

**Annual Report for Incidental Take Statement [50 CFR 402.14(i)(3)] for Fisheries and Ecosystem Research Activities Conducted by the Northeast Fisheries Science Center during January 01, 2018 – December 31, 2018 to satisfy Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) authorizations**

Effective September 13, 2016, the National Marine Fisheries Service's Northeast Fisheries Science Center (NEFSC) and its designees were authorized under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(A)) to take marine mammals incidental to fishery and ecosystem research activities in the Atlantic Ocean, subject to the provisions of the MMPA and the Regulations Governing Taking of Marine Mammals Incidental to Northeast Fisheries Science Center Fisheries Research in the Atlantic Coast Region (50 CFR Part 219, Subpart D) (Regulations). Additionally, an authorized amended Incidental Take Statement for the June 2016 Programmatic Biological Opinion (Biop) to take Sperm Whales and several ESA listed species incidental to fishery and ecosystem research activities in the Atlantic Coast Region (ACR) was received. These authorizations are valid through September 09, 2021.

In accordance with these authorizations, the NEFSC is required to provide annual reports. The following report will cover the period from January 01, 2018 – December 31, 2018.

The report will be organized into the following sections:

- I. Overview of NEFSC's required mitigation measures for MMPA LOA and Response to Reasonable and Prudent Measures for ESA Biop.
- II. Line-kilometers surveyed during which EK60, ME70, DSM300 were predominant & pro-rated estimates of actual Level B acoustic take for Marine Mammals
- III. Information regarding use of all sampling gear
- IV. Accounts of all incidents of marine mammal interactions including Pinniped Haul out Census during Penobscot Bay Acoustic Survey
- V. Evaluation of effectiveness of NEFSC mitigation strategies
- VI. Final outcome of serious injury determinations
- VII. Training provided to NEFSC staff

## **I. Overview of NEFSC's required mitigation measures**

With the issuance of the NEFSC's MMPA LOA and ITS (Biop) a set of prescribed mitigation and reasonable and prudent measures were outlined for the Center to follow on all surveys in order to attempt to minimize the likelihood or severity of incidental gear interactions with marine mammals and other protected species. These measures vary slightly depending on the gear type and survey but are mainly comprised of dedicated marine mammal / protected species watches, an associated exclusion zone and move-on rule if protected species are seen during watch, and standard operating procedures by gear type.

Below are gear specific descriptions of these conservation measures.

### **Trawl Surveys:**

- (i) NEFSC shall conduct trawl operations as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall initiate marine mammal watches (visual observation) prior to sampling. Marine mammal watches shall be conducted by scanning the surrounding waters with the naked eye and binoculars (or monocular). During nighttime operations, visual observation shall be conducted using the naked eye and available vessel lighting.
- (iii) NEFSC shall implement the move-on rule if a marine mammal is sighted around the vessel before setting the gear. NEFSC may decide to move the vessel away from the marine mammal to a different section of the sampling area if the animal appears to be at risk of interaction with the gear. If, after moving on, marine mammals are still visible from the vessel, NEFSC may decide to move again or to skip the station. NEFSC may use best professional judgment in making this decision.
- (iv) NEFSC shall maintain visual monitoring effort during the entire period of time that trawl gear is in the water (i.e., throughout gear deployment, fishing, and retrieval). If marine mammals are sighted before the gear is fully removed from the water, NEFSC shall take the most appropriate action to avoid marine mammal interaction. NEFSC may use best professional judgment in making this decision.
- (v) If trawling operations have been suspended because of the presence of marine mammals, NEFSC may resume trawl operations when practicable only when the animals are believed to have departed the area. NEFSC may use best professional judgment in making this determination.
- (vi) NEFSC shall implement standard survey protocols to minimize potential for marine mammal interactions. These may include maximum tow durations at target depth and maximum tow distance, cleaning of nets prior to deployment, and careful emptying of the trawl as quickly as possible upon retrieval.

**Dredge Surveys:**

- (i) NEFSC shall deploy dredge gear as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall initiate marine mammal watches (visual observation) prior to sampling. Marine mammal watches shall be conducted by scanning the surrounding waters with the naked eye and binoculars (or monocular). During nighttime operations, visual observation shall be conducted using the naked eye and available vessel lighting.
- (iii) NEFSC shall implement the move-on rule. If marine mammals are sighted around the vessel before setting the gear, NEFSC may decide to move the vessel away from the marine mammal to a different section of the sampling area if the animal appears to be at risk of interaction with the gear. If after moving on, marine mammals are still visible from the vessel, NEFSC may decide to move again or to skip the station. NEFSC may use best professional judgment in making this decision but may not elect to conduct dredge survey activity when animals remain near the vessel.
- (iv) NEFSC shall maintain visual monitoring effort during the entire period of time that dredge gear is in the water (i.e., throughout gear deployment, fishing, and retrieval). If marine mammals are sighted before the gear is fully removed from the water, NEFSC shall take the most appropriate action to avoid marine mammal interaction. NEFSC may use best professional judgment in making this decision.
- (v) If dredging operations have been suspended because of the presence of marine mammals, NEFSC may resume operations when practicable only when the animals are believed to have departed the area. NEFSC may use best professional judgment in making this determination.
- (vi) NEFSC shall carefully empty the dredge gear as quickly as possible upon retrieval to determine if marine mammals are present in the gear.

**Longline Surveys:**

- (i) NEFSC shall deploy longline gear as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall initiate marine mammal watches (visual observation) no less than 30 minutes prior to both deployment and retrieval of the longline gear. Marine mammal watches shall be conducted by scanning the surrounding waters with the naked eye and binoculars (or monocular). During nighttime operations, visual observation shall be conducted using the naked eye and available vessel lighting.
- (iii) NEFSC shall implement the move-on rule. If marine mammals are sighted near the vessel within the 30 minutes before setting the gear, NEFSC may decide to move the vessel away from the marine mammal to a different section of the sampling area

if the animal appears to be at risk of interaction with the gear. If, after moving on, marine mammals are still visible from the vessel, NEFSC may decide to move again or to skip the station. NEFSC may use best professional judgment in making this decision but may not elect to conduct longline survey activity when animals remain near the vessel.

