UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

December 16, 2022

Ms. Karen Baker
Chief, Office of Renewable Energy Programs
Bureau of Ocean Energy Management
45600 Woodland Road VAM–OEP
Sterling, VA 20166

RE: Draft Wind Energy Areas for commercial wind energy leasing on the Central Atlantic outer continental shelf (OCS)

Dear Ms. Baker:

We have reviewed the November 16, 2022, *Federal Register* (FR) notice requesting comments on the Draft Wind Energy Areas (WEA) proposed by BOEM for potential leasing offshore the U.S. Central Atlantic coast, which include eight areas covering approximately 1.75 million acres. We understand that BOEM will consider information received in response to this notice to identify Final WEAs as part of the Area Identification process. A draft report titled *Development of the Central Atlantic Wind Energy Areas*[1] (Draft Report) was also made available, which provides background, methods, results, and next steps for the development of the Central Atlantic Draft WEAs, including information on a spatial site suitability model developed for the WEA identification process by BOEM with technical support by the National Oceanic and Atmospheric Administration's (NOAA)'s National Centers for Coastal Ocean Science (NCCOS). BOEM is soliciting information and feedback on site conditions, resources, and multiple uses in close proximity to or within the eight Draft WEAs identified.

We appreciate the opportunity to comment on the suitability model and the Draft WEAs, and offer information related to NOAA trust resources, including habitat, protected species, fisheries, and NOAA scientific surveys for your consideration as you finalize WEAs in the Central Atlantic outer continental shelf (OCS). The comments and information provided herein were prepared in coordination with NOAA's National Marine Fisheries Service (NMFS) Southeast Region. We also provided written comments on June 24, 2022, in response to BOEM's Call for Information; these are included as an attachment to this letter. Those comments remain relevant to these Draft WEAs, including resources of concern, areas identified as unsuitable for development, and scientific recommendations, including the recommendation to implement a federal survey mitigation program prior to leasing to address unavoidable impacts to NOAA fisheries surveys. We recommend your continued consideration of those comments, as well as the information herein, as you work to finalize WEAs for future leasing in the Central Atlantic.

[1]Available at: https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/BOEM_NCCOS_JointReport_DraftWEAs_FINAL.pdf

Draft WEA Siting Suitability Model Comments

Both BOEM and NOAA recognize the value of using Marine Spatial Planning tools to inform siting decisions[2]; these tools use rigorous scientific data to inform decisions and promote the transparency of decision-making. We commend BOEM's decision to work with NCCOS in implementing spatial modeling to inform their area identification process. NMFS staff from the Greater Atlantic Region (GAR) and the Southeast Region (SER) advised NCCOS regarding available data, information, and resources of concern off the Central Atlantic for BOEM's consideration in its spatial modeling efforts. NMFS identified scientific data sets for resources under our jurisdiction, including fisheries, habitat, protected species, and our scientific surveys[3]. As described below, key datasets from the model were excluded, making the results incomplete for the identification of habitat and fisheries resources. This works against the intent of marine spatial planning by reducing the objectivity and transparency of information used in decision-making. BOEM's ability to use the spatial model to make fully-informed, objective decisions would be improved by including these data sets, and we provide additional comments and feedback related to the model below to inform BOEM's finalization of the WEAs

Frank R. Lautenberg Deep-Sea Coral Protection Area and Priority Habitats

Through our coordination with NCCOS, NMFS identified priority vulnerable/sensitive habitats and available habitat datasets. In addition to the data layers identified in the Draft Report, NMFS provided the data layer for the Frank R. Lautenberg Deep-sea Coral Protection Area and recommended this data layer be considered as a constraint, or, at a minimum, an area poorly suited for development in the model. However, BOEM did not include the Coral Protection Area in the current site suitability model. We recommend this data layer be included to ensure that the model yields results that reflect the best available information and accurately represent the value of the coral protection area. We are concerned that areas we identified as the highest priority for protection appear to be identified by the siting model as most suitable for development. We understand and appreciate that there are plans to reexamine this issue, particularly related to how the coral habitat suitability data were integrated; however, we also recommend BOEM rerun the model to incorporate the entire Frank R. Lautenberg Deep-sea Coral Protection Area. While NMFS recommends this area be incorporated as a constraint in the siting model, BOEM could, alternatively, include the information and weight the data layer to be commensurate with the degree of consideration given to the Deep-sea Coral Protected Area. While the former approach is preferred, either alternative would provide greater transparency to

[2] https://www.boem.gov/newsroom/notes-stakeholders/boem-enhances-its-processes-identify-future-offshore-wind-energy-areas

[3] The Draft Joint BOEM/NCCOS report "Development of the Central Atlantic Wind Energy Areas at footnote 1 clarifies, "1. NCCOS is providing BOEM with technical assistance to support BOEM's spatial planning in relation to offshore wind projects. This support is being provided with funding resources from NCCOS and through reimbursable support from BOEM to NCCOS. NMFS is providing technical assistance to NCCOS regarding available science (i.e. data layers and modeling methods) for BOEM's consideration in their spatial modeling efforts. These efforts are supporting BOEM's ocean and coastal planning activities related to siting of call areas, wind energy areas, and transmission cable routing. The information provided by NMFS to NCCOS is purely technical in nature and does not reflect or constitute an official agency policy, position, or action. Official NMFS positions related to spatial planning for offshore wind activity will be submitted by NMFS through written comments to BOEM during the planning and review processes for each activity." This letter constitutes NMFS's official views on the notice of Draft Wind Energy Areas for commercial wind energy leasing on the Central Atlantic outer continental shelf (OCS).

the area identification process and better reflect the importance of this habitat. Additionally, we recommend BOEM eliminate Draft WEAs E-1 and E-2 from further consideration due to their overlap with the Coral Protection Area and with priority hard bottom and coral habitats that are highly vulnerable to impacts and that NMFS does not consider compatible with development.

Greater Atlantic Region Fishing Logbook Data

As described in the Draft Report, only vessel monitoring system (VMS) and NMFS SER headboat survey data were used in the siting model; fishing vessel logbook data for vessels permitted by NMFS GAR were not integrated into the model to inform BOEM's decision on draft Central Atlantic WEAs. BOEM staff recently informed NMFS that they considered historic (2007-2012) vessel logbook data during the development of the initial Central Atlantic Call Area published in April 2022. We appreciate BOEM's consideration of logbook data given that VMS data does not include all fishing operations that may occur in these areas. However, as noted in our information needs to assess fisheries impacts document[4], we suggest using the most recent 10 years of data, including data from the latest 2 years. Based on comments made during the December 1, 2022, public hearing on the draft WEAs, we understand that BOEM plans to consider more recent (i.e., through 2020) commercial and party/charter logbook data that NMFS provided to both BOEM and NCCOS; we support inclusion of these data to help ensure that the model accurately reflects all relevant fishing operations and is consistent with a best available science standard. We, therefore, recommend including logbook data through 2021 (NMFS will provide BOEM with the 2021 data which recently became available) and re-running the model to help inform BOEM's determination of final WEAs. If BOEM integrates the logbook data into the model, we recommend BOEM identify how it was used and the weighting criteria, if any, applied to this data source. We are happy to further assist NCCOS and BOEM in interpreting the results.

Sea Turtle Density Data

The current representation of sea turtles in the site suitability model for the Central Atlantic simply presents the GAR and SER Section 7 Mapper layers for sea turtles, which provide only general presence-absence data for sea turtles, but do not facilitate the identification of high-use and low-use areas. In general, these layers are not spatially informative for WEA siting recommendations. New sea turtle spatial density models are currently being finalized for use by the U.S. Navy and are expected to be available in the coming months. These new models will allow us to apply the same approaches used for other protected species (marine mammals and giant manta ray) where density models were available, resulting in more informative siting recommendations for ESA-listed sea turtles. NMFS recommends re-running the site suitability model once the new sea turtle density data are available; this would allow for more refined siting guidance and more informed consideration of potential impacts on sea turtles from development in these areas. We are available to further assist NCCOS and BOEM in considering the timing and availability of these new models for inclusion.

Additional Considerations

It is important to recognize that the site suitability model considered separate and distinct inshore (A, B, C, D) and offshore areas (E, F), as the initial Call Area had been identified prior to

[4] Available at: https://media.fisheries.noaa.gov/2022-02/Socioeconomic-InfoNeeds-OSW-GARFO.pdf

initiating the spatial planning analysis. Breaking the Call Area into four inshore and two offshore areas prior to evaluation, with the intent of identifying suitable areas within each previously identified area, removes the very informative relative comparisons *across* locations and restricts the analysis to siting *within* locations, rather than identifying the most suitable areas for development within all draft WEAs collectively. Doing so results in identification of suitable areas in both inshore and offshore areas, even if certain areas may be far less suitable than others for various affected resources. We recommend re-running the model to look at Areas A-F collectively, rather than inshore/offshore separately, to be more consistent with an integrated ecosystem approach. For example, the protected species data layer is valid to inform relative comparisons between Areas A-F, but by presenting suitability based on ranked outcomes in each area separately, the relative comparative value to inform siting to fully minimize protected species conflicts is not considered. As such, NMFS recommends proactively removing the areas with the highest potential conflict. Additionally, we recommend the model be re-run to include a ranking and clustering approach for identifying WEAs carried out *across* locations rather than *within* locations. This would provide a more accurate depiction of 'suitability' across the entire Central Atlantic WEAs and should be considered prior to finalizing the WEAs.

Comments on the Draft Wind Energy Areas

We provided extensive comments on the Central Atlantic areas in our June 24, 2022, letter which identified portions of the Call Area that should be removed due to high conflicts with sensitive marine resources, habitats, and fishing activity. Based on the eight draft WEAs identified, it does not appear all of the areas that we identified as most conflicting for sensitive habitats and fishing activity have been eliminated from further consideration. We recommend you fully consider our June 24, 2022 (attached hereto) comments, in addition to comments herein, before finalizing the WEAs for leasing. Below we provide recommendations and information for draft WEAs that should be removed from consideration for leasing or further refined.

Frank R. Lautenberg Deep-sea Coral Protection Area and Priority Habitats

As previously stated in our comments to you in November 2021 and June 2022, the entire Frank R. Lautenberg Deep-sea Coral Protection Area should be fully removed from further consideration for leasing. We request that BOEM reach out directly to NMFS for further discussion in advance of a decision to choose to include any portion of the Frank R. Lautenberg Deep-sea Coral Protection Area in the final WEA designations. Draft WEAs E-1 and E-2 both overlap with the coral protection area and should not be included in any final WEAs. We recommend areas E–1 and E-2 be removed for the following reasons:

1. <u>Opening this coral protection area to development undermines the transparent, stakeholder driven process that was involved in designating this area.</u> Additional comments are provided in our June 24, 2022, letter and we also refer you to the Mid-Atlantic Fishery Management Council's Deep Sea Corals Amendment (Amendment 16 to the Mackerel, Squid, Butterfish Fisheries Management Plan[5]) for maps and more

[5] https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5dd6bf48f2b0f9308f2f64ae/1574354783071/DeepSea+Corals+EA_Signed+FONSI.pdf

information as well as resources[6] found on the Council's website that highlights the scientific research and collaborative efforts that went into identifying this as an area warranting protection.

2. <u>These Draft WEAs overlap with highly sensitive hard bottom habitats and corals.</u> Corals provide habitat for other species and because they grow and reproduce at very slow rates (with some estimated to be hundreds of years old), they are highly susceptible to anthropogenic impacts making mitigation impossible and their recovery from disturbances difficult over short time periods. We provide more information related to these vulnerable habitats in our June 24, 2022, letter.

3. <u>There is insufficient coral data in these offshore areas.</u> As we have highlighted in our previous comments, the coral habitat suitability model is based on presence data only, and only a small percentage of the total protected area has actually been surveyed for corals. Thus, it is important to stress that there are insufficient data to suggest other areas within the coral broad zone (E-1 and E-2) are absent of corals or hard bottom habitats. To ensure these vulnerable habitats are protected, more investment in research and surveys is needed prior to identifying areas to lease.

4. <u>Removal of vulnerable habitat areas should occur during the Area Identification Process and should not be deferred to the Construction and Operation Plan (COP) stage.</u> Given the status of information available in the Coral Protection Area, we recommend that these habitat areas be removed during the WEA identification process, and discourage an approach that would rely on coral habitats being identified and later avoided at the COP stage. The benthic habitat surveys currently conducted at the COP stage to inform the regulatory process do not meet the level of data collection necessary to ensure corals would not be impacted by project development. Full coverage surveys - the standards for which extend well beyond those included as part of the regulatory process - would be necessary to ensure corals would not be impacted. These would include video surveys, with equipment sufficient to collect these data at depths found offshore of the shelf break. In the *Federal Register* notice, you request information on the technological and economic viability of development within Draft WEAs E-1, E-2, and F. The physical and biological surveys necessary to adequately map and characterize these deep-sea habitats to inform the regulatory process should be considered in determining the technical and economic feasibility of development in these areas.

Integration of Offshore Transmission Planning and Siting

We understand that NCCOS is working with BOEM on the development of a cable siting model. We support the development of a model to inform cable siting and recommend it be integrated into any lease area model. This would allow for a more holistic approach to the area identification process. Consideration of export cable routing, in conjunction with identification of areas for leasing, would help reduce environmental impacts and user conflicts at the start of

[6] https://www.mafmc.org/actions/msb-am16; https://www.mafmc.org/newsfeed/2016/noaa-fisheries-announces-final-rule-on-mid-atlantic-councils-frank-r-lautenberg-deep-sea-coral-protection-area

the process. Such an approach would also help create a more efficient and streamlined regulatory process as individual projects are developed.

This integration of cable siting and lease area modeling is particularly important for areas offshore the continental shelf where extensive energy transmission infrastructure would be required. We recommend all areas offshore of the continental shelf break be removed from consideration for leasing at this time. This includes Draft WEAs E-1, E-2, and F. Leasing offshore the shelf break would result in overlap of extensive energy transmission infrastructure with biologically sensitive areas, including canyons, methane seeps, and upwelling areas that serve as biodiversity hotspots for chemosynthetic communities, deep-sea coral and sponges, highly migratory fish species, and marine mammals. Substantial surveys and analysis, which have not yet been conducted, would be necessary to identify potential suitable transmission corridors. We recommend this analysis be done at the siting phase in concert with area identification for leasing. A transparent and science-based approach to transmission planning and route identification should be developed prior to identifying WEAs offshore the continental shelf.

Areas with High Fisheries Overlap (Area A and the Central Portion of Area C)

As noted in our June 2022 comment letter, we continue to recommend BOEM exclude Area A and the central portion of Area C from consideration for future offshore wind leasing due to substantial overlap with historic and existing fishing operations and NMFS surveys. Specifically, we refer you to Appendix B2 and B9 of our June 2022 Call for Information comment letter, which provides detailed information on historic commercial and party/charter fishing operations within Area A. As noted, Area A accounted for nearly 3 million lb of total fishery landings each year valued at over $4 million. This area is particularly important to the surfclam and historic scallop fishery operating out of New Jersey and Virginia ports, with some vessels dependent upon this area for up to 86 percent of annual fishery revenue. Surfclam operations in Area A represent up to 13 percent of total regional surfclam annual landings and up to 12 percent of total regional annual surfclam revenue. VMS data indicate that many surfclam and scallop vessels transit Area A from Ocean City, Maryland, Cape May, New Jersey, and other ports further north. In addition, over 50 percent of historic party/charter catch and revenue within the Central Atlantic Call Area came from Area A, with party/charter trips increasing in Area A since 2008. Recently, a historic surfclam fishery has reemerged within the central portion of Area C that shows promise of future fishing opportunities based on evidence of younger clams from recent surveys in the area.

Available data, including information identified in the Draft Report, suggest significant conflicts with the fishing community if Area A and portions of Area C move forward for leasing. Specifically, figures 3.16 and 3.17 of the Draft Report indicate Area A and the central portion of Area C overlap with the highest amounts of fishing effort. These figures indicate that up to 12,000 commercial trips were taken in these areas, with the fisheries submodel categorizing these areas as low to moderately low suitability for offshore wind development. Figure 3.10 of that report indicates both areas also overlap with 10-12 NMFS surveys. Based on available information showing substantial overlap of Area A with historic fishing operations, we recommend BOEM avoid future development in Area A (both primary and secondary areas) to minimize fishery impacts. We also recommend BOEM work more closely with the fishing

industry related to fishing operations and potential conflicts within Area C prior to finalizing the WEAs.

Areas with High Protected Species Overlap

Overall, the Central Atlantic WEAs provide important habitat for many protected species, ranging from sea turtles to deep diving marine mammal species and thus have high areas of species overlap (Figure 2 of Appendix B of the Draft Report). Since our June 2022 comment letter, where we noted that information on the fine scale distribution, abundance, and habitat use of protected species in the Central Atlantic Call Area is limited, two new data sources have been developed to help understand species occurrence and overlap with these areas (updates to Roberts et al. 2016 marine mammal density models and the GARFO/SERO combined protected species layer). The new data sources received since June 2022 demonstrate Areas A, B, and C have high areas of species overlap. Areas A and B overlap more significantly with the modeled distribution of endangered North Atlantic right whales along the OCS, compared to the other Central Atlantic WEAs under consideration. North Atlantic right whales traveling through these areas may be pregnant females traveling south to the calving area and mother calf pairs traveling north to foraging areas. Both of these are essential life stages of the population and their protection is critical to the recovery of the species. Area C has significant overlap with many protected species, evident by the average site suitability scores for protected species in Areas C-1 and C-2, which are an order of magnitude lower than any other areas under consideration (Figure 2 of Appendix B of the Draft Report). Although thorough fine scale information is still unavailable, based on this more current information, we recommend that careful consideration be given to the scope of proposed leasing in Areas A, B, and C to avoid and minimize potential impacts to protected species including North Atlantic right whales. Given the potential conflicts with protected species in a substantial portion of the draft WEAs, we request BOEM actively coordinate with NMFS, as areas are refined and prior to finalizing the WEAs, to work to avoid high value habitat and to minimize impacts of siting and development on protected species including North Atlantic right whales.

As noted in our June 2022 comment letter, Areas D and F are directly adjacent to critical habitat designated for the Northwest Atlantic Distinct Population Segment (DPS) of loggerhead sea turtle, specifically migratory habitat and Sargassum habitat. As such, a careful assessment should be carried out of the potential impacts to the physical and biological features (PBF) of each habitat type, and their primary constituent elements. Appropriate buffers should be considered to minimize the impact of development on the PBFs of this designated critical habitat. Additionally, consistent with the terms of a Settlement Agreement, by June 30, 2023, NMFS will submit to the Office of the Federal Register for publication a proposed determination concerning the designation of critical habitat for the six distinct population segments (DPS) of green sea turtles, including the North Atlantic and South Atlantic DPSs, whose ranges overlap with the Central Atlantic WEAs. Once the determination is available, we would be happy to identify any additional coordination that may be required by ESA section 7(a)(4).

