section 118(f)(1).

minimum known count of interactions with pot/trap gear type is provided and summarized below. However, because not all human caused serious injuries or mortalities to marine mammals are discovered, reported, or show signs of entanglement, stranding data alone underestimates the extent of human-related mortality and serious injury. Additionally, if gear is present, it is often difficult to definitively attribute the animal's death or serious injury to the gear interaction, or to a specific fishery. As a result, the conclusions below should be taken with these considerations in mind, and with an understanding that interactions may occur more frequently than what we are able to detect at this time.

Reviewing the most recent 10 years of data provided in the NMFS Marine Mammal SARs for the Atlantic Region (i.e., 2012-2021), of the small cetacean and pinniped species identified in Table 19, bottlenose dolphins (Northern and Southern Migratory stocks) are the only species in which entanglement in trap/pot gear has been documented. Between 2012-2021, stranding data documented a total of four cases of bottlenose dolphins entangled in trap/pot gear that could be ascribed to the Western North Atlantic Northern Migratory Coastal stock; for the Western North Atlantic Southern Migratory Coastal, there were a total of 13 cases. All cases over this timeframe resulted in the serious injury or mortality of the animal. Although the trap/pot gear involved in most of the cases were either unknown or identified to the Atlantic blue crab trap/pot fishery, given the general similarities in trap/pot gear composition (e.g., traps and vertical buoy lines); there is the potential for interactions to occur between bottlenose dolphins and pot/trap gear used in pot/trap fisheries operating in the affected environment of the proposed action. However, given the information provided above, interactions with trap/pot gear, resulting in the serious injury or mortality to small cetaceans or pinnipeds, are likely to be infrequent.

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