DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XC136]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys in the Area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS) Lease Areas OCS–A 0486, 0487, and 0500

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

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from Orsted Wind Power North America LLC (Orsted) for authorization to take marine mammals incidental to high resolution geophysical (HRG) site characterization surveys in coastal waters from New York to Massachusetts in the areas of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf Lease Areas OCS–A 0486, 0487, 0500, and along potential export cable routes (ECR) to landfall locations between Raritan Bay (part of the New York Bight) and Falmouth, MA. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in Request for Public Comments at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than September 26, 2022.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.taylor@noaa.gov.*

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.,* name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Jessica Taylor, Office of Protected Resources, NMFS, (301) 427–8401. Electronic copies of the 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/permit/incidental-take-authorizations-under-marine-mammal-protection-act-other-energy-activities-renewable.* In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the ''take'' of marine mammals, with certain exceptions. 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 proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other ''means of effecting the least practicable adverse impact'' on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as ''mitigation''); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

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 proposed action (*i.e.,* the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216–6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On April 19, 2022, NMFS received a request from Orsted for an IHA to take small numbers of marine mammals incidental to marine site characterization surveys in federal waters located OCS Commercial Lease Areas off the coasts from Rhode Island to Massachusetts, and along potential ECRs to landfall locations between Raritan Bay (part of the New York Bight) and Falmouth, Massachusetts. Following NMFS' review of the draft application, a revised version was submitted on July 8, 2022. The application was deemed adequate and complete on August 3, 2022. Orsted's request is for take of 16 species of marine mammals (consisting of 16 stocks) by Level B harassment only. Neither Orsted nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued IHAs and a renewal IHA to Orsted for marine site characterization HRG surveys in the OCS–A 0486, 0487, and 0500 Lease Areas (84 FR 52464, October 2, 2019; 85

FR 63508, October 8, 2020; 87 FR 13975, March 11, 2022). Orsted complied with all the requirements (*e.g.,* mitigation, monitoring, and reporting) of the previous IHA and information regarding their monitoring results may be found in the Effects of the Specified Activity on Marine Mammals and their Habitat section.

On August 1, 2022, NMFS announced proposed changes to the existing North Atlantic right whale vessel speed regulations to further reduce the likelihood of mortalities and serious injuries to endangered right whales from vessel collisions, which are a leading cause of the species' decline and a primary factor in an ongoing Unusual Mortality Event (87 FR 46921). Should a final vessel speed rule be issued and become effective during the effective period of this IHA (or any other MMPA incidental take authorization), the authorization holder would be required to comply with any and all applicable requirements contained within the final rule. Specifically, where measures in any final vessel speed rule are more protective or restrictive than those in this or any other MMPA authorization, authorization holders would be required to comply with the requirements of the rule. Alternatively, where measures in this or any other MMPA authorization are more restrictive or protective than those in any final vessel speed rule, the measures in the MMPA authorization would remain in place. These changes would become effective immediately upon the effective date of any final vessel speed rule and would not require any further action on NMFS's part.

Description of Proposed Activity

Overview

Orsted proposes to conduct HRG surveys in the Lease Areas OCS–A 0486, 0487, 0500 and ECR Area in federal waters from New York to Massachusetts to support the characterization of the existing seabed and subsurface geological conditions, which is necessary for the development of an offshore electric transmission system. The proposed project will use active HRG sources operating at frequencies lower than 180 kHz, which may result in the incidental take of marine mammals by Level B harassment. This take of marine mammals is anticipated to be in the form of behavioral harassment and no serious injury or mortality is anticipated, nor is any proposed. In-water work will include approximately 400 survey days using multiple vessels lasting from September 25, 2022 to September 24, 2023.

Dates and Duration

As described above, HRG surveys are expected to commence on September 25, 2022 and last through September 24, 2023 for up to approximately 400 survey days (Table 1). Orsted is proposing to conduct continuous HRG survey operations 12-hours per day and 24-hours per day using multiple vessels. A survey day is defined as a 24-hour activity day in which an assumed number of line km are surveyed. The number of anticipated survey days was calculated as the number of days needed to reach the overall level of effort required to meet survey objectives assuming any single vessel covers, on average 70 line kilometer (km) per 24-hour operations. A survey day accounts for multiple vessels such that two vessels operating within one 24-hour period equates to two survey days. A maximum of three vessels would work concurrently in the project area in any combination of 24-hour and 12-hour vessels. To be conservative, our exposure analysis assumes daily 24-hour operations. Although vessels may complete 20–80 km/day of actual source operations, we anticipate that vessels will average 70 line km of active IHA-regulated sources per day. As shown by Table 1, the estimated number of survey days varies by Lease Area and ECR.

TABLE 1—PROPOSED NUMBER OF SURVEY DAYS FOR EACH LEASE AREA AND ECR

Area	Total number of survey days [1]
OCS–A–0486	10
OCA–A–0487	10
OCS–A–0500	200
ECR	180
Total	400

[1] Up to three total survey vessels may be operating within both of the survey areas concurrently.

Specific Geographic Region

Orsted's survey activities would occur in the Lease Areas located approximately 14 miles (22.5 km) south of Martha's Vineyard, Massachusetts at its closest point to land, as well as along potential export cable route (ECR) corridors off the coast of New York, Connecticut, Rhode Island, and Massachusetts to landfall locations between Raritan Bay and Falmouth, MA, as shown in Figure 1. Water depths in the project area extend out from shoreline to approximately 90 m in depth.

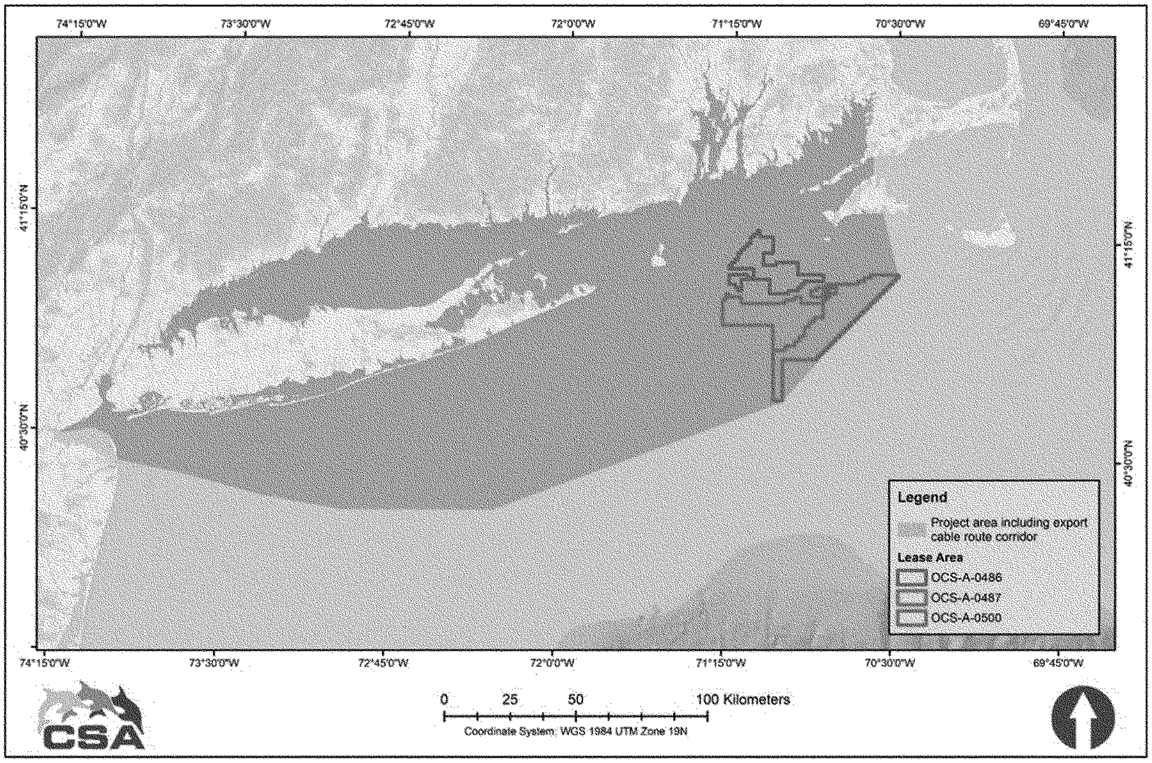

Figure 1. Project area for site characterization surveys

Detailed Description of Specific Activity

Orsted proposes to conduct HRG survey operations, including multibeam depth sounding, seafloor imaging, and shallow and medium penetration sub-bottom profiling. The HRG surveys will include the use of seafloor mapping equipment with operating frequencies above 180 kilohertz (kHz) (*e.g.,* side-scan sonar (SSS), multibeam echosounders (MBES)); magnetometers and gradiometers that have no acoustic output; and shallow- to medium-penetration sub-bottom profiling (SBP) equipment (*e.g.,* parametric sonars, compressed high-intensity radiated pulses (CHIRPs), boomers, sparkers) with operating frequencies below 180 kilohertz (kHz). No deep-penetration SBP surveys (*e.g.,* airgun or bubble gun surveys) will be conducted. HRG equipment will either be deployed from remotely operated vehicles (ROVs) or mounted to or towed behind the survey vessel at a typical survey speed of approximately 4.0 knots (7.4 km) during the site characterization activities within the Lease areas and ECR area. Equipment deployed on the ROVs would be identical to that deployed on the vessel; however, the sparker systems are not normally deployed from an ROV due to the power supply required. The extent of ROV usage in this project is unknown at this time, however NMFS expects the use of ROVs to have de minimis impacts relative to the use of vessels given the smaller sources and inherent nature of utilizing an ROV (*e.g.,* much smaller size of an ROV relative to a vessel and less acoustic exposure given location of their use in the water column). For these reasons, our analysis focuses on the acoustic sources themselves and the use of vessels to deploy such sources, rather than the specific use of ROVs to deploy the survey equipment. Therefore, ROVs are not further analyzed in this notice.

Acoustic sources planned for use during HRG survey activities proposed by Orsted for which sounds levels have the potential to result in Level B harassment of marine mammals include the following:

- Shallow penetration, non-impulsive, intermittent, mobile, non-parametric SBPs (*i.e.,* CHIRP SBPs) are used to map the near-surface stratigraphy (top 0 to 10 m) of sediment below seabed. A CHIRP system emits sonar pulses that increase in frequency from approximately 2 to 20 kHz over time. The frequency range can be adjusted to meet project variables. These sources are typically mounted on a pole, either over the side of the vessel or through a moon pool in the bottom of the hull. The operational configuration and relatively narrow beamwidth of these sources reduce the likelihood that an animal would be exposed to the signal;
- Medium penetration SBPs (boomers) are used to map deeper subsurface stratigraphy as needed. A boomer is a broad-band sound source operating in the 3.5 Hz to 10 kHz frequency range. This system is commonly mounted on a sled and towed behind the vessel. Boomers are impulsive and mobile sources; and
- Medium penetration SBPs (sparkers) are used to map deeper subsurface stratigraphy as needed. Sparkers create acoustic pulses from 50 Hz to 4 kHz omnidirectionally from the source, and are considered to be impulsive and mobile sources. Sparkers are typically towed behind the vessel with adjacent hydrophone arrays to receive the return signals.