- (iv) For the Apex Predators Bottom Longline Coastal Shark Survey, if one or more marine mammals are observed within 1 nm of the planned location in the 30 minutes before gear deployment, NEFSC shall transit to a different section of the sampling area to maintain a minimum set distance of 1 nm from the observed marine mammals. If, after moving on, marine mammals remain within 1 nm, NEFSC may decide to move again or to skip the station. NEFSC may use best professional judgment in making this decision but may not elect to conduct pelagic longline survey activity when animals remain within the 1-nm zone.
- (v) NEFSC shall maintain visual monitoring effort during the entire period of gear deployment or retrieval. If marine mammals are sighted before the gear is fully deployed or retrieved, NEFSC shall take the most appropriate action to avoid marine mammal interaction. NEFSC may use best professional judgment in making this decision.
- (vi) If deployment or retrieval operations have been suspended because of the presence of marine mammals, NEFSC may resume such operations after there are no sightings of marine mammals for at least 15 minutes within the area or within the 1-nm area for the Apex Predators Bottom Longline Coastal Shark Survey. NEFSC may use best professional judgment in making this decision.
- (vii) NEFSC shall implement standard survey protocols, including maximum soak durations and a prohibition on chumming.

### **Gillnet Surveys:**

- (i) NEFSC shall deploy gillnet gear as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall initiate marine mammal watches (visual observation) prior to both deployment and retrieval of the gillnet gear. When the vessel is on station during the soak, marine mammal watches shall be conducted during the soak by scanning the surrounding waters with the naked eye and binoculars (or monocular).
- (iii) NEFSC shall implement the move-on rule. If marine mammals are sighted near the vessel before setting the gear, the NEFSC and/or its cooperating institutions, contracted vessels, or commercially-hired captains, as appropriate may decide to move the vessel away from the marine mammal to a different section of the sampling area if the animal appears to be at risk of interaction with the gear. If after moving on, marine mammals are still visible from the vessel, the NEFSC and/or its cooperating institutions, contracted vessels, or commercially-hired captains may decide to move again or to skip the station. NEFSC and/or its cooperating institutions, contracted vessels, or commercially-hired captains may use best

professional judgment in making this decision but may not elect to conduct the gillnet survey activity when animals remain near the vessel.

- (iv) If marine mammals are sighted near the vessel during the soak and are determined to be at risk of interacting with the gear, then NEFSC shall carefully retrieve the gear as quickly as possible. NEFSC and/or its cooperating institutions, contracted vessels, or commercially-hired captains may use best professional judgment in making this decision.
- (v) NEFSC shall implement standard survey protocols, including continuously monitoring the gillnet gear during soak time and removing debris with each pass as the net is reset into the water to minimize bycatch.
- (vi) NEFSC shall maintain visual monitoring effort during the entire period of gear deployment or retrieval. If marine mammals are sighted before the gear is fully deployed or retrieved, the NEFSC shall take the most appropriate action to avoid marine mammal interaction. NEFSC may use best professional judgment in making this decision.
- (vii) NEFSC shall ensure that surveys deploy acoustic deterrent devices on gillnets in areas where required for commercial fisheries. NEFSC must ensure that the devices are operating properly before deploying the net.
- (viii) NEFSC shall ensure that its cooperating institutions, contracted vessels, or commercially-hired captains conducting gillnet surveys adhere to monitoring and mitigation requirements and shall include required protocols in all survey instructions, contracts, and agreements.
- (ix) For the COASTSPAN gillnet surveys, NEFSC shall actively monitor for potential bottlenose dolphin entanglements by hand-checking the gill net every 20 minutes. In the unexpected case of a bottlenose dolphin entanglement, NEFSC shall request and arrange for expedited genetic sampling for stock determination. NEFSC shall also photograph the dorsal fin and submit the image to the NMFS Southeast Stranding Coordinator for identification/matching to bottlenose dolphins in the Mid-Atlantic Bottlenose Dolphin Photo-Identification Catalog.

#### **Pot/trap Surveys:**

- (i) NEFSC shall deploy pot/trap gear as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall initiate marine mammal watches (visual observation) no less than 30 minutes prior to both deployment and retrieval of the pot/trap gear. Marine mammal watches shall be conducted by scanning the surrounding waters with the naked eye and binoculars (or monocular). During nighttime operations, visual observation shall be conducted using the naked eye and available vessel lighting.
- (iii) NEFSC shall implement the move-on rule. If marine mammals are sighted near the

vessel before setting the gear, NEFSC, as appropriate, may decide to move the vessel away from the marine mammal to a different section of the sampling area if the animal appears to be at risk of interaction with the gear. If after moving on, marine mammals are still visible from the vessel, NEFSC may decide to move again or to skip the station. NEFSC may use best professional judgment in making this decision but may not elect to conduct the pot and trap activity when animals remain near the vessel.

- (iv) If marine mammals are sighted near the vessel during the soak and are determined to be at risk of interacting with the gear, then NEFSC shall carefully retrieve the gear as quickly as possible. NEFSC may use best professional judgment in making this decision.
- (v) NEFSC shall ensure that surveys deploy gear fulfilling all pot/trap universal commercial gear configurations such as weak link requirements and marking requirements as specified by applicable take reduction plans as required for commercial pot/trap fisheries.
- (vi) NEFSC shall ensure that its cooperating institutions, contracted vessels, or commercially-hired captains conducting pot/trap surveys adhere to monitoring and mitigation requirements and shall include required protocols in all survey instructions, contracts, and agreements.

#### **Fyke Net Surveys:**

- (i) NEFSC shall conduct fyke net gear deployment as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall visually survey the area prior to both deployment and retrieval of the fyke net gear. NEFSC shall conduct monitoring and retrieval of the gear every 12- to 24-hour soak period.
- (iii) If marine mammals are in close proximity (approximately 100 m) of the setting location, NEFSC shall determine if the set location should be moved. NEFSC may use best professional judgment in making this decision.
- (iv) If marine mammals are observed to interact with the gear during the setting, NEFSC shall lift and remove the gear from the water.
- (v) NEFSC must install and use a marine mammal excluder device at all times when the 2-m fyke net is used.

#### **Beach Seine Surveys:**

- (i) NEFSC shall conduct beach seine deployment as soon as is practicable upon arrival at the sampling station.