Conclusion

NMFS recognizes the urgency to mitigate climate change, and we support the Administration's goal of deploying offshore wind energy while also protecting biodiversity and promoting ocean co-use. To meet these goals, we must work diligently to ensure any planning and development is

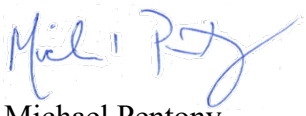
conducted with the best scientific information available to better inform decision makers and the public of how to avoid and minimize adverse impacts to marine resources and to reduce conflict with ocean uses and communities that rely on these areas for their livelihood.

We appreciate the opportunity that BOEM is providing agencies and the public to comment on the Draft WEAs prior to BOEM's final decisions on the identification of areas for future leasing. We recognize the value of BOEM's work with NCCOS to integrate spatial modeling into the area identification process, and we look forward to continuing to provide technical assistance to NCCOS as they further refine the siting model to support BOEM's decision making process. As outlined in our comments, there are several Draft WEAs that in whole or in part present conflicts with marine resources and existing ocean uses. In addition to recommending areas for removal, we request BOEM further coordinate with NMFS to refine the draft WEAs, and consider transmission planning prior to finalizing the WEAs.

We continue to advocate that a robust comprehensive scientific analysis be conducted for area identification/selection in consideration of the issues discussed above to avoid and minimize adverse impacts on NOAA trust resources early in the process, and before developers are economically tied to specific locations. A programmatic NEPA analysis would allow for such an evaluation, as well as up front identification of avoidance, minimization and mitigation measures, and we recommend such an analysis be conducted for the Central Atlantic to inform area identification and the potential leasing process.

We appreciate the opportunity to comment and look forward to seeing how you address the comments and recommendations put forward in this letter and the enclosed June 2022 letter. Should you have any questions regarding these comments, please contact Sue Tuxbury in our Habitat and Ecosystem Services Division at (978) 281-9176 or susan.tuxbury@noaa.gov.

Sincerely,



Michael Pentony
Regional Administrator

Enclosures: June 24, 2022, NMFS comment letter

cc: Bridget Duplantis, BOEM
David Macduffee, BOEM
Brian Hooker, BOEM
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Rachael Peabody, VMRC
David Stormer, DEDFW
F/SER, Strelcheck, Fay, Bernhart, Wilber

Attachment

NMFS Comments on the Central Atlantic Call for Information June 24, 2022

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

June 24, 2022

Ms. Bridgette Duplantis
Project Coordinator
Office of Leasing and Plans
Leasing and Financial Responsibility Section
Bureau of Ocean Energy Management
1202 Elmwood Park Boulevard
New Orleans, LA 70123

RE: Call for information and nominations (Call or notice) for possible commercial wind energy leasing on the outer continental shelf (OCS) offshore the U.S. central Atlantic coast

Dear Ms. Duplantis:

We have reviewed the April 29, 2022 *Federal Register* (FR) Notice requesting information related to possible commercial wind energy leasing offshore the U.S. central Atlantic coast. While this is not a leasing announcement, the areas described in the FR Notice may be available for future leasing. BOEM is soliciting information and feedback on site conditions, resources, and ocean uses in close proximity to or within the identified Call Area, which comprises approximately 4 million acres offshore the Commonwealth of Virginia and the States of Delaware, Maryland, and North Carolina. In the FR Notice, you specifically request information on resources within our jurisdiction, including commercial and recreational fisheries, federally designated (or proposed) critical habitat, essential fish habitat, protected species, and areas that are environmentally sensitive or crucial to marine productivity and are state or federally managed for their conservation value. You are requesting feedback on this area in an effort to understand potential use conflicts, identify factors that should be considered in determining the size and number of wind energy areas (WEAs), and receive relevant socioeconomic, cultural, biological, and environmental data and information.

We appreciate the opportunity to offer information related to NOAA trust resources, including habitat, protected species, fisheries, and NOAA scientific surveys for you to consider when identifying potential WEAs in the Central Atlantic outer continental shelf (OCS). The comments and information provided herein were prepared in coordination with the Southeast Regional Office of NOAA's National Marine Fisheries Service (NMFS). As an agency with a direct understanding of the challenges associated with refining lease areas through the regulatory process, we underscore the need for a deliberative, science-based approach to identifying WEAs in the Central Atlantic. The Call Areas overlap with a number of sensitive habitats, areas of high biodiversity, and substantial fishing operations that warrant special consideration for avoidance, minimization, and, if necessary, mitigation as this process moves forward. We ask that you fully consider these comments as you work to identify areas for future leasing in the Central Atlantic.

Coordination to Date

As an agency with legal jurisdiction and special expertise related to marine resources, we provided input into your process at the earlier planning stages through a November 1, 2021, letter and during the Central Atlantic Task Force meeting on February 16, 2022. We acknowledge and appreciate the fact that some of the resource areas of concern raised during that earlier coordination have been removed from further consideration. Much of these areas were in the southern portion of the planning areas where you removed overlap with snapper/grouper Habitat Areas of Particular Concern (HAPCs), critical habitat designated for loggerhead sea turtles under the Endangered Species Act, the mean north wall of the Gulf Stream, as well as some of the canyons and methane seeps. We expect refining the Call Areas to avoid overlap with these resources will benefit future regulatory processes and project review.

The Call Areas identified in the FR Notice contain additional reductions from earlier planning areas, specifically at the south edge of Area B and the north edge of Area D. Compared to the original planning areas, the proposed Call Areas reduce overlap with several fisheries, including alewife, Atlantic chub mackerel, Atlantic croaker, bluefish, blueline tilefish, *Illex* squid, spot, and weakfish fisheries based on federal data. This is mostly due to the removal of inshore portions of Area B. However, despite these refinements, significant sensitive marine resources remain present in the proposed Call Areas. To move forward with responsible development in the Central Atlantic, we strongly encourage BOEM take a deliberative, science-based approach to both further refine potential wind energy areas and develop robust lease stipulations with the goal of avoiding or reducing the potential for adverse impacts to marine resources, including fisheries, and the fishing communities that rely on them.

Resources in the Call Area

Appendix A of this letter provides further details specific to NOAA trust resources that may be affected by potential future development in the Call Areas, including habitat resources, protected species, fisheries and fishing communities, and NOAA scientific surveys. Appendix B includes detailed socioeconomic impact reports for both commercial and party/charter vessel operations in each Call Area and all Call Areas combined.

The identified Call Areas overlap extensively with important habitat areas, including deep-sea coral habitats. Deep-sea corals are fragile and slow growing, making them particularly vulnerable to anthropogenic impacts. BOEM is still considering the Frank R. Lautenberg Deep-Sea Coral Protection Area for offshore wind development; we request the coral protection area be removed from further consideration. This area was identified for protection through a transparent and extensive stakeholder-driven process led by the Mid-Atlantic Fishery Management Council, and it is being considered for inclusion in the Administration's atlas documenting areas that are conserved to achieve the "30 by 30" goal of conserving 30 percent of the Nation's lands and waters by the year 2030. It includes deep-sea coral habitats that have been identified in and around submarine canyons that extend beyond the edge of the continental shelf into deeper water within Call Area E and portions of Call Area F. Outside of the coral protection area, the south end of Call Area F overlaps with canyons and valuable coral habitats along the shelf break.

In addition to corals, other sensitive complex habitats and benthic features important to supporting fisheries occur in the Call Areas. Portions of the Call Areas A and B, and E overlap with prime fishing grounds that have been identified and mapped by the State of New Jersey; these areas may include complex hard bottom habitats, live bottom habitats and/or benthic features such as sand ridges and troughs. These habitat areas should be removed from further consideration, as leasing and potential follow-on development would cause unacceptable levels of adverse effects. The eastern edge of some inshore Call Areas, particularly Call Areas B, C, and D, are immediately adjacent to the shelf break, canyons, and designated HAPCs for tilefish, and may overlap with coral habitats. Conservation buffers between these habitats and any potential lease areas should be established to avoid or minimize adverse impacts from potential future development. It is also important to note that most of the Call Areas have not been fully mapped, and we expect there to be additional sensitive habitats in these Call Areas. BOEM should conduct extensive mapping and habitat data collection prior to finalizing WEAs for leasing to help identify sensitive habitat areas so that these habitats can be excluded from leasing; this will reduce conflicts and delays during the regulatory process.

Several species of marine mammals, sea turtles, and marine fish that are listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, as amended, occur in the Central Atlantic Call Areas and surrounding waters that will be used for transmission corridors and/or project vessels. See Appendix A for more details. As you continue through this process, we strongly encourage you to consider all available options to avoid and minimize risk to these species and their habitats. Options include, but are not limited to, limiting the extent of leasing and development in areas used by these species, and implementing robust lease stipulations to avoid or minimize effects to these species and the ecosystems on which they depend. For example, given the presence of protected species and their habitats in the Call Areas, it would be especially beneficial to identify lease stipulations in the proposed lease sale notice that would avoid, minimize, and document the effects on them due to in-water activities that occur prior to submission of any Construction and Operations Plans. As noted above, the Call Areas now under consideration no longer overlap with any designated critical habitat. However, please note that, consistent with the terms of a Settlement Agreement, by June 30, 2023, NMFS will submit to the Office of the Federal Register for publication a proposed determination concerning the designation of critical habitat for the six distinct population segments (DPS) of green sea turtles, including the North Atlantic and South Atlantic DPSs, whose ranges overlap with the Central Atlantic Call Areas. Once the determination is available, we would be happy to identify any additional coordination that may be required by ESA section 7(a)(4).

While we recognize that BOEM's recent revisions of the planning areas have reduced overlap with several fisheries, the Call Areas identified in the FR Notice remain a concern for key regional fisheries. Vessels fishing in all of the Call Areas combined landed an average of 6.6 million pounds (lb) of all species, valued at $11 million each year, with surfclams, scallops, and squid comprising the majority of the landings and revenue. Vessels from Massachusetts to North Carolina operate in the Call Areas, with Areas A and B particularly important to vessels operating out of Atlantic City, Ocean City, and Cape May, NJ; New Bedford, MA; and Newport News, VA. When combined with existing lease areas, the Call Areas overlap with up to 26 percent of annual surfclam revenue, 19 percent of annual black sea bass revenue, and 17 percent of annual scallop revenue based on historic fishing operations and similar proportions of annual

landings for each species (see Appendix A, Table 6). Accordingly, offshore wind development in all of these areas could result in substantial cumulative economic and social impacts to important regional fisheries and associated fishing communities. Fishing communities such as Atlantic City, NJ, New Bedford, MA, Newport News, VA, as well as smaller fishing communities of Hobucken and Engelhard, NC, are highly dependent on commercial fishing and the potential for wind farm development in these areas raises Environmental Justice concerns. These communities have vulnerable populations with high rates of poverty and/or minority populations that may have less personal capacity to adapt to changes. NMFS is committed to support and advance equity and opportunities for these communities and encourages BOEM to consider the impacts of the Call Areas as well as cumulative development to these communities. The social and economic impacts from offshore wind development in the Call Areas will not only impact vulnerable coastal communities and those that rely on commercial and recreational fishing for their livelihood; they also will have direct impacts on domestic food production that could limit the availability of sustainable sources of protein. Avoiding, minimizing, and mitigating the impacts of offshore wind in the Call Areas will help to ensure that Americans have access to abundant, healthy, affordable, and sustainably-managed seafood. Based on fishery surveys, vessel monitoring system data, and fishing footprint analysis, Call Areas A and B are important to the scallop, surfclam, and *Illex* squid fisheries, with Area C reemerging as an important area for the surfclam fishery in recent years based on information provided by the fishing industry. We recommend BOEM consider removing these areas from future offshore wind development to minimize localized and regional impacts to existing fishery uses, associated marine resources, and the Nation's food supply.

As stated in previous environmental impact statements, major adverse impacts to NMFS scientific research and surveys would occur from offshore wind development on the OCS. These impacts could potentially affect fisheries management through lower quotas for commercial and recreational fishermen due to increased uncertainty in the surveys' measures of abundance. Effects to NMFS scientific surveys would also result in adverse effects on monitoring and assessment activities associated with recovery and conservation programs for protected species, including the critically endangered North Atlantic right whale. The interaction of the Call Areas with Northeast Fisheries Science Center (NEFSC) and Southeast Fisheries Science Center (SEFSC) scientific surveys are described in Appendix A.

Recommended Areas to be Removed from Further Consideration

There are some proposed Call Areas or portions of Call Areas that substantially overlap with important marine resources, fishing operations, and scientific surveys (see Appendix A for more detailed information). The following areas should be removed from further consideration due to the anticipated substantial adverse impacts from potential development of these areas:

- Frank R. Lautenberg Deep-Sea Coral Protection Area (overlaps with all of Area E and portions of Area F);
- The southern portion of Area F overlapping the canyon BOEM refers to as "The Point" in *Large Submarine Canyons of the United States Outer Continental Shelf Atlas* (OCS Study BOEM 2019-066);
- All Call Areas that overlap with or occur within close proximity of the edge of the continental shelf, the continental slope, canyons, methane seeps, and HAPC, particularly

the eastern edge of the inshore Call Areas B, C and D. We recommend BOEM work with us to identify a suitable buffer to minimize impacts of any future development on benthic and pelagic habitats along the shelf break; and

- Areas A and C and eastern portions of Area B to minimize conflict with fisheries and habitats that support these fisheries, including areas identified as Prime Fishing Areas by the state of NJ.

In summary, we recommend: 1) Areas A, C, and E be completely eliminated from further consideration; 2) Call Area F should be significantly reduced both at the northern and southern end where overlap with coral protection areas and offshore canyons occur; 3) Inshore Call Areas (particularly B, C (if not wholly excluded), and D) be reduced along the eastern edge to minimize overlap and conflicts with canyons, coral habitats, and HAPC; and, 4) the eastern portion of Area B be reduced to minimize conflict with fisheries and sensitive habitats. More information on the rationale for our recommendations is provided in the enclosed Appendices.

Scientific Recommendations for Site Identification

Given the important marine resources and potential user conflicts in the Central Atlantic Call Areas, we strongly recommend BOEM take a deliberative ecosystem-based management approach to evaluating and identifying areas within the Central Atlantic that may be eligible for leasing. Currently, BOEM's process for identifying Wind Energy Areas and then identifying and refining lease areas is not clearly understood. A science-based planning approach would provide greater transparency and clarity to the process by better informing the public on potential resource impacts and user conflicts, whether they occur prior to COP approval or as a result of it, the importance of reducing conflicts, and how they may be reduced. Below we outline recommended steps that should be taken prior to issuing additional leases on the OCS.

1. **Design and apply ecosystem-based management and marine spatial planning approaches to considering leasing and any wind energy development in the Central Atlantic.**

   The Central Atlantic Call Areas cover approximately 4 million acres of the OCS, in addition to the 1.75 million acres already leased and the approximately 811,000 acres recently leased in the New York Bight and Carolina Long Bay areas. Given the extensive area eligible or proposed for development on the Atlantic OCS, we request that you take this opportunity to establish a method for estimating cumulative impacts upfront in the planning process. This should include the development of decision-support tools to analyze and predict the aggregated and cumulative impacts from multiple stressors, including offshore wind development and associated activities in the context of climate change. Such modeling exercises and tool development are reliant on rigorous and sustained systematic data collection on various ecosystem parameters and would be important for informing the identification of future lease areas. This approach would include an integrated ecosystem assessment or application of best available ecosystem-based management tools to incorporate a cumulative impact analysis of additive impacts to inform the planning process, rather than waiting to consider such effects on a project-by-project basis. This analysis should include the evaluation of potential transmission corridors rather than simply focusing on the lease areas alone. This is particularly

important given BOEM's proposal to designate WEAs beyond the continental shelf break. Such an approach can help inform the wind energy area identification process to weigh, if not reduce, resource impacts and user conflicts, while providing more transparency to the process of wind energy area identification.

We understand BOEM is working with NOAA's National Centers for Coastal Ocean Science (NCCOS) to conduct marine spatial planning in the Central Atlantic Call Areas to inform your decision on area identification. This is an important step to better inform area identification and it will be important to use the results of this effort to inform final lease areas within the Central Atlantic. However, we are concerned that the timeline to effectively and transparently conduct such a process will limit our ability to fully take advantage of such an approach. We encourage you to work with NCCOS to take a comprehensive approach and incorporate the best available data and consider existing data gaps to inform any marine spatial model. In an effort to assist in this process, we are also working with NCCOS to provide a list of existing data sets and models that we recommend be considered in your spatial planning efforts for the Central Atlantic. We welcome the opportunity to work with you and NCCOS to help inform any marine spatial planning efforts.

2. **Design and execute research and test performance of pilot-scale floating wind technologies.**

Prior to considering areas beyond the continental shelf break as eligible for leasing, we recommend BOEM further study and evaluate the potential effects of floating technology on marine resources, including associated inter-array and export cables. Such studies can support the development of science to be applied to the commercial leasing process in order to ensure that our offshore wind energy goals can be met with increased predictability of development opportunities. Studies should examine floating wind turbine and inter-array/export cable effects on habitats, corals, marine mammals, and benthic and pelagic fishing operations. A full evaluation of the transmission of energy from floating wind to shore should be incorporated into these studies, particularly how the cables will be transported through the continental shelf and associated habitats. Research study topics can be informed by recent efforts such as Maine's Offshore Wind Roadmap, RODA's Synthesis of the Science Report, Responsible Offshore Science Alliance discussions, and the National Renewable Energy Laboratory's data needs recommendations. Pilot scale testing should be conducted prior to large- scale commercial development to inform siting and operational development for future wind energy areas.

3. **Establish and implement a federal survey mitigation program with funds to apply mitigation to existing and future leasing.**

In March 2022, NOAA and BOEM released a draft Federal Survey Mitigation Implementation Strategy to address our agencies' efforts to mitigate the impacts on NMFS scientific surveys and the risks posed to living marine resource management. The strategy outlines actions that need to be taken in order to develop and implement regional

survey mitigation programs, including identifying and securing the necessary resources to implement mitigation activities. Prior to leasing in the Central Atlantic, key elements of the strategy should be completed, including developing and resourcing Northeast and Southeast Regional Federal Survey Mitigation Programs. This will provide certainty to developers, NMFS, and the public who depend on NMFS scientific survey enterprise.

4. **Establish and begin collecting region-wide baseline monitoring, including passive acoustic monitoring and habitat surveys of sufficient spatial and temporal resolution.**

   In order to effectively perform environmental assessments of future project impacts on the marine environment, it is critical to understand resource and human use conditions of areas being considered for development. No standardized baseline monitoring requirements exist that allow sufficient resolution for assessing the resource conditions of proposed development areas. While guidelines and best practices have been developed, there are major gaps in our understanding of habitat conditions, fisheries use patterns, protected species distribution and habitat use, and ecosystem conditions; without consistent standardized approaches, it is not possible to effectively evaluate project impacts. It is important to establish and begin a baseline region-wide monitoring program to help inform wind energy area identification and provide more certainty to future regulatory processes.