Operation of the following survey equipment types is not reasonably expected to result in take of marine mammals and will not be discussed further beyond the brief summaries provided below:

- Parametric SBPs, also commonly referred to as sediment echosounders, are used to provide high data density in sub-bottom profiles that are typically required for cable routes, very shallow water, and archaeological surveys. Parametric SPBs are typically mounted on a pole, either over the side of the vessel or through a moon pool in the bottom of the hull. Crocker and Fratantonio (2016) does not provide relevant measurements or source data for parametric SBPs, however, some source information is provided by the manufacturer. For the proposed project, the SBP used would generate short, very narrow-beam (1° to 3.5°) sound pulses at relatively high frequencies (generally around 85 to 100 kHz). The narrow beam width significantly reduces the potential for exposure while the high frequencies of the source are rapidly attenuated in seawater. Given the narrow beam width and relatively high frequency. NMFS does not reasonably expect there to be potential for marine mammals to be exposed to the signal;

• Acoustic cores are seabed-mounted sources with three distinct sound sources: A high-frequency parametric source, a high-frequency CHIRP sonar, and a low-frequency CHIRP sonar. The beam width is narrow (3.5° to 8°) and the source is operated roughly 3.5 m above the seabed from a seabed mount, with the transducer pointed directly downward;

• Ultra-short baseline (USBL) positioning systems are used to provide high accuracy ranges by measuring the time between the acoustic pulses transmitted by vessel transceiver and a transponder (or beacon) necessary to produce the acoustic profile. It is a two-component system with a moon pool- or side pole mounted transceiver and one or several transponders mounted on other survey equipment. USBLs are expected to produce extremely small acoustic propagation distances in their typical operating configuration;

• Multibeam echosounders (MBES) are used to determine water depths and general bottom topography. MBES sonar systems project sonar pulses in several angled beams from a transducer mounted to a ship's hull. The beams radiate out from the transducer in a fan-shaped pattern orthogonally to the ship's direction. All of the proposed MBESs have operating frequencies >180 kHz and, therefore, are outside the general hearing range of marine mammals; and

• Side scan sonars (SSS) are used for seabed sediment classification purposes and to identify natural and man-made acoustic targets on the seafloor. The sonar device emits conical or fan-shaped pulses down toward the seafloor in multiple beams at a wide angle, perpendicular to the path of the sensor through the water column. All of the proposed SSS have operating frequencies >180 kHZ and, therefore, are outside the general hearing range of marine mammals.

Table 2 identifies representative survey equipment with the expected potential to result in exposure of marine mammals and thus potentially result in take. The make and model of the listed geophysical equipment may vary depending on availability and the final equipment choices will vary depending upon the final survey design, vessel availability, and survey contractor selection.

TABLE 2—SUMMARY OF REPRESENTATIVE HRG SURVEY EQUIPMENT [1]

HRG survey equipment	Representative equipment	Operating frequency ranges (kHz)	SL (SPL dB re 1 µPa m)	SL (SEL dB re 1 µPa2 m2 s)	SL (PK dB re 1 µPa m)	Beamwidth ranges (degrees)	Pulse duration (width) (millisecond)	Pulse repetition rate (Hz)
CHIRPs (non-impulsive, non-parametric).	ET 216 (2000DS or 3200 top unit).	2–16 2–8	195	178		24	20	6
	ET 424 3200–XS	4–24	176	152		71	3.4	2
	ET 512i	0.7–12	179	158		80	9	8
	GeoPulse 5430A	2–17	196	183		55	50	10
	Teledyne Benthos Chirp III—TTV 170.	2–7	197	185		100	60	15
	Pangeo SBI	4.5–12.5	188.2	165		120	4.5	45
Sparker (impulsive)	AA, Dura-spark UHD Sparker (400 tips, 500 J) [2].	0.3–1.2	203	174	211	Omni	1.1	4
Sparkers and Boomers (impulsive).	AA, Dura-spark UHD Sparker Model 400 × 400 [2].	0.3–1.2	203	174	211	Omni	1.1	4
	GeoMarine, Dual 400 Sparker, Model Geo-Source 800 [2 3].	0.4–5	203	174	211	Omni	1.1	2
	GeoMarine Sparker, Model Geo-Source 200–400 [2 3].	0.3–1.2	203	174	211	Omni	1.1	4
	GeoMarine Sparker, Model Geo-Source 200 Lightweight [2 3].	0.3–1.2	203	174	211	Omni	1.1	4
	AA, triple plate S-Boom (700–1,000 J) [4].	0.1–5	205	172	211	80	0.6	4

µPa = micropascal; AA = Applied Acoustics; CF = Crocker and Fratantonio (2016); CHIRP = compressed high-intensity radiated pulses; dB = decibel; EM = equipment mounted; ET = edgetech; J = joule; Omni = omnidirectional source; re = referenced to; PK = zero-to-peak sound pressure level; PM = pole mounted; SBI = sub-bottom imager; SL = source level; SPL = root-mean-square sound pressure level; T = towed; TB = Teledyne benthos; UHD = ultra-high definition; WFA = weighting factor adjustment.

[1] Operational parameters listed here differ from those listed in the Bureau of Ocean Energy Management Biological Assessment published in February 2021 (Baker and Howson, 2021).

[2] The Dura-spark measurements and specifications provided in Crocker and Fratantonio (2016) were used for all sparker systems proposed for the survey. The data provided in Crocker and Fratantonio (2016) represent the most applicable data for similar sparker systems with comparable operating methods and settings when manufacturer or other reliable measurements are not available.

[3] The AA Dura-spark (500 J, 400tips) was used as a proxy source.

[4] Crocker and Fratantonio (2016) provide S-Boom measurements using two different power sources (CSP–D700 and CSP–N). The CSP–D700 power source was used in the 700 J measurements but not in the 1,000 J measurements. The CSP–N source was measured for both 700 J and 1,000 J operations but resulted in a lower SL; therefore, the single maximum SL value was used for both operational levels of the S-Boom.

The deployment of certain types of HRG survey equipment, including some of the equipment planned for use during Orsted's proposed activity, produces sound in the marine environment that has the potential to result in harassment of marine mammals. Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see Proposed Mitigation and Proposed Monitoring and Reporting).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, incorporated here by reference, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS Stock Assessment Reports (SARs; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS website (*https://www.fisheries.noaa.gov/find-species).*

Table 3 lists all species or stocks for which take is expected and proposed to be authorized for these activities, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. 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 (as described in NMFS' SARs). While no serious injury or mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS U.S. draft 2021 U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 3 are the most recent available at the time of publication and are available in the 2020 SARs (Hayes *et al.,* 2021) and draft 2021 SARs (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

TABLE 3—SPECIES LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	PBR	Annual M/SI [3]
Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)						
North Atlantic right whale	*Eubalaena glacialis*	Western Atlantic	E/D, Y	368 (0; 364;[5] 2019)	0.7	7.7
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	-/-, Y	1,396 (0; 1,380; 2016)	22	12.15
Fin whale	*Balaenoptera physalus*	Western North Atlantic	E/D, Y	6,802 (0.24; 5,573; 2016)	11	1.8
Sei whale	*Balaenoptera borealis*	Nova Scotia	E/D, Y	6,292 (1.02; 3,098; 2016)	6.2	0.8
Minke whale	*Balaenoptera acutorostrata*	Canadian East Coastal	-/-, N	21,968 (0.31; 17,002; 2016)	170	10.6
Order Cetartiodactyla—Cetacea—Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Sperm whale	*Physeter macrocephalus*	North Atlantic	E/D, Y	4,349 (0.28; 3,451; 2016)	3.9	0
Long-finned pilot whale	*Globicephala melas*	Western North Atlantic	-/-, N	39,215 (0.3; 30,627; 2016)	306	29
Striped dolphin	*Stenella coeruleoalba*	Western North Atlantic	-, -, N	67,036 (0.29, 52,939, 2016)	529	0
Atlantic white-sided dolphin.	*Lagenorhynchus acutus*	Western North Atlantic	-/-, N	93,233 (0.71; 54,443; 2016)	544	27
Bottlenose dolphin	*Tursiops truncatus*	Western North Atlantic Offshore.	-/-, N	62,851 (0.23; 51,914; 2016)	519	28
Short-beaked Common dolphin.	*Delphinus delphis*	Western North Atlantic	-/-, N	172,974(0.21, 145,216, 2016)	1,452	390
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic	-/-, N	39,921 (0.27; 32,032; 2016)	320	0
Risso's dolphin	*Grampus griseus*	Western North Atlantic Sock.	-/-, N	35,215 (0.19; 30,051; 2016)	301	34
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy.	-/-, N	95,543 (0.31; 74,034; 2016)	851	164
Order Carnivora—Superfamily Pinnipedia						
Harbor seal	*Phoca vitulina*	Western North Atlantic	-/-, N	61,336 (0.08; 57,637; 2018)	1,729	339
Gray seal [4]	*Halichoerus grypus*	Western North Atlantic	-/-, N	27,300 (0.22; 22,785; 2018)	1,389	4,453

[1] ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or 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 online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.* CV is the coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable.

[3] These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, ship strike).

[4] NMFS' stock abundance estimate (and associated PBR value) applies to U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,431. The annual M/SI value given is for the total stock.

[5] The draft 2022 SARs have yet to be released; however, NMFS has updated its species web page to recognize the population estimate for NARWs is now below 350 animals (*https://www.fisheries.noaa.gov/species/north-atlantic-right-whale*).

As indicated above, all 16 species (with 16 managed stocks) in Table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. All species that could potentially occur in the proposed survey areas are included in Table 6 of the IHA application. While the blue whale (*Balaenoptera musculus*), Cuvier's beaked whale (*Ziphius cavirostris*), four species of Mesoplodont beaked whale (*Mesoplodon* spp.), dwarf and pygmy sperm whale (*Kogia sima* and *Kogia breviceps*), short-finned pilot whale (*Globicephala macrorhynchus*), northern bottlenose whale (*Hyperoodon ampullatus*), killer whale (*Orcinus orca*), pygmy killer whale (*Feresa attenuata*), false killer whale (*Pseudorca crassidens*), melon-headed whale (*Peponocephala electra*), white-beaked dolphin (*Lagenorhynchus albirostris*), pantropical spotted dolphin (*Stenella attenuata*), Fraser's dolphin (*Lagenodelphis hosei*), rough-toothed dolphin (*Steno bredanensis*), Clymene dolphin (*Stenella clymene*), spinner dolphin (*Stenella longirostris*), hooded seal (*Cystophora cristata*), and harp seal (*Pagophilus groenlandicus*) have been documented in the area, the temporal and/or spatial occurrence of these species is such that take is not expected to occur and they are not analyzed further.

In addition, the Florida manatee (*Trichechus manatus latirostris*) may be found in the coastal waters of the project area. However, Florida manatees are managed by the U.S. Fish and Wildlife Service and are not considered further in this document.

Below is a description of the species that have the highest likelihood of occurring in the project area and are, thus, expected to potentially be taken by the proposed activities as well as further detail informing the baseline for select species (*i.e.,* information regarding current Unusual Mortality Events (UMEs) and important habitat areas).

North Atlantic Right Whale

The North Atlantic right whale ranges from calving grounds in the southeastern United States to feeding grounds in New England waters and into Canadian waters (Hayes *et al.,* 2021). Right whales have been observed in or near southern New England during all four seasons (Quintana-Rizzo *et al.,* 2021), and passive acoustic monitoring indicates the year-round presence of NARWs in the Gulf of Maine (Morano *et al.,* 2012; Bort *et al.,* 2015). Surveys have demonstrated the existence of seven areas where NARWs congregate seasonally: The coastal waters of the southeastern U.S., the Great South Channel, Jordan Basin, Georges Basin along the northeastern edge of Georges Bank, Cape Cod and Massachusetts Bays, the Bay of Fundy, and the Roseway Basin on the Scotian Shelf (Hayes *et al.,* 2018). NOAA Fisheries has designated two critical habitat areas for the NARW under the ESA: The Gulf of Maine/Georges Bank region, and the southeast calving grounds from North Carolina to Florida (81 FR 4837, January 27, 2016).

