



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

October 17, 2022

Ms. Karen J. Baker
Chief, Office of Renewable Energy Programs
Bureau of Ocean Energy Management
United States Department of the Interior
45600 Woodland Road
Sterling, Virginia 20166

RE: Cooperating agency review comments on the Draft Environmental Impact Statement for the Revolution Wind Project

Dear Ms. Baker:

We reviewed the Draft Environmental Impact Statement (DEIS) regarding the Construction and Operations Plan (COP) submitted by Revolution Wind, LLC (Revolution Wind); this review followed our earlier cooperating agency review of the preliminary DEIS (PDEIS). The Revolution Wind Project includes a proposal to construct up to 100 wind turbine generators (WTGs), up to 2 offshore high voltage alternating current substations with an interconnecting cable, inter-array cables, offshore export cables, and an onshore substation with connections to the existing electrical grid in Rhode Island. The WTGs and offshore substations would be located within Lease Area OCS-A 0486 approximately 15 miles southeast of Point Judith, Rhode Island. With this letter and the attachment, we provide our comments on the DEIS. In short, and as explained below, while we appreciate that some improvements have been made to the DEIS since our preliminary review, many of our concerns remain unaddressed.

In response to the September 2, 2022, Notice of Availability, we conducted this review as a cooperating agency with legal jurisdiction and special expertise over marine trust resources including resources protected by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and section 7 of the Endangered Species Act (ESA) under which we also serve as a consulting agency. We are also an action agency for this project to the extent that NOAA's National Marine Fisheries Service (NMFS) provides Incidental Take Authorizations (ITA) under the Marine Mammal Protection Act (MMPA). If we determine the document is sufficient, we will rely on and adopt your Final EIS (FEIS) to satisfy our independent legal obligations to prepare an adequate and sufficient analysis under the National Environmental Policy Act (NEPA) in support of our proposal to issue the ITA for the proposed project. If NMFS does not deem the EIS sufficient for adoption, we would need to conduct an independent NEPA analysis to evaluate the impacts of the proposed issuance of the ITA, which would add significant time to the permitting timeline.

In our dual roles as both a cooperating and adopting agency, we provided comments on May 23, 2022, during an interagency review of the PDEIS. While some of our comments were addressed, a significant portion of the comments we provided during the cooperating agency review are not reflected or resolved in the current version of the DEIS. Thus, we remain concerned with the analysis of impacts from the project on NOAA trust resources. Below we elaborate on these



issues. Additional comments and examples are included in the attached spreadsheet (Attachment A). We encourage you to resolve these issues in the Final EIS.

No Action Scenario and the Approach to the Alternatives Analysis

Consistent with comments we provided on other recent offshore wind project EISs, we remain concerned with the approach to the alternatives analysis, including the No Action Alternative. Specifically, this approach leads to an incomplete description and analysis of impacts on NOAA trust resources from activities and trends in the baseline, as well as from the proposed action and alternatives. This approach skews the impacts analysis by minimizing and diluting the direct and indirect effects of the proposed action and action alternatives, by reducing the distinction in impacts among alternatives such that there is no material difference, and by conflating the cumulative impacts analysis with impacts considered in the No Action Alternative. As a result, the evaluation of cumulative impacts does not reflect the true scale of regional wind development; rather, it suggests that cumulative impacts will be similar to the direct and indirect impacts of the proposed action. We continue to recommend that BOEM evaluate a “No Action” scenario that does not include all future planned wind and non-wind activities. We understand and appreciate that you are in the process of updating the structure of your EIS documents and we recommend that you continue to work with us on this issue. We consider this to be a critical issue to resolve, as ultimately we will need to independently evaluate the structure and content of BOEM’s EIS to determine whether we will be able to adopt the BOEM NEPA document or develop our own to support our MMPA authorization decision.

