UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

09/15/2021

F:SER/BR

Amanda Lefton, Director
Bureau of Ocean Energy Management
45600 Woodland Road (VAM-OREP)
Sterling, Virginia 20166

Attention: Michelle Morin, Kyle Baker, Casey Reeves, John Filostrat

Re: Carolina Long Bay Offshore Wind Energy Lease - Supplemental Environmental Assessment

Dear Ms. Lefton:

NOAA Fisheries Southeast Regional Office (SERO) has reviewed the August 13, 2021, Bureau of Ocean Energy Management (BOEM) notice (BOEM-2021-0055) of your intent to prepare a supplemental Environmental Assessment (EA) to consider additional wind leasing options for offshore North and South Carolina. Specifically, BOEM is considering a lease sale for the Wilmington East Wind Energy Area (WEA); the EA will cover lease activities that occur prior to the approval of a construction and operations plan.

As an agency responsible for the stewardship of the nation's ocean resources and their habitats, our core goals include using science-based decision making to maximize fishing opportunities, ensuring sustainability of fisheries and fishing communities, and conserving and recovering protected species, while supporting responsible fishing and resource development. In order to achieve these goals, we will be involved in the process pursuant to:

- The Magnuson-Stevens Fishery Conservation Management Act (MSA) (Public Law 94-265), which requires consultation between the Federal action agency and us for projects that have the potential to affect Essential Fish Habitat (EFH);
- The Endangered Species Act of 1973 as amended (ESA) (16 U.S.C. § 1531 et seq.), which requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat;
- The Marine Mammal Protection Act (MMPA) of 1972 (50 CFR 216), which provides protection to all marine mammals regardless of their listing status under the ESA;
- The Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.), which requires the Federal action agency give full consideration of recommendations provided by Federal resource agencies; and
- The National Environmental Policy Act (NEPA) (40 CFR Parts 1500 through 1508), which requires that Federal agencies include in their decision-making processes appropriate and careful consideration of all environmental effects of proposed actions, analyze potential environmental effects of proposed actions and their alternatives, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental

quality to the extent practicable. As an agency both with subject matter expertise and our own NEPA obligations under the MMPA, we expect to serve as both a cooperating agency and an adopting agency pursuant to NEPA.

We have reviewed potential lease areas included in Wilmington East WEA. The following is a reiteration of our comments in our May 1, 2020 response, and includes new comments based on the best available data.

Essential Fish Habitat (EFH)

The Mid-Atlantic Fishery Management Council, South Atlantic Fishery Management Council, and NOAA Fisheries' Atlantic Highly Migratory Species (HMS) Management Division have designated a variety of habitat types within the Wilmington East WEA as EFH. Habitat types include, depending upon species and life stage, the water column (e.g., Charleston Gyre, Gulf Stream), abiotic substrates (e.g., sandy shoals, hard bottom) and biotic features (e.g., floating seaweed, corals).

The NOAA EFH Mapper[1] is an online interactive tool that displays maps for EFH, habitat areas of particular concern (HAPCs), and provides links to supporting materials such as Fishery Management Plans. The tool may be of use in the development of an EFH Assessment for the supplemental EA. We also encourage BOEM to consult the most recent version of *Users Guide to Essential Fish Habitat Designations by the South Atlantic Fishery Management Council.*[2]

HAPCs within the Wilmington East WEA include both artificial reefs and hardbottom habitats[3]. As part of the initial BOEM Call for Nomination on November 25, 2015, BOEM specifically excluded lease blocks containing known artificial reefs. However, there remains the possibility that previously unidentified areas of hardbottom exist within potential lease blocks. NOAA Fisheries is particularly concerned about impacts to hardbottom habitat, including ledges, mixed hardbottom/sand, and pavement habitats that occur in the Wilmington East WEA.

Proposals for a wind energy lease should identify all types of hardbottom within 300 meters of the proposed facility, transmission cables, and supporting infrastructure at a minimum mapping unit of 0.01 acres or smaller. NOAA Fisheries notes that the initial remote sensing and fish density surveys completed in 2013 and 2014 by the National Centers for Coastal Ocean Science provide an excellent starting point for this effort. Based on the exact location of a proposed lease, NOAA Fisheries can recommend additional survey and analysis procedures that would optimize detection of all hardbottom habitat. Characterizations of the hardbottom habitat should include the elevations of the exposed hardbottom, depths of buried hardbottom habitat, species present, and use by fishery species and their prey. NOAA Fisheries believes these surveys are critical for proper siting to protect benthic habitats, important to commercially- and

[1] https://www.habitat.noaa.gov/apps/efhmapper/

[2] https://safmc.net/download/SAFMCEFHUsersGuideAugust21.pdf

[3] U.S. Department of the Interior, Bureau of Ocean Energy Management. *Benthic Habitat Mapping and Assessment in the Wilmington-East Wind Energy Call Area*. OCS Study BOEM 2016-003 and NOAA Technical Memorandum 196. 150 pages.

recreationally-valuable fisheries during construction, operation, and long-term maintenance of these facilities.

Threatened and Endangered Species

Region-specific information on species under NOAA Fisheries jurisdiction, listed as threatened or endangered, and designated critical habitat for each state and territory is available for review online.[4] For your convenience, Tables 1 through 3 detail the ESA-listed species of marine mammals, sea turtles, and fishes listed as endangered or threatened under the ESA and that may be located in the Wilmington East WEA. Table 4 details the critical habitat under NOAA Fisheries jurisdiction that overlaps with the Wilmington East WEA.

NOAA Fisheries has more detailed distributional information on many of these species, based on previous surveys, however, more recent seasonal, interannual, and fine-scale information on species behavior, densities/abundance, and distribution are likely needed to support future phases of renewable energy development. NOAA Fisheries' Southeast Fisheries Science Center (SEFSC) is available to discuss how additional information on protected species (species protected under the ESA and/or the MMPA) can be developed and provided to support BOEM's decision-making process. We urge BOEM to begin these conversations soon, to allow coordination and planning of these efforts. In addition, please contact Dana Bethea to discuss the Section 7 consultation schedule.

Potential stressors to ESA-listed species from offshore wind development in the mid-Atlantic include but are not limited to: the impacts of elevated underwater noise resulting from pile driving, site characterization surveys, and other project-related activities; the risk of vessel strike due to increases in vessel traffic and/or changes in vessel traffic patterns; any activities that may increase the risk of entanglement, particularly from monofilament, fishing line, and anchor line that may accumulate on tower structures following their installation; habitat loss/avoidance; changes in water quality; any activities that may result in the displacement of individuals or changes to behavior (e.g., migratory, foraging, and mating behavior); any activities that may result in altered prey assemblages; the impact of electromagnetic fields from transmission cables; and any other activities that may result in harassment, injury, or mortality.

Please note the abbreviations used in the following tables are: DPS = distinct population segment; E = an "endangered" listing under the ESA; FR = Federal Register; T = a "threatened" listing under the ESA.

Table 1. ESA-Listed Marine Mammals Potentially Occurring in the Wilmington East WEA

Species	ESA Listing Status	Listing Rule/Date	Most Recent Recovery Plan/Outline Date
Blue whale	E	35 FR 12222/July 30, 1970	November 2020
Fin whale	E	35 FR 12222/December 2, 1970	August 2010

[4] www.fisheries.noaa.gov/southeast/consultations/threatened-and-endangered-species-and-critical-habitats

North Atlantic right whale	E	35 FR 18319/December 2, 1970	June 2005
Sei whale	E	35 FR 12222/December 2, 1970	December 2011
Sperm whale	E	35 FR 12222/December 2, 1970	December 2010

Table 2. ESA-Listed Sea Turtles Potentially Occurring in the Wilmington East WEA

Species	ESA Listing Status	Listing Rule/Date	Most Recent Recovery Plan/Outline Date
Green sea turtle (North Atlantic DPS)	T	81 FR 20057/April 6, 2016	October 1991
Green sea turtle (South Atlantic DPS)	T	81 FR 20057/April 6, 2016	October 1991
Kemp's ridley sea turtle	E	35 FR 18319/December 2, 1970	September 2011
Leatherback sea turtle	E	35 FR 8491/June 2, 1970	April 1992
Loggerhead sea turtle (Northwest Atlantic DPS	T	76 FR 58868/September 22, 2011	December 2008
Hawksbill sea turtle	E	35 FR 8491/June 2, 1970	December 1993

Table 3. ESA-Listed Fishes Potentially Occurring in the Wilmington East WEA

Species	ESA Listing Status	Listing Rule/Date	Most Recent Recovery Plan/Outline Date
Shortnose sturgeon	E	32 FR 4001/March 11, 1967	December 1998
Atlantic sturgeon (Carolina DPS)	E	77 FR 5914/February 6, 2012	N/A
Atlantic sturgeon (South Atlantic DPS)	E	77 FR 5914/February 6, 2012	N/A
Atlantic sturgeon (Chesapeake Bay DPS)	E	77 FR 5914/February 6, 2012	N/A
Atlantic sturgeon (New York Bight DPS)	E	77 FR 5914/February 6, 2012	N/A
Atlantic sturgeon (Gulf of Maine DPS)	T	77 FR 5914/February 6, 2012	N/A
Giant manta ray	T	83 FR 2916/January 22, 2018	2019
Oceanic whitetip shark	T	83 FR 4153/January 30, 2018	2018

Table 4. Critical Habitat within the Wilmington East WEA

Species	Critical Habitat Unit	Critical Habitat Rule/Date
North Atlantic right whale	Unit 2	81 FR 4837/January 27, 2016

Other critical habitat potentially affected, depending on future project details such as noise impacts due to pile driving, placement of cable transmission corridors, and/or vessel traffic, include: Loggerhead sea turtle Nearshore Reproductive (Unit LOGG-N-05 and Unit LOGG-N-06) (79 FR 39856/July 10, 2014) and Atlantic sturgeon Cape Fear River (Unit C4), and North and South Santee River (Unit C7) (82 FR 39160/August 17, 2017). We encourage BOEM to carefully investigate each listing rule to determine how offshore wind energy in the Wilmington East WEA may affect each of the critical habitats' features essential to the conservation of the listed species.

SERO, in conjunction with the Greater Atlantic Regional Fisheries Office (GARFO), recently developed an ESA Information Needs Checklist for BOEM to use when developing Biological Assessments (BA), for the purpose of ESA Section 7 consultation, of the effects of proposed offshore wind energy activities on ESA-listed species and designated critical habitat in the Southeast and Greater Atlantic regions. This "checklist" (Enclosure A) was designed to provide an outline of the information and analysis expected to be necessary to support a robust analysis of the effects of a proposed offshore wind project on ESA-listed species and designated critical habitat.

Finally, SERO is developing a Section 7 Mapper that will be available online in the fall of 2021. The Section 7 Mapper is a mapping application designed to aid Federal action agencies in their Section 7 consultation responsibilities under the ESA. Action agencies can better determine whether the activities they plan to authorize, fund, or carry out may affect listed species or designated critical habitat under SERO's jurisdiction by using the map data layers. When available, the tool may also be of use in the development of the supplemental EA.

North Atlantic Right Whale and North Atlantic Right Whale Critical Habitat

We wish in particular to draw BOEM's attention to the North Atlantic right whale and its designated critical habitat occurring within the Wilmington East WEA. Our knowledge of the status of the North Atlantic right whale has changed since BOEM's 2015 EA was issued. Assessing potential co-occurrence of this species and avoiding impacts to it and its critical habitat should be one of BOEM's top priorities for endangered and threatened species considerations.

We now know that since 2010 the population has been in decline, with a 99.99% probability of a decline of just under 1% per year (Pace et al. 2017). 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 North Atlantic right whale calves were observed. In the following years, seven new calves were reported in 2019, 10 in 2020, and 19 in

2021.[5] Of the 19 spotted in 2021, two are known to have died (one from assumed birthing-related issues and the other from boat strike). The current best estimate of population abundance for the species is just over 350 individuals (Pace, 2021).

Since June 7, 2017, elevated North Atlantic right whale mortalities have been documented, primarily in Canada, and were declared an Unusual Mortality Event (UME). As of this writing, the current total mortality for the UME is 34 whales (21 in Canada, 13 in the U.S.).[6] An additional 16 whales have been documented with serious injuries and are likely to die from those injuries. Preliminary findings support human interactions, specifically vessel strikes or rope entanglements, as the cause of death for the majority of the whales.

In the 2015 Environmental Assessment, BOEM noted that "...although habitat modeling using appropriate habitat characteristics requires more systematic collection of data in these areas and additional analyses, the model predicted that suitable calving habitat exists as far north as Cape Fear, NC (Keller et al., 2012)." Systematic visual surveys conducted off the coast of North Carolina during the winters of 2001 and 2002 sighted eight calves, suggesting the calving grounds may extend as far north as Cape Fear (W.A. McLellan, Univ. of North Carolina Wilmington, pers. comm.). In other words, aerial survey sightings in addition to Keller's (2012) model indicates that calving and calving habitat extend as far north as Cape Fear, NC. Further, North Atlantic right whales exhibit staggered arrival and departure times in the Southeast. According to Krzystan et al. (2018), right whales are not just migrating southward during fall and northward during spring. Sightings data suggest they are migrating throughout the calving season along the mid-Atlantic. We caution BOEM about assuming right whale use of the Wilmington East WEA is low based on the 1977-2014 sighting data. The data are not effort-corrected, and North Atlantic right whales exhibit behaviors that affect detectability in the mid-Atlantic (i.e., they are black in color, have no dorsal fin, and tend to lay on the surface).

NOAA Fisheries published a final rule revising right whale critical habitat in the North Atlantic on January 27, 2016 (81 FR 4838). A portion of the Wilmington East WEA is within Unit 2 of North Atlantic right whale critical habitat. Unit 2 is calving habitat with the following physical and biological features essential to the conservation of the North Atlantic right whale: (1) calm sea surface conditions of Force 4 or less on the Beaufort Wind Scale; (2) sea surface temperatures from a minimum of 7°C, and never more than 17°C; and (3) water depths of 6 to 28 meters, where these features simultaneously co-occur over contiguous areas of at least 231 nm^2 of ocean waters during the months of November through April. Calving North Atlantic right whales are moving throughout Unit 2 to select optimal combinations of sea surface roughness, sea surface temperatures, and water depths, depending on factors such as the weather and calf age. The essential features of North Atlantic right whale calving habitat are dynamic in their distributions throughout Unit 2 in that they vary over both time and space, and their variations do not necessarily correlate with each other.

As NOAA Fisheries stated in the proposed rule to revise critical habitat for right whales in the North Atlantic, installation and operation of offshore energy development facilities are not

[5] NARW Information Portal: https://sites.google.com/noaa.gov/nmfs-hq-narw-info-portal/historical-calving

[6] www.fisheries.noaa.gov/national/marine-life-distress/2017-2019-north-atlantic-right-whale-unusual-mortality-event

likely to negatively impact the preferred ranges of sea surface roughness, sea surface temperatures, or water depths, in that these facilities will not result in lowering or raising the available value ranges for these features. However, installation and operation of these technologies may fragment the large, contiguous areas containing the optimum ranges of all the essential features that are necessary for North Atlantic right whale calving and rearing. As such, North Atlantic right whales may be deterred from moving about to find and use the optimal combinations of the features necessary for successful calving and rearing. These are negative impacts on what makes these features essential to the conservation of the species. Importantly, BOEM needs to demonstrate that offshore wind development will not adversely modify right whale critical habitat, paying particular attention to how large wind turbine fields will affect the availability and contiguity of essential features to calving right whales.

NOAA Fisheries recommends that no offshore wind development occur within the boundaries of North Atlantic right whale critical habitat Unit 2 until BOEM can demonstrate that these facilities will not adversely modify the availability and contiguity of the essential features necessary for successful calving and rearing to North Atlantic calving right whales.

NOAA Marine Mammals

All marine mammals are protected under the MMPA. In addition to the five stocks of ESA listed marine mammals, 16 cetacean species managed are anticipated to occur in the Wilmington East WEA, six of which are considered "strategic" under the MMPA (Table 5, grouped by hearing frequency). Many stocks lack a baseline, have an outdated baseline, or have inadequate data. NOAA Fisheries is concerned about the lack of data on distribution, density, abundance, behavior, movements, and cumulative effects for these stocks. We recognize that Table 5 is not exhaustive; however, it does capture many of the key species. We urge BOEM to use this table, the footnotes and literature cited (Enclosure B) as a jumping-off point; a lot of new data and information has come out since 2015 and each species needs to be revisited thoroughly for seasonality and/or listing status. Additionally, NOAA Fisheries recommends BOEM consult with us to identify data needs to inform future offshore wind development planning.

Other, more-recent sources of data include the following websites:

- Ocean Biodiversity Information System Spatial Ecological Analysis of Megavertebrate Populations[7]
- Passive Acoustic Cetacean Map | NOAA NEFSC[8]
- Atlantic Marine Assessment Program for Protected Species (AMAPPS)
    - AMAPPS reports[9]
    - AMAPPS Mammal Mammal Model Viewer 2021[10]
- Marine Mammal Stock Assessments (NOAA Fisheries)[11]

[7] seamap.env.duke.edu/

[8] apps-nefsc.fisheries.noaa.gov/pacm/#/

[9] www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/atlantic-marine-assessment-program

[10] apps-nefsc.fisheries.noaa.gov/AMAPPSviewer/

[11] www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments

- Habitat-based Marine Mammal Density Models for the US Atlantic: Latest Versions[12]

There are several potential impacts to marine mammal species associated with the Wilmington East WEA. Impacts generally include: behavioral and injurious acoustic impacts; prey distribution and abundance changes; water quality effects; habitat loss and fragmentation; displacement and avoidance of habitat; vessel strikes; and entanglement. Associated environmental analyses for the WEA should fully examine all potential impacts. Acoustic impacts should be based on NOAA Fisheries 2018 revisions to its technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing.[13]

Table 5. MMPA-Protected Marine Mammal Species Occurring in the Wilmington East Wind Energy Area.

Common Name	Status	Occurrence
Low Frequency Cetaceans (baleen whales)		
Blue whale	MMPA protected, ESA endangered	Year-round
Rice's whale (Bryde's whale)	MMPA protected	Unknown
Fin whale	MMPA depleted, MMPA strategic, ESA endangered	Year-round[14]
Humpback whale (West Indies DPS)	MMPA protected, ESA delisted	Fall/winter/spring
Minke Whale	MMPA protected	Low likelihood, unknown[15]
North Atlantic right whale	MMPA depleted, MMPA strategic, ESA endangered	Potentially year round[16]
Sei whale	MMPA depleted, MMPA strategic, ESA endangered	Low likelihood; Spring[12]

[12] seamap.env.duke.edu/models/Duke/EC/

[13] National Marine Fisheries Service. 2018. 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Department of Commerce., NOAA. NOAA Technical Memorandum NMFS-OPR-59, 167 p.

[14] Edwards et al. (2015) found evidence to confirm the presence of fin and sei whales in every season throughout much of the U.S. Exclusive Economic Zone (EEZ) north of 35º N; however, densities vary seasonally.

[15] Per the 2020 SARs, minke whales are typically most abundant in New England waters during the spring-to-fall period. Records based on visual sightings and summarized by Mitchell (1991) hinted at a possible winter distribution in the West Indies, and in the mid-ocean south and east of Bermuda, a suggestion that has been validated by acoustic detections throughout broad ocean areas off the Caribbean from late September through early June (Clark and Gagnon 2002; Risch et al. 2014).

[16] Aerial surveys indicate calving and nursing occur as far north as North Carolina.

Mid-frequency Cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)		
Atlantic Spotted Dolphin	MMPA protected	Year-round
Beaked whales (various spp.)	MMPA protected	Year-round
Harbor porpoise	MMPA protected	Low likelihood
Pilot whale, long-finned	MMPA protected	Low likelihood
Pilot whale, short finned	MMPA protected	Year-round
Risso's dolphin	MMPA protected	Year-round
Short-beaked Common Dolphin	MMPA protected	Winter/spring[17]
Sperm Whale	MMPA protected, ESA endangered	Year-around
Western North Atlantic Bottlenose Dolphin, Offshore stock	MMPA protected	Year-round
Western North Atlantic Bottlenose Dolphin, South Carolina Georgia coastal stock	MMPA protected, MMPA depleted, MMPA strategic	Year-round
Western North Atlantic Bottlenose Dolphin, Southern Migratory Stock	MMPA protected, MMPA depleted, MMPA strategic	Year-round
Western North Atlantic Bottlenose Dolphin, Southern North Carolina estuarine stock	MMPA protected, MMPA strategic	Year-round, nearshore
High Frequency Cetaceans (true porpoises, Kogia)		
Kogia spp.	MMPA protected	Year-round

[17] Per the 2020 SARs, the species is less common south of Cape Hatteras, although schools have been reported as far south as the Georgia/South Carolina border (32º N) (Jefferson et al. 2009). They exhibit seasonal movements, where they are found from Cape Hatteras northeast to Georges Bank (35˚ to 42˚N) during mid-January to May (Hain et al. 1981; CETAP 1982; Payne et al. 1984).

Pinnipeds		
Gray Seal	MMPA protected	Low likelihood
Harbor Seal	MMPA protected	Low likelihood

Sustainable Fisheries

The proposed Wilmington East WEA is habitat for both federally and non-federally-managed marine species, which may seasonally concentrate in high numbers while migrating, spawning, or foraging. The dynamic seasonal distribution of marine species must be considered in relation to any offshore projects. As such, resource availability and harvest rates vary throughout the year, and from year-to-year. Therefore, data used in assessing potential impacts to fisheries resources should be considered over multiple years, as available, rather than relying on a snapshot of one year or season.

Information on the status and distribution of regulated species is readily available in stock assessment reports on the Southeast Fisheries Science Center (SEFSC) website.[18] Resource and fishery distribution patterns based on available Federal and state marine resource surveys, observer data, and fishery-dependent data are often provided in fishery performance reports, Stock Assessment and Fishery Evaluation reports, and in applicable NEPA documents for regulatory actions. These materials are available on the South Atlantic Fishery Management Council (SAFMC), Mid-Atlantic Fishery Management Council (MAFMC), and the Atlantic States Marine Fisheries Commission (ASMFC) websites.[19] [20] [21] Many of these reports, particularly stock assessments, also identify key research needs for each managed species. BOEM should consider all of these available sources of information when identifying research that should be conducted to inform future evaluations of impacts, developing a broader strategic plan for offshore energy infrastructure, and consulting with affected entities. Our commercial socioeconomic impact summary reports[22] provide an overview of the landings, revenues, gear types, and ports that would be affected by this project, along with vessel dependency upon this area and species catch within the project area relative to total regional landings and revenue.

The following fisheries managed by the SAFMC have the potential to operate in the Wilmington East WEA: snapper/grouper commercial fleets (especially: black sea bass, tomtate, white grunt, scup, red snapper, gray triggerfish, vermilion snapper, gag, and red grouper), including those using black sea bass pots, bandit gear, and longline; the dolphin/wahoo fishery; the Coastal Migratory Pelagics fishery (Spanish and king mackerel); and the shrimp trawl fishery. Recreational fleets may also be in the area to target species such as amberjack, dolphin, wahoo,

[18] www.fisheries.noaa.gov/about/southeast-fisheries-science-center
[19] South Atlantic Fish Management Council - www.safmc.net
[20] Mid-Atlantic Fishery Management Council - www.mafmc.org
[21] Atlantic States Fisheries Commission - www.asmfc.org
[22] https://www.fisheries.noaa.gov/resource/data/socioeconomic-impacts-atlantic-offshore-wind-development

black sea bass, and Spanish and king mackerel, using hook-and-line and spear. Vessels may also transit the area while engaging in other fisheries. The presence of turbine structures within the lease area could inhibit the ability of vessels to safely transit through or fish the area, which could result in avoidance of the Wilmington East WEA and accumulate vessel traffic in other areas where it may not have previously existed.

If fishing is to be permitted immediately adjacent to the proposed turbines, lines and hooks and other debris could accumulate on the turbine support structures, creating potential entanglement and entrapment risks for marine mammals, sea turtles, and other species (similar to the issues in other high-relief structures). This is more likely to be an issue if the support structures are "cross-beam towers", as opposed to single solid pillars.

NOAA Fisheries supports any outreach to fishermen in the Wilmington East WEA to make them aware of the project, and we support BOEM's commitment to developing a detailed understanding of the marine fisheries resources and the commercial and recreational fisheries that have historically operated in, and transited, through the proposed lease area.

Highly Migratory Species (HMS)

A number of species and fisheries managed by NOAA Fisheries under the 2006 Consolidated Atlantic HMS Fishery Management Plan occur in the Wilmington East WEA. Resource and fishery distribution patterns based on available Federal and state marine resource surveys, observer data, and fishery-dependent data are often provided in fishery performance reports, Stock Assessment and Fishery Evaluation reports, and in applicable NEPA documents for regulatory actions. These materials are available on the Atlantic HMS Management Division website.[23] Many of these reports, particularly stock assessments, also identify key research needs for each managed species. BOEM should consider all of these available sources of information when identifying research that should be conducted to inform future evaluations of impacts, developing a broader strategic plan for offshore energy infrastructure, and consulting with affected entities.

The following Atlantic HMS EFH intersects with the Carolina Long Bay lease blocks in the Wilmington East WEA:

- Blacknose (neonate, juvenile, adult), blacktip (juvenile, adult), dusky (juvenile, adult), sand tiger (neonate, juvenile, adult), Atlantic sharpnose (neonate, juvenile, adult), scalloped hammerhead (juvenile, adult), tiger (neonate, juvenile, adult), smoothhound (neonate, juvenile, adult), sandbar (juvenile, adult), and spinner (neonate, juvenile, adult) sharks, bluefin (adult) and skipjack (juvenile) tunas, and sailfish (adult).

HMS commercial fisheries occur within and transit through the proposed project area including bottom longline; pelagic longline; gillnet; and handgear targeting swordfish, tunas, and sharks. HMS recreational fisheries also operate in the area including charter/headboat businesses, private

[23] www.fisheries.noaa.gov/topic/atlantic-highly-migratory-species

recreational anglers, and tournaments targeting swordfish, tunas, billfishes, and sharks. Turbine spacing and the size of potential exclusion zones during and after construction may be particularly important to HMS recreational fishermen due to the large amounts of line required to fight these large sportfish (as compared to other recreationally-targeted species). The potential impacts on these fisheries and their respective communities should be evaluated, and communication and outreach to local HMS fishermen is strongly encouraged.

Conclusion

NOAA Fisheries appreciates the opportunity to provide information and comments to BOEM on the intent to prepare a supplemental EA to consider additional wind leasing options for offshore North and South Carolina. We are committed to working with BOEM to support the Administration's efforts to advance offshore renewable energy through our participation in the offshore wind development regulatory and planning process by providing expertise to help BOEM avoid and minimize impacts to NOAA Fisheries' trust resources. For questions related to the MSA and/or EFH, please contact Cynthia Cooksey (cynthia.cooksey@noaa.gov) in our Habitat Conservation Division. For questions regarding ESA Section 7 consultation, please contact Dana Bethea (dana.bethea@noaa.gov) in our Protected Resources Division. For questions regarding MMPA Incidental Take Authorizations, please contact Jaclyn Daly (jaclyn.daly@noaa.gov) in our Office of Protected Resources. For questions regarding sustainable fisheries, please contact Rick DeVictor (rick.devictor@noaa.gov) in our Sustainable Fisheries Division. For questions regarding HMS, please contact Tobey Curtis (tobey.curtis@noaa.gov) in our Highly Migratory Species Management Division.

Sincerely,

FAY.VIRGINIA.M.1365817320 Digitally signed by FAY.VIRGINIA.M.1365817320 Date: 2021.09.15 14:09:20 -04'00'

for Andrew J. Strelcheck
Regional Administrator

Enclosures
ESA Information Needs Checklist
References

cc: F/Policy, Chabot, Reid, Newell, Divittorio, Nachman
F/OGC, Zamboni, Farley, Htun
F/OPR, Daly, Zoodsma, Youngkin
F/SER, Strelcheck, Fay, Blough, Silverman, Rosegger
F/SER3, Bernhart, Bethea, Powell, Engleby
F/SER47, Wilber, Cooksey
F/SFD, DeVictor
F/SEFSC, Walter, Muñoz
F/NOS, IOOS, Zelenke
F/NOS, NCCOS, Taylor

Enclosure A

Endangered Species Act Information Needs for Offshore Wind Energy Projects in the U.S. Atlantic

This document is designed to aid BOEM and lessees/project proponents when developing Biological Assessments, for Endangered Species Act (ESA) section 7 consultations, of the effects of proposed offshore wind energy activities on listed species and designated critical habitat in NMFS' Greater Atlantic Region (GAR) (Maine - Virginia) and Southeast Region (SER) (North Carolina - Texas).

General guidance on carrying out ESA Section 7 consultation in the **GAR** is available at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultation-technical-guidance-greater-atlantic.

General guidance on carrying out ESA Section 7 consultation in the **SER** is available at: https://www.fisheries.noaa.gov/southeast/endangered-species-conservation/esa-section-7-interagency-consultation-southeast-united-states.

The statutory requirements for Biological Assessments and requests for consultation are described at 84 FR 44976 (August 27, 2019).

This "checklist" is designed to provide an outline of the information and analysis expected to be necessary to support a robust analysis of the effects of a proposed offshore wind project on ESA-listed species and designated critical habitat. This list is not project specific and may not capture all information needs for all projects. For each project, we expect that any description of baseline information or analysis of the potential effects of any action will be comprehensive and based on the best available scientific information. We understand that site-specific information may not always be available; in those instances, the best reasonable substitute should be provided with an explanation for why any necessary assumptions are reasonable. We also recognize that quantitative analyses are not always possible; in those cases, qualitative assessments should be provided with a robust explanation of any underlying assumptions or data gaps. For information related to NMFS trust resources (e.g. impacts to protected species surveys), contact:

Nick Sisson, Greater Atlantic Regional Fisheries Office, Protected Resources Division, nick.sisson@noaa.gov

Dana Bethea, Southeast Regional Fisheries Office, Protected Resources Division, dana.bethea@noaa.gov

Chris Orphanides, Northeast Fisheries Science Center, Protected Species Branch, chris.orphanides@noaa.gov

For each specific information need/stressor listed, we have included sub-topics with specific aspects to include/consider/analyze. Some information needs/stressors repeat themselves and thus we have only included new text in the sub-topic if the main topic repeats itself (note that initial sub-topics still pertain).

Information Needs Checklist:

1. **Description of the Proposed Action**
    a. Include all proposed Federal actions (e.g., BOEM COP approval, USACE permits, EPA Clean Air Act permit, MMPA take authorizations)
    b. Describe all activities and identify those that may affect ESA-listed species/designated critical habitat, with sufficient detail to allow for identification of consequences to individuals. This detailed description should include activity levels, frequency, duration, location, and intensity and should reflect the best available information on the activities and how the activities are likely to be carried out (see **Enclosure A Appendix** for more detail).
    c. Identify all proposed conservation measures (e.g., best management practices) for avoidance or minimization of effects that are to be considered part of the proposed action, including specific information about when and how these would apply and the anticipated reduction in exposure or intensity of exposure. This should also include any proposed monitoring or reporting measures.

2. **Identification of Action Area**
    a. Note that the action area is defined as: "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" [50 CFR Section 402.02].
    b. Include lease area, vessel transit routes during all phases of the project (including international ports), and cable routes, etc.

3. **Description of the natural and anthropogenic characteristics (atmospheric and oceanographic environment, habitat features, shipping lanes, fishing grounds, etc.) of the action area**
    a. Include relevant seasonal, geographic, etc. information for each characteristic.

4. **Description of critical habitat in the action area (if any)**

5. **Abundance and distribution of ESA-listed species in the action area**
    a. Use the best available information to describe listed species distribution and abundance in the entire action area:
        i. Describe how listed species habitat use varies across the action area (e.g., some species may occur in the lease area but not along the entirety of the cable corridor, and seasonality of use, if any).

ii. Examples of data sources or relevant research that may be used to identify ESA-listed species and critical habitat presence in the action area include, but are not limited to the following:

1. Atlantic Marine Assessment Program for Protected Species (AMAPPS), https://www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/atlantic-marine-assessment-program-protected
2. Developer/Lessee site characterization surveys
3. NOAA NEFSC Northeast Acoustic Marine Mammal Surveys, https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-acoustic-projects
4. NOAA Northeast Fisheries Science Center Right Whale Aerial Survey, https://apps-nefsc.fisheries.noaa.gov/psb/surveys/MapperiframeWithText.html
5. Provincetown Center for Coastal Studies Right Whale Aerial Survey, https://coastalstudies.org/right-whale-research/
6. New England Aquarium MA/RI Wind Energy Area Surveys, contact Nils Bolgen, NBolgen@masscec.com
7. OBIS-SEAMAP, http://seamap.env.duke.edu/
8. DOE Mid-Atlantic Baseline Studies, http://www.briloon.org/mabs
9. New York State Dept. of Conservation NY Bight Passive Acoustic Monitoring, Aerial, Shipboard Surveys, https://www.dec.ny.gov/lands/113647.html
10. Duke MGEL Density Models, contact Jason Roberts, jason.roberts@duke.edu
11. NMFS Section 7 Mapper, https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater

6. Information Needed to Support Evaluation of Project Effects and Anticipated Affects to ESA-Listed Species and designated Critical Habitat. For each potential stressor listed in Enclosure A Appendix, the following should be analyzed:

a. Determine which ESA –listed species may be exposed to the effect/stressors of the action, including a description of the life-stage (e.g., life stage, species).
b. When possible, include a quantitative assessment of the number of individuals likely to be exposed to a particular stressor. When a quantitative assessment is not possible, a qualitative approach may be substituted (e.g., identification of the species and life stages likely to be exposed and the duration and intensity of that exposure).
c. Establish if the stressor may result in any impacts to designated critical habitat in the action area, include which Physical and Biological Features may be exposed.
d. Determine and describe what the response to the exposure is for each ESA-listed species.
e. Determine and describe the effects of the response on ESA-listed species.

f. Determine and describe what the response to the exposure is for critical habitat.
g. Determine and describe the effects of the response on critical habitat.
h. Evaluate the effects when added to baseline conditions - (this is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem within the action area.
i. Make an determination regarding the effects of the action on listed species and/or critical habitat[24]:
    i. For each stressor/activity, determine if effects are expected to be: (a) discountable (extremely unlikely to occur), (b) insignificant (unable to meaningfully measure, detect or evaluate), (c) wholly beneficial (positive effects without *any* negative effects), or (d) adverse (the appropriate conclusion if the effects are not discountable, insignificant or wholly beneficial). If the effects to a species are likely to be adverse, identify the type of take that you anticipate will occur (e.g., harm, harass, capture, kill, injure, collect);
    ii. At the project level, for each species and critical habitat in the action area, determine if the action:
        1. May Affect, Not Likely to Adversely Affect (NLAA), if effects are: (a) discountable (extremely unlikely to occur), (b) insignificant (unable to meaningfully measure, detect or evaluate), and/or (c) wholly beneficial (positive effects without *any* negative effects); or
        2. May affect, Likely to Adversely Affect (LAA), if effects are likely to adversely affect the listed species and/or critical habitat.

[24] Note that you may reach different effects conclusions for the same activity/stressor for different species or species groups.

Enclosure A Appendix

For all activity descriptions, include as much detail as possible including relevant mitigation, monitoring, and reporting requirements that are part of the proposed action.

Construction

a. Noise

i. Include sound source levels and distance to isopleths of concern for all noise sources including: vessels, aircraft, cable installation, dredging, wind turbine generator operations, site assessment or other surveys, foundation installation.
   1. Information on source levels and the size of the area where noise will be above thresholds of concern (see below) should be quantified.
   2. Information on pile/foundation installation should include foundation type, pile diameter, number of strikes/pile, number of piles / day, hammer energy, etc.

ii. Describe the species anticipated to be exposed to noise sources and anticipated responses (e.g., mortality, injury, behavioral disturbance). Clearly address how any minimization and monitoring measures included as part of the proposed action are anticipated to reduce exposure (either the number of individuals or the duration of exposure) or the response/consequences to the exposed individuals.
   1. Where possible, a quantitative assessment of the number of individuals likely to be exposed to underwater noise that could result in mortality, injury, and/or behavioral disturbance/response should be provided. However, when that is not possible, a qualitative approach is acceptable.

iii. Include a complete description of any acoustic thresholds to be used in the analysis (see below for NMFS requirements).

iv. Evaluate impacts to listed species that are displaced from an impacted area due to project noise (e.g., consider how displacement may affect interactions with fisheries, shipping lanes, etc.)

b. Vessels

i. Describe baseline vessel traffic in the area where project vessels will occur (i.e., vessel traffic in the area is absent but for the proposed action).
   1. Include 3 years of unique transits for all vessels transiting the entire action area. Unique transits are considered an individual entry-exit of a vessel that overlaps the action area.
   2. Description should include vessel types, activity, size (length, beam, draft, deadweight tons), and operational speed (maximum and average)

ii. Include details of number and types of vessels to be used during construction, including size (length, beam, draft, deadweight tons) speed, and operational speed (maximum and average).
iii. Include details on ports planned for use and number of expected trips by vessel type to each port per month.
iv. Evaluate risk of ship strike to listed species from project vessels during all project phases.

c. Non-noise in-water Construction (dredging, cable installation, wind turbine generator (WTG) foundations)

i. For pre-lay grapnel run (if conducted), evaluate effects to habitat (i.e., increased sedimentation/turbidity, loss or displacement of benthic resources) and assessment of any entanglement risk.
ii. For dredging operations, address risk of capture, impingement, entrainment of listed species, turbidity, evaluate effects on prey, and provide information on dredge type, volume and type of material removed.
iii. For cable installation, evaluate potential loss of benthic resources, turbidity, effects on prey, and amount of habitat disturbed.
iv. For wind turbine foundations and scour protection, evaluate potential loss of benthic resources, turbidity, effects on prey, and amount of habitat disturbed.

d. Displacement/Shifts and Changes in Use of other Activities

i. Describe potential changes (if any) in use of the Project Area by non-wind related activities/users and how those changes may affect listed species (i.e., assess interaction risk due to displacement/shifts of vessel traffic and fishing activity).
ii. Describe access limits to the Project Area during construction, if access is limited, evaluate:
    1. Potential displacement of commercial and/or recreational fishing effort and/or vessel transit from the Project Area, details on which fisheries exist in the Project Area can be accessed via GARFO data request email: nmfs.gar.data.requests@noaa.gov
    2. Potential impact to listed species if commercial and/or recreational fisheries are displaced from the wind lease area.
    3. Other activities (e.g., commercial shipping, recreational boaters, ferry services) that may be displaced or shifted, and impacts to listed species.

e. Pollutant discharge

i. Describe risk of oil spills, and evaluate risk to listed species.
ii. Describe risk of chemical releases, and evaluate risk to listed species.

f. Unexpected/unanticipated events (e.g., vessel collision, etc.)

i. Describe unexpected/unanticipated events, and evaluate any risk to listed species - explain whether such events are “reasonably certain to occur.”

g. Surveys

i. Describe any geophysical and geotechnical surveys that may occur during construction, providing information on equipment to be used, sound source levels, distances to isopleths of interest. Address impacts on listed species due to noise and vessel traffic from surveys, see **a.** and **b.** above, respectively.

ii. Describe any surveys for fisheries or other biological resources that are planned over the life of the project that may affect (inclusive of capture or collect even if released unharmed) protected species. Identify any permits or authorizations that are associated with these surveys. Please note that additional information and/or coordination may be necessary to ensure appropriate consideration of protected species issue in such surveys.

h. Project Lighting

i. Evaluate project lighting as a potential attractant.

Operation

a. Effects of the Physical Presence of WTGs to Listed Species and their Environment

i. Evaluate the potential for displacement/disruption of listed species use of the project area and the consequences of any such displacement or disruption of use of the area.

ii. Evaluate the habitat conversion (e.g. scour, reef effect) and loss or addition of benthic resources.

iii. Evaluate the effects of the physical presence of WTGs to regional and local oceanographic (e.g. wakes) and atmospheric conditions (e.g. reduced wind stress) and how that will impact listed species, including impacts on prey species.

b. Vessels

i. See **b.** above

c. Pollutant discharge

i. See **e.** above

d. Cable presence

i. Describe effects (if any) from electromagnetic fields and heat from inter-array and export cable to listed species and their prey (i.e. ability to forage, attraction...etc.).

e. Displacement and Changes in Use of other Activities

i. See **d.** above

f. Project Lighting

i. See **h.** above

g. Surveys

i. See **g.** above

ii. Describe impacts of wind farm presence to NMFS and other protected species surveys (aerial, shipboard) and evaluate anticipated effects to listed species.

iii. Describe impacts of wind farm presence to NMFS and other fisheries or other resource surveys and assess risk of capture of listed species and risk of serious injury or mortality.

h. Repair and Maintenance Activities

i. Describe repair and maintenance activities that may directly or indirectly affect listed species and analyze those effects.

i. Operational noise

i. Describe the addition of operational noise from WTGs on current oceanic soundscape, and evaluate effects to listed species.

j. Describe unexpected/unanticipated events, and evaluate any risk to listed species

i. Vessel collision/allusion

ii. Failure of WTGs due to weather

Decommissioning

a. Noise

i. Describe noise levels associated with decommissioning activities (i.e. foundation, cable, scour removal, vessel traffic), and evaluate effects to listed species.

b. Vessels

i. See **b.** above

c. Habitat alterations/changes

i. Describe how the environment will be altered due to decommissioning of wind farm

1. For removal of structures, evaluate impacts to benthic resources, turbidity, effects on prey, and amount of habitat disturbed.
2. For dredging operations, address risk of capture, impingement, entrainment of listed species, turbidity evaluate effects on prey, and provide information on dredge type, volume and type of material removed.
3. For cable removal, evaluate impacts to benthic resources, turbidity, effects on prey, and amount of habitat disturbed.

d. Pollutant discharge

i. See **e.** above

e. Describe unexpected/unanticipated events, and evaluate any risk to listed species

Acoustic Thresholds

a. ESA-listed fish

i. NMFS considers the potential for behavioral disturbance with exposure to noise greater than 150 dB re 1 uPa rms

ii. FHWG (2008)[25] interim criteria for injury:
    1. Peak SPL: 206 dB re 1 µPa
    2. SELcum: 187 B re 1µPa^2-s for fishes 2 grams or larger (0.07 ounces)
    3. SELcum: 183 dB re 1µPa^2-s for fishes less than 2 grams (0.07 ounces)

b. Sea Turtles

i. Acoustic thresholds identifying the onset of permanent threshold shift and temporary threshold shift for sea turtles exposed to impulsive sounds (U.S. Navy 2017) (McCauley et al. 2000a; McCauley et al. 2000b)

Hearing Group	Generalized Hearing Range	Permanent Threshold Shift Onset	Temporary Threshold Shift Onset
Sea Turtles	30 Hz to 2 kHz	204 dB re: 1 Pa^2·s SEL_{cum} 232 dB re: 1 µPa SPL (0-pk)	189 dB re: 1 µPa^2·s SEL_{cum} 226 dB re: 1 µPa SPL (0-pk)

Behavior: response when exposed to received levels of 166 dB re: 1uPa rms and significant behavioral disruption and avoidance behavior when exposed to received levels of 175 dB re: 1 µPa (rms) and higher (McCauley et al. 2000b).

c. ESA-listed whales

i. Impulsive acoustic thresholds identifying the onset of permanent threshold shift and temporary threshold shift for the marine mammal species groups (NMFS 2018).

Hearing Group	Generalized Hearing Range[1]	Permanent Threshold Shift Onset[2]	Temporary Threshold Shift Onset
Low-Frequency Cetaceans (LF: baleen whales)	7 Hz to 35 kHz	*L*pk,flat: 219 dB *L*E,LF,24h: 183 dB	*L*pk,flat: 213 dB *L*E,LF,24h: 168 dB

[25] BOEM finds the criteria in that agreement FHWG 2008 no longer represent the best available science (BoS). Internationally, Popper et al. 2014 ANSI guidelines are widely utilized and recognized as the BoS. Including both sets of criteria have been agreed to in the acoustic modeling recommendations commented on by NMFS.

Mid-Frequency Cetaceans (MF: sperm whales)	150 Hz to 160 kHz	*L*pk,flat: 230 dB *L*E,MF,24h: 185 dB	*L*pk,flat: 224 dB *L*E,MF,24h: 170 dB

Behavior - continuous noise source: 120 dB re 1uPa rms; impulsive noise source: 160 dB re 1uPa rms

[1] 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 approximately 65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall et al. 2007).

[2] *L*pk,flat: unweighted ($_{flat}$) peak sound pressure level (L_{pk}) with a reference value of 1 µPa; *L*E,$_{xF,24h}$: weighted (by species group; $_{LF}$: Low Frequency, or $_{MF}$: Mid-Frequency) cumulative sound exposure level (L_E) with a reference value of 1 μPa^2-s and a recommended accumulation period of 24 hours ($_{24h}$)

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Enclosure B

References and Suggested Scientific Resources (Not Exhaustive) Regarding Use of the Project Area by ESA-Listed Species, see ESA Information Needs Checklist for additional sources on the abundance and distribution of listed species.

Fish

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