New England waters are a primary feeding habitat for NARWs during late winter through spring, with feeding moving into deeper and more northerly waters during summer and fall. Since 2010, NARWs have reduced their use of habitats in the Great South Channel and Bay of Fundy, while increasing their use of habitat within Cape Cod Bay as well as a region south of Martha's Vineyard and Nantucket Islands (Stone *et al.,* 2017; Mayo *et al.,* 2018; Ganley *et al.,* 2019; Record *et al.,* 2019; Meyer-Gutbrod *et al.,* 2021). This shift is likely due to changes in oceanographic conditions and food supply as dense patches of zooplankton are necessary for efficient foraging (Mayo and Marx, 1990; Record *et al.,* 2019). NARW use of habitats such as in the Gulf of St. Lawrence, southern New England waters, and the mid-Atlantic waters of the United States have also increased over time (Davis *et al.,* 2017; Davis and Brillant, 2019; Crowe *et al.,* 2021; Quintana-Rizzo *et al.,* 2021). Simard *et al.* (2019) documented the presence of NARWs in the southern Gulf of St. Lawrence from late April through mid-January annually from 2010–2018 using passive acoustics, with occurrences peaking in the area from August through November each year (Simard *et al.,* 2019). In addition, Pendleton *et al.* (2022) found that peak use of NARW habitat in Cape Cod Bay has shifted over the past 20 years to later in the spring, likely due to variations in seasonal conditions.

In the late fall months (*e.g.,* October), right whales are generally thought to depart from the feeding grounds in the North Atlantic and move south to their calving grounds off Georgia and Florida. However, recent research indicates our understanding of their movement patterns remains incomplete and not all of the population undergoes a consistent annual migration (Davis *et al.,* 2017). Females may remain in the feeding grounds during the winter in the years preceding and following the birth of a calf to increase their energy stores while juvenile and adult males may move to southern wintering grounds after years of abundant prey in northern feeding areas (Gowan *et al.,* 2019). Within the proposed project area, NARWs have primarily been observed during the winter and spring seasons through visual surveys although are likely present year-round (Kraus *et al.,* 2016; Quintana-Rizzo *et al.,* 2021).

NARW movements within and between habitats are extensive and the area off the coasts of Rhode Island and Massachusetts is an important migratory corridor. The proposed project area overlaps a portion of a NARW Biologically Important Area (BIA) for migration. This migratory corridor is approximately 269,488 km^2 in size, comprises the waters of the continental shelf offshore the east coast of the United States, and extends from Florida through Massachusetts (LaBrecque *et al.,* 2015). NARW movements may include seasonal migrations between northern feeding grounds and southern breeding grounds as well as movements between feeding habitats in Cape Cod Bay and southern New England waters (Quintana-Rizzo *et al.,* 2021). Given that Orsted's proposed surveys would be concentrated offshore of Massachusetts and Rhode Island, many NARWs in the vicinity would likely be migrating through the area, however, foraging activity may also take place as Quintana-Rizzo *et al.* (2021) observed NARWs foraging in southern New England waters year-round.

Since 2010, the western North Atlantic right whale population has been in decline (Pace *et al.,* 2017), with a 40 percent decrease in calving rate (Kraus *et al.,* 2016). In 2018, no new North Atlantic right whale calves were documented in their calving grounds; this represented the first time since annual NOAA aerial surveys began in 1989 that no new right whale calves were observed. Eighteen right whale calves were documented in 2021. As of July 14, 2022 and the writing of this proposed Notice, 15 North Atlantic right whale calves have been documented during this calving season. Presently, the best available peer-reviewed population estimate for North Atlantic right whales is 368 per the draft 2021 SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*). The draft 2022 SARs have yet to be released; however, NMFS has updated its species web page to recognize the population estimate for NARWs is below 350 animals (*https://www.fisheries.noaa.gov/species/north-atlantic-right-whale*).

NMFS regulations at 50 CFR part 224.105 designated nearshore waters of the Mid-Atlantic Bight as Mid-Atlantic U.S. Seasonal Management Areas (SMA) for right whales in 2008. SMAs were developed to reduce the threat of collisions between ships and right whales around their migratory route and calving grounds. The Block Island SMA, which occurs off the mouth of Long Island Sound, overlaps spatially with the proposed project area (*https://apps-nefsc.fisheries.noaa.gov/psb/surveys/MapperiframeWithText.html*). The SMA is active from November 1 through April 30 of each year and may be used by NARWs for feeding or migrating.

Right Whale Slow Zones are established when NARWs are detected both visually (*i.e.,* Dynamic Management Area) and acoustically (*i.e.,* Acoustic Slow Zone). These are areas where mariners are encouraged to avoid and/or reduce speeds to 10 kn (5.1 m/s) to avoid vessel collisions with NARWs. Slow Zones typically persist for 15 days. More information on these right whale Slow Zones can be found on NMFS' website (*https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales*).

Dynamic Management areas (DMAs) are a type of NARW Slow Zones that may be established when three or more NARWs are visually sighted within a discrete area. This criteria is based upon findings by Clapham and Pace (2001) that showed an aggregation of three or more whales is likely to remain in the area for several days, in contrast to an aggregation of fewer whales. Acoustic Slow Zones are another type of NARW Slow Zone based upon acoustic detections, and are established when three or more upcall detections from an acoustic system occur within an evaluation period (*e.g.,* 15 min). More information, as well as the most up-to-date DMA establishments, can be found on NMFS' website (*https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales*).

Elevated North Atlantic right whale mortalities have occurred since June 7, 2017 along the U.S. and Canadian coasts. As of July 2022, a total of 34 confirmed dead stranded whales (21 in Canada; 13 in the United States) have been documented. This event has been declared an Unusual Mortality Event (UME), with human interactions, including entanglement in fixed fishing gear and vessel strikes, implicated in at least 16 of the mortalities thus far. More information is available online at: *www.fisheries.noaa.gov/national/marine-life-distress/2017-2019-north-atlantic-right-whale-unusual-mortality-event.*

Humpback Whale

Humpback whales are found worldwide in all oceans. Humpback whales were listed as endangered under the Endangered Species Conservation Act (ESCA) in June 1970. In 1973, the ESA replaced the ESCA, and humpbacks continued to be listed as endangered. On September 8, 2016, NMFS divided the species into 14 distinct population segments (DPS), removed the current species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62259; September 8, 2016). The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the ESA, is the only DPS of humpback whales that is expected to occur in the project area. Whales occurring in the project area are not necessarily from the Gulf of Maine feeding population managed as a stock by NMFS. Bettridge *et al.* (2015) estimated the size of the West Indies DPS population at 12,312 (95 percent CI 8,688–15,954) whales in 2004–05, which is consistent with previous population estimates of approximately 10,000–11,000 whales (Stevick *et al.,* 2003; Smith *et al.,* 1999) and the increasing trend for the West Indies DPS (Bettridge *et al.,* 2015).

In New England waters, feeding is the principal activity of humpback whales, and their distribution in this region has been largely correlated to abundance of prey species (Payne *et al.,* 1986, 1990). Humpback whales are frequently piscivorous when in New England waters, feeding on herring (*Clupea harengus*), sand lance (*Ammodytes spp.*), and other small fishes, as well as euphausiids in the northern Gulf of Maine (Paquet *et al.,* 1997). During winter, the majority of humpback whales from the North Atlantic feeding area (including the Gulf of Maine) mate and calve in the West Indies, where spatial and genetic mixing among feeding groups occurs (Katona and Beard 1990; Clapham *et al.* 1993; Palsbøll *et al.,* 1997; Stevick *et al.,* 1998; Kennedy *et al.,* 2014), though significant numbers of animals are found in mid- and high-latitude regions at this time (Clapham *et al.,* 1993; Swingle *et al.,* 1993). Some individuals have been sighted repeatedly within the same winter season (Clapham *et al.,* 1993; Robbins, 2007), indicating that not all humpback whales migrate south every winter (Waring *et al.,* 2017).

Kraus *et al.* (2016) observed humpbacks in the Rhode Island/Massachusetts (RI/MA) & MA Wind Energy Areas (WEAs) and surrounding areas during all seasons. Humpback whales were observed most often during spring and summer months, with a peak from April to June. Kraus *et al.* (2016) also observed calves and one instance of courtship behavior among adults. Acoustic data indicate that this species may be present within the MA WEA year-round, with the highest rates of acoustic detections in the winter and spring (Kraus *et al.,* 2016). Stocks of sand lance appear to correlate with the years in which the most abundant whales are observed, suggesting that humpback whale distribution and occurrences could largely be influenced by prey availability (Kenney and Vigness-Raposa, 2010). Other sightings of note include 46 sightings of humpback whales in the New York-New Jersey Harbor Estuary documented from 2011–2016 (Brown *et al.,* 2017) and multiple humpbacks observed feeding off Long Island during July 2016 (Hayes *et al.,* 2020). Pendleton *et al.* (2022) documented a recent shift in humpback whale peak habitat use of Cape Cod Bay, in which maximum occupancy occurred later in the spring during May rather than April.

The most significant anthropogenic causes of mortality of humpback whales include incidental fishery entanglements, responsible for roughly eight whale mortalities, and vessel collisions, responsible for four mortalities both on average annually from 2013 to 2017 (Hayes *et al.,* 2020).

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. This event has been declared a UME. Partial or full necropsy examinations have been conducted on approximately half of the 161 known cases (as of July 14, 2022). Of the whales examined, approximately 50 percent had evidence of human interaction, either ship strike or entanglement. While a portion of the whales have shown evidence of pre-mortem vessel strike, this finding is not consistent across all whales examined and more research is needed. Three previous UMEs involving humpback whales have occurred since 2000, in 2003, 2005, and 2006. More information is available at: *www.fisheries.noaa.gov/national/marine-life-distress/2016-2021-humpback-whale-unusual-mortality-event-along-atlantic-coast.*

Fin Whale

Fin whales have a common occurrence in waters of the U.S. Atlantic Exclusive Economic Zone (EEZ), principally from Cape Hatteras northward with a distribution in both continental shelf and deep water habitats (Hayes *et al.,* 2021). Fin whales are present north of 35-degree latitude in every season and are broadly distributed throughout the western North Atlantic for most of the year although densities vary seasonally (Edwards *et al.,* 2015; Hayes *et al.,* 2021). They are typically found in small groups of up to five individuals (Brueggeman *et al.,* 1987).

New England and Gulf of St. Lawrence waters represent major feeding grounds for fin whales (Hayes *et al.,* 2021). Two well-known feeding grounds for fin whales are present near the proposed project area in the Great South Channel and Jeffrey's Ledge and in waters directly east of Montauk, New York (Hayes *et al.,* 2019; Kenney and Vigness-Raposa, 2010). The highest occurrences are identified south of Montauk Point to south of Nantucket (Kenney and Vigness-Raposa, 2010). Cape Cod Bay, just north of the proposed project area, also represents seasonal feeding habitat for fin whales (Clapham and Seipt, 1991). Surveys conducted in the RI/MA WEA indicate fin whales may be present year-round, but sightings were the highest during the spring and summer (Kraus *et al.,* 2016). The northwest corner of the ECR Area overlaps with a fin whale BIA for feeding (LaBrecque *et al.,* 2015). The BIA is located east of Montauk Point between the 15-m and 50-m contours. Feeding is known to occur from March through October (LaBrecque *et al.,* 2015).

The fin whale is federally listed under the ESA as an endangered marine mammal and are designated as a strategic stock under the MMPA due to their endangered status under the ESA, uncertain human-caused mortality, and incomplete survey coverage of the stock's defined range. The main threats to fin whales are fishery interactions and vessel collisions (Hayes *et al.,* 2021).

Sei Whale

The Nova Scotia stock of sei whales can be found in deeper waters of the continental shelf edge waters of the northeastern U.S. and northeastward to south of Newfoundland (Hayes *et al.,* 2021). Sei whales have a regular occurrence in the proposed project area. The southern portion of the stock's range during spring and summer includes the Gulf of Maine and Georges Bank. Spring is the period of greatest abundance in U.S. waters, with sightings concentrated along the eastern margin of Georges Bank and into the Northeast Channel area, and along the southwestern edge of Georges Bank in the area of Hydrographer Canyon (CETAP, 1982; Kraus *et al.,* 2016, Roberts *et al.,* 2016; Palka *et al,.* 2017; Cholewiak *et al.,* 2018).