The DEIS does not fully evaluate each alternative and, in many cases, the analysis does not provide any meaningful distinctions between the impacts of the action alternatives. While the document considers alternatives that would reduce the project size by one-third to one-half, BOEM concludes that there are no differences between the effects of the proposed action and any other action alternatives. We disagree with the conclusion that impacts to NOAA trust resources would be the same among all alternatives considered - impact minimization alternatives are included and evaluated based on the expectation that they will result in a measurable and meaningful reduction in substantial impacts to resources. For example, Alternative C (habitat impact minimization alternative), in combination with Alternative F (larger turbine size) could avoid most impacts to complex habitats and avoid areas of known Atlantic cod spawning activity; yet those reductions in impacts are not meaningfully discussed, analyzed, or explained. Alternatives C through F would result in a lower magnitude of noise exposure for marine mammals (due to the installation of fewer turbines), which could easily be quantified to demonstrate the reduced impacts associated with scaling down project size; however, that analysis is not included in the document. Moreover, the DEIS appears to lack any analysis of Alternative F, and while BOEM has not identified a specific layout for this alternative, the reduction in area and increased size of the turbines should be incorporated into the impacts analysis and should, at a minimum, be qualitatively discussed.

In addition to the structure of the No Action alternative, we have identified two other elements that contribute to the lack of distinction among alternatives: (1) The scale of the geographic area analyzed for each resource; and (2) the significance criteria definitions and their application to the various resources. For example, the approach to the area of analysis for each resource is unclear. The DEIS explains that the geographic analysis area - a broader scale - is used for cumulative impacts, but for direct and indirect effects of the proposed action, impacts are

predicted presumably on a finer scale defined by the Impact Producing Factor (IPF). It is unclear in Chapter 3 how this geographic analysis approach is applied on an IPF or resource basis as the parameters in many cases are not well-defined. Moreover, the importance of the temporal duration of impacts to resources is not clearly explained through the significance criteria or applied to the analysis in the document.

The significance criteria definitions remain vague, particularly the distinction between moderate and major impacts. In addition, intensity conclusions rely on elements of mitigation, but fail to provide a thorough analysis of those mitigation measures or an indication as to how and to what extent they will be required. The significance criteria, in combination with the ill-defined area of analysis for each resource, do not appear to adequately consider variations in the intensity or scale of impacts and how these factors may affect resources at the project, regional, or population levels. Consideration of both the scale and intensity of impacts in the definition and application of the significance criteria is necessary to support accurate impact conclusions and provide clear distinctions among action alternatives. We previously coordinated with BOEM to develop agreed upon resource-specific significance criteria for marine mammals; these criteria have not been incorporated but they should be applied in this analysis.

Additionally, when applying significance criteria to reach an impact determination, the associated analysis should include sufficient detail to support those impact conclusions. Currently the analysis of effects does not consider the loss of ecosystem functions. While the quantitative loss of environmental elements (e.g., complex habitat) may be presented, overall the analysis does not provide a clear picture of what the effects of those spatial impacts and temporal losses mean for NOAA trust resources and the communities that rely on them. The current approach results in an analysis that makes the benefits and drawbacks among these alternatives indistinguishable.

Evaluation of Impacts to Complex Habitats and Cod Spawning on Cox Ledge

The project substantially overlaps with extensive highly complex and diverse habitats on Cox Ledge as well as known spawning activity for Atlantic cod, a species of biological, ecological, economic, and cultural significance to this region. In June 2022, the New England Fishery Management Council approved a new habitat area of particular concern (HAPC) that overlaps with the Revolution Wind Project. This action was approved to protect complex habitats and cod spawning habitats from negative impacts associated with offshore wind development. While we recognize information related to the new HAPC designation, complex habitats on Cox Ledge, and Atlantic cod spawning activity was added since our PDEIS review, the analysis of impacts to these resources includes inconsistent and inaccurate habitat calculations with limited details, and appears to conflate the new HAPC for complex habitats with cod spawning habitats. Further, there are missing analyses and the DEIS lacks support for conclusions related to adverse impact determinations. For example, while there are multiple activities included under seabed preparation that would occur within known cod spawning aggregations, including boulder plows, grabs, and grapple runs required to clear the cobble/boulder habitats on Cox Ledge, there is no analysis of impacts from seabed preparation on Atlantic cod spawning activity. Further, these activities would result in a substantial alteration of highly complex cobble and boulder habitats on Cox Ledge. The significance of these proposed alterations, in the context of the regional setting of Cox Ledge, is not addressed in the document. We disagree with BOEM's assessment that impacts to benthic habitats, finfish, and EFH would be minor to moderate; this conclusion is

not supported by the text in the document, and is not consistent with the best available or most current science.

The DEIS does not include an analysis of all reasonable mitigation measures we suggested for your consideration to help minimize impacts to cod spawning activity. For example, we identified a time of year restriction for construction activities to protect spawning cod, yet this has not been analyzed. Rather, it suggests a pile-driving time of year restriction for the North Atlantic right whale is sufficient to protect cod, which is contrary to the best available science, including the most recent studies in this area¹, as the time of year that cod spawning occurs on Cox Ledge (November - April) does not entirely overlap with the January - April right whale pile driving restriction. Furthermore, BOEM is suggesting that acoustic monitoring for cod during the spawning season to trigger mitigative action is sufficient to protect spawning activity; this is based on assumptions of detection success with an unproven and untested method². We have concerns that adverse impacts to spawning activity for Atlantic cod and a reasonable range of mitigation measures to reduce impacts are not fully analyzed in the document.

NMFS considers the proposed action to have unmitigated major adverse impacts to EFH and Atlantic cod as the proposed action includes full build out of the lease area, including Cox Ledge, and the proposed mitigation measures would not protect Atlantic cod spawning. Based on our review of the proposed action, we anticipate project and regional-scale adverse impacts to habitats on Cox Ledge and population-level impacts to Atlantic cod in Southern New England; by BOEM's definition, this is a major adverse impact to benthic habitat, finfish, and EFH.

Mitigation Measures

As we have highlighted in past comments, the evaluation and implementation of mitigation measures is a critical component of the analysis in any NEPA document. We recommend the FEIS analyze and describe the anticipated impacts of the proposed action, mitigation measures considered to be part of that action, the effectiveness of these measures, and the expected impacts if mitigation methods are applied. This structure is necessary to support the final impact determinations. An important element of that analysis is the likelihood (or not) that such measures will be committed to, adopted, and implemented.

The mitigation and monitoring measures for the proposed action as well as additional measures are only briefly referenced in the document with little analysis of their effectiveness. There are several instances where assumptions about the success of mitigation measures are made despite the lack of evidence or necessary associated actions. This is the case for mitigation for cod spawning impacts, as described above, for fisheries impacts, and for impacts on NOAA fisheries scientific surveys. Specifically, the document unreasonably relies on the anticipated success of fisheries mitigation guidance that has not yet been finalized or implemented by BOEM. Moreover, the draft NMFS/BOEM Federal Survey Mitigation Implementation Strategy has neither resulted in developed mitigation plans for any affected federal survey, nor acquired the

¹ Van Parijs pers.comm. related to ongoing study - Mapping the distribution of habitat use of soniferous fish on Cox's ledge, with a focus on Atlantic cod spawning aggregations (BOEM. Award #M19PG00015)

² Note passive acoustic monitoring glider must be within 0.1 km of spawning activity to detect cod grunts. See Van Parijs et al 2021; NOAA and BOEM Minimum Recommendations for Use of Passive Acoustic Listening Systems in Offshore Wind Energy Development Monitoring and Mitigation Programs.

necessary funding to support such efforts. Therefore, the anticipated success of these mitigation strategies is premature and unreasonably optimistic.

The DEIS also still contains sections where BOEM is relying on mitigation measures to reduce impacts but does not specify which of these measures, if any, are factored into the impact determination. For example, in the analysis of impacts to marine mammals from nighttime pile driving (an activity that is part of the developer's proposed action), it is unclear in the document whether BOEM's impact determination considered only those mitigation measures proposed by the developer as part of the COP, additional time-of-day pile driving restrictions that may be imposed by BOEM as a condition of COP approval, or any additional mitigation measures. While we understand that a final commitment to additional measures cannot be made until the ROD and COP approval decision stage, the FEIS should be explicit as to what additional mitigation measures beyond the applicant's proposed measures are anticipated to be required and which measures were relied on in reaching the impact conclusions.

Analytical Issues

During our review of the PDEIS in May, we highlighted several analytical issues that we recommended be addressed prior to publication of the DEIS. Unfortunately, we found that several of the analytical comments we made during that review have not been addressed in this latest draft. In addition to addressing the comments herein and in the attached spreadsheet, we recommend additional review of our PDEIS comments so these issues can be resolved in the FEIS.

Support for Conclusions and Use of Best Available Science: Consistent with comments raised on the PDEIS, in many instances, the DEIS fails to incorporate and consider the best available scientific information to support impact determinations. This results in mischaracterization of both NOAA trust resources and project impacts to those resources. While the DEIS includes some additional discussion of resources, the document is not comprehensive and does not apply those findings to an examination of the proposed action and alternatives. As a result, conclusions in the document related to impact determinations lack supporting rationale. An example of this is the analysis of impacts from oceanographic wake effects and hydrodynamic changes from the presence of structures. The DEIS appears to exclude all existing peer-reviewed literature related to oceanographic wake effects from offshore wind projects, basing the analysis solely on the Johnson et al. 2021 report, which has not been peer reviewed. While the lack of peer review is not necessarily determinative of whether a paper may be considered part of the best available scientific information, our Northeast Fisheries Science Center has reviewed this report and identified several flaws, including poor model skill, weak model validation, an over-emphasis on mean values, and an inappropriate interpretation of model results as they apply to fisheries. Nevertheless, this single source is used in the DEIS as justification to dismiss impacts from oceanographic and atmospheric effects to fisheries and other NOAA trust resources. The recent Synthesis of the Science white paper, a technical report co-led by BOEM, NOAA, and RODA, addresses hydrodynamic impacts and includes the findings of Johnson et al. 2021 alongside peer-reviewed literature. The best available science suggests that wind wakes may have broad-scale effects on biological and physical oceanography with implications for all trophic levels; this contrasts with the conclusion reached by the analysis in the DEIS. The best available science should be incorporated into the FEIS.

Fisheries Analysis: The fisheries data used in the analysis at large are incomplete, outdated, and do not reflect all of the metrics we suggested BOEM evaluate during our review of the PDEIS. The analysis does not consider impacts to fisheries not fully captured by Vessel Trip Report (VTR) data, including highly migratory species, lobsters, and conch, and does not discuss the number of vessels and trips affected by each alternative. Further, some of the data used to analyze project areas reflect outdated shapefiles on our website from 2021 including the Revolution Wind project area that is smaller than that identified in the EIS (see attached technical comments). Thus, the project-specific and cumulative impact analysis should be updated in the Final EIS, as necessary, based on the most accurate project areas.

Missing Analyses: There continue to be important analyses and conclusions that are absent from the DEIS, many of which were identified in our PDEIS review. For example, while the document indicates there will be unexploded ordnance (UXO) removal and/or detonation (at least 13 in total), there is no information related to where these may occur or during what time of year; yet impact conclusions suggest effects will be minimal, with little supporting analysis. As noted in our PDEIS comments, there are missing IPFs considered for ESA-listed finfish and sea turtle species, including fisheries surveys and vessel traffic. These activities can result in injury and mortality of protected species and the absence of these analyses is a critical omission that should be resolved in the FEIS. The document is also missing an analysis of impacts from nighttime pile driving, despite it being a component of the proposed action. The DEIS also does not include social impact evaluations (non-market impacts) or estimate overall economic impacts to shoreside support services and fishing communities due to potential changes in fisheries operations, the latter of which is necessary to comprehensively evaluate potential compensation needs for this project. All anticipated changes to the marine environment and fishing communities from the Revolution Wind project and other projects should be explicitly discussed and the potential impacts examined in the FEIS.

Geographic Analysis Area: As noted above, the analysis is complicated by the geographic analysis areas that vary by resource. While additional text and rationale were provided since we raised this concern in the PDEIS, it is still unclear how or why these geographic areas were selected. For example, the area of analysis for marine mammals covers the entire range, including into Canada; however, there is no indication that vessel traffic is originating in Canada. In addition, impacts to benthic resources appear to be limited within the lease area; yet extensive areas outside the lease area (in an attempt to connect survey locations) are included in the analysis area. This creates confusion and skews the analysis, as the geographic analysis areas do not appear connected to the IPFs. The geographic scope of potential project effects may vary depending on the IPFs and the presence of resources being impacted by those IPFs. This should be reflected in the analysis so impacts of the proposed action and each alternative can be accurately evaluated and clearly understood.

NOAA Scientific Surveys

As we have discussed previously, we have significant concerns related to the major impacts offshore wind will have on our NOAA scientific surveys. Regional offshore wind development projects are the primary cause of immediate impacts on NOAA scientific surveys and research due to the presence of structures, as noted in the DEIS. The DEIS states that implementation of the NMFS/BOEM Federal Survey Mitigation Strategy would reduce effects on commercial fisheries and for-hire recreational fishing from a major adverse impact to a long-term moderate

adverse impact level. This conclusion is not supported nor is it consistent with the best available analysis conducted by NMFS. The DEIS does not include any discussion nor details on how these major impacts will be mitigated at the project level other than referencing the ongoing BOEM/NMFS survey mitigation efforts, suggesting that the project would comply with mitigation measures set forth in the federal survey mitigation strategy. However, the mitigation strategy is not currently resourced and does not set requirements or standards with which projects must comply. In order to minimize the major adverse impacts expected on scientific surveys, we recommend mitigation measures be required and implemented before development moves forward, consistent with our joint survey mitigation efforts. As stated in the DEIS, we will continue to work with you to ensure these details can be included in the FEIS.

Conclusion

We acknowledge and appreciate the improvements that have been made to the Revolution Wind DEIS since our cooperating agency review of the preliminary draft. However, we continue to have outstanding concerns as highlighted in this letter and in our attached technical comments. We are committed to achieving the Administration's goals of expeditiously developing renewable offshore wind energy in a manner that is sustainable and conserves marine resources. We urge you to carefully review these comments and those in the attachment and address these significant issues prior to issuing the FEIS. If you have any further questions, please contact Sue Tuxbury (susan.tuxbury@noaa.gov).

Sincerely,



Michael Pentony
Regional Administrator

Attachment

cc: Katherine Segarra, BOEM
Trevis Olivier, BOEM
Jessica Stromberg, BOEM
Brian Krevor, BOEM
Brian Hooker, BOEM
Sophie Godfrey-McKee, NOAA
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Naomi Handell, USACE
Mary Krueger, NPS
David Simmons, FWS

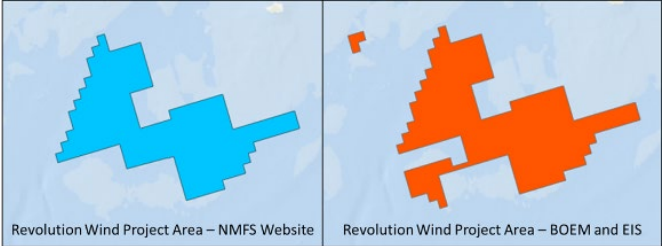
Cindy Whitten, FAA
Lisa Engler, MACZM
Jeffrey Willis, RICRMC

Attachment A – NOAA Fisheries Technical Comments on the Revolution Wind DEIS

Section #	PDF Page # (x/2386)	Comment
		Chapter 1 - Introduction
1	37	Please add the following footnote after the reference to the regulations, "(40 Code of Federal Regulations [CFR] 1500–1508": "This EIS is being prepared using the 2020 CEQ NEPA Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 Fed. Reg. at 43372-73 (§§ 1506.13, 1507.3(a)). This EIS began on April 30, 2021 and accordingly proceeds under the 2020 regulations."
1.2	42	Additional language provided in the Purpose and Need does not reflect the agreed upon template language previously coordinated with BOEM, and its relevance is not clear. Specifically, the final paragraph on this page states, "In making this determination, the Secretary retains wide discretion to weigh those goals as an application of their technical expertise and policy judgment (DOI 2021). This determination is made at the record of decision (ROD) stage. If BOEM disapproves the Revolution Wind COP, per 30 CFR 585.628(f)(2), BOEM will inform Revolution Wind of the reasons and allow Revolution Wind an opportunity to resubmit a revised COP addressing the concerns identified." Please ensure that the P&N is consistent with language previously agreed upon and that included language is clearly relevant. This language may be more applicable in sections of the document discussing Regulatory Frameworks (1.3).
1.2	43	Please replace this sentence with the following for accuracy, "The National Oceanic and Atmospheric Administration’s (NOAA’s) National Marine Fisheries Service (NMFS) received a request for authorization to take marine mammals incidental to construction activities related to the Project, which NMFS may authorize under the Marine Mammal Protection Act (MMPA)."
1.2	43	Please ensure that the P&N is consistent with previously agreed upon language and reads as follows: "The purpose of the NMFS action—which is a direct outcome of Revolution Wind's request for authorization to take marine mammals incidental to specified activities associated with the Project (e.g., pile driving)—is to evaluate (insert developer name)’s request pursuant to specific requirements of the MMPA and its implementing regulations administered by NMFS, considering impacts of the applicant’s activities on relevant resources, and if appropriate, issue the permit or authorization."
1.6	46	We request that reasonably foreseeable impacts be defined based on the 2020/22 CEQ regulations (40 CFR 1508.1) under which this document is written, ""Reasonably foreseeable means sufficiently likely to occur such that a person of ordinary prudence would take it into account in reaching a decision."" The text here, ""Reasonably foreseeable can occur from individually minor but collectively significant actions that take place over time"" is the definition of ""cumulative impacts"" as defined in both the 1978 (40 CFR 1508.7) and 2022 (40 CFR 1508.1) regulations. ".... Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."" Additionally, cumulative impacts should be incorporated in a separate analysis from the No Action Alternative.
		Chapter 2 – Alternatives
2.1.1	49	NMFS understands agencies are currently working together to address this comment. Similar to the Ocean Wind DEIS and Revolution Wind DEIS, the No Action alternative presumes the full approval of all foreseeable wind development projects with the exception of the proposed action, enabling the PDEIS to diminish the intensity of the project’s impacts within a context where all other potential projects are assumed to have been approved. Essentially, the No Action Alternative conflates the description of the baseline with a cumulative effects analysis. Importantly, this minimizes the impacts of the proposed action and action alternatives because they are compared to the No Action Alternative with a significantly inflated baseline.
2.1.3	85	The description of this alternative should be revised to include cod spawning activity. While the description of C2 includes cod spawning activity, as discussed with BOEM and illustrated in the prioritization of areas for turbine removal, the primary focus of the alternative development was to minimize impacts to cod spawning activity in addition to complex habitat. Cod spawning activity should be accurately described as a primary focus for this alternative.

2.1.3	85	The description of the alternatives should be revised to exclude the statement "where micrositing is not possible." Micrositing was not considered in the development of this alternative and is not factored into the selection of turbines for removal. If necessary, the potential for micrositing turbines that would not be removed under this alternative into soft bottom habitats can be mentioned as an additional mitigation measure.
2.1.3	85	The reference to coordination with NMFS should be clarified. Specifically, we did not recommend narrowing the alternative to two options, rather we reviewed and agreed that the configurations, as presented in the DEIS, were reasonable layout options for turbine removal considering the priorities of avoiding impacts to cod spawning activity and habitat complexity; based upon the data available at the time of our review. We cautioned against making a predetermination of which turbines should be removed and recommended the layouts be presented as options for illustrative purposes and examples in the DEIS for how this alternative could avoid and minimize impacts to cod spawning and complex habitats. The reference to coordination with NMFS should be clarified to indicate that the presented alternatives were selected by BOEM.
2.1.3	86	The provided figures for Alternative C do not illustrate the data that BOEM relied upon in the identification of turbines considered for removal. While some of the data used is illustrated in Appendix K, the provided figures (Figure 2.1-8 and Figure 2.1-9) in the presentation of the alternative should clearly depict the data used to determine the considered turbine removal locations to provide the reader with the appropriate context and clearly illustrate what resource impacts will - and will not - be avoided or minimized under the alternative.
Section 3.3 – Definition of Impact Levels		
3.3	119	Several of the general impact descriptions used are somewhat vague or unclear, e.g. "most adverse impacts..." Throughout the document, additional resource-specific impact descriptions are also not provided (for example, see previous NMFS comments on marine mammal criteria). Impact definitions also rely heavily on mitigation. All of these factors make it more difficult to assess impact conclusions for some resources. Please see additional comments on impact analysis in the attached letter.
3.3	122	In footnote 12, the citation for the document that BOEM refers to does not appear in the subsection for 3.3 in Appendix B - References Cited section. Please clarify what document this footnote refers to by adding it to "References Cited".
Section 3.6 – Benthic Habitat and Invertebrates		
3.6	Global	Global comment: The approach to the analysis does not allow for a meaningful evaluation between the project alternatives. This is particularly true for Alternative C would reduce impacts to benthic habitats by approximately one-third, and even further if combined with Alternative F; however that is not apparent or considered in your analysis. We disagree with BOEM's assessment that there is no difference in impacts to benthic habitats and invertebrates among the action alternatives.
3.6	Global	Global comment: We appreciate that additional literature and supporting information is included in the DEIS. We have provided some additional specific references that should be included in the DEIS in other comments within this section (see below). We also appreciate that the temporal impacts are defined in a manner consistent with our recommend timeframes. However, the provided analysis still relies heavily on perceived beneficial effects from the construction and installation of artificial structures and materials, as well as unsupported statements and conclusions. Please refer to our prior comments on other OSW NEPA documents to assist you in developing a more accurate analysis of the expected project impacts.
3.6	Global	Global comment: The impact analysis for this section still largely ignores the complex benthic habitats present in the lease area. The lease area overlaps with Cox Ledge and supports a highly complex mix of substrates, with more than half of the lease area supporting highly complex natural rocky habitats. The analysis minimizes adverse effects to these natural habitats and heavily relies on potential, perceived beneficial "reef effects" to balance/offset the extensive adverse impacts to important, highly complex natural rocky habitats that would occur under the proposed action. The Proposed Action analysis should include a reasonable analysis of the expected long-term and permanent effects to benthic habitats, in the context of Cox Ledge. This should include the potential <i>adverse</i> effects that may occur as a result of the expected artificial reef effects from the presence of structures within highly complex, natural rocky habitats that occur throughout the lease area. Given the expected long-term and permanent effects that would occur on a regional scale to the extensive complex habitats in this lease area on Cox Ledge; effects to benthic habitats should be classified as major adverse impacts, consistent with BOEM's significance criteria definition.

3.6	Global	Global comment: Please check and clarify all presented calculated impact areas. The presented calculated areas in the tables and text do not align and it is not clear why. For example, the RWF calculation in Table 3.6-1 states the maximum work area is 58,143 acres, however this calculated area does not align with any of the disturbance areas presented in the analysis of project alternatives, or the sum of calculated maximum disturbance areas for the proposed action. Similarly, there are conflicting reported impacts to complex habitats. The proposed action is stated to result in 2,602 acres of large grained complex and complex habitats in the conclusion for the proposed action (page 3.6-36), however in the alternatives section is it stated that impacts from the proposed action are estimated to be 2,057 acres for large grained complex and complex habitats.
3.6	Global	Global comment: The basis for the calculated impacts for the alternatives are unclear, particularly the percentages of habitat types that would be impacted. For example, Table 3.6-11 indicates that impacts for the "estimated maximum extent of seafloor disturbance" from the export cable, inter-array cable (IAC), and vessel anchoring for the two habitat alternatives would result in similar, or larger proportional impacts to complex habitats than the proposed action. This is inaccurate as this alternative considers removal of turbines and cables within complex habitats. Table 3.6-13 indicates that the viewshed alternative would result in proportionally less impacts to complex habitats than both the proposed action and habitat impact minimization alternative. This also appears inaccurate as the removal of turbines and the associated IAC and vessel anchoring impacts from predominantly soft-bottom impacts would not result in such substantial reduction in impacts to large-grained complex habitats (by nearly half) and complex habitats combined. The analysis appears to suggest the removal of turbines from areas supporting near-contiguous large-grained complex and complex habitats would not result in a substantial reduction in impacts to large-grained complex and complex habitats. It does not appear that the habitat types are being accurately considered in the evaluation of alternatives. In addition to verifying these calculations and clarifying the basis for the habitat impact calculations presented, we recommend the DEIS present impact calculations for each alternative (including the proposed action) and include impact calculations, with appropriate tables, specific to lease area impacts. This will provide clarity for the comparison of the proposed action and action alternatives.
3.6	125-126	The geographic analysis area for Benthic Habitat should be revised. We appreciate the provided rationale on how the area was selected, however the rationale is not based upon either the expected extent of impacts or a resource-based region of interest. Rather, the rationale highlights that the area for analysis was based upon encapsulating all project components regardless of their connectivity or the exposure of the area to project impacts. In order to allow for a meaningful analysis of the proposed project impacts and evaluation of project alternatives, the geographic analysis area should be selected based upon the extent of potential project effects, including indirect effects, and may define the regional context of the selected analysis area. Please modify the geographic analysis area.
3.6.1.1.1 and 3.6.1.1.2	129-133	The No Action alternative relies on all other potential wind lease areas moving forward, except the proposed action. This only serves to dilute the analysis and evaluation of the proposed action. Further, the concluding effects determinations are not supported by the analysis provided. For example, it is stated that "vessel traffic, ...port expansion, and channel deepening activities; ongoing commercial fishing activities.....would contribute to ongoing adverse impacts on benthic habitat." However, there is no mention or analysis of such activities outside the conclusion statement. An analysis of each stated activity in the concluding significance determination should be provided. Additionally, it is stated that "BOEM anticipates that the planned and future offshore wind activities would have no effect on benthic habitat composition within the GAA for benthic habitat." It is unclear how BOEM is defining "benthic habitat composition," and we consider it unreasonable to determine that other planned OSW activities would not affect benthic habitats within the GAA as currently defined. Multiple other projects are proposed within the RI/MA WEA that are likely to have not only overlapping effects within the Revolution Wind lease area and cable corridor, but also within the broader defined GAA. The effects determination for the "No Action" alternative should be revised to include an evaluation of all activities discussed in the conclusions and to provide appropriate justification for all determinations presented.
3.6.1.1	130	Figure 3.6-2 illustrates habitat delineations and large surficial boulders. However, the large-grained boulder delineations are overlapping the surficial boulder points, obscuring the view of large boulders within this habitat category delineation. The figure should be revised to include the surficial boulders as the top layer in the figure so the full extent of boulders in the lease area is visible.

3.6.1.2	133	The geographic analysis area for Invