DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 219

[Docket No. 200409–0108]

RIN 0648–BG44

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Southeast Fisheries Science Center Fisheries Research

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule, notification of issuance.

SUMMARY: NMFS's Office of Protected Resources (OPR), upon request from NMFS's Southeast Fisheries Science Center (SEFSC), hereby issues regulations to govern the unintentional taking of marine mammals incidental to fisheries research conducted in the Atlantic Ocean along the southeastern U.S. coast and select estuaries, the Gulf of Mexico and select estuaries, and the Caribbean Sea over the course of 5 years. These regulations, which allow for the issuance of Letters of Authorization (LOA) for the incidental take of marine mammals during the described activities and specified timeframes, prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat, as well as requirements pertaining to the monitoring and reporting of such taking.

DATES: Effective from June 5, 2020, through June 5, 2025.

ADDRESSES: A copy of the SEFSC's application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *www.fisheries.noaa.gov/action/incidental-take-authorization-noaa-fisheries-afsc-fisheries-and-ecosystem-research.* In case of problems accessing these documents, please call the contact listed below.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Purpose and Need for Regulatory Action

These regulations, issued under the authority of the MMPA (16 U.S.C. 1361 *et seq.*), establishes a framework for authorizing the take of marine mammals incidental to fisheries-independent research conducted by the SEFSC (in the Atlantic Ocean and associated estuaries, Gulf of Mexico and associated estuaries, and Caribbean Sea). SEFSC fisheries research has the potential to take marine mammals due to possible physical interaction with fishing gear (*e.g.,* trawls, gillnets, hook-and-line gear) and exposure to noise generated by SEFSC sonar devices (*e.g.,* echosounders, side-scan sonar). The SEFSC submitted an application to NMFS requesting 5-year regulations and a letter of authorization (LOA) to take multiple species and stocks of marine mammals in the three specified research areas (Atlantic, Gulf of Mexico, and Caribbean). The SEFSC requested, and NMFS has authorized, take, by mortality, serious injury, and Level A harassment, incidental to the use of various types of fisheries research gear and Level B harassment incidental to the use of active acoustic survey sources. The regulations are valid from June 5, 2020, through June 5, 2025.

Legal Authority for the Action

Section 101(a)(5)(A) of the MMPA (16 U.S.C. 1371(a)(5)(A)) directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region for up to 5 years if, after notice and public comment, the agency makes certain findings and issues regulations that set forth permissible methods of taking pursuant to that activity, as well as monitoring and reporting requirements.

Section 101(a)(5)(A) of the MMPA and the implementing regulations at 50 CFR part 216, subpart I provide the legal basis for issuing these final rules containing 5-year regulations and subsequent Letters of Authorization. As directed by this legal authority, these final rules contain mitigation, monitoring, and reporting requirements.

Summary of Major Provisions Within the Regulations

Following is a summary of the major provisions for the SEFSC within the final rulemaking. The SEFSC is required to:

- Delay setting or haul in gear if marine mammal interaction may occur.
- Monitor prior to and during sets for signs of potential marine mammal interaction.
- Implement the ''move-on rule'' mitigation strategy during select surveys (note: this measure does not apply to bottlenose dolphins).
- Limit gear set times (varies based on gear type).
- Haul gear immediately if marine mammals may interact with gear.
- Utilize dedicated marine mammal observations during select surveys.
- Prohibit chumming.
- Continue investigation on the effectiveness of modifying lazy lines to reduce bottlenose dolphin entanglement risk.
- Establish and convene the South Carolina Department of Natural Resources (SCDNR) Working Group to better understand bottlenose dolphin entanglement events and apply effective mitigation strategies.

We note that in the proposed rule (84 FR 6576, February 27, 2019), we proposed regulations that would have applied separately both to the SEFSC and Texas Parks and Wildlife Department (TPWD). Since that time, new information has emerged regarding TPWD's activity that NMFS is considering before making final decisions regarding the take of marine mammals incidental to TPWD's gillnet fishing. Here, we announce issuance of regulations for SEFSC only.

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

NMFS has defined ''negligible impact'' in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival. The MMPA states that the term ''take'' means to harass, hunt, capture, kill or attempt to harass, hunt, capture, or kill any marine mammal.

Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Summary of Request

On May 4, 2015, NMFS OPR received an application from the SEFSC for a rulemaking and associated 5-year Letter of Authorization (LOA) to take marine mammals incidental to fisheries research activities conducted by the SEFSC and 18 cooperating research partners in the Atlantic Ocean Research Area (ARA), Gulf of Mexico Research Area (GOMRA), and Caribbean Research Area (CRA). The SEFSC submitted a revised draft in October 2015, followed by another revision on April 6, 2016, which we deemed adequate and complete. On April 22, 2016 (81 FR 23677), we published a notice of receipt of the SEFSC's application and, subsequently, on February 27, 2019, a notice of proposed rulemaking in the **Federal Register** (84 FR 6576) that requested comments and information related to the SEFSC's request for 30 days. The SEFSC request is for the take of 15 species of marine mammals by mortality, serious injury, and Level A harassment (hereafter referred to as ''M/SI'') and 34 species of marine mammals by Level B harassment.

Description of the Specified Activity

Overview

The SEFSC is the research arm of NMFS in the Southeast Region. The SEFSC plans, develops, and manages a multidisciplinary program of basic and applied research to generate the information necessary for the conservation and management of the region's living marine resources, including the region's marine and anadromous fish and invertebrate populations to ensure they remain at sustainable and healthy levels. The SEFSC collects a wide array of information necessary to evaluate the status of exploited fishery resources and the marine environment from fishery independent (*i.e.,* non-commercial or recreational fishing) platforms. Surveys are conducted from NOAA-owned and operated vessels, NOAA chartered vessels, or research partner-owned or chartered vessels in the state and Federal waters of the Atlantic Ocean south of Virginia, Gulf of Mexico, and Caribbean Sea. All work will occur within the Exclusive Economic Zone (EEZ), except for two surveys which may occur outside the EEZ.

The SEFSC plans to administer, fund, or conduct 74 fishery-independent survey programs over the 5-year period the regulations are effective (see Table 1–1 in the SEFSC's application). The SEFSC works with 18 Federal, state, or academic partners to conduct these surveys (see Table 1–1 in SEFSC's application for a list of cooperating research partners). Of the 74 surveys, only 38 involve gear and equipment with the potential to take marine mammals. Gear types include towed trawl nets fished at various levels in the water column, seine nets, traps, longline and other hook and line gear. Surveys using any type of seine net (*e.g.,* gillnets), trawl net, or hook and line (*e.g.,* longlines) have the potential for marine mammal interaction (*e.g.,* entanglement, hooking) resulting in M/SI harassment. In addition, the SEFSC conducts hydrographic, oceanographic, and meteorological sampling concurrent with many of these surveys which requires the use of active acoustic devices (*e.g.,* side-scan sonar, echosounders). These active sonars result in elevated sound levels in the water column, resulting in the potential to behaviorally disturb marine mammals resulting in Level B harassment.

Many SEFSC surveys only occur at certain times of the year to align with the target species and age class being researched (see Table 1–1 in SEFSC's application). However, in general, the SEFSC conducts some type of sampling year round in various locations. Specific dates and duration of individual surveys are inherently uncertain because they are based on congressional funding levels, weather conditions, and ship contingencies. For example, some surveys are only conducted every 2 or 3 years or when funding is available. Timing of the surveys is a key element of their design. Oceanic and atmospheric conditions, as well as ship contingencies, often dictate survey schedules even for routinely-conducted surveys. In addition, cooperative research is designed to provide flexibility on a yearly basis in order to address issues as they arise. Some cooperative research projects last multiple years or may continue with modifications. Other projects only last one year and are not continued. Most cooperative research projects go through an annual competitive selection process to determine which projects should be funded based on proposals developed by many independent researchers and fishing industry participants. The exact location of survey effort also varies year to year (albeit in the same general area) because they are often based on randomized sampling designs. Year-round, in all research areas, one or more of the surveys planned has the potential to take marine mammals.

Specified Geographic Region

The SEFSC conducts research in three research areas: The Atlantic Ocean from North Carolina to Florida and associated estuaries (ARA), the Gulf of Mexico and associated estuaries (GOMRA), and the Caribbean around Puerto Rico and the US Virgin Islands (CRA). Research surveys occur both inside and outside the U.S. Exclusive Economic Zone (EEZ), and sometimes span across multiple ecological, physical, and political boundaries (see Figure1–2 in the SEFSC's application for map). With respect to gear, Appendix B in the NMFS PEA includes a table and figures showing the spatial and temporal distribution of fishing gear used during SEFSC research.

The three research areas fully or partially encompass four Large Marine Ecosystems (LMEs): The Northeast U.S. Continental Shelf LME (NE LME), the Southeast U.S. Continental Shelf LME (SE LME), the Gulf of Mexico LME, (GOM LME), and the Caribbean Sea LME (CS LME). LMEs are large areas of coastal ocean space, generally include greater than 200,000 square kilometers (km^2) of ocean surface area and are located in coastal waters where primary productivity is typically higher than in open ocean areas. LME physical boundaries are based on four ecological criteria: Bathymetry, hydrography, productivity, and trophic relationships. NOAA has implemented a management approach designed to improve the long-term sustainability of LMEs and their resources by using practices that focus on ensuring the sustainability of the productive potential for ecosystem goods and services. Figure 2–1 in the SEFSC's application shows the location and boundaries of the three research areas with respect to LME boundaries. We note here that, while the SEFSC specified geographical region extends outside of the U.S. EEZ, into the Mexican EEZ (not including Mexican territorial waters), the MMPA's authority does not extend into foreign territorial waters. A complete description of the SEFSC's three research areas is provided in the proposed rule (84 FR 6576, February 27, 2019) and Chapter 3 of the Final PEA.

Detailed Description of Activities

To carry out this research, the SEFSC proposes to administer or conduct 74 survey programs during the 5-year period the proposed regulations would be effective. However, only 44 surveys have the potential to take marine mammals from gear interaction or acoustic harassment. Surveys would be carried out by SEFSC scientists alone or in combination with Federal, state, or academic partners while some surveys would be carried out solely by cooperating research partners. Surveys not conducted by SEFSC staff are included here because they are funded or have received other support (*e.g.,* gear) by the SEFSC. SEFSC scientists conduct fishery-independent research onboard NOAA-owned and operated vessels or chartered vessels while partners conduct research aboard NOAA, their own or chartered vessels. Table 1 provides a summary of annual projects including survey name, entity conducting the survey, location, gear type, and effort. The information presented here augments the more detailed table included in the SEFSC's application. In the subsequent section, we describe relevant active acoustic devices, which are commonly used in SEFSC survey activities. Appendix A of the SEFSC's application contains detailed descriptions, pictures, and diagrams of all research gear and vessels used by the SEFSC and partners under this rulemaking. We provided a detailed description of the SEFSC planned research activities, gear types, fishing methods, and active acoustic sound sources used in the notice of rulemaking (84 FR 6576; February 27, 2019) and do not repeat that information here. There are no changes to the specified activities, gear types, fishing methods, or active acoustic sound sources described in that document.

TABLE 1—SUMMARY DESCRIPTION OF FISHERIES AND ECOSYSTEM RESEARCH ACTIVITIES CONDUCTED OR FUNDED BY THE SEFSC IN THE GOMRA, ARA, AND CRA

Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
Gulf of Mexico Research Area					
HMS–GOM Shark Pupping & Nursery Survey (GULFSPAN), (SEFSC, USM/GCRL, UWF, FSU/CML) [1]* UWF is inactive.	SEFSC—FL Panhandle in St. Andrew Bay and St. Joseph Bay, 1–10 m depths.	Annual Apr–Oct, 30 DAS, (approximately 4 days/month), daytime operations only.	USCG Class I: R/V *Mokarran,* R/V *Pristis*.	Set gillnet	SEFSC—16–20 sets/month, up to 120 sets total.
	Mississippi Sound, 1–9 m depths.	Annual Apr–Oct, 8 DAS (1/month), daytime operations only.	USCG Class I: *Small vessel*.	Set gillnet	3 sets/month 21 sets total.
	Perdido Bay, Pensacola Bay, Choctawhatchee Bay, and Santa Rosa Sound, 1.5–6 m depths.	Annual May–Sep, 10 DAS (2/month), daytime operations only.	USCG Class I: State vessel.	Set gillnet	10 sets/month 50 sets total.
	Northwest FL state waters, 0.7–7 m depths.	Annual	USCG Class I: R/V *Naucrates*.	Set gillnet	74 sets/yr total. (A) 24 sets. (B) 50 sets.
	(A) Apalachee Bay (B) Alligator Pt.—Anclote Keys.	(A) Jan–Dec, 12 DAS (1/month). (B) June & July, 20 DAS, daytime operations only.		Bottom longline	74 sets/yr total. (A) 24 total. (B) 50 total.
	State waters of southwest FL within Pine Island Sound in the Charlotte Harbor estuary. Depth ranges 0.6–4.6 m depth.	Annual May–Sep, 15 DAS, daytime operations only.	USCG Class I: State vessel.	Set gillnet	16 sets/month (within two designated 10 km^2 grids), 80 sets total.
IJA Coastal Finfish Gillnet Survey, (MDMR) [1].	Mississippi Sound and estuaries; 0.2–2 m depths.	Annual, Jan–Dec, 24 DAS, daytime operations only.	USCG Class I: Small vessel.	Sinking gillnet, shallow deployment.	8 sets/month, 96 sets total.
Smalltooth Sawfish Abundance Survey, (SEFSC) [1].	Ten Thousand Islands, FL backcountry region, including areas in Everglades National Park and Ten Thousand Island National Wildlife Refuge in 0.2–1.0 m depths.	Annual, Mar–Nov, 56 DAS (6–7 DAS/trip), daytime operations only.	USCG Class I: R/V *Pristis*.	Set gillnet, shallow deployment.	~20 sets/month, 180–200 sets total.
Pelagic Longline Survey-GOM, (SEFSC) [1].	U.S. GOM	Intermittent, Feb–May, 30 DAS, 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V *Oregon II*.	Pelagic longline CTD profiler	100–125 sets. 100–125 casts.
Shark and Red Snapper Bottom Longline Survey-GOM, (SEFSC) [1].	Randomly selected sites from FL to Brownsville, TX between bottom depths 9–366 m.	Annually, July–Sep, 60 DAS, 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V *Oregon II, R/V Gordon Gunter;*. USCG Small R/V: R/V Caretta, R/V Gandy.	Bottom longline CTD profiler and rosette water sampler.	175 sets. 175 casts.
SEAMAP—GOM Bottom Longline Survey (ADCNR, USM–GCRL, LDWF, TPWD) [1].	AL—MS Sound, Mobile Bay, and near Dauphin Island. MS—MS Sound, south of the MS Barrier Islands, Chandeleur, and Breton Sound, and the area east of the Chandeleur Islands.	Annually, Apr–May, June–July, Aug–Sep;. AL—8 DAS, day operations only. MS—16 DAS, day operations only.	USCG Class III: R/V E.O. Wilson, R/V Alabama Discovery, R/V Defender I, R/V Tom McIlwain, RV Jim Franks, R/V Nueces, R/V SanJacinto; USCG R/V: R/V Blazing Seven (2011–2014).	Bottom longline CTD Profiler	AL—32 sets. MS—40. LA—98. TX—20. AL—32 casts. LA—40.

TABLE 1—SUMMARY DESCRIPTION OF FISHERIES AND ECOSYSTEM RESEARCH ACTIVITIES CONDUCTED OR FUNDED BY THE SEFSC IN THE GOMRA, ARA, AND CRA—Continued

Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
	LA—LA waters west of the MS River. TX—near Aransas Pass and Bolivar Roads Ship Channel.	LA—30 DAS, day operations only. TX—10 DAS, day operations only.	.....	Water quality and chemistry (YSI instruments, Niskin bottles, turbidity meter).	MS—40 casts. TX—20.
IJA Biloxi Bay Beam Trawl Survey (MDMR) [1].	MS state waters in Biloxi Bay, 1–2 m depths.	Annually, Jan–Dec, 25 DAS, day operations only.	USCG Class I: R/V Grav I, R/V Grav II, R/V Grav IV.	Modified beam trawl	11 trawls/month, 132 trawls total.
IJA Inshore Finfish Trawl Survey (MDMR)[1].	MS state waters from Bay St. Louis, to approximately 2 miles south Cat Island, 1–8 m depths.	Annually, Jan–Dec, 12 DAS, day operations only.	USCG Class I: Small vessel R/V Geoship.	Otter trawl	72 trawls.
IJA Open Bay Shellfish Trawl Survey (TPWD) [1].	TX state waters in Galveston, Matagorda, Aransas, and Corpus Christi Bays and the lower Laguna Madre, 1–10 m depths.	Annually, Jan–Dec, 120 DAS, day operations only.	USCG Class I: Small vessel. USCG Class II: R/V Trinity Bay, R/V Copano Bay, R/V RJ Kemp.	Otter trawl ..... Water quality and chemistry (YSI instruments, Niskin bottles, turbidity meter).	90 trawls/month, 1080 trawls total.
Oceanic Deep-water Trawl—GOM, (SEFSC) [1].	U.S. GOM waters >500 m deep.	Intermittent due to funding, 20 DAS, 24 hour operations, * conducted in 2009 & 2010 and in the future as funding allows.	USCG R/V: R/V Gunter, R/V Pisces.	High Speed Midwater Trawl, Aleutian Wing Trawl. CTD profiler and rosette water sampler.	60 trawls (2–3 per day). 60 casts. Tow speed: 0. Duration: 60–90 min.
St. Andrew Bay Juvenile Reef Fish Trawl Survey, (SEFSC) [1].	St. Andrew Bay, FL, up to 2 m depths.	Annually, May–Nov, 28 DAS, day operations only, (one day/week).	USCG Class I: Boston Whaler.	Benthic Trawl	13 trawls per week, 24 weeks, 312 trawls total.
Small Pelagics Trawl Survey, (SEFSC) [1].	U.S. GOM in depths of 50–500 m.	Annually, Oct–Nov, 40 DAS, 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V Gordon Gunter, R/V Pisces.	High-opening bottom trawl. Simrad ME70 Multi-Beam echosounder. EK60 Multi-frequency single-beam active acoustics. ADCP ..... CTD profiler and rosette water sampler.	150–200 trawls. Continuous. Continuous. Continuous. 250 casts.
SEAMAP–GOM Shrimp/ Groundfish Trawl Survey (SEFSC, FFWCC, ADCNR, USM/GCRL, LDWF) [1].	U.S. GOM from FL to Mexico in depths of 9–110–360 m.	Annually, summer (June & July) and fall (Oct–Nov), effort evenly divided between seasons unless noted; all surveys have 24 hour operations-set/haul anytime day or night;. SEFSC—80 DAS ..... FL—20 DAS (summer only). AL—6 DAS ..... MS—6 DAS ..... LA—5 DAS	USCG Class II: R/V Trinity Bay, R/V Copano Bay, R/V RJ Kemp. USCG Class III: R/V A.E. Verrill, R/V Alabama Discovery, R/V Sabine Lake, R/V Nueces, R/V San Jacinto, R/V San Antonio, R/V Matagorda Bay. USCG R/V: R/V *Oregon II,* R/V *Tommy Munro,* R/V *Weatherbird II,* R/V *Pelican,* R/V *Blazing Seven* (2011–2014), R/V *Point Sur*.	Otter trawl ..... CTD profiler and rosette water sampler\uses YSI Datasonde 6600 v2–4.	Effort evenly divided between seasons unless noted. SEFSC—345 trawls (summer), 325 (fall). FL—160 (summer only). AL—16–24. MS—60. LA—32. SEFSC—395 casts (summer), 305 (fall). FL—200 (summer only). AL—20. MS—81. LA—39.
SEFSC BRD Evaluations (SEFSC) [1].	State and Federal nearshore and offshore waters off FL, AL, MS, and LA at depths of 10–35 m. Also Mississippi Sound at depths of 3–6 m.	Annually, May & Aug (one week/month), 14 DAS, night operations only.	USCG Class III: R/V *Caretta*.	Western jib shrimp trawls	20 paired trawls each season, 40 paired trawls total.
SEFSC–GOM TED Evaluations, (SEFSC) [1].	State and Federal nearshore and offshore waters off FL, AL, MS, and LA at depths of 10–35 m. Also Mississippi Sound at depths of 3–6 m.	Annually, May, Aug, & Sep (one week/month), 21 DAS, day operations only.	USCG Class I & II: NOAA small boats. USCG Class III: R/V *Caretta*.	Western jib shrimp trawls	30 paired trawls per season, 90 paired trawls total.
SEFSC Skimmer Trawl TED Testing (SEFSC) [1].	Conducted in Mississippi Sound, Chandeleur Sound, and Breton Sound at depths of 2–6 m.	Annually until 2016 (tentative depending on funding and need) May–Dec, 5–15 DAS/ month, 60 DAS total, 24 hour operations-set/ haul anytime day or night.	USCG Class III: R/V *Caretta*.	Skimmer trawls	600 paired trawls.

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Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
SEFSC Small Turtle TED Testing and Gear Evaluations (SEFSC) [1].	State waters in St. Andrews Bay, FL and off Shell Island and/or Panama City Beach, FL at depths of 7–10 m.	Annually, 21 DAS, day operations only.	USCG Class III: R/V *Caretta.*	Western jib shrimp trawls are utilized during TED evaluations.	100 paired trawls.
IJA Biloxi Bay Seine Survey, (MDMR)[1].	MS state waters in Biloxi Bay, 1–2 m depths.	Annually, Jan–Dec, 25 DAS, day operations only.	USCG Class I & II: R/V *Grav I,* R/V *Grav II,* R/V *Grav IV,* small vessel.	Bag seine	11 sets/month, 132 sets total.
IJA Oyster Dredge Monitoring Survey, (MDMR).	MS state waters, at commercially important oyster reefs: Pass Christian Complex, Pass Marianne Reef, Telegraph Reef and St. Joe Reef, in 5–15 ft depths.	Annually, Jan-Dec, 12 DAS, day operations only.	USCG Class I: R/V *Rookie* USCG Class II: R/V *Silvership.*	Oyster dredge	38 tows.
IJA Shoreline Shellfish Bag Seine Survey, (TPWD) [1].	TX state waters in Galveston, Matagorda, Aransas, and Corpus Christi Bays and the lower Laguna Madre, 0–6 ft depths.	Annually, Jan–Dec, 120 DAS, day operations only.	N/A	Bag seine	100 sets/month, 1200 total.
Marine Mammal and Ecosystem Assessment Survey-GOM, (SEFSC) [1].	Northern GOM	Every three years, June-Sep, 60 DAS, 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V *Gordon Gunter.*	CTD profiler and rosette water sampler. Expendable bathythermographs. ADCP ..... Simrad ME70 Multi-Beam echosounder. EK60 Multi-frequency single-beam active acoustics. Passive acoustic arrays	60 casts. 300 units. Continuous. Continuous. Continuous. Continuous.
Northeast GOM MPA Survey, (SEFSC) * Currently Inactive.	Madison-Swanson, Steamboat Lumps, and The Edges marine reserves on the West Florida Shelf.	Annually, Feb–Mar, 60 DAS, day operations only.	USCG Class III: R/V *Caretta.*	4-camera array ..... CTD Profiler	100–200 deployments. 100–200 casts.
Panama City Laboratory Reef Fish (Trap/Video) Survey, (SEFSC).	Penscecola, FL to Cedar Key, FL.	Annually, May–Sep, 40 DAS, day operations only.	USCG Class II: R/V Harold B, USCG Class III: R/V Caretta , R/V Defender, R/V Apalachee.	4-camera array ..... Chevron fish trap outfitted with one GoPro video camera. CTD profiler	200 deployments. 100 sets. 200 casts.
SEAMAP–GOM Finfish Vertical Line Survey, (ADCNR, LDWF, USM/GCRL).	State and Federal waters off Alabama at sampling depths from 60 to 500 ft and LA waters west of the Mississippi River across three depth strata (60–120 ft, 120–180 ft, and 180–360 ft) and selected areas of Texas at three depth strata (33–66 ft, 66–132 ft, and 132–495 ft). Stations are sampled during daylight hours.	AL: Annually, two intervals: Spring (Apr/May) and summer (July–Sep), 9 DAS, day operations only LA and TX: Annually, April–Oct.	USCG Class III: R/V *Escape,* R/V *Lady Ann,* R/V *Defender I* USCG R/V: R/V *Blazing Seven* (2011–2014), *Poseidon, Trident R/V Sabine, San Jacinto, San Antonio, Nueces, Laguna.*	Bandit gear	AL: 120 sets per season, 240 sets total. LA: 100 sets total. TX: 165 sets total.
	State and Federal waters off MS. Sampling depths 5–55 fathoms. Stations are sampled during daylight hours.	Annually, Mar–Oct, 16 DAS (4 days/month), day operations only.	USCG Class III: R/V *Jim Franks.*	Bandit gear	15 stations/season—45 stations total, 3 sets per station, 135 sets total.
SEAMAP–GOM Plankton Survey, (ADCNR, LDWF, USM/GCRL).	State and Federal waters off the coast of AL, MS, LA, and FL.	AL: Annually, Aug–Sep, 2 DAS, day operations only.	USCG Class III: R/V *A.E. Verrill,* R/V *Alabama Discovery,* R/V *Acadiana.*	Bongo net	AL: 6 tows. LA: 9 tows. MS: 20 tows.
	LA: Annually, June, Sep, 2 DAS, day operations only.	USCG R/V: R/V *Blazing Seven* (2011–2014), R/V *Point Sur;* R/V *Defender.*	Neuston net	AL: 6 tows. ..... LA: 9 tows. ..... MS/FL: 20 tows..	
			MS: Annually, May and Sep, 4 DAS, 24 hour operations.	CTD Profiler	AL: 6 casts. LA: 9 casts. MS/FL: 20 casts.

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Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
SEAMAP–GOM Plankton Survey, (SEFSC).	Coastal, shelf and open ocean waters of the GOM.	Annually, Feb–Mar (winter), 30 DAS;. Apr–May (spring), 60 DAS. Aug–Sep (fall), 36 DAS .. 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V *Oregon II,* R/V *Gordon Gunter,* R/V *Pisces*.	Bongo net ..... Neuston net ..... MOCNESS ..... Methot juvenile fish net .. CTD profiler and rosette water sampler.	650 tows. 650 tows. 378 tows. 126 tows. 756 casts.
SEAMAP–GOM Reef Fish Monitoring, (FFWCC).	West FL shelf from 26°N to Dry Tortugas, FL.	Annual, July–Sep, 50 DAS, daylight hours.	USCG Class I & II: R/V *No Frills,* R/V *Gulf Mariner,* R/V *Sonic,* R/V *Johnson,* chartered fishing vessels.	2-camera array	150 deployments.
			USCG Small R/V: R/V *Bellows,* R/V *Apalachee* USCG R/V:.	Chevron fish trap	300–450 sets.
			R/V *Weatherbird*	CTD profiler	300 casts.
SEAMAP–GOM Reef Fish Survey, (SEFSC).	Gulf-wide survey from Brownsville, TX to Key West, FL, in depths of 15–500 ft. Approximately 7.0% of this survey effort (458 stations) occurs within the Florida Garden Banks NMS.	Annual, Apr–July, 60 DAS, 24 hour operations on large vessels (cameras, traps, bandit—daytime only), 12 hour operations on small vessels (daytime only).	USCG Class III: R/V *Caretta,* R/V *Gandy*. USCG R/V: R/V *Pisces,* R/V *Oregon II*. USCG R/V: *Southern Journey*. NOAA Ship: *Gordon Hunter*.	4-camera array ..... Chevron trap (discontinued use in 2013). CTD Profiler ..... Bandit Reels ..... Acoustic Doppler Current Profiler. Simrad ME70 Multi-beam echosounder. EK60 Multi-frequency single-beam active acoustics.	400–600 deployments. 50–100 sets. 400–600 casts. 120 sets. Continuous. Continuous. Continuous.
IJA Oyster Visual Monitoring Survey, (MDMR).	MS state waters, 5–15 ft depths.	Annually, Sep/Oct to Apr/May of following year, 12 DAS, day operations only.	USCG Class I & II: R/V *Silvership,* R/V *Rookie*.	SCUBA divers	~20 dives.
Reef Fish Visual Census Survey—Dry Tortugas, Flower Gardens (SEFSC).	Dry Tortugas area in the GOM, <33m deep.	Biannually, May–Sept, 25 DAS, day operations only.	USCG Class II & III: Chartered dive vessel.	SCUBA divers with meter sticks, 30 cm rule and digital camera.	300 stations (4dives per station).
Tortugas Ecological Reserve Survey, (SEFSC) *. * Currently inactive since 2015.	Tortugas South Ecological Reserve, Florida Keys National Marine Sanctuary.	Biannually, summer (June or July), 6 days, day and night 12 hour operations. * Survey has been discontinued since 2015.	USCG Class II & III: Chartered vessel.	SCUBA divers, transect tape, clipboards/pencils.	16 stations, each station done 2–3 times.
Atlantic Research Area					
ACFCMA American Eel Fyke Net Survey, (SCDNR).	Goose Creek Reservoir or the Cooper River, near Charleston, SC, 1–7 ft depths.	Annually, Feb–Apr, 32 DAS, day operations only.	USCG Class A: John Boat—no motor, walk/wade to work net.	Fyke net	1 station per day, 40 collections total.
				Thermometer	32 casts.
ACFCMA American Shad Drift Gillnet Survey, (SCDNR) [1].	Santee, Edisto, Waccamaw, Combahee Rivers, SC.	Annual, Jan–Apr, (2–3 trips/week), 40 DAS, day operations only.	USCG Class I: R/V *Bateau,* R/V *McKee Craft*.	Drift gillnet	4–5 sets/trip, 120 sets total.
RecFIN Red Drum Trammel Net Survey, (SCDNR).	Coastal estuaries and rivers of SC in depths of 6 ft or less along shoreline.	Annually, Jan–Dec, 120–144 DAS (14–18 days/month), day operations only.	USCG Class I: Florida Mullet Skiffs.	Trammel net	1000 sets/yr covering 225 stations/yr. Operates in 7–9 strata/month.
HMS Chesapeake Bay and Coastal Virginia Bottom Longline Shark Survey, (VIMS) [1].	Chesapeake Bay and state and Federal waters off Virginia.	Annually, May–Oct (5 days/month), 30 DAS, day operations only.	USCG Class III: R/V *Bay Eagle*.	Bottom longline	50 sets.
				Hydrolab MS5 Sonde	50 casts.
MARMAP Reef Fish Long Bottom Longline Survey, (SCDNR) [1].	South Atlantic Bight (between 27° N and 34° N, but mostly off GA and SC). Sampling occurs in Federal waters. Depths from ~500 to 860 ft.	Annually 1996–2012 *, Aug–Oct, 10–20 DAS, day operations only. *Halted in 2012 but will resume annually if funding obtained.	USCG Small R/V: R/V *Lady Lisa*.	Bottom longline ..... CTD profiler	60 sets. 60 casts.
MARMAP/SEAMAP–SA Reef Fish Survey, (SCDNR) [1] * Inactive 2012–2014.	South Atlantic Bight (between 27° N and 34° N).	Annually, year-round but primarily Apr–Oct, 70–120 DAS, day operations only.	USCG R/V: R/V *Palmetto*	Chevron fish trap outfitted with two cameras. Bottom longline ..... Bandit reels ..... CTD profiler	600 sets. 60 sets. 400 sets. 300 casts.

TABLE 1—SUMMARY DESCRIPTION OF FISHERIES AND ECOSYSTEM RESEARCH ACTIVITIES CONDUCTED OR FUNDED BY THE SEFSC IN THE GOMRA, ARA, AND CRA—Continued

Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
Pelagic Longline Survey-SA, (SEFSC) [1]. (See also effort conducted in the GOMRA).	Cape Hatteras, NC to Cape Canaveral, FL.	Intermittent, Feb–May, 30 DAS, 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V *Oregon II*.	Pelagic Longline ..... CTD profiler	100–125 sets. 100–125 casts.
Shark and Red Snapper Bottom Longline Survey-SA, (SEFSC) [1]. (See also effort conducted in the GOMRA).	Cape Hatteras, NC to Cape Canaveral, FL between bottom depths 9–183 m.	Annually, July–Sep, 60 DAS, 24 hour operations (set/haul anytime day or night).	USCG Class III: R/V *Caretta*. USCG R/V: R/V *Oregon II,* R/V *Gordon Gunter*.	Bottom longline ..... CTD profiler and rosette water sampler. Neuston and bongo effort if needed to augment SEAMAP plankton objectives.	70 sets. 70 casts. 0–20 tows.
SEAMAP–SA Red Drum Bottom Longline Survey, (NCDEQ, SCDNR, GDNR) [1].	NC: Pamlico Sound or in the nearshore waters of Ocracoke Inlet. SC: Estuaries out to 10 miles in Winyah Bay, Charleston Harbor, St. Helena Sound, and Port Royal Sound. GA: State and Federal waters off the coast of GA and NE FL, (~32°05′ N latitude to the north, 29°20′ N latitude to the south, 80°30′ W longitude to the east, and the coastline to the west).	Annually ..... NC: mid–July to mid–Oct (2 days/week for 12 weeks), 24 DAS, 12 hour operations, beginning at dusk. SC: Aug–Dec, day operations only. 36 DAS ..... GA: Apr–Dec (6 days/month), 54 DAS, day operations only.	USCG Class II: 26 ft outboard. USCG Class III: R/V *Marguerite,*R/V *Silver Crescent*.	Bottom longline ..... YSI (Dissolved oxygen, salinity, temperature).	NC: 75–100 sets total. SC: 360 sets. GA: 200–275 sets. NC: 75–100 casts. SC: 360 casts. GA: 200–275 casts.
ACFCMA Ecological Monitoring Trawl Survey, (GDNR) [1].	Georgia state waters out to 3 nm, 10–35 ft depths.	Annually, Jan–Dec (7 days/month), 84 DAS, day operations only.	USCG Class III: R/V *Anna*.	Otter trawl ..... YSI 85 (Dissolved oxygen, salinity, temperature).	42 trawls/month, 504 trawls total. 504 casts total.
ACFCMA Juvenile Stage Trawl Survey, (GDNR) [1].	Creeks and rivers of three Georgia sound systems (Ossabaw, Altamaha, and St. Andrew).	Annually, Dec–Jan (3 days/month), 36 DAS, day operations only.	USCG Class I: 19 ft Cape Horn; 25 ft Parker.	Otter trawl ..... YSI 85 (Dissolved oxygen, salinity, temperature).	18 trawls/month, 216 trawls total. 216 casts total.
Atlantic Striped Bass Tagging Bottom Trawl Survey, (USFWS) [1].	North of Cape Hatteras, NC, in state and Federal waters, 30–120 ft depths.	Annually, Jan–Feb, 14 DAS, 24 hour operations (set/haul anytime day or night).	USCG R/V: R/V *Oregon II,* R/V *Cape Hatteras,* R/V *Savannah*.	65 ft high-opening bottom trawls.	200–350 trawls.
Juvenile Sport Fish Trawl Monitoring in Florida Bay, (SEFSC) [1].	Florida Bay, FL	Annually, May–Nov, 35 DAS, day operations only.	USCG Class I: R/V *Batou*.	Otter trawl	~500 trawls.
Oceanic Deep-water Trawl Survey (SEFSC) [1] * Currently Inactive.	Southeastern U.S. Atlantic waters >500 m deep.	Intermittent due to funding, 20 DAS, 24 hour operations (trawls may be set and retrieved day or night). * conducted as funding allows.	USCG R/V: NOAA ships	High Speed Midwater Trawl, Aleutian Wing Trawl. CTD profiler and rosette water sampler.	60 trawls (2–3 per day). 60 casts.
SEAMAP–SA NC Pamlico Sound Trawl Survey, (NCDENR) [1].	Pamlico Sound and the Pamlico, Pungo, and Neuse rivers in waters ≥6 ft deep.	Annually, June & Sep, 20 DAS (10 days/month), day operations only.	USCG Class III: R/V *Carolina Coast*.	Otter trawl: Paired mongoose-type Falcon bottom trawls. Ponar grab ..... YSI 556 (Dissolved oxygen, salinity, temperature). Secchi disk	54 trawls each month, 108 trawls total. 54 casts each month, 108 total. 54 casts each month, 108 total. 54 casts each month, 108 total.
SEAMAP–SA Coastal Trawl Survey, (SCDNR) [1].	Cape Hatteras, NC to Cape Canaveral, FL in nearshore oceanic waters of 15–30 ft depth.	Annually, Apr–May (spring), July–Aug (summer), and Oct–Nov (fall), 60–65 DAS, day operations only.	USCG Small R/V: R/V *Lady Lisa*.	Otter trawl: Paired mongoose-type Falcon bottom trawls. SEABIRD electronic CTD	300–350 trawls total, evenly divided between seasons. 300–350 casts.
SEFSC–SA TED Evaluations, (SEFSC) [1].	State and Federal waters off Georgia and eastern FL.	Annually, Nov–Apr, 10 DAS, 24 hour operations—set/haul anytime day or night.	USCG Class III: R/V *Georgia Bulldog*.	Otter trawl: Mongoose shrimp trawls.	50 paired trawls.
In-Water Sea Turtle Research (SCDNR) [1].	Winyah Bay, SC to St. Augustine, FL in water depths of 15–45 ft.	Annually, mid-May through late Jul to early Aug, 24–30 DAS, day operations only.	USCG Class III: R/V *Georgia Bulldog*. USCG Small R/V: R/V *Lady Lisa*.	Paired flat net bottom trawls (NMFS Turtle Nets per Dickerson et al. 1995) with tickler chains.	400–450 trawls.

TABLE 1—SUMMARY DESCRIPTION OF FISHERIES AND ECOSYSTEM RESEARCH ACTIVITIES CONDUCTED OR FUNDED BY THE SEFSC IN THE GOMRA, ARA, AND CRA—Continued

Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
ACFCMA American Eel Pot Survey for Yellow-phase Eels, (GADNR).	Georgia state waters in the Altamaha River System. Sampling is conducted during daylight hours. Depth ranges from 2 to 20 ft.	Annually. Sampling monthly Nov–Apr. based on water temp. 36 DAS (6 days/month), day operations only.	USCG Class I: 19 ft Cape Horn, 18 ft skiff.	Eel traps/pots with float ..	30 stations (180 sets/month; 30 traps set each of 6 days).
Beaufort Bridgenet Plankton Survey, (SEFSC).	Pivers Island Bridge, NOAA Beaufort facility, Beaufort, NC.	Annually, Nov–May (some years monthly Jan–Dec), night operations only sampling occurs once per week, n+4 tows per night.	None	Plankton net	125 tows.
Integrated Biscayne Bay Ecological Assessment and Monitoring Project (IBBEAM) Project, (SEFSC).	Western shoreline of Biscayne Bay, FL.	Twice annually, May–Oct (wet season) and Nov–Apr (dry season), 14 DAS, day operations only.	USCG Class II & III vessels.	Human divers	100 dives.
				Throw trap	372 casts.
Intraspecific Diversity in Pink Shrimp Survey, (SEFSC) * Currently inactive.	Florida Bay, Whitewater Bay, Fakahatchee Bay, Biscayne Bay, Sanibel shrimp fishery, Tortugas shrimp fishery.	Annually, June–Aug, 16 DAS, day operations only.	USCG Class I: R/V *Privateer*.	Miniature roller-frame trawl.	40 trawls.
				Dip net	40 samples.
				Bag seine	40 sets.
Marine Mammal and Ecosystem Assessment Survey–SA (SEFSC) [1].	Southeastern U.S. Atlantic.	Every three years, June–Sep, 60 DAS, 24 hour operations.	USCG R/V: R/V *Gordon Gunter*.	CTD profiler and rosette water sampler.	60 casts.
				Expendable bathythermographs.	300 units.
				Acoustic Doppler Current Profiler.	Continuous.
				Simrad ME70 Multi-Beam echosounder.	Continuous.
				EK60 Multi-frequency single-beam active acoustics.	Continuous.
				Passive acoustic arrays	Continuous.
RecFIN Red Drum Electrofishing Survey, (SCDNR).	Coastal estuaries and rivers of SC in depths of 6 ft or less in low salinity waters (0–12 ppt).	Annually, Jan–Dec, 60–72 DAS (5–6 days/month), day operations only.	USCG Class I: Small vessels.	18 ft elecrofishing boat ...	360 stations per year (30 sites/month).
St. Lucie Rod-and-Reel Fish Health Study, (SEFSC) [1] * Currently inactive.	Nearshore reef, inlet, and estuary of St. Lucie River, FL inlet system (Jupiter or Ft. Pierce, FL).	Annually, Jan–Dec, weekly, 156 DAS, day operations only.	USCG Class I: Small vessels.	Rod and reel gear	468 stations per year: 3/day × 3 day/wk.
SEAMAP–SA Gag Ingress Study, (SCDNR) * Inactive since 2016.	In the vicinity of Swansboro, NC; Wilmington, NC; Georgetown, SC; Charleston, SC; Beaufort, SC; Savannah, GA; and Brunswick, GA.	Annually, Mar–June, 100 DAS, day operations only.	USCG Class I: Small vessels.	Witham collectors	15 sets (4 collectors at each set), 60 sets total.
Southeast Fishery Independent Survey (SEFIS) (SEFSC) [1].	Cape Hatteras, NC, to St. Lucie Inlet, FL. Fifteen survey stations occur within Gray's Reef NMS.	Annually, Apr–Oct, 30–80 DAS, 24 hour operations (cameras & traps—daytime operations, acoustics—anytime day or night).	USCG R/V: R/V *Nancy Foster,* R/V *Pisces,* R/V *Savannah*.	Chevron fish trap outfitted with 2 high-definition video cameras..	1,000 deployments.
				CTD profiler	100–200 casts.
				Simrad ME70 Multi-Beam echosounder.	Continuous.
				Multi-frequency single-beam active acoustics.	Continuous.
U.S. South Atlantic MPA Survey, (SEFSC) [1].	Jacksonville, FL to Cape Fear, NC on or near the continental shelf edge at depths between 80 and 600 m.	Annually, May–Aug, 14 DAS, 24 hour operations (ROV daytime operations, acoustics—anytime day or night).	USCG R/V: R/V *Pisces,* R/V *Nancy Foster,* R/V *Spree*.	ROV Phantom S2 vehicle with tether attached to CTD cable.	10–40 deployments.
				CTD profiler	28 casts.
				Simrad ME70 Multi-Beam echosounder.	Every other night for 6–12 hrs.
				EK60 Multi-frequency single-beam active acoustics.	Every other night for 6–12 hrs.
FL/Dry Tortugas Coral Reef Benthic Survey, (SEFSC).	Survey area encompasses Federal and territorial waters from Dry Tortugas to Martin County, FL. Surveys occur within the Florida Keys NMS (150 stations).	Quarterly–annually, May–Oct, 100 DAS.	USCG Class I & II: Small vessels.	SCUBA divers with measuring devices, cameras, and hand tools.	300 dives.

TABLE 1—SUMMARY DESCRIPTION OF FISHERIES AND ECOSYSTEM RESEARCH ACTIVITIES CONDUCTED OR FUNDED BY THE SEFSC IN THE GOMRA, ARA, AND CRA—Continued

Survey name (research agency)	General area of operation	Season, frequency, yearly days at sea (DAS)	Vessel used	Gear used	Number of stations
Demographic Monitoring of *Acropora* Species, (SEFSC).	Florida Keys National Marine Sanctuary.	3 × per year, ~35 DAS ...	USCG Class I	SCUBA divers	30 fixed plots.
Reef Fish Visual Census Survey—Florida Keys/SE Florida Shelf, (SEFSC).	Florida Keys NMS and SE Florida Shelf, <33 m deep.	Annually, May–Sep, 25 DAS, day operations only.	USCG Class I: R/V *Aldo Leopold*.	SCUBA divers with meter sticks, 30 cm rule and digital camera.	300 dives.
Caribbean Research Area					
Caribbean Plankton Recruitment Experiment, (SEFSC).	Caribbean and Mexican waters.	Bi-annually, Feb or June, 15 DAS, 24 hour operations, anytime day or night.	USCG R/V: R/V *Gordon Gunter,* R/V *Nancy Foster*.	Bongo net	75 tows.
				MOCNESS	75 tows.
				CTD profiler and rosette water sampler.	75 casts.
Caribbean Reef Fish Survey, (SEFSC) [1].	PR and USVI, continental shelf waters.	Every two years, Mar–June, 40 DAS, 24 hour operations.	USCG R/V: R/V *Pisces,* R/V *Oregon II*.	Bandit Reels	300 sets.
				4-camera array	150 deployments.
				Chevron traps	100 sets.
				CTD profiler	300 casts.
				Simrad ME70 Multi-Beam echosounder.	Continuous.
				Acoustic Doppler Current Profiler.	Continuous.
				EK60 Multi-frequency single-beam active acoustics.	Continuous.
Marine Mammal and Ecosystem Assessment Survey-C, (SEFSC) [1].	U.S. Caribbean Sea	Every three years, June–Sep, 60 DAS, 24 hour operations-acoustics-anytime day or night.	USCG R/V: R/V *Gordon Gunter*.	CTD profiler and rosette water sampler.	60 casts.
				Expendable bathythermographs.	300 units.
				Acoustic Doppler Current Profiler.	Continuous.
				Simrad ME70 Multi-Beam echosounder.	Continuous.
				EK60 Multi-frequency single-beam active acoustics.	Continuous.
				Passive acoustic arrays	Continuous.
SEAMAP–C Reef Fish Survey (PR–DNER, USVI–DFW).	USVI and PR territorial and Federal waters at 15–300 ft depths.	Annually, Jan–Dec, (Day operations only).	USCG Class I & III: *Three chartered vessels*.	Camera array—two GoPro cameras and four lasers set on an aluminum frame.	PR: 120 per coast total of 240.
* Began 2017		PR: 70 DAS for each coast.			USVI: 72 per island, 144 total.
		USVI: ~30 DAS.			
SEAMAP–C Lane Snapper Bottom Longline Survey, (PR–DNER) [1].	East, west, and south coasts of PR in territorial and Federal waters at depths ranging from 15–300 ft.	Annually beginning July 2015, (summer, winter, fall, spring), 120 DAS (30 days/season), night operations only.	USCG Class III: *Two chartered vessels*.	Bottom longline	45 sets/season, 180 sets total.
SEAMAP–C Yellowtail Snapper Rod-and-Reel Survey, (PR–DNER) [1].	East, west, and south coasts of PR in territorial and Federal waters at depths ranging from 15–300 ft.	Annually beginning 2014, (4 sampling seasons), 120 DAS, night operations only.	USCG Class I & III: *Three chartered vessels*.	Rod-and-reel gear	120 stations (360 lines total).
Caribbean Coral Reef Benthic Survey, (SEFSC).	Federal and territorial waters around PR, USVI, and Navassa.	Annual to triennial, May–Oct, 30 DAS, day operations only.	USCG Class I & II: Small vessel <28 ft.	SCUBA divers with measuring devices and hand tools.	300 dives.
Reef Fish Visual Census Survey-U.S. Caribbean, (SEFSC).	PR and USVI waters < 100 ft deep.	Annually, May-Sept, 25 DAS, day operations only.	USCG Class I & II: Small vessel <24 ft.	SCUBA divers with meter sticks, 30 cm rule and digital camera.	300 dives.
SEAMAP–C Queen Conch Visual Survey, (PR–DNER, USVI–DFW).	PR and USVI territorial waters in 10–90 ft depths, some sampling occurs in Federal waters.	Annually, ...	USCG Class I & III: *Three chartered vessels*.	SCUBA divers, SCUBA gear and underwater scooters.	PR: 100 dives
		PR: July–Nov, 35 DAS ...			USVI: 62 dives.
		USVI: June–Oct, 62 DAS, day operation only.			
SEAMAP–C Spiny Lobster Post Larvae Settlement Surveys, (PR–DNER).	PR territorial waters in 6–90 ft depths.	Every four years	USCG Class I & III: *Three chartered vessels*.	Fifty-six modified Witham pueruli collectors.	6 stations along the west coast platform per depth and distance from the shoreline.
		West cost of PR: Jan–Dec, 84 DAS.	R/V Erdman		
SEAMAP–C Spiny Lobster Artificial Habitat Survey, (PR–DNER, USVI–DFW).	PR and USVI territorial waters in 6–90 ft depths.	Annually, ...	USCG Class I & III: *Three chartered vessels*.	Juvenile lobster artificial shelters.	10 shelters, continuous deployment.
		PR: Jan–Dec, 84 DAS ...		SCUBA divers, SCUBA gear and underwater scooters.	PR: 60 dives
		USVI: Jan–Dec, 20 DAS, day operations only.			USVI: 20 dives.

[1] These surveys have the potential to take marine mammals through M/SI and/or Level B harassment.

* Inactive projects are currently not conducted but could resume if funds became available.

Description of Fishing Gear—A complete description of fishery-independent survey gear and vessels used by the SEFSC is provided in the proposed rule (84 FR 6576, February 27, 2019) and Appendix A of the PEA. We refer the reader to those documents for a detailed description of gear and fishing methods.

Description of Active Acoustic Sound Sources—A wide range of active acoustic devices are used in SEFSC fisheries surveys for remotely sensing bathymetric, oceanographic, and biological features of the environment. A complete description of acoustic sources used by the SEFSC is provided in the proposed rule (84 FR 6576, February 27, 2019) and the PEA. We refer the reader to those documents for a detailed description of gear, fishing methods, and acoustic source characteristics. A summary table of source operational parameters is below (Table 2).

TABLE 2—OPERATING CHARACTERISTICS OF SEFSC ACTIVE ACOUSTIC SOURCES

Active acoustic system	Operating frequencies (kHz)	Maximum source level (dB re: 1μPa @1 m)	Nominal beamwidth	Effective exposure area: Sea surface to 200 m depth (km^2)	Effective exposure area: Sea surface to 160 dB threshold depth (km^2)
Simrad EK60 narrow beam echosounder	18, 38, 70, 120, *200, *333	224	11° @18 kHz 7° @38 kHz ...	0.0142	0.1411
Simrad ME70 multibeam echosounder	70–120	205	140°	0.0201	0.0201
Teledyne RD Instruments ADCP, Ocean Surveyor	75	223.6	N/A	0.0086	0.0187
Simrad EQ50	50, *200	210	16 @50kHz .... 7 @200kHz	0.0075	0.008
Simrad ITI Trawl Monitoring System	27–33	<200	40° × 100°	0.0032	0.0032

*Devices working at this frequency is outside of known marine mammal hearing range and is not considered to have the potential to result in marine mammal harassment.

Comments and Responses

NMFS published a notice of proposed rulemaking in the **Federal Register** on February 27, 2019 (84 FR 6576) and requested comments and information from the public. During the 30-day public comment period, we received letters from the Marine Mammal Commission (Commission) and comments from four public citizens. We provide a summary of the comments and our full responses here and have posted the public comments on our website: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* and on the Federal e-Rulemaking Portal at *www.regulations.gov* (enter 0648–BG44 in the ''Search'' box and scroll down to the Comments section).

Comment 1: The Commission recommends that NMFS revise Table 3a in the **Federal Register** notice to include fin, sei, and Bryde's whales as marine mammals that potentially occur in the CRA and revise its analyses and take estimates as necessary.

NMFS Response: Fin, sei and Bryde's whales are extralimital or rarely sighted in the CRA. While Bryde's whales routinely occur in the southern Caribbean off (*e.g.,* off the coast of Venezuela), they are rare in the SEFSC's CRA in the northern Caribbean. There is one record from Puerto Rico (Mignucci-Giannoni *et al.* 1998) and one from Cuba (Whitt *et al.* 2011). The Commission cited Erdman *et al.,* 1973 and Ward *et al.,* 2001 when claiming Bryde's whales also have been observed in waters off Puerto Rico and the U.S. Virgin Islands and generally occur in nearshore and shelf edge waters. However, both NMFS and the SEFSC reviewed the referenced documents and cannot find this information. Whitt *et al.* (2011) confirmed one (likely extralimital) northeastern Caribbean stranding record from the Dominican Republic in July 1974 (Mead, 1977). Sightings designated as sei whales in the northeastern Caribbean (Erdman, 1970; Erdman *et al.,* 1973; Mignucci-Giannoni, 1989) are not confirmed records. Neither photos nor clear diagnostic features were provided for these unconfirmed records; the species identification was based on behavioral characteristics. Likewise, there are no confirmed records of sei whales in Cuban waters. There is also no indication that fin whales are not rare in the CRA. Based on this review, NMFS determined the Commission's recommendation was not supported and we did not include take of fin, sei, and Bryde's whales in the final rule.

Comment 2: The Commission provides general recommendations—not specific to the proposed SEFSC rulemaking—that NMFS provide interim guidance based on various criteria (*e.g.,* source level, peak frequency, bandwidth, signal duration and duty cycle, affected species or stocks) for determining when prospective applicants should request taking by Level B harassment resulting from the use of echosounders, other sonars, and subbottom profilers.

NMFS Response: NMFS is currently in the process of developing guidance to assist potential applicants in assessing whether a take is likely to result from particular activities. In the meanwhile, we provide assistance and guidance as requested to interested parties on a case-by-case basis.

Comment 3: The Commission recommends that NMFS require SEFSC to estimate the numbers of marine mammals taken by Level B harassment incidental to the use of active acoustic sources (*e.g.,* echosounders) based on the 120-decibel (dB) rather than the 160-dB root mean square (rms) sound pressure level (SPL) threshold. They alternatively suggest that NMFS require the SEFSC to estimate take based on acoustic thresholds developed by the U.S. Navy, including the Navy's unweighted 120 dB re 1 μPa threshold for harbor porpoises and the various biphasic dose response functions for the other marine mammal species.

Response: The Commission repeats a recommendation made in prior letters concerning the proposed authorization of take incidental to use of scientific sonars (such as echosounders). As we have described in responding to those prior comments (*e.g.,* 83 FR 36370), our evaluation of the available information leads us to disagree with this recommendation. We provide a full

response to this comment in our notice of issuance of an IHA to Alaska Fisheries Science Center Final Rule (84 FR 46788, September 5, 2019) with a summary here. First, the Commission misinterprets how NMFS characterizes scientific sonars and claims that we are using an incorrect threshold because scientific sonars do not produce impulse noise. Sound sources can be divided into broad categories based on various criteria or for various purposes. As discussed by Richardson *et al.* (1995), source characteristics include strength of signal amplitude, distribution of sound frequency and, importantly in context of these thresholds, variability over time. With regard to temporal properties, sounds are generally considered to be either continuous or transient (*i.e.,* intermittent). Continuous sounds, which are produced by the industrial noise sources for which the 120-dB behavioral harassment threshold was selected, are simply those whose sound pressure level remains above ambient sound during the observation period (ANSI, 2005). Intermittent sounds are defined as sounds with interrupted levels of low or no sound (NIOSH, 1998). Simply put, a continuous noise source produces a signal that continues over time, while an intermittent source produces signals of relatively short duration having an obvious start and end with predictable patterns of bursts of sound and silent periods (*i.e.,* duty cycle) (Richardson and Malme, 1993). It is this fundamental temporal distinction that is most important for categorizing sound types in terms of their potential to cause a behavioral response.

The Commission relies heavily on the use of examples pertaining to the most sensitive species, which does not support an argument that the 120-dB threshold should be applied to all species. NMFS has acknowledged that the scientific evidence indicates that certain species are, in general, more acoustically sensitive than others. In particular, harbor porpoise and beaked whales are considered to be behaviorally sensitive, and it may be appropriate to consider use of lower behavioral harassment thresholds for these species. NMFS is considering this issue in its current work of developing new guidelines for assessing behavioral harassment. However, until this work is completed and new guidelines are identified (if appropriate), the existing generic thresholds are retained. Moreover, as is discussed above for other reasons, the majority of examples cited by the Commission are of limited relevance in terms of comparison of sound sources. In support of their statement that numerous researchers have observed marine mammals responding to sound from sources claimed to be similar to those considered herein, the Commission indeed cites numerous studies. However, the vast majority of these address responses of harbor porpoise or beaked whales to various types of acoustic alarms or deterrent devices.

With respect to the Commission's recommendation that the SEFSC adopt the Navy's dose-response models to estimate take, we find several reasons why this suggestion should not be implemented. First, the data on which the Navy's dose-response curves are based are primarily from marine mammal exposure to military tactical sonar, a source not relevant to the SEFSC. Second, for reasons referenced above, we do not agree that a 120 dB threshold is appropriate, especially the step-function created for harbor porpoise considering that this species is non-existent in the GOMRI and CRA and limited in the ARA. Lastly, NMFS does not require applicants to adopt another applicant's model, especially complex biphastic models, when the proposed take estimate approach is appropriate, which it was in this case. Therefore, NMFS did not adopt the Navy's dose-response model to estimate take.

Finally, we acknowledge that the Commission presents legitimate points in support of defining a threshold specific to non-impulsive, intermittent sources and that, among the large number of cited studies, there are a few that show relevant results of individual animals responding to exposure at lower received levels in ways that could be considered harassment. As noted in a previous comment response, NMFS is currently engaged in an ongoing effort towards developing updated guidance regarding the effects of anthropogenic sound on marine mammal behavior. However, prior to conclusion of this effort, NMFS will continue using the historical Level B harassment thresholds (or derivations thereof) and will appropriately evaluate behavioral harassment due to intermittent sound sources relative to the 160-dB threshold.

Comment 4: The Commission notes that NMFS has delineated two categories of acoustic sources, largely based on frequency, with those sources operating at frequencies greater than the known hearing ranges of any marine mammal (*i.e.,* >180 kilohertz (kHz)) lacking the potential to disturb marine mammals by causing disruption of behavioral patterns. The Commission describes the recent scientific literature on acoustic sources with frequencies above 180 kHz (*i.e.,* Deng *et al.,* 2014; Hastie *et al.,* 2014) and recommends that we estimate numbers of takes associated with those acoustic sources (or similar acoustic sources) with frequencies above 180 kHz that have been shown to elicit behavioral responses above the 120-dB threshold.

Response: As the Commission acknowledges, we considered the cited information in our Notice of Proposed Rulemaking. NMFS' response regarding the appropriateness of the 120-dB versus 160-dB rms thresholds was provided above in the response to Comment #3. In general, the referenced literature indicates only that sub-harmonics could be detectable by certain species at distances up to several hundred meters. As we have noted in previous responses, behavioral response to a stimulus does not necessarily indicate that Level B harassment, as defined by the MMPA, has occurred. Source levels of the secondary peaks considered in these studies—those within the hearing range of some marine mammals—mean that these sub-harmonics would either be below the threshold for Level B harassment or would attenuate to such a level within a few meters. Beyond these important study details, these high-frequency (*i.e.,* Category 1) sources and any energy they may produce below the primary frequency that could be audible to marine mammals would be dominated by a few primary sources (*e.g.,* EK60) that are operated near-continuously—much like other Category 2 sources considered in our assessment of potential incidental take from SEFSC's use of active acoustic sources—and the potential range above threshold would be so small as to essentially discount them. Further, recent sound source verification testing of these and other similar systems did not observe any sub-harmonics in any of the systems tested under controlled conditions (Crocker and Fratantonio, 2016). While this can occur during actual operations, the phenomenon may be the result of issues with the system or its installation on a vessel rather than an issue that is inherent to the output of the system. There is no evidence to suggest that Level B harassment of marine mammals should be expected in relation to use of active acoustic sources at frequencies exceeding 180 kHz.

Comment 5: The Commission recommended that, in the preamble to the final rule, NMFS (1) specify in Table 11 which species were lacking density data and clarify whether densities were available for blue, sei, and killer whales in ARA and humpback and minke

whales in the GOMRA and (2) ensure Tables 13 and 18 include all species and stocks proposed to be taken by SEFSC's proposed activities. The Commission understands that NMFS did not intentionally omit this information.

NMFS Response: Species for which density data are not available were included in a footnote in Table 11 in the proposed rule. However, NMFS has updated that footnote to include blue whales, sei whales, and killer whales in the ARA and humpback whales and minke whales in the GOMRA. NMFS also updated the relevant tables in this final rule to ensure all species for which take is authorized are included in both tables. While these changes provide clarity, NMFS did not change species taken or amount of take from the proposed rule. Therefore, there is no modification to our analysis or determinations.

Comment 6: The Commission recommends that NMFS ensure that the final rule includes details similar to those specified in the preamble for the various mitigation, monitoring, and reporting measures.

NMFS Response: NMFS has included all the mitigation, monitoring and reporting measures in the regulatory text as discussed in the preamble in this final rule.

Comment 7: The Commission recommends that NMFS authorize taking by M/SI only for those stocks for which a negligible impact determination can be made when looking at overall removals from each stock as a whole. The Commission is concerned that it appears that removal of an animal from some bottlenose dolphin stocks meet or exceed PBR and that any additional mortalities from those stocks should not be considered as having negligible impact. Specifically, the Commission indicates the proposed number of takes that could result in M/SI for SEFSC would not equal or exceed PBR for most stocks. However, the proposed takes by M/SI for SEFSC would equal PBR for the Northern South Carolina Estuarine (NSCE) stock of bottlenose dolphins and would exceed PBR for the Mobile Bay, Bonsecour Bay (Mobile Bay) stock and the MS Sound stock. Although NMFS proposed to authorize the taking by M/SI of only one bottlenose dolphin during the proposed 5-year period (or 0.2 dolphins per year) from each of the three stocks, when considered in light of other known causes of mortality, PBR would either be met or exceeded.

NMFS Response: The Commission appears to assert that NMFS cannot make a negligible impact determination when the proposed or authorized M/SI take from a marine mammal stock, when considered in light of other known causes of mortality, meets or exceeds PBR. As described in more detail in the Negligible Impact Analysis and Determination section later in this document, consistent with the interpretation of PBR across the rest of the agency, NMFS' Permits and Conservation Division has been using PBR as a tool to inform the negligible impact analysis under section 101(a)(5)(A), recognizing that it is not a dispositive threshold that automatically determines whether a given amount of M/SI either does or does not exceed a negligible impact on the affected species or stock. In 1999, NMFS published criteria for making a negligible impact determination pursuant to section 101(a)(5)(E) of the MMPA in a notice of proposed permits for certain fisheries (64 FR 28800; May 27, 1999). Criterion 2 stated ''If total human-related serious injuries and mortalities are greater than PBR, and fisheries-related mortality is less than 0.1 PBR, individual fisheries may be permitted if management measures are being taken to address non-fisheries-related serious injuries and mortalities. When fisheries-related serious injury and mortality is less than 10 percent of the total, the appropriate management action is to address components that account for the major portion of the total.'' This criterion addresses when total human-caused mortality is exceeding PBR, but the activity being assessed is responsible for only a small portion of the mortality. Accordingly, we applied a similar criterion in our negligible impact analysis under section 101(a)(5)(A) to evaluate the relative role of an applicant's incidental take when other sources of take are causing PBR to be exceeded, but the take of the specified activity is comparatively small. Where this occurs, we may find that the impacts of the taking from the specified activity may (those impacts alone, before we have considered the combined effects from any harassment take) be negligible even when total human-caused mortality from all activities exceeds PBR if (in the context of a particular species or stock) the authorized mortality or serious injury would be less than or equal to 10 percent of PBR and management measures are being taken to address serious injuries and mortalities from the other activities (*i.e.,* other than the specified activities covered by the incidental take authorization under consideration). Here, pursuant to the criteria, the authorized mortality or serious injury would be less than or equal to 10 percent of PBR, and management measures are being taken to address serious injuries and mortalities from the other activities (*i.e.,* other than the specified activities covered by the incidental take authorization under consideration). We must also determine, though, that impacts on the species or stock from other types of take (*i.e.,* harassment) caused by the applicant do not combine with the impacts from mortality or serious injury to result in adverse effects on the species or stock through effects on annual rates of recruitment or survival. Wade *et al.* (1998), authors of the paper from which the current PBR equation is derived, note that ''Estimating incidental mortality in one year to be greater than the PBR calculated from a single abundance survey does not prove the mortality will lead to depletion; it identifies a population worthy of careful future monitoring and possibly indicates that mortality-mitigation efforts should be initiated.''

In addition to a quantitative approach comparing the issued M/SI against PBR, a number of other factors influence our negligible impact determination. These are described in detail in our Negligible Impact Analysis and Determination section below, but we also summarize them here. First, the amount of M/SI take authorized for estuarine bottlenose dolphins stocks is the lowest amount possible (one over 5 years). Therefore, in 4 of those 5 years, no effect to rates of recruitment or survival would occur. Second, literature suggests the interaction with fishing gear (including trawls which account for the majority of SEFSC fisheries research) is biased towards males. The loss of a male from the population is less likely, if at all, to have an effect on population rates of recruitment or survival. Third, there are a number of ongoing management actions, including development and implementation of a Gulf-wide strategic framework to restore for injuries associated with the Deepwater Horizon (DWH) oil spill under a Natural Resource Damage Assessment (NRDA). This framework is designed to reduce human-induced causes of mortality and serious injury other than SEFSC fisheries research over the 5 years the LOA would be effective.

Comment 8: One commenter noted the SEFSC has taken substantial measures to minimize the impacts on marine mammals. However, the commenter recommended prohibiting long-lining, trawling, or gill netting due to the associated high bycatch rates and the impacts of these fishing methods on cetacean populations. The commenter recommended strict monitoring

protocols and that the SEFSC use active acoustics (*i.e.,* sonar) and other detection methods to ensure the avoidance of taking marine mammals.

NMFS Response: Issuance of an incidental take authorization allows for the taking of marine mammals incidental to a specified activity, it does not authorize or permit the activity itself. Therefore NMFS cannot require an applicant to not conduct an activity. To issue an authorization, NMFS must prescribe, among other things, mitigation and monitoring measures effecting the least practicable adverse impact on a species or stock. In this case, the commenter agrees NMFS has taken substantial measures to minimize impacts on marine mammals. However, to restrict fishing using the proposed methods would be impracticable and outside of NMFS' authority under the MMPA.

Regarding impacts to cetacean populations, the commenter appears to be associating bycatch rates of commercial fisheries to those from research surveys. As described in the proposed rule, the taking of marine mammals incidental to SEFSC fisheries research is very low and NMFS has authorized only one marine mammal mortality per stock over the course of 5 years (with the exception of coastal bottlenose dolphins wherein we are authorizing the take, by serious injury or mortality, of three animals over 5 years) in its final rule. The rule also has a suite of mitigation and monitoring measures designed to further reduce risk of netting or hooking an animal. The rule does not require SEFSC use active acoustics to detect and deter marine mammals, as use of those sources in that manner would be a source of harassment in itself.

Comment 9: One commenter suggested the lack of acknowledgement towards the plankton populations is capricious and recommended an environmental assessment be completed.

NMFS Response: All impacts from the SEFSC's fishery-independent research activities, including those on plankton, have been analyzed in a PEA which was made available to the public for comment on April 20, 2016 and finalized prior to issuing this rule. See **ADDRESSES** section. As described in those documents, the SEFSC's primary survey methods use fishing gear to capture fish and invertebrates for stock assessment or other research purposes. However, some collection of plankton and oceanographic and acoustic data to characterize the marine environment does occur. As described in the SEFSC's application, proposed rule, and LOA, plankton is sampled in very small quantities, is minor relative to that taken through commercial fisheries, and is an even smaller percentage of total biomass available as marine mammal prey.

Comment 10: One commenter was concerned the proposed rule would result in fish catch limits.

NMFS Response: This rule, issued pursuant to the MMPA, has no connection to the Magnuson-Stevens Fishery Management Act process by which fish limits are determined.

Comment 11: One commenter believed the major provisions in the proposed regulation seem adequate and that the regulations can be implemented well and with no complications.

NMFS Response: NMFS agrees that all practicable mitigation measures have been incorporated into the proposed rule and will continue to work with the SEFSC to ensure the SEFSC and all partners are aware of and understand the monitoring, mitigation, and reporting measures.

Changes From Proposed to Final Rule

The most substantive change from the proposed to final rule is the baseline evaluation of the Mobile Bay stock of bottlenose dolphins. In the proposed rule, NMFS used outdated (1992) survey data which indicated the Mobile Bay stock abundance was approximately 122 dolphins. However, we determined a more accurate representative abundance estimate is 1,393 based on more recent DWH oil spill injury assessments (DHW MMIQT, 2015). We also updated the final regulations to reflect the entirety of the mitigation, monitoring, and reporting measures described in the preamble of the proposed rule as some were inadvertently not replicated in the regulatory text. We also updated a discussion regarding the consideration of PBR in our negligible impact determination to more fully reflect how the metric is appropriately considered in the negligible impacts determination for a specified activity. We also updated a previous dolphin gear interaction table and related discussion to reflect the entanglement of a single bottlenose dolphin on October 13, 2019, by the South Carolina Department of Natural Resources (SCDNR). None of these modifications affect our negligible impact or small numbers determinations.

Description of Marine Mammals in the Area of the Specified Activity

We presented a detailed discussion of marine mammals, their occurrence, and important habitat (*e.g.,* Biologically Important Areas) in the planned action area detailed in the **Federal Register** notice of proposed rulemaking (84 FR 6576; February 27, 2019). Please see that notice of proposed rulemaking or the SEFSC's application for more information (see **ADDRESSES**). We provide a summary of marine mammal occurrence in the study areas in Table 3.

Species that could occur in a given research area but are not expected to have the potential for interaction with SEFSC research gear or that are not likely to be harassed by SEFSC's use of active acoustic devices are listed here but omitted from further analysis. These include extralimital species, which are species that do not normally occur in a given area but for which there are one or more occurrence records that are considered beyond the normal range of the species. Extralimital or rarely sighted species within the SEFSC's ARA include the North Atlantic bottlenose whale (*Hyperoodon ampullatus*), Bryde's whale (*B. edeni*), Atlantic white-sided dolphins (*Lagenorhynchus acutus*), white-beaked dolphins (*Lagenorhynchus albirostris*), Sowerby's beaked whale (*Mesoplodon bidens*), harp seal (*Pagophilus groenlandicus*), and hooded seal (*Cystophora cristata*). Extralimital or rarely sighted species in the GOMRA include the North Atlantic right whale (*Eubalaena glacialis*), blue whale, fin whale (*B. physalus*), sei whale, minke whale (*B. acutorostrata*), humpback whale (*Megaptera novaeangliae*), and Sowerby's beaked whale. In the CRA, extralimital or rarely sighted species include blue whale, fin whale, sei whale, Bryde's whale, minke whale, harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), harp seal, and hooded seal. In addition, Caribbean manatees (*Trichechus manatus*) may be found in all three research areas. However, manatees are managed by the U.S. Fish and Wildlife Service and are not considered further in this document.

TABLE 3a—MARINE MAMMALS POTENTIALLY PRESENT IN THE ATLANTIC, GULF OF MEXICO, AND CARIBBEAN RESEARCH AREAS DURING FISHERY RESEARCH

Common name	Scientific name	MMPA stock	Research area			ESA status (L/NL), MMPA Strategic (Y/N) [1]	Stock abundance (CV, N_{min}) [2]	PBR [3]	Annual M/SI [4]
			ARA	GOM	CRA				
Order Cetartiodactyla—Cetacea—Suborder Mysticeti (baleen whales)									
Family Balaenopteridae (rorquals):									
North Atlantic right whale.	*Eubalaena glacialis.*	Western North Atlantic.	X	.....	.....	L, Y	451 (0, 445)	0.9	5.56.
Humpback whale.	*Megaptera novaeangliae.*	Gulf of Maine [5]	X	X	X	NL, Y	896 (0, 896)	14.6	9.8.
Blue whale	*Balaenoptera musculus.*	Western North Atlantic.	X	.....	.....	L, Y	unk (unk, 440, 2010).	0.9	unk.
Fin whale	*Balaenoptera physalis.*	Western North Atlantic.	X	.....	.....	L, Y	1,618 (0.33, 1,234).	2.5	2.65.
Minke whale ..	*Balaenoptera acutorostrata.*	Canadian East Coast.	X	X	X	NL, N	2,591 (0.81, 1,425).	14	7.5.
Bryde's whale	*Balaenoptera edeni.*	Northern Gulf of Mexico.	.....	X	.....	L, Y	33 (1.07, 16)	0.03	0.7.
Sei whale	*Balaenoptera borealis.*	Nova Scotia	X	.....	.....	L, Y	357 (0.52, 236) ...	0.5	0.6.
Order Cetartiodactyla—Cetacea—Suborder Odontoceti (toothed whales)									
Family Physeteridae:									
Sperm whale	*Physeter macrocephalus.*	North Atlantic	X	.....	.....	L, Y	2,288 (0.28,1,815)	3.6	0.8.
		Northern Gulf of Mexico.	.....	X	.....	L, Y	763 (0.38, 560) ...	1.1	0.
		Puerto Rico and U.S. Virgin Islands.	.....	.....	X	L, Y	unk	unk	unk.
Family Kogiidae:									
Pygmy sperm whale.	*Kogia breviceps* ..	Western North Atlantic.	X	.....	X	NL, N	3,785 (0.47, 2,598) [6].	21	3.5.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	186 (1.04, 90) [7] ...	0.9	0.3.
Dwarf sperm whale.	*K. sima*	Western North Atlantic.	X	.....	X	NL, N	3,785 (0.47, 2,598) [6].	21	3.5.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	186 (1.04, 90) [8] ...	0.9	0.
Family Ziphiidae (beaked whales):									
Cuvier's beaked whale.	*Ziphius cavirostris*	Western North Atlantic.	X	.....	.....	NL, N	6,532 (0.32, 5,021).	50	0.4.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	74 (1.04, 36)	0.4	0.
		Puerto Rico and U.S. Virgin Islands.	.....	.....	X	NL, N	Unk	unk	unk.
Blainville's beaked whale.	*Mesoplodon densirostris.*	Western North Atlantic.	X	.....	X	NL, N	7,092 (0.54, 4,632) [8].	46	0.2.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	149 (0.91, 77)	0.8	0.
Gervais' beaked whale.	*Mesoplodon europaeus.*	Western North Atlantic.	X	.....	X	NL, N	7,092 (0.54, 4,632) [8].	46	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	149 (0.91, 77)	0.8	0.
Sowerby's beaked whale.	*Mesoplodon bidens.*	Western North Atlantic.	X	.....	X	NL, N	7,092 (0.54, 4,632) [8].	46	0.
True's beaked whale.	*Mesoplodon mirus*	Western North Atlantic.	X	.....	X	NL, N	7,092 (0.54, 4,632) [8].	46	0.
Family Delphinidae (dolphins):									
Melon-headed whales.	*Peponocephala electra.*	Western North Atlantic.	X	.....	X	NL, N	Unk	unk	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	2,235 (0.75, 1,274).	13	0.
Risso's dolphin.	*Grampus griseus*	Western North Atlantic.	X	.....	X	NL, N	18,250 (0.46, 12,619).	126	49.9.

TABLE 3a—MARINE MAMMALS POTENTIALLY PRESENT IN THE ATLANTIC, GULF OF MEXICO, AND CARIBBEAN RESEARCH AREAS DURING FISHERY RESEARCH—Continued

Common name	Scientific name	MMPA stock	Research area			ESA status (L/NL), MMPA Strategic (Y/N) [1]	Stock abundance (CV, N_{min}) [2]	PBR [3]	Annual M/SI [4]
			ARA	GOM	CRA				
		Northern Gulf of Mexico.	.....	X	.....	NL, N	2,442 (0.57, 1,563).	16	7.9.
Short-finned pilot whales.	*Globicephala macrorhynchus.*	Western North Atlantic.	X	.....	.....	NL, N	28,924 (0.24, 23,637).	236	168.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	2,415 (0.66, 1,456).	15	0.5.
		Puerto Rico and U.S. Virgin Islands.	.....	.....	X	NL, N	unk	unk	unk.
Long-finned pilot whales.	*Globicephala melas.*	Western North Atlantic.	X	.....	.....	NL, N	5,636 (0.63, 3,464).	35	27.
Bottlenose dolphin.	*Tursiops truncatus*	See table 3b.							
Common dolphin.	*Delphinus delphis*	Western North Atlantic.	X	.....	.....	NL, N	70,184 (0.28, 55,690).	557	406.
Atlantic spotted dolphin.	*Stenella frontalis*	Western North Atlantic.	X	.....	.....	NL, N	44,715 (0.43, 31,610).	316	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	unk	unk	42.
		Puerto Rico and U.S. Virgin Islands.	.....	.....	X	NL, N	unk	unk	unk.
Pantropical spotted dolphin.	*Stenella attenuata*	Western North Atlantic.	X	.....	X	NL, N	3,333 (0.91, 1,733).	17	0.
		Northern Gulf of Mexico.	.....	X	.....		50,880 (0.27, 40,699).	407	4.4.
Striped dolphin.	*Stenella coeruleoalba.*	Western North Atlantic.	X	.....	X	NL, N	54,807 (0.3, 42,804).	428	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	1,849 (0.77, 1,041).	10	0.
Fraser's dolphin.	*Lagenodelphis hosei.*	Western North Atlantic.	X	.....	X	NL, N	unk	unk	0.
		Gulf of Mexico	.....	X	.....	NL, N	unk	undet	0.
Rough-toothed dolphin.	*Steno bredanensis.*	Western North Atlantic.	X	.....	X	NL, N	136 (1.0, 67)	0.7	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	624 (0.99, 311) ...	2.5	0.8.
Clymene dolphin.	*Stenella clymene*	Western North Atlantic.	X	.....	X	NL, N	unk	undet	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	129 (1.0, 64)	0.6	0.
Spinner dolphin.	*Stenella longirostris.*	Western North Atlantic.	X	.....	.....	NL, N	unk	unk	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	11,441 (0.83, 6,221).	62	0.
		Puerto Rico and U.S. Virgin Islands.	.....	.....	X	NL, N	unk	unk	unk.
Killer whale ...	*Orcinus orca*	Western North Atlantic.	X	.....	X	NL, N	unk	unk	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	28 (1.02, 14)	0.1	0.
Pygmy killer whale.	*Feresa attenuata*	Western North Atlantic.	X	.....	X	NL, N	unk	unk	0.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	152 (1.02, 75)	0.8	0.
False killer whale.	*Pseudorca crassidens.*	Western North Atlantic.	X	.....	X	NL, N	442 (1.06, 212) ...	2.1	unk.
		Northern Gulf of Mexico.	.....	X	.....	NL, N	unk	undet	0.
Family Phocoenidae (porpoises):									
Harbor porpoise.	*Phocoena phocoena vomerina.*	Gulf of Maine/Bay of Fundy.	X	.....	.....	NL, N	79,833 (0.32, 61,415).	706	255.
Order Carnivora—Superfamily Pinnipedia									
Family Phocidae (earless seals):									
Harbor seal ...	*Phoca vitulina richardii.*	Western North Atlantic.	X	.....	.....	NL, N	75,834 (0.15, 66,884).	2,006	345.

TABLE 3a—MARINE MAMMALS POTENTIALLY PRESENT IN THE ATLANTIC, GULF OF MEXICO, AND CARIBBEAN RESEARCH AREAS DURING FISHERY RESEARCH—Continued

Common name	Scientific name	MMPA stock	Research area			ESA status (L/NL), MMPA Strategic (Y/N) [1]	Stock abundance (CV, N_{min}) [2]	PBR [3]	Annual M/SI [4]
			ARA	GOM	CRA				
Gray seal	*Halichoerus grypus.*	Western North Atlantic.	X	.....	.....	NL, N	27,131 (0.19, 23,158).	1,389	5,688.

[1] Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). NL indicates that the species is not listed under the ESA and is not designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports at: *www.nmfs.noaa.gov/pr/sars/.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance.

[3] PBR indicates Potential Biological Removal as referenced from the SARs. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. It is the product of minimum population size, one-half the maximum net productivity rate and a recovery factor for endangered, depleted, threatened stocks, or stocks of un known status relative to OSP.

[4] These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value. All M/SI values are as presented in the draft 2019 SARs.

[5] Humpback whales present off the southeastern U.S. are thought to be predominantly from the Gulf of Maine stock. However, these could include animals from Canadian stocks (*e.g.,* Nova Scotia) (NMFS, 2017). Here we provide estimates for the Gulf of Maine stock only as a conservative value.

[6] This estimate includes both dwarf and pygmy sperm whales in the N. Atlantic stock.

[7] This estimate includes both dwarf and pygmy sperm whales in the Gulf of Mexico stock.

[8] This estimate includes all species of *Mesoplodon* in the N. Atlantic stock.

TABLE 3b—BOTTLENOSE DOLPHIN STOCKS POTENTIALLY PRESENT IN THE ATLANTIC, GULF OF MEXICO, AND CARIBBEAN RESEARCH AREAS AND TEXAS DURING FISHERY RESEARCH

Stock	MMPA status	Stock abundance (CV, N_{min}) [1]	PBR	Annual M/SI
Atlantic Research Area				
Western North Atlantic, Offshore	Not Strategic	77,532 (0.40, 56,053)	561	39.4.
Northern Migratory Coastal	Depleted	6,639 (0.41, 4,759)	48	6.1–13.2.
Southern Migratory Coastal	Depleted	3,751 (0.06, 2,353)	23	0–14.3.
South Carolina & Georgia Coastal	Depleted	6,027 (0.34, 4,569)	46	1.4–1.6.
Northern Florida Coastal	Depleted	877 (0.0.49, 595)	6	0.6.
Central Florida Coastal	Depleted	1,218 (0.71, 2,851)	9.1	0.4.
Northern North Carolina Estuarine System	Strategic	823 (0.06, 782)	7.8	0.8–18.2.
Southern North Carolina Estuarine System	Strategic	unk	undet	0.4–0.6.
Northern South Carolina Estuarine System	Strategic	unk	undet	0.2.
Charleston Estuarine System	Strategic	unk	undet	unk.
Northern Georgia/Southern South Carolina Estuarine System.	Strategic	unk	undet	1.4.
Central Georgia Estuarine System	Strategic	192 (0.04, 185)	1.9	unk.
Southern Georgia Estuarine System	Strategic	194 (0.05, 185)	1.9	unk.
Jacksonville Estuarine System	Strategic	unk	undet	1.2.
Indian River Lagoon	Strategic	unk	undet	4.4.
Biscayne Bay	Strategic	unk	undet	unk.
Florida Bay	Not Strategic	unk	undet	unk.
Gulf of Mexico Research Area				
Oceanic	Not Strategic	5,806 (0.39, 4,230)	42	6.5.
Continental Shelf	Not Strategic	51,192 (0.1, 46,926)	469	0.8.
Western Coastal	Not Strategic	20,161 (0.17, 17,491)	175	0.6.
Northern Coastal	Not Strategic	7,185 (0.21, 6,004)	60	0.4.
Eastern Coastal	Not Strategic	12,388 (0.13, 11,110)	111	1.6.
Northern Gulf of Mexico Bay, Sound, and Estuary [2 3]				
Laguna Madre	Strategic	80 (1.57, unk)	undet	0.4.
Nueces Bay, Corpus Christi Bay	Strategic	58 (0.61, unk)	undet	0.
Copano Bay, Aransas Bay, San Antonio Bay, Redfish Bay, Espirtu Santo Bay.	Strategic	55 (0.82, unk)	undet	0.2.
Matagorda Bay, Tres Palacios Bay, Lavaca Bay.	Strategic	61 (0.45, unk)	undet	0.4.
West Bay	Strategic	48 (0.03, 46)	0.5	0.2.
Galveston Bay, East Bay, Trinity Bay	Strategic	152 (0.43, unk)	undet	0.4.
Sabine Lake	Strategic	0 (-,-)	undet	0.2.
Calcasieu Lake	Strategic	0 (-,-)	undet	0.2.
Vermillion Bay, West Cote Blanche Bay, Atchafalaya Bay.	Strategic	0 (-,-)	undet	0.
Terrebonne Bay, Timbalier Bay	Strategic	3,870 (0.15, 3,426)	27	0.2.
Barataria Bay	Strategic	2306 (0.09, 2,138)	17	160.
Mississippi River Delta	Strategic	332 (0.93, 170)	1.4	0.2.

TABLE 3b—BOTTLENOSE DOLPHIN STOCKS POTENTIALLY PRESENT IN THE ATLANTIC, GULF OF MEXICO, AND CARIBBEAN RESEARCH AREAS AND TEXAS DURING FISHERY RESEARCH—Continued

Stock	MMPA status	Stock abundance (CV, N_{min}) [1]	PBR	Annual M/SI
Mississippi Sound, Lake Borgne, Bay Boudreau.	Strategic	3,046 (0.06, 2,896)	23	310.
Mobile Bay, Bonsecour Bay	Strategic	1,393 (unk, unk)	undet	1.
Perdido Bay	Strategic	0 (-,-)	undet	0.6.
Pensacola Bay, East Bay	Strategic	33 (	undet	unk.
Choctawhatchee Bay	Strategic	179 (0.04, unk)	undet	0.4.
St. Andrews Bay	Strategic	124 (0.57, unk)	undet	0.2.
St. Joseph Bay	Strategic	152 (0.08, unk)	undet	unk.
St. Vincent Sound, Apalachicola Bay, St. Georges Sound.	Strategic	439 (0.14,-)	undet	0.
Apalachee Bay	Strategic	491 (0.39, unk)	undet	0.
Waccasassa Bay, Withlacoochee Bay, Crystal Bay.	Strategic	unk	undet	0.
St. Joseph Sound, Clearwater Harbor	Strategic	unk	undet	0.4.
Tampa Bay	Strategic	unk	undet	0.6.
Sarasota Bay, Little Sarasota Bay	Strategic	158 (0.27, 126)	1.3	0.6.
Pine Island Sound, Charlotte Harbor, Gasparilla Sound, Lemon Bay.	Strategic	826 (0.09, -)	undet	1.6.
Caloosahatchee River	Strategic	0 (-,-)	undet	0.4.
Estero Bay	Strategic	unk	undet	0.2.
Chokoloskee Bay, Ten Thousand Islands, Gullivan Bay.	Strategic	unk	undet	0.
Whitewater Bay	Strategic	unk	undet	0.
Florida Keys (Bahia Honda to Key West)	Strategic	unk	undet	0.
Carribean Research Area				
Puerto Rico and U.S. Virgin Islands	Strategic	unk	undet	unk.

[1] CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance).
[2] Details for these 25 stocks are included in the report: Common bottlenose dolphin (*Tursiops truncatus truncatus*), Northern Gulf of Mexico Bay, Sound, and Estuary Stocks.
[3] The total annual human-caused mortality and serious injury for these stocks of common bottlenose dolphins is unknown because these stocks may interact with unobserved fisheries. Also, for Gulf of Mexico BSE stocks, mortality estimates for the shrimp trawl fishery are calculated at the state level and have not been included within mortality estimates for individual BSE stocks. Therefore, minimum counts of human-caused mortality and serious injury for these stocks are presented.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

We provided a summary and discussion of the potential effects of the specified activity on marine mammals and their habitat in our **Federal Register** notice of proposed rulemaking (84 FR 6576; February 27, 2019). In the *Potential Effects of Specified Activities on Marine Mammals and Their Habitat* section of the proposed rule, NMFS provided a description of the ways marine mammals may be affected by these activities in the form of serious injury or mortality, physical trauma, sensory impairment (permanent and temporary threshold shifts and acoustic masking), physiological responses (particular stress responses), behavioral disturbance, or habitat effects. We also describe historical taking by the SEFSC and the circumstances surrounding those takes. We do not reprint the information here but refer the reader to that document. For additional summary and discussion of recent scientific studies not included in the proposed rulemaking, we direct the reader to the NMFS PEA.

Since 2002, NMFS Science Centers have been documenting and recording all fishery research related incidental takes of marine mammals in PSIT database. There is also a documented take on record from 2001. We present all takes documented by the SEFSC in Table 4.

TABLE 4—SEFSC RESEARCH GEAR INTERACTIONS WITH MARINE MAMMALS SINCE 2001

Survey name (lead organization)	Species taken (stock)	Gear type	Date taken	Number killed [1]	Number released alive [2]	Total taken
Atlantic research area						
SEAMAP–SA Coastal Trawl Survey_Fall (SCDNR).	Bottlenose dolphin (South Carolina/ Georgia coastal).	Bottom trawl.	13 Oct 2019	0	1	1
SEFSC In-Water Sea Turtle Research (SCDNR [3]).	Bottlenose dolphin (South Carolina/ Georgia coastal).	Bottom trawl.	20 July 2016	1	0	1
SEAMAP–SA Coastal Trawl Survey_Spring (SCDNR).	Bottlenose dolphin (Northern Florida coastal).	Bottom trawl.	11 April 2014	1	0	1

TABLE 4—SEFSC RESEARCH GEAR INTERACTIONS WITH MARINE MAMMALS SINCE 2001—Continued

Survey name (lead organization)	Species taken (stock)	Gear type	Date taken	Number killed [1]	Number released alive [2]	Total taken
SEAMAP–SA Coastal Trawl Survey_Summer (SCDNR).	Bottlenose dolphin (South Carolina/Georgia coastal).	Bottom trawl.	2 Aug 2012	1	0	1
In-Water Sea Turtle Trawl Survey (SCDNR).	Bottlenose dolphin (South Carolina/Georgia coastal).	Bottom trawl.	11 July 2012	0	1	1
SEAMAP–SA Coastal Trawl Survey_Fall (SCDNR).	Bottlenose dolphin (southern migratory).	Bottom trawl.	5 October 2006	1	0	1
SEAMAP–SA Coastal Trawl Survey_Summer (SCDNR).	Bottlenose dolphin (South Carolina/Georgia coastal).	Bottom trawl.	28 July 2006	1	0	1
RecFIN Red Drum Trammel Net Survey (SCDNR).	Bottlenose dolphin (Charleston Estuarine System).	Trammel net.	22 August 2002	2	0	2
In-Water Sea Turtle Trawl Survey (SCDNR).	Bottlenose dolphin (unk).	Bottom Trawl.	2001 [3]	0	1	1
ARA Total				7	3	10
Gulf of Mexico Research Area						
Gulf of Mexico Shark Pupping and Nursery GULFSPAN (SEFSC).	Bottlenose dolphin (Sarasota Bay).	Gillnet	3 July 2018	0	1	1
Gulf of Mexico Shark Pupping and Nursery GULFSPAN (USA/DISL[2]).	Bottlenose dolphin (northern Gulf of Mexico).	Gillnet	15 July 2016	1	0	1
Skimmer Trawl TED Testing (SEFSC).	Bottlenose dolphin (MS Sound, Lake Borgne, Bay Boudreau).	Skimmer trawl.	1 October 2014	1	0	1
Skimmer Trawl TED Testing (SEFSC).	Bottlenose dolphin (MS Sound, Lake Borgne, Bay Boudreau).	Skimmer trawl	23 October 2013	0	1	1
SEAMAP–GOM Bottom Longline Survey (ADCNR).	Bottlenose dolphin (Mobile Bay, Bonsecour Bay).	Bottom longline.	6 August 2013	0	1 (SI)	1
Gulf of Mexico Shark Pupping and Nursery GULFSPAN (USA/DISL).	Bottlenose dolphin (MS Sound, Lake Borgne, Bay Boudreau).	Gillnet	18 April 2011	1	0	1
GOMRA Total				3	3	6
Total all areas [3].				10	6	16

[1] If there was question over an animal's fate after it was released (*e.g.,* it was struggling to breath/swim), it was considered ''killed''. Serious injury determinations were not previously made for animals released alive, but they are now part of standard protocols for released animals and will be reported in stock assessment reports.
[2] Animals released alive but considered seriously injured aew marked as SI.
[3] This take occurred prior to development of the PSIT database, but we include it here because it is documented.
[4] There have been no SEFSC fishery research-related takes of marine mammals in the CRA.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of whether the number of takes is ''small'' and the negligible impact determination. When discussing take, we consider three manners of take: Mortality, serious injury, and harassment. Serious injury is defined as an injury that could lead to mortality, while injury refers to injury that does not lead to mortality. Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

As previously described, the SEFSC has a history of take of marine mammals incidental to fisheries research. The degree of take resulting from gear interaction can range from mortality, serious injury, Level A harassment (injury), or released unharmed with no observable injury. However, given that we cannot predict the degree of take, we

conservatively assume that any interaction may result in mortality or serious injury and have issued take as such. In the case of the Mississippi Sound stock, we have also authorized a single take from Level A harassment (injury) only. The amount of research conducted in Mississippi Sound using gear with the potential for marine mammal interaction increases the potential for interaction above other estuarine systems. However, there is evidence that, even without the proposed prescribed mitigation and monitoring measures, take may not result in mortality or serious injury (*e.g.,* the October 13, 2013 skimmer trawl take which did not result in serious injury or mortality). The proposed mitigation and monitoring measures described in this proposed rulemaking are designed to further reduce risk of take and degree of take.

Estimated Take Due to Gear Interaction

Given the complex stock structure of bottlenose dolphins throughout the ARA and GOMRA, as well as the vulnerability of this species to be taken incidental to fishery research, we have partitioned this section into two categories to present requested and proposed take in an organized manner. Below we present our analysis informing the proposed take of estuarine and coastal bottlenose dolphins followed by pelagic marine mammals which includes all relevant non-bottlenose dolphin species and open ocean stocks of bottlenose dolphins.

Estuarine and Coastal Bottlenose Dolphin Take—SEFSC

In order to estimate the number of potential bottlenose dolphin takes in estuarine and coastal waters, we considered the SEFSC's record of such past incidents and other sources of take (*e.g.,* commercial fisheries and non-SEFSC affiliated research). We consulted the SARs, marine mammal experts at the SEFSC, and information emerging from the BDTRT to identify these other sources of mortality. We then assessed the similarities and differences between fishery research and commercial fisheries gear and fishing practices. Finally, we evaluated means of affecting the least practicable adverse impact on bottlenose dolphins through the proposed mitigation and additional mitigation developed during the proposed rulemaking process.

In total, since 2001 and over the course of thousands of hours of research effort, 16 marine mammals (all bottlenose dolphins) have been entangled in SEFSC-affiliated research gear. All takes occurred between April through October. However, this is likely a result of research effort concentrated during this time period and there does not appear to be any trend in increased vulnerability throughout the year.

In the ARA, the SEFSC has 10 documented takes of bottlenose dolphins (in 9 instances) from fishing gear (Table 5) and 1 take of an Atlantic spotted dolphin since 2001. The Atlantic spotted dolphin take was a calf struck by a propeller during a marine mammal research cruise. Given the anomalous nature of the incident and proposed mitigation measures, NMFS is not proposing to authorize take by ship strike. Therefore, this take is not discussed further. Of the 10 gear-related takes, two animals were taken at once in a trammel net by the SCDNR in 2002. However, the SCDNR has since changed fishing methods and implemented monitoring and mitigation measures essentially eliminating the potential for take during this survey. No other trammel net-related takes have occurred since these changes were implemented. Therefore, we believe the potential for a take in SCDNR trammel nets is discountable. The remaining eight gear-related takes have been a result of interaction with bottom trawl gear during SEAMAP and TED research surveys, resulting in an average 0.42 takes per year (8 takes/19 years).

To further assess the potential for take in any given year, we considered where takes have occurred and the possible stock origin from which an animal was taken. The July 2006 take occurred offshore of Fripp Island, SC; the October 2006 take occurred Oak Island, NC; the July 2012 take occurred off Little Tybee Island, GA; the August 2012 take occurred off Pawley's Island, SC; the April 2014 take occurred just off the coast of Florida between St. Augustine and Daytona Beach; the July 2016, take occurred off Sea Island, Georgia which is nestled between Little St. Simon's Island and St. Simon's Island; and the October 2019 take occurred approximately 10 km off Dewey's Island, South Carolina. Therefore, the dolphins taken could have originated from any of the five coastal stocks (the Northern Migratory and Southern Migratory stock, South Carolina/Georgia Coastal stock, Northern Florida Coastal stock and a Central Florida stock), although they were assigned to the stock based on the location where the take occurred. Taking the average rate of 0.42 animals per year across five stocks equates to an average taking of 0.08 animals per stock per year. This average would be even less if one considers an estuarine stock may be the stock of origin (although unlikely).

According to the SEFSC's application, three trawl surveys and two bottom longline surveys conducted by the SEFSC or research partner overlap spatially with the NNCES stock (Table 1). These are the Atlantic Striped Bass Tagging Bottom Trawl Survey (USFWS), SEAMAP–SA Coastal Trawl Survey (SCDNR), SEAMAP–SA North Carolina Pamlico Sound Trawl Survey (NCDENR), Shark and Red Snapper Bottom Longline Survey (SEFSC), and the SEAMAP–SA Red Drum Bottom Longline Survey (NCDNR). No gillnet surveys would take place in waters overlapping with this stock. Based on data in the PSIT database, no dolphins from the NNCES stock have been taken from SEFSC or partner fishery research surveys, including those described above which have taken place for many years.

Despite the lack of historical take, we further investigated the potential for future interaction. Based on commercial fishery and SEFSC fishery survey bycatch rates of marine mammals, we would expect the trawl surveys to be more likely to take a dolphin than the bottom longline surveys. An evaluation of each occurring survey type is provided below to more thoroughly evaluate the potential for taking a bottlenose dolphin belonging to the NNCES stock.

The Atlantic Striped Bass Bottom Trawl Survey (conducted by the USFWS) is limited to 2 weeks (200–350 trawls) during January and February in coastal waters north of Cape Hatteras ranging from 30 to 120 ft (9–37 m) in depth. The USFWS uses dual 65-ft trawl nets with 3.75 in. stretch nylon multifilament mesh codend. Tow speed is 3 kts and tow time does not exceed 30 minutes at depth. Trawl operations are conducted day and night from the R/V Oregon II, R/V Oregon, or R/V Savannah (please refer to the PEA for detailed vessel descriptions). The winter operations of this survey overlaps in time with when some animals move out of Pamlico Sound and into coastal waters. However, photo-ID studies, available tag data and stable isotope data indicate that the portion of the stock that moves out of Pamlico Sound into coastal waters remain south of Cape Hatteras during cold water months (Waring *et al.* 2016). The USFWS has historically conducted surveys north of Cape Hatteras. However, the survey is currently inactive due to funding constraints. If funding becomes available, they may undertake this survey. However, the spatial and temporal specifications described above greatly reduce the likelihood of a take from the NNCES stock. In addition,

given the short duration of the survey (2 weeks) and short tow time durations (up to 30 minutes), the chance of marine mammal interaction is limited. This logic is supported by the lack of take from this survey. At this time, for the reasons described above, we believe the likelihood of an animal from the NNCES stock being taken during Atlantic Striped Bass Bottom Trawl Survey is unlikely.

The SEAMAP–SA Pamlico Sound Trawl Survey (NCDENR) is conducted to support stock assessments and management of finfish, shrimp, and crab species in Pamlico Sound and its bays and rivers. The otter trawl survey takes place for 10 days in June and 10 days in September during daylight hours. Up to 54 trawls are completed each month (total = 108 trawls) aboard the R/V Carolina Coast. The general area of operation is Pamlico Sound and the Pamlico, Pungo, and Neuse rivers in waters greater than or equal to 6 ft. Despite spatial and temporal overlap with the NNCES stock, this survey has no record of interacting with a marine mammal. Given the lack of historical interaction, limited number of tows, and implementation of the proposed monitoring and mitigation measures, we do not believe there is reasonable likelihood that of take from this survey.

The SEAMAP–SA Coastal Trawl Survey (SCDNR) operates 300–350 trawls annually from Cape Hatteras, NC to Cape Canaveral, FL in nearshore oceanic waters of 15–30 ft (4–10 m) depth. Its goal is to collect long-term fishery independent data on ecologically, commercially, and recreationally important fish and invertebrates, including shrimp and blue crab. Tow time is approximately 20 minutes. This survey is not associated with sea turtle research surveys, which have longer tow times. SCDNR uses the R/V Lady Lisa outfitted with an otter trawl comprised of paired mongoose-type Falcon bottom trawls. All takes of dolphins have occurred in coastal waters (none from estuarine waters), and all assigned takes have been from coastal stocks. However, because estuarine stocks may venture into coastal waters, there is a small possibility that takes from this survey could have been from the SNCES (n = 1), Northern South Carolina Estuarine System (n = 1), Northern Georgia/Southern South Carolina Estuarine System (n = 2), and Southern Georgia Estuarine System (n = 1) (Table 5). This is the only survey which may potentially overlap with the NNCES and SNCES stock, but it does so in coastal waters where coastal stocks overlap in time and space. It is most likely that a take from this survey would be from a coastal stock. Therefore, we are not proposing to authorize take from the NNCES or SNCES stock.

TABLE 5—POSSIBLE STOCK ORIGIN OF BOTTLENOSE DOLPHINS TAKEN IN THE ARA

Date	Location taken	Possible stocks	
		Coastal	Estuarine
2001	Unknown	Unknown	unknown
July 2006	Off Fripp Island, GA	W.N. Atlantic South Carolina-Georgia Coastal.	Northern Georgia/Southern South Carolina Estuarine System.
October 2006	Off Oak Island, NC	Southern Migratory	Southern North Carolina Estuarine System.
July 2012	Off Little Tybee Island, GA	W.N. Atlantic South Carolina-Georgia Coastal.	Northern Georgia/Southern South Carolina Estuarine System.
August 2012	Off Pawley's Island, SC	W.N. Atlantic South Carolina-Georgia Coastal.	Northern South Carolina Estuarine System:
April 2014	off the coast of Florida between St. Augustine and Daytona Beach.	W.N. Atlantic Northern Florida Coastal	W.N. Atlantic Central Florida Coastal.
July 2016	off Sea Island, Georgia	W.N. Atlantic South Carolina-Georgia Coastal.	Southern Georgia Estuarine System.
October 2019	10 kms off Dewey's Island, SC	W.N. Atlantic South Carolina-Georgia Coastal.	N/A—too far offshore.

The only survey overlapping with the Indian River Lagoon (IRL) stock is the St. Lucie Rod-and-Reel Fish Health Study. There are no documented instances of the SEFSC taking a dolphin from this survey. Therefore, we believe the likelihood of take is low and mitigation measures (*e.g.* quickly reeling in line if dolphins are likely to interact with gear) would be effective at further reducing take potential to discountable. In consideration of this, we are not proposing to issue take of the IRL stock.

In summary, we are not proposing to authorize requested take in the ARA for the NNCES, SNCES, and Indian River Lagoon stocks due to low to discountable potential for take. For all other estuarine stocks for which take was requested (n = 7), we are proposing to authorize the requested one take over 5 years by M/SI (Table 7). We are proposing to issue the requested three M/SI takes per stock of each of the coastal stocks and the offshore stock in the ARA over 5 years (Table 7).

In the GOMRA, the SEFSC is requesting to take one dolphin from each of the 21 estuarine stocks, three dolphins from the Mississippi Sound stock, and three dolphins per year from the coastal stocks (Table 7). Similar to the ARA, NMFS examined the SEFSC's request and assessed authorizing take based on fishing effort and stock spatial and temporal parameters, the potential for take based on fishing practices (*e.g.,* gear description, tow/soak times). In addition, the SEFSC has provided supplemental information indicating some surveys are discontinued or currently inactive and are not likely to take place during the proposed 5-year regulations. For example, at time of the application, only one survey conducted by TPWD was planned to occur in Sabine Lake. However, that specific survey has been discontinued. Therefore, no fisheries research by SEFSC or its partners would occur in Sabine Lake. Therefore, no take is expected to occur, and we did not include take of dolphins in Sabine Lake in the rule.

When examining the survey gear used and fishing methods, we determined that the IJA Open Bay Shellfish Trawl Survey (conducted by TPWD) has a very low potential to take dolphins. This survey has no documented dolphin/gear interactions despite high fishing effort (90 trawls for month/1080 trawls per year). This is likely because TPWD uses

a very small (20 ft (6 m) wide) otter shrimp trawl which is towed for only 10 minutes in 3–30 ft (1–10 m) of water. The nets can be retrieved within 1 to 2 minutes. The IJA Open Bay Shellfish Trawl Survey is the only survey conducted by the SEFSC that overlaps with the following BSE bottlenose dolphin stocks: Laguna Madre; Nueces Bay, Corpus Christi Bay; Copano Bay, Aransas Bay, San Antonio Bay, Redfish Bay, Espirtu Santo Bay; Matagorda Bay, Tres Palacios Bay, Lavaca Bay; West Bay, and Galveston Bay, East Bay, Trinity Bay. TPWD has no documented take of dolphins from the IJA Open Bay Shellfish Trawl Survey despite years of research effort. Due to the discountable potential for take from the IJA Open Bay Shellfish Trawl Survey, we are not proposing to authorize take of these Texas bottlenose dolphin stocks to the SEFSC.

Another stock with a discountable potential for take is the Barataria Bay stock. This stock's habitat includes Caminada Bay, Barataria Bay east to Bastian Bay, Bay Coquette, and Gulf coastal waters extending 1 km from the shoreline. The SEFSC has committed to avoiding conducting fisheries independent monitoring in these waters. Hence, we find the potential for take from the Barataria Bay stock is discountable and we are not proposing to authorize the requested take.

On December 22, 2017, the SEFSC indicated the Gulfspan shark survey conducted by University of West Florida (UWF) is considered inactive as of 2017 and would not likely take place over the course of the regulations due to staffing changes. This is the only survey overlapping with the Perdido Bay, Pensacola Bay, Choctawhatchee Bay stocks. Therefore, we find the potential for take from these stocks is discountable, and we are not proposing to authorize the requested take.

There are nine surveys in the GOMRA overlapping with the Mississippi Sound, Lake Borgne, Bay Boudreau stock (MS Sound stock): four trawl, three gillnet, and two hook and line. While there are three documented takes from this stock since 2011 (from gillnet and trawl surveys), there are none none prior to that year. The SEFSC requested three M/SI takes from the MS Sound stock due to the amount of fishing effort in this waterbody. However, we find two takes are warranted over the life of the 5-year regulations given the lack of take prior to 2011 and implementation of the mitigation and monitoring measures. Further, previous takes indicate there is potential that a marine mammal may not die or be seriously injured in fishing gear but be injured. Therefore, we are proposing to authorize one take by M/SI and one take by Level A harassment for the Mississippi Sound stock over the 5-year regulations (Table 6). No takes of bottlenose dolphins by the SEFSC have been documented in the CRA. However, we authorize one take over 5 years at the request of the SEFSC.

TABLE 6—SEFSC TOTAL REQUESTED AND AUTHORIZED TAKE OF BOTTLENOSE DOLPHINS IN ARA, GOMRA, AND CRA OVER THE LIFE OF THE PROPOSED 5-YEAR REGULATIONS

Stock	Total requested take (M/SI or level A)	Total authorized take (M/SI or level A)
Northern North Carolina Estuarine System Stock	1	0[1]
Southern North Carolina Estuarine System Stock	1	0[1]
Northern South Carolina Estuarine Stock	1	1
Charleston Estuarine System Stock	1	1
Northern Georgia/Southern South Carolina Estuarine System Stock	1	1
Central Georgia Estuarine System	1	1
Southern Georgia Estuarine System Stock	1	1
Jacksonville Estuarine System Stock	1	1
Indian River Lagoon Estuarine System Stock	1	0[1]
Biscayne Bay Stock	0	0
Florida Bay Stock	1	1
Western North Atlantic South Carolina/Georgia Coastal Stock	3	3
Western North Atlantic Northern Florida Coastal Stock	3	3
Western North Atlantic Central Florida Coastal Stock	3	3
Western North Atlantic Northern Migratory Coastal Stock	3	3
Western North Atlantic Southern Migratory Coastal Stock	3	3
Western North Atlantic Offshore Stock	3	3
Puerto Rico and US Virgin Islands Stock	1	1
Laguna Madre	1	0[1]
Nueces Bay, Corpus Christi Bay	1	0[1]
Copano Bay, Aransas Bay, San Antonio Bay, Redfish Bay, Espirtu Santo Bay	1	0[1]
Matagorda Bay, Tres Palacios Bay, Lavaca Bay	1	0[1]
West Bay	1	0[1]
Galveston Bay, East Bay, Trinity Bay	1	0[1]
Sabine Lake	1	0[1]
Calcasieu Lake	0	0
Atchalfalaya Bay, Vermilion Bay, West Cote Blanche Bay	0	0
Terrabonne Bay, Timbalier Bay	1	1
Barataria Bay Estuarine System	1	0[2]
Mississippi River Delta	1	1
Mississippi Sound, Lake Bornge, Bay Boudreau	3	1 M/SI, 1 Level A[3]
Mobile Bay, Bonsecour Bay	1	1
Perdido Bay	1	0[2]
Pensacola Bay, East Bay	1	0[2]
Choctwhatchee Bay	1	0[2]
St. Andrew Bay	1	1
St. Joseph Bay	1	1
St. Vincent Sound, Apalachiola Bay, St. George Sound	1	1
Apalachee Bay	1	1

TABLE 6—SEFSC TOTAL REQUESTED AND AUTHORIZED TAKE OF BOTTLENOSE DOLPHINS IN ARA, GOMRA, AND CRA OVER THE LIFE OF THE PROPOSED 5-YEAR REGULATIONS—Continued

Stock	Total requested take (M/SI or level A)	Total authorized take (M/SI or level A)
Waccasassa Bay, Withlacoochee Bay, Crystal Bay	1	1
St. Joseph Sound, Clearwater Harbor	0	0
Tampa Bay	0	0
Sarasota Bay, Little Sarasota Bay	0	0
Pine Island Sound, Charlotte Harbor, Gasparilla Sound, Lemon Bay	1	1
Caloosahatchee River	0	0
Estero Bay	0	0
Chokoloskee Bay, Ten Thousand Islands, Gullivan Bay	1	1
Whitewater Bay	0	0
Florida Keys-Bahia Honda to Key West	0	0
Northern Gulf of Mexico Western Coastal Stock	3	3
Northern Gulf of Mexico Northern Coastal Stock	3	3
Northern Gulf of Mexico Eastern Coastal Stock	3	3

[1] Surveys overlapping these stocks have a low to discountable potential to take marine mammals due to temporal and spatial overlap with stock, fishing methods, and/or gear types. The SEFSC has no history of taking individuals from these stocks.
[2] No surveys are proposed that overlap with these stocks.
[3] The SEFSC has the potential to take one marine mammal by M/SI or Level A harassment and one marine mammal by Level A harassment (injury) only for the Mississippi Sound stock.

Pelagic Marine Mammals Take—SEFSC

Since systematic record keep began in 2002, the SEFSC and affiliated research partners have taken no marine mammals species other than bottlenose dolphins by gear interaction. However, NMFS has assessed other sources of M/SI for these species (*e.g.,* commercial fishing) to inform the potential for incidental takes of marine mammals in the ARA, GOMRA, and CRA under this rule. These species have not been taken historically by SEFSC research activities but inhabit the same areas and show similar types of behaviors and vulnerabilities to such gear used in other contexts. To more comprehensively identify where vulnerability and potential exists for take between SEFSC research and other species of marine mammals, we compared with similar commercial fisheries by way of the 2017 List of Fisheries (LOF) and the record of interactions from non-SEFSC affiliated research.

NMFS LOF classifies U.S. commercial fisheries into one of three categories according to the level of incidental marine mammal M/SI that is known to have occurred on an annual basis over the most recent 5-year period (generally) for which data has been analyzed: Category I, frequent incidental M/SI; Category II, occasional incidental M/SI; and Category III, remote likelihood of or no known incidental M/SI. In accordance with the MMPA (16 U.S.C. 1387(e)) and 50 CFR 229.6, any vessel owner or operator, or gear owner or operator (in the case of non-vessel fisheries), participating in a fishery listed on the LOF must report to NMFS all incidental mortalities and injuries of marine mammals that occur during commercial fishing operations, regardless of the category in which the fishery is placed. The LOF for 2016 was based on, among other things, stranding data; fisher self-reports; and SARs, primarily the 2014 SARs, which are generally based on data from 2008–2012. Table 7 indicates which species (other than bottlenose dolphins) have been known to interact with commercial fishing gear in the three research areas based on the 2016 LOF (81 FR 20550; April 8, 2016). More information on the 2016 LOF can be found at *http://www.nmfs.noaa.gov/pr/interactions/fisheries/lof.html.*

TABLE 7—GEAR TYPES IMPLICATED FOR INTERACTION WITH MARINE MAMMALS IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN COMMERCIAL FISHERIES

Species	Fishery by gear type [1]			
	Gillnet fisheries	Trawl fisheries	Trap/pot	Longline
N. Atlantic right whale	Y		Y	
Humpback whale	Y		Y	
Fin whale	Y		Y	
Minke whale	Y	Y	Y	Y
Risso's dolphin	Y	Y		Y
Cuvier's beaked whale				Y
Gervais beaked whale				Y
Beaked whale (*Mesoplodon spp*)				Y
False killer whale				Y
Killer whale				Y
Pygmy sperm whale				Y
Sperm Whale				Y
Long-finned pilot whale	Y	Y		Y
Short-finned pilot whale				Y
White-sided dolphin	Y	Y		

TABLE 7—GEAR TYPES IMPLICATED FOR INTERACTION WITH MARINE MAMMALS IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN COMMERCIAL FISHERIES—Continued

Species	Fishery by gear type [1]			
	Gillnet fisheries	Trawl fisheries	Trap/pot	Longline
Atlantic spotted dolphin	.....	Y	.....	Y
Pantropical spotted dolphin	Y	.....	.....	Y
Common dolphin	Y	Y	.....	Y
Harbor porpoise	Y	Y	.....	.....
Harbor seal	Y	Y	Y	.....
Gray seal	.....	Y	.....	.....

[1] Only fisheries with gear types used by the SEFSC during the course of the regulations are included here. For example, purse seine and aquaculture fisheries are also known to interact with marine mammals in the specified geographic region. However, the SEFSC would not use those gears during their research.

In addition to examining known interaction, we also considered a number of activity-related factors (*e.g.,* gear size, set duration, etc.) and species-specific factors (*e.g.,* species-specific knowledge regarding animal behavior, overall abundance in the geographic region, density relative to SEFSC survey effort, feeding ecology, propensity to travel in groups commonly associated with other species historically taken) to determine whether a species may have a similar vulnerability to certain types of gear as historically taken species. For example, despite known take in commercial trap/pot fisheries, here we rule out the potential for traps/pots to take marine mammals incidental to SEFSC research for a number of reasons. Commercial fisheries often involve hundreds of unattended traps that are located on a semi-permanent basis, usually with long, loose float lines, in shallow waters close to shore. In contrast, SEFSC research gear is fished in deeper waters, and typically only one pot is fished at a time and monitored continuously for short soak times (*e.g.,* one hour). These differences in fishing practices, along with the fact no marine mammals have been taken in a SEFSC trap/pot, negate the potential for take to a level NMFS does not believe warrants authorization of take, and there is no historical documentation of take from this gear incidental to SEFSC surveys. Therefore, we do not expect take incidental to SEFSC research activities using trap/pot gear.

It is well documented that multiple marine mammal species are taken in commercial longline fisheries (Table 8). We used this information to help make an informed decision on the probability of specific cetacean and large whale interactions with longline gear and other hook-and-line gear while taking into account many other factors affecting the vulnerability of a species to be taken in SEFSC research surveys (*e.g.,* relative survey effort, survey location, similarity in gear type, animal behavior, prior history of SEFSC interactions with longline gear etc.). First we examined species known to be taken in longline fisheries but for which the SEFSC has not requested take. For example, the SEFSC is not requesting take of large whales in longline gear. Although large whale species could become entangled in longline gear, the probability of interaction with SEFSC longline gear is extremely low considering a far lower level of survey effort relative to that of commercial fisheries, as well as much shorter set durations, shorter line lengths, and monitoring and mitigation measures implemented by the SEFSC (*e.g.,* the move-on rule). Although data on commercial fishing efforts comparable to the known SEFSC research protocols (net size, tow duration and speed, and total number of tows) are not publically available, based on the amount of fish caught by commercial fisheries versus SEFSC fisheries research, the ''footprint'' of research effort compared to commercial fisheries is very small (see Section 9 in the SEFSC's application). As such, the SEFSC has not requested, nor is NMFS proposing, to authorize take of large whales (*i.e.,* mysticetes) incidental to longline research. There are situations with hook-and-line (*e.g.,* longline) fisheries research gear when a caught animal cannot be identified to species with certainty. This might occur when a hooked or entangled dolphin frees itself before being identified or when concerns over crew safety, weather, or sea state conditions necessitate quickly releasing the animal before identification is possible. The top priority for live animals is to release them as quickly and safely as possible. The SEFSC ship's crew and research personnel make concerted efforts to identify animals incidentally caught in research gear whenever crew and vessel safety are not jeopardized.

With respect to trawling, both commercial fisheries and non-SEFSC affiliated research trawls in the Gulf of Mexico have taken pelagic marine mammals. For example, a mid-water research trawl conducted to monitor the effects of the Deepwater Horizon oil spill in the Gulf of Mexico took three pantropical spotted dolphins in one trawl in 2012. Additionally, an Atlantic spotted dolphin was taken in non-SEFSC research bottom trawl in 2014. Known takes in commercial trawl fisheries in the ARA and GOMRA include a range of marine mammal species (Table 8). NMFS examined the similarities between species known to be taken in commercial and non-SEFSC research trawls with those species that overlap in time and space with SEFSC research trawls in the open ocean. Because some species exhibit similar behavior, distribution, abundance, and vulnerability to research trawl gear to these species, NMFS proposes to authorize take of eight species of pelagic cetaceans and two pinniped species in the ARA and nine species of cetaceans in the GOMRA (Table 9). In addition, NMFS provides allowance of one take of an unidentified species in the ARA, GOMRA, and CRA over the life of these regulations to account for any animal that cannot be identified to a species level. Takes would occur incidental to trawl and hook and line (including longline) research in the ARA and GOMRA. However, because the SEFSC does not use trawl gear in the CRA, take is incidental to hook and line gear in the Caribbean (see Tables 6.4–6.6 in SEFSC's application for more detail). We are proposing to authorize the amount of take requested by the SEFSC's for these stocks listed in Table 8.

TABLE 8—TOTAL TAKE, BY SPECIES AND STOCK, OF PELAGIC MARINE MAMMALS IN THE ARA AND GOMRA INCIDENTAL TO TRAWL AND HOOK AND LINE RESEARCH AND, IN THE CRA, INCIDENTAL TO HOOK AND LINE RESEARCH ACTIVITIES OVER THE 5 YEAR REGULATIONS

Species	Stock	Total M&SI take
Risso's dolphin	Western North Atlantic	1
	N. Gulf of Mexico	1
Melon headed whale	N. Gulf of Mexico	3
Short-finned pilot whale	Western North Atlantic	1
	N. Gulf of Mexico	1
Long-finned pilot whale	Western North Atlantic	1
Short-beaked common dolphin	Western North Atlantic	4
Atlantic spotted dolphin	Western North Atlantic	4
	N. Gulf of Mexico	4
Pantropical spotted dolphin	Western North Atlantic	1
	N. Gulf of Mexico	4
Striped dolphin	Western North Atlantic	3
	N. Gulf of Mexico	3
Spinner dolphin	N. Gulf of Mexico	3
Rough-toothed dolphin	N. Gulf of Mexico	1
Bottlenose dolphin	Western North Atlantic Oceanic	4
	N. Gulf of Mexico Oceanic	4
	N. Gulf of Mexico Continental Shelf	4
	Puerto Rico/USVI	1
Harbor porpoise	Gulf of Maine/Bay of Fundy	1
Undetermined delphinid	Western North Atlantic	1
	N. Gulf of Mexico	1
Harbor seal	Western North Atlantic	1
Gray seal	Western North Atlantic	1

Estimated Take Due to Acoustic Harassment

As described previously (*Potential Effects of Specified Activities on Marine Mammals and their Habitat*), we believe that SEFSC use of active acoustic sources has, at most, the potential to cause Level B harassment of marine mammals. In order to attempt to quantify the potential for Level B harassment to occur, NMFS (including the SEFSC and acoustics experts from other parts of NMFS) developed an analytical framework considering characteristics of the active acoustic systems described previously under *Description of Active Acoustic Sound Sources,* their expected patterns of use, and characteristics of the marine mammal species that may interact with them. This quantitative assessment benefits from its simplicity and consistency with current NMFS acoustic guidance regarding Level B harassment but we caution that, based on a number of deliberately precautionary assumptions, the resulting take estimates may be seen as an overestimate of the potential for Level B harassment to occur as a result of the operation of these systems. Additional details on the approach used and the assumptions made that result in these estimates are described below.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (Level A harassment). We note NMFS has begun efforts to update its behavioral thresholds, considering all available data, and is formulating a strategy for updating those thresholds for all types of sound sources considered in incidental take authorizations. It is NMFS intention to conduct both internal and external review of any new thresholds prior to finalizing. In the interim, we apply the traditional thresholds.

Level B Harassment for non-explosive sources—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.,* frequency, predictability, duty cycle), the environment (*e.g.,* bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.,* 2011). Based on what the best available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of Level B harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 μPa (rms) for continuous (*e.g.,* vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources. Neither threshold is used for military sonar due to the unique source characteristics.

The Marine Mammal Commission (Commission) has previously suggested NMFS apply the 120 dB continuous threshold to scientific sonar such as the ones proposed by the SEFSC. NMFS has responded to this comment in multiple **Federal Register** notices of issuance for other NMFS science centers. However, we provide more clarification here on why the 160 dB threshold is appropriate when estimating take from acoustic sources used during SEFSC research activities. NMFS has historically referred to the 160 dB threshold as the impulsive threshold, and the 120 dB threshold as the continuous threshold, which in and of itself is conflicting as one is referring to pulse characteristics and the other is referring to the temporal component. A more accurate term for

the impulsive threshold is the intermittent threshold. This distinction is important because, when assessing the potential for hearing loss (PTS or TTS) or non-auditory injury (*e.g.,* lung injury), the spectral characteristics of source (impulsive vs. non-impulsive) is critical to assessing the potential for such impacts. However, for behavior, the temporal component is more appropriate to consider. Gomez *et al.* (2016) conducted a systematic literature review (370 papers) and analysis (79 studies, 195 data cases) to better assess probability and severity of behavioral responses in marine mammals exposed to anthropogenic sound. They found a significant relationship between source type and behavioral response when sources were split into broad categories that reflected whether sources were continuous, sonar, or seismic (the latter two of which are intermittent sources). Moreover, while Gomez *et al.* (2017) acknowledges acoustically sensitive species (beaked whales and harbor porpoise), the authors do not recommend an alternative method for categorizing sound sources for these species when assessing behavioral impacts from noise exposure.

To apply the continuous 120 dB threshold to all species based on data from known acoustically sensitive species (one species of which is the harbor porpoise which is likely to be rarely encountered in the ARA and do not inhabit the GOMRA or CRA) is not warranted as it would be unnecessarily conservative for non-sensitive species. Qualitatively considered in our effects analysis below is that beaked whales and harbor porpoise are more acoustically sensitive than other cetacean species, and thus are more likely to demonstrate overt changes in behavior when exposed to such sources. Further, in absence of very sophisticated acoustic modeling, our propagation rates are also conservative. Therefore, the distance to the 160 dB threshold is likely much closer to the source than calculated. In summary, the SEFSC's proposed activity includes the use of intermittent sources (scientific sonar). Therefore, the 160 dB re 1 µPa (rms) threshold is applicable when quantitatively estimating take by Level B harassment incidental to SEFSC scientific sonar for all marine mammal species.

Level A harassment for non-explosive sources—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). However, as described in greater detail in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section, given the highly directional beam, NMFS does not anticipate animals would be exposed to noise levels resulting in PTS. Therefore, the Level A criteria do not apply here and are not discussed further; NMFS is proposing take by Level B harassment only.

The operating frequencies of active acoustic systems used by the SEFSC sources range from 18–333 kHz (see Table 2). These frequencies are within the very upper hearing range limits of baleen whales (7 Hz to 35 kHz). The Simrad EK60 may operate at frequency of 18 kHz which is the only frequency that might be detectable by baleen whales. However, the beam pattern is extremely narrow (11 degrees) at that frequency. The Simrad ME70 echosounder, EQ50, and Teledyne RD ADCP operate at 50–200 kHz which are all outside of baleen whale hearing capabilities. Therefore, we would not expect any exposures to these signals to result in Level B harassment. The Simrad EK60 lowest operating frequency (18 kHz) is within baleen whale hearing capabilities.

The assessment paradigm for active acoustic sources used in SEFSC fisheries research mirrors approaches by other NMFS Science Centers applying for regulations. It is relatively straightforward and has a number of key simple and conservative assumptions. NMFS' current acoustic guidance requires in most cases that we assume Level B harassment occurs when a marine mammal receives an acoustic signal at or above a simple step-function threshold. For use of these active acoustic systems used during SEFSC research, NMFS uses the threshold is 160 dB re 1 µPa (rms) as the best available science indicates the temporal characteristics of a source are most influential in determining behavioral impacts (Gomez *et al.,* 2016), and it is NMFS' long standing practice to apply the 160 dB threshold to intermittent sources. Estimating the number of exposures at the specified received level requires several determinations, each of which is described sequentially below:

(1) A detailed characterization of the acoustic characteristics of the effective sound source or sources in operation;

(2) The operational areas exposed to levels at or above those associated with Level B harassment when these sources are in operation;

(3) A method for quantifying the resulting sound fields around these sources; and

(4) An estimate of the average density for marine mammal species in each area of operation.

Quantifying the spatial and temporal dimension of the sound exposure footprint (or ''swath width'') of the active acoustic devices in operation on moving vessels and their relationship to the average density of marine mammals enables a quantitative estimate of the number of individuals for which sound levels exceed the relevant threshold for each area. The number of potential incidents of Level B harassment is ultimately estimated as the product of the volume of water ensonified at 160 dB rms or higher and the volumetric density of animals determined from simple assumptions about their vertical stratification in the water column. Specifically, reasonable assumptions based on what is known about diving behavior across different marine mammal species were made to segregate those that predominately remain in the upper 200 m of the water column, versus those that regularly dive deeper during foraging and transit. Methods for estimating each of these calculations are described in greater detail in the following sections, along with the simplifying assumptions made, and followed by the take estimates.

Sound source characteristics—An initial characterization of the general source parameters for the primary active acoustic sources operated by the SEFSC was conducted, enabling a full assessment of all sound sources used by the SEFSC and delineation of Category 1 and Category 2 sources, the latter of which were carried forward for analysis here. This auditing of the active acoustic sources also enabled a determination of the predominant sources that, when operated, would have sound footprints exceeding those from any other simultaneously used sources. These sources were effectively those used directly in acoustic propagation modeling to estimate the zones within which the 160 dB rms received level would occur.

Many of these sources can be operated in different modes and with different output parameters. In modeling their potential impact areas, those features among those given previously in Table 2 (*e.g.,* lowest operating frequency) that would lead to the most precautionary estimate of maximum received level ranges (*i.e.,* largest ensonified area) were used. The effective beam patterns took into account the normal modes in which these sources are typically operated. While these signals are brief and

intermittent, a conservative assumption was taken in ignoring the temporal pattern of transmitted pulses in calculating Level B harassment events. Operating characteristics of each of the predominant sound sources were used in the calculation of effective line-kilometers and area of exposure for each source in each survey (Table 9).

TABLE 9—EFFECTIVE EXPOSURE AREAS FOR PREDOMINANT ACOUSTIC SOURCES ACROSS TWO DEPTH STRATA

Active acoustic system	Effective exposure area: Sea surface to 200 m depth (km^2)	Effective exposure area: Sea surface to depth at which 160-dB threshold is reached (km^2)
Simrad EK60 narrow beam echosounder	0.0142	0.1411
Simrad ME70 multibeam echosounder	0.0201	0.0201
Teledyne RD Instruments ADCP, Ocean Surveyor	0.0086	0.0187
Simrad ITI trawl monitoring system	0.0032	0.0032

Calculating effective line-kilometers—As described below, based on the operating parameters for each source type, an estimated volume of water ensonified at or above the 160 dB rms threshold was calculated. In all cases where multiple sources are operated simultaneously, the one with the largest estimated acoustic footprint was considered to be the effective source. Two depth zones were defined for each research area: a Continental Shelf Region defined by having bathymetry 0–200 m and an Offshore Region with bathymetry >200 m. Effective line distance and volume insonified was calculated for each depth stratum (0–200 m and > 200 m), where appropriate (*i.e.* in the Continental Shelf region, where depth is <200 m, only the exposure area for the 0–200 m depth stratum was calculated). In some cases, this resulted in different sources being predominant in each depth stratum for all line km when multiple sources were in operation. This was accounted for in estimating overall exposures for species that utilize both depth strata (deep divers). For each ecosystem area, the total number of line km that would be surveyed was determined, as was the relative percentage of surveyed linear km associated with each source. The total line km for each vessel, the effective portions associated with each of the dominant sound types, and the effective total km for operation for each sound type is given in Tables 6–8a and 6–8b in SEFSC's application. In summary, line transect kms range from 1149 to 3352 in the ARA and 16,797 to 30,146 km with sources operating 20–100 percent of the time depending on the source.

Calculating volume of water ensonified—The cross-sectional area of water ensonified to a 160 dB rms received level was calculated using a simple spherical spreading model of sound propagation loss (20 log R) such that there would be 60 dB of attenuation over 1000 m. The spherical spreading model accounted for the frequency dependent absorption coefficient and the highly directional beam pattern of most of these sound sources. For absorption coefficients, the most commonly used formulas given by Francois and Garrison (1982) were used. The lowest frequency was used for systems that are operated over a range of frequencies. The vertical extent of this area is calculated for two depth strata (surface to 200 m, and for deep water operations >200 m, surface to range at which the on-axis received level reaches 160 dB RMS). This was applied differentially based on the typical vertical stratification of marine mammals (see Tables 6–9 and 6–10 in SEFSC's application).

For each of the three predominant sound sources, the volume of water ensonified is estimated as the cross-sectional area (in square kilometers) of sound at or above 160 dB rms multiplied by the total distance traveled by the ship (see Table 6a and 6b in SEFSC's application). Where different sources operating simultaneously would be predominant in each different depth strata (*e.g.,* ME70 and EK60 operating simultaneously may be predominant in the shallow stratum and deep stratum, respectively), the resulting cross-sectional area calculated took this into account. Specifically, for shallow-diving species this cross-sectional area was determined for whichever was predominant in the shallow stratum, whereas for deeper-diving species, this area was calculated from the combined effects of the predominant source in the shallow stratum and the (sometimes different) source predominating in the deep stratum. This creates an effective total volume characterizing the area ensonified when each predominant source is operated and accounts for the fact that deeper-diving species may encounter a complex sound field in different portions of the water column.

Marine mammal densities—One of the primary limitations to traditional estimates of Level B harassment from acoustic exposure is the assumption that animals are uniformly distributed in time and space across very large geographical areas, such as those being considered here. There is ample evidence that this is in fact not the case, and marine species are highly heterogeneous in terms of their spatial distribution, largely as a result of species-typical utilization of heterogeneous ecosystem features. Some more sophisticated modeling efforts have attempted to include species-typical behavioral patterns and diving parameters in movement models that more adequately assess the spatial and temporal aspects of distribution and thus exposure to sound (*e.g.,* Navy, 2013). While simulated movement models were not used to mimic individual diving or aggregation parameters in the determination of animal density in this estimation, the vertical stratification of marine mammals based on known or reasonably assumed diving behavior was integrated into the density estimates used.

The marine mammal abundance estimates used for the ARA and GOM were obtained from Stock Assessment Reports for the Atlantic and the Gulf of Mexico ecosystem areas (Waring *et al.* 2012, 2013, 2014, and 2015), and the best scientific information available to SEFSC staff. We note abundances for cetacean stocks in western North Atlantic U.S. waters are the combined estimates from surveys conducted by the NMFS Northeast Fisheries Science Center (NEFSC) from central Virginia to

the lower Bay of Fundy and surveys conducted by the SEFSC from central Virginia to central Florida. The SEFSC primary area of research is south of central Virginia. Therefore, densities are based on abundance estimates from central Virginia to central Florida and are reported in the stock assessment report for each stock. For example, the fin whale abundance estimate for the stock is 1,618. However, most of those animals occur in the northeast with only about 23 individuals in the southeast where SEFSC would occur. Therefore, an abundance estimate of 23 was used to estimate density. Density estimates in areas where a species is known to occur, but where published density data is absent, were calculated based on values published for the species in adjacent regions by analogy and SEFSC expertise. For example, in the CRA there are records of marine mammal species occurrence (*e.g.,* Mignucci-Giannoni 1998, Roden and Mullin 2000). However, area specific abundance estimates are unavailable so the density estimates for the GOMRA were used as proxies where appropriate to estimate acoustic take in the CRA. There are a number of caveats associated with these estimates:

(1) They are often calculated using visual sighting data collected during one season rather than throughout the year. The time of year when data were collected and from which densities were estimated may not always overlap with the timing of SEFSC fisheries surveys (detailed previously in *Detailed Description of Activities*).

(2) The densities used for purposes of estimating acoustic exposures do not take into account the patchy distributions of marine mammals in an ecosystem, at least on the moderate to fine scales over which they are known to occur. Instead, animals are considered evenly distributed throughout the assessed area, and seasonal movement patterns are not taken into account.

In addition, and to account for at least some coarse differences in marine mammal diving behavior and the effect this has on their likely exposure to these kinds of often highly directional sound sources, a volumetric density of marine mammals of each species was determined. This value is estimated as the abundance averaged over the two-dimensional geographic area of the surveys and the vertical range of typical habitat for the population. Habitat ranges were categorized in two generalized depth strata (0–200 m and 0 to greater than 200 m) based on gross differences between known generally surface-associated and typically deep-diving marine mammals (*e.g.,* Reynolds and Rommel, 1999; Perrin *et al.,* 2009). Animals in the shallow-diving stratum were assumed, on the basis of empirical measurements of diving with monitoring tags and reasonable assumptions of behavior based on other indicators, to spend a large majority of their lives (*i.e.,* greater than 75 percent) at depths shallower than 200 m. Their volumetric density and thus exposure to sound is therefore limited by this depth boundary. In contrast, species in the deeper-diving stratum were assumed to regularly dive deeper than 200 m and spend significant time at these greater depths. Their volumetric density, and thus potential exposure to sound at or above the 160 dB rms threshold, is extended from the surface to the depth at which this received level condition occurs (*i.e.,* corresponding to the 0 to greater than 200 m depth stratum).

The volumetric densities are estimates of the three-dimensional distribution of animals in their typical depth strata. For shallow-diving species, the volumetric density is the area density divided by 0.2 km (*i.e.,* 200 m). For deeper diving species, the volumetric density is the area density divided by a nominal value of 0.5 km (*i.e.,* 500 m). The two-dimensional and resulting three-dimensional (volumetric) densities for each species in each ecosystem area are provided in Table 10.

TABLE 10—ABUNDANCES AND VOLUMETRIC DENSITIES CALCULATED FOR EACH SPECIES IN SEFSC RESEARCH AREAS USED IN TAKE ESTIMATION

Species [1]	Abundance	Typical dive depth strata		Continental shelf area [2] density (#/km^2)	Offshore area [3] density (#/km^2)	Continental shelf area volumetric density (#/km^3)	Offshore area volumetric density (#/km^3)
		0–200 m	>200 m				
Atlantic Research Area [4]							
Fin whale	23	X			0.00005		0.00025
Sperm whale	695		X		0.00148		0.00296
Pygmy/dwarf sperm whales [5].	2,002		X		0.00426		0.00852
False killer whale	442	X			0.00094		0.00470
Beaked whales [5]	3,163		X		0.00673		0.01346
Risso's dolphin	3,053	X			0.00650		0.03248
Short-finned pilot whale	16,964		X		0.03610		0.07219
Short-beaked common dolphin.	2,993	X			0.00637		0.03184
Atlantic spotted dolphin	17,917	X		0.39209	0.03812	1.96043	0.19062
Pantropical spotted dolphin.	3,333	X			0.00709		0.03546
Striped dolphin	7,925	X			0.01686		0.08431
Rough-toothed dolphin	271	X			0.00058		0.00288
Bottlenose dolphin	50,766 (offshore); 31,212 (cont. shelf).	X		0.25006	0.10802	1.25028	0.54010
Gulf of Mexico Research Area							
Bryde's whale	33	X			0.00011		0.00054
Sperm whale	763		X		0.00438		0.00876
Pygmy/dwarf sperm whales [5].	184		X		0.01857		0.00101
Pygmy killer whale	152	X			0.00080		0.00400

TABLE 10—ABUNDANCES AND VOLUMETRIC DENSITIES CALCULATED FOR EACH SPECIES IN SEFSC RESEARCH AREAS USED IN TAKE ESTIMATION—Continued

Species [1]	Abundance	Typical dive depth strata		Continental shelf area [2] density (#/km^2)	Offshore area [3] density (#/km^2)	Continental shelf area volumetric density (#/km^3)	Offshore area volumetric density (#/km^3)
		0–200 m	>200 m				
False killer whale	Unk	X			0.00086		0.00432
Beaked whales [5 6]	149		X		0.00925		0.00081
Melon-headed whale	2,235	X			0.00487		0.02434
Risso's dolphin	2,442	X			0.00523		0.02613
Short-finned pilot whale	2,415		X		0.00463		0.00925
Atlantic spotted dolphin [7].	37,611	X		0.09971	unk	0.49854	Unk
Pantropical spotted dolphin.	50,880	X			0.09412		0.47062
Striped dolphin	1,849	X			0.00735		0.03677
Rough-toothed dolphin	624	X		0.00401	0.00664	0.02006	0.03322
Clymene dolphin [8]	129	X			0.00907		0.04537
Spinner dolphin	11,441	X			0.01888		0.09439
Bottlenose dolphin	5,806 (oceanic); 51,192 (cont. shelf).	X		0.29462	0.02347	1.47311	0.11735
Caribbean Research Area [9]							
Sperm whale	763		X	na	0.00438	na	0.008761
Pygmy/dwarf sperm whales [5 6].	186		X	na	0.01857	na	0.00101
Killer whale	184	X		na	0.00000	na	0
Pygmy killer whale	152	X		na	0.00080	na	0.003998
False killer whale	Unk	X		na	0.00086	na	0.004324
Beaked whales [5 6]	149		X	na	0.00925	na	0.00081
Melon-headed whale	2,235	X		na	0.00487	na	0.024343
Risso's dolphin	2,442	X		na	0.00523	na	0.026132
Short-finned pilot whale	2,415		X	na	0.00463	na	0.009255
Pantropical spotted dolphin.	50,880	X		na	0.09412	na	0.470615
Striped dolphin	1,849	X		na	0.00735	na	0.036771
Fraser's dolphin		X		na	0.00000	na	0
Rough-toothed dolphin	624	X		na	0.00664	na	0.03322
Clymene dolphin	129	X		na	0.00907	na	0.045365
Spinner dolphin	11,441	X		Na	0.01888	na	0.094389
Bottlenose dolphin	5,806 (oceanic); 51,192 (cont. shelf).	X		Na	0.02347	na	0.117349

[1] Those species known to occur in the ARA and GOMRA with unknown volumetric densities have been omitted from this table. Those omitted include: For the ARA—North Atlantic right whale, blue whale, sei whale, minke whale, humpback whale, melon-headed whale, killer whale, pygmy killer whale, long-finned pilot whale, Fraser's dolphin, spinner dolphin, Clymene dolphin, harbor porpoise, gray seal, and harbor seal; for the GOMRA—killer whale, Fraser's dolphin, humpback whale and minke whale. This does not mean they were all omitted for take as proxy species provided in this table were used to estimate take, where applicable.

[2] Continental shelf area means 0–200 m bottom depth.

[3] Offshore area means 200 m bottom depth.

[4] Abundances for cetacean stocks in western North Atlantic U.S. waters are the combined estimates from surveys conducted by the NEFSC from central Virginia to the lower Bay of Fundy and surveys conducted by the SEFSC from central Virginia to central Florida. The SEFSC primary area of research is south of central Virginia. Therefore, acoustic take estimates are based on abundance estimates from central Virginia to central Florida and are reported in the stock assessment report for each stock. However, these acoustic takes are compared to the abundance for the entire stock.

[5] Density estimates are based on the estimates of dwarf and pygmy sperm whale SAR abundances and the combined abundance estimates of all beaked whales (Mesoplodon spp. + Cuvier's beaked whale). These groups are cryptic and difficult to routinely identify to species in the field.

[6] Data from acoustic moorings in the Gulf of Mexico suggest that both beaked whales and dwarf/pygmy sperm whales are much more abundant than visual surveys suggest. Therefore, acoustic take estimates for these groups were based on abundance estimates extrapolated from acoustic mooring data (DWH–NRDAT 2016).

[7] The most reasonable estimate Atlantic spotted dolphin abundance is in the Gulf of Mexico is based on ship surveys of continental shelf waters conducted from 2000–2001. In the Gulf of Mexico, the continental shelf is the Atlantic spotted dolphin's primary habitat. Ship surveys have not been conducted in shelf waters since 2001.

[8] Three previous abundance estimates for the Clymene dolphin in the Gulf of Mexico were based on surveys conducted over several years, and estimates ranged from 5,000 to over 17,000 dolphins. The current estimate is based on one survey in 2009 from the 200 m isobaths to the EEZ and is probably negatively biased.

[9] Estimates for the CRA are based on proxy values taken from the GOMRA where available and appropriate. Species omitted due to lack of data were humpback whale, minke whale, Bryde's whale, and Atlantic spotted dolphin.

Using area of ensonification and volumetric density to estimate exposures—Estimates of potential incidents of Level B harassment (*i.e.,* potential exposure to levels of sound at or exceeding the 160 dB rms threshold) are then calculated by using (1) the combined results from output characteristics of each source and identification of the predominant sources in terms of acoustic output; (2) their relative annual usage patterns for

each operational area; (3) a source-specific determination made of the area of water associated with received sounds at either the extent of a depth boundary or the 160 dB rms received sound level; and (4) determination of a volumetric density of marine mammal species in each area. Estimates of Level B harassment by acoustic sources are the product of the volume of water ensonified at 160 dB rms or higher for the predominant sound source for each portion of the total line-kilometers for which it is used and the volumetric density of animals for each species. However, in order to estimate the additional volume of ensonified water in the deep stratum, the SEFSC first subtracted the cross-sectional ensonified area of the shallow stratum (which is already accounted for) from that of the deep stratum. Source- and stratum-specific exposure estimates are the product of these ensonified volumes and the species-specific volumetric densities (Table 11). The general take estimate equation for each source in each depth statrum is density * (ensonified volume * linear kms). If there are multiple sources of take in both depth stata, individual take estimates were summed. To illustrate, we use the ME70 and the pantropical spotted dolphin, which are found only in the 0–200 m depth stratum, as an example:

(1) ME70 ensonified volume (0–200 m) = 0.0201 km^2.

(2) Total Linear kms = 1794 km (no pantropical spotted dolphins are found on the shelf so those trackline distances are not included here).

(3) Pantropical spotted dolphin density (0–200 m) = 0.47062 dolphins/km^3.

(4) Estimated exposures to sound ≥ 160 dB rms = 0.47062 pantropical spotted dolphin/km^3 * (0.0201 km^2 * 1794 km) = 16.9 (rounded up) = 17 estimated pantropical spotted dolphin exposures to SPLs ≥ 160 dB rms resulting from use of the ME70.

TABLE 11—ESTIMATED SOURCE-, STRATUM-, AND SPECIES-SPECIFIC ANNUAL ESTIMATES OF LEVEL B HARASSMENT

Species [1]	Estimated level B harassment (#s of animals) in 0–200 m dive depth stratum			Estimated level B harassment in >200 m dive depth stratum		Total calculated take
	EK60	ME70	EQ50	EK60	EQ50	
Atlantic Continental Shelf						
Bottlenose dolphin	67.00	21.43	21.43	0.00	0.00	110
Atlantic Offshore						
Fin whale	0.02	0.00	0.00	0.00	0.00	1
Sperm whale	0.18	0.02	0.01	1.75	0.00	2
Pygmy/dwarf sperm whales	0.52	0.06	0.02	5.03	0.00	6
False killer whale	0.29	0.03	0.01	0.00	0.00	1
Beaked whales	0.83	0.09	0.03	7.95	0.00	9
Risso's dolphin	2.00	0.21	0.08	0.00	0.00	3
Short-finned pilot whale	4.43	0.48	0.17	42.65	0.00	48
Short-beaked common dolphin	1.96	0.21	0.07	0.00	0.00	3
Atlantic spotted dolphin	11.71	1.26	0.45	0.00	0.00	14
Pantropical spotted dolphin	2.18	0.23	0.08	0.00	0.00	3
Striped dolphin	5.18	0.56	0.20	0.00	0.00	6
Rough-toothed dolphin	0.18	0.02	0.01	0.00	0.00	1
Bottlenose dolphin	33.18	3.57	1.27	0.00	0.00	39
Gulf of Mexico Continental Shelf						
Atlantic spotted dolphin	161.80	12.95	22.75	0.00	0.00	198
Bottlenose dolphin	269.16	21.55	37.84	0.00	0.88	329
Gulf of Mexico Offshore						
Bryde's whale	0.23	0.02	0.01	0.00	0.00	1
Sperm whale	1.58	00.15	0.06	15.04	0.06	17
Pygmy/dwarf sperm whales	0.38	0.04	0.01	3.66	0.01	5
Pygmy killer whale	0.79	0.07	0.03	0.00	0.00	1
False killer whale	1.63	0.15	0.06	0.00	0.00	2
Beaked whales	0.31	0.03	0.01	2.93	0.01	4
Melon-headed whale	11.55	1.09	0.41	0.00	0.00	13
Risso's dolphin	15.78	1.49	0.55	0.00	0.00	18
Short-finned pilot whale	4.99	0.47	0.18	0.00	0.00	4
Pantropical spotted dolphin	179.45	16.97	6.31	0.00	0.00	203
Striped dolphin	14.02	1.33	0.49	0.00	0.00	16
Rough-toothed dolphin	3.23	0.30	0.11	0.00	0.00	4
Clymene dolphin	0.67	0.06	0.02	0.00	0.00	1
Spinner dolphin	59.13	5.59	2.08	0.00	0.00	67
Bottlenose dolphin	44.75	4.23	1.57	0.00	0.00	51
Caribbean Offshore						
Sperm whale	0.18	0.01	0.00	1.66	0.00	2
Pygmy/dwarf sperm whales	0.38	0.04	0.01	3.66	0.01	5
Pygmy killer whale	0.09	0.00	0.00	0.00	0.00	1
False killer whale	0.19	0.00	0.00	0.00	0.00	1

TABLE 11—ESTIMATED SOURCE-, STRATUM-, AND SPECIES-SPECIFIC ANNUAL ESTIMATES OF LEVEL B HARASSMENT—Continued

Species [1]	Estimated level B harassment (#s of animals) in 0–200 m dive depth stratum			Estimated level B harassment in >200 m dive depth stratum		Total calculated take
	EK60	ME70	EQ50	EK60	EQ50	
Beaked whales	0.31	0.03	0.01	2.93	0.01	4
Melon-headed whale	1.34	0.03	0.01	0.00	0.00	2
Risso's dolphin	1.83	0.04	0.02	0.00	0.00	2
Short-finned pilot whale	0.58	0.01	0.01	0.00	0.00	1
Pantropical spotted dolphin	20.80	0.50	0.23	0.00	0.00	22
Striped dolphin	1.63	0.04	0.02	0.00	0.00	2
Rough-toothed dolphin	1.47	0.04	0.02	0.00	0.00	1
Clymene dolphin	0.08	0.05	0.02	0.00	0.00	1
Spinner dolphin	6.85	0.16	0.07	0.00	0.00	8
Bottlenose dolphin	5.19	0.12	0.06	0.00	0.00	6

[1] Those species known to occur in the ARA and GOMRA with unknown volumetric densities have been omitted from this table. Those omitted include: For the ARA—North Atlantic right whale, blue whale, sei whale, minke whale, humpback whale, melon-headed whale, killer whale, pygmy killer whale, long-finned pilot whale, Fraser's dolphin, spinner dolphin, Clymene dolphin, harbor porpoise, gray seal, and harbor seal; for the GOMRA—killer whale, Fraser's dolphin, humpback whale and minke whale. This does not mean they were all omitted for take as proxy species provided in this table were used to estimate take, where applicable.

In some cases, the calculated Level B take estimates resulted in low numbers of animals which are known to be gregarious or travel in group sizes larger than the calculated take estimate. In those cases, we have adjusted the requested take to reflect those groups sizes (see take column in Table 12).

TABLE 12—CALCULATED AND AUTHORIZED LEVEL B TAKE ESTIMATES

Common name	MMPA stock	Calculated take	Avg. group size [1]	Authorized take
Fin whale	Western North Atlantic	1	2	4
Blue whale	Western North Atlantic	N/A [2]	2	4
N. Atlantic right whale	Western North Atlantic	N/A [2]	2	4
Sei whale	Western North Atlantic	N/A [1]	2	4
Bryde's whale	Northern Gulf of Mexico	1	2	4
Humpback whale	Gulf of Maine		2	4
Sperm whale	North Atlantic	2	2.1	4
	Northern Gulf of Mexico	17	2.6	17
	Puerto Rico and US Virgin Islands	4	unk	4
Pygmy/dwarf sperm whale [1]	Western North Atlantic	6	1.9	10
	Northern Gulf of Mexico	5	2	6
	Northern Gulf of Mexico (CRA)	5	2	6
Beaked whale [2]	Western North Atlantic	9	2.3	9
	Northern Gulf of Mexico (GOMRA)	4	2	4
	Northern Gulf of Mexico (CRA)	4	2	4
Melon-headed whales	Northern Gulf of Mexico	13	99.6	100
Risso's dolphin	Western North Atlantic	3	15.4	15
	Northern Gulf of Mexico	18	10.2	18
	Puerto Rico and U.S. Virgin Island	2	10.2	10
Short-finned pilot whales	Western North Atlantic	48	16.6	48
	Northern Gulf of Mexico	6	24.9	25
	Puerto Rico and U.S. Virgin Islands	1	unk	20
Common dolphin	Western North Atlantic	3	267.2	267
Atlantic spotted dolphin	Western North Atlantic	14	37	37
	Northern Gulf of Mexico	198	22	198
	Puerto Rico and U.S. Virgin Islands	unk	unk	50
Pantropical spotted dolphin	Western North Atlantic	4	77.5	78
	Northern Gulf of Mexico	203	71.3	203
Striped dolphin	Western North Atlantic	6	74.6	75
	Northern Gulf of Mexico	16	46.1	46
Bottlenose dolphin	Western North Atlantic (offshore)	39	11.8	39
	Western North Atlantic (coastal/continental shelf)	110	10	110
	Northern Gulf of Mexico (coastal)	N/A [3]	10	350 [3]
	Northern Gulf of Mexico (continental shelf)	329	10	350
	Northern Gulf of Mexico (oceanic)	51	20.6	100
	Puerto Rico and U.S. Virgin Islands	6	unk	50
Rough-toothed dolphin	Western North Atlantic	1	8	10
	Northern Gulf of Mexico	4	14.1	20
Clymene dolphin	Western North Atlantic	20	110	110
	Northern Gulf of Mexico	1	89.5	100
Spinner dolphin	Western North Atlantic	unk	unk	100
	Northern Gulf of Mexico	16	151.5	200

TABLE 12—CALCULATED AND AUTHORIZED LEVEL B TAKE ESTIMATES—Continued

Common name	MMPA stock	Calculated take	Avg. group size [1]	Authorized take
	Puerto Rico and U.S. Virgin Islands	n/a	unk	50
Pygmy killer whale	Northern Gulf of Mexico	1	18.5	20
False killer whale	Western North Atlantic	1	unk	20
	Northern Gulf of Mexico	n/a	27.6	28
Harbor porpoise	Gulf of Maine/Bay of Fundy	n/a	8 [4]	16

[1] Groups sizes based on Fulling *et. al.,* 2003; Garrison *et al.,* 2011; Mullin *et al.,* 2003; and Mullin *et al.,* 2004.
[2] Take estimates are based on take calculations using fin whales as a proxy.
[3] We note the SEFSC's application did not request take, by Level B harassment, of bottlenose dolphins belonging to coastal stocks. However, because surveys occur using scientific sonar in waters where coastal dolphins may occur, we are proposing to issue the same amount of Level B take as requested for the continental shelf stock.
[4] The American Cetacean Society reports average group size of harbor porpoise range from 6 to 10 individuals. We propose an average group size of 8 for the ARA which is likely conservative given the low density of animals off North Carolina. Given the short and confined spatio-temporal scale of SEFSC surveys in North Carolina during winter months, we assume two groups per year could be encountered.

Mitigation

In order to issue an incidental take authorization under Section 101(a)(5)(A or D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, ''and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking'' for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), and the likelihood of effective implementation (probability implemented as planned); and

(2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

SEFSC Mitigation for Marine Mammals and Their Habitat

The SEFSC has invested significant time and effort in identifying technologies, practices, and equipment to minimize the impact of the proposed activities on marine mammal species and stocks and their habitat. The mitigation measures discussed here have been determined to be both effective and practicable and, in some cases, have already been implemented by the SEFSC. In addition, the SEFSC is actively conducting research to determine if gear modifications are effective at reducing take from certain types of gear. Any potentially effective and practicable gear modification mitigation measures will be discussed as research results are available as part of the adaptive management strategy included in this rule. As for other parts of this rule, all references to the SEFSC, unless otherwise noted, include requirements for all partner institutions identified in the SEFSC's application.

Coordination and communication—When SEFSC survey effort is conducted aboard NOAA-owned vessels, there are both vessel officers and crew and a scientific party. Vessel officers and crew are not composed of SEFSC staff, but are employees of NOAA's Office of Marine and Aviation Operations (OMAO), which is responsible for the management and operation of NOAA fleet ships and aircraft and is composed of uniformed officers of the NOAA Commissioned Corps as well as civilians. The ship's officers and crew provide mission support and assistance to embarked scientists, and the vessel's Commanding Officer (CO) has ultimate responsibility for vessel and passenger safety and, therefore, decision authority. When SEFSC-funded surveys are conducted aboard cooperative platforms (*i.e.,* non-NOAA vessels), ultimate responsibility and decision authority again rests with non-SEFSC personnel (*i.e.,* vessel's master or captain). Decision authority includes the implementation of mitigation measures (*e.g.,* whether to stop deployment of trawl gear upon observation of marine mammals). The scientific party involved in any SEFSC survey effort is composed, in part or whole, of SEFSC staff and is led by a Chief Scientist (CS). Therefore, because the SEFSC—not OMAO or any other entity that may have authority over survey platforms used by the SEFSC—is the applicant to whom any incidental take authorization issued under the authority of these regulations would be issued, we require that the SEFSC take all necessary measures to coordinate and communicate in advance of each specific survey with OMAO, and other relevant parties, to ensure that all mitigation measures and monitoring requirements described herein, as well as the specific manner of implementation and relevant event-contingent decision-making processes, are clearly understood and agreed-upon. This may involve description of all required measures when submitting cruise instructions to OMAO or when completing contracts with external entities. The SEFSC will coordinate and conduct briefings at the outset of each survey and, as necessary, between ship's crew (CO/master or designee(s), as appropriate) and scientific party in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures. SEFSC will also coordinate as necessary on a daily basis during survey cruises with OMAO personnel or other relevant personnel on non-NOAA platforms to ensure that requirements, procedures, and decision-making processes are understood and

properly implemented. The CS will be responsible for coordination with the Officer on Deck (OOD; or equivalent on non-NOAA platforms) to ensure that requirements, procedures, and decision-making processes are understood and properly implemented.

For fisheries research being conducted by partner entities, it remains the SEFSC's responsibility to ensure those partners are communicating and coordinating with the SEFSC, receiving all necessary marine mammal mitigation and monitoring training, and implementing all required mitigation and monitoring in a manner compliant with the rule and LOA. The SEFSC will incorporate specific language into its contracts that specifies training requirements, operating procedures, and reporting requirements for protected species that will be required for all surveys conducted by research partners, including those conducted on chartered vessels. To facilitate this requirement, SEFSC would be required to hold at least one training per year with at least one representative from each partner institution (preferably CSs of the fishery independent surveys discussed in this rule) to review the mitigation, monitoring and reporting requirements. The SEFSC would also provide consistent, timely support throughout the year to address any questions or concerns researchers may have regarding these measures.

SEFSC would also be required to establish and maintain cooperating partner working group(s) to identify circumstances of a take should it occur and any action necessary to avoid future take. Each working group shall consist of at least one SEFSC representative knowledgeable of the mitigation, monitoring and reporting requirements contained within these regulations, one or more research institution or SEFSC representative(s) (preferably researcher(s) aboard vessel when take or risk of take occurred), one or more staff from NMFS Southeast Regional OPRDivision, and one or more staff from NMFS OPR. At the onset of these regulations, SEFSC shall maintain the recently established SCDNR working group to identify actions necessary to reduce the amount of take from SCDNR trawling. If a partner takes more than one marine mammal within 5-years, other working groups shall be established to identify circumstances of marine mammal take and necessary action to avoid future take. Each working group shall meet at least once annually. The SEFSC will maintain a centralized repository for all working group findings to facilitate sharing and coordination.

While at sea, best professional judgement is used to determine if a marine mammal is at risk of entanglement/hooking and, if so, what type of actions should be taken to decrease risk of interaction. To improve judgement consistency across the region, the SEFSC will initiate a process for SEFSC and partner institution FPCs, SWLs, scientists, and vessel captains and crew to communicate with each other about their experiences with protected species interactions during research work, with the goal of improving decision-making regarding avoidance of adverse interactions. The SEFSC will host at least one training annually (may be combined with other training requirements) to inform decision-makers of various circumstances that may arise during surveys, necessary action, and follow-up coordination and reporting of instances of take or possible take. The intent of this new training program would be to draw on the collective experience of people who have been making those decisions, provide a forum for the exchange of information about what went right and what went wrong, and try to determine if there are any rules-of-thumb or key factors to consider that would help in future decisions regarding avoidance practices. The SEFSC would coordinate, not only among its staff and vessel captains and crew, but also with those from other fisheries science centers, research partners, the Southeast Regional Office, and other institutions with similar experience.

The SEFSC will coordinate with the local Southeast Regional Stranding Coordinator and the NMFS Stranding Coordinator for any unusual protected species behavior and any stranding, beached live/dead, or floating protected species that are encountered during field research activities. If a large whale is alive and entangled in fishing gear, the vessel will immediately call the U.S. Coast Guard at VHF Ch. 16 and/or the appropriate Marine Mammal Health and Stranding Response Network for instructions. All entanglements (live or dead) and vessel strikes must be reported immediately to the NOAA Fisheries Marine Mammal Stranding Hotline at 1–877–433–8299.

General Fishing Gear Measures

The following measures describe mitigation application to all SEFSC surveys while measures specific to gear types follow. SEFSC will take all necessary measures to avoid marine mammal interaction with fishing gear used during fishery research surveys. This includes implementing the move-on rule (when applicable), meaning delaying setting gear when marine mammals are observed at or approaching the sampling site, and are deemed to be at-risk of becoming entangled or hooked on any type of fishing gear, and immediately pulling gear from the water when marine mammals are deemed to be at-risk of becoming entangled or hooked on any type of fishing gear. SEFSC will, at all times, monitor for any unusual circumstances that may arise at a sampling site and use best professional judgment to avoid any potential risks to marine mammals during use of all research equipment.

In some cases, marine mammals may be attracted to the vessel during fishing. To avoid increased risk of interaction, the SEFSC will conduct fishery research sampling as soon as practicable upon arriving at a sampling station and prior to conducting environmental sampling. If fishing operations have been suspended because of the presence of marine mammals, SEFSC may resume fishing operations when interaction with marine mammals is deemed unlikely. SEFSC may use best professional judgment in making this determination. SEFSC shall coordinate with all research partners, at least once annually, to ensure mitigation, monitoring and reporting requirements, procedures and decision-making processes contained within the regulations and LOA are understood. All vessels must comply with applicable and relevant take reduction plans, including any required soak time limits and gear length restrictions.

Trawl Mitigation Measures

The SEFSC and research partners use a variety of bottom trawl gears for different research purposes. These trawl types include various shrimp trawls (otter, western jib, mongoose, Falcon), high-opening bottom trawls, and flat net bottom trawls (see Table 1–1 and Appendix A in the DPEA). The SEFSC and its research partners also use modified beam trawls and benthic trawls pulled by hand that are not considered to pose a risk to protected species due to their small size and very short tow durations. Therefore, these smaller, hand pulled trawls are not subject to the mitigation measures provided here.

The following mitigation measures apply for trawl surveys:

- Limit tow times to 30 minutes (except for sea turtle research trawls);
- open codend close to deck/sorting table during haul back to avoid damage to animals that may be caught in gear

and empty gear as quickly as possible after retrieval haul back;

- delay gear deployment if marine mammals are believed to be at-risk of interaction;
- retrieve gear immediately if marine mammals is believed to be entangled or at-risk of entanglement;
- implement marine mammal mitigation measures included in the NMFS ESA Scientific Research permit under which a survey may be operating;
- dedicated marine mammal observations shall occur at least 15 minutes to beginning of net deployment; this watch may include approach to the sampling station;
- at least one scientist will monitor for marine mammals while the trawl is deployed and upon haul-back;
- minimize ''pocketing'' in areas of the net where dolphin depredation evidence is commonly observed;
- continue investigation into gear modifications (*e.g.,* stiffening lazy lines) and the effectiveness of gear modification; and
- reduce vessel speed and/or implement appropriate course alteration.

In 2008, standard tow durations for fishery bottom trawl surveys were reduced from 55 minutes to 30 minutes or less at target depth (excluding deployment and retrieval time). These short tow durations decrease the opportunity for curious marine mammals to find the vessel and investigate. Tow times are less than the 55 minute tow time restriction required for commercial shrimp trawlers not using turtle excluder devices (TEDs) (50 CFR 223.206). The resulting tow distances are typically one to two nm or less, depending on the survey and trawl speed. Short tow times reduce the likelihood of entangling protected species.

The move-on rule will be applied to all oceanic deep water trawls if sightings occur anywhere around vessel (within 2 nm) during a 30 minute pre-gear deployment monitoring timeframe. Vessels will move away if animals appear at risk or trawling will be delayed until marine mammals have not been sighted for 30 minutes or otherwise determined to no longer be at risk. If animals are still at risk after moving or 30 minutes have lapsed, the vessel will move again or the station will be skipped.

Bottom trawl surveys conducted for purposes of researching gears designed to reduce sea turtle interaction (*e.g.,* turtle exclusion device (TED) testing) and develop finfish bycatch mitigation measures for commercial trawl fisheries may have tow times of up to 4 hours. These exceptions to the short tow duration protocols are necessary to meet research objectives. TEDs are used in nets that are towed in excess of 55 minutes as required by 50 CFR 223.206. When research objectives prevent the installation of TEDs, tow time limits will match those set by commercial fishing regulations such as the skimmer trawl fishery which has a 55 minute tow time limit. This research is covered under the authority of the ESA and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR parts 222–226). The SEFSC began using skimmer trawls in their TED testing in 2012. Mitigation measures in Scientific Research permit 20339, issued May 23, 2017, include:

- Trawling must not be initiated when marine mammals (except dolphins or porpoises) are observed within the vicinity of the research, and the marine mammals must be allowed to either leave or pass through the area safely before trawling is initiated;
- Researchers must make every effort to prevent interactions with marine mammals, and researchers must be aware of the presence and location of these animals at all times as they conduct trawling activities;
- During skimmer trawl surveys, a minimum of two staff, one on each side (port/starboard) of the vessel, must inspect the gear every 5 minutes to monitor for the presence of marine mammals;
- Prior to retrieving the skimmer trawl tail bags, the vessel must be slowed from the active towing speed to 0.5–1.0 kn;
- If a marine mammal enters the net, becomes entangled or dies, researchers must (a) Stop trawling activities and immediately free the animal, (b) notify the appropriate NMFS Regional Stranding Coordinator as soon as possible and (c) report the incident (permitted activities will be suspended until the Permits Division has granted approval to continue research); and
- Video monitoring of the TED must be used when trawling around Duck, North Carolina, to reduce take of Atlantic sturgeon (although this requirement is not geared toward marine mammals, the camera feed can be used to observe marine mammals to inform decisions regarding implementing mitigation).

The SEFSC also holds an ESA-research permit to assess sea turtle abundance, stock identification, life history, and impacts of human activities; determine sea turtle movements, fine-scale habitat characteristics and selection, and delineation of foraging and nursery areas; and examine how sea turtle distributions correlate with temporal trends and environmental data (Scientific Research Permit 16733–04). That research permit includes a number of marine mammal conditions that must be followed and are incorporated into this rule by reference:

- Trawl tow times must not exceed 30 minutes (bottom time) except in cases when the net is continuously monitored with a real-time video camera or multi-beam sonar system;
- Haul back must begin once a sea turtle or marine mammal enters the net regardless of time limits;
- Seine net pulls must not exceed 45 minutes as part of a 2-hour deployment;
- Nets must not be put in the water and trawls must not be initiated when marine mammals are observed within the vicinity of the research;
- Marine mammals must be allowed to either leave or pass through the area safely before net setting or trawling is initiated;
- Researchers must make every effort to prevent interactions with marine mammals;
- Researchers must be aware of the presence and location of these animals at all times as they conduct activities;
- During skimmer trawl surveys, a minimum of two staff, one on each side (port/starboard) of the vessel, must inspect the gear every five minutes to monitor for the presence of marine mammals;
- Prior to retrieving the skimmer trawl tail bags, the vessel must be slowed from the active towing speed to 0.5–1.0 kn;
- Should marine mammals enter the research area after the seine or tangle nets have been set, the lead line must be raised and dropped in an attempt to make marine mammals in the vicinity aware of the net;
- If marine mammals remain within the vicinity of the research area, tangle or seine nets must be removed; and
- If a marine mammal enters the trawl net, becomes entangled or captured, researchers must stop activities and immediately free the animal, notify the NMFS Southeast Regional Stranding Coordinator as soon as possible, report the incident within 2 weeks and, in addition to the written report, the Permit Holder must contact the Permits Division.

Other mitigation measures are included in research permit 16733–04 that are designed for sea turtles but also have benefits to minimizing entanglement of marine mammals. These include:

• Highly visible buoys must be attached to the float line of each net and be spaced at intervals of 10 mor less. Nets must be checked at intervals of less than 30 minutes, and more frequently whenever turtles or other organisms are observed in the net. If water temperatures are ≤ 10oC or ≥ 30oC, nets must be checked at less than 20-minute intervals (''net checking'' is defined as a complete and thorough visual check of the net either by snorkeling the net in clear water or by pulling up on the top line such that the full depth of the net is viewed along the entire length). The float line of all nets must be observed at all times for movements that indicate an animal has encountered the net (when this occurs the net must be immediately checked). During diver-assisted gear evaluations (SEFSC Small Turtle TED Testing and Gear Evaluations), dive teams are deployed on the trawls while they are being towed. During this research, divers actively monitor the gear for protected species interactions and use emergency signal floats to notify the vessel if an interaction occurs. When the signal float is deployed, the vessel terminates the tow and slows the gear down to a minimal forward speed of less than 0.5 knots which allows divers to assist the protected species to escape.

Live feed video or sonar monitoring of the trawl may be used in lieu of tow time limits. This mitigation measure is also used in addition to TEDs during some projects. Video or sonar feeds are monitored for the duration of the tow. If a TED is not installed in the trawl and a protected species is observed in the trawl then the tow is immediately terminated. If a TED is installed and a marine mammal is observed to have difficulty escaping through the TED opening, or the individual is lost from the video or sonar feed then the tow is immediately terminated. For all trawl types, the lazy line is a source of entanglement. In particular, dolphins like to rub the line. Loose lines are prone to create a half-hitch around their tail. Therefore, to mitigate this type of interaction, the SEFSC Harvesting Systems Unit (HSU) has conducted limited research examining the potential use of lazy lines constructed of alternative materials designed to reduce marine mammal entanglement with respect to material, thickness, and stiffness. Polyester rope, also known as Dacron, may be a suitable alternative to traditionally used polypropylene. Polyester rope is UV and abrasion resistant and has less elasticity than nylon but does not lose strength when wet. Polyester, like polypropylene, does not absorb water but has a higher specific gravity (1.38), which causes it to sink. Polyester can be constructed using a process that results in a medium or hard lay rope that is stiff, avoids hockling (a twist in the line which gets caught in a block), and is self-coiling when loaded or unloaded off a capstan or gear hauler. The high specific gravity of this type of rope may pose a snagging or hang-up hazard when used as a lazy line in trawl operations. However, the smooth feel of the rope compared to polypropylene may reduce the attractiveness of the line to the rubbing behavior of bottlenose dolphin.

In 2007, the HSU conducted preliminary NOAA diver assisted trials with High Density Polyethylene (HDPE) rope as a replacement for traditional polypropylene. Compared to polypropylene, HDPE rope has similar properties including negligible water absorption, UV resistance, and low specific gravity, which allows it to float. However, HDPE rope may be constructed with a harder lay than traditional polypropylene rope. Divers found that half-hitching the line was more difficult than traditional polypropylene line. However, operational trials were not conducted to examine performance and usability aboard the vessel during extended fishing operations.

Another alternative may be replacement of the lazy line with ⅜ in. stainless steel cable or replacement of the aft portion of the lazy line with ⅜ in. stainless steel cable. Replacement of the entire lazy line with cable would require block replacement and the use of dedicated winches for hauling the gear. Replacing the aft portion of the lazy line, where bottlenose dolphins typically interact with the line, would not require any changes as long as the rope to cable connection is able to smoothly pass through existing blocks. However, each of these changes would result in sinking and potential snagging or hang-up hazards. These modifications are also not without consequences. Lazy line modifications may require vessel equipment changes (*e.g.,* blocks on research vessels) or may change the effectiveness of the catch, precluding the comparison of new data with long-term data sets. In 2017, the HSU conducted a follow-up study, funded by NMFS Office of Science and Technology, to further investigate gear modification and the potential effectiveness at reducing dolphin entanglement.

The following summarizes HSU's 2017 research efforts on shrimp trawl gear modification which was carried out to inform the development of this rule (the full report can be found at *https://www.fisheries.noaa.gov/node/23111*). Gearhart and Hathaway (2018) provide the following summary of research methods and findings: From June 9–22, 2017, HSU conducted gear evaluations in Panama City, Florida, with various lazy lines and configurations. In addition to traditional polypropylene, three types of 3 strand rope were examined; Samson Ultra-Blue Medium Hard Lay (MHL); Samson SSR 100 MHL; and Samson XLR. Vertical and horizontal profiles of each rope type were measured with and without a ''sugar line'' attached in a twin-rigged trawl configuration. In addition, dolphin interactions were simulated by NMFS divers with an aluminum dolphin fluke model. Results indicate that the vertical profiles were reduced and horizontal profiles increased for all rope types when a 25 ft (7.6 m) ''sugar line'' was added. Due to differences in elasticity when compared to polypropylene, the alternative rope types experienced greater tension with vertical profiles flattening, while the polypropylene rope maintained vertical relief. Results of simulated dolphin interactions were inconclusive with divers able to introduce half-hitch loops around the model fluke with both polypropylene and the stiffest alternative rope, Samson SSR 100 MHL. However, divers commented that it was more difficult to introduce the loop in the stiffer Samson SSR 100 MHL than the polypropylene line and more difficult to introduce the loop along the outer portion of the lazy line with the sugar line attached, due to the increased tension on the line. Use of an alternative stiffer line with low stretch in combination with a short sugar line may reduce the potential for bottlenose dolphin takes on lazy lines. However, additional usability research is needed with these alternative rope types to see how they perform under commercial conditions. Finally, more directed dolphin/lazy line interaction behavior research is needed to better understand the modes of interaction and provide conservation engineers with the knowledge required to better formulate potential solutions.

Given the report's results and recommendations, NMFS is not requiring the SEFSC implement lazy line modifications at this time. However, as an adaptive management strategy, NMFS will be periodically assessing lazy line modification as a potential mitigation measure in this and future regulations. NMFS will continue to work with the SEFSC to determine if gear modifications such as stiffer lazy

lines are both warranted and practicable to implement. Should the SEFSC volunteer to modify trawl lazy lines, NMFS will work with the researchers to identify any potential benefits and costs of doing so.

In addition to interactions with the lazy line, the SEFSC has identified that holes in trawl nets resulting from dolphin depredation are most numerous around net ''pockets'' where fish congregate. Reinforcing these more vulnerable sections of the net could help reduce entanglement. Similar to lazy line modification investigations, this potential mitigation measure will be further examined to determine its effectiveness and practicability. The regulations provide that ''pocketing'' of the net should be minimized.

Finally, marine mammal monitoring will occur during all trawls. Bottlenose dolphins are consistently interacting with research trawls in the estuary and nearshore waters and are seemingly attracted to the vessel, with most dolphins converging around the net during haul-back (SCDNR Working Group, pers. comm., February 2, 2016). This makes it difficult to ''lose'' dolphins, even while moving stations. Due to the known persistent behavior of dolphins around trawls in the estuary and nearshore waters, the move-on rule will not be required for such surveys. However, the CS and/or vessel captain will be required to take immediate action to reduce dolphin interaction should animals appear to be at risk or are entangled in the net. For skimmer trawl research, both the lazy line and net can be monitored from the vessel. However, this is not possible for bottom trawls. Therefore, for bottom trawls, researchers should use best professional judgement to determine if gear deployment should be delayed or hauled. For example, the SCDNR has noted one instance upon which dolphins appeared distressed, evident by the entire group converging on the net during haul-back. They quickly discovered a dolphin was entangled in the net. This, and similar types of overt distress behaviors, should be used by researchers monitoring the net to identify potential entanglement, requiring the net be hauled-in immediately and quickly.

Pelagic trawls conducted in deep water (500–800 m deep) are typically mid-water trawls and occur in oceanic waters where marine mammal species diversity is greater when compared to the coast or estuaries. Oceanic species often travel in very large groups and are less likely to have prior encounters and experience with trawl gear than inshore bottlenose dolphins. For these trawls, a dedicated marine mammal observer would observe around the vessel for no less than 30 minutes prior to gear deployment. If a marine mammal is observed within 2 nm of the vessel, gear deployment would be delayed until that animal is deemed to not be at risk of entanglement (*e.g.,* the animal is moving on a path away from the vessel) or the vessel would move to a location absent of marine mammals and deploy gear. If trawling operations have been delayed because of the presence of protected species, the vessel resumes trawl operations (when practicable) only when these species have not been sighted within 30 minutes or are determined to no longer be at risk (*e.g.,* moving away from deployment site). If the vessel moves, the required 30-minute monitoring period begins again. In extreme circumstances, the survey station may need to be cancelled if animals (*e.g.,* delphinids) follow the vessel. In addition to implementing the ''move-on'' rule, all trawling would be conducted first to reduce the opportunity to attract marine mammals to the vessel. However, the order of gear deployment is at the discretion of the FPC or SWL based on environmental conditions. Other activities, such as water sampling or plankton tows, are conducted in conjunction with, or upon completion of, trawl activities.

Once the trawl net is in the water, the officer on watch, FPC or SWL, and/or crew standing watch continue to monitor the waters around the vessel and maintain a lookout for protected species as far away as environmental conditions allow. If protected species are sighted before the gear is fully retrieved, the most appropriate response to avoid incidental take is determined by the professional judgment of the FPC or SWL, in consultation with the officer on watch. These judgments take into consideration the species, numbers, and behavior of the animals, the status of the trawl net operation (net opening, depth, and distance from the stern), the time it would take to retrieve the net, and safety considerations for changing speed or course. Most marine mammals have been caught during haul-back operations, especially when the trawl doors have been retrieved and the net is near the surface and no longer under tension. In some situations, risk of adverse interactions may be diminished by continuing to trawl with the net at depth until the protected species have left the area before beginning haul-back operations. In other situations, swift retrieval of the net may be the best course of action. The appropriate course of action to minimize the risk of incidental take of protected species is determined by the professional judgment of the FPC or SWL based on all situation variables, even if the choices compromise the value of the data collected at the station. Care is taken when emptying the trawl, including opening the codend as close as possible to the deck of the checker (or sorting table) in order to avoid damage to protected species that may be caught in the gear but are not visible upon retrieval. The gear is emptied as quickly as possible after retrieval in order to determine whether or not protected species are present.

Seine Nets

The SEFSC will implement the following mitigation measures when fishing with seine nets (*e.g.,* gillnets, trammel nets):

- Conduct gillnet and trammel net research activities during daylight hours only;
- Limit soak times to the least amount of time required to conduct sampling;
- Conduct dedicated marine mammal observation monitoring beginning 15 minutes prior to deploying the gear and continue through deployment and haulback;
- Hand-check the net every 30 minutes if soak times are longer than 30 minutes or immediately if disturbance is observed;
- Pull gear immediately if disturbance in the nets is observed;
- Reduce net slack and excess floating and trailing lines;
- Repair damaged nets prior to deploying; and
- Delay or pull all gear immediately and implement the move-on rule if marine mammal is at-risk of entanglement.

The dedicated observation will be made by scanning the water and marsh edge (if visible when working in estuarine waters) 360 degrees around the vessel where the net would be set. If a marine mammal is sighted during this observation period, nets would not be deployed until the animal has left the area, is on a path away from where the net would be set, or has not been re-sighted within 15 minutes. Alternatively, the research team may move the vessel to an area clear of marine mammals. If the vessel moves, the 15 minute observation period is repeated. Monitoring by all available crew would continue while the net is being deployed, during the soak, and during haulback.

If marine mammals are sighted in the peripheral sampling area during active netting, the SEFSC will raise and lower the net leadline. If marine mammals do

not immediately depart the area and the animal appears to be at-risk of entanglement (*e.g,* interacting with or on a path towards the net), the SEFSC will delay or pull all gear immediately and, if required, implement the move-on rule if marine mammal is at-risk of entanglement.

If protected species are not sighted during the 15 minute observation period, the gear may be set. Waters surrounding the net and the net itself would be continuously monitored during the soak. If protected species are sighted during the soak and appear to be at risk of interaction with the gear, then the gear is pulled immediately. If fishing operations are halted, operations resume when animal(s) have not been sighted within 15 minutes or are determined to no longer be at risk, as determined by the judgment of the FPC or SWL. In other instances, the station is moved or cancelled. If any disturbance in the gear is observed in the gear, it is immediately checked or pulled.

Hook and Line Gear Mitigation

In addition to the general mitigation measures listed above, the SEFSC will implement the following mitigation measures:

- Monitor area for marine mammals and, if present, delay setting gear until the animal is deemed not at risk.
- Immediately reel in lines if marine mammals are deemed to be at risk of interacting with gear.
- Follow existing Dolphin Friendly Fishing Tips: *http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/documents/dolphin_friendly_fishing_tips.pdf.*
- Not discard leftover bait overboard while actively fishing.
- Inspect tackles daily to avoid unwanted line breaks.

When fishing with bottom or pelagic longlines, the SEFSC will: (1) Limit longline length and soak times to the minimum amount possible; (2) deploy longline gear first (after required monitoring) prior to conducting environmental sampling; (3) if any marine mammals are observed, delay deploying gear unless animal is not at risk of hooking; (4) pull gear immediately and implement the move-on rule if any marine mammal is hooked or is at risk of being hooked; (5) deploy longline gear prior to environmental sampling; and (6) avoid chumming (*i.e.,* baiting water). More detail on these measures are described below.

Prior to arrival on station (but within 0.5 nautical mile), the officer, crew members, and scientific party on watch visually scan for protected species for 30 minutes prior to station arrival for pelagic longline surveys and 15 minutes prior for other surveys. Binoculars will be used as necessary to survey the area while approaching and upon arrival at the station, while the gear is deployed, and during haulback. Additional monitoring is conducted 15 minutes prior to setting longline gear by members of the scientific crew that monitor from the back deck while baiting hooks. If protected species are sighted prior to setting the gear or at any time the gear is in the water, the bridge crew and SWL are alerted immediately. Environmental conditions (*e.g.,* lighting, sea state, precipitation, fog, etc.) often limit the distance for effective visual monitoring of protected species. If marine mammals are sighted during any monitoring period, the ''move-on'' rule, as described in the trawling mitigation section above would be implemented. If longline operations have been delayed because of the presence of protected species, the vessel resumes longline operations only when these species have not been sighted within 15 minutes or otherwise determined to no longer be at risk. The risk decision is at the discretion of the FPC or SWL and is dependent on the situation. After the required monitoring period, longline gear is always the first equipment or fishing gear to be deployed when the vessel arrives on station.

If marine mammals are detected during setting operations or while the gear is in the water and are considered to be at risk (*e.g.,* moving towards deployment site, displaying behaviors of potentially interacting with gear, etc.), the FPC or SWL in conjunction with the officer on watch may halt the setting operation or call for retrieval of gear already set. The species, number, and behavior of the protected species are considered along with the status of the ship and gear, weather and sea conditions, and crew safety factors when making decisions regarding gear deployment delay or retrieval.

There are also a number of standard measures designed to reduce hooking potential and minimize injury. In all pelagic longline sets, gangions are 110 percent as long as the drop line depth. Therefore, this gear configuration allows a potentially hooked marine mammal to reach the surface. SEFSC longline protocols specifically prohibit chumming, thereby reducing any attraction. Further, no stainless steel hooks are used, so that in the event a hook can not be retrieved from an animal, it will corrode. Per PLTRP, the SEFSC pelagic longline survey uses the Pelagic Longline Marine Mammal Handling and Release Guidelines for any pelagic longline sets made within the Atlantic EEZ. These procedures would also be implemented in the GOMRA and CRA.

Other gears—The SEFSC deploys a wide variety of gear to sample the marine environment during all of their research cruises. Many of these types of gear (*e.g.,* chevron fish trap, eel traps, dip nets, video cameras and ROV deployments) are not considered to pose any risk to marine mammals due to their size, deployment methods, or location, and therefore are not subject to mitigation. However, at all times when the SEFSC is conducting survey operations at sea, the OOD and/or CS and crew will monitor for any unusual circumstances that may arise at a sampling site and use best professional judgment to avoid any potential risks to marine mammals during all vessel operation and use of research equipment.

Electrofishing—Electrofishing occurs on small vessels and operates with a 3,000 watt pulsed direct current for 15 minutes. The electric field is less than 20 feet (6 m) around the electrofishing vessel. Before the electrofishing vessel begins operating, a dedicated marine mammal observer would scan the surrounding waters for at least 15 minutes prior to fishing. If a marine mammal is observed within 50 m of the vessel or on a path toward the vessel, electrofishing would be delayed. Fishing would not begin until the animal is outside of the 50 m safety zone or on a consistent path away from the vessel. Alternatively, if animals do not leave the area, the vessel could move to another sampling station. If the vessel moves, the 15 minutes observation period is repeated. During electrofishing, the research crew would also monitor for marine mammals. If animals are observed within or on a path toward the 50 m safety zone, electrofishing would be terminated and not resume until the animal is clear of and on a path away from the 50 m safety zone. All samples collected during electrofishing are to remain on the vessel and not discarded until all electrofishing is completed to avoid attracting protected species.

Vessel speed—Vessel speed during active sampling is less than 5 kn (average 2–3 kn). Transit speeds to and from sampling sites vary from 6–14 kn but average 10 kn. These low vessel speeds minimize the potential for ship strike (see Potential Effects of Specified Activities on Marine Mammals and Their Habitat for an in-depth discussion of ship strikes). At any time during a survey or in transit, if a crew member standing watch or dedicated marine mammal observer sights marine

mammals that may intersect with the vessel course, that individual will immediately communicate the presence of marine mammals to the bridge for appropriate course alteration or speed reduction, if possible, to avoid incidental collisions.

While transiting in areas subject to the North Atlantic ship strike rule, all SEFSC- affiliated research vessels (NOAA vessels, NOAA chartered vessels, and research partner vessels) will abide by the required speed restrictions and sighting alert protocols. The ship strike rule for the southeast U.S. seasonal management area (SMA) requires that, from November 15 through April 15, all vessels 65 feet (20 m) or longer must slow to 10 kn or less in the right whale calving and nursery grounds which are bounded to the north by latitude 31°27′ N, to the south by 29°45′ N, and to the east by 80°51′36″ W. Mid-Atlantic SMAs include several port or bay entrances from northern Georgia to Rhode Island between November 1 and April 30. In addition, dynamic management areas (DMAs) are temporary areas created around right whale sightings, the size of which depends on the number of whales sighted. Voluntary speed reductions may apply when no SMA is in effect. All NOAA research vessels operating in North Atlantic right whale habitat participate in the Right Whale Early Warning System.

SEFSC research vessel captains and crew watch for marine mammals while underway during daylight hours and take necessary actions to avoid them. There are currently no Marine Mammal Observers (MMOs) aboard the vessels dedicated to watching for marine mammals to minimize the risk of collisions, although the large NOAA vessels (*e.g.,* NOAA Ship *Pisces*) operated by the NOAA Office of Marine and Aviation Operations (OMAO) include one bridge crew dedicated to watching for obstacles at all times, including marine mammals. At any time during a survey or in transit, any bridge personnel that sights marine mammals that may intersect with the vessel course immediately communicates their presence to the helm for appropriate course alteration or speed reduction as soon as possible to avoid incidental collisions, particularly with large whales (*e.g.,* North Atlantic right whales).

The Right Whale Early Warning System is a multi-agency effort that includes the SEFSC, the Florida Fish and Wildlife Conservation Commission (FWCC), U.S. Coast Guard, U.S. Navy, and volunteer observers. Sightings of the critically endangered North Atlantic right whale are reported from aerial surveys, shipboard surveys, whale watch vessels, and opportunistic sources (U.S. Coast Guard, commercial ships, fishing vessels, and the general public). Whale sightings are reported in real time to the Right Whale Early Warning System network and information is disseminated to mariners within a half hour of a sighting. The program was designed to reduce collisions between ships and North Atlantic right whales by alerting mariners to the presence of the whales in near real time. Under the rule, all NOAA-affiliated vessels operating in North Atlantic right whale habitat will be required to participate in the Right Whale Early Warning System.

Acoustic and Visual Deterrent Devices—Acoustic and visual deterrents include, but are not limited; to pingers, recordings of predator vocalizations, light sticks, and reflective twine/rope. Pingers are underwater sound-emitting devices attached to gear that have been shown to decrease the probability of interactions with certain species of marine mammals. Pingers have been shown to be effective in deterring some marine mammals, particularly harbor porpoises, from interacting with gillnet gear (Nowacek *et al.* 2007, Carretta and Barlow 2011). Multiple studies have reported large decreases in harbor porpoise mortality (approximately 80 to 90 percent) in bottom-set gillnets (nets composed of vertical panes of netting, typically set in a straight line and either anchored to the bottom or drifting) during controlled experiments (*e.g.,* Kraus *et al.,* 1997; Trippel *et al.,* 1999; Gearin *et al.,* 2000). Using commercial fisheries data rather than a controlled experiment, Palka *et al.* (2008) reported that harbor porpoise bycatch rates in the northeast U.S gillnet fishery when fishing without pingers was about two to three times higher compared to when pingers were used. After conducting a controlled experiment in a California drift gillnet fishery during 1996–97, Barlow and Cameron (2003) reported significantly lower bycatch rates when pingers were used for all cetacean species combined, all pinniped species combined, and specifically for short-beaked common dolphins (85 percent reduction) and California sea lions (69 percent reduction). While not a statistically significant result, catches of Pacific white-sided dolphins (which are historically one of the most frequently captured species in SEFSC surveys; see Table 4) were reduced by 70 percent. Carretta *et al.* (2008) subsequently examined 9 years of observer data from the same drift gillnet fishery and found that pinger use had eliminated beaked whale bycatch. Carretta and Barlow (2011) assessed the long-term effectiveness of pingers in reducing marine mammal bycatch in the California drift gillnet fishery by evaluating fishery data from 1990–2009 (with pingers in use beginning in 1996), finding that bycatch rates of cetaceans were reduced nearly fifty percent in sets using a sufficient number of pingers. However, in a behavioral response study investigating bottlenose dolphin behavior around gillnets outfitted with acoustic alarms in North Carolina, there was no significant difference in number of dolphins or closest approach between nets with alarms and nets without alarms (Cox *et al.,* 2003). Studies of acoustic deterrents in a trawl fishery in Australia concluded that pingers are not likely to be effective in deterring bottlenose dolphins, as they are already aware of the gear due to the noisy nature of the fishery (Stephenson and Wells 2008, Allen *et al.* 2014). Acoustic deterrents were also ineffective in reducing bycatch of common dolphins in the U.K. bass pair trawl fishery (Mackay and Northridge 2006).

The use and effectiveness of acoustic deterrent devices in fisheries in which bottlenose dolphins have the potential to interact has been approached with caution. Two primary concerns expressed with regard to pinger effectiveness in reducing marine mammal bycatch relate to habituation (*i.e.,* marine mammals may become habituated to the sounds made by the pingers, resulting in increasing bycatch rates over time; Dawson, 1994; Cox *et al.,* 2001; Carlström *et al.,* 2009) and the ''dinner bell effect'' (Dawson, 1994; Richardson *et al.,* 1995), which implies that certain predatory marine mammal species may come to associate pingers with a food source (*e.g.,* fish caught in nets), with the result that bycatch rates may be higher in nets with pingers than in those without.

The BDTRP, after years of directed investigation, found that pingers are not effective at deterring bottlenose dolphins from depredating on fish captured by trawls and gillnets. During research driven by the BDTRT efforts to better understand the effectiveness of pingers on bottlenose dolphins, one became entangled and drowned in a net outfitted with a pinger. Dolphins can become attracted to the sound of the pinger because they learn it signals the presence of fish (*i.e.,* the ''dinner bell effect''), raising concerns about potential increased entanglement risks (Cox *et al.,* 2003; Read *et al.,* 2004 and 2006; and Read and Waples 2010). Due to the lack of evidence that pingers are effective at

deterring bottlenose dolphins coupled with the potential dinner-bell effect, the BDTRP does not recommend them for use in SEFSC for bottlenose dolphins.

The effectiveness of acoustic and visual deterrents for species encountered in the ARA, GOMRA, and CRA is uncertain. Therefore, the SEFSC will not be required to outfit gear with deterrent devices but is encouraged to undertake investigations on the efficacy of these measures where unknown (*i.e.,* not for surveys in which bottlenose dolphins are primary bycatch) in order to minimize the potential for takes.

Disentanglement Handling Procedures—The SEFSC will implement a number of handling protocols to minimize the potential harm to marine mammals that are incidentally taken during the course of fisheries research activities. In general, protocols have already been prepared for use on commercial fishing vessels. Although commercial fisheries are known to take a larger number of marine mammals than fisheries research, the nature of entanglements are similar. Therefore, the SEFSC would adopt commercial fishery disentanglement protocols, which are expected to increase post-release survival. Handling or disentangling marine mammals carries inherent safety risks, and using best professional judgment and ensuring human safety is paramount.

Captured live or injured marine mammals are released from research gear and returned to the water as soon as possible with no gear or as little gear remaining on the animal as possible. Animals are released without removing them from the water if possible, and data collection is conducted in such a manner as not to delay the release of the animal(s) or endanger the crew. SEFSC is responsible for training SEFSC and partner researchers on how to identify different species; handle and bring marine mammals aboard a vessel; assess the level of consciousness; remove fishing gear; and return marine mammals to water. Human safety is always the paramount concern.

At least two persons aboard SEFSC ships and one person aboard smaller vessels, including vessels operated by partners where no SEFSC staff are present, will be trained in marine mammal handling, release, and disentanglement procedures. If a marine mammal is entangled or hooked in fishery research gear and discovered alive, the SEFSC or affiliate will follow safe handling procedures. To facilitate this training, SEFSC would be required to ensure relevant researchers attend the NMFS Highly Migratory Species/Protected Species Safe Handling, Release, and Identification Workshop *www.nmfs.noaa.gov/sfa/hms/compliance/workshops/protected_species_workshop/index.html* or other similar training. The SEFSC shall provide SEFSC scientists and partner institutions with the Protected Species Safe Handling and Release Manual (see Appendix D is SEFSC's application) and advise researchers to follow this manual, in addition to lessons learned during training, should a marine mammal become entangled during a survey. For those scientists conducting longline surveys, the SEFSC shall provide training on the Pelagic Longline Take Reduction Team Marine Mammal Handling and Release Guidelines.

Based on our evaluation of the SEFSC's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an incidental take authorization for an activity, section 101(a)(5)(A) of the MMPA states that NMFS must set forth ''requirements pertaining to the monitoring and reporting of such taking.'' The MMPA implementing regulations at 50 CFR 216.104 (a)(13) require that requests for incidental take authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the action area (*e.g.,* presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.,* source characterization, propagation, ambient noise); (2) affected species (*e.g.,* life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.,* age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.,* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

The SEFSC plans to make more systematic its training, operations, data collection, animal handling and sampling protocols, etc. in order to improve its ability to understand how mitigation measures influence interaction rates and ensure its research operations are conducted in an informed manner and consistent with lessons learned from those with experience operating these gears in close proximity to marine mammals. We propose the monitoring requirements described below.

Marine mammal watches are a standard part of conducting fisheries research activities and are implemented as described previously in the Mitigation section. Dedicated marine mammal observations occur as described (1) for some period prior to deployment of most research gear; (2) throughout deployment and active fishing of all research gears; (3) for some period prior to retrieval of gear; and (4) throughout retrieval of research gear. Observers should record the species and estimated number of animals present and their behaviors, which may be valuable information towards an understanding of whether certain species may be attracted to vessels or certain survey gears. Separately, on white boats, marine mammal watches are conducted by watch-standers (those navigating the vessel and other crew; these will typically not be SEFSC personnel) at all times when the vessel is being operated. The primary focus for this type of watch is to avoid striking marine mammals and to generally avoid navigational hazards. These watch-standers typically have other duties associated with navigation and other vessel operations and are not required to record or report data to the scientific party on marine mammal sightings, except when gear is being deployed or retrieved.

Training

The SEFSC anticipates that additional information on practices to avoid marine mammal interactions can be gleaned from training sessions and more systematic data collection standards. The SEFSC will conduct annual trainings for all CS and other personnel who may be responsible for conducting dedicated marine mammal visual observations to explain mitigation measures and monitoring and reporting requirements, mitigation and monitoring protocols, marine mammal identification, recording of count and disturbance observations (relevant to AMLR surveys), completion of datasheets, and use of equipment. Some of these topics may be familiar to SEFSC staff, who may be professional biologists. The SEFSC shall determine the agenda for these trainings and ensure that all relevant staff have necessary familiarity with these topics. The first such training will include three primary elements:

First, the course will provide an overview of the purpose and need for the authorization, including mandatory mitigation measures by gear and the purpose for each, and species that the SEFSC is authorized to incidentally take. Second, the training will provide detailed descriptions of reporting, data collection, and sampling protocols. This portion of the training will include instruction on how to complete new data collection forms such as the marine mammal watch log, the incidental take form (*e.g.,* specific gear configuration and details relevant to an interaction with protected species), and forms used for species identification and biological sampling. The biological data collection and sampling training module will include the same sampling and necropsy training that is used for the Southeast Regional Observer training.

The SEFSC will also dedicate a portion of training to discussion of best professional judgment (which is recognized as an integral component of mitigation implementation; see Mitigation), including use in any incidents of marine mammal interaction and instructive examples where use of best professional judgment was determined to be successful or unsuccessful. We recognize that many factors come into play regarding decision-making at sea and that it is not practicable to simplify what are inherently variable and complex situational decisions into rules that may be defined on paper. However, it is our intent that use of best professional judgment be an iterative process from year to year, in which any at-sea decision-maker (*i.e.,* responsible for decisions regarding the avoidance of marine mammal interactions with survey gear through the application of best professional judgment) learns from the prior experience of all relevant SEFSC personnel (rather than from solely their own experience). The outcome should be increased transparency in decision-making processes where best professional judgment is appropriate and, to the extent possible, some degree of standardization across common situations, with an ultimate goal of reducing marine mammal interactions. It is the responsibility of the SEFSC to facilitate such exchange.

Handling Procedures and Data Collection

Improved standardization of handling procedures was discussed previously in the Mitigation section. SEFSC believes that implementing these protocols will benefit animals through increased post-release survival. In addition, SEFSC believes that adopting these protocols for data collection will also increase the information on which ''serious injury'' determinations (NMFS, 2012a, b) are based and improve scientific knowledge about marine mammals that interact with fisheries research gears and the factors that contribute to these interactions. SEFSC personnel will be provided standard guidance and training regarding handling of marine mammals, including how to identify different species, bring an individual aboard a vessel, assess the level of consciousness, remove fishing gear, return an individual to water and log activities pertaining to the interaction.

The SEFSC will record interaction information on either existing data forms created by other NMFS programs or will develop their own standardized forms. To aid in serious injury determinations and comply with the current NMFS Serious Injury Guidelines, researchers will also answer a series of supplemental questions on the details of marine mammal interactions.

Finally, for any marine mammals that are killed during fisheries research activities, when practicable, scientists will collect data and samples pursuant to Appendix D of the SEFSC DEA, ''Protected Species Handling Procedures for SEFSC Fisheries Research Vessels.''

SEFSC Reporting

As is normally the case, SEFSC will coordinate with the relevant stranding coordinators for any unusual marine mammal behavior and any stranding, beached live/dead, or floating marine mammals that are encountered during field research activities. The SEFSC will follow a phased approach with regard to the cessation of its activities and/or reporting of such events, as described in the regulatory text following this preamble. In addition, CS (or cruise leader) will provide reports to SEFSC leadership and to the OPR. As a result, when marine mammals interact with survey gear, whether killed or released alive, a report provided by the CS will fully describe any observations of the animals, the context (vessel and conditions), decisions made and rationale for decisions made in vessel and gear handling. The circumstances of these events are critical in enabling the SEFSC and OPR to better evaluate the conditions under which takes are most likely occur. We believe in the long term this will allow the avoidance of these types of events in the future.

The SEFSC will submit annual summary reports to OPR including:

(1) Annual line-kilometers surveyed during which the EK60, ME70, SX90 (or equivalent sources) were predominant (see ''Estimated Take'' for further discussion), specific to each region;

(2) Summary information regarding use of all trawl, net, and hook and line gear, including number of sets, tows, hook hours, etc., specific to each research area and gear;

(3) Accounts of all incidents of marine mammal interactions, including circumstances of the event and descriptions of any mitigation procedures implemented or not implemented and why;

(4) Summary information related to any disturbance of marine mammals and distance of closest approach;

(5) A written description of any mitigation research investigation efforts and findings (*e.g.,* lazy line modifications);

(6) A written evaluation of the effectiveness of SEFSC mitigation strategies in reducing the number of marine mammal interactions with survey gear, including best professional judgment and suggestions for changes to the mitigation strategies, if any;

(7) Details on marine mammal-related training taken by SEFSC and partner scientists; and

(8) A summary of meeting(s) and workshop(s) outcomes with any partner working group, including, the South Carolina Department of Natural Resources, designed to reduce the number of marine mammal interactions.

The period of reporting will be annually, beginning one year post-issuance of any LOA, and the report must be submitted not less than ninety days following the end of a given year.

Submission of this information is in service of an adaptive management framework allowing NMFS to make appropriate modifications to mitigation and/or monitoring strategies, as necessary, during the 5-year period of validity for these regulations and LOA.

Should an incidental take occur, the SEFSC, or affiliated partner involved in the taking, shall follow the NMFS Final Take Reporting and Response Procedures, dated January 15, 2016. NMFS has established a formal incidental take reporting system, the PSIT database, requiring that incidental takes of protected species be reported within 48 hours of the occurrence. The PSIT generates automated messages to NMFS leadership and other relevant staff, alerting them to the event and to the fact that updated information describing the circumstances of the event has been inputted to the database. The PSIT and CS reports represent not only valuable real-time reporting and information dissemination tools but also serve as an archive of information that may be mined in the future to study why takes occur by species, gear, region, etc.

The SEFSC will also collect and report all necessary data, to the extent practicable given the primacy of human safety and the well-being of captured or entangled marine mammals, to facilitate serious injury (SI) determinations for marine mammals that are released alive. The SEFSC will require that the CS complete data forms and address supplemental questions, both of which have been developed to aid in SI determinations. The SEFSC understands the critical need to provide as much relevant information as possible about marine mammal interactions to inform decisions regarding SI determinations. In addition, the SEFSC will perform all necessary reporting to ensure that any incidental M/SI is incorporated as appropriate into relevant SARs.

Negligible Impact Analysis and Determination

Introduction—NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' by mortality, serious injury, and Level A or Level B harassment, we consider other factors, such as the likely nature of any behavioral responses (*e.g.,* intensity, duration), the context of any such responses (*e.g.,* critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.,* as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, and specific consideration of take by M/SI previously authorized for other NMFS research activities).

We note here that the takes from potential gear interactions enumerated below could result in non-serious injury or no injury, but their worst potential outcome (M/SI) is analyzed for the purposes of the negligible impact determination.

We discuss here the connection, and differences, between the legal mechanisms for authorizing incidental take under section 101(a)(5) for activities such as the SEFSC fishery research activities, and for authorizing incidental take from commercial fisheries. In 1988, Congress amended the MMPA's provisions for addressing incidental take of marine mammals in commercial fishing operations. Congress directed NMFS to develop and recommend a new long-term regime to govern such incidental taking (see MMC, 1994). The need to develop a system suited to the unique circumstances of commercial fishing operations led NMFS to suggest a new conceptual means and associated regulatory framework. That concept, PBR, and a system for developing plans containing regulatory and voluntary measures to reduce incidental take for fisheries that exceed PBR were incorporated as sections 117 and 118 in the 1994 amendments to the MMPA. In *Conservation Council for Hawaii* v. *National Marine Fisheries Service,* 97 F. Supp.3d 1210 (D. Haw. 2015), which concerned a challenge to NMFS' regulations and LOAs to the Navy for activities assessed in the 2013–2018 HSTT MMPA rulemaking, the Court ruled that NMFS' failure to consider PBR when evaluating lethal takes in the negligible impact analysis under section 101(a)(5)(A) violated the requirement to use the best available science.

PBR is defined in section 3 of the MMPA as ''the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population'' (OSP) and, although not controlling, can be one measure considered among other factors when evaluating the effects of M/SI on a marine mammal species or stock during the section 101(a)(5)(A) process. OSP is defined in section 3 of the MMPA as ''the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element.'' Through section 2, an overarching goal of the statute is to ensure that each species or stock of marine mammal is maintained at or returned to its OSP.

PBR values are calculated by NMFS as the level of annual removal from a stock that will allow that stock to equilibrate within OSP at least 95 percent of the time, and is the product of factors relating to the minimum population estimate of the stock (N_{min}), the productivity rate of the stock at a small population size, and a recovery factor. Determination of appropriate values for these three elements incorporates significant precaution, such that application of the parameter to the management of marine mammal stocks may be reasonably certain to achieve the goals of the MMPA. For example, calculation of the minimum population estimate (N_{min}) incorporates the level of precision and degree of variability associated with abundance information, while also providing reasonable assurance that the stock size is equal to or greater than the estimate (Barlow *et al.,* 1995), typically by using the 20th percentile of a log-normal distribution of the population estimate. In general, the three factors are developed on a stock-specific basis in consideration of one another in order to produce conservative PBR values that appropriately account for both imprecision that may be estimated, as well as potential bias stemming from lack of knowledge (Wade, 1998).

Congress called for PBR to be applied within the management framework for commercial fishing incidental take under section 118 of the MMPA. As a result, PBR cannot be applied appropriately outside of the section 118 regulatory framework without

consideration of how it applies within the section 118 framework, as well as how the other statutory management frameworks in the MMPA differ from the framework in section 118. PBR was not designed and is not used as an absolute threshold limiting commercial fisheries. Rather, it serves as a means to evaluate the relative impacts of those activities on marine mammal stocks. Even where commercial fishing is causing M/SI at levels that exceed PBR, the fishery is not suspended. When M/SI exceeds PBR in the commercial fishing context under section 118, NMFS may develop a take reduction plan, usually with the assistance of a take reduction team. The take reduction plan will include measures to reduce and/or minimize the taking of marine mammals by commercial fisheries to a level below the stock's PBR. That is, where the total annual human-caused M/SI exceeds PBR, NMFS is not required to halt fishing activities contributing to total M/SI but rather utilizes the take reduction process to further mitigate the effects of fishery activities via additional bycatch reduction measures. In other words, under section 118 of the MMPA, PBR does not serve as a strict cap on the operation of commercial fisheries that may incidentally take marine mammals.

Similarly, to the extent PBR may be relevant when considering the impacts of incidental take from activities other than commercial fisheries, using it as the sole reason to deny (or issue) incidental take authorization for those activities would be inconsistent with Congress's intent under section 101(a)(5), NMFS' long-standing regulatory definition of ''negligible impact,'' and the use of PBR under section 118. The standard for authorizing incidental take for activities other than commercial fisheries under section 101(a)(5) continues to be, among other things that are not related to PBR, whether the total taking will have a negligible impact on the species or stock. Nowhere does section 101(a)(5)(A) reference use of PBR to make the negligible impact finding or authorize incidental take through multi-year regulations, nor does its companion provision at 101(a)(5)(D) for authorizing non-lethal incidental take under the same negligible-impact standard. NMFS' MMPA implementing regulations state that take has a negligible impact when it does not ''adversely affect the species or stock through effects on annual rates of recruitment or survival''—likewise without reference to PBR. When Congress amended the MMPA in 1994 to add section 118 for commercial fishing, it did not alter the standards for authorizing non-commercial fishing incidental take under section 101(a)(5), implicitly acknowledging that the negligible impact standard under section 101(a)(5) is separate from the PBR metric under section 118. In fact, in 1994 Congress also amended section 101(a)(5)(E) (a separate provision governing commercial fishing incidental take for species listed under the ESA) to add compliance with the new section 118 but retained the standard of the negligible impact finding under section 101(a)(5)(A) (and section 101(a)(5)(D)), showing that Congress understood that the determination of negligible impact and application of PBR may share certain features but are, in fact, different.

Since the introduction of PBR in 1994, NMFS had used the concept almost entirely within the context of implementing sections 117 and 118 and other commercial fisheries management-related provisions of the MMPA. Prior to the Court's ruling in *Conservation Council for Hawaii* v. *National Marine Fisheries Service* and consideration of PBR in a series of section 101(a)(5) rulemakings, there were a few examples where PBR had informed agency deliberations under other MMPA sections and programs, such as playing a role in the issuance of a few scientific research permits and subsistence takings. But as the Court found when reviewing examples of past PBR consideration in *Georgia Aquarium* v. *Pritzker,* 135 F. Supp. 3d 1280 (N.D. Ga. 2015), where NMFS had considered PBR outside the commercial fisheries context, ''it has treated PBR as only one 'quantitative tool' and [has not used it] as the sole basis for its impact analyses.'' Further, the agency's thoughts regarding the appropriate role of PBR in relation to MMPA programs outside the commercial fishing context have evolved since the agency's early application of PBR to section 101(a)(5) decisions. Specifically, NMFS' denial of a request for incidental take authorization for the U.S. Coast Guard in 1996 seemingly was based on the potential for lethal take in relation to PBR and did not appear to consider other factors that might also have informed the potential for ship strike in relation to negligible impact (61 FR 54157; October 17, 1996).

The MMPA requires that PBR be estimated in SARs and that it be used in applications related to the management of take incidental to commercial fisheries (*i.e.,* the take reduction planning process described in section 118 of the MMPA and the determination of whether a stock is ''strategic'' as defined in section 3). But nothing in the statute requires the application of PBR outside the management of commercial fisheries interactions with marine mammals. Nonetheless, NMFS recognizes that as a quantitative metric, PBR may be useful as a consideration when evaluating the impacts of other human-caused activities on marine mammal stocks. Outside the commercial fishing context, and in consideration of all known human-caused mortality, PBR can help inform the potential effects of M/SI requested to be authorized under 101(a)(5)(A). As noted by NMFS and the U.S. Fish and Wildlife Service in our implementation regulations for the 1986 amendments to the MMPA (54 FR 40341, September 29, 1989), the Services consider many factors, when available, in making a negligible impact determination, including, but not limited to, the status of the species or stock relative to OSP (if known); whether the recruitment rate for the species or stock is increasing, decreasing, stable, or unknown; the size and distribution of the population; and existing impacts and environmental conditions. In this multi-factor analysis, PBR can be a useful indicator for when, and to what extent, the agency should take an especially close look at the circumstances associated with the potential mortality, along with any other factors that could influence annual rates of recruitment or survival.

When considering PBR during evaluation of effects of M/SI under section 101(a)(5)(A), we first calculate a metric for each species or stock that incorporates information regarding ongoing anthropogenic M/SI from all sources into the PBR value (*i.e.,* PBR minus the total annual anthropogenic mortality/serious injury estimate in the SAR), which is called ''residual PBR.'' (Wood *et al.,* 2012). We first focus our analysis on residual PBR because it incorporates anthropogenic mortality occurring from other sources. If the ongoing human-caused mortality from other sources does not exceed PBR, then residual PBR is a positive number, and we consider how the anticipated or potential incidental M/SI from the activities being evaluated compares to residual PBR using the framework in the following paragraph. If the ongoing anthropogenic mortality from other sources already exceeds PBR, then residual PBR is a negative number and we consider the M/SI from the activities being evaluated as described further below.

When ongoing total anthropogenic mortality from the applicant's specified activities does not exceed PBR and

residual PBR is a positive number, as a simplifying analytical tool, we first consider whether the specified activities could cause incidental M/SI that is less than 10 percent of residual PBR (the ''insignificance threshold,'' see below). If so, we consider M/SI from the specified activities to represent an insignificant incremental increase in ongoing anthropogenic M/SI for the marine mammal stock in question, that alone (*i.e.,* in the absence of any other take) will not adversely affect annual rates of recruitment and survival. As such, this amount of M/SI would not be expected to affect rates of recruitment or survival in a manner resulting in more than a negligible impact on the affected stock unless there are other factors that could affect reproduction or survival, such as Level A and/or Level B harassment, or other considerations such as information that illustrates the uncertainty involved in the calculation of PBR for some stocks. In a few prior incidental take rulemakings, this threshold was identified as the ''significance threshold,'' but it is more accurately labeled an insignificance threshold. Thus, we use that terminology here, as we did in the AFTT Proposed and Final Rules (83 FR 57076; November 14, 2018). Assuming that any additional incidental take by Level A or Level B harassment from the activities in question would not combine with the effects of the authorized M/SI to exceed the negligible impact level, the anticipated M/SI caused by the activities being evaluated would have a negligible impact on the species or stock. However, M/SI above the 10 percent insignificance threshold does not indicate that the M/SI associated with the specified activities is approaching a level that would necessarily exceed negligible impact. Rather, the 10 percent insignificance threshold is meant only to identify instances where additional analysis of the anticipated M/SI is not required because the negligible impact standard clearly will not be exceeded on that basis alone.

Where the anticipated M/SI is near, at, or above residual PBR, consideration of other factors (positive or negative), including those outlined above, as well as mitigation is especially important to assessing whether the M/SI will have a negligible impact on the species or stock. PBR is a conservative metric and not sufficiently precise to serve as an absolute predictor of population effects upon which mortality caps would appropriately be based. For example, in some cases stock abundance (which is one of three key inputs into the PBR calculation) is underestimated because marine mammal survey data within the U.S. EEZ are used to calculate the abundance, even when the stock range extends well beyond the U.S. EEZ. An underestimate of abundance could result in an underestimate of PBR. Alternatively, we sometimes may not have complete M/SI data beyond the U.S. EEZ to compare to PBR, which could result in an overestimate of residual PBR. The accuracy and certainty around the data that feed any PBR calculation, such as the abundance estimates, must be carefully considered to evaluate whether the calculated PBR accurately reflects the circumstances of the particular stock. M/SI that exceeds PBR may still potentially be found to be negligible in light of other factors that offset concern, especially when robust mitigation and adaptive management provisions are included.

In *Conservation Council for Hawaii* v. *NMFS,* 97 F.Supp.3d 1210 (D. Haw. 2015), which involved the challenge to NMFS' issuance of LOAs to the Navy in 2013 for activities in the HSTT Study Area, the Court reached a different conclusion, stating, ''Because any mortality level that exceeds PBR will not allow the stock to reach or maintain its OSP, such a mortality level could not be said to have only a 'negligible impact' on the stock.'' As described above, the Court's statement fundamentally misunderstands the two terms and incorrectly indicates that these concepts (PBR and ''negligible impact'') are directly connected, when in fact nowhere in the MMPA is it indicated that these two terms are equivalent.

Specifically, PBR was designed as a tool for evaluating mortality and is defined as the number of animals that can be removed while ''allowing that stock to reach or maintain its [OSP].'' OSP is defined as a population that falls within a range from the population level that is the largest supportable within the ecosystem to the population level that results in maximum net productivity, and thus is an aspirational management goal of the overall statute with no specific timeframe by which it should be met. PBR is designed to ensure minimal deviation from this overarching goal, with the formula for PBR typically ensuring that growth towards OSP is not reduced by more than 10 percent (or equilibrates to OSP 95 percent of the time). As PBR is applied by NMFS, it provides that growth toward OSP is not reduced by more than 10 percent, which certainly allows a stock to ''reach or maintain its [OSP]'' in a conservative and precautionary manner—and we can therefore clearly conclude that if PBR were not exceeded, there would not be adverse effects on the affected species or stocks. Nonetheless, it is equally clear that in some cases the time to reach this aspirational OSP level could be slowed by more than 10 percent (*i.e.,* total human-caused mortality in excess of PBR could be allowed) without adversely affecting a species or stock through effects on its rates of recruitment or survival. Thus, even in situations where the inputs to calculate PBR are thought to accurately represent factors such as the species' or stock's abundance or productivity rate, it is still possible for incidental take to have a negligible impact on the species or stock even where M/SI exceeds residual PBR or PBR.

As noted above, in some cases the ongoing human-caused mortality from activities other than those being evaluated already exceeds PBR. Therefore, residual PBR is negative. In these cases (specifically two GoM BSE stocks: Mississippi Sound and Mobile Bay), any additional mortality, no matter how small, and no matter how small relative to the mortality caused by other human activities, would result in greater exceedance of PBR. PBR is helpful in informing the analysis of the effects of mortality on a species or stock because it is important from a biological perspective to be able to consider how the total mortality in a given year may affect the population. However, section 101(a)(5)(A) of the MMPA indicates that NMFS shall authorize the requested incidental take from a specified activity if we find that ''the total of such taking [*i.e.,* from the specified activity] will have a negligible impact on such species or stock.'' In other words, the task under the statute is to evaluate the applicant's anticipated take in relation to their take's impact on the species or stock, not other entities' impacts on the species or stock. Neither the MMPA nor NMFS' implementing regulations call for consideration of other unrelated activities and their impacts on the species or stock. In fact, in response to public comments on the implementing regulations, NMFS explained that such effects are not considered in making negligible impact findings under section 101(a)(5). However, the extent to which a species or stock is being impacted by other anthropogenic activities is not ignored. Such effects are reflected in the baseline of existing impacts as reflected in the species' or stock's abundance, distribution, reproductive rate, and other biological indicators.

NMFS guidance for commercial fisheries provides insight when evaluating the effects of an applicant's incidental take as compared to the

incidental take caused by other entities. Parallel to section 101(a)(5)(A), section 101(a)(5)(E) of the MMPA provides that NMFS shall allow the incidental take of ESA-listed endangered or threatened marine mammals by commercial fisheries if, among other things, the incidental M/SI from the commercial fisheries will have a negligible impact on the species or stock. As discussed earlier, the authorization of incidental take resulting from commercial fisheries and authorization for activities other than commercial fisheries are under two separate regulatory frameworks. However, when it amended the statute in 1994 to provide a separate incidental take authorization process for commercial fisheries, Congress kept the requirement of a negligible impact determination for ESA-listed species, thereby applying the standard to both programs. While the structure and other standards of the two programs differ such that evaluation of negligible impact under one program may not be fully applicable to the other program (*e.g.,* the regulatory definition of ''negligible impact'' at 50 CFR 216.103 applies only to activities other than commercial fishing), guidance on determining negligible impact for commercial fishing take authorizations can be informative when considering incidental take outside the commercial fishing context. In 1999, NMFS published criteria for making a negligible impact determination pursuant to section 101(a)(5)(E) of the MMPA in a notice of proposed permits for certain fisheries (64 FR 28800; May 27, 1999). Criterion 2 stated ''If total human-related serious injuries and mortalities are greater than PBR, and fisheries-related mortality is less than 0.1 PBR, individual fisheries may be permitted if management measures are being taken to address non-fisheries-related serious injuries and mortalities. When fisheries-related serious injury and mortality is less than 10 percent of the total, the appropriate management action is to address components that account for the major portion of the total.'' This criterion addresses when total human-caused mortality is exceeding PBR, but the activity being assessed is responsible for only a small portion of the mortality. In the SEFSC proposed rule, NMFS' description of how we consider PBR in the section 101(a)(5) authorization process did not include consideration of this scenario. However, the analytical framework we use here appropriately incorporates elements of the one developed for use under section 101(a)(5)(E). And because the negligible impact determination under section 101(a)(5)(A) focuses on the activity being evaluated, it is appropriate to utilize the parallel concept from the framework for section 101(a)(5)(E).

Accordingly, we are using a similar criterion in our negligible impact analysis under section 101(a)(5)(A) to evaluate the relative role of an applicant's incidental take when other sources of take are causing PBR to be exceeded, but the take of the specified activity is comparatively small. Where this occurs, we may find that the impacts of the taking from the specified activity may (alone) be negligible, even when total human-caused mortality from all activities exceeds PBR if (in the context of a particular species or stock) the authorized mortality or serious injury would be less than or equal to 10 percent of PBR and management measures are being taken to address serious injuries and mortalities from the other activities (*i.e.,* other than the specified activities covered by the incidental take authorization under consideration). We must also determine, though, that impacts on the species or stock from other types of take (*i.e.,* harassment) caused by the applicant do not combine with the impacts from mortality or serious injury to result in adverse effects on the species or stock through effects on annual rates of recruitment or survival.

As discussed above, however, while PBR is useful in informing the evaluation of the effects of M/SI in section 101(a)(5)(A) determinations, it is just one consideration to be assessed in combination with other factors. It is not determinative including because, as explained above, the accuracy and certainty of the data used to calculate PBR for the species or stock must be considered. And we reiterate the considerations discussed above for why it is not appropriate to consider PBR an absolute cap in the application of this guidance. Accordingly, we use PBR as a trigger for concern while also considering other relevant factors to provide a reasonable and appropriate means of evaluating the effects of potential mortality on rates of recruitment and survival, while acknowledging that it is possible to exceed PBR (or exceed 10 percent of PBR in the case where other human-caused mortality is exceeding PBR but the specified activity being evaluated is an incremental contributor, as described in the last paragraph) by some small amount and still make a negligible impact determination under section 101(a)(5)(A).

Our evaluation of the M/SI for each of the species and stocks for which mortality or serious injury could occur follows. All mortality authorized for some of the same species or stocks over the next several years pursuant to our final rulemaking for the NMFS Southwest and Pacific Islands Fisheries Science Centers has been incorporated into the residual PBR.

We first consider maximum potential incidental M/SI for each stock (Table 13 and 14) in consideration of NMFS's threshold for identifying insignificant M/SI take (10 percent of residual PBR (69 FR 43338; July 20, 2004)). By considering the maximum potential incidental M/SI in relation to residual PBR and ongoing sources of anthropogenic mortality, we begin our evaluation of whether the potential incremental addition of M/SI through SEFSC research activities may affect the species' or stock's annual rates of recruitment or survival. We also consider the interaction of those mortalities with incidental taking of that species or stock by harassment pursuant to the specified activity.

We methodically examined each stock above the insignificance threshold to determine if the amount and degree of authorized taking would have effects to annual rates of recruitment or survival (*i.e.,* have a negligible impact on the species or stock). These rates are inherently difficult to quantify for marine mammals because adults of long-lived, birth-pulse populations (*e.g.,* many cetaceans, polar bears and walrus) may not breed every year because of parental care, long gestation periods or nutritional constraints (Taylor *et al.,* 1987). Therefore, we pursued a combination of quantitative and qualitative analyses to inform our determinations.

First, we compiled data to assess the baseline population status of each stock for which the SEFSC is requesting take. These data were pulled from the most recent SARs (Hayes *et al.,* 2017) and, where information was unknown or undetermined in the SARs, we consulted marine mammal experts at the SEFSC and on TRTs to fill data gaps to the best of our ability based on the best available science. Data pulled from these sources include population size and demographics (where known), PBR, known mortality and serious injury from commercial and recreational fishing and other human-caused sources (*e.g.,* direct shootings), stock trends (*i.e.,* declining, stable, or increasing), threats, and other sources of potential take M/SI (*e.g.,* MMPA 101(a)(5)(A or D) applications and scientific research permit applications). In addition, we looked at ongoing management actions (*e.g.,* TRT gear restrictions) to identify

where efforts are being focused and are successful at reducing incidental take.

Estuarine and Coastal Bottlenose Dolphins

For estuarine bottlenose dolphin stocks, reaching our negligible impact determination required a hard examination of the status of each of the 7 ARA and 11 GOMRA stocks for which we authorized take. We recognize that PBR is technically undetermined for many stocks because abundance data is more than 8 years old. Therefore, we consulted with marine mammal experts at the SEFSC to derive best estimates of PBR based on the available data. Overall, PBR is low (less than one animal) because stock sizes are generally small (tens to hundreds) in southeast estuaries (with notable exceptions such as Mississippi Sound and Mobile Bay). Stock sizes are expected to be small because the abundance of a dolphin stock in an estuary is bounded by the capabilities of the bays and estuarine systems to support that stock (*i.e.,* carrying capacity of the system) due to the residential nature of these stocks, among other things. With respect to rates of annual M/SI, we note some fisheries in the GoM (*e.g.,* shrimp fishery) do not have full observer coverage. Estimates of take from these fisheries are both extrapolated and aggregated to the state level. Thus, calculating total M/SI rates from commercial fisheries applicable to any given stock, rather than all stocks within a state, not possible.

We approached the issue of outdated abundance information by working closely with SEFSC experts and have developed estimated abundance data and PBR values. The resulting values follow the general trend of small stock sizes and are very conservative in some cases. For example, recent abundance surveys in Barataria Bay and Terrebonne Bay revealed stock numbers were in the thousands compared to the previously estimated populations of approximately 200–300 animals (Hayes *et al.,* 2018). In addition, three stocks, including the Perdido Bay stock have population estimates showing zero. However, it is well documented that dolphins inhabit these areas. We also consulted with the NMFS Southeast Regional Office (SERO) bottlenose dolphin conservation coordinator to better understand the nature of the takes identified in the SARs M/SI values (*i.e.,* the source of take such as commercial fishery or research). That is, if we relied solely on the SAR annual M/SI values reported in the SARs and added the authorized M/SI take to these numbers, we would be double-counting M/SI as some takes were attributed to the research for which we are proposing to authorize take. Therefore, where M/SI takes were contributed to SEFSC research, we have adjusted annual M/SI values from Table 3b above so as not to ''double count'' potential take. Table 13 reflects these adjustments.

In the ARA, the amount of take from all M/SI (both authorized here and other sources) does not exceed PBR. M/SI take for ARA stocks is below the insignificance threshold (10 percent r-PBR) except for the Northern South Carolina Estuarine, Northern Georgia/Southern South Carolina Estuarine, Central Georgia Estuarine, and Southern Georgia Estuarine stocks (Table 13). Authorized M/SI take for the latter two stocks are only slightly above the insignificance threshold (11.76 and 10.35 percent, respectively). The authorized take for the Northern Georgia/Southern South Carolina stock constitutes 28.57 percent of r-PBR. Sources of anthropogenic mortality for this stock include hook and line and crab pot/trap fisheries. The authorized M/SI take (0.2/year) of the Northern South Carolina stock is 50 percent of PBR. However, considering an average of one animal every 5 years is taken in commercial fisheries (likely gillnet or crab pot/trap), the authorized take and annual M/SI constitute 100 percent of r-PBR. The Northern South Carolina Estuarine System stock is delimited as dolphins inhabiting estuarine waters from Murrells Inlet, South Carolina, southwest to Price Inlet, South Carolina, the northern boundary of Charleston Estuarine System stock. The region has little residential, commercial, and industrial development and contains the Cape Romain National Wildlife Refuge. As such, the stock is not facing heavy anthropogenic pressure, and there are no identified continuous indirect stressors threatening the stock.

For the nine estuarine stocks in the GOMRA for which we are proposing to authorize take by M/SI, take is below the insignificance threshold (10 percent r-PBR) for four stocks: Mobile Bay, Terrebonne Bay/Timbalier Bay; St. Vincent Sound/Apalachicola Bay/St. George Sound, and Apalachee Bay. As described above, we have updated the population estimate and PBR of the Mobile Bay stock in this final rule to reflect data presented in the DWH Trustees quantification of injury report (DWH MMIQT 2015), which more accurately describes the Mobile Bay stock abundance than the proposed rule as that estimate was based on outdated (1991) survey data. The authorized M/SI take for three coastal stocks are also below the insignificance threshold. The authorized M/SI take for four BSE stocks are between 14 and 40 percent r-PBR. Ongoing M/SI take attributed to the Mississippi Sound stock is already above PBR in absence of the authorized M/SI take. (Table 13).

TABLE 13—SUMMARY INFORMATION OF ESTUARINE AND COASTAL BOTTLENOSE DOLPHIN STOCKS RELATED TO SEFSC AUTHORIZED M/SI TAKE IN THE ARA, GOMRA, AND CRA

Stock	Stock abundance (N_{best})	M/SI take (annual)	PBR	Annual M/SI	NEFSC authorized take by M/SI (annual)	r-PBR [2]	M/SI take/r-PBR (%) [3]
Atlantic							
Northern South Carolina Estuarine Stock.	[1] 50	0.2	[1] 0.4	0.2	0	0.2	100.00.
Charleston Estuarine System Stock	[1] 289	0.2	[1] 2.8	0.2	0	2.6	7.69.
Northern Georgia/Southern South Carolina Estuarine.	[1] 250	0.2	[1] 2.1	1.4	0	0.7	28.57.
Central Georgia Estuarine	192	0.2	1.9	0.2	0	1.7	11.76.
Southern Georgia Estuarine	194	0.2	1.9	0	0	1.9	10.53.
Jacksonville Estuarine System	[1] 412	0.2	[1] 3.9	1.2	0	2.7	7.41.
Florida Bay	[1] 514	0.2	[1] 4.5	0	0	4.5	4.44.
South Carolina/Georgia Coastal	6,027	0.6	46	1.0–1.4	0	44.6–45	1.35.
Northern Florida Coastal	877	0.6	6	0.6	0	5.4	11.11.

TABLE 13—SUMMARY INFORMATION OF ESTUARINE AND COASTAL BOTTLENOSE DOLPHIN STOCKS RELATED TO SEFSC AUTHORIZED M/SI TAKE IN THE ARA, GOMRA, AND CRA—Continued

Stock	Stock abundance (N_{best})	M/SI take (annual)	PBR	Annual M/SI	NEFSC authorized take by M/SI (annual)	r-PBR [2]	M/SI take/r-PBR (%) [3]
Central Florida Coastal	1,218	0.6	9.1	0.2	0	8.9	6.74.
Northern Migratory Coastal	6,639	0.6	48	6.1–13.2	1.6	33.2–43.5	0.4–0.6.
Southern Migratory Coastal	3,751	0.6	23	14.3	1.6	7.1	8.45.
Gulf of Mexico							
Terrebonne Bay, Timbalier Bay	3,870	0.2	27	0.2	0	26.8	0.75.
Mississippi River Delta	332	0.2	1.4	[4] 0	0	1.4	14.29.
Mississippi Sound, Lake Borgne, Bay Boudreau [5].	3,046	.02 (M/SI), 0.2 (Level A).	23	310	0	−287	Neg.
Mobile Bay, Bonsecour Bay	1,393	0.2	[6] 13	[5] 0.8	0	12.2	1.6.
St. Andrew Bay	199	0.2	1.5	0.2	0	1.3	15.4.
St. Joseph Bay	142	0.2	1.0	0	0	1.0	20.0.
St. Vincent Sound, Apalachicola Bay, St. George Sound.	439	0.2	[1] 3.91	0	0	3.91	5.12.
Apalachee Bay	491	0.2	[1] 3.61	0	0	3.61	5.54.
Waccasassa Bay, Withlacoochee Bay, Crystal Bay.	[1] 100	0.2	[1] 0.5	0	0	0.5	40.00.
Northern Gulf of Mexico Western Coastal Stock.	20,161	0.6	175	0.6	0	174.4	0.34.
Northern Gulf of Mexico Northern Coastal Stock.	7,185	0.6	60	0.4	0	59.6	1.01.
Northern Gulf of Mexico Eastern Coastal Stock.	12,388	0.6	111	1.6	0	109.4	0.55.

[1] For many estuarine stocks, the draft 2019 SAR has unknown abundance estimates and undetermined PBRs. Where this occurred, we used either the most recent estimates (even if more than 8 years old) or we consulted with SEFSC marine mammal experts for best judgement (pers. comm., K. Mullin).

[2] r-BPR = PBR—(annual M/I + NEFSC authorized take). For example, for the southern migratory coastal stock r-PBR = 23 − (14.3 + 1.6).

[3] Values in the column reflect what the take represents as a percentage of r-PBR. The insignificance threshold is 10 percent.

[4] The annual M/SI in the draft 2019 SAR is 0.2 for the Mississippi River stock. However, the takes considered were from gillnet fishery research. Therefore, we reduced M/SI to 0.

[5] The annual M/SI in the draft 2019 SAR is 1.0. However, one take used in those calculations is from fisheries research for which we propose to authorize take. Therefore, we reduced M/SI to 0.8.

[6] PBR for the Mobile Bay stock was derived from the lower 95 percent confidence interval presented in DHW MIQTT 2015 (N_{min} = 1252). We calculated PBR as 1252 * 0.02 * 0.4 = 13.

For the Mississippi Sound stock, we evaluated various aspects of stock status and considered the amount of SEFSC M/SI compared to PBR. As described above, we may find that the impacts of the taking from the specified activity may be negligible even when total human-caused mortality from all activities exceeds PBR if (in the context of a particular species or stock) the authorized mortality or serious injury would be less than or equal to 10 percent of PBR and management measures are being taken to address serious injuries and mortalities from the other activities (*i.e.,* other than the specified activities covered by the incidental take authorization under consideration). In this case, authorized M/SI take is less than 10 percent of PBR and management actions are in place to address M/SI from other sources. According to this stock's 2017 SAR, the mean annual fishery-related mortality and serious injury during 2012–2015 for observed fisheries and strandings and at-sea observations identified as fishery-caused related is 1.0. Additional mean annual mortality and serious injury during 2011–2015 due to other human-caused actions (fishery research, sea turtle relocation trawling, gunshot wounds, and DWH oil spill) is 309 with the majority sourced from DWH. Projected annual M/SI over the next 5 years from commercial fishing and DWH are 6 and 1539 (or 1.2 and 308, annually), respectively.

Management and research actions, including ongoing health assessments and Natural Resource Damage Plan efforts designed to restore injury to the stock, are anticipated to improve the status of the stock moving forward. In June 2017, the Deepwater Horizon (DWH) oil spill Natural Resource Damage Assessment (NRDA) Trustees (Trustees) released a ''Strategic Framework for Marine Mammal Restoration Activities.'' The framework outlines the following general actions:

- Implement an integrated portfolio of restoration approaches to restore injured Bay, Sound, and Estuary (BSE); coastal; shelf; and oceanic marine mammals across the diverse habitats and geographic ranges they occupy.
- Identify and implement restoration activities that mitigate key stressors to support resilient populations. Collect and use monitoring information, such as population and health assessments and spatiotemporal distribution information.
- Identify and implement actions that support ecological needs of the stocks; improve resilience to natural stressors; and address direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook-and-line fishery interactions.

NMFS is also currently investigating a number of actions to reduce both intentional and incidental mortality and serious injury for all GOM BSE stocks, including Mississippi Sound and Mobile Bay. These efforts include working collaboratively with shrimp fishermen to explore ways to modify fishing gear that would reduce bycatch of dolphins; enhancing observer coverage & data collection on shrimp

trawls; working collaboratively to reduce dolphin mortality from intentional mortality (gunshot, arrows) and illegal feeding activities by enhancing state law enforcement and conducting outreach; and building capacity and preparedness of the marine mammal stranding network.

Further, marine mammal population modeling indicates dolphin populations should begin recovery nine years post spill (NRDA Trustees, 2016; DWH MMIQT 2015). Applying that model to the Mississippi Sound stock, we should begin to see the population recover during the life of the regulations. Moreover, we note the three research-related mortalities discussed in the SAR for this stock are from the specified activities for which we have authorized take. Therefore, the authorized take would not be in addition to, but would account for, these research-related takes.

In addition to quantitative comparisons between the issued amount of M/SI take to PBR and r-PBR, we consider qualitative information such as population dynamics and context to determine if the authorized amount of take of estuarine and coastal bottlenose dolphins in the ARA and GOMRA would adversely affect a stock through effects of annual rates of recruitment and survival. Marine mammals are K-selected species, meaning they have few offspring, long gestation and parental care periods, and reach sexual maturity later in life. Therefore, between years, reproduction rates vary based on age and sex class ratios. As such, population dynamics is a driver when looking at reproduction rates. We focus on reproduction here because we conservatively consider inter-stock reproduction is the primary means of recruitment for these stocks. We note this is a conservative assumption, as some individuals are known to travel, and there is some mixing between the estuarine stocks and adjacent coastal stocks (Hayes *et al,* 2017). Given reproduction is the primary means of recruitment and females play a significantly larger role in their offspring's reproductive success (also known as Bateman's Principle), the mortality of females rather than males is, in general, more likely to influence recruitment rate. Several studies have purported that male bottlenose dolphins are more likely to engage in depredation or related behaviors with trawls and recreational fishing (Corkeron *et al.,* 1990; Powell & Wells, 2011) or become entangled in gear (Reynolds *et al.,* 2000; Adimey *et al.,* 2014). Male bias has also been reported for strandings with evidence of fishery interaction (Stolen *et al.,* 2007; Fruet *et al.,* 2012; Adimey *et al.,* 2014) and for *in situ* observations of fishery interaction (Corkeron *et al.,* 1990; Finn *et al.,* 2008; Powell & Wells, 2011). Byrd and Hohn (2017) examined stranding data to determine whether there was differential risk of bycatch based on sex and age class from gillnet fisheries in North Carolina. They found more males than females stranded. However, the relative gillnet bycatch risk was not different for males and females. In summary, these data suggest the risk of gear interaction from trawls and hook and line is likely higher for males, while gillnet interactions may pose equal risk for males and females. For this rulemaking, the majority of historical gear interactions are from trawls. Therefore, we believe males (which are less likely to influence recruitment rate) are more likely at risk than females.

Understanding the population dynamics of each bottlenose dolphin stock considered in this rulemaking is not possible as the data simply do not exist for each stock. Therefore, we considered a well-studied population, the Sarasota Bay stock, as a proxy for assessing population dynamics of other estuarine stocks throughout the ARA and GOMRA. The Sarasota Bay stock is the most data rich population of bottlenose dolphins in the United States. The Sarasota Bay Research Program (SBRP) possesses 40 years of data on the resident dolphin population. Research topics include, but are not limited to, population structure and dynamics, health and physiology, and human interaction and impacts.

The Sarasota Bay stock demonstrates high recruitment and survival rates. Wells *et al.* (2014) found 83 percent (95 percent CI = 0.52 to 0.99) of detected pregnancies were documented as resulting in live births. Eight of the 10 calves (80 percent) resulting from documented pregnancies survived through the calendar year of their birth and, therefore, were considered to have been successfully recruited into the Sarasota Bay bottlenose dolphin population. This value compares favorably with the 81 percent first year survival reported by Wells & Scott (1990) for Sarasota Bay bottlenose dolphins. Thus, approximately 66 percent of documented pregnancies led to successful recruitment. Mann *et al.* (2000) found dolphin interbirth intervals for surviving calves are between 3 and 6.2 years, resulting in annual variability in reproductive rates.

With respect to survival, Wells and Scott (1990) calculated a mean annual survival rate of Sarasota Bay dolphins at 96.2 percent. In comparison, a mark-recapture study of dolphins near Charleston, South Carolina reported an apparent annual survival rate of 95.1 percent (95 percent CI: 88.2–100) (Speakman *et al.,* 2010). In summary, survival rate and reproductive success of the Sarasota Bay stock is high and, except for those stocks for which we know individual marine mammal health and reproductive success are compromised from the Deepwater Horizon oil spill (*e.g.,* Mississippi Sound stock), we consider estuarine bottlenose stocks in the ARA and GOMRA to have similar rates of recruitment and survival.

For stocks that are known to be experiencing levels of stress from fishing and other anthropogenic sources, we look toward the ongoing management actions and research designed to reduce those pressures when considering our negligible impact determination. Overall, many estuarine bottlenose dolphin stocks are facing anthropogenic stressors such as commercial and recreational fishing, coastal development, habitat degradation (*e.g.,* oil spills, harmful algal blooms), and directed violence (intentional killing/injury) and have some level of annual M/SI. NOAA, including the SEFSC, is dedicated to reducing fishery take, both in commercial fisheries and research surveys. For example, the Atlantic BDTRT is in place to decrease M/SI in commercial fisheries and scientists at NOAA's National Center for Coastal Ocean Science (NCCOS) in Charleston, South Carolina, are undertaking research and working with local fishermen to reduce crab pot/trap and trawling entanglement (*e.g.,* McFee *et al.,* 2006, 2007; Greenman and McFee, 2014). In addition, through this rulemaking, the SEFSC has invested in developing measures that may be adopted by commercial fisheries to reduce bycatch rates, thereby decreasing the rate of fishing-related M/SI. For example, in 2017, the SEFSC executed the previously described Lazy Line Modification Mitigation Work Plan (see Potential Effects of Specified Activities on Marine Mammals and Their Habitat section) and is investigating the feasibility of applying gear modifications to select research trawl surveys. Also, as a result of this rulemaking process, the SEFSC has a heightened awareness of the risk of take and a commitment to not only implement the mitigation measures in this rulemaking but to develop additional mitigation measures beyond this rule that they find effective and practicable. Because all NMFS Science Centers are dedicated to decreasing gear

interaction risk, each Science Center is also committed to sharing information about reducing marine mammal bycatch, further educating fishery researchers on means by which is to make best professional judgements and minimize risk of take.

Region-wide, Gulf of Mexico states, in coordination with Federal agencies, are taking action to recover from injury sustained during the DWH spill. Funds from the spill have been allocated specifically for marine mammal restoration to the Florida, Alabama, Mississippi, Louisiana, Texas, Open Ocean, and Region-wide Trustee Implementation Groups (TIGs). As described above, in June 2017, the Trustees released their Strategic Framework for Marine Mammal Restoration Activities. The framework includes a number of marine mammal restoration goals (listed above) which would improve marine mammal populations over the course of the regulations by, among other things, increasing marine mammal resilience to natural stressors and addressing direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook-and-line fishery interactions. The Alabama TIG has made the most progress on executing this strategic framework. In 2018, the Alabama TIG committed to three projects designed to restore marine mammals: (1) Enhancing Capacity for the Alabama Marine Mammal Stranding Network; (2) Assessment of Alabama Estuarine Bottlenose Dolphin Populations & Health (including the Mobile Bay stock); and (3) Alabama Estuarine Bottlenose Dolphin Protection: Enhancement & Education.

Since publication of the proposed rule, an unusual mortality event (UME) has been declared for dolphins in the Gulf of Mexico, including BSE dolphins. We consider this UME in the context of our negligible impact determination since it was (a) recent, (b) is ongoing, and (c) most notably impacted BSE stocks (*e.g.,* Mobile Bay) for which we authorized M/SI take. Elevated bottlenose dolphin strandings have been occurring in the Northern Gulf of Mexico including Louisiana (n = 114), Mississippi (n = 139), Alabama (n = 58), and the panhandle of Florida (Alabama border through Franklin County; n = 38) since February 1, 2019. As of January 2, 2020, these 342 dolphin stranding rate is approximately three times higher than the average. The UME investigation is ongoing and, to date, no specific causes have been identified. However, a number of the stranded dolphins have had visible skin lesions that are consistent with freshwater exposure. During the spring season, it is not uncommon to see a reduction of salinity in bays, sounds, and estuaries and also an increase in dolphins (both live free swimming and stranded) exhibiting visible skin lesions consistent with low salinity exposure. These freshets may be a result of local rainfall and/or watershed flow from upstream snow melt or flood events emptying into the bays, sounds and estuaries of the Gulf of Mexico. Last year (2019) was an especially wet year with high levels of rainfall in addition to the opening of the spillways due to the extreme flooding upstream (*e.g.,* the Bonnet-Carre spillway was open 76 days (January–June 11, 2019) affecting areas east of the Mississippi River outflow). The majority of strandings associated with this UME occurred prior to July with the stranding rate decreasing over the last several months. For example, of the total 342 strandings since February 1, 2019, 289 occurred prior to July 5, 2019 (5 months). Between July 5, 2019 and October 3, 2019 (3 months), there were 28 strandings and between October 4, 2019 and January 2, 2020 (3 months), there were 25 strandings. Therefore, although the UME is ongoing, the rate of mortality is decreasing.

For all estuarine stocks, 0.2 M/SI annually means the potential for one mortality in 1 of the 5 years and zero mortalities in 4 of those 5 years. Therefore, the SEFSC would not be contributing to the total human-caused mortality at all in 4 of the 5, or 80 percent, of the years covered by this rule. That means that even if a dolphin from any estuarine stock were to be killed or seriously injured as a result of fisheries research, in 4 of the 5 years there could be no effect on annual rates of recruitment or survival from SEFSC-caused M/SI. Additionally, as noted previously, the loss of a male, which we have demonstrated is more likely when trawling is the cause of take, would have far less, if any, effect on annual rates of recruitment or survival. As described above, male bias has been documented for strandings with evidence of fishery interaction (most notably trawls), and the majority of work assessed under this rule is trawling. Therefore, there is likely a greater than 50 percent chance a male could be taken, further decreasing the likelihood of impact on annual rates of recruitment or survival.

In situations like this where potential M/SI take is fractional (*e.g.,* 0.2 per year), consideration must be given to the lessened impacts anticipated due to the absence of M/SI in four of the years and due to the fact that a single M/SI from gear interaction is more likely to be male. Lastly, we reiterate that PBR is a conservative metric and also not sufficiently precise to serve as an absolute predictor of population effects upon which mortality caps would appropriately be based. This is especially important given the minor difference between zero and one across the 5-year period covered by this rule, which is the smallest distinction possible when considering mortality. Wade (1998), authors of the paper from which the current PBR equation is derived, note (on page 29) that ''Estimating incidental mortality in one year to be greater than the PBR calculated from a single abundance survey does not prove the mortality will lead to depletion; it identifies a population worthy of careful future monitoring and possibly indicates that mortality-mitigation efforts should be initiated.''

Offshore Pelagic Stocks

For all offshore pelagic stocks where PBR is known, except for gray seal, the level of taking is less than 10 percent of r-PBR after considering other sources of human-caused mortality (Table 14). Again, for those stocks with total incidental M/SI take less than the significance threshold (*i.e.,* ten percent of residual PBR), we consider the effects of the specified activity to represent an insignificant incremental increase in ongoing anthropogenic M/SI and need not consider other factors in making a negligible impact determination except in combination with additional incidental take by acoustic harassment.

TABLE 14—SUMMARY INFORMATION OF PELAGIC STOCKS RELATED TO AUTHORIZED M/SI TAKE TO THE SEFSC IN THE ARA, GOMRA, AND CRA

Species	Stock	M/SI take (annual)	PBR	Annual M/SI (SAR)	NEFSC author-ized take by M/SI (annual)	r-PBR	MI/SI take/ r-PBR (%)
Risso's dolphin	Western North Atlantic	0.2	126	49.9	0.6	75.5	0.26.
	N. Gulf of Mexico	0.2	16	7.9	0	8.1	2.47.
	Puerto Rico/USVI	0.2	15	0.5	0	14.5	1.38.
Melon headed whale	N. Gulf of Mexico	0.6	13	0	0	13	4.62.
Short-finned pilot whale	Western North Atlantic	0.2	236	168	0	68	0.29.
	N. Gulf of Mexico	0.2	15	0.5	0	14.5	1.38.
	Puerto Rico/USVI	0.2	unk	unk	0	unk	unk.
Common dolphin	Western North Atlantic	0.8	557	406	1.4	149.6	0.53.
Atlantic spotted dolphin	Western North Atlantic	0.8	316	0	0.4	315.6	0.25.
	N. Gulf of Mexico	0.8	undet	42	0	unk	unk.
	Puerto Rico/USVI	0.2	unk	unk	0	unk	unk.
Pantropical spotted dolphin	Western North Atlantic	0.2	17	0	0	17	1.18.
	N. Gulf of Mexico	0.8	407	4.4	0	402.6	0.20.
Striped dolphin	Western North Atlantic	0.6	428	0	0	428	0.14.
	N. Gulf of Mexico	0.6	10	0	0	10	6.00.
Spinner dolphin	Western North Atlantic	0	unk	0	0	unk.	
	N. Gulf of Mexico	0.6	62	0	0	62	0.
	Puerto Rico/USVI	0	unk	unk	0	unk	0.
Rough-toothed dolphin	Western North Atlantic	0	1.3	0	0	1.3	0.
	N. Gulf of Mexico	0.2	3	0.8	0	2.2	9.09.
Bottlenose dolphin	Western North Atlantic Offshore	0.8	561	39.4	1.6	520	0.15.
	N. Gulf of Mexico Oceanic	0.8	60	0.4	0	59.6	1.34.
	N. Gulf of Mexico Continental Shelf.	0.8	469	0.8	0	468.2	0.17.
	Puerto Rico/USVI	0.2	unk	0	0	unk	unk.
Harbor porpoise	Gulf of Maine/Bay of Fundy	0.2	706	437	0	269	0.07.
Unidentified delphinid	Western North Atlantic	0.2			0.6	n/a	n/a.
	N. Gulf of Mexico	0.2			0	n/a	n/a.
	Puerto Rico/USVI	0.2			0	n/a	n/a.
Harbor seal	Western North Atlantic	0.2	2,006	389	12	1,605	0.01.
Gray seal	Western North Atlantic	0.2	1,389	5,688		−4,299	Neg.

Gray seals are the only stock where, at first look, annual M/SI is above PBR (but the authorized M/SI is less than 10 percent of PBR) (Table 14). However, the minimum abundance estimate provided in the SAR is based on the U.S. population estimate of 23,158 and does not include the Canada population. The total estimated Canadian gray seal population in 2016 was estimated to be 424,300 (95 percent CI = 263,600 to 578,300) (DFO 2017). This would be acceptable except that the annual M/SI rate of 5,688 includes M/SI from both the U.S. and Canada populations. Therefore, we should compare population to population. The draft 2018 SAR indicates the annual M/SI for the U.S. population is 878. That equates to an r-PBR of 511. Considering the SEFSC is requesting one take, by M/SI, of gray seal over 5 years (or 0.2 animals per year), this results in a percentage of 0.003, well under the 10 percent insignificance threshold. Further, given the authorized M/SI take of one animal over 5 years, this amount of take can be considered discountable given the large population size.

We note that for all stocks, we have conservatively considered in this analysis that any gear interaction would result in mortality or serious injury when it has been documented that some gear interactions may result in Level A harassment (injury) or no injury at all, as serious injury determinations are not made in all cases where the disposition of the animal is ''released alive'' and, in some cases, animals are disentangled from nets without any injury observations (*e.g.,* no wounds, no blood in water, etc).

Level B Take From Acoustic Sources

As described in greater depth previously, we do not believe that SEFSC use of active acoustic sources has the likely potential to result in Level A harassment, serious injury, or mortality. In addition, for the majority of species, the annual take by Level B harassment is very low in relation to the population abundance estimate (less than one percent). We have produced what we believe to be precautionary estimates of potential incidents of Level B harassment (Table 12). The procedure for producing these estimates, described in detail in *Estimated Take Due to Acoustic Harassment,* represents NMFS' best effort towards balancing the need to quantify the potential for occurrence of Level B harassment due to production of underwater sound with a general lack of information related to the specific way that these acoustic signals, which are generally highly directional and transient, interact with the physical environment and to a meaningful understanding of marine mammal perception of these signals and occurrence in the areas where the SEFSC operates. The sources considered here have moderate to high output frequencies (10 to 180 kHz), generally short ping durations, and are typically focused (highly directional with narrow beam width) to serve their intended purpose of mapping specific objects, depths, or environmental features. In addition, some of these sources can be operated in different output modes (*e.g.,* energy can be distributed among multiple output beams) that may lessen the likelihood of perception by and potential impacts on marine mammals in comparison with the quantitative

estimates that guide our take authorization.

As described previously, there is some minimal potential for temporary effects to hearing capabilities within specific frequency ranges for select marine mammals, but most effects would likely be limited to temporary behavioral disturbance. If individuals are in close proximity to active acoustic sources, they may temporarily increase swimming speeds (presumably swimming away from the source) and surface time or decrease foraging effort (if such activity were occurring). These reactions are considered to be of low severity due to the short duration of the reaction. Individuals may move away from the source if disturbed. However, because the source is itself moving and because of the directional nature of the sources considered here, it is unlikely any temporary displacement from areas of significance would occur, and any disturbance would be of short duration. In addition, because the SEFSC survey effort is widely dispersed in space and time, repeated exposures of the same individuals would be very unlikely. For these reasons, we do not consider the level of take by acoustic disturbance to represent a significant additional population stressor when considered in context with the level of take by M/SI for any species. Further, we note no take by harassment is for estuarine bottlenose dolphins. Therefore, only M/SI is incorporated into our negligible impact analysis for those stocks. For Level B take of coastal stocks in both the ARA and GOMRA, it is not possible to quantify take per stock given overlap in time and space. However, we consider the anticipated amount of take to have the potential to occur from some combination of coastal stocks.

Summary of Negligible Impact Determination for SEFSC

In summary, we consider the authorization would not impact annual rates of recruitment or survival of any of the stocks considered here because: (1) The possibility of injury, serious injury, or mortality from the use of active acoustic devices may reasonably be considered discountable; (2) the anticipated incidents of Level B harassment from the use of active acoustic devices consist of, at worst, temporary and relatively minor modifications in behavior; (3) the predicted number of incidents of potential mortality are at insignificant levels (*i.e.,* below ten percent of residual PBR) for select stocks; (4) consideration of more detailed data for gray seals do not reveal cause for concern; (5) for stocks above the insignificance threshold, the loss of one animal over 5 years, especially if it is male (the sex more likely to interact with trawls), is not likely to contribute to measurable changes in annual rates of recruitment or survival; (7) many stocks are subjected to ongoing management actions designed to improve stock understanding and reduce sources of M/SI from other anthropogenic stressors (*e.g.,* BDTRT management actions, pelagic longline TRT); (8) the efforts by the DHW Trustees are designed to restore for injury, including addressing ongoing stressors such as commercial fishery entanglement which would improve stock conditions; (9) implementation of this rule would build upon research designed to reduce fishery related mortality (*e.g.,* NCCOS crab pot/trap and trawl interaction research; HSU lazy line research); (10) the presumed efficacy of the planned mitigation measures in reducing the effects of the specified activity to the level of least practicable adverse impact, and (11) M/SI is more likely to be attributed to males and M/SI for all BSE stocks is the lowest level practicable (1 over 5 years) with no M/SI occurring in 4 of those 5 years.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from SEFSC fisheries research activities will have a negligible impact on affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Small Numbers Analysis—SEFSC

The total amount of take authorized for all estuarine and coastal bottlenose dolphin stocks is less than one percent of each estuarine stock and less than 12 percent of all coastal stocks (Table 15; we note this 12 percent is conservatively high because it considers that all Level B take would come from any given single stock). For pelagic stocks, the total amount of take is less than 13 percent of the estimated population size (Table 16).

TABLE 15—AMOUNT OF AUTHORIZED TAKE OF ESTUARINE AND COASTAL BOTTLENOSE DOLPHIN STOCKS IN THE ARA AND GOMRA RELATED TO STOCK ABUNDANCE

Stock	Stock abundance (N_{best})	Level B take	M/SI take (annual)	Take % population
Atlantic				
Northern South Carolina Estuarine Stock	50	0	0.2	0.40
Charleston Estuarine System Stock	289		0.2	0.07
Northern Georgia/Southern South Carolina Estuarine System Stock	250		0.2	0.08
Central Georgia Estuarine System	192		0.2	0.10
Southern Georgia Estuarine System Stock	194		0.2	0.10
Jacksonville Estuarine System Stock	412		0.2	0.05
Florida Bay Stock	514		0.2	0.04
South Carolina/Georgia Coastal Stock	6,027		0.6	0.01
Northern Florida Coastal Stock	877	110	0.6	12.61
Central Florida Coastal Stock	1,218		0.6	9.08
Northern Migratory Coastal Stock	6,639		0.6	1.67

TABLE 15—AMOUNT OF AUTHORIZED TAKE OF ESTUARINE AND COASTAL BOTTLENOSE DOLPHIN STOCKS IN THE ARA AND GOMRA RELATED TO STOCK ABUNDANCE—Continued

Stock	Stock abundance (N_{best})	Level B take	M/SI take (annual)	Take % population
Southern Migratory Coastal Stock	3,751		0.6	2.95
Gulf of Mexico				
Terrebonne Bay, Timbalier Bay	100	0	0.2	0.20
Mississippi River Delta	332		0.2	0.06
Mississippi Sound, Lake Borgne, Bay Boudreau	3,046		0.2 (M/SI), 0.2 (Level A).	0.01
Mobile Bay, Bonsecour Bay	1,393		0.2	0.16
St. Andrew Bay	124		0.2	0.16
St. Joseph Bay	152		0.2	0.13
St. Vincent Sound, Apalachicola Bay, St. George Sound	439		0.2	0.05
Apalachee Bay	491		0.2	0.04
Waccasassa Bay, Withlacoochee Bay, Crystal Bay	100		0.2	0.20
Northern Gulf of Mexico Western Coastal Stock	20,161	350	0.6	1.74
Northern Gulf of Mexico Northern Coastal Stock	7,185		0.6	4.88
Northern Gulf of Mexico Eastern Coastal Stock	12,388		0.6	2.83

TABLE 16—AMOUNT OF AUTHORIZED TAKE OF PELAGIC STOCKS IN THE ARA, GOMRA, AND CRA TO THE SEFSC RELATED TO STOCK ABUNDANCE

Species	Stock	Abundance (N_{best})	Level B take (annual)	M/SI take (annual)	Total take % population
N. Atlantic right whale	Western North Atlantic	451	4	0	0.89
Fin whale	Western North Atlantic	1,618	4	0	0.25
Sei whale	Western North Atlantic	357	4	0	1.12
Blue whale	Western North Atlantic	33	4	0	12
Humpback whale	Gulf of Maine	896	4	0	0.45
Minke whale	Western North Atlantic	2,591	4	0	0.15
Bryde's whale	Northern Gulf of Mexico	33	4	0	12.12
Sperm whale	North Atlantic	2,288	4	0	0.17
	Northern Gulf of Mexico	763	17	0	2.23
	Puerto Rico/USVI	unk	4	0	unk.
Risso's dolphin	Western North Atlantic	18,250	15	0.2	0.08
	N. Gulf of Mexico	2,442	10	0.2	0.42
	Puerto Rico/USVI	21,515	10	0.2	0.05
Kogia	Western North Atlantic	3,785	10	0	0.26
	N. Gulf of Mexico	186	12	0	6.45
Beaked whales	Western North Atlantic	7,092	9	0	0.13
	N. Gulf of Mexico	149	8	0	5.37
Melon headed whale	N. Gulf of Mexico	2,235	100	0.6	4.50
Short-finned pilot whale	Western North Atlantic	28,924	48	0.2	0.17
	N. Gulf of Mexico	2,415	25	0.2	1.04
	Puerto Rico/USVI	unk	20	0.2	unk.
Common dolphin	Western North Atlantic	70,184	268	0.8	0.38
Atlantic spotted dolphin	Western North Atlantic	44,715	37	0.8	0.08
	N. Gulf of Mexico	unk	198	0.8	unk.
	Puerto Rico/USVI	unk	50	0.2	unk.
Pantropical spotted dolphin	Western North Atlantic	3,333	78	0.2	2.35
	N. Gulf of Mexico	50,807	203	0.8	0.40
Striped dolphin	Western North Atlantic	54,807	75	0.6	0.14
	N. Gulf of Mexico	1,849	46	0.6	2.52
Spinner dolphin	Western North Atlantic	unk	100	0	unk.
	N. Gulf of Mexico	11,441	200	0.6	1.75
	Puerto Rico/USVI	unk	50	0	unk.
Rough-toothed dolphin	Western North Atlantic	136	10	0	7.35
	N. Gulf of Mexico	624	20	0.2	3.24
Bottlenose dolphin	Western North Atlantic Offshore	77,532	39	0.8	0.05
	N. Gulf of Mexico Oceanic	5,806	100	0.8	1.74
	N. Gulf of Mexico Continental Shelf	51,192	350	0.8	0.69
	Puerto Rico/USVI	unk	50	0.2	unk.
Harbor porpoise	Gulf of Maine/Bay of Fundy	79,833	0	0.2	0.00
Unidentified delphinid	Western North Atlantic	n/a	0	0.2	n/a
	N. Gulf of Mexico			0.2	
	Puerto Rico/USVI			0.2	
Harbor seal	Western North Atlantic	75,834	0	0.2	0.00
Gray seal	Western North Atlantic	27,131	0	0.2	0.00

The majority of stocks would see take less than 5 percent of the population taken with the greatest being 12.12 percent from Bryde's whales in the Gulf of Mexico. However, this is assuming all takes came from the same stock of beaked whales which is unlikely. Where stock numbers are unknown, we would expect a similar small amount of take relative to population sizes.

Based on the analysis contained herein of the proposed activity (including the mitigation and monitoring measures) and the authorized take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by the issuance of regulations to the SEFSC. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Adaptive Management

The regulations governing the take of marine mammals incidental to SEFSC fisheries research survey operations contain an adaptive management component which is both valuable and necessary within the context of 5-year regulations for activities that have been associated with marine mammal mortality. The use of adaptive management allows OPR to consider new information from different sources to determine (with input from the SEFSC regarding practicability) on an annual or biennial basis if mitigation or monitoring measures should be modified (including additions or deletions). The coordination and reporting requirements in this rule are designed to provide OPR with data to allow consideration of whether any changes to mitigation and monitoring is necessary. OPR and the SEFSC will meet annually to discuss the monitoring reports and current science and whether mitigation or monitoring modifications are appropriate. Decisions will also be informed by findings from any established working groups, investigations into gear modifications and dolphin-gear interactions, new stock data, and coordination efforts between all NMFS Fisheries Science Centers. Mitigation measures could be modified if new data suggest that such modifications would have a reasonable likelihood of reducing adverse effects to marine mammals and if the measures are practicable. In addition, any M/SI takes by the SEFSC and affiliates are required to be submitted within 48 hours to the PSIT database and OPR will be made aware of the take. If there is an immediate need to revisit monitoring and mitigation measures based on any given take, OPR and SEFSC would meet as needed.

The following are some of the possible sources of applicable data to be considered through the adaptive management process: (1) Results from monitoring reports, as required by MMPA authorization; (2) results from general marine mammal and sound research; (3) any information which reveals that marine mammals may have been taken in a manner, extent, or number not authorized by these regulations or subsequent LOAs; and (4) findings from any mitigation research (*e.g.,* gear modification). In addition, developments on the effectiveness of mitigation measures as discovered through research (*e.g.,* stiffness of lazy lines) will inform adaptive management strategies. Finally, the SEFSC–SCDNR working group is investigating the relationships between SCDNR research surveys and marine mammal takes. Any report produced by that working group will inform improvements to marine mammal monitoring and mitigation.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216–6A, NMFS must review our action (*i.e.,* the issuance of an incidental harassment authorization) with respect to potential impacts on the human environment.

Accordingly, NMFS prepared a PEA to consider the environmental impacts associated with the issuance of the regulations and LOA to SEFSC. Subsequently, NMFS issued the Final PEA for Fisheries and Ecosystem Research Conducted and Funded by the Southeast Fisheries Science Center and signed a Finding of No Significant Impact (FONSI) on March 23, 2020. The documents can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.*

Endangered Species Act (ESA)

On May 9, 2016, NMFS SERO issued a Biological Opinion on Continued Authorization and Implementation of National Marine Fisheries Service's Integrated Fisheries Independent Monitoring Activities in the Southeast Region (Biological Opinion). The Biological Opinion found independent fishery research is not likely to adversely affect the following ESA-listed species: Blue whales, sei whales, sperm whales, fin whales, humpback whales, North Atlantic right whales, gulf sturgeon and all listed corals in the action area. NMFS amended this Biological Opinion on June 4, 2018, updating marine mammal hearing group frequency ranges based on the best available science, adding evaluation of the effects of this proposed action on the Gulf of Mexico Bryde's whale, and including NMFS' issuance of regulations and a LOA to SEFSC as part of the proposed action. Similar to the previous finding, the amended Biological Opinion concluded SEFSC independent fishery research is not likely to adversely affect listed marine mammals or adversely modify critical habitat.

Classification

Pursuant to the procedures established to implement Executive Order 12866, the Office of Management and Budget has determined that this rule is not significant.

Pursuant to section 605(b) of the Regulatory Flexibility Act (RFA), the Chief Counsel for Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy of the Small Business Administration that this rule, if adopted, would not have a significant economic impact on a substantial number of small entities. The SEFSC is the sole entitiy that would be subject to the requirements in these regulations, and the SEFSC is not a small governmental jurisdiction, small organization, or small business, as defined by the RFA. Because of this certification, a regulatory flexibility analysis is not required and none has been prepared.

The rule for the SEFSC does not contain a collection-of-information requirement subject to the provisions of the Paperwork Reduction Act (PRA) because the applicant is a Federal agency.

List of Subjects in 50 CFR Part 219

Endangered and threatened species, Fish, Marine mammals, Reporting and recordkeeping requirements, Wildlife.

Dated: April 10, 2020.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For reasons set forth in the preamble, 50 CFR part 219 is amended as follows:

PART 219—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS

■ 1. The authority citation for part 219 continues to read as follows:

Authority: 16 U.S.C. 1361 *et seq.*

■ 2. Add subpart H to read as follows:

Subpart H—Taking Marine Mammals Incidental to Southeast Fisheries Science Center Fisheries Research in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea

Sec.

Subpart H—Taking Marine Mammals Incidental to Southeast Fisheries Science Center Fisheries Research in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea

§ 219.71 Specified activity and specified geographical region.

(a) Regulations in this subpart apply only to the National Marine Fisheries Service's (NMFS) Southeast Fisheries Science Center (SEFSC) and those persons it authorizes or funds to conduct fishery-independent research surveys on its behalf for the taking of marine mammals that occurs in the area outlined in paragraph (b) of this section and that occurs incidental to SEFSC and partner research survey program operations. Hereafter, ''SEFSC'' refers to both the SEFSC and all designated partners.

(b) The taking of marine mammals by the SEFSC and partners may be authorized in a 5-year Letter of Authorization (LOA) only if it occurs during fishery research surveys in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea and their associated estuaries.

§ 219.72 Effective dates.

This subpart is effective from June 5, 2020, through June 5, 2025.

§ 219.73 Permissible methods of taking.

Under an LOA issued pursuant to §§ 216.106 of this chapter and 219.77, the Holder of the LOA (hereinafter ''SEFSC'') may incidentally, but not intentionally, take marine mammals within the areas described in § 219.71 by Level A harassment, serious injury, or mortality associated with fisheries research gear including trawls, gillnets, and hook and line, and Level B harassment associated with use of active acoustic systems provided the activity is in compliance with all terms, conditions, and requirements of the regulations in this subpart and the relevant LOA.

§ 219.74 Prohibitions.

Notwithstanding takings contemplated in § 219.73 and authorized by an LOA issued under §§ 216.106 of this chapter and 219.77, no person in connection with the activities described in § 219.71 may:

(a) Violate, or fail to comply with, the terms, conditions, and requirements of this subpart or a LOA issued under §§ 216.106 of this chapter and 219.77;

(b) Take any marine mammal species or stock not specified in the LOA;

(c) Take any marine mammal in any manner other than as specified in the LOA; and

(d) Take a marine mammal specified in an LOA in numbers exceeding those authorized.

§ 219.75 Mitigation requirements.

When conducting the activities identified in § 219.71, the mitigation measures contained in any LOA issued under §§ 216.106 of this chapter and 219.77 must be implemented. These mitigation measures must include but are not limited to:

(a) *General conditions.* (1) SEFSC must take all necessary measures to coordinate and communicate in advance of each specific survey with the National Oceanic and Atmospheric Administration's (NOAA) Office of Marine and Aviation Operations (OMAO) or other relevant parties on non-NOAA platforms to ensure that all mitigation measures and monitoring requirements described herein, as well as the specific manner of implementation and relevant event-contingent decision-making processes, are clearly understood and agreed upon;

(2) SEFSC must coordinate and conduct briefings at the outset of each survey and as necessary between ship's crew (Commanding Officer/master or designee(s), as appropriate) and scientific party in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;

(3) SEFSC must coordinate, on an annual basis, with all partners to ensure that marine mammal-related requirements, procedures, and decision-making processes are understood and properly implemented.

(4) SEFSC must establish and maintain cooperating partner working group(s) to identify circumstances of a take should it occur and any action necessary to avoid future take.

(i) Working groups must be established if a partner takes more than one marine mammal within 5 years to identify circumstances of marine mammal take and necessary action to avoid future take. Each working group must meet at least once annually.

(ii) Each working group must consist of at least one SEFSC representative knowledgeable of the mitigation, monitoring and reporting requirements contained within these regulations, one or more research institution or SEFSC representative(s) (preferably researcher(s) aboard vessel when take or risk of take occurred), one or more staff from NMFS Southeast Regional Office Protected Resources Division, and one or more staff from NMFS Office of Protected Resources.

(5) When deploying any type of sampling gear at sea, SEFSC must at all times monitor for any unusual circumstances that may arise at a sampling site and use best professional judgment to avoid any potential risks to marine mammals during use of all research equipment.

(6) SEFSC must implement handling and/or disentanglement protocols that must be provided to survey personnel. During fishery surveys where there is a potential for take, at least two persons aboard SEFSC ships and one person aboard smaller vessels, including vessels operated by partners where no SEFSC staff are present, must be trained in marine mammal handling, release, and disentanglement procedures.

(7) For research surveys using gear that has the potential to hook or entangle a marine mammal in open-ocean waters (as defined from the coastline seaward), the SEFSC must implement move-on rule mitigation protocol upon observation of any marine mammal other than dolphins and porpoises attracted to the vessel (see specific gear types below for marine mammal monitoring details). Specifically, if one or more marine mammals (other than dolphins and porpoises) are observed near the sampling area and are considered at risk of interacting with the vessel or research gear, or appear to be approaching the vessel and are considered at risk of interaction, SEFSC must either remain onsite or move on to another sampling location. If remaining onsite, the set must be delayed until the animal(s) depart or appear to no longer be at risk of interacting with the vessel or gear. At such time, the SEFSC may deploy gear. The SEFSC must use best professional judgment, in accordance with this

paragraph, in making decisions related to deploying gear.

(8) Vessels Operation—While transiting in areas subjected to the North Atlantic right whale ship strike rule, all SEFSC-affiliated research vessels (NOAA vessels, NOAA chartered vessels, and research partner vessels) must abide by the required speed restrictions and sighting alert protocols. All NOAA research vessels operating in North Atlantic right whale habitat participate in the Right Whale Early Warning System.

(9) The SEFSC must avoid baiting the waters (*i.e,* chumming) during all surveys.

(b) *Trawl survey mitigation.* In addition to the general conditions provided in § 219.75(a), the following measures must be implemented during trawl surveys:

(1) SEFSC must conduct fishing operations as soon as practicable upon arrival at the sampling station and, if practicable, prior to other environmental sampling;

(2) The SEFSC must limit tow times to 30 minutes (except for sea turtle research trawls);

(3) The SEFSC must, during haul back, open cod end close to deck/sorting table to avoid damage to animals that may be caught in gear and empty gear as quickly as possible after retrieval haul back;

(4) The SEFSC must delay gear deployment if any marine mammals are believed to be at risk of interaction;

(5) The SEFSC must retrieve gear immediately if any marine mammals are believed to be entangled or at risk of entanglement;

(6) Dedicated marine mammal observations must occur at least 15 minutes prior to the beginning of net deployment when trawling occurs in waters less than 200 meters in depth. If trawling occurs in waters deeper than 200 m, dedicated marine mammal observations must occur at least 30 minutes prior to net deployment. This watch may include approach to the sampling station within 0.5 nm. Marine mammal watches should be conducted by systematically scanning the surrounding waters and marsh edge (if visible) 360 degrees around the vessel. If dolphin(s) are sighted and believed to be at-risk of interaction (*e.g.,* moving in the direction of the vessel/gear; moms/calves close to the gear; etc.), gear deployment should be delayed until the animal(s) are no longer at risk or have left the area on their own. If species other than dolphins are sighted, trawling must not be initiated and the marine mammal(s) must be allowed to either leave or pass through the area safely before trawling is initiated. All marine mammal sightings must be logged and reported per § 219.76 of this subpart.

(7) The SEFSC must retrieve gear immediately if marine mammals are believed to be captured/entangled in a net or associated gear (*e.g.,* lazy line) and follow disentanglement protocols;

(8) The SEFSC must minimize ''pocketing'' in areas of trawl nets where dolphin depredation evidence is commonly observed;

(9) When conducting research under an ESA section 10(a)(1)(A) scientific research permit issued by NMFS, all marine mammal mitigation and monitoring protocol contained within that permit must be implemented;

(10) SEFSC must implement standard survey protocols to minimize potential for marine mammal interactions, including maximum tow durations at target depth and maximum tow distance, and must carefully empty the trawl as quickly as possible upon retrieval. Trawl nets must be cleaned prior to deployment; and

(11) The SEFSC must continue investigation into gear modifications (*e.g.,* stiffening lazy lines) and the effectiveness of gear modification at avoiding entanglement, as funding allows.

(c) *Seine net and gillnet survey mitigation.* In addition to the general conditions provided in paragraph (a) of this section, the following measures must be implemented during seine and gillnet surveys:

(1) Conduct gillnet and trammel net research activities during daylight hours only.

(2) Limit soak times to the least amount of time required to conduct sampling;

(3) Conduct dedicated marine mammal observation monitoring beginning 15 minutes prior to deploying the gear and continue through deployment and haulback;

(4) Hand-check the net every 30 minutes if soak times are longer than 30 minutes or immediately if disturbance is observed;

(5) Reduce net slack and excess floating and trailing lines;

(6) Repair damaged nets prior to deploying;

(7) Delay setting net if a marine mammal is deemed to be at-risk of entanglement;

(8) Pull net immediately if a marine mammal is entangled and follow disentanglement procedures; and

(9) If marine mammals are sighted in the sampling area during active netting, the SEFSC must raise and lower the net leadline. If marine mammals do not immediately depart the area and the animal appears to be at-risk of entanglement (*e.g.,* interacting with or on a path towards the net), the SEFSC must delay or pull all gear immediately.

(d) *Hook and line (including longline) survey mitigation.* In addition to the General Conditions provided in paragraph (a) of this section, the following measures must be implemented during hook and line surveys:

(1) SEFSC must deploy hook and line gear as soon as is practicable upon arrival at the sampling station.

(2) SEFSC must initiate marine mammal observations (visual observation) no less than 30 minutes prior to gear deployment if sampling is conducted in waters greater than 200 m. If sampling in water less than 200 m, the SEFSC must initiate marine mammal observations no less than 15 minutes prior to setting gear. Observations must be conducted by scanning the surrounding waters with the naked eye and range-finding binoculars (or monocular) when longlines exceed observation distances using the naked eye. During nighttime operations, visual observation must be conducted using available vessel lighting.

(3) SEFSC must implement the move-on rule mitigation protocol, as described in paragraph (a)(7) of this section.

(4) SEFSC must maintain visual monitoring effort, where practicable, during the entire period of gear deployment and retrieval. If marine mammals are sighted before the gear is fully deployed or retrieved, SEFSC must take the most appropriate action to avoid marine mammal interaction. SEFSC may use best professional judgment in making this decision.

(5) If gear deployment or fishing has been suspended because of the presence of marine mammals, SEFSC may resume such operations when practicable only when the animals are believed to have departed the area in accordance with the move-on rule as described in paragraph (a)(7) of this section. If longline operations have been delayed because of the presence of protected species, the vessel resumes longline operations only when these species have not been sighted within 15 minutes if in less than 200 m or 30 minutes if greater than 200 m of water, or otherwise determined to no longer be at risk. SEFSC may use best professional judgment in making this decision.

(6) SEFSC must implement standard survey protocols, including maximum soak durations and limiting longline length to that necessary.

(7) For pelagic, surface longlines, gangion length must allow hooked

animals to reach the surface. SEFSC must immediately reel in lines if marine mammals are deemed to be at risk of interacting with gear.

(8) SEFSC must follow existing Dolphin Friendly Fishing Tips available at *http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/documents/dolphin_friendly_fishing_tips.pdf.*

(9) SEFSC must not discard leftover bait overboard while actively fishing.

(10) SEFSC must inspect tackles daily to avoid unwanted line breaks.

(11) Pull gear immediately if a marine mammal is hooked and follow disentanglement procedures.

(12) Avoid using stainless steel hooks.

(13) For pelagic longline surveys in the Atlantic Ocean, follow the Pelagic Longline Take Reduction Plan and Longline Marine Mammal Handling and Release Guidelines.

(d) *Electrofishing.* (1) SEFSC must implement marine mammal monitoring 15 minutes prior to the onset of electrofishing (this can include approach to the survey site). If the vessel moves to another survey site, the 15 minutes observation period must be repeated.

(2) SEFSC must implement a 50-m safety zone. If a marine mammal is observed within 50 m of the vessel or on a path toward the vessel, electrofishing must be delayed. Electrofishing must not begin until the animal is outside of the 50 m safety zone or on a consistent path away from the vessel.

(3) All samples collected during electrofishing must remain on the vessel and not be discarded until all electrofishing is completed to avoid attracting protected species.

§ 219.76 Requirements for monitoring and reporting.

(a) *Compliance coordination.* SEFSC must designate a compliance coordinator who is responsible for ensuring and documenting compliance with all requirements of any LOA issued pursuant to §§ 216.106 of this chapter and 219.77 and for preparing for any subsequent request(s) for incidental take authorization. All partners must report to this SEFSC-based compliance coordinator.

(b) *Visual monitoring program.* (1) Marine mammal visual monitoring must occur prior to deployment of trawl, net, and hook and line gear, respectively; throughout deployment of gear and active fishing of research gears (not including longline soak time); prior to retrieval of longline gear; and throughout retrieval of all research gear.

(2) When vessels are transiting, the SEFSC must maintain marine mammal observations to avoid ship strike.

(c) *Training.* (1) SEFSC must conduct annual training for all SEFSC and affiliate chief scientists and other personnel who may be responsible for conducting dedicated marine mammal visual observations to explain mitigation measures, by gear and the purpose for each measure, and monitoring and reporting requirements in the LOA, mitigation and monitoring protocols, and marine mammal identification and species that the SEFSC is authorized to incidentally take. SEFSC may determine the agenda for these trainings.

(2) The training must provide detailed descriptions of reporting, data collection, and sampling protocols. This portion of the training will include instruction on how to complete new data collection forms such as the marine mammal watch log, the incidental take form (*e.g.,* specific gear configuration and details relevant to an interaction with protected species), and forms used for species identification and biological sampling. The biological data collection and sampling training module will include the same sampling and necropsy training that is used for the Southeast Regional Observer training.

(3) SEFSC must also dedicate a portion of training to discussion of best professional judgment, including use in any incidents of marine mammal interaction and instructive examples where use of best professional judgment was determined to be successful or unsuccessful.

(4) SEFSC must coordinate with NMFS' Office of Science and Technology to ensure training and guidance related to handling procedures and data collection is consistent with other fishery science centers.

(d) *Handling procedures and data collection.* (1) SEFSC must implement standardized marine mammal handling, disentanglement, and data collection procedures. These standard procedures will be subject to approval by NMFS' Office of Protected Resources (OPR).

(2) For any marine mammal interaction involving the release of a live animal, SEFSC must collect necessary data to facilitate a serious injury determination.

(3) SEFSC must provide its relevant personnel with standard guidance and training regarding handling of marine mammals, including how to identify different species, bring an individual aboard a vessel, assess the level of consciousness, remove fishing gear, return an individual to water, and log activities pertaining to the interaction.

(4) At least two persons aboard SEFSC ships and one person aboard smaller vessels, including vessels operated by partners where no SEFSC staff are present, must be trained in marine mammal handling, release, and disentanglement procedures.

(5) SEFSC must record such data on standardized forms, which will be subject to approval by OPR. SEFSC must also answer a standard series of supplemental questions regarding the details of any marine mammal interaction.

(6) For any marine mammals that are killed during fisheries research activities, when practicable, scientists will collect data and samples pursuant to Appendix D of the SEFSC DEA, ''Protected Species Handling Procedures for SEFSC Fisheries Research Vessels.

(e) *Reporting.* (1) The SEFSC must follow protocol for reporting incidental takes:

(i) The SEFSC must notify the Southeast Marine Mammal Stranding Network (877–433–8299) immediately following the incidental take of a marine mammal. For injured/uninjured marine mammals, priority should be to release the animal before notifying the Stranding Network.

(ii) The SEFSC must report all marine mammal gear interaction to NMFS's Protected Species Incidental Take (PSIT) database within 48 hours of occurrence and must provide supplemental information to OPR and SERO upon request. Information related to marine mammal interaction (animal captured or entangled in research gear) must include details of research survey, monitoring conducted prior to interaction, full descriptions of any observations of the animals, the context (vessel and conditions), decisions made, and rationale for decisions made in vessel and gear handling.

(2) The SEFSC must submit a draft annual report to NMFS OPR. The period of reporting must be annual, beginning one year post-issuance of any LOA and the report must be submitted not less than ninety days following the end of a given year.

(i) SEFSC must provide a final report within thirty days following resolution of comments on the draft report.

(ii) These reports must contain, at minimum, the following:

(A) Annual line-kilometers and locations surveyed during which the EK60, ME70, and EQ50 (or equivalent sources) operating below 200 kHz were predominant and associated pro-rated estimates of actual take;

(B) Summary information regarding use of all trawl, gillnet, and hook and line gear, including location, number of

sets, hook hours, tows, etc., specific to each gear;

(C) Accounts of surveys where marine mammals were observed during sampling but no interactions occurred;

(D) All incidents of marine mammal interactions, including circumstances of the event and descriptions of any mitigation procedures implemented or not implemented and why and, if released alive, serious injury determinations;

(E) Summary information related to any disturbance of marine mammals and distance of closest approach;

(F) A written evaluation of the effectiveness of SEFSC mitigation strategies in reducing the number of marine mammal interactions with survey gear, including gear modifications and best professional judgment and suggestions for changes to the mitigation strategies, if any;

(G) A summary of all relevant training provided by SEFSC and any coordination with NMFS Office of Science and Technology and the SERO;

(H) A summary of meeting(s) and workshop(s) outcomes with any partner working group, including, the South Carolina Department of Natural Resources, designed to reduce the number of marine mammal interactions; and

(I) A written description of any mitigation research investigation efforts and findings (*e.g.,* lazy line modifications).

(f) *Reporting of injured or dead marine mammals.* (1) In the unanticipated event that the activity defined in § 219.71(a) clearly causes the take of a marine mammal in a prohibited manner, SEFSC personnel engaged in the research activity must immediately cease such activity until such time as an appropriate decision regarding activity continuation can be made by the SEFSC Director (or designee). The incident must be reported immediately to OPR and SERO. OPR and SERO will review the circumstances of the prohibited take and work with SEFSC to determine what measures are necessary to minimize the likelihood of further prohibited take. The immediate decision made by SEFSC regarding continuation of the specified activity is subject to OPR concurrence. The report must include the information included in paragraph (f)(2) of this section.

(2) SEFSC or partner must report all injured or dead marine mammals observed during fishery research surveys that are not attributed to the specified activity to the Southeast Regional Stranding Coordinator within 24 hours. If the discovery is made by a partner, the report must also be submitted to the SEFSC Environmental Compliance Coordinator. The following information must be provided:

(i) Time, date, and location (latitude/longitude) of the incident;

(ii) Description of the incident including, but not limited to, monitoring prior to and occurring at time of incident;

(iii) Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, visibility);

(iv) Description of all marine mammal observations in the 24 hours preceding the incident;

(v) Species identification or description of the animal(s) involved;

(vi) Status of all sound source or gear used in the 24 hours preceding the incident;

(vii) Water depth;

(viii) Fate of the animal(s) (*e.g.* dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared, etc.); and

(ix) Photographs or video footage of the animal(s).

(3) In the event of a ship strike of a marine mammal by any SEFSC or partner vessel involved in the activities covered by the authorization, SEFSC or partner must immediately report the information in paragraph (f)(2) of this section, as well as the following additional information:

(i) Vessel's speed during and leading up to the incident;

(ii) Vessel's course/heading and what operations were being conducted;

(iii) Status of all sound sources in use;

(iv) Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;

(v) Estimated size and length of animal that was struck; and

(vi) Description of the behavior of the marine mammal immediately preceding and following the strike.

§ 219.77 Letters of Authorization.

(a) To incidentally take marine mammals pursuant to these regulations, SEFSC must apply for and obtain an LOA.

(b) An LOA, unless suspended or revoked, may be effective for a period of time not to exceed the expiration date of these regulations.

(c) In the event of projected changes to the activity or to mitigation and monitoring measures required by an LOA, SEFSC must apply for and obtain a modification of the LOA as described in § 219.78.

(d) The LOA must set forth:

(1) Permissible methods of incidental taking;

(2) Means of effecting the least practicable adverse impact (*i.e.,* mitigation) on the species, its habitat, and on the availability of the species for subsistence uses; and

(3) Requirements for monitoring and reporting.

(e) Issuance of the LOA must be based on a determination that the level of taking will be consistent with the findings made for the total taking allowable under these regulations.

(f) Notice of issuance or denial of an LOA must be published in the **Federal Register** within 30 days of a determination.

§ 219.78 Renewals and modifications of Letters of Authorization.

(a) An LOA issued under §§ 216.106 of this chapter and 219.77 for the activity identified in § 219.71(a) must be renewed or modified upon request by the applicant, provided that:

(1) The specified activity and mitigation, monitoring, and reporting measures, as well as the anticipated impacts, are the same as those described and analyzed for these regulations (excluding changes made pursuant to the adaptive management provision in paragraph (c)(1) of this section), and

(2) OPR determines that the mitigation, monitoring, and reporting measures required by the previous LOA under these regulations were implemented.

(b) For an LOA modification or renewal requests by the applicant that include changes to the activity or the mitigation, monitoring, or reporting (excluding changes made pursuant to the adaptive management provision in paragraph (c)(1) of this section) that do not change the findings made for the regulations or result in no more than a minor change in the total estimated number of takes (or distribution by species or years), OPR may publish a notice of proposed LOA in the **Federal Register**, including the associated analysis of the change, and solicit public comment before issuing the LOA.

(c) An LOA issued under §§ 216.106 of this chapter and 219.77 for the activity identified in § 219.71(a) may be modified by OPR under the following circumstances:

(1) *Adaptive management.* OPR may modify or augment the existing mitigation, monitoring, or reporting measures (after consulting with SEFSC regarding the practicability of the modifications) if doing so creates a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring set forth in the preamble for these regulations.

(i) If, through adaptive management, the modifications to the mitigation, monitoring, or reporting measures are substantial, OPR will publish notification of proposed LOA in the **Federal Register** and solicit public comment.

(ii) [Reserved]

(2) *Emergencies.* If OPR determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in LOAs issued pursuant to §§ 216.106 of this chapter and 219.77, an LOA may be modified without prior notice or opportunity for public comment. Notification would be published in the **Federal Register** within 30 days of the action.

§§ 219.79–219.80 [Reserved]

[FR Doc. 2020–07933 Filed 5–5–20; 8:45 am]

BILLING CODE 3510–22–P