Sei whales are most common in deeper waters along the continental shelf edge (NMFS, 2021) but will forage occasionally in shallower, inshore waters. A sei whale BIA for feeding occurs adjacent to the east of the proposed project area. The occurrence and abundance of sei whales on feeding grounds may shift dramatically from one year to the next. CETAP surveys observed sei whales along the continental shelf edge only during the spring and summer (CETAP, 1982). In the RI/MA WEA, sei whales were also only observed during the spring (eight sightings) and summer (13 sightings). No sightings were reported in the WEA during the fall and winter (Kraus *et al.,* 2016).

Sei whales are listed as endangered under the ESA, and the Nova Scotia stock is considered strategic and depleted under the MMPA. The main threats to this stock are interactions with fisheries and vessel collisions. Impacts from environmental contaminants also present a concern as well as potential spatial shifts in distribution related to climate change (Hayes *et al.,* 2020; Sousa *et al.,* 2019).

Minke Whale

Minke whales can be found in temperate, tropical, and high-latitude waters. The Canadian East Coast stock can be found in the area from the western half of the Davis Strait (45° W) to the Gulf of Mexico (Hayes *et al.,* 2021). This species generally occupies waters less than 100 m deep on the continental shelf and has a common occurrence in the proposed project area. There appears to be a strong seasonal component to minke whale distribution in the survey areas, in which spring to fall are times of relatively widespread and common occurrence while during winter the species appears to be largely absent (Hayes *et al.,* 2021; Risch *et al.,* 2013).

Little is known about their specific migratory behavior compared to other large whale species; however, acoustic detections show that minke whales migrate south in mid-October to early November and return from wintering grounds starting in March through early April (Risch *et al.,* 2014). Northward migration appears to track the warmer waters of the Gulf Stream along the continental shelf, while southward migration is made farther offshore (Risch *et al.,* 2014). Surveys conducted in the RI/MA WEA, reported 103 minke whale sightings within the area, predominantly in the spring followed by summer and fall (Kraus *et al.,* 2016).

Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina, with a total of 123 strandings (as of July 14, 2022). This event has been declared a UME. Full or partial necropsy examinations were conducted on more than 60 percent of the whales. Preliminary findings in several of the whales have shown evidence of human interactions or infectious disease, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at: *www.fisheries.noaa.gov/national/marine-life-distress/2017-2021-minke-whale-unusual-mortality-event-along-atlantic-coast.*

Sperm Whale

The distribution of the sperm whale in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Hayes *et al.,* 2020). The basic social unit of the sperm whale appears to be the mixed school of adult females plus their calves and some juveniles of both sexes, normally numbering 20–40 animals in all. There is evidence that some social bonds persist for many years (Christal *et al.,* 1998). In summer, the distribution of sperm whales includes the area east and north of Georges Bank and into the Northeast Channel region, as well as the continental shelf (inshore of the 100 m isobath) south of New England. In the fall, sperm whale occurrence south of New England on the continental shelf is at its highest level, and there remains a continental shelf edge occurrence in the Mid-Atlantic Bight. In winter, sperm whales are concentrated east and northeast of Cape Hatteras (Hayes *et al.,* 2020).

CETAP and NMFS Northeast Fisheries Science Center sightings in shelf-edge and off-shelf waters included many social groups with calves/juveniles (CETAP, 1982). Sperm whales were usually seen at locations corresponding to the tops of the seamounts and rises and did not generally occur over the slopes. Sperm whales were recorded at the surface over depths varying from 800 to 3,500 m. Kraus *et al.* (2016) reported sightings of sperm whales in the RI–MA WEA during the summer and fall months, with five individuals in August, one in September, and three in June. There have also been occasional strandings in Massachusetts and Long Island (Kenney and Vigness-Raposa, 2010). Although the likelihood of occurrence within the proposed project area remains very low, the sperm whale was included as an affected species because of its high seasonal densities east of the project area.

Sperm whales are listed as endangered under the ESA, and the North Atlantic stock is considered strategic under the MMPA. The greatest threats to sperm whales include ship strikes (McGillivary *et al.,* 2009; Carrillo and Ritter, 2010), anthropogenic sound (Nowacek *et al.,* 2015), and the potential for climate change to influence variations in spatial distribution and abundance of prey (Hayes *et al.,* 2020).

Long-Finned Pilot Whale

Long-finned pilot whales are found from North Carolina north to Iceland, Greenland, and the Barents Sea (Sergeant, 1962; Leatherwood *et al.,* 1976; Abend, 1993; Bloch *et al.,* 1993; Abend and Smith, 1999). In U.S. Atlantic waters, the species is distributed principally along the continental shelf edge off the northeastern U.S. coast in winter and early spring (CETAP 1982; Payne and Heinemann, 1993; Abend and Smith, 1999; Hamazaki, 2002). In late spring, pilot whales move onto Georges Bank and into the Gulf of Maine and more northern waters and remain in these areas through late autumn (CETAP 1982; Payne and Heinemann, 1993). Long-finned pilot whales are highly social and vocal and are typically observed in groups of 10 to 20 surface-active individuals (NOAA 2022). Within the RI–MA WEA, no sightings of pilot whales were observed during the summer, fall, or winter (Kraus *et al.,* 2016).

Striped Dolphin

Striped dolphins are widely distributed in tropical and warm temperate waters of the Western North Atlantic ranging from Nova Scotia to the Caribbean and Gulf of Mexico (Archer and Perrin, 1997; Archer, 2002; Hayes *et al.,* 2020). In waters off the northeastern U.S. coast, striped dolphins are distributed along the continental shelf edge from Cape Hatteras to the southern margin of Georges Bank, and also occur offshore over the continental slope and rise in the mid-Atlantic region (CETAP, 1982; Mullin and Fulling, 2003). During CETAP surveys, continental shelf edge sightings were generally centered along the 1,000 m depth contour in all seasons (CETAP, 1982). Striped dolphins prefer offshore waters from the continental slope to the Gulf Stream (Hayes *et al.,* 2020; Leatherwood *et al.,* 1976; Perrin *et al.,* 1994; Schmidly, 1981).

There are few reported occurrences of striped dolphins in the project area. All CETAP records reported striped dolphins in waters greater than 900m; although it was noted that the most northern sightings aligned with warm core rings of the Gulf Stream (Hayes *et al.,* 2020; Waring *et al.,* 1992). Striped dolphins would not typically be associated with shelf waters off New York and Massachusetts; however, preliminary data from site investigation surveys for offshore wind have a very small number of probable striped dolphin sightings; therefore, they have been included in this assessment. Between 2013 and 2017, strandings of striped dolphins were reported from New York (five); Massachusetts (two); and New Jersey (seven) (Hayes *et al.,* 2020). None showed definitive signs of human interaction (Hayes *et al.,* 2020).

Atlantic White-Sided Dolphin

Atlantic white-sided dolphins observed off the U.S. Atlantic coast are part of the Western North Atlantic Stock (Hayes *et al.,* 2020) which inhabits waters from central West Greenland to North Carolina (about 35° N) and primarily continental shelf waters to the 328 ft (100 m) depth contour (Doksæter *et al.,* 2008). Sighting data indicate seasonal shifts in distribution (Northridge *et al.,* 1997). From January to May, low numbers of Atlantic white-sided dolphins are found from Georges Bank to Jeffrey's Ledge off New Hampshire. From June through September, large numbers of Atlantic white-sided dolphins are found from Georges Bank to the lower Bay of Fundy. From October to December, they occur at intermediate densities from southern Georges Bank to the southern Gulf of Maine (Payne and Heinemann, 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year-round, but at low densities (Hayes *et al.,* 2020).

Offshore Rhode Island, Atlantic white-sided dolphins are common in continental shelf waters, with a slight tendency to occur in shallower waters in the spring (Kenney and Vigness-Raposa, 2010). Aggregations of sightings have occurred southeast of Montauk Point during the spring and summer. In the RI–MA WEA, Atlantic white-sided dolphins were sighted primarily during summer followed by fall (Kraus *et al.,* 2016).

Bottlenose Dolphin

There are two distinct bottlenose dolphin ecotypes in the western North Atlantic: The coastal and offshore forms (Duffield *et al.,* 1983; Mead and Potter, 1995; Rosel *et al.,* 2009). The migratory coastal ecotype resides in waters typically less than 20 m deep, along the inner continental shelf (within 7.5 km (4.6 miles) of shore), around islands, and is continuously distributed south of Long Island, New York into the Gulf of Mexico. Torres *et al.* (2003) found a statistically significant break in the distribution of the ecotypes at 34 km from shore based upon the genetic analysis of tissue samples collected in nearshore and offshore waters from New York to central Florida. The offshore ecotype was found exclusively seaward of 34 km and in waters deeper than 34 m. This ecotype is primarily expected in waters north of Long Island, New York (Waring *et al.,* 2017; Hayes *et al.,* 2018). The offshore form is distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic Ocean from Georges Bank to the Florida Keys and is the only type that may be present in the project area.

Common bottlenose dolphins were observed in the RI/MA WEA in all seasons with the highest seasonal abundance estimates during the fall, summer, and spring. The greatest concentrations of bottlenose dolphins were observed in the southernmost portion of the RI/MA WEA (Kraus *et al.,* 2016). Further evidence for the presence of the offshore stock in the study area is supported by seasonal stranding records which match the temporal patterns of the offshore stock better than the coastal stock (Kenney and Vigness-Raposa, 2010). Therefore, the northern migratory coastal stock is not likely to occur in the project area and will not be discussed further.

Common Dolphin

Common dolphins within the U.S. Atlantic EEZ belong to the Western North Atlantic stock, generally occurring from Cape Hatteras to the Scotian Shelf (Hayes *et al.,* 2021). Common dolphins are a highly seasonal, migratory species. Within the U.S. Atlantic EEZ, this species is distributed along the continental shelf and typically associated with Gulf Stream features (CETAP, 1982; Selzer and Payne, 1988; Hamazaki, 2002; Hayes *et al.,* 2021). Common dolphins occur from Cape Hatteras northeast to Georges Bank (35° to 42° N) during mid-January to May and move as far north as the Scotian Shelf from mid-summer to fall (Selzer and Payne, 1988). Migration onto the Scotian Shelf and continental shelf off Newfoundland occurs when water temperatures exceed 51.8 ° Fahrenheit (11° Celsius) (Sergeant *et al.,* 1970, Gowans and Whitehead 1995). Breeding usually takes place between June and September (Hayes *et al.,* 2019). Kraus *et al.* (2016) observed 3,896 individual common dolphins within the RI–MA WEA. Summer surveys included observations of the most individuals followed by fall, winter, then spring.

Atlantic Spotted Dolphin

Atlantic spotted dolphins are found in tropical and warm temperate waters ranging from southern New England, south to Gulf of Mexico and the Caribbean to Venezuela (Hayes *et al.,* 2020). The Western North Atlantic stock regularly occurs in continental shelf waters south of Cape Hatteras and in continental shelf edge and continental slope waters north of this region (Hayes *et al.,* 2020). Atlantic spotted dolphins occur in two forms, with the larger ecotype inhabiting the continental shelf and usually occurring inside or near the 200-m isobaths (Hayes *et al.,* 2020).

There are few reported occurrences of spotted dolphins (*Stenella* spp.) in the proposed project area. CETAP reported 126 spotted dolphin sightings over the course of the 3-year study, and 40 individuals south of Block Island in 1982 (CETAP, 1982). NMFS shipboard surveys conducted during June–August between central Virginia and the Lower Bay of Fundy reported 542 to 860 individual sightings from two separate visual teams (Palka *et al.,* 2017).

Risso's Dolphin

Risso's dolphins occur worldwide in both tropical and temperate waters (Jefferson *et al.,* 2008, Jefferson *et al.,* 2014). Risso's dolphins within the U.S. Atlantic EEZ are part of the Western North Atlantic stock which inhabits waters from Florida to eastern Newfoundland (Leatherwood *et al.,* 1976; Baird and Stacey, 1991). During spring, summer, and fall, Risso's dolphins are distributed along the continental shelf edge from Cape Hatteras north to Georges Bank (CETAP, 1982; Payne *et al.,* 1984). During the winter, the distribution extends outward into oceanic waters (Payne *et al.,* 1984) within the Mid-Atlantic Bight. However, little is known about their movement and migration patterns, and they are infrequently observed in shelf waters.

Offshore Rhode Island, Risso's dolphins have been observed year-round, with a peak abundance during the summer. Primarily observed along the continental shelf break, few individuals are typically seen in waters shallower than 100 m (Kenney and Vigness-Raposa, 2010).

Harbor Porpoise

The harbor porpoise occupies U.S. and Canadian waters. During summer (July to September), harbor porpoises are generally concentrated along the continental shelf within the northern Gulf of Maine, southern Bay of Fundy region, and around the southern tip of Nova Scotia, generally in waters less than 150 m deep (Gaskin, 1977; Kraus *et al.,* 1983; Palka, 1995). During fall (October to December) and spring (April to June), they are more widely dispersed from New Jersey to Maine with lower densities farther north and south. In winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina with lower densities found in waters off New York to New Brunswick, Canada (Hayes *et al.,* 2020).

There are four distinct populations of harbor porpoise in the western Atlantic: Gulf of Maine/Bay of Fundy, Gulf of St. Lawrence, Newfoundland, and Greenland (Gaskin, 1984, 1992; Hayes *et al.,* 2020). Harbor porpoises observed within the U.S. Atlantic EEZ are considered part of the Gulf of Maine/Bay of Fundy stock.

The main threat to the species is interactions with fisheries, with documented take in the U.S. northeast sink gillnet, mid-Atlantic gillnet, and northeast bottom trawl fisheries and in the Canadian herring weir fisheries (Waring *et al.,* 2020).

Harbor Seal

Harbor seals are found throughout coastal waters of the Atlantic Ocean and adjoining seas above 30° N (Burns, 2009; Desportes *et al.,* 2010; Hayes *et al.,* 2021). In the western North Atlantic, harbor seals occur year-round in coastal waters of eastern Canada and Maine (Katona *et al.,* 1993), yet they are distributed seasonally along the coast from southern New England to Virginia from September through late May (Schneider and Payne, 1983; Schroeder, 2000; Rees *et al.,* 2016, Toth *et al.,* 2018) Harbor seals are year-round inhabitants of the coastal waters of eastern Canada and Maine (Richardson and Rough, 1993), and occur seasonally from southern New England to New Jersey between September and late May (Schneider and Payne, 1983; Barlas, 1999; Schroeder, 2000). A general southward movement from the Bay of Fundy to southern New England occurs in fall and early winter (Rosenfeld *et al.,* 1988, Whitman and Payne, 1990, Barlas 1999). A northward movement from southern New England to Maine and eastern Canada takes place prior to the pupping season, which occurs from mid-May through June along the Maine coast (Richardson, 1976; Wilson, 1978; Whitman and Payne, 1990; Kenney, 1994).

In addition to coastal waters, harbor seals use terrestrial habitat as haul-out sites throughout the year, but primarily during the pupping and molting periods, which occur from late spring to late summer in the northern portion of their range. No pupping areas have been identified in southern New England, but there are several haul-out sites on Block Island and six haul-out sites have been identified in Narragansett Bay (Barlas, 1999; Kenney and Vigness-Raposa, 2010).

From July 2018 through March 2020, elevated numbers of harbor seal and gray seal mortalities occurred across Maine, New Hampshire and Massachusetts. Additionally, stranded seals showed clinical signs as far south as Virginia, although not in elevated numbers. This even was declared a UME, and the UME investigation encompassed all seal strandings from Maine to Virginia. A total of 3,152 reported strandings (both harbor and gray seals) occurred during the UME. Full or partial necropsy examinations have been conducted on some of the seals and samples have been collected for testing. Based on tests conducted as of April 30, 2021, the main pathogen found in the seals is phocine distemper virus. NMFS is performing additional testing to identify any other factors that may be involved in this UME. This UME was declared from 2018 through 2020, and is currently pending closure to become non-active. Therefore, this UME will not be addressed further in this document. Further information is available at: *https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along.*

Gray Seal

There are three major populations of gray seals found in the world: eastern Canada (western North Atlantic stock), northwestern Europe and the Baltic Sea. Gray seals in the project area belong to the western North Atlantic stock. The range for this stock is thought to be from New Jersey to Labrador (Davies, 1957; Mansfield, 1966; Katona *et al.,* 1993); however, stranding records as far south as Cape Hatteras (Gilbert *et al.,* 2005) have been recorded. This species inhabits temperate and sub-arctic waters and lives on remote, exposed islands, shoals, and sandbars (Jefferson *et al.,* 2008).

In U.S. waters, pupping sites are located from Maine to Massachusetts (Wood *et al.,* 2019). Historically, gray seals were relatively absent from Rhode Island and nearby waters. However, with the recent recovery of the Massachusetts and Canadian populations, their occurrence has increased in southern New England waters (Kenney and Vigness-Raposa, 2010). In New York, gray seals are typically seen alongside harbor seal haul-outs. Two frequent sighting locations include Great Gull Island and Fisher's Island (Kenney and Vigness-Raposa, 2010). Two breeding and pupping grounds have also been identified in Nantucket Sound at Monomoy and Muskeget Island (NMFS, 2021). Gray seals have been observed using the historic pupping site on Muskeget Island in Massachusetts since 1990.

Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic EEZ (Hayes *et al.,* 2021). Although the rate of increase is unknown, surveys conducted since the 1980s indicate a steady increase in abundance in both Maine and Massachusetts (Hayes *et al.,* 2021). It is believed that recolonization by Canadian gray seals is the source of the U.S. population (Hayes *et al.,* 2021). As described above, elevated seal mortalities, including gray seals, have occurred from Maine to Virginia from 2018 through 2020. Phocine distemper virus has been the main pathogen found in stranded seals. More information is available at: *https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along.*

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.,* Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 4.

TABLE 4—MARINE MAMMAL HEARING GROUPS

[NMFS, 2018]

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, *Kogia,* river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz.

* Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.,* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.,* 2006; Kastelein *et al.,* 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Sixteen marine mammal species (14 cetacean and 2 pinniped (both phocid) species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 3. Of the cetacean species that may be present, five are classified as low-frequency cetaceans (*i.e.,* all mysticete species), eight are classified as mid-frequency cetaceans (*i.e.,* all delphinid species and the sperm whale), and one is classified as high-frequency cetaceans (*i.e.,* harbor porpoise and Kogia spp.).

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section includes a discussion of the ways that Orsted's specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology, over a similar amount of time, and occurring in the northwest Atlantic region, including waters offshore of Massachusetts and Rhode Island (*e.g.,* 85 FR 63508, October 8, 2020; 86 FR 40469, July 28, 2021; 87 FR 806, January 6, 2022; 87 FR 13975, March 11, 2022). No significant new information is available, and we refer the reader to these documents rather than repeating the details here. The Estimated Take section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by Orsted's activity. The Negligible Impact Analysis and Determination section considers the content of this section, the Estimated Take section, and the Proposed Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Underwater sound from active acoustic sources can include one or more of the following: Temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al.,* 2007).

Permanent Threshold Shift—Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al.,* 2007). Repeated sound exposure that leads to TTS could cause PTS. In severe cases of PTS, there can be total or partial deafness, while in most cases the animal has an impaired ability to hear sounds in specific frequency ranges (Kryter, 1985).

Temporary Threshold Shift—TTS is the mildest form of hearing impairment that can occur during exposure to sound (Kryter, 1985). While experiencing TTS, the hearing threshold rises, and a sound must be at a higher level in order to be heard. In terrestrial and marine mammals, TTS can last from minutes or hours to days (in cases of strong TTS). In many cases, hearing sensitivity recovers rapidly after exposure to the sound ends.

When PTS occurs, there is physical damage to the sound receptors in the ear (*i.e.,* tissue damage), whereas TTS represents primarily tissue fatigue and is reversible (Southall *et al.,* 2007). In addition, other investigators have suggested that TTS is within the normal bounds of physiological variability and tolerance and does not represent physical injury (*e.g.,* Ward, 1997). Therefore, NMFS does not consider TTS to constitute auditory injury.

Many studies have examined noise-induced hearing loss in marine mammals (see Finneran (2015) and Southall *et al.* (2019) for summaries). Animals in the vicinity of Orsted's proposed site characterization survey activities are unlikely to incur even TTS due to the characteristics of the sound sources, which include relatively low sound source levels (176 to 205 dB re 1 μPa-m) and generally very short pulses and potential duration of exposure. These characteristics mean that instantaneous exposure is unlikely to cause TTS, as it is unlikely that exposure would occur close enough to the vessel for received levels to exceed peak pressure TTS criteria, and the cumulative duration of exposure would be insufficient to exceed cumulative sound exposure level (SEL) criteria. Regarding instantaneous exposure, high-frequency cetacean species (*e.g.,* harbor porpoises) have the greatest sensitivity to potential TTS, and individuals would have to make an approach within 5 m of the vessel (the estimated isopleth distance to the peak threshold). Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce TTS than would continuous exposures of the same duration (*i.e.,* intermittent exposure results in lower levels of TTS). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.,* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim though at such a close range. Further, the restricted beam shape of many of HRG survey devices planned for use (Table 2) makes it unlikely that an animal would be exposed more than briefly during the passage of the vessel.

Behavioral Effects—Behavioral disturbances may include a variety of effects, including subtle changes in behavior (*e.g.,* minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.,* species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.,* Richardson *et al.,* 1995; Wartzok *et al.,* 2003; Southall *et al.,* 2007; Weilgart, 2007; Archer *et al.,* 2010; Southall *et al.,* 2021). Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

The following subsections provide examples of behavioral responses that provide an idea of the variability in behavioral responses that would be expected given the differential sensitivities of marine mammal species to sound and the wide range of potential acoustic sources to which a marine mammal may be exposed. Behavioral responses that could occur for a given sound exposure should be determined from the literature that is available for each species, or extrapolated from closely related species when no information exists, along with contextual factors. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, the stock, or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.,* Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2003). There are broad categories of potential response, which we describe in greater detail here, that include alteration of dive behavior, alteration of foraging behavior, effects to breathing, interference with or alteration of vocalization, avoidance, and flight.

Changes in dive behavior can vary widely, and may consist of increased or decreased dive times and surface intervals as well as changes in the rates of ascent and descent during a dive (*e.g.,* Frankel and Clark, 2000; Costa *et al.,* 2003; Ng and Leung, 2003; Nowacek *et al.,* 2004; Goldbogen *et al.,* 2013). Seals exposed to non-impulsive sources with a received sound pressure level within the range of calculated exposures (142–193 dB re 1 μPa (referenced to 1 micropascal), have been shown to change their behavior by modifying diving activity and avoidance of the sound source (Götz *et al.,* 2010; Kvadsheim *et al.,* 2010). Variations in dive behavior may reflect interruptions in biologically significant activities (*e.g.,* foraging) or they may be of little biological significance. The impact of an alteration to dive behavior resulting from an acoustic exposure depends on what the animal is doing at the time of the exposure and the type and magnitude of the response. Due to the mobile nature of the proposed activities and mobility of marine mammals, we expect minimal effects on diving behavior as animals would be able to move away from the sound source.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.,* bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.,* Croll *et al.,* 2001; Nowacek *et al.;* 2004; Madsen *et al.,* 2006; Yazvenko *et al.,* 2007; Melcón *et al.,* 2012). In addition, the behavioral state of the animal plays a role in the type and severity of a behavioral response, such as disruption to foraging (*e.g.,* Silve *et al.,* 2016; Wensveen *et al.,* 2017). As mentioned earlier, the proposed project area overlaps with a fin whale feeding BIA. However, due to the mobile nature of the proposed acoustic sources, as well as fin whales and their prey, fin whales would have alternate habitat available for foraging during the brief duration of acoustic activity. We, therefore, expect minimal impacts to foraging fin whales.

A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal. Goldbogen *et al.* (2013) indicate that disruption of feeding and displacement could impact individual fitness and health. However, for this to be true, we would have to assume that an individual could not compensate for this lost feeding opportunity by either immediately feeding at another location, by feeding shortly after cessation of acoustic exposure, or by feeding at a later time. There is no indication this is the case, particularly since unconsumed prey would likely still be available in the environment in most cases following the cessation of acoustic exposure. Information on or estimates of the energetic requirements of the individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal will help better inform a determination of whether foraging disruptions incur fitness consequences.

Marine mammals vocalize for different purposes and across multiple modes, such as whistling, echolocation click production, calling, and singing. Changes in vocalization behavior in response to anthropogenic noise can occur for any of these modes and may result from a need to compete with an increase in background noise or may reflect increased vigilance or a startle response. For example, in the presence of potentially masking signals, humpback whales and killer whales have been observed to increase the length of their songs (Miller *et al.,* 2000; Fristrup *et al.,* 2003; Foote *et al.,* 2004), while right whales have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.,* 2007; Rolland *et al.,* 2012). Killer whales off the northwestern coast of the United States have been observed to increase the duration of primary calls once a threshold in observing vessel density (*e.g.,* whale watching) was reached, which has been suggested as a response to increased masking noise produced by the vessels (Foote *et al.,* 2004; NOAA, 2014). In some cases, however, animals may cease or alter sound production in response to underwater sound (*e.g.,* Bowles *et al.,* 1994; Castellote *et al.,* 2012; Cerchio *et al.,* 2014). Studies also demonstrate that even low levels of noise received far from the noise source can induce changes in vocalization and/or behavioral responses (Blackwell *et al.,* 2013, 2015). Due to the short-term duration and mobile nature of the proposed activities, we expect minimal impacts to marine mammal vocalization.

Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors, and is one of the most obvious manifestations of disturbance in marine mammals (Richardson *et al.,* 1995). Avoidance is qualitatively different from the flight response, but also differs in the magnitude of the response (*i.e.,* directed movement, rate of travel, *etc.*). Avoidance is often temporary, and animals return to the area once the noise has ceased. Acute avoidance responses have been observed in captive porpoises and pinnipeds exposed to a number of different sound sources (Kastelein *et al.,* 2001; Finneran *et al.,* 2003; Kastelein *et al.,* 2006a, 2006b; 2015a, 2015b, 2018). Short-term avoidance of seismic surveys, low frequency emissions, and acoustic deterrents have also been noted in wild populations of odontocetes (Bowles *et al.,* 1994; Goold, 1996; Goold and Fish, 1998; Stone *et al.,* 2000; Morton and Symonds, 2002; Hiley *et al.,* 2021) and to some extent in mysticetes (Malme *et al.,* 1984; McCauley *et al.,* 2000; Gailey *et al.,* 2007). Longer-term displacement is possible, however, which may lead to changes in abundance or distribution patterns of the affected species in the affected region if habituation to the presence of the sound does not occur (*e.g.,* Blackwell *et al.,* 2004; Bejder *et al.,* 2006; Teilmann *et al.,* 2006). Avoidance may occur for any marine mammals exposed to the proposed sound sources, however, alternate habitat is available for any animals that are temporarily displaced and mitigation measures, as described further in the Proposed Mitigation section, are expected to reduce avoidance.

A flight response is a dramatic change in normal movement to a directed and rapid movement away from the perceived location of a sound source. The flight response differs from other avoidance responses in the intensity of the response (*e.g.,* directed movement, rate of travel). Relatively little information on flight responses of marine mammals to anthropogenic signals exist, although observations of flight responses to the presence of predators have occurred (Connor and Heithaus, 1996). The result of a flight response could range from brief, temporary exertion and displacement from the area where the signal provokes flight to, in extreme cases, marine mammal strandings (Evans and England, 2001). There are limited data on flight response for marine mammals in water; however, there are examples of this response in species on land (*e.g.,* Born *et al.,* 1999; Ward *et al.,* 1999; Frid, 2003). However, it should be noted that response to a perceived predator does not necessarily invoke flight (Ford and Reeves, 2008), and whether individuals are solitary or in groups may influence the response. Due to proposed mitigation measures, we do not expect any marine mammals to exhibit flight responses to the proposed activities.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.,* those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.,* snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.,* shipping, sonar, seismic exploration) in origin. Marine mammal communications would not likely be masked appreciably by the acoustic signals given the directionality of the signals for most HRG survey equipment types planned for use (Table 2) and the brief period when an individual mammal is likely to be exposed.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hour cycle). Disruption of such functions resulting from reactions to stressors such as sound exposure are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.,* 2007). Consequently, a behavioral response lasting less than one day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.,* 2007). Note that there is a difference between multi-day substantive behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses. Due to the short-term nature of the proposed HRG activities, we expect minimal disruption to any diel cycles of marine mammals.

To assess the strength of behavioral changes and responses to external sounds and SPLs associated with changes in behavior, Southall *et al.,* (2007) developed and utilized a severity scale, which is a 10 point scale ranging from no effect (labeled 0), effects not likely to influence vital rates (low; labeled from 1 to 3), effects that could affect vital rates (moderate; labeled 4 to 6), to effects that were thought likely to influence vital rates (high; labeled 7 to 9). Southall *et al.,* (2021) updated the severity scale by integrating behavioral context (*i.e.,* survival, reproduction, and foraging) into severity assessment. For non-impulsive sounds (*i.e.,* similar to the sources used during the proposed action), data suggest that exposures of pinnipeds to sources between 90 and 140 dB re 1 μPa do not elicit strong behavioral responses; no data were available for exposures at higher received levels for Southall *et al.,* (2007) to include in the severity scale analysis. Reactions of harbor seals were the only available data for which the responses could be ranked on the severity scale. For reactions that were recorded, the majority (17 of 18 individuals/groups) were ranked on the severity scale as a 4 (defined as moderate change in movement, brief shift in group distribution, or moderate change in vocal behavior) or lower; the remaining response was ranked as a 6 (defined as minor or moderate avoidance of the sound source).

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.,* 2003). Animals are most likely to habituate to sounds that are predictable and unvarying. It is important to note that habituation is appropriately considered as a ''progressive reduction in response to stimuli that are perceived as neither aversive nor beneficial,'' rather than as, more generally, moderation in response to human disturbance (Bejder *et al.,* 2009). The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure. As noted, behavioral state may affect the type of response. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.,* 1995; NRC, 2003; Wartzok *et al.,* 2003). Controlled experiments with captive marine mammals have shown pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway *et al.,* 1997; Finneran *et al.,* 2003). Observed responses of wild marine mammals to loud impulsive sound sources (typically seismic airguns or acoustic harassment devices) have been varied but often consist of avoidance behavior or other behavioral changes suggesting discomfort (Morton and Symonds, 2002; see also Richardson *et al.,* 1995; Nowacek *et al.,* 2007). Although habituation to the proposed sound sources could occur, it is not likely due to the short-term nature of the HRG activities.

Stress responses—An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (*e.g.,* Seyle, 1950; Moberg, 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (*e.g.,* Moberg, 1987; Blecha, 2000).

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and ''distress'' is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function. We expect minimal stress responses to result from marine mammals due to the short-term duration of activities and proposed mitigation measures.

Potential effects on prey—Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* crustaceans, cephalopods, fish, zooplankton) (*i.e.,* effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area relatively quickly, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly.

Marine Mammal Habitat

The HRG survey equipment will not contact the seafloor and does not represent a source of pollution. As the HRG survey equipment introduces noise to the marine environment, there is the potential for it to result in avoidance of the area around the HRG survey activities on the part of marine mammal prey. Any avoidance of the area on the part of marine mammal prey would be expected to be short term and temporary.

Due to the temporary nature of the disturbance, and the availability of similar habitat and resources (*e.g.,* prey species) in the surrounding area, the impacts to marine mammals and the food sources that they utilize are expected to be minimal and unlikely to cause significant or long-term consequences for individual marine mammals or their populations.

Ship Strikes

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. Ship strikes generally involve commercial shipping vessels, which are generally larger (*e.g.,* 40,000 ton container ship) and of which there is much more traffic in the ocean than geophysical survey vessels. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975–2003 and found that most collisions occurred in the open ocean and involved large vessels (*e.g.,* commercial shipping). For vessels used in geophysical survey activities, vessel speed while towing gear is typically approximately 4–5 kn (2.1–2.6 m/s) (as is the speed of the vessel for Orsted's proposed HRG surveys). At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds. Notably in the Jensen and Silber study, no strike incidents were reported for geophysical survey vessels during that time period.

The potential effects of Orsted's specified survey activity are expected to be limited to Level B behavioral harassment. Temporary and minimal impacts to marine mammal habitat, including prey, may occur.

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 ''small numbers'' and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of 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).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to certain HRG sources. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.,* shutdown measures, vessel strike avoidance procedures) discussed in detail below in the Proposed Mitigation section, Level A harassment is neither anticipated nor proposed to be authorized.

As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS recommends the use of 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 (equated to Level A harassment).

Level B Harassment—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 or exposure context (*e.g.,* frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.,* bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.,* Southall *et al.,* 2007, 2021, Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (re 1 μPa) for continuous (*e.g.,* vibratory pile-driving, drilling) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources.

Level A Harassment—NMFS Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (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).

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

Orsted's proposed activity includes the use of impulsive (*i.e.,* boomers and sparkers) and non-impulsive (*i.e.,* CHIRP SBPs) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise from the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Orsted's application (Section 1.4) for a quantitative Level A exposure analysis exercise. The results indicated that maximum estimated distances to

Level A harassment isopleths were less than 3 m for all sources and hearing groups, with the exception of an estimated 18.9 m and 11.4 m distance to the Level A harassment isopleth for high-frequency cetaceans (*i.e.,* harbor porpoises) during use of the GeoPulse 5430 and TB CHIRP III, respectively (see Table 2 for source characteristics). Orsted did not request authorization of take by Level A harassment and no take by Level A harassment is proposed for authorization by NMFS.

TABLE 5—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset thresholds * (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{p,0\text{-pk,flat}}$: 219 dB; $L_{E,p,\ LF,24h}$: 183 dB	*Cell 2:* $L_{E,p,\ LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{p,0\text{-pk,flat}}$: 230 dB; $L_{E,p,\ MF,24h}$: 185 dB	*Cell 4:* $L_{E,p,\ MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{p,0\text{-pk,flat}}$: 202 dB; $L_{E,p,HF,24h}$: 155 dB	*Cell 6:* $L_{E,p,\ HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{p,0\text{-pk,flat}}$: 218 dB; $L_{E,p,PW,24h}$: 185 dB	*Cell 8:* $L_{E,p,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{p,0\text{-pk,flat}}$: 232 dB; $L_{E,p,OW,24h}$: 203 dB	*Cell 10:* $L_{E,p,OW,24h}$: 219 dB.

* Dual metric thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds are recommended for consideration.

Note: Peak sound pressure level ($L_{p,0\text{-pk}}$) has a reference value of 1 μPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1μPa²s. In this Table, thresholds are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals (*i.e.,* 7 Hz to 160 kHz). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

NMFS has developed a user-friendly methodology for determining the rms sound pressure level (SPL_{rms}) at the 160-dB isopleth for the purpose of estimating the extent of Level B harassment isopleths associated with HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and some directionality to refine estimated ensonified zones. Orsted used NMFS's methodology, using the source level and operation mode of the equipment planned for use during the proposed survey, to estimate the maximum ensonified area over a 24-hr period also referred to as the harassment area (Table 6). Potential takes by Level B harassment are estimated within the ensonified area (*i.e.,* harassment area) as an SPL exceeding 160 dB re 1 μPa for impulsive sources (*e.g.,* sparkers, boomers) within an average day of activity.

The harassment zone, also known as the Zone of Influence (ZOI), is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI was calculated for mobile sound sources per the following formula:

$$ZOI = (\text{Distance/day} \times 2r) + \pi r^2$$

Where r is the linear distance from the source to the isopleth for the Level B harassment threshold.

The estimated potential daily active survey distance of 70 km was used as the estimated areal coverage over a 24-hr period. This distance accounts for the vessel traveling at roughly 4 kn (2.1 m/s) and only for periods during which equipment <180 kHz is in operation. A vessel traveling 4 kn (2.1 m/s) can cover approximately 110 km per day; however, based on data collected since 2017, survey coverage over a 24-hour period is closer to 70 km per day as a result of delays due to, *e.g.,* weather, equipment malfunction. For daylight only vessels, the distance is reduced to 20 km per day; however, to maintain the potential for 24-hr surveys, the corresponding Level B harassment zones provided in Table 6 were calculated for each source based on the Level B threshold distances within a 24-hour (30 km) operational period.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases, when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 2 shows the HRG equipment types that may be used during the proposed surveys and the source levels associated with those HRG equipment types.

Based upon modeling results, of the HRG survey equipment planned for use by Orsted that has the potential to result in Level B harassment of marine mammals, the Applied Acoustics Dura-Spark UHD and GeoMarine Geo-Source sparkers would produce the largest Level B harassment isopleth (141 m) or ZOI. Estimated distances to Level B harassment isopleths for all sources evaluated here, including the sparkers, are provided in Table 6. Although Orsted does not expect to use sparker sources on all planned survey days, Orsted proposes to assume for purposes of analysis that the sparker would be used on all survey days. This is a conservative approach, as the actual sources used on individual survey days may produce smaller harassment distances.

TABLE 6—DISTANCE TO LEVEL B HARASSMENT THRESHOLDS (160 dB RMS)

Source	Distance to level B harassment threshold (m)
Non-impulsive, non-parametric, shallow SBP (CHIRPs)	
ET 216 CHIRP	12
ET 424 CHIRP	4
ET 512i CHIRP	6
GeoPulse 5430	29
TB CHIRP III	54
Pangeo SBI	22
Impulsive, medium SBP (Boomers and Sparkers)	
AA Triple plate S-Boom (700/1,000 J)	76
AA, Dura-spark UHD Sparkers	141
GeoMarine Sparkers	141

AA = Applied Acoustics; CHIRP = compressed high-intensity radiated pulses; ET = edgetech; HF = high-frequency; J = joules; LF = low-frequency; MF = mid-frequency; PW = phocid pinnipeds in water; SBI = sub-bottom imager; SBP = sub-bottom profiler; TB = Teledyne benthos; UHD = ultra-high definition.

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including density or other relevant information that will inform the take calculations.

Habitat based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.,* 2016, 2022) represent the best available information regarding marine mammal densities in the project area. The density data presented by Roberts *et al.* (2016, 2022) incorporate aerial and shipboard line-transect data from NMFS and other organizations and incorporate data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and control for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.,* 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at *https://seamap.env.duke.edu/models/Duke/EC/.* Marine mammal density estimates in the project area (animals/km²) were obtained using the most recent model results for all taxa (Roberts 2022). The updated models incorporate sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

For exposure analysis, density data from Roberts (2022) were mapped using a geographic information system (GIS). Density grid cells that included any portion of the proposed project area were selected for all survey months (see Figure 3 of Orsted's application). Given the variability in level of effort between the Lease Areas and the ECR area, densities were separated for the three Lease Areas (OCS–A 0486, 0487, and 0500) and the ECR area. The densities for each species as reported by Roberts *et al.* (2022) for each of the Lease Areas and ECR were averaged by month; those values were then used to calculate the mean annual density for each species within the project area. Estimated mean monthly and annual densities (animals per km²) of all marine mammal species that may be taken by the proposed survey are shown in Tables 8–11 of Orsted's application. Please see Table 7 for density values used in the exposure estimation process.

Given their size and behavior when in the water, seals are difficult to identify during shipboard visual surveys and limited information is currently available on their distribution. Therefore, data used to establish the density estimates from Roberts *et al.* (2022) are based on information for all seal species that may occur in the Western North Atlantic (*i.e.,* harbor, gray, hooded, harp). However, only the harbor seal and gray seal are reasonably expected to occur in the project area, and the densities were split evenly between both species.

Long- and short-finned pilot whales are also difficult to distinguish during shipboard surveys so individual habitat models were not able to be developed for these species. As only long-finned pilot whales are expected to occur within the study area, pilot whale densities within the study area were attributed to this species.

For bottlenose dolphin densities, Roberts (2022) does not differentiate by stock. As previously discussed, only the Western North Atlantic offshore stock is expected to occur in the proposed project area. Thus, all bottlenose dolphin density estimates within the project area were attributed to the offshore stock.

TABLE 7—AVERAGE ANNUAL MARINE MAMMAL DENSITY ESTIMATES ACROSS SURVEY SITES

Species	Average annual density (km²)			
	OCS–A 0486	OCS–A 0487	OCS–A 0500	ECR
Low-frequency Cetaceans:				
Fin whale	0.0013	0.0021	0.0023	0.0015
Sei whale	0.0000	0.0001	0.0001	0.0000
Minke whale	0.0005	0.0008	0.0009	0.0005
Humpback whale	0.0012	0.0013	0.0015	0.0006
North Atlantic right whale	0.0040	0.0020	0.0034	0.0008
Mid-frequency Cetaceans:				
Sperm whale	0.0001	0.0001	0.0001	0.0001
Atlantic white sided dolphin	0.0092	0.0234	0.0367	0.0163
Atlantic spotted dolphin	0.0001	0.0003	0.0004	0.0003
Common bottlenose dolphin	0.0151	0.0078	0.0097	0.0266
Long-finned pilot whale	0.0020	0.0074	0.0090	0.0043
Risso's dolphin	0	0.0001	0.0001	0.0001
Common dolphin	0.0457	0.0924	0.0945	0.0562
Striped dolphin	0.0000	0.0000	0.0000	0.0000
High-frequency Cetaceans:				
Harbor porpoise	0.0335	0.0399	0.0384	0.0337
Pinnipeds in-water: [1]				
Gray seal	0.0104	0.0110	0.0124	0.0182
Harbor seal	0.0104	0.0110	0.0124	0.0182

[1] Seal species are not separated in the Roberts (2022) data therefore densities were evenly split between the two species expected to occur in the project area.

Take Estimation

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization.

Level B exposures were estimated by multiplying the average annual density of each species within the project area (Table 7) by the largest ZOI that was estimated to be ensonified to an SPL exceeding 160 dB re 1 μPa (141m; Table 6). That result was then multiplied by the number of survey days in that Lease Area or ECR (Table 1), and rounded to the nearest whole number to arrive at estimated take. This final number equals the instances of take for the entire operational period. It was assumed the sparker systems were operating all 400 survey days as it is the sound source expected to produce the largest harassment zone. A summary of this method is illustrated in the following formula with the resulting proposed take of marine mammals is shown below in Table 8:

Estimated take = species density × ZOI × # of survey days

TABLE 8—TOTAL ESTIMATED AND REQUESTED TAKE NUMBERS

[By level B harassment only]

Species	Abundance	Estimated level B takes	Requested level B takes	Max percent population
Low-frequency Cetaceans				
Fin whale	6,802	14	14	0.21
Sei whale	6,292	0	3	0.05
Minke whale	21,968	6	13	0.06
Humpback whale	1,396	8	34	2.44
North Atlantic right whale	368	17	17	4.62
Mid-frequency Cetaceans				
Sperm whale	4,349	0	2	0.05
Atlantic white-sided dolphin	93,233	210	210	0.23
Atlantic spotted dolphin	39,921	3	29	0.07
Common bottlenose dolphin	62,851	139	139	0.22
Pilot whale	39,215	17	17	0.13
Risso's dolphin	35,215	1	30	0.09
Common dolphin	172,974	601	6,000	3.47
Striped dolphin	67,036	0	20	0.03
High-frequency Cetaceans				
Harbor porpoise	95,543	287	287	0.30
Pinnipeds				
Seals:.				
Gray seal	27,300	118	118	0.43
Harbor seal	61,336	118	118	0.19

Additional data regarding average group sizes from survey effort in the region was considered to ensure adequate take estimates are evaluated. Take estimates for several species were adjusted based upon observed group sizes in the area. The adjusted take estimates for these species are indicated in bold in Table 8. These calculated take estimates were adjusted for these species as follows:

- *Sei whale:* Although no takes were estimated, prior Protected Species Observer (PSO) monitoring documented the presence of sei whales in the area. One take was requested based on the most common group size reported in Kenney and Vigness-Raposa (2010);
- *Minke and humpback whales:* Requested takes were increased to the number recorded within 500 m of an active source based on draft PSO data (see Table 13 in the application);
- *Sperm whale:* No takes were estimated but based on their occurrence in PSO data, 1 group of 2 (Barkaszi and Kelly, 2019) was added to the requested takes;
- *Atlantic spotted dolphin:* Requested takes were increased to the average number of dolphins in a group reported in Palka *et al.* (2017, 2021);
- *Risso's dolphin:* Only one take was estimated but based on their occurrence in PSO data, 1 group of 30 (Kenney and Vigness-Raposa, 2010) was added to the requested takes.
- *Common dolphin:* Requested takes were increased to 6,000. This is based on the average group size of 15 from the PSO data (calculated by dividing the total number of individuals [14,250] by the total number of detections [927] in Table 13 of the application) multiplied by the planned number of survey days (400) in Table 1.
- *Striped dolphin:* No takes were estimated but based on their occurrence in PSO data, one group of 20 dolphins (Kenney and Vigness-Raposa, 2010) was added to the requested takes.

PSO data for adjusting take estimates of minke whales, humpback whales, common bottlenose dolphins, and common dolphins was derived from draft PSO observer reports from surveys conducted in the project lease areas and ECR from 2020–2021, as shown in Table 13 of Orsted's application.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). 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 the 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, NMFS considers 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), 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 and impact on operations.

Mitigation for Marine Mammals and Their Habitat

NMFS proposes the following mitigation measures be implemented during Orsted's proposed marine site characterization surveys. Pursuant to section 7 of the ESA, NEETMA would also be required to adhere to relevant Project Design Criteria (PDC) of the NMFS' Greater Atlantic Regional Fisheries Office (GARFO) programmatic consultation (specifically PDCs 4, 5, and 7) regarding geophysical surveys along the U.S. Atlantic coast (*https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic#offshore-wind-site-assessment-and-site-characterization-activities-programmatic-consultation*).

Marine Mammal Shutdown Zones

Marine mammal shutdown zones would be established around impulsive HRG survey equipment (<180 kHz; *e.g.,* sparkers and boomers) for all marine mammals, and around impulsive HRG survey equipment and non-impulsive, non-parametric sub-bottom profilers (*e.g.,* CHIRPs) for North Atlantic right whales. Shutdown zones would be monitored by protected species observers (PSOs) based upon the radial distance from the acoustic source rather than being based around the vessel itself. An immediate shutdown of impulsive HRG survey equipment will be required if a whale is sighted at or within the corresponding marine mammal shutdown zones to minimize noise impacts on the animals. If a shutdown is required, a PSO will notify the survey crew immediately. Vessel operators and crews will comply immediately with any call for shutdown. The shutdown zone may or may not encompass the Level B harassment zone. Shutdown zone distances are as follows:

- A 500-meter (m) Shutdown Zone for North Atlantic right whales for use of impulsive acoustic sources (*e.g.,* boomers and/or sparkers) and non-impulsive, non-parametric sub-bottom profilers; and
- A 100-m shutdown zone for use of impulsive acoustic sources for all other marine mammals, with the exception of delphinids belonging to the Family *Delphinidae* and one of the following genera: *Delphinus, Lagenorhynchus, Stenella,* or *Tursiops,* and pinnipeds.

Shutdown will remain in effect until the minimum separation distances (detailed above) between the animal and noise source are re-established. If a marine mammal enters the respective shutdown zone during a shutdown period, the equipment may not restart until that animal is confirmed outside the clearance zone as stated previously in the pre-start clearance procedures. These stated requirements will be included in the site-specific training to be provided to the survey team.

Pre-Start Clearance

Marine mammal clearance zones would be established at the following distances around the HRG survey equipment and monitored by PSOs:

- 500 m for all ESA-listed marine mammals;
- 100 m for all other whales; and
- 50 m for dolphins and porpoises.

Orsted would implement a 30-minute pre-start clearance period prior to the initiation of ramp-up of specified HRG equipment. During this period, clearance zones will be monitored by PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective clearance zone. If a marine mammal is observed within a clearance zone during the pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.,* 15 minutes for small odontocetes and seals, and 30 minutes for all other species). Monitoring would be conducted throughout all pre-clearance and shutdown zones as well as all visible waters surrounding the sound sources and the vessel. All marine mammals detected will be recorded as described in the Proposed Monitoring and Reporting section.

Ramp-Up of Survey Equipment

A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the acoustic source when technically feasible. The ramp-up procedure would be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the project area by allowing them to vacate the area prior to the commencement of survey equipment operation at full power. Operators should ramp-up sources to half power for 5 minutes and then proceed to full power.

The ramp-up procedure will not be initiated (*i.e.,* equipment will not be started) during periods of inclement conditions when the marine mammal pre-start clearance zone cannot be adequately monitored by the PSOs for a 30 minute period using the appropriate visual technology. If any marine mammal enters the clearance zone, ramp-up will not be initiated until the animal is confirmed outside the marine mammal clearance zone, or until the appropriate time (30 minutes for whales, 15 minutes for dolphins, porpoises, and seals) has elapsed since the last sighting of the animal in the clearance zone.

Shutdown, pre-start clearance, and ramp-up procedures are not required during HRG survey operations using only non-impulsive sources (*e.g.,* echosounders) other than non-parametric sub-bottom profilers (*e.g.,* CHIRPs).

Vessel Strike Avoidance

Orsted must adhere to the following measures except in the case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.,* PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to (1) distinguish protected species from other phenomena, and (2) broadly identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;

a. All survey vessels, regardless of size, must observe a 10-knot speed restriction in specified areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including seasonal management areas (SMAs) and dynamic management areas (DMAs) when in effect;

b. Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the project area during the survey, the vessels will abide by speed restrictions in the DMA;

c. All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 kn (5.1 m/s) or less at all times;

d. All vessels must reduce their speed to 10 kn (5.1 m/s) or less when mother/calf pairs, pods, or large assemblages of any species of cetaceans is observed near a vessel;

e. All vessels must maintain a minimum separation distance of 500 m from right whales and other ESA-listed large whales;

f. If a whale is observed but cannot be confirmed as a species other than a right whale or other ESA-listed large whale, the vessel operator must assume that it is a right whale and take appropriate action;

g. All vessels must maintain a minimum separation distance of 100 m from non-ESA listed whales;

- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.,* for animals that approach the vessel);
- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.,* attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed 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.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) 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) indicate that requests for 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 while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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 area in which take is anticipated (*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.

Proposed Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Orsted would employ independent, dedicated, trained PSOs, meaning that the PSOs must (1) be employed by a third-party observer provider, (2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and (3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specified duties in support of approved, independent PSOs on smaller vessels with limited crew operating in nearshore waters.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including shutdown and pre-clearance zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established shutdown and pre-clearance zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.,* any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.,* from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360 degree visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observations per 24-hr period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.,* daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team. Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather, details of marine mammal sightings (*e.g.,* species, numbers, behaviors); and details of any observed marine mammal behavior that occurs (*e.g.,* notes behavioral disturbances). For more detail on the proposed monitoring requirements, see Condition 5 of the draft IHA.

Proposed Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a draft comprehensive report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. A final report must be submitted within 30 days following any comments on the draft report. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Taylor@noaa.gov.* The report must contain at minimum, the following:

a. PSO names and affiliations;

a. Dates of departures and returns to port with port names;

b. Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;

c. Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;

d. Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;

e. Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;

• Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.,* vessel traffic, equipment malfunctions); and

• Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.,* pre-clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

a. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

b. PSO who sighted the animal;

c. Time of sighting;

d. Vessel location at time of sighting;

e. Water depth;

f. Direction of vessel's travel (compass direction);

g. Direction of animal's travel relative to the vessel;

h. Pace of the animal;

i. Estimated distance to the animal and its heading relative to vessel at initial sighting;

• Identification of the animal (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;

a. Estimated number of animals (high/low/best);

b. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);

c. Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);

• Detailed behavior observations (*e.g.,* number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);

a. Animal's closest point of approach and/or closest distance from the center point of the acoustic source;

• Platform activity at time of sighting (*e.g.,* deploying, recovering, testing, data acquisition, other); and

• Description of any actions implemented in response to the sighting (*e.g.,* delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Orsted must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755–6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that Orsted personnel discover an injured or dead marine mammal, Orsted will report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

a. Species identification (if known) or description of the animal(s) involved;

b. Condition of the animal(s) (including carcass condition if the animal is dead);

c. Observed behaviors of the animal(s), if alive;

d. If available, photographs or video footage of the animal(s); and

e. General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in this activities covered by the IHA, Orsted would report the incident to NMFS OPR and the NMFS New/England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

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

b. Species identification (if known) or description of the animal(s) involved;

c. Vessel's speed during and leading up to the incident;

d. Vessel's course/heading and what operations were being conducted (if applicable);

e. Status of all sound sources in use;

f. 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;

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

h. Estimated size and length of animal that was struck;

i. Description of the behavior of the marine mammal immediately preceding and following the strike;

j. If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;

k. Estimated fate of the animal (*e.g.,* dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and

l. To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

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'' through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.,* intensity, duration), the context of any impacts or responses (*e.g.,* critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the 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' 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 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, or ambient noise levels).

To avoid repetition, the discussion of our analysis applies to all the species listed in Table 3, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. Where there are meaningful differences between species or stocks—as is the case of the North Atlantic right whale—they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is proposed to be authorized. As discussed in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.,* Southall *et al.,* 2007, 2021). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations and the estimated small size of the Level A harassment zones.

In addition to being temporary, the maximum expected harassment zone around the survey vessel is 141 m. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the project area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the proposed project area. Several harbor and gray seal haul out sites have been identified on Block Island, Great Gull Island, and Fishers Island as wells as along Narragansett and Nantucket Sounds. As the acoustic footprint of the proposed HRG activities is relatively small, hauled seals are not expected to be impacted by these activities. In addition, cable landfall sites have yet to be determined and may not be in the vicinity of haul out sites. The proposed ECR area encompasses a feeding BIA for fin whales east of Montauk Point, NY that is active from March through October (LaBrecque *et al.,* 2015). The fin whale feeding BIA is extensive and sufficiently large (2,933 km^2), and the acoustic footprint of the proposed survey is sufficiently small (project area) that feeding opportunities for fin whales would not be reduced appreciably. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. In addition, feeding success is not likely to be significantly affected as minimal impacts to prey species are expected, for reasons as described above in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section.

North Atlantic Right Whale

The status of the North Atlantic right whale (NARW) population is of heightened concern and therefore, merits additional analysis. As noted previously, elevated NARW mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. The proposed project area overlaps with a migratory corridor BIA for North Atlantic right whales (effective March–April; November–December) that extends from Massachusetts to Florida and, off the coast of NY and RI, from the coast to beyond the shelf break (LaBrecque *et al.,* 2015). Right whale migration is not expected to be impacted by the proposed survey due to the very small size of the project area relative to the spatial extent of the available migratory habitat in the BIA. The proposed project area also overlaps with the Block Island seasonal management area (SMA), active from November 1 to April 30. NARWs may be feeding or migrating within the SMA. Required vessel strike avoidance measures and following the speed restrictions of the SMA will decrease the risk of ship strike during NARW migration; no ship strike is expected to occur during Orsted's proposed activities. For reasons as described above, minimal impacts are expected to prey availability and feeding success. Additionally, HRG survey operations are required to maintain a 500 distance and shutdown if a NARW is sighted at or within 500 m. The 500 m shutdown zone for right whales is conservative, considering the Level B harassment isopleth for the most impactful sources (*i.e.,* GeoMarine Sparkers, AA Dura-spark UHD Sparkers, AA Triple plate S-Boom) is estimated to be 141 m, and thereby minimizes the potential for behavioral harassment of this species. Therefore only very limited take by Level B harassment of NARW has been requested and is being proposed for authorization by NMFS. As noted previously, Level A harassment is not expected, nor authorized, due to the small PTS zones associated with HRG equipment types proposed for use. NMFS does not anticipate NARW takes that result from the proposed survey activities would impact annual rates of recruitment or survival. Thus, any takes that occur would not result in population level impacts.

Other Marine Mammals With Active UMEs

As noted previously, there are several active UMEs occurring in the vicinity of Orsted's proposed project area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

The required mitigation measures are expected to reduce the number and/or severity of proposed takes for all species listed in Table 3, including those with active UMEs, to the level of least practicable adverse impact. In particular, they would provide animals the opportunity to move away from the sound source before HRG survey equipment reaches full energy, thus preventing them from being exposed to more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or proposed for authorization.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging in the area (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Required mitigation measures, such as shutdown zones and ramp up, would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or proposed for authorization;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the ensonified area during the planned surveys to avoid exposure to sounds from the activity;
- Take is anticipated to be of Level B behavioral harassment only consisting of brief startling reactions and/or temporary avoidance of the ensonified area;
- While the project area is within areas noted as a migratory BIA and SMA for North Atlantic right whales, the activities would occur in such a comparatively small area such that any avoidance of the ensonified area due to activities would not affect migration. In addition, mitigation measures require shutdown at 500 m (almost four times the size of the Level B harassment isopleth (141 m), which minimizes the effects of the take on the species; and
- The proposed mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

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 proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (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. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS proposes to authorize is below one third of the estimated stock abundance for all species (in fact, take of individuals is less than 6 percent of the abundance of the affected stocks for these species, see Table 8). The figures presented in Table 8 are likely conservative estimates as they assume all takes are of different individual animals which is likely not to be the case. Some individuals may return multiple times in a day, but PSOs would count them as separate takes if they cannot be individually identified.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals would 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 this action. 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.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS Office of Protected Resources (OPR) consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS OPR is proposing to authorize the incidental take of four species of marine mammals which are listed under the ESA, including the North Atlantic right, fin, sei, and sperm whale, and has determined that these activities fall within the scope of activities analyzed 107 in GARFO's programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021).

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Orsted for conducting site characterization surveys off the coast of New York and Rhode Island from September 25, 2022 through September 24, 2023, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable.*

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed HRG surveys. We also request comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activities section of this notice is planned or (2) the activities as described in the Description of Proposed Activities section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

• A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).

• The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: August 23, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2022–18454 Filed 8–25–22; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

Agency Information Collection Activities; Submission to the Office of Management and Budget (OMB) for Review and Approval; Comment Request; Infrastructure Investment and Jobs Act—Application for Broadband Grant Programs

AGENCY: National Telecommunications and Information Administration (NTIA), Department of Commerce.

ACTION: Notice of information collection, request for comment.

SUMMARY: The Department of Commerce, in accordance with the Paperwork Reduction Act of 1995 (PRA), invites the general public and other Federal agencies to comment on proposed, and continuing information collections, which helps us assess the impact of our information collection requirements and minimize the public's reporting burden. The purpose of this notice is to allow for 60 days of public comment preceding submission of the collection to OMB.

DATES: To ensure consideration, comments regarding this proposed information collection must be received on or before October 25, 2022.

ADDRESSES: Interested persons are invited to submit written comments by mail to Teri Caswell, Broadband