- (ii) NEFSC shall visually survey the area prior to both deployment and retrieval of the seine net gear.
- (iii) If marine mammals are in close proximity of the seining location, NEFSC shall lift the net and remove it from the water. NEFSC may use best professional judgment in making this decision.

#### **Rotary Screw Trap Surveys:**

- (i) NEFSC shall conduct rotary screw trap deployment as soon as is practicable upon arrival at the sampling station.
- (ii) NEFSC shall visually survey the area prior to both setting and retrieval of the rotary screw trap gear. If marine mammals are observed in the sampling area, NEFSC shall suspend or delay the sampling. NEFSC may use best professional judgment in making this decision.
- (iii) NEFSC shall tend to the trap on a daily basis to monitor for marine mammal interactions with the gear.
- (iv) If the rotary screw trap captures a marine mammal, NEFSC shall carefully release the animal as soon as possible.

#### **Reasonable and Prudent Measures for ESA listed Species**

We believe the following RPMs are necessary or appropriate to minimize and monitor the impacts of incidental take of sperm whales, sea turtles, shortnose and Atlantic sturgeon, and Atlantic salmon. They include a training requirement for NEFSC cruise and cooperative research staff (#1), which must be accomplished through workshops in the classroom or the field, followed by four sets of activities that must be conducted and completed by NEFSC cruise and cooperative research staff while at sea in the order listed below in the aftermath of any event of incidental take (#2-#5).

##### **RPM #1 PROTECTED SPECIES OBSERVER AND DISENTANGLEMENT TRAINING:**

NEFSC staff scientists and/or crew regularly participating in research cruises or cooperative research studies that may interact with ESA-listed species must obtain or possess both protected species observer training (to be given through the NEFOP) and sea turtle disentanglement training (to be provided by staff from the GARFO PRD). This is an absolute requirement for staff scientists and crew involved in the following survey programs which have had past interactions with ESA-listed species: (1) COASTSPAN, (2) Spring and Fall NEFSC BTS, (3) Spring and Fall NEAMAP, and (4) Apex Predators.

- (i) See Training in Section VI, below.

**RPM #2 HANDLING AND RESUSCITATION:** Any sea turtles, shortnose sturgeon, Atlantic sturgeon, or Atlantic salmon caught and retrieved in gear used in NEFSC research cruises or cooperative research projects covered under this Opinion must be handled and resuscitated (if unresponsive) according to established protocols and whenever at-sea conditions are safe for those handling and resuscitating the animal(s) to do so.

- (i) All NEFSC survey and cooperative research vessels and their staff onboard have copies of the sea turtle handling and resuscitation requirements in a supplied manual and as reproduced in the wheelhouse card in Appendix C prior to the commencement of any on-water activity. The NEFSC or its research partners must carry out these handling and resuscitation procedures any time a sea turtle is incidentally captured and brought onboard the vessel during the proposed actions. NEFSC ensures that survey and cooperative research staff give priority to limiting handling times for these species to a minimum (i.e., kept to 15 minutes or less) to limit the amount of stress placed on the animals.
- (ii) For ESA-listed whales and sea turtles encountered during fisheries and ecosystem research that appear injured, sick, distressed, or dead (including stranded or entangled individuals), NEFSC survey and cooperative research staff will immediately contact the Greater Atlantic Region Marine Animal Hotline at 866-755-NOAA (6622) for further instructions and guidance on handling, retention, and/or disposal of the animal.
- (iii) NEFSC ensures that survey and cooperative research staff attempt to resuscitate any shortnose sturgeon, Atlantic sturgeon, or Atlantic salmon that are unresponsive or comatose by providing a running source of water over the gills.

**RPM #3 DATA COLLECTION, SAMPLING, AND TAGGING:** Any sea turtles, shortnose sturgeon, Atlantic sturgeon, or Atlantic salmon caught and/or retrieved in gear used in NEFSC research cruises or cooperative research projects covered under this Opinion must first be identified to species or species group. Each ESA-listed species caught and/or retrieved must then be properly documented using appropriate equipment and data collection forms provided by the GARFO PRD, NEFSC, or NMFS Office of Science and Technology. Finally, biological data and samples must be collected for all sea turtles, sturgeon, and salmon caught and retrieved from fishing gear and appropriate tags be applied to the animals if it is determined that they have not been tagged already.

- (i) NEFSC ensures that both survey vessels and those vessels participating in cooperative research projects have at least one staff member onboard at all times that on-water work is being conducted who is experienced in the identification of ESA-listed whales, sea turtles, shortnose and Atlantic sturgeon, and Atlantic salmon thru training.
- (ii) NEFSC ensures that both survey vessels and vessels participating in cooperative research projects with a history or likelihood of ESA-listed species take have a passive integrated transponder (PIT) tag reader onboard and that this reader be used to scan any captured sea turtles, sturgeon, or salmon for tags. Any recorded tags must be entered into the PSIT record or reported to the GARFO PRD. Any untagged sturgeon or salmon must be tagged with PIT tags (and/or flipper tags for sea turtles)



and the tag numbers recorded into the PSIT database or reported to the GARFO PRD. NEFSC has supplied most of their partners with PIT tag readers and pit tags.

- (iii) NEFSC ensures that staff working on projects either with a history of sea turtle interactions or deploying fishing gear in areas and at times of year when sea turtles are present obtain two biopsy samples from all captured sea turtles (alive or dead). One sample must be collected for genetics and the other for stable isotope analysis. This has been done in accordance with NEFOP protocols.
- (iv) NEFSC ensures that survey and cooperative research staff either with a history of sturgeon or salmon interactions or deploying fishing gear in areas and at times of year when sturgeon or salmon are present obtain genetic samples from all captured fish (alive or dead). This must be done in accordance with the fin clip procedures provided by the GARFO PRD. NEFSC had difficulty advising COASTSPAN inshore shark longline and gill net programs. Takes were reported, but tagging and biopsies were not taken. NEFSC will assure that training and sampling will commence for the next sampling year from this program.
- (v) NEFSC ensures that survey and cooperative research staff measure, weigh, and either photograph or video all sea turtles, sturgeon, and salmon incidentally captured. The condition of each animal and any potential injuries are documented to the best of the staff member's ability. These data are entered as part of the PSIT record for each incidental take. Data logs, photos, and videos are uploaded to PSIT following the completion of all cruises.

**RPM #3 RELEASE OR RETENTION:** Any live sea turtles, shortnose sturgeon, Atlantic sturgeon, or Atlantic salmon caught and retrieved in gear used in NEFSC research cruises or cooperative research projects covered under this Opinion must ultimately be released according to established protocols and whenever at-sea conditions are safe for those releasing the animal(s) to do so. Any dead sea turtles, shortnose sturgeon, Atlantic sturgeon, or Atlantic salmon must be retained, if logistically feasible and instructed by the GARFO PRD to do so, and then transferred to an appropriately permitted research facility either the GARFO PRD or NEFSC Protected Species Branch will identify so that a necropsy can be undertaken to attempt to determine the cause of death and/or other appropriate examinations can take place. Sea turtle, sturgeon, and salmon carcasses should be held in cold storage until shipping.

- (i) NEFSC assures all live, uninjured sea turtles, sturgeon, and salmon that are incidentally captured during NEFSC surveys or cooperative research projects must be released back into the water as quickly as possible to minimize stress to the animal.
- (ii) NEFSC assures that in the event of any lethal takes of sea turtles, sturgeon, or salmon, any dead specimens or body parts must be preserved (frozen is preferred, although refrigerated is permitted as well if a freezer is not available) until retention or disposal procedures are discussed with the GARFO PRD. In the event a carcass is severely damaged or decayed to the point at which a necropsy would not be feasible, the animal will be disposed of at sea after a genetic sample is taken. It is up to the NEFOP-trained or experienced staff member onboard to assess the state of damage/decay and to ultimately make the call as to whether a necropsy is possible.

The form included as Appendix H (sturgeon salvage form) must also be completed and submitted to us for any dead sturgeon captured.

**RPM #4 REPORTING:** The GARFO PRD must be notified and/or a Protected Species Incidental Take (PSIT) database record must be entered for all observed takes of sperm whales, sea turtles, shortnose sturgeon, Atlantic sturgeon, or Atlantic salmon resulting from NEFSC research cruises or cooperative research projects covered under this Opinion. To comply with RPM #5, the NEFSC or its research partners must ensure that either a PSIT record is entered (online at <https://www.st.nmfs.noaa.gov/finss/psit/psitMain.jsp>) or the GARFO PRD is notified within 48 hours of any interaction with an ESA-listed whale, sea turtle, sturgeon, or salmon. These reports, if unable to be entered into the PSIT database, can instead be sent via e-mail to [Incidental.take@noaa.gov](mailto:Incidental.take@noaa.gov) (preferred), sent by fax to (978) 281-9394, or called in to the GARFO PRD. The report must include at a minimum: (1) survey name and applicable information (e.g., vessel name, station number); (2) GPS coordinates describing the location of the interaction (in decimal degrees or degrees/minutes/seconds); (3) gear type (e.g., bottom trawl, gillnet, longline) or sonar (e.g., EK60 or ME70) involved; (4) time and date of the interaction; and (5) identification of the animal to the species level. We also request that in the “Comments” field of the PSIT entry the following information be provided: (1) a link to or acknowledgement that a clear photograph or video of the animal was taken (multiple photographs are suggested, including at least one photograph of the head scutes); (2) actual or estimated length, width, and weight of the animal; (3) ID numbers of external or PIT tags either recorded or applied to the animal; (4) condition of the animal upon retrieval and release/retention (e.g., alive uninjured, alive potentially injured, comatose or unresponsive, fresh dead, decomposed); and (5) a description of any care or handling provided. If reporting within 48 hours is not possible (e.g., due to distance from shore or lack of ability to communicate via phone, fax, or email), the interaction must be reported as soon as the vessel is in a position to do so and absolutely no later than 48 hours after the vessel returns to port.

- (i) To comply with RPM #5, the NEFSC NEPA Coordinator will provided a tabular summary to the GARFO PRD within eight months of completion of all on-water survey or cooperative research work for a given calendar year, providing a summary spreadsheet of ESA-listed species interactions that occurred by cruise/vessel/trip and species. The NEPA Coordinator included these summary reports as part of the annual “Omnibus data response” prepared each spring. In this case, NEFSC requested an extension to June 21, 2019.
- (ii) To comply with RPM #5, the NEFSC or its research partners shall immediately suspend any fisheries or ecosystem research activities if a dead or injured sperm whale (or any other ESA-listed whale) is observed nearby. If we, based on the information available, and in coordination with the regional stranding network, determine that the death or injury of the animal could be attributable to the proposed actions in question, all survey activities on that trip must cease and consultation must be reinitiated.
- (iii) To comply with RPM #5, the NEFSC submitted an annual report on estimated sperm whale acoustic interactions to both the OPR and GARFO PRD as part of the Omnibus data request of 2019. The report contains annual line- kilometers surveyed during which the Simrad EK60 and ME70 sonar sources were predominant and pro-rated estimates of actual sperm whale take.

**II: Line-kilometers surveyed during which EK60, ME70, DSM300 (Raytheon C120) were predominant & pro-rated estimates of actual Level B acoustic take**

Table 1. Total line-kilometers (kms) surveyed during the reporting period (January 1, 2018 – December 31, 2018) for which the EK60, ME70, and C120 echosounder was predominant acoustic source in the LME compared to the totals calculated in the NEFSC’s MMPA LOA application (Appendix D of NEFSC’s National Environmental Policy Act Programmatic Environmental Assessment).

NEFSC Large Marine Ecosystem				
Echosounder	EA Estimated summed dominant line-kms/source (0-200m)	Summed line-kms of reporting period / source (0-200m)	EA Estimated summed dominant line-kms/source (>200m)	Summed line-kms of reporting period / source (>200m)
C120	16,927	10,601	NA	NA
EK60	36,697	4,628	NA	1,359
ME70	14,000	17,737	NA	NA

Table 2. Total line-kilometers (kms) surveyed during the reporting period ( January 1, 2018 – December 31, 2018) for which the EK60 or ME70 echosounder was predominant acoustic source in the NEFWSC Offshore area compared to the totals calculated in the NEFSC’s MMPA LOA application (Appendix D of NEFSC’s National Environmental Policy Act Programmatic Environmental Assessment).

NEFSC Offshore Area				
Echosounder	EA Estimated summed dominant line-kms/source (0-200m)	Summed line-kms of reporting period / source (0-200m)	EA Estimated summed dominant line-kms/source (>200m)	Summed line-kms of reporting period / source (>200m)
EK60	3,666	NA	8,816	1,257
ME70	5,150	NA	0	0

### III: Information regarding use of all sampling gear

Table 3. NEFSC trawl deployments by project for reporting period of January 1, 2018 – December 31, 2018. Durations are in minutes.

<b>Trawl Project</b>	<b>Trawl Gear Type</b>	<b>#Trawls</b>	<b>Depth Range (m)</b>	<b>Duration</b>
Spring Bottom Trawl Survey - 2018	4 seam 3 bridle rock hopper	324	10 - 400	20
Fall Bottom Trawl Survey - 2018	4 seam 3 bridle rock hopper	269	10 - 400	20
Spring State of Mass Inshore Survey - 2018	2 seam rockhopper	105	5 - 50	30
Fall State of Mass Inshore Survey - 2018	2 seam rockhopper	95	5 - 50	30
Northern Shrimp Trawl GOM survey	4 seam shrimp	81	50 - 400	20
Spring NEAMAP Inshore Survey - 2018	4 seam 3 bridle cookie sweep	150	5 - 50	20
Fall NEAMAP Inshore Survey - 2018	4 seam 3 bridle cookie sweep	150	5 - 50	20
Spring ME/NH Inshore Trawl Survey	4 seam shrimp rock hopper	118	5 - 200	20
Fall ME/NH Inshore Trawl Survey	4 seam shrimp rock hopper	96	5 - 200	20
Meso-Pelagic Mid-Water Trawl	High Speed Midwater trawl	5	0 – 250	60

Table 4. NEFSC dredge deployments by project for reporting period of January 1, 2018 – December 31, 2018. Dredge haul durations in minutes.

<b>Dredges</b>	<b>Trawl Gear Type</b>	<b>#Dredge hauls</b>	<b>Depth Range (m)</b>	<b>Duration</b>
Surf Clam and Ocean Quahog	COMM. CLAM DREDGE 13'	179	10 – 100	5
Sea Scallop Survey	8' scallop dredge	162	10 – 100	15
Scallop Grant Programs ()	8' and 15' dredges	2,217	10 - 150	15/30

Table 5. NEFSC long line deployments by project for reporting period from January 1, 2018 – December 31, 2018. Long line soak times in hours.

<b>Long Line Gear</b>	<b>Sets</b>	<b>Length of set (nm)</b>	<b>Soak Time (hours)</b>
Spring 2018 GOM Longline Survey	45	1	2
Fall 2018 GOM Longline Survey	45	1	2
Apex Predator Survey	53	300 hooks	3
COASTSPAN	1,219	1 – 100 (avg. 39)	913

Table 6. NEFSC gill net deployments by project for reporting period from January 1, 2018 – December 31, 2017. Gill net soak times in hours.

Gill Net Gear	Sets	Length of set (meters)	Soak Time (hours)
COASTSPAN	340	< 50 meters	170

Table 7. NEFSC fyke net, beach seine, pot/trap, rotary screw traps deployments by project for reporting period from January 1, 2018 – December 31, 2017.

Gear	Effort
Fyke Net	none
Beach Seine	none
Rotary Screw Trap	9 traps

#### IV: Accounts of all incidents of marine mammal interactions

##### Level A interactions in NEFSC LME and Offshore Area

During the reporting period, NEFSC had **zero** Level A interaction events with marine mammals reported.

Table 8. NEFSC’s annual Level B harassment by acoustic sources by sound type for each marine mammal species in the LME. For each species and predominant source, the cross sectional area for the relevant depth strata (Table 6.5 of NEFSC EA appendix D) was multiplied by the actual line-km for each respective strata (Table 1.) and the volumetric density (shown here) to assess Level B harassment for the reporting period.

Common Name	Volumetric density (#/km3)	Typical vertical habitat		NEFSC Reporting Period Acoustic Takes (# of animals)			Reporting Period Total Takes	EA Estimated Annual Takes
		0 - 200m	>200m	EK60	ME70	C120		
<b>LME Area Cetaceans</b>								
Atlantic white-sided dolphin	0.122	X		8	43	19	70	144
Cmn. bottlenose dolphin (coastal)	0.5165	X		34	184	79	297	609
Cmn. bottlenose dolphin (offshore)	0.03	X		2	11	5	17	35
Cuvier’s beaked whale	0.0105	X		0	4	2	6	12
Dwarf/Pygmy Sperm Whale	0.00004		X	0	0	0	0	10

Harbor Porpoise	0.0965	X		6	34	15	55	114
Long-finned Pilot Whale	0.1725	X		11	61	26	99	203
Mesoplodon beaked whales	0.0105	X		1	4	2	6	12
Risso's dolphin	0.011	X		1	4	2	6	13
Short-beaked common dolphin	1.0575	X		69	377	161	608	1,247
Short-finned Pilot Whale	0.1725	X		11	61	26	99	203
<b>Sperm Whale</b>	<b>0.00005</b>		<b>X</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>
White-beaked dolphin	0.0405	X		3	14	6	23	48
<b>LME Area Pinnipeds</b>								
Gray Seal	0	X		0	0	0	0	0
Harbor Seal	1.422	X		231	507	217	817	1,677

Table 9. NEFSC's annual Level B harassment by acoustic sources by sound type for each marine mammal species in the offshore area. For each species and predominant source, the cross sectional area for the relevant depth strata (Table 6.5 of NEFSC EA appendix D) was multiplied by the actual line-km for each respective strata (Table 1.) and the volumetric density (shown here) to assess Level B harassment for the reporting period.

Common Name	Volumetric density (#/km <sup>3</sup> )	Typical vertical habitat		NEFSC Reporting Period Acoustic Takes (# of animals)			Reporting Period Total Takes	EA Estimated Annual Takes
		0 - 200m	>200m	EK60	ME70	C120		
<b>Offshore Area Cetaceans</b>								
Atlantic spotted dolphin	0.104		X	2	0	0	2	16
Cmn. bottlenose dolphin (offshore)	0.263		X	5	0	0	5	41
Cuvier's beaked whale	0.0312		X	1	0	0	1	19
Dwarf sperm whale	0.004		X	0	0	0	0	2
Long-finned pilot whale	0.0512		X	1	0	0	1	32
Mesoplodon beaked whales	0.0312		X	1	0	0	1	19
Northern bottlenose whale	0.0034		X	0	0	0	0	2
Pygmy sperm whale	0.004		X	0	0	0	0	2
Risso's dolphin	0.422		X	8	0	0	8	66
Rough toothed dolphin	0.008		X	0	0	0	0	1
Short-beaked common dolphin	0.9375		X	17	0	0	17	146
Short-finned pilot whale	0.0512		X	1	0	0	1	32
<b>Sperm whale</b>	<b>0.0304</b>		<b>X</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>19</b>
Striped dolphin	1.514		X	27	0	0	27	236

## **Level B Disturbance of Penobscot Bay Pinniped Haul-out Area Survey**

As part of the NEFSC Atlantic Salmon Group’s Penobscot hydroacoustic transect survey, Avian and Marine Mammal Census (referred as **Penobscot River pinniped haul out census** in LOA) are conducted to document fish predators relative to the fish biomass identified in the acoustics. NEFSC Atlantic Salmon Research Team used 10x50 magnification binoculars to survey both sides of the river and ahead of the boat for birds and mammals, continually scanning as the boat proceeded along the transect line. All bird and marine mammal species in or immediately above the river or using the banks of the river, and their primary (i.e. swimming, flying, and stationary) and secondary (i.e. foraging, resting) behavior were recorded. Time of each observation was recorded to the nearest minute. The observations and time were joined with the waypoint data from the GPS to geospatially assign observations. The width of the estuary allowed for accurate observation from shore to shore for the northern estuary portion but wider sections in the lower estuary were considered a sample count and not a census. The speed of the boat allowed for approximately 200 m to be traveled in one minute, and most birds and marine mammals were observed well within 200 m. Effort was made to avoid counting birds multiple times in the same area by tracking activity as much as practical. The transect design passes by 3 ledges that are potential pinniped haul-outs and these points are observed by binocular from a distance of 300-500 meters.

The NEFSC is tasked with ranking hauled-out pinniped behavior according to the three-point scale of response severity (1 = alert; 2 = movement; 3 = flight). In general, the haul-out seals remained on the ledge during observation and did not flight to the water as a group. According to the three-point scale of response severity (1 = alert; 2 = movement; 3 = flight), the haul-out observations should be considered level = 1 as it isn’t possible to equate movement and flight from the ledge as caused by the vessel or acoustic gear versus normal behaviors. During the 11 hydroacoustics surveys in 2018, 3 species of marine mammal were observed: Harbor seal *Phoca vitulina*, Grey Seal *Halichoerus grypus* and harbor porpoise *Phocoenaphocoena*. We observed 401 Harbor seals and 0 grey seals on haul outs.

In addition, 52 harbor seals, 11 grey seals and 2 harbor porpoise were observed swimming. Since these observations were all made while the vessel was under power, the response severity should be conservatively considered = 3. The mammals observed never maintained their position and either swam away or dove assumingly in response to our nearby vessel.

Table 10. Pinniped Haul Out Survey and Response Severity

Species	Count (on haul-out)	Count (in water)	Response (severity score = # of animals)
Harbor seal	401	52	(1) (3)
Grey seal	0	11	(1) (3)
Harbor porpoise	n/a	2	(1) (3)

### **Anticipated Amount or Extent of Incidental Take**

Based on the information presented in the Opinion, we anticipate that the fisheries and ecosystem research projects being conducted and funded by the NEFSC over the next five years (and in future five-year periods) will result in the capture of up to:

85 NWA DPS loggerhead sea turtles (ten lethal);  
 95 Kemp’s ridley sea turtles (15 lethal);  
 10 North Atlantic DPS green sea turtles (none lethal);  
 10 Leatherback sea turtles (five lethal);  
 10 Shortnose sturgeon (one lethal);  
 595 Atlantic sturgeon (30 lethal)  
 308 from the NYB DPS (15 lethal),  
 130 from the SA DPS (seven lethal),  
 70 from the CB DPS (four lethal),  
 60 from the GOM DPS (three lethal),  
 14 from the Carolina DPS (one lethal),  
 13 Canadian origin (non-listed);  
 5 Gulf of Maine DPS Atlantic salmon (two lethal).

Table 11 NEFSC Incidental Turtle Takes 2018

Species	Total	Tagged	Biopsy Taken
Kemp's Ridley	4	3	4
Loggerhead	10	9	9
Green	3	0	0
Total	17	12	13

Seventeen total turtles from all of NEFSC projects were taken in 2018. A combination of running out of tags and some the COASTSPAN projects having limited time and experience resulted in a reduction in the number of tags applied and samples taken. Three green turtles were caught in small quick set gillnets by Florida Atlantic University. Each green turtle was released alive and in good condition before any measurements or tagging could occur. NEFSC will work with the COASTSPAN project to improve the tagging and sampling for 2019 and moving forward.

Table 12. NEFSC Incidental Atlantic Sturgeon Takes 2018

Pit Tagged	45
Pre-existing Pit Tag	4
No Pit Tag Applied	13
Fin Clips Taken	43
Fin Clips not taken	19
Total Takes	62

The entire NEFSC suite of programs caught a total of sixty-two Atlantic Sturgeon in 2018. Thirty-seven more than in 2017. All Atlantic Sturgeon were returned alive. There were no lethal takes. The bulk of these interactions were by the inshore NEAMAP survey (n = 54) that conducts inshore stations close to estuaries. Again, we



have determined that this level of anticipated take is not likely to result in jeopardy to any species of sea turtle, shortnose sturgeon, or any DPS of Atlantic sturgeon or Atlantic salmon. The NEAMAP survey encountered more Atlantic Sturgeon than we had tags and sampling vials onboard. The ME/NH NEAMAP survey was not fully trained to sample Atlantic Sturgeon. This is why there were some missing tags events and sampling events from those two programs. This situation was solved with more supplies and training in 2019.

Takes for Atlantic Sturgeon have not been assessed. Biopsy results and population assignment will lag by several years. We have had 15% of the non-lethal five year quota (595 individuals) over the past two sampling seasons.

We have concluded that the NEFSC's fisheries and ecosystem research over a five-year period is likely to result in incidental take of sperm whales in the form of Level B acoustic harassment.

The exposure to underwater noise from the two primary acoustic sources (Simrad EK60 and Simrad ME70) is expected to cause behavioral effects, such as disruption of feeding, resting, or other activities or alterations in breathing, vocalizing, or diving rates. The project-related acoustic effects from these sources will be temporary, short term, and geographically limited to a very small portion of the overall species' range. The OPR's Permits and Conservation Division has issued a final LOA for the harassment of a small number of marine mammals incidental to the proposed actions. The LOA is effective for a period of five years from September 12, 2016, to September 9, 2021 (81 FR 53061; August 11, 2016). The LOA authorizes up to 15 incidents of sperm whale take per year over the course of the five-year period. The amount of exempted take will be exceeded if any sperm whales are harmed, injured, or killed as a result of the proposed action, or if the number of sperm whale take occurrences by acoustic harassment as defined above exceeds the estimate of 15 events per year. For sperm whales, this ITS is only valid over the lifespan of the LOA, unless renewed in the future.

## **V: Evaluation of Monitoring and Effectiveness of NEFSC mitigation strategies**

An evaluation of the mitigation measures employed by the NEFSC to reduce potential impacts to marine mammals is outlined below for deployed fishing gear types. For detailed mitigation measure descriptions, please see Section 1 of this report. Monitoring, recording of sightings, and indication of decision to move on within a sampling area or skip a sampling location was not instigated for NEFSC programs consistently in 2018. Data recorded and presented is anecdotal or derived. During the 2019 MMPA LOA training, NEFSC did discuss guidance for recording the presence of marine mammals that trigger a mitigation measure unless it was an incidental harassment level A take. All programs will record incidents when a sampling location is dropped or the "move-on rule" is evoked. All monitoring was conducted and mitigation measures were taken.

## **Trawl Survey Marine Mammal Mitigation Strategies**

The Northeast Fisheries Science Center and its partners utilizes several different types of bottom and mid-water trawling gear. They range from the 4 seam 3 bridle standardized bottom trawl with rockhopper footrope gear for the seasonal shelf wide bottom trawl survey, an inshore seasonal shelf wide bottom trawl survey with the same gear and an alternate cookie footrope, 2 seam bottom trawls for inshore work for the state of Massachusetts inshore bottom trawl survey, cooperative research work with 2 seam bottom trawl gear for turtle excluder devices (TEDS), 4 seam rockhopper rigged shrimp trawls for Gulf of Maine shrimp survey, paired trawls gear comparison research cruises with the standardized nets rigged with different footgear, 8' wide beam trawls, and small mid-water trawls for Penobscot bay predator/prey surveys. We currently do not separate mitigation and reporting measures between bottom and mid-water trawling gear. With the dramatic reduction in mid-water trawling activities, the need to separate these gear types for reporting purposes has diminished.

During use of any of these trawl gears, the following mitigation protocols were to be conducted: trawls were conducted as soon as practicable, visual observations (mammal watches) were conducted by Bridge staff during the entire gear deployment, move on rule to within the sampling site or sites skipped if mammals were in the area and not moving out of the site, and maintain standard trawling protocols to minimize marine mammal interactions (short trawls (20 minutes) and cleaning out nets quickly and carefully upon retrieval.

The NEFSC discussed a standardized method to record mitigation efficiency effects from trawl surveys at the January 2019 training session. Bridge logs and electronic entry will be used to assemble a data base of times the move-on and trawl aborted rule for each trawl survey was initiated in order to assess the loss of survey time (survey efficiency loss due to abiding by marine mammal mitigation measures). The NEFSC will work during 2019 to finalize a standard method of recording these data and reporting requirements to the LOA coordinator. Some of our surveys utilize an electronic bridge log that may be able to record these data easily.

The NEAMAP survey responded to this request with 300 trawl deployments (150 per season for the spring of 2018 and fall 2018) with zero incidents when station efficiency was affected by the presence of marine mammals. They did not have to move trawl locations to locations within the random sampling site or skip sites to move on to another random site for spring or fall 2018. This information was based on comments from the PI's in charge of the surveys that are on the bridge during station arrival and gear deployment. Unfortunately, our other programs were not informed in 2018 to record these interaction notes in a standard manner across programs, so NEFSC is not prepared to report on the effects of mitigation measures on project efficiency.

NEFSC Standardized Trawl Survey: No stations were moved or dropped due to the presence of marine mammals.

Gulf of Maine Shrimp Survey: No stations were moved or dropped due to the presence of marine mammals.

Penobscot Bay Trawl Survey: Not conducted in 2018.

ME/NH Inshore Trawl Survey: No stations were moved or dropped due to the presence of marine mammals.

Mass Inshore Trawl Survey: No stations were moved or dropped due to the presence of marine mammals.

### **Dredge Gear Marine Mammal Mitigation Strategies**

The NEFSC and its partners utilize several types of dredge gear to conduct surveys and research. The standardized scallop survey uses a lined 8' wide New Bedford style dredge, the RSA Scallop surveys utilize both 8' wide science dredge and 15' wide commercial sized scallop dredge gear, the clam survey uses a commercial sized (13' wide) clam dredge, During use of any of these dredge gears, the following mitigation protocols were to be conducted: dredge hauls were conducted as soon as practicable, visual observations (mammal watches) were conducted by Bridge staff during the entire gear deployment, move on rule to within the sampling site or sites skipped if mammals were in the area and not moving out of the site, and maintain standard dredging protocols to minimize marine mammal interactions (short trawls (15 and 30 for scallop, 5 for clam) and cleaning out dredge gear quickly and carefully upon retrieval.

Sea Scallop Survey: No stations moved or dropped due to the presence of marine mammals.

Surf Clam Dredge Survey: No stations moved or dropped due to the presence of marine mammals in 2018.

Scallop RSA Dredge Surveys: No stations moved or dropped due the presence of marine mammals for RSA Projects

As stated above, NEFSC has initiated the standardization of the collection of the mitigation measures, therefor assessment of the successes to mitigation measures at this time is still anecdotal.

### **Longline Gear Marine Mammal Mitigation Strategies**

As stated above, NEFSC has not standardized the collection of marine mammal sightings, triggers for mitigation measures, therefor assessment of the successes to mitigation measures is anecdotal. COASTSPAN longline shark surveys did not report any takes of marine mammals in 2018 across 1,219 longline deployments with over 913 hours of soak time.

### **Gill Nets Marine Mammal Mitigation Strategies**

Gill net surveys for shark species are conducted using gill nets in waters off of Delaware, Virginia, Georgia, Florida, and South Carolina. The NEFSC Apex Predator group contracts out gill net surveys annually. COASTSPAN longline shark surveys did not report any takes

of marine mammals in 2018 across 340 gillnet deployments with over 170 hours of soak time. Three green turtles were captured in COASTSPAN small gillnets by Florida Atlantic University. All three were released unharmed, but before they could be tagged and measured.

### **Pot/Traps, Fyke Nets, Beach Seines, Rotary Screw Traps Marine Mammal Mitigation Strategies**

The NEFSC did not conduct gill nets, pot/trap, Fyke net or beach seines in 2018, so there were no methods to assess for mitigation success and changes for those gear types. Rotary Screw traps were deployed in 2018. No marine mammal interactions were reported.

Each PI was provided the LOA that contain the mitigation and monitoring measures for each gear type. From all reports, mitigation monitoring and reporting were followed. These included marine mammal watches before, during, hauling of all gear types.

### **VI: Final outcome of serious injury determinations**

The NEFSC did not have any marine mammal takes in 2018; therefore, there were no serious injury determination from the period of January 1, 2018 – December 31, 2018.

There were Sixty-two takes of Atlantic Sturgeon, with no indication of additional harm or serious injury. Although, staff from NEAMAP have stated that they worry about the long term effects of multiple Sturgeon on deck and the level and complexity of the sampling may stress the fish more than we suspect.

There were fourteen turtle takes, ten loggerhead and four Kemp's Ridley turtles. All were released uninjured.

### **VII: Training provided to NEFSC staff**

The NEFSC is required to conduct annual training for all chief scientists and other personnel who may be responsible for implementing mitigation measures, data collection, and reporting requirements. A portion of the training must be dedicated to discussion on the use of best professional judgment to avoid marine mammal interactions to gain an understanding of successful versus unsuccessful decisions.

Training was provided by NEFSC to NEFSC staff and partner seagoing personnel on March 6, 2019. Thirty-two participants from NEFSC, State of Massachusetts, State of New Hampshire, State of Virginia, and staff from the Fishery Observer program attended.

Tania Lewandowski (NEFSC Fishery Observer Branch) and Victor Nordahl (NEPA Coordinator) developed and provided the logistics, *Training on Incidental Take Authorization and Environmental Compliance Process for NEFSC Fisheries and Ecosystem Research* – the training was put on for NEFSC's biological sampling programs in Falmouth Massachusetts. The training occurred over one full work day and divisions determined who from seagoing staff would participate – chief scientists relayed all relevant information to those folks who could

not make the training.

The training was designed to introduce staff who had not played a major role in acquiring environmental compliance and incidental take authorizations to the process and new regulatory requirements that would have to be implemented on their surveys. Throughout the training two way communication was promoted between staff and presenters to ensure that a thorough and complete understanding of all new requirements was translated.

First, an overview and background were provided to give a general understanding of statutory requirements, NEFSC's incidental take history, and development of the NEFSC's mitigation measures. After that, the main objective of the training was to introduce 1) the scope (research areas, gear types, authorized take species, etc.) of what the Center's authorizations would cover, and 2) the implementation of the authorization conditions (mitigation measures, reporting requirements, data collection, etc.) for each Incidental Take species group. Included was a portion of the training focused on the circumstances in which professional judgment decisions can be used and what decisions are frequently made when dealing with specific gear types and interactions / avoidance practices with protected species.

The first session of the daily training was titled "Sea Turtles" and was conducted by Johanna Pedersen and Stephanie Petrus from NEFO/NEFSC. The session included sea turtle identification, resuscitation methods, sampling protocol review, photographing, biopsy protocols, Iconel tagging and pit tagging scanning practice.

The second session was titled "Marine Mammals and Sea Birds" and was conducted by Johanna Pedersen and Stephanie Petrus from NEFO/NEFSC. The session included marine mammal identification, sampling protocol review, photographing, biopsy protocols, and condition reporting. Sea bird sighting and sampling protocols for retaining sea bird carcasses.

The third session was titled "Sturgeon" and was conducted by NEFSC's Keith from Fisheries Sampling Branch. The session included species identification between Atlantic and Short-nosed sturgeon, critical measurements, fin clip protocols, photographing, resuscitation, and pit tag scanning and tagging practice.

The fourth session was titled "Atlantic Salmon" and was conducted by Timothy Sheehan of the NEFSC Protected Species Branch. The session included salmon ID, critical measurements, sampling, photographing, resuscitation and pit tag scanning and tagging protocols.

The fifth session was titled "Mitigation Results" and was conducted by Victor Nordahl of the Operations, Management and Information Division/ NEPA Coordinator. Results of the 2018 sampling year were presented with numbers of interactions reported by survey type. No mammals were intercepted during the 2018 sampling year. Discussions regarding the best practices for avoiding marine mammal interactions. A plan for the 2019 season was discussed for each program to record when a station or sampling site had to be moved or the move on rule evoked. To this point, protocols were being followed, just not tracked.

The marine mammal and sea turtle handling and sampling portion of the trainings were

developed in coordination with NEFSC's Marine Mammal and Turtle Division and GARFO. There have been several turtle and sturgeon interactions, but all mitigation measures have been followed. It was decided to continue with reporting and not to re-assess mitigation measures at this time.

The NEFSC has not scheduled a second training for 2019 as of yet. There is a small number of NEFSC staff that need the training. Although, NEFSC recognizes the value of meeting each year to provide updates to changes in protocols, discuss past mitigation measures, and discuss improvements. The idea is that an annual training session is useful to prepare seagoing staff immediately prior to their field season, and a forum is useful to debrief implementing mitigation, reporting and collecting data during the past season while memories are still fresh. The NEFSC Environmental Compliance Coordinator will make plans to conduct onsite training for new staff at remote sites if needed.