5. **Establish pre-construction, construction, and post-construction fisheries and wildlife monitoring requirements.**

   Prior to WEA identification and leasing, it is critical to establish certainty for all parties with regards to scientific needs and regulatory requirements for monitoring fisheries, wildlife, and ecosystem conditions. In the absence of monitoring requirements, individual projects will continue to implement narrowly defined monitoring strategies that do not follow standardized protocols, procedures, methods, and data sharing arrangements. As part of the development of uniform monitoring methods, we encourage early collaboration with NMFS scientists in the Northeast and Southeast regions to maximize the utility of any monitoring efforts.

6. **Establish standardized regional requirements for mitigating impacts of offshore wind development.**

   Consistent with the Council on Environmental Quality regulations, we encourage BOEM to avoid and minimize impacts to existing users and marine resources at all stages in the process and mitigate adverse impacts that cannot be avoided. Given the importance of the Call Areas to marine trust resources, BOEM, in partnership with state and federal agencies and affected stakeholders, should develop a consistent, equitable, and science-based mitigation process to address unavoidable impacts on wildlife, including protected species, habitats, and fishing industries and communities. Such a process should be required as a lease stipulation when any leases are issued, but also employed throughout project development. Developing consistent and equitable regional mitigation standards

following transparent scientific-based processes are an essential element in increasing the certainty and predictability for developers, conservation interests, and fishing communities. It is critical that fair and equitable processes are established to address any foreseeable or unforeseen impacts of offshore wind development on the marine ecosystem and this should be developed prior to additional leasing. NMFS continues to assert that the foregoing objectives could be achieved through preparation of programmatic environmental analyses to inform the identification of WEAs and develop avoidance, minimization and mitigation measures that could be incorporated and applied in future decision making such as disclosure of proposed lease stipulations prior to lease issuance.

Early Engagement and Enhanced Coordination

The recommendations put forward in this letter and the enclosed Appendix are intended to help inform BOEM's process for wind energy area identification. Taking an enhanced scientific approach to area identification, as recommended, will significantly improve the process of weighing and reducing impacts to marine resources, weighing and reducing conflicts with existing ocean uses, and providing more certainty to the regulatory process. Stakeholder coordination throughout the process, including at the earliest stages, is also key to helping ensure conflicts are minimized. Below are some recommendations for points in the process to coordinate early with our agency and other relevant stakeholders as you work toward area identification and future leasing in the Central Atlantic.

- *Interagency Coordination:* We welcome open communication with our agency as you work through this area identification process and future leasing. We would be happy to follow up with you and further discuss the information, comments, and recommendations put forward in this letter prior to finalizing any wind energy areas. Once areas are identified for future leasing, we would appreciate the opportunity to work with you to ensure future lease stipulations include measures to promote responsible development that avoids or minimizes adverse impacts to marine resources, existing ocean uses and the communities that rely on these resources, including incorporation of standard mitigation and monitoring requirements and ensuring funds to support such programs are available. We encourage frequent coordination and communication with our agency early and often throughout the process.

- *Early and Continued Engagement:* As we have indicated on several occasions, we recommend coordination with our agency occur at the earliest possible point in the process, at the earliest stages of project scoping, and prior to finalizing any project design. Frequent and continued engagement between BOEM, resource agencies, and developers will reduce the potential for resource conflicts to disrupt or delay project plans. The efforts underway to use NOAA's expertise in marine spatial planning to refine planning areas, including the Central Atlantic Call Area, into potential lease areas is a significant step forward and provides an ideal forum for early and continued engagement.

- *Stakeholder Engagement*: We recommend you coordinate with all affected stakeholders and maintain an open and transparent process as you work toward area identification in the Central Atlantic. In addition to soliciting and considering input from stakeholders,

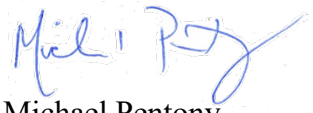
BOEM should provide a clear explanation of how that input was considered and incorporated into any final wind energy area selection decisions.

Conclusion

As a science agency, we recognize the urgency to mitigate climate change, and we support the Administration's goal of deploying offshore wind energy while also protecting biodiversity and promoting ocean co-use. However, it is crucial that, in that effort, we must not lose sight of the need to recognize the impacts associated with large scale development of the OCS. We must work diligently to ensure any planning and development is conducted in a responsible manner, with the benefit of scientific information that aims to better inform decision makers and the public of how to avoid and minimize adverse impacts to marine resources and to reduce conflict with ocean uses and communities that rely on these areas for their livelihood, and ensure that the nation has access to a sustainable and healthy source of seafood. As we have suggested from the beginning of our involvement with offshore wind development, a robust scientific comprehensive analysis should be conducted for area identification/selection in consideration of the issues discussed above to avoid and minimize adverse impacts on NOAA trust resources early in the process, and before developers are economically tied to specific locations. A programmatic NEPA analysis would allow for such an evaluation and we recommend it be developed for the Central Atlantic to inform area identification.

We appreciate the opportunity to comment and look forward to seeing how you address the comments and recommendations put forward in this letter and the enclosed Appendices. Should you have any questions regarding these comments, please contact Sue Tuxbury in our Habitat and Ecosystem Services Division at (978) 281-9176 or susan.tuxbury@noaa.gov.

Sincerely,



Michael Pentony
Regional Administrator

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F/SER, Strelcheck, Fay, Bernhart, Wilber

APPENDIX A
NOAA Trust Resources in the Proposed Central Atlantic Call Areas

Habitat Resources

The identified Call Areas overlap extensively with ecologically important and sensitive habitat areas. Numerous resources[1] are available to aid BOEM in their understanding of many of these areas, though they are also discussed at length herein. Specifically, Figure 1 depicts known important habitat areas, and illustrates extensive overlap of the proposed Call Areas with the Frank R. Lautenberg Deep-Sea Coral Protection Area as well as areas identified as suitable habitats for corals. See Deep Sea Corals Amendment (Amendment 16 to the Mackerel, Squid, Butterfish Fisheries Management Plan) for maps and more information.

Frank R. Lautenberg Deep-Sea Coral Protection Area
The mid-Atlantic Frank R. Lautenberg Deep-Sea Coral Protection Area, recommended by the Mid-Atlantic Fishery Management Council and approved by NOAA in 2016, covers a 99,000 km^2 (~38,000 square mile) area on the outer continental shelf (OCS), slope, and canyons to the outer boundary of the EEZ and includes two types of zones. 'Discrete' zones protect defined areas of canyons and canyon complexes based on known coral distributions or outputs of predictive models that rank the likely presence of suitable coral habitats. Discrete canyons within and adjacent to the Call Areas, from north to south, include Wilmington, North Heyes-South Wilmington, South Vries, Baltimore, Warr-Phoenix Canyon Complex, Accomac-Leonard Canyons, Washington, Norfolk Canyons. A precautionary 'broad' zone protects a large area of deepwater habitats extending from approximately 450 m on the slope to the outer limits of the U.S. EEZ. The objective of designating the coral protection area was to protect corals by limiting future expansion of bottom fishing in an area that is largely outside the footprint of current fishing activity. Both zones restrict most bottom-tending gears, with a few exceptions. Due to its unique role protecting important coral habitat, the Frank R. Lautenberg Deep-Sea Coral Protection Area should not be considered for development and Call Areas that overlap with it should be excluded from further consideration. The entire Call Area E should be eliminated, as well as the northern portion of Call Area F due to their overlap with the Coral Protection Area.

Coral Habitat Suitability Model
A coral habitat suitability model was developed by NMFS and NOS to inform the coral protection area designation process. This coral suitability model has been peer reviewed and ground-truthed and is the best available model for predicting coral habitat in the mid-Atlantic. Both the discrete and broad zones of the Frank R. Lautenberg Deep-Sea Coral Protection Area were defined based on coral habitat suitability modeling, occurrence/detection data from coral surveys, and historical observations, as well as areas of high slope. It is important to note that only a small portion of the overall protected area was actually surveyed, and coral data from both zones used in the suitability model are presence data only. Absence of coral data does not mean

[1] https://www.mafmc.org/actions/msb-am16; https://www.mafmc.org/s/DeepSea-Corals-EA_Signed-FONSI.pdf; https://portal.midatlanticocean.org/resources-data-links/

absence of corals; thus extensive and full coverage habitat mapping, far more extensive than currently conducted in existing lease areas, would be necessary to determine the extent at which corals could be impacted by future development. Removing the coral protection area and other areas identified as suitable coral habitat areas from further consideration is the most appropriate measure to ensure sensitive coral habitats remain protected.

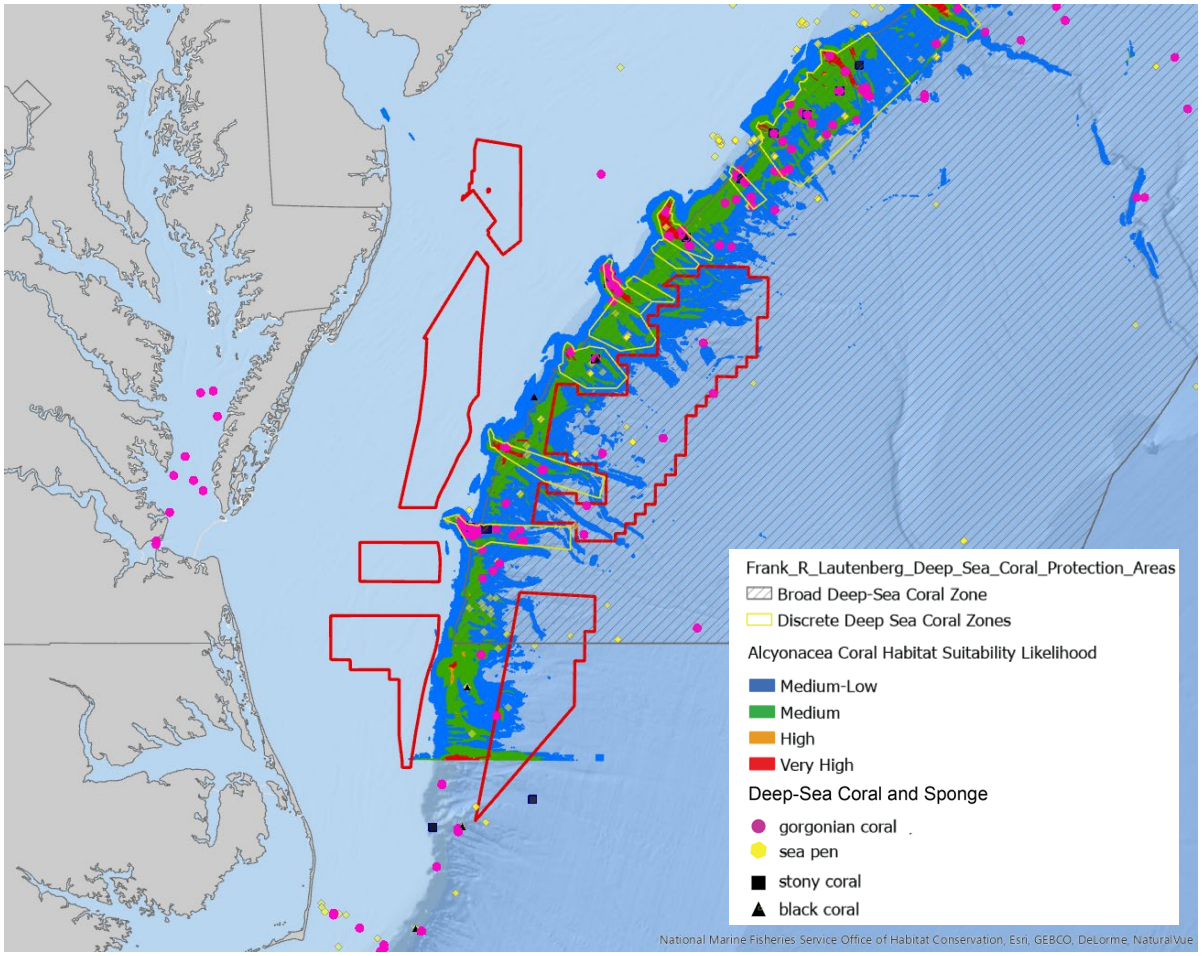

Figure 1. Frank R. Lautenberg Deep Sea Coral Protection Area: This dataset depicts the discrete and broad zone boundaries of the Frank R. Lautenberg Deep-Sea Coral Protection Area. Deep Sea Corals and Sponges (observed): This layer represents NOAA's Deep-Sea Corals and Sponges point location data.[2] NOAA's Deep-Sea Coral Research and Technology Program (DSCRTP) oversees a geodatabase of the known locations of deep-sea corals and sponges in U.S. territorial waters and beyond. The figure also displays the model output for alcyonacean deep-sea coral habitat suitability in the U.S. North and Mid-Atlantic.[3] and BOEM Central Atlantic Call Areas.

[2] NOAA National Database for Deep Sea Corals and Sponges (Database version: 20220426-0). https://deepseacoraldata.noaa.gov/. NOAA Deep Sea Coral Research & Technology Program.

[3] Kinlan, B.; Poti, M.; Dorfman, D.; Caldow, C.; Drohan, A.; Packer, D.; Nizinski, M. (2016). Model output for deep-sea coral habitat suitability in the U.S. North and Mid-Atlantic from 2013 (NCEI Accession 0145923).

Deep-Sea Corals and Habitats along the Continental Shelf Break

Corals and other sensitive benthic habitats areas extend beyond the designated coral protection area and overlap with portions of Call Area F (see suitability model results in Figure 1). The Keller Canyon and Hatteras Canyon occur in the southern portion of Call Area F and overlap an area known as "The Point," which the South Atlantic Fishery Management Council designates a Habitat Area of Particular Concern (HAPC) under four fishery management plans (coastal migratory species; snapper-grouper complex, coral; and dolphin and wahoo). The Point also overlaps an area the Council designates an HAPC for tilefish. The Council's essential fish habitat users guide[4] and on-line GIS should be consulted for precise description of these areas. While these canyons and The Point are not as well studied as the Frank R. Lautenberg Deep-Sea Coral Protection Area, this portion of the Call Area F has the same geomorphic features as the northeastern planning area, including rare methane-seep habitats[5] which could not be mitigated, repaired, or replaced should they be damaged by development. Accordingly, this southern portion of Call Area F should not be considered further for development.

In the FR Notice, BOEM acknowledges that deep-sea corals are likely to occur in the Call Areas in deeper waters and references a recent BOEM funded study that synthesized data and modeled deep-sea coral and hardbottom habits on the OCS offshore the U.S. Southeast Atlantic coast. We request more information related to which study is referenced here. We understand BOEM conducted a deep-sea coral study that focused on the Baltimore and Norfolk canyons (2012-2013), but we are unclear which study and modeling effort is referenced in the FR Notice. We recommend BOEM consider all available data, including the extensive work that was done to designate the Frank R. Lautenberg Deep-Sea Coral Protection Area and subsequent deep-sea coral surveys since then, that are in the DSCRTP database. This information should be considered in the area identification process and any spatial planning model developed for the Central Atlantic.

Bottom habitats in these shelf, slope, canyon, and methane seep areas are hotspots of biodiversity that warrant protection because they support diverse biological communities that include rare, fragile, and vulnerable species of deep-sea corals and sponges. Chemosynthetic communities near methane seeps are unique and include microbial mats, mussels, and tube worms, as well as commercial, recreational, and protected species. The upper slope areas are ecotones and upwelling areas used by many highly migratory fish species, whales, and other marine mammals for migration and feeding. The deep-sea coral and sponge habitats provide important three-dimensional structure for many deep-water bottom communities and have been identified as habitat for certain commercially important fish and shellfish species. Many deep-sea corals have a complex, branching form of growth that makes them very fragile. Because they grow and reproduce at very slow rates (with some estimated to be hundreds of years old) they are highly susceptible to anthropogenic impacts that makes mitigation impossible and their recovery from disturbances difficult over short time periods. This vulnerability has stimulated intensive research, monitoring, mapping, and conservation efforts to protect deep-sea corals and their

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Threshold Logistic Outputs for Alcyonacea. NOAA National Centers for Environmental Information (NCEI). https://www.ncei.noaa.gov/archive/accession/0145923.

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

[5] https://oceanexplorer.noaa.gov/explorations/17atlantic-margin/welcome.html

habitats.

These vulnerable habitats are not suitable for development and we request BOEM avoid leasing areas for development that may overlap with, or otherwise impact these areas. Additionally, sufficient buffers should be implemented around the continental shelf break to avoid and minimize impacts from construction and operation of future offshore wind projects. Conservation buffers should be designed in consideration of both impacts to the benthos as well as affects to persistent fronts and areas of upwelling that sustain the biodiversity of these areas. Given the vulnerability of habitats along the shelf break, we recommend the inshore Call Areas be modified along the eastern edge to ensure an adequate buffer between any potential wind energy area and the edge of the continental shelf, the slope, the canyons, methane seeps, and designated HAPC. Of particular concerns are Call Areas B, C, and D which are located in close proximity to the shelf break. Prior to identifying the wind energy areas, BOEM must consider potential effects to oceanographic processes along the shelf break, including effects from the wind turbine structures themselves, as well as oceanographic effects from extraction of energy from the atmosphere during operation. Given the uncertainties around the impacts to oceanographic processes from offshore wind, and the unique and vulnerable nature of the resource, we recommend a conservative approach to identifying a suitable conservation buffer. A conservation buffer zone between any potential development and these shelf, slope, canyon, and methane seep areas is necessary to ensure these areas of high biodiversity are not adversely impacted, directly or indirectly, by construction or operation of wind facilities. We can work with you to review best available information and develop a suitable buffer zone for this area; we note that recent studies have indicated strongest oceanographic effects occur within 20-30 km of a wind field (Christiansen et al. 2022[6]).

Energy Transmission from Call Areas

BOEM's considerations for wind energy area identification should not be confined to the Call Areas where future leasing may occur. In addition to effects to habitats within and adjacent to the Call Areas, BOEM should consider potential transmission corridors, particularly for the Call Areas beyond the shelf break. We recommend BOEM conduct a comprehensive evaluation of potential cable routes and available onshore connection locations prior to finalizing the designation of wind energy areas. Based on the location of the Call Areas, we expect export cable transmission to require extra booster stations and/or AC/DC converter stations, which require water intakes and discharge at elevated temperatures; creating unmitigated impacts throughout the life of a project. Any leasing of areas east of the shelf break may result in impacts to canyons, corals, methane seeps, or other sensitive habitats along the shelf break and slope as a result of energy transmission to shore. Potential transmission routes should be considered to help identify appropriate areas for leasing and minimize adverse impacts from any future development.

New Jersey Prime Fishing Areas

The Call Areas also overlap with numerous New Jersey (NJ) Prime Fishing Areas, particularly in

[6] Christiansen, N., U. Daewel, B. Djath, and C. Schrum. 2022. Emergence of Large-Scale Hydrodynamic Structures Due to Atmospheric Offshore Wind Farm Wakes. Frontiers in Marine Science., 03 February 2022 | https://doi.org/10.3389/fmars.2022.818501.

the inshore Call Areas A and B, with some overlap in Call Area E. Prime Fishing Areas are identified and designated by NJ and include "...areas that have a demonstrable history of supporting a significant local intensity of recreational or commercial fishing activity. These areas include features such as artificial reefs, rock outcroppings, sand ridges or lumps, rough bottoms, aggregates such as cobblestones, coral, shell and tubeworms, slough areas and offshore canyons" (N.J.A.C 7:7-9.2). Example areas that overlap with, or are entirely within, the Central Atlantic Call Areas include, but are not limited to, "Triple Wrecks," "Parking Lot," and "'Doc' Lummis Slough," within Call Area A, and the two "T Cups." within Call Area B. A map of all overlaps with Prime Fishing Areas is shown in Figure 2. We recommend these areas be removed from further consideration since they likely include important benthic features and complex habitat areas that are not suitable for development. In addition to the Prime Fishing Areas, numerous fish havens and other named features (on charts), such as lumps, banks, and shoals, are present in the Call Areas. Many of these habitat areas are also important for commercial and recreational fishing; specifically, the naming of features is typically the result of the area being important to various marine users, primarily commercial and recreational fishing communities. These areas, inclusive of the NJ Prime Fishing Areas are likely characterized by high fish production, high benthic faunal density, and species diversity; dense aggregations of fish are supported by high local primary production. Therefore, named areas on charts, fish havens, and NJ Prime Fishing Areas should be removed from consideration for future wind energy areas.

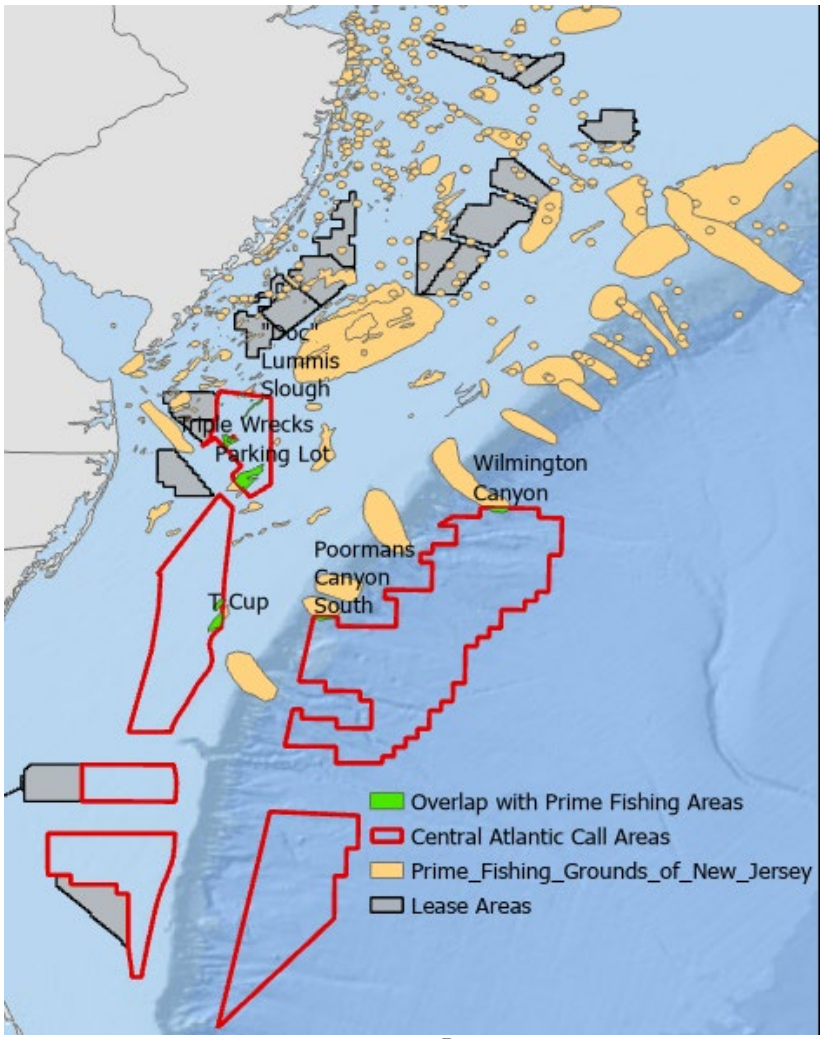

Figure 2. New Jersey (NJ) Prime Fishing Areas[7] identified and mapped in the mid-Atlantic and overlap with the BOEM Central Atlantic Call Areas.

Other Habitats of Concern

In addition to the habitats and protected areas described above, other ecologically sensitive habitats exist within the Call Areas. High-resolution site-specific information will be needed to precisely identify where these habitats are located in order to avoid and minimize adverse impacts from any future offshore wind development. For example, we know that discrete "live bottom" areas consisting of rock outcrops, ledges, boulders, and cobbles with dense aggregations of vulnerable, structure-forming biota (e.g., gorgonian corals and anemones) that support abundant fish populations, exist on the continental shelf in the Mid-Atlantic, and are likely to occur within expansive areas encompassing the Central Atlantic Call Areas. Other valuable and sensitive habitats in the Call Areas may include shellfish beds (e.g., Atlantic surfclams) and large topographic features (e.g., shoals and shoal complexes, scarps, sand ridges, and sand waves, and their associated troughs and depressions). Broader scale mapping efforts will be necessary to identify complex habitats and benthic features.

[7] https://gisdata-njdep.opendata.arcgis.com/datasets/njdep::prime-fishing-grounds-of-new-jersey/about

Habitat Mapping and Data Collection Needs
Site-specific habitat data collection is necessary to identify all areas that may not be suitable for development. If sensitive areas are not removed or identified at the site identification stage, we will recommend their removal during the regulatory process. We have concerns that the level of habitat mapping that has been conducted for recent projects would not be sufficient to detect some sensitive habitat types found in these Call Areas, such as corals; thus, substantially more mapping efforts and aerial coverage are necessary to ensure these vulnerable habitats are not impacted. To reduce potential conflict later in the process, we recommend BOEM initiate large-scale habitat mapping in the Call Areas, in consultation with our agency, prior to leasing. This may help identify sensitive areas early in the planning process and provide more certainty and efficiencies for the regulatory process.

BOEM should consult satellite oceanography to assess frontal regions that may overlap with or be adjacent to the Call Areas, particularly along the shelf break, and should remove these areas, which provide important habitat for fisheries and protected species, from further consideration. Once the wind energy areas are established, BOEM should conduct regular physical and biological oceanographic sampling in the areas and adjacent waters to collect baseline data on the pelagic environment. Such sampling should begin prior to lease issuance as a component of region-wide baseline monitoring. Sampling should occur three to five years prior to construction and should be designed to assess seasonal characteristics of the water column, including the formation and breakdown of the Cold Pool, the Gulf Stream, and prey resources (i.e., plankton, forage fish). BOEM's research design should consider recent efforts to assess ecological metrics and sampling strategies, such as a 2021 workshop held by Rutgers University and a related workshop held in 2019 on offshore wind and the Cold Pool[8]. BOEM should use the information collected prior to construction to provide a baseline to assess the impacts of offshore wind development. Sampling should occur such that results can be used to assess effects of wind turbines on the oceanographic and atmospheric environment. The studies should also be used to inform the development of lease areas to minimize effects to oceanographic features (and subsequently habitats and protected species) by limiting placement of structures which may overlap with identified features (i.e., frontal activity) that may aggregate a high diversity of species and prey or unique features to the region (i.e., Gulf Stream, Cold Pool) that support ecosystem function.

Summary
In summary, we recommend the following steps be taken to avoid and minimize impacts to vulnerable habitats in the Central Atlantic Call Areas:

- Remove Frank R. Lautenberg Deep-Sea Coral Protection Area (overlaps with all of Area E and portions of Area F) from further consideration for development;
- Remove the southern portion of Area F overlapping the canyon BOEM refers to as "The Point" in *Large Submarine Canyons of the United States Outer Continental Shelf Atlas*

[8] 2021 Partners in Science Workshop: Identifying Ecological Metrics and Sampling Strategies for Baseline Monitoring During Offshore Wind Development, 2019 Partners in Science Workshop: Offshore Wind and the Mid-Atlantic Cold Pool (https://rucool.marine.rutgers.edu/wp-content/uploads/2020/10/PartnersWorkshop_WhitePaper_Final.pdf)

(OCS Study BOEM 2019-066) from further consideration;

- Remove designated prime fishing grounds that have been identified and mapped by the State of New Jersey from further consideration. These areas overlap with portions of the Call Areas A, B, and E;
- Work with NMFS to identify an appropriate conservation buffer to avoid and minimize impacts to benthic and pelagic habitats located along the shelf break and slope, including deep-sea corals, methane seeps, canyons, and designated HAPCs, from construction and operation of future offshore wind development. This should include reduction of the eastern edges of inshore Call Areas B, C, and D, which occur within close proximity to continental shelf break;
- Conduct an analysis of potential offshore wind transmission corridors and onshore connection sites. This information should be used to inform siting of any final wind energy areas to help minimize adverse effects of future development on habitats in the Central Atlantic; and
- Conduct habitat mapping and begin baseline physical and biological oceanographic sampling in and around the Call Areas prior to issuing any leases to help identify sensitive habitats and unique benthic features unsuitable for development early in the process and to begin critical baseline monitoring to inform any future development.

Protected Resources

Several species of marine mammals, sea turtles, and marine fish that are listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, as amended, occur in the Central Atlantic Call Areas and surrounding waters. Tables 1 through 3 detail the ESA-listed species whose range overlaps with at least some portion of the Central Atlantic Call Areas. As currently identified, none of the areas overlap with designated critical habitat. As noted above, critical habitat for the North Atlantic DPS of green sea turtle may be proposed in a future rulemaking. All ESA-listed marine mammals are also protected under the MMPA. More information on these species, including links to relevant regulatory and planning documents, are available on the NMFS webpage (https://www.fisheries.noaa.gov/species-directory/threatened-endangered).

As the potential lease sites in the Call Areas are further defined, it will be critical to fully consider both project-specific and cumulative effects of offshore development (including activities that occur prior to construction) on all species listed under the ESA and MMPA and the habitats and ecosystems on which they depend, and to evaluate ways to avoid and minimize adverse impacts to these species and their habitats. We strongly encourage you to consider all available options to minimize risk to these species and their habitats including limiting the extent of leasing and development in areas used by these species and implementation of robust lease stipulations. Additionally, before leases are issued (or at the latest, before construction), a robust monitoring program should be implemented in any Central Atlantic Call Areas to collect information to refine these areas and inform further development; please see our comments below about recommended baseline monitoring.

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 Occurring in the Central Atlantic Call Area

Species	ESA Listing Status	Listing Rule/Date	Most Recent Recovery Plan/Outline Date
Blue whale	E	35 FR 18319/December 2, 1970	November 2020
Fin whale	E	35 FR 12222/December 2, 1970	August 2010
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 Occurring in the Central Atlantic Call Area

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

*Hawksbill sea turtles are rare north of Florida but could occasionally occur in association with hard bottom habitat in southern portions of the call areas.

Table 3. ESA-Listed Fishes Occurring in the Central Atlantic Call Area

Species	ESA Listing Status	Listing Rule/Date	Most Recent Recovery Plan/Outline Date
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

In addition to the five stocks of ESA-listed marine mammals, 15 protected cetacean species occur in the Central Atlantic Call Area, six of which are considered "strategic" under the MMPA (Table 4, grouped by hearing frequency). Descriptions of all marine mammal stocks under NMFS jurisdiction can be found in the final 2020 and draft 2021 Stock Assessment Reports[9].

Table 4. MMPA-Protected Marine Mammal Species Occurring in the Central Atlantic Call Area

Common Name	Status	Occurrence[10]
Low Frequency Cetaceans (baleen whales)		
Blue whale	MMPA protected, ESA endangered	Year-round
Fin whale	MMPA depleted, MMPA strategic, ESA endangered	Year-round[11]
Humpback whale (West Indies DPS); Gulf of Maine MMPA stock)	MMPA protected	Year-round
Minke Whale	MMPA protected	Low likelihood, potentially year round [12]

[9] https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments

[10] Habitat-based density models (https://seamap.env.duke.edu/models/Duke/EC/) have been developed for all marine mammals in the Atlantic. These models are updated periodically; therefore, NMFS recommends referencing these models for occurrence throughout the planning process.

[11] Edwards et al. (2015) and Davis et al. (2020) found evidence to confirm the presence of humpback, fin and sei whales in every season throughout much of the U.S. Exclusive Economic Zone (EEZ) north of 35° N; however, densities vary seasonally.

[12] Per the 2020 SAR, 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) suggest 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).

North Atlantic right whale	MMPA depleted, MMPA strategic, ESA endangered	Fall/winter/spring, possibly summer
Sei whale	MMPA depleted, MMPA strategic, ESA endangered	Low likelihood; Spring[12]
Mid-frequency Cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)		
Atlantic Spotted Dolphin	MMPA protected	Year-round
Beaked whales (various spp.)[13]	MMPA protected	Year-round
Harbor porpoise	MMPA protected	Fall/winter/spring[14]
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[15]
Sperm Whale	MMPA protected, ESA endangered	Year-around
Western North Atlantic Bottlenose Dolphin, Offshore stock	MMPA protected	Year-round
Western North Atlantic Bottlenose Dolphin, Northern and Southern Migratory Stocks	MMPA protected, MMPA depleted, MMPA strategic	Year-round[16]

[13] Beaked whale species occurring in the Atlantic include Cuvier's beaked whale and several *Mesoplodon spp*. (Blainville's, Gervais, Sowerby's, True's beaked whales).

[14] Per the 2020 SAR, during fall (October–December) and spring (April–June), harbor porpoises are widely dispersed from New Jersey to Maine, with lower densities farther north and south. During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina, and lower densities are found in waters off New York to New Brunswick, Canada.

[15] Per the 2020 SAR, the species is less common south of Cape Hatteras, although schools have been reported as far south as the Georgia/South Carolina border (32° 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).

[16] These stocks make broad-scale, seasonal migrations in coastal waters from the shoreline to the 20-m isobath. See the SARs for more detailed information.

High Frequency Cetaceans (true porpoises, Kogia)		
Kogia spp.	MMPA protected	Year-round
Pinnipeds		
Gray Seal	MMPA protected	Low likelihood
Harbor Seal	MMPA protected	Fall/winter/spring[17]

Overall, information on the fine scale distribution, abundance, and habitat use of protected species in the the Central Atlantic Call Areas is limited. Broad-scale distribution data for these species is available; however, continued data collection on seasonal distribution, density, abundance, behavior, movements, and habitat use for these species is needed to better understand the consequences of leasing and development in the Central Atlantic Call Areas. Moreover, as described above, an assessment of the cumulative impacts of leasing these areas in combination with previously leased areas or other planned lease areas (e.g., Gulf of Maine) should be undertaken prior to finalizing any Wind Energy Areas and additional leases. This is particularly important as many protected species are migratory in nature and are likely to be exposed to effects of offshore wind projects in multiple lease areas. Please see our comments below about recommended baseline monitoring to inform the further development of the Central Atlantic Call Areas.

The overlap with critical habitat designated for the Northwest Atlantic DPS of loggerhead sea turtles has been removed; however, we note that Call Areas D and F are directly adjacent to the constricted migratory corridors and *Sargassum* habitat of the Northwest Atlantic DPS of loggerhead sea turtle. As such, careful assessment of the potential impacts to the physical and biological features (PBFs) of each habitat type and the primary constituent elements that support the PBFs of each habitat type should be carried out and appropriate buffers should be considered to minimize the potential impact of development on the features of this habitat.

Endangered North Atlantic right whales occur year round, albeit in varying densities, in the Central Atlantic Call Areas, as well as along the potential cable corridors and anticipated vessel transit routes. The status of this species is extremely poor and distribution and habitat-use in this region is not particularly well known. The consequences of leasing these areas on North Atlantic right whales needs to be carefully considered. This species will be exposed to effects of offshore wind development in every lease area identified on the Atlantic OCS to date. The lack of a cumulative assessment of development of these lease areas on North Atlantic right whales, their designated critical habitat, and the areas in between, severely limits full consideration of the consequences to this severely depleted and sensitive species. According to Krzystan et al.

[17] Per the 2020 SAR, recent studies demonstrate that various age classes utilize habitat along the eastern seaboard throughout the year with occurrence within the call areas from September through May.

(2018),[18] North Atlantic right whales are not just migrating southward during fall and northward during spring; sightings data suggest they are occurring throughout the calving season along the Mid-Atlantic. As the population continues to decline[19] and in the midst of a protracted Unusual Mortality Event[20] the development of fixed and floating offshore wind facilities presents additional risk to the species from stressors such as noise exposure, vessel traffic, increased energy expenditure by individuals due to displacement, habitat changes, and displaced fishing effort. The identification of any areas eligible for leasing, pre-construction activities, and ultimate development of wind energy facilities must be done in a way that avoids and minimizes effects to North Atlantic right whales and their habitat, with particular consideration of risks to migrating pregnant right whales and their newborn calves.

It is important to recognize that many protected species range along the East Coast and thus are likely to be exposed to effects of multiple offshore wind projects. As mentioned elsewhere, leasing in the Central Atlantic should be informed by an assessment of the anticipated effects on protected species that occur in the area, including consideration of operational impacts (e.g., turbine noise, physical presence of turbines, vessel traffic, habitat modifications); this analysis should consider project-specific and cumulative effects that may occur before, during and after construction. It is also important to consider how development in this area may affect the availability and quality of habitat as well as vessel traffic and fishing use patterns which may affect the risk that these activities pose to protected species.

Additional information on the species that occur in the Central Atlantic Call Area can be found at:

- Greater Atlantic Regional Fisheries Office (GARFO) Section 7 Mapper[21]
- Southeast Regional Office (SERO) Section 7 Mapper[22]
- Ocean Biodiversity Information System Spatial Ecological Analysis of Megavertebrate Populations[23]
- Passive Acoustic Cetacean Map[24]
- WhaleMap[25]
- Atlantic Marine Assessment Program for Protected Species (AMAPPS)
    - AMAPPS reports[26]
    - AMAPPS Mammal Mammal Model Viewer[27]

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[18] Krzystan, A.M., Gowan, T.A., Kendall, W.L., Martin, J., Ortega-Ortiz, J.G., Jackson, K., Knowlton, A.R., Naessig, P., Zani, M., Schulte, D.W., and Taylor, C.R. (2018). Characterizing residence patterns of North Atlantic right whales in the southeastern USA with a multistate open robust design model. Endangered Species Research, 36:279–295.

[19] Pace, R. M. 2021. Revisions and Further Evaluations of the Right Whale Abundance Model: Improvements for Hypothesis Testing. NOAA Technical Memorandum NMFS-NE-269. National Marine Fisheries Service, Northeast Fisheries Science Center, Woods Hole, MA. April 2021.

[20] https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2022-north-atlantic-right-whale-unusual-mortality-event

[21] https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper

[22] https://www.arcgis.com/home/item.html?id=b184635835e34f4d904c6fb741cfb00d

[23] https://seamap.env.duke.edu/

[24] https://apps-nefsc.fisheries.noaa.gov/pacm/#/

[25] http://whalemap.org

[26] https://www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/atlantic-marine-assessment-program-protected

[27] https://apps-nefsc.fisheries.noaa.gov/AMAPPSviewer/

- Marine Mammal Stock Assessments[28]
- Habitat-based Marine Mammal Density Models for the US Atlantic: Latest Versions[29]
- DOE Mid-Atlantic Baseline Studies[30]
- New York State Dept. of Conservation NY Bight Passive Acoustic Monitoring, Aerial, Shipboard Surveys[31,32]

We would also like to bring your attention to two other NOAA efforts related to protected species: The Biologically Important Areas (BIAs)[33] effort and updates to the North Atlantic right whale vessel speed rule (50 CFR § 224.105). The two efforts are discussed below.

BIAs identify areas and times within which cetacean species or populations are known to concentrate for specific behaviors, or be range-limited, and provide additional context within which to examine potential interactions between cetaceans and human activities. Specific to anthropogenic sound and marine mammals, there is compelling evidence indicating that a variety of contextual factors, including behavioral state and life stage, can influence the probability, nature, and extent of a marine mammal's response to noise. The BIAs provide some of this important contextual information for cetaceans and can augment the cetacean density, distribution, and occurrence data typically used in marine mammal impact assessments. BIAs are compilations of the best available science and have no inherent or direct regulatory power. They have been used by NOAA, other federal agencies, and the public to support planning and marine mammal impact assessments, and to inform the development of conservation measures for cetaceans. Importantly, NOAA, with the support of the U.S. Navy, has convened a working group of regional cetacean experts who have begun updating and revising the BIAs identified in Van Parijs et al. (2015), identifying the full extent of any BIAs that overlap U.S. waters, adding new BIAs where appropriate, and now scoring each BIA. The use of a new BIA scoring and labeling system will improve the utility and interpretability of the BIAs by designating an overall Importance Score for each BIA. Finalization of the updated website and database is scheduled for December 2022. The locations, timing, and Importance Scores of the updated and revised BIAs in the Central Atlantic, once this information becomes available, should be considered as lease areas are identified. Until then, the previously recognized North Atlantic right whale migratory corridor BIA that extends along the East Coast establishes the importance of the Central Atlantic to migrating mothers and their newborn calves. As noted previously, given how little is known about North Atlantic right whale habitat utilization in the Central Atlantic, this BIA should be carefully considered when refining Call Areas.

In June 2020, NMFS completed an assessment[34] of its vessel speed rule (50 CFR § 224.105). This assessment included an evaluation of mariner compliance with the rule's Seasonal

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

[29] https://seamap.env.duke.edu/models/Duke/EC/

[30] http://www.briloon.org/mabs

[31] https://www.dec.ny.gov/lands/113647.html

[32] https://remote.normandeau.com/nys_aer_overview.php

[33] https://oceannoise.noaa.gov/biologically-important-areas

[34] National Marine Fisheries Service. 2020. North Atlantic Right Whale (Eubalaena glacialis) Vessel Speed Rule Assessment. National Marine Fisheries Service, Office of Protected Resources, Silver Spring, MD.

Management Area (SMA) vessel speed restrictions and cooperation with the voluntary Dynamic Management Area (DMA) program. The evaluation found that compliance with the rule (all vessels over 65 feet are required to reduce speed to 10 knots or less in SMAs) reached 81% across all SMAs and called for revising SMA timing and boundaries to better match current North Atlantic right whale habitat use and distribution. Cooperation with DMAs was generally low, and the assessment recommended that the DMA program be terminated or modified. NMFS is currently considering the recommendations of the assessment and related public comments as we explore potential options for further reducing vessel strikes of North Atlantic right whales. All potential measures to further reduce the risk of vessel strike for North Atlantic right whales, including the recommendations of the assessment, and any information provided in any future rulemaking, should be considered as potential lease areas and lease conditions are identified.

Recommendations for Monitoring to Inform Area Refinement
To inform the further refinement of the Central Atlantic Call Areas, and in respect to our suggestion of taking an ecosystem approach to identifying areas and conducting a cumulative impact analysis, we recommend the following monitoring efforts below be completed before leases are issued (or at the latest, before construction).

Continuous archival Passive Acoustic Monitoring (PAM) and acoustic and satellite telemetry should be conducted in the Call Areas prior to leasing and construction to collect baseline information on the presence, distribution, and seasonality of North Atlantic right whales, other marine mammals, and acoustically tagged species (e.g., highly migratory species such as tunas and sharks, sturgeon, and sea turtles). Additionally, both archival and real-time PAM should be used to collect baseline information on the presence, distribution, and seasonality of marine mammals located in the potential transit routes from ports that may be used to support offshore construction and operations. Archival PAM should also be used to establish baseline noise levels and habitat conditions in the Call Areas and surrounding waters. A coordinated regional PAM approach should be taken which follows the recommendations in Van Parijs et al. 2021.[35] Monitoring using continuous PAM archival recorders should occur three to five years prior to the identification of lease areas, or at least a minimum of three to five years before construction. If conducted prior to leasing, the information from the PAM should be used to inform the location and size of potential lease areas by removing areas which overlap with identified locations with high species diversity, biological importance (i.e. migratory routes), or high individual species presence (i.e. hotspot). If PAM is conducted after leasing, but prior to construction, the information should be used to inform the development of lease areas to minimize effects to protected species by limiting activities, such as construction or placement of structures, which may overlap with identified locations with high species diversity, biological importance (i.e. migratory routes), or high individual species presence (i.e. hotspots).

Systematic aerial surveys should be conducted in the Call Areas and adjacent waters to collect baseline data on the presence, abundance, distribution, and seasonality of marine megafauna prior to leasing and construction. Surveys should follow a similar protocol to the aerial surveys

[35] Van Parijs, S.M., Baker, K., Carduner, J., Daly, J., Davis, G.E., Esch, C., Guan, S., Scholik-Schlomer, A., Sisson, N.B. and Staaterman, E., 2021. NOAA and BOEM Minimum Recommendations for Use of Passive Acoustic Listening Systems in Offshore Wind Energy Development Monitoring and Mitigation Programs. *Frontiers in Marine Science*, *8*, p.760840.

conducted in the Massachusetts/Rhode Island Wind Energy Areas[36] and should be flown on a regular basis. Aerial surveys should occur three to five years prior to the identification of lease areas, or at least a minimum of three to five years before construction. If conducted prior to leasing, the information from the aerial surveys should be used to inform the location and size of potential lease areas by removing areas which overlap with identified locations with high species diversity, biological importance (i.e. migratory routes), or high individual species presence (i.e. hotspot). If aerial surveys are conducted after leasing, but prior to construction, the information should be used to inform the development of lease areas to minimize effects to protected species by limiting activities, such as the construction or placement of structures, which may overlap with identified locations of high species diversity, biological importance (i.e. migratory routes), or high individual species presence (i.e. hotspots). Studies that provide a better understanding of behavioral impacts to marine mammals from noise sources such as pile driving and concentrated vessel traffic, with particular attention to baleen whales, should also be undertaken.

Fisheries Operations and Resources

The following summarizes information derived from evaluating the Call Areas using the fishing footprint method based on vessel logbook data. Tables and figures provided below reflect revenues in 2019 dollars, but the same data presented in the Appendix B reports reflect revenues adjusted to 2020 dollars. Therefore, the numbers in the tables below will not match similar data in the reports. Information presented here was compared to other sources such as vessel monitoring data and resource surveys for key species to corroborate findings.

We appreciate revisions to the western inshore planning area (Call Areas A and B), which reduced overlap with several important regional fisheries. However, the Call Areas continue to overlap with historic operations in several important regional fisheries. Based on the updated Call Areas, Appendix B1 provides summary information on historic fishing operations that could be affected by future wind development projects within the Call Areas as currently proposed. Since 2008, up to 581 vessels have fished nearly 6,000 trips in these Call Areas each year, with most fishing occurring in Areas A and B. Such trips landed in ports within Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, and North Carolina. During 2008-2020, over 89 million pounds (lbs) of fish were landed from these planning areas at a value of over $169 million. Average annual fishing revenue from trips within all of the Call Areas combined exceeded $1 million for important fishing communities such as Cape May, NJ, New Bedford, MA, and Newport News, VA (see Table 5). For some species, fishing operations in these areas represent a substantial portion of annual landings and associated revenue. For example, average annual sea scallop landings (836,856 lbs) were valued at $7.2 million, while surfclam and *Illex* squid annual landings averaged 2.2 million lbs and 1.7 million lbs worth $1.4 million and $650,000, respectively (see Table 6).[37] Many vessels depended upon these planning areas for more than 50 percent of annual fishing revenue in all years, with several entities reliant on these areas for over 75 percent of annual landings in several years (see Figure 8.1 in

[36] https://www.masscec.com/marine-mammal-and-sea-turtle-surveys

[37] *Illex* squid landings and revenue are likely overestimated based on comparing vessel monitoring system data to data derived on singular fishing locations reported in logbooks.

Appendix B1). Thus, these planning areas are important to existing fisheries and represent substantial contributions to annual regional fishery landings and revenue.

Cumulatively, current and anticipated offshore wind development areas, including all existing and proposed lease areas and the Call Areas, would impact significant amounts of regional commercial fishery operations. For 11 species managed by GARFO and the Atlantic States Marine Fisheries Commission (ASMFC), over 10 percent of annual landings and revenue in certain years came from areas proposed for wind energy development. Relative to total annual regional landings and revenue, fishing operations in these areas represented up to 26 percent of annual landings and 25 percent of annual revenues for Atlantic surfclams; 22 percent of annual Atlantic chub mackerel landings and revenues; 19 percent of annual *Illex* squid landings and revenues; 19 and 18 percent of annual black sea bass landings and revenues, respectively; 17 and 16 percent of annual sea scallop landings and revenue, respectively;and over 12 percent of annual ocean quahog and red crab landings and revenue (see Table 7). If vessel operators choose not to fish within wind energy areas, this could result in substantial adverse economic impacts to many of the region's most important fisheries and associated fishing communities. This could also disrupt the supply of a healthy and sustainable food source to both domestic and international markets, reduce the availability of bait used to target other fish, and increase costs for fishery products worldwide. Together, these impacts could potentially compromise the economic viability of individual fishing businesses and food security for the nation at large.

Of the Call Areas, Areas A and B overlap the most with existing commercial fishery operations under the management of GARFO (see Figure 3 and the reports in Appendix B). Over 80 percent of surfclam revenue from the Call Areas during 2008-2020 ($19 million) was from Area A, while over 64 percent of scallop revenue from the Call Areas during 2008-2020 ($60 million) comes from Area B. Up to 506 vessels took up to 4,400 trips annually in Area A since 2008, while up to 450 vessels took up to nearly 2,900 trips annually into Area B since 2008. Vessel dependence varies by area, but many vessels were dependent upon Areas A and B for over 25 percent of annual fishing revenue during this time, with a few dependent upon this area for over 50 percent of annual fishing revenue in some years. Based on industry input, surfclam fishing has increased in the eastern portions of Area C. Although such an increase is not reflected in the area-specific reports in Appendix B, NMFS surfclam survey data indicate concentrations of surfclams in this area supporting industry input. Survey data also confirm the presence of high quantities of surfclams in Area A and most of Area B, particularly the northern and western portions of these areas. While fishing footprint data suggest a high degree of overlap with the *Illex* fishery in Areas B, E, and F, the spatial resolution of the underlying vessel logbook data likely overestimates the degree of impact on this fishery based on comparisons with vessel monitoring system data. The eastern portion of Areas B and C closest to the shelf break and canyons likely overlap with the *Illex* squid fishery to the greatest degree among Call Areas, however. This area also corresponds to historic scallop activity as well as represented by survey and vessel monitoring system data. As a result, we recommend BOEM avoid placing offshore wind projects within Areas A and C, and the eastern portion of Area B to minimize overlap with historical and anticipated commercial fishing operations.

Similar to commercial operations, Areas A and B include the vast majority of for-hire recreational (party/charter vessels) operations for GARFO-managed species within the Call

Areas. For-hire activity in Areas C and D were very similar in terms of total revenue and fish count, with operations in Area E slightly lower in fish caught, but higher in total revenue due to substantially higher revenue reported in 2019. Operations in Area F are minimal during 2008-2020, although this is likely reflective of the limited reporting of more southerly and highly migratory species in fishery logbooks submitted to the Greater Atlantic Regional Fisheries Office. Black sea bass dominated the catch in Areas A, B, and C, while dolphin fish (Mahi-mahi), yellowfin tuna, bluefin tuna, and other species, mostly highly migratory species such as whiate marlin, skipjack tuna, and wahoo dominated the catch in Areas D, E, and F.[38] Based on vessel logbook data for party/charter permits issued by GARFO, over 50 percent of the total number of fish caught within the Call Areas between 2008-2020 (174,000 fish) was caught in Area A (92,000 fish) (see Appendix B8 and B9). Similarly, Area A is responsible for nearly 50 percent of revenue from ticket sales, valued at over $2.6 million from 2008-2020, or approximately an average of $95,000 per year. For-hire trips into the planning areas, particularly Area A, have been generally increasing since 2008. For-hire vessels operated primarily out of ports in Maryland (Ocean City), Delaware (Indian River and Lewes), and Virginia, although Cape May, New Jersey also operated in the Call Areas. Over 1,000 angler trips were taken out of individual ports, with several ports (e.g., Ocean City, Cape May, taking over 200 angler trips into the Call Areas each year. Generally, angler trips have increased since 2008, with over 3,200 trips taken in Call Areas in 2020 alone. Many of the GARFO-permitted party/charter vessels operating in the Call Areas relied upon Areas A and B for over 20 percent of annual revenue from angler trips.

[38] Due to existing reporting requirements, species catch within the Central Atlantic Call Areas may be reported through multiple logbook reports to different NMFS offices. The summary reports in Appendix B are based on catch reported through Greater Atlantic Region (ME-NC) logbooks and likely underrepresent catch of more southerly species, including highly migratory species, which are reported separately.

Table 5: Average Annual Landings (All Species) within the Central Atlantic Call Areas by Landing Port.

Port	Average annual landings (lb)							Average annual revenue (2019 dollars)						
	All Call Areas Combined	Area A	Area B	Area C	Area D	Area E	Area F	All Call Areas Combined	Area A	Area B	Area C	Area D	Area E	Area F
ALL_OTHERS	732,978	133,086	294,162	112,915	234,570	225,741	157,890	$1,497,696	$416,419	$823,504	$129,886	$154,399	$270,912	$99,172
ATLANTIC CITY	1,325,173	1,187,324	196,873			1,525		$862,328	$767,527	$134,047			$8,770	
BARNEGAT	36,893	12,899	48,529			7,742		$288,968	$116,277	$390,177			$35,343	
BEAUFORT	27,611	2,679	12,619	1,502	6,476	13,403	1,300	$81,687	$14,438	$49,389	$2,791	$12,023	$25,539	$2,034
CAPE MAY	1,747,677	677,394	323,820	26,839	42,378	743,680	45,368	$2,238,418	$840,818	$976,258	$15,670	$36,258	$415,392	$22,365
CHINCOTEAGUE	219,601	2,682	205,665	8,287	2,182	10,057		$408,088	$4,427	$379,746	$34,091	$3,427	$17,099	
DAVISVILLE	786,360	3,716	103,912	92,088	324,702	112,807	216,450	$377,906	$2,831	$57,390	$43,239	$166,452	$61,861	$108,215
ENGELHARD	57,257				15,926		2,029	$118,297				$26,232		$3,551
FALL RIVER	76,838		6,448			45,044		$116,472		$13,796			$61,569	
HAMPTON	232,301	22,924	111,678	24,071	22,408	46,023	17,685	$589,957	$153,067	$359,396	$12,788	$25,186	$79,041	$11,549
HOBUCKEN	10,045	1,980						$24,998	$7,344					
INDIAN RIVER	18,730	14,734	2,229					$48,942	$36,020	$8,552				
LEWES	13,358	12,017						$29,747	$25,626					
LONG BEACH	17,069	16,149						$115,876	$114,683					
MONTAUK	30,456	2,903	9,883			12,455		$49,376	$4,566	$39,016			$16,848	
NEW BEDFORD	399,640	79,547	203,999	10,926		111,400	42,610	$2,372,458	$632,782	$1,625,125	$19,456		$280,415	$62,978
NEW LONDON	18,525	4,844	18,188			2,197		$145,659	$35,432	$161,056			$9,594	
NEWPORT NEWS	284,761	45,752	153,160	10,844	30,971	45,685	24,146	$1,542,292	$331,918	$1,081,016	$15,303	$31,215	$98,780	$22,343
NORTH KINGSTOWN	1,592,564	63,908	243,817	89,020	266,395	589,627	223,306	$893,374	$34,259	$201,707	$50,099	$153,267	$303,774	$123,666
OCEAN CITY	1,071,930	627,158	432,256	1,003		10,733		$882,934	$486,395	$368,335	$2,284		$27,210	
ORIENTAL	34,423	2,807	12,051		130	19,705		$56,395	$5,673	$24,546		$368	$31,264	
POINT JUDITH	68,546	6,202	18,392	1,649	2,427	43,023	3,664	$88,297	$10,834	$35,021	$1,843	$2,418	$43,209	$3,221
POINT PLEASANT	19,853	6,090	25,857			1,501		$128,498	$24,940	$198,986			$11,287	
SEA ISLE CITY	27,256	17,520	584			8,166		$69,774	$47,731	$2,513			$13,166	
STONINGTON	7,905	2,355	11,102			1,106		$49,653	$17,913	$82,297			$4,639	
VIRGINIA BEACH	58,464		1,287	34,775	26,887			$123,660		$1,923	$105,582	$25,224		
WACHAPREAGUE	2,398		1,502					$4,756		$3,337				
WANCHESE	89,448	3,599	25,009	7,427	47,325	24,460	17,390	$95,715	$6,157	$34,956	$12,578	$42,998	$35,849	$7,867
WILDWOOD	23,391	22,353						$83,765	$78,686					

Table 6: Average Annual Species Landings and Revenue from All Central Atlantic Call Areas Combined during 2008-2020 (revenues in 2019 dollars).

Species	Average Annua Landings 2008-2020 (lb)	Average Annua Revenue 2008-2020 (2019 dollars)
Atlantic sea scallop	836,856	$7,252,217
Atlantic surfclam	2,256,640	$1,463,883
Illex squid	1,740,029	$650,624
Longfin squid	438,393	$490,532
Black sea bass	126,330	$381,502
Summer Flounder	190,698	$342,918
Red crab	215,901	$214,548
Monkfish	129,178	$196,804
Ocean quahog	133,619	$111,466
American lobster*	18,983	$93,182
Atlantic menhaden*	441,790	$39,342
Bluefish	40,545	$30,862
Atlantic chub mackerel	106,684	$25,835
Atlantic croaker*	45,932	$23,889
Atlantic herring	164,050	$17,523
Jonah crab*	18,934	$16,829
Skate wings	39,950	$15,739
Spiny dogfish	92,265	$15,597
Golden tilefish	3,060	$12,551
Blueline tilefish*	4,962	$11,937
Scup	17,225	$9,842
Atlantic mackerel	35,036	$8,455
Butterfish	17,457	$8,168
Striped bass	3,161	$7,170
Tautog	1,103	$3,708
Silver hake	3,837	$2,611
American eel*	370	$1,335
Atlantic cod	621	$1,163
Witch flounder	713	$1,105
Horseshoe crab	1,477	$973
Spot**	576	$659
Ocean pout	773	$641
Red hake	864	$472
Weakfish	204	$296
Offshore hake	149	$196
White hake	104	$192
Spanish mackerel	113	$126
Black drum*	279	$113
Cobia*	37	$67
Redfish	16	$18
Red drum*	8	$15
Pollock	6	$7
*Landings/revenue for these species are underestimated due to limited coverage of these fisheries in Greater Atlantic logbooks.		

Table 7: The maximum percentage of total annual regional landings and revenues for species managed by GARFO and the ASMFC caught within existing and proposed offshore wind lease areas and the Central Atlantic Call Areas.

GARFO and ASMFC Managed Species	Maximum Annual Percent Total Regional Species Landings	Maximum Annual Percent Total Regional Species Revenue
American eel**	22%	31%
Blueline tilefish**	26%	28%
Atlantic surfclam	26%	25%
Atlantic chub mackerel	22%	22%
Illex squid	19%	19%
Atlantic menhaden**	20%	19%
Black sea bass	19%	18%
Black drum**	19%	18%
Atlantic croaker**	14%	17%
Atlantic sea scallops	17%	16%
Yellowtail flounder	14%	15%
Offshore hake	14%	14%
Spot**	15%	13%
Ocean quahog	14%	13%
Red crab	12%	12%
Red drum**	11%	11%
Alewife	9%	10%
Bluefish	9%	10%
Skate wings	10%	10%
Atlantic mackerel	9%	10%
Cobia**	18%	9%
Longfin squid	9%	9%
Scup	8%	9%
Monkfish	10%	8%
Weakfish	8%	7%
Summer flounder	7%	7%
Red hake	11%	7%
Spanish mackerel	6%	6%
Butterfish	7%	6%
Silver hake	7%	6%
Hickory shad	7%	6%
Tautog	6%	6%
Golden tilefish	6%	6%
Blueback herring	5%	6%
Jonah crab*	5%	5%
Horseshoe crab	6%	4%
American shad	6%	4%
Spiny dogfish	4%	4%
Winter flounder	3%	4%
Windowpane flounder	3%	3%
Atlantic herring	3%	2%
American lobster*	1%	2%
*Landings/revenue for these species are underestimated due to limited historic coverage of these fisheries in existing reporting requirements for the Greater Atlantic Region.		
**Landings/revenue percentages for these species are likely overestimated due to limited coverage of these fisheries in existing Greater Atlantic Region reporting requirements.		

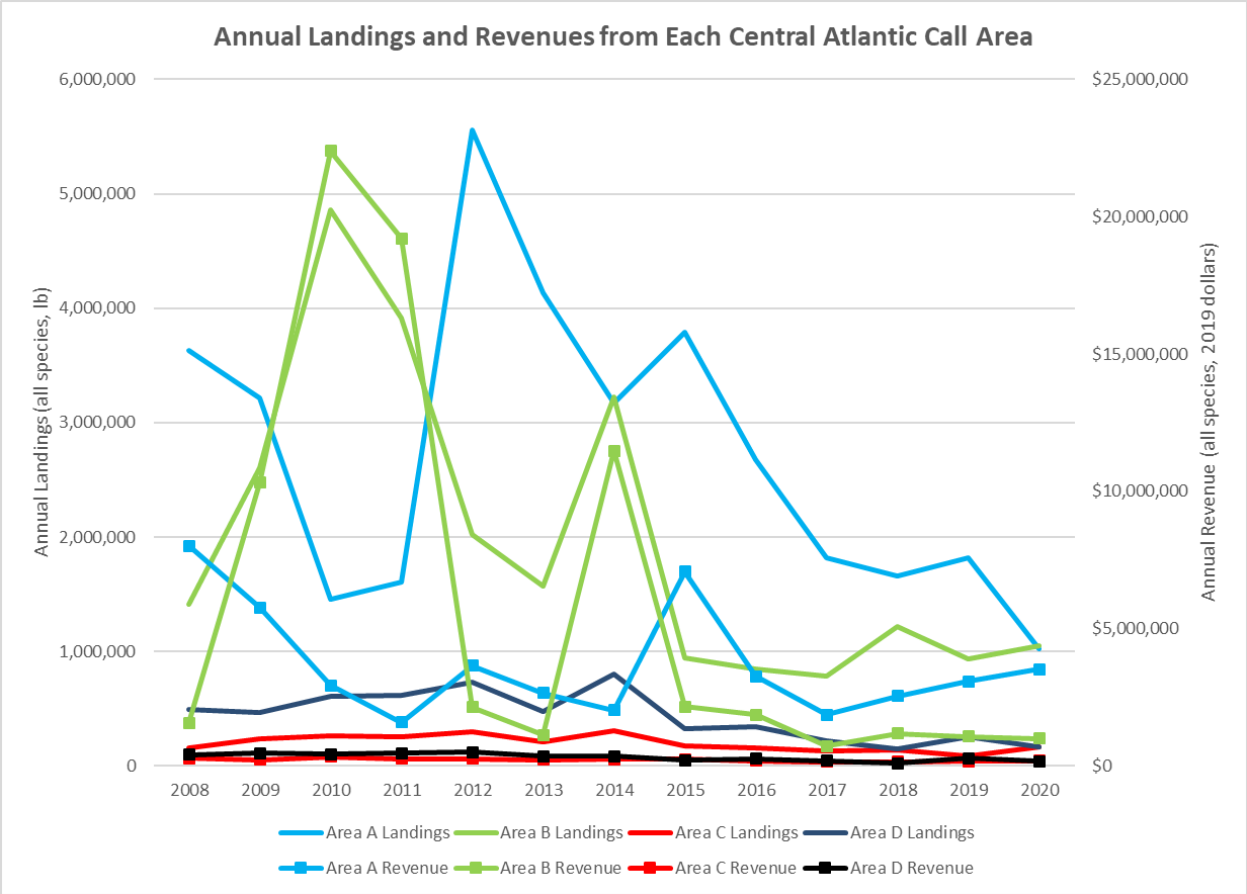


Figure 3. Annual Landings and Revenues from Each Central Atlantic Call Area

The Call Areas are also heavily utilized by recreational and commercial fisheries for Atlantic Highly Migratory Species (HMS), including swordfish, billfishes, tunas, and sharks. Areas offshore of the shelf break (E and F) presumably would be for floating wind. These areas are heavily utilized by commercial HMS longline fishing vessels that primarily target swordfish and tunas. Coastwide, HMS commercial ex-vessel revenues are $30-40 million per year. The shelf-edge and adjacent waters from North Carolina to New Jersey are a heavily fished area by commercial HMS vessels, with the Mid-Atlantic region accounting for approximately 37% of U.S. Atlantic coast HMS pelagic longline effort in recent years (Figure 4). While HMS vessels from Massachusetts to Florida seasonally operate in Mid-Atlantic waters, vessels based in New Jersey, Delaware, Maryland, Virginia, and North Carolina are more reliant on the region and may be disproportionately impacted. Across HMS commercial permits, 19% (902 vessels) are home ported in these states. While effort in the pelagic longline fishery is focused along the shelf-edge, set locations vary depending on oceanographic conditions, including Gulf Stream position, mesoscale eddies and frontal zones, and seasonal and interannual productivity dynamics. HMS bottom longline fishing targeting coastal sharks and gillnet and trawl vessels targeting smooth dogfish also occur over Mid-Atlantic shelf waters (Areas A, B, C, and D). Given that HMS longline sets often exceed 20 miles in mainline length, these vessels would be unable to fish within turbine arrays, or between neighboring arrays, and would be forced to redistribute effort elsewhere. Furthermore, pelagic longline sets may drift over an additional 30 miles with prevailing currents in this region, requiring additional spatial buffers from

installations to prevent gear entanglements.

These areas are also seasonally fished by HMS private and for-hire recreational fishermen, including for numerous highly valuable HMS tournaments (Figure 5). HMS recreational fishing has an estimated annual economic impact exceeding $500 million, supporting approximately 4,500 jobs coastwide (https://www.fisheries.noaa.gov/feature-story/new-report-reveals-economic-impact-recreational-atlantic-highly-migratory-species). HMS recreational fishing in the Mid-Atlantic represents a significant portion of this total. The states adjacent to the Central Atlantic Call Areas (NJ to NC) account for 27% (1081) of HMS charter/headboat permit holders, 36% (8,473) of HMS private angling permit holders, and 26% (333) of HMS-focused fishing tournaments. Unlike recreational fisheries for smaller species, fishing for HMS such as blue marlin, yellowfin and bigeye tunas, thresher sharks, and others, requires thousands of yards of line, and during fights vessels often drift > 1 mile. Therefore, considerable spacing between neighboring vessels or other obstructions (such as wind turbines) is necessary when targeting HMS. Recreational vessels targeting HMS would be unable to fish within turbine arrays due to increased risks of gear entanglements, aggregation of fishing vessels, and resulting losses of hooked fish.

It should be noted that the vast majority of HMS fishing effort is not reported to the GARFO Vessel Trip Report program, but rather through separate logbook programs managed by the SEFSC and is not be well-represented in the attached socioeconomic analyses. Impacts to HMS resources, fisheries, and communities must not be overlooked. Additional information can be found in HMS Stock Assessment and Fisheries Evaluation (SAFE) Reports (https://www.fisheries.noaa.gov/atlantic-highly-migratory-species/atlantic-highly-migratory-species-stock-assessment-and-fisheries-evaluation-reports), and recreational data, including the Large Pelagics Survey, is available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

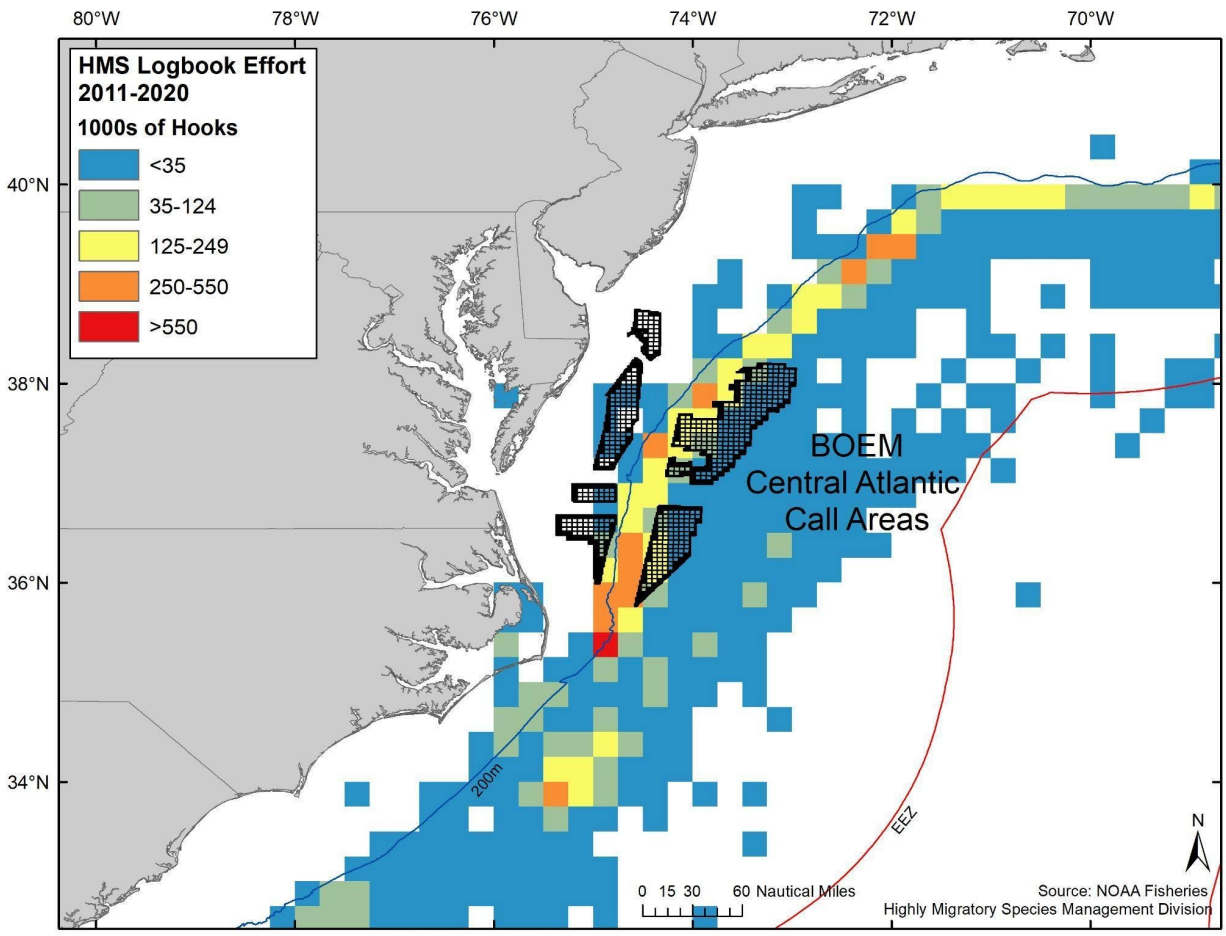


Figure 4. Commercial HMS fishing effort (primarily pelagic longlines targeting swordfish and tunas), 2011-2020, relative to the Central Atlantic Call Areas.

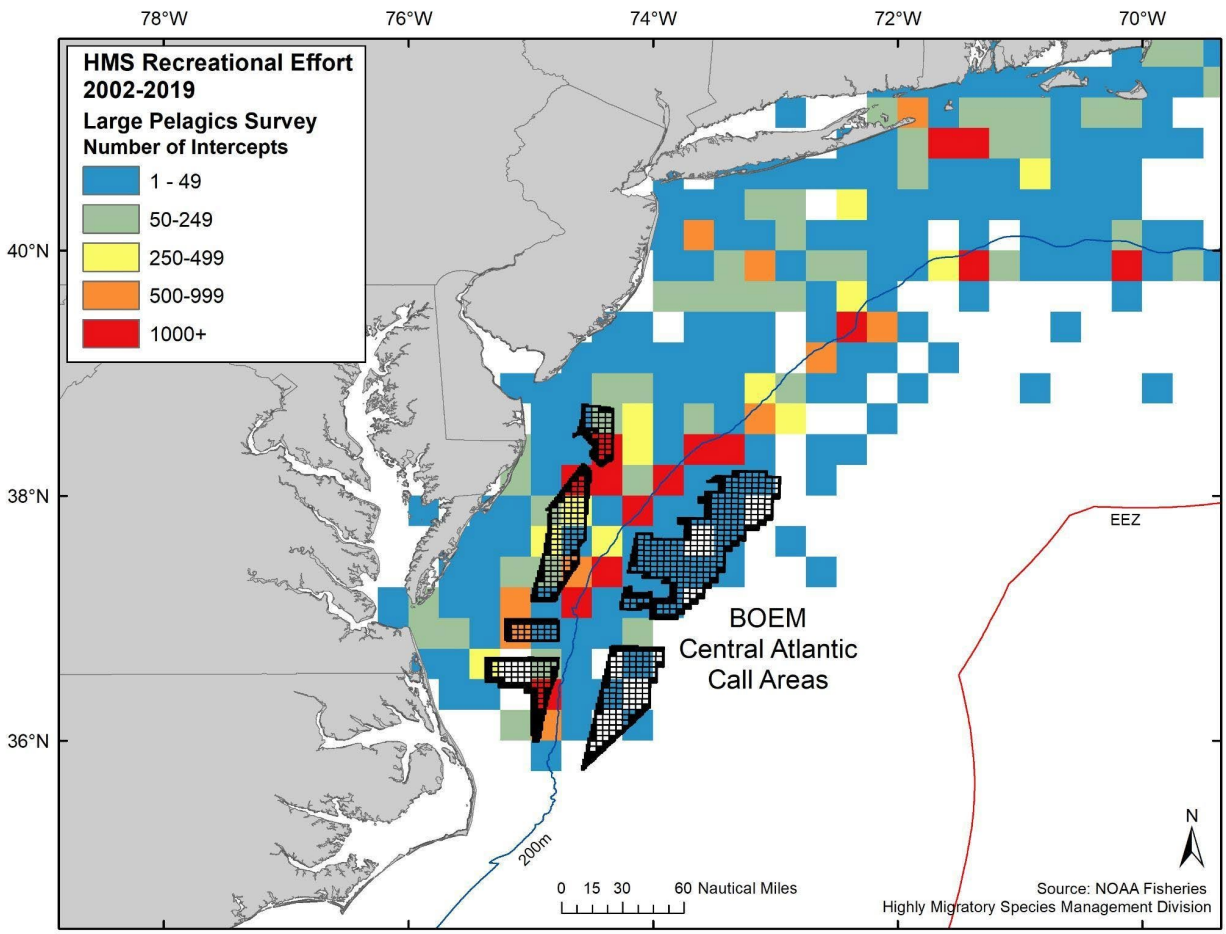


Figure 5. HMS recreational fishing effort sampled by the Large Pelagics Survey (LPS) program, 2002-2019, relative to the Central Atlantic Call Areas. Dockside survey intercepts are conducted from Maine through Virginia during June through October annually. Thus, the lack of effort reported from North Carolina southward is an artifact of the survey design, not a true absence of HMS fishing effort.

A number of the areas cover some of the highly productive recreational and charter fishing locations in the East coast, particularly the area immediately north of Oregon Inlet and the areas just West of the canyons. The areas offshore of Delaware, Maryland and Virginia near the Eastern extent of the Canyons are key fishing locations for HMS as well as for numerous bottom species such as tilefish and seabass.

Fishing Community Dependence and Environmental Justice

The cumulative social effects to coastal communities that are dependent on fishing should be considered before proposing more wind development lease areas. A sample of NOAA Fisheries Community Social Vulnerability Indicators (CSVI) data is provided in this letter, but further community data is found at: https://www.fisheries.noaa.gov/national/socioeconomics/social-indicators-coastal-communities. and data tool here: https://www.st.nmfs.noaa.gov/data-and-tools/social-indicators/. NOAA Fisheries' indices for poverty, population composition, and personal disruption can be used to better identify and understand Environmental Justice communities. The indicators show that fishing communities that are dependent upon commercial fishing are far more likely to have higher levels of poverty, have a larger percentage of minority and tribal populations, and/or have residents with less "personal capacity" to respond to change. Table 8 lists ports that have reported landings from within the Central Atlantic Call Areas (see Table 5) that also have environmental justice concerns or gentrification pressure. Based on the CSVIs, the ports reported score Medium-High in commercial fishing dependence (engagement and reliance) and score Medium-High to High in at least one indicator of environmental justice (poverty, population composition, personal disruption) and gentrification (housing disruption, retiree migration, urban sprawl). Many communities listed here have significant portions of landings from within the Call Areas, including Atlantic City and New Bedford. Many are smaller fishing communities that could be more vulnerable to changes (e.g., Wildwood, Hobucken, Engelhard, Beaufort) and show higher environmental justice scores and higher commercial fishing dependence scores.

Further analyses should be completed to understand the effects on food security, including the underserved populations' access to food supply. Additionally, little is understood on the potential effects of wind development on the already vulnerable seafood industry job market. Further research is needed on the multiplier effects to coastal communities and the regional economy on lost or displaced fishing revenue at all stages of cumulative development. These effects should be analyzed and any impacts expected should have transparent and clear mitigation strategies. BOEM should ensure that distributive justice is practiced with underserved communities given access and resources to participate in all stages of the wind energy development process, including future consideration of these planning areas.

PORT	EJ Concerns	Gentrification Pressure
ATLANTIC CITY, NJ	X	X
BARNEGAT LIGHT, NJ		X
BEAUFORT, NC	X	X
CAPE MAY, NJ		X
CHINCOTEAGUE, VA		X
ENGELHARD, NC	X	
FALL RIVER, MA	X	
HOBUCKEN, NC	X	
LEWES, DE	X	X
MONTAUK, NY		X
NEW BEDFORD, MA	X	X
NEW LONDON, CT	X	
NEWPORT NEWS, VA	X	
OCEAN CITY, MD		X
ORIENTAL, NC		X
POINT JUDITH, RI		X
POINT PLEASANT, NJ		X
SEA ISLE CITY, NJ		X
WILDWOOD, NJ	X	X

Table 8. Ports with landings from within the Central Atlantic Call Areas that are medium to highly dependent on commercial fishing and score medium-high to high in at least one indicator of EJ and Gentrification

NOAA Scientific Surveys

BOEM and NMFS have determined that the proposed offshore wind development would have major adverse impacts on NMFS scientific research and surveys, which will in turn result in adverse impacts on fishery participants and communities and on the American public who consume seafood. These impacts potentially include lower quotas for commercial and recreational fishermen due to increased uncertainty in the surveys' measures of abundance, which will lead to lower associated fishing revenue. Proposed new planning areas would also result in adverse effects on monitoring and assessment activities associated with recovery and conservation programs for protected species, including the critically endangered North Atlantic right whale. The interaction of the draft planning areas with NEFSC and SEFSC scientific surveys are described below.

The proposed 3.9 million acres of the Central Atlantic Call Areas overlap with eight NMFS/NEFSC scientific surveys: Spring and Autumn Bottom Trawl Survey, Atlantic Surfclam Survey, Ocean Quahog Survey, Scallop Survey, Ecosystem Monitoring Survey, North Atlantic Right Whale Surveys, Marine Mammal and Sea Turtle Ship-Based and Aerial Surveys, and the Large Coastal Shark Bottom Longline Survey. The majority of surveys only interact with Call Areas A-D, with the exception of the AMAPPS aerial survey which overlaps with Call Area E

and the AMAPPS shipboard overlaps all Central Atlantic Call Areas. However, it should be noted that submarine cable corridors that will be required remain undefined and these areas will interact with many NEFSC surveys. The minimum and maximum of individual survey strata overlap for all 8 surveys ranges from 1% to 100%. See below for maps of each science survey that intersects with the Central Atlantic Call Areas. The tables within each map provide the overlap for each Central Atlantic Call Area as well as the cumulative ranges of overlap with survey strata and the percent of total survey area overlap with current and anticipated offshore wind development areas (Gulf of Maine Planning Area, SC Call Areas, and existing lease areas) in the region. For example, the Central Atlantic Call Areas overlap with 15 scallop survey strata, ranging from 1-100% overlap. Call Area D interacts with the most strata. The total survey overlap with the Central Atlantic Call Areas represents 5% of the cumulative total (12%) overlap with wind development areas in the region. In addition to the NEFSC surveys, the eastern extent of Central Atlantic Call Area D has minimal overlap with the NMFS/SEFSC South Atlantic Deepwater Longline (SADL) Survey for tilefishes, snappers and groupers (see figures below). In addition, although Call Areas E and F have limited overlap with many fisheries independent surveys, potential changes in pelagic fisheries effort and potential habitat alterations due to offshore wind development may change the distribution, abundance, or vital rates of NMFS managed stocks which may necessitate the need to conduct new and expanded surveys in these offshore areas.

Currently, the NEFSC right whale survey intermittently covers the northernmost part of the inshore Central Atlantic Call Areas. The NEFSC is looking to expand survey efforts along the mid-Atlantic in the near future to support necessary management of this declining species.

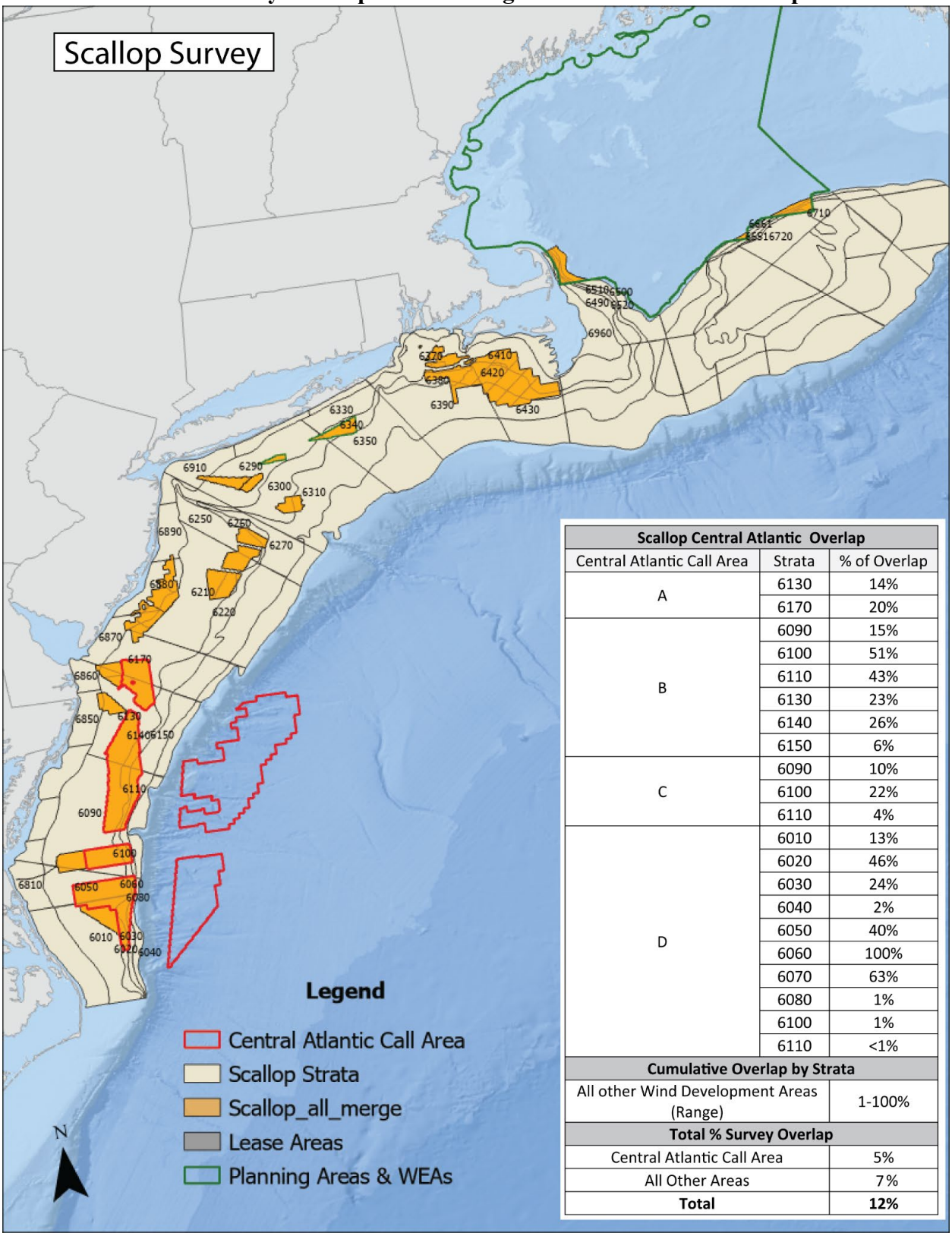
Additional analyses/recommendations:

- BOEM should work with the NMFS NEFSC and SEFSC to understand the full extent of overlaps with scientific surveys along the Atlantic Coast, including in existing and proposed lease areas, the Central Atlantic Call Areas, and future planning areas.

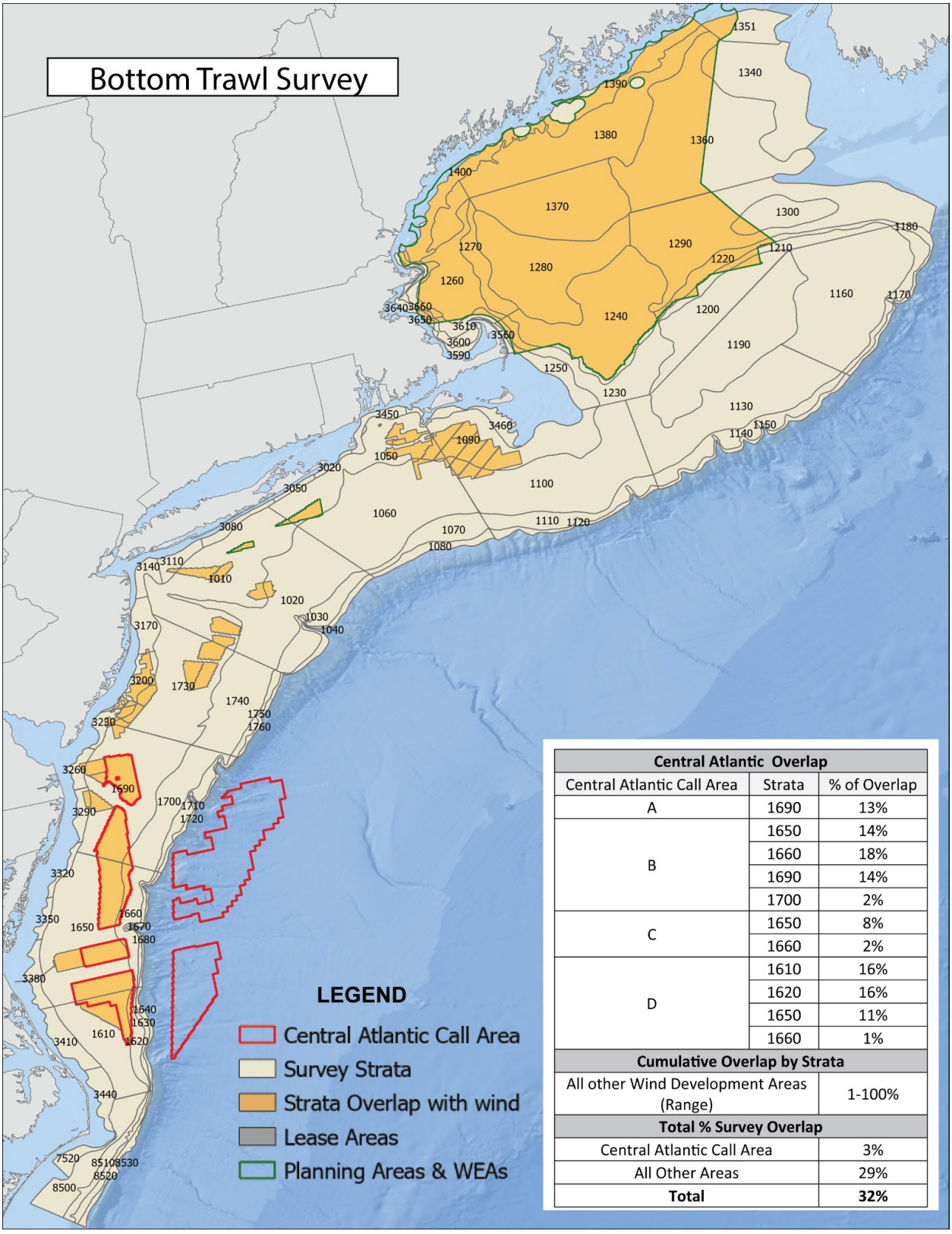
- There are efforts underway to examine the extent of impact on our surveys and determine how to mitigate for those impacts, so we cannot determine at this time if there are specific areas that should be removed from the Call Areas to avoid or minimize survey impacts.

- We encourage BOEM to suspend designation of the planning area boundaries until the establishment of regional survey mitigation programs in the Northeast and Southeast Regions as described in the Joint BOEM and NMFS Draft Federal Survey Mitigation Implementation Strategy. Having certainty on how NMFS regional survey mitigation efforts will be conducted and resourced should be an essential precursor to future wind energy development throughout the Atlantic Coast.

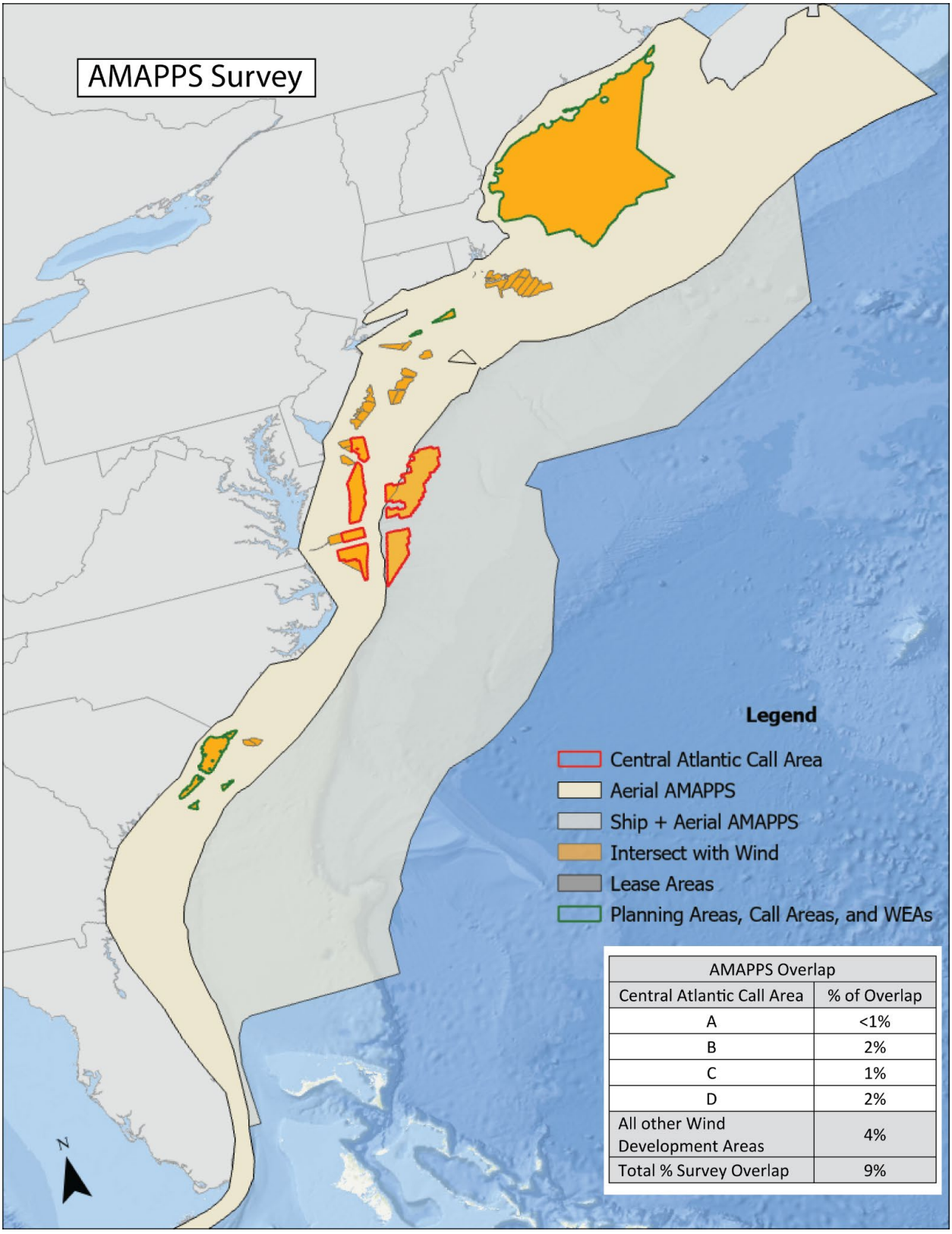
NOAA Scientific Survey Overlap with Existing and Planned Wind Development Areas



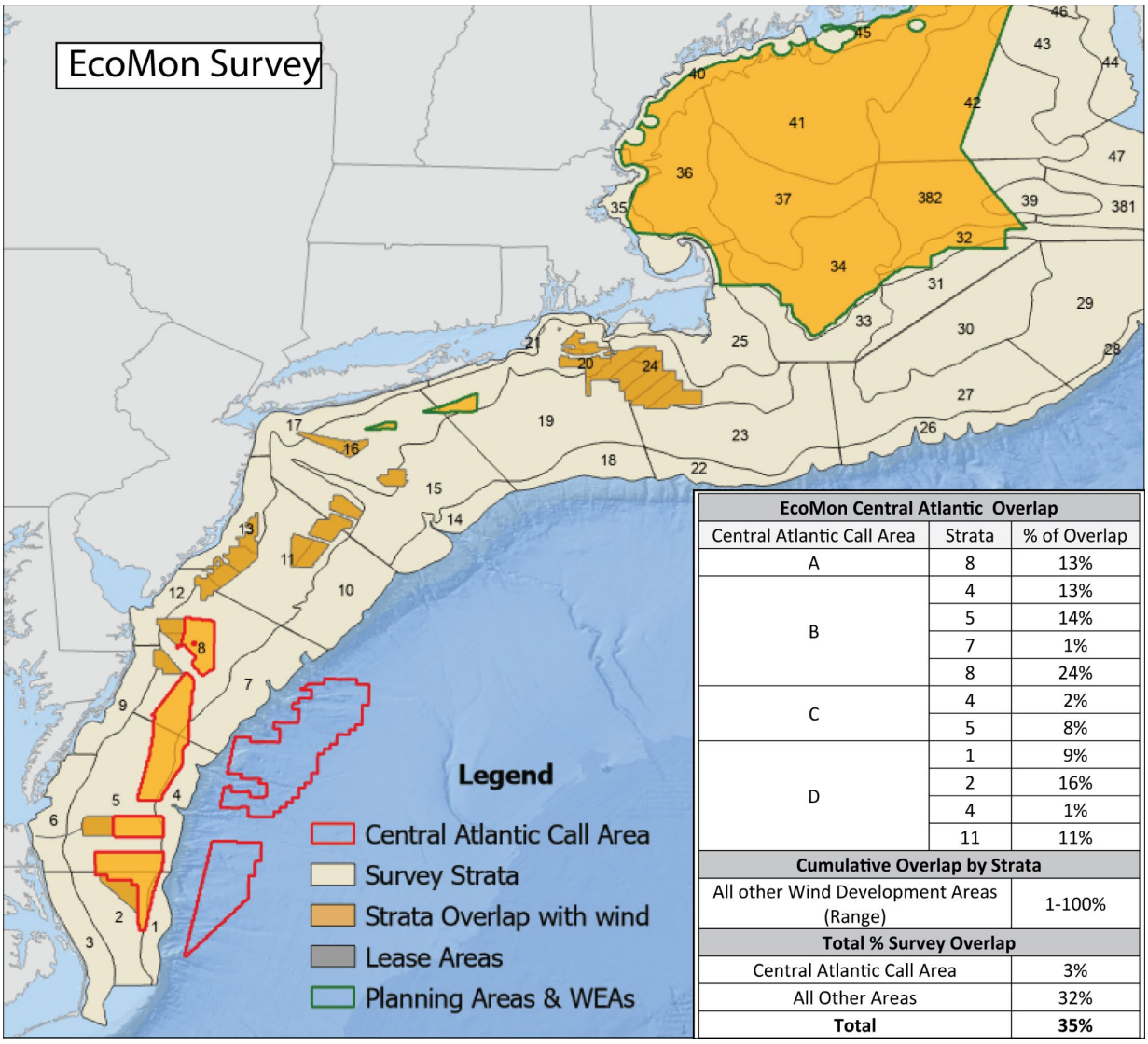
Scallop Central Atlantic Overlap		
Central Atlantic Call Area	Strata	% of Overlap
A	6130	14%
	6170	20%
B	6090	15%
	6100	51%
	6110	43%
	6130	23%
	6140	26%
	6150	6%
C	6090	10%
	6100	22%
	6110	4%
D	6010	13%
	6020	46%
	6030	24%
	6040	2%
	6050	40%
	6060	100%
	6070	63%
	6080	1%
	6100	1%
	6110	<1%
Cumulative Overlap by Strata		
All other Wind Development Areas (Range)		1-100%
Total % Survey Overlap		
Central Atlantic Call Area		5%
All Other Areas		7%
Total		**12%**



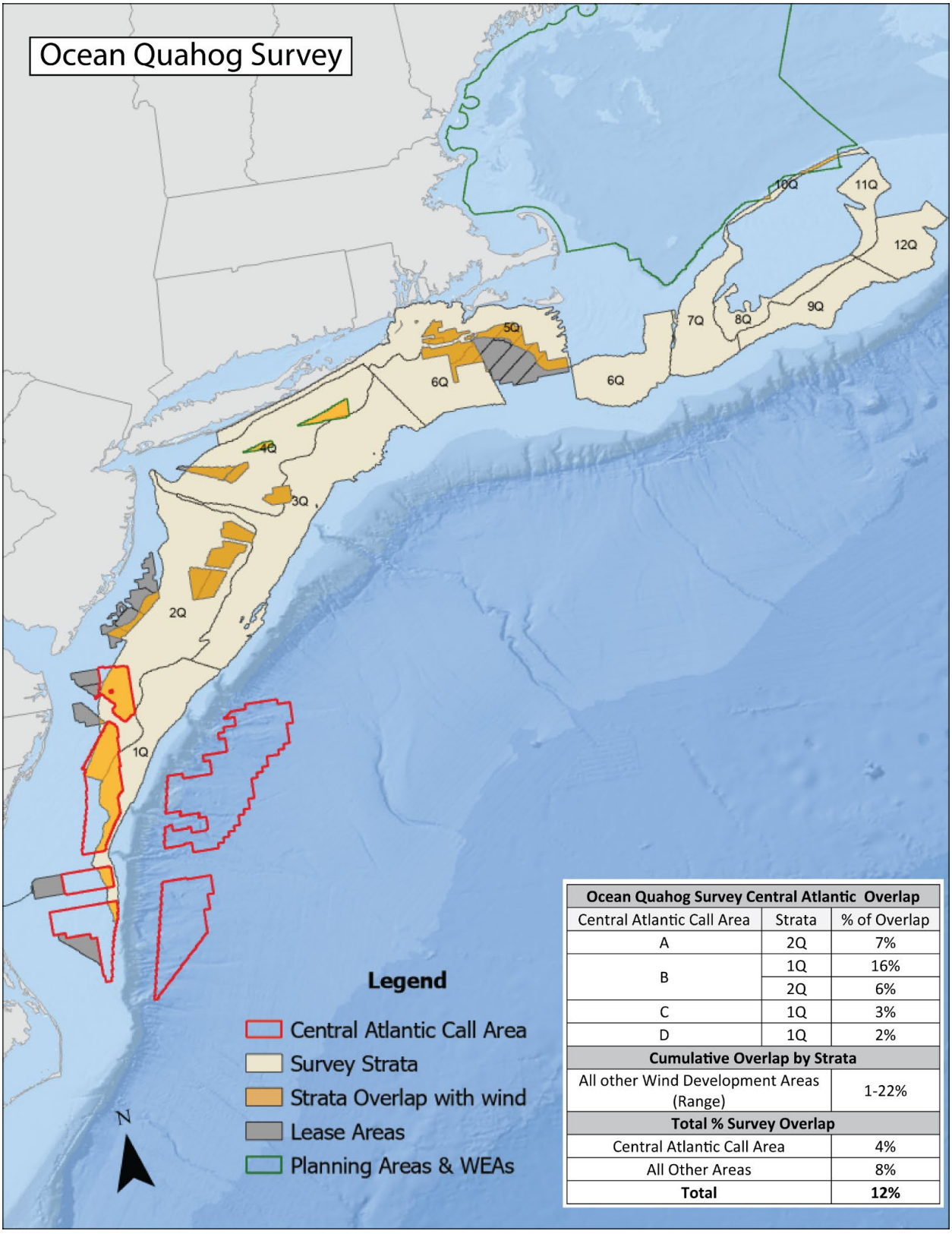
Central Atlantic Overlap		
Central Atlantic Call Area	Strata	% of Overlap
A	1690	13%
B	1650	14%
	1660	18%
	1690	14%
	1700	2%
C	1650	8%
	1660	2%
D	1610	16%
	1620	16%
	1650	11%
	1660	1%
Cumulative Overlap by Strata		
All other Wind Development Areas (Range)		1-100%
Total % Survey Overlap		
Central Atlantic Call Area		3%
All Other Areas		29%
Total		**32%**



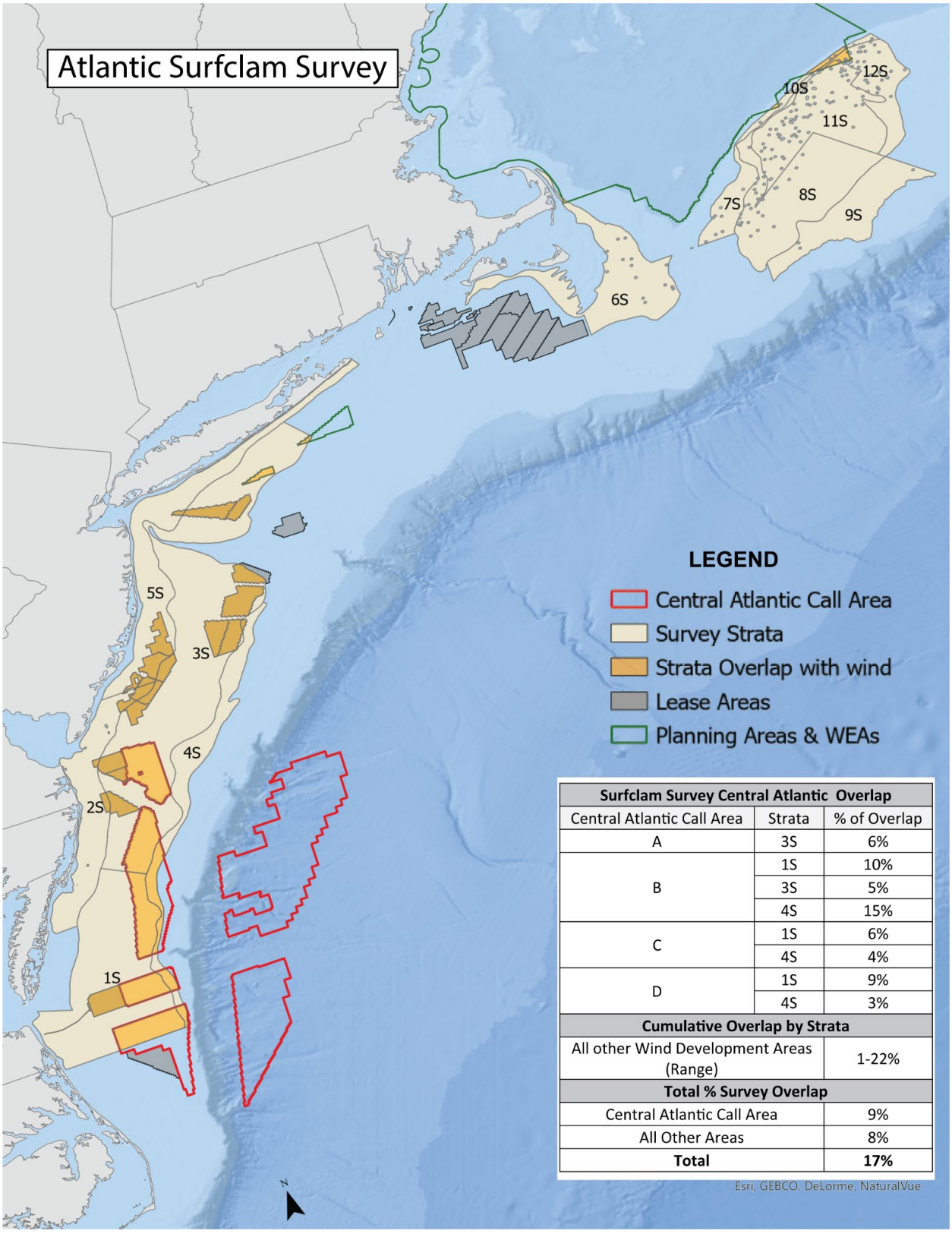
AMAPPS Overlap	
Central Atlantic Call Area	% of Overlap
A	<1%
B	2%
C	1%
D	2%
All other Wind Development Areas	4%
Total % Survey Overlap	9%



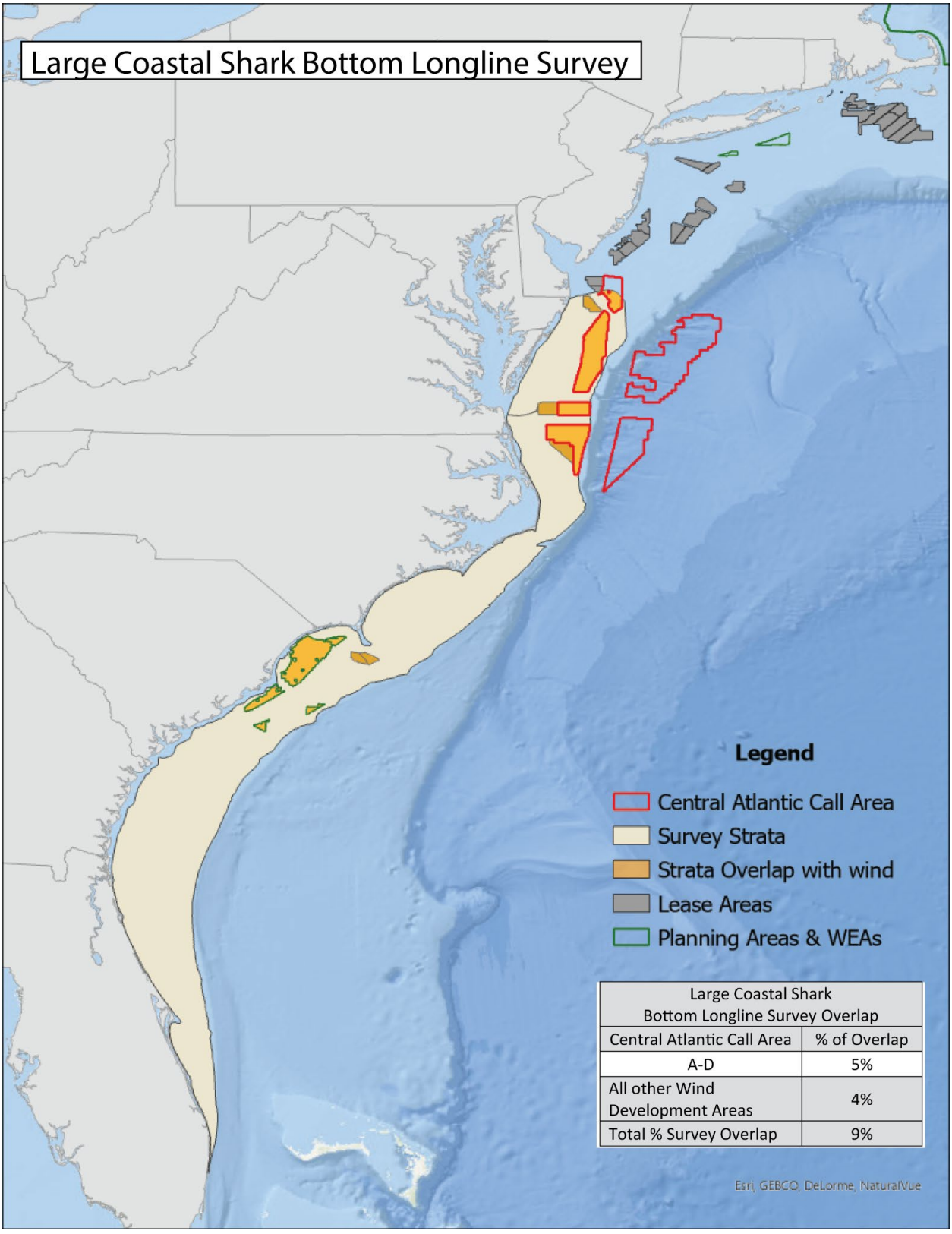
EcoMon Central Atlantic Overlap		
Central Atlantic Call Area	Strata	% of Overlap
A	8	13%
B	4	13%
	5	14%
	7	1%
	8	24%
C	4	2%
	5	8%
D	1	9%
	2	16%
	4	1%
	11	11%
Cumulative Overlap by Strata		
All other Wind Development Areas (Range)		1-100%
Total % Survey Overlap		
Central Atlantic Call Area		3%
All Other Areas		32%
Total		**35%**



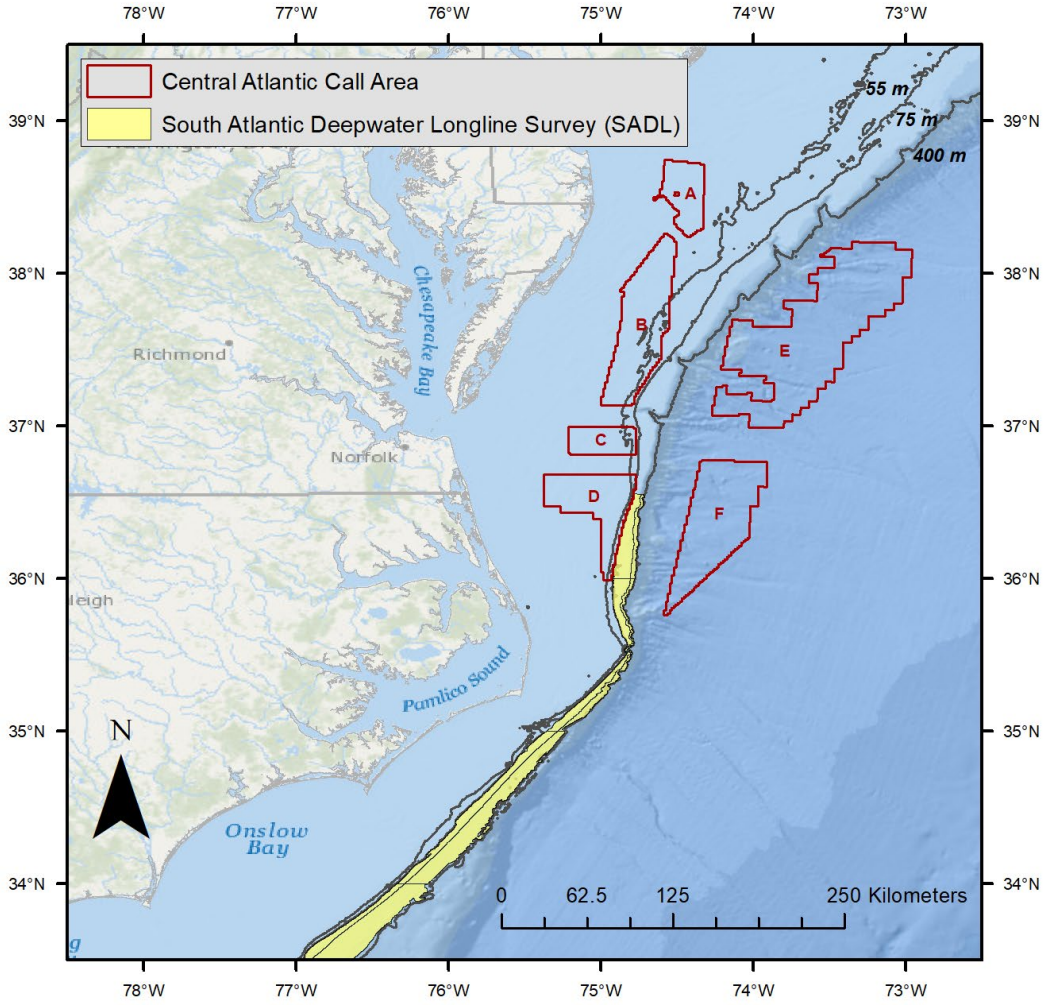
Ocean Quahog Survey Central Atlantic Overlap		
Central Atlantic Call Area	Strata	% of Overlap
A	2Q	7%
B	1Q	16%
	2Q	6%
C	1Q	3%
D	1Q	2%
Cumulative Overlap by Strata		
All other Wind Development Areas (Range)		1-22%
Total % Survey Overlap		
Central Atlantic Call Area		4%
All Other Areas		8%
Total		**12%**



Surfclam Survey Central Atlantic Overlap		
Central Atlantic Call Area	Strata	% of Overlap
A	3S	6%
B	1S	10%
	3S	5%
	4S	15%
C	1S	6%
	4S	4%
D	1S	9%
	4S	3%
Cumulative Overlap by Strata		
All other Wind Development Areas (Range)		1-22%
Total % Survey Overlap		
Central Atlantic Call Area		9%
All Other Areas		8%
Total		**17%**



Large Coastal Shark Bottom Longline Survey Overlap	
Central Atlantic Call Area	% of Overlap
A-D	5%
All other Wind Development Areas	4%
Total % Survey Overlap	9%


Central Atlantic Call Area
South Atlantic Deepwater Longline Survey (SADL)
55 m
75 m
400 m
A
B
C
D
E
F
Richmond
Norfolk
Chesapeake Bay
Pamlico Sound
Onslow Bay
N
0
62.5
125
250 Kilometers
78°W
77°W
76°W
75°W
74°W
73°W
39°N
38°N
37°N
36°N
35°N
34°N

Appendix B
Fisheries and Socioeconomic Information for Proposed Central Atlantic Call Areas
(see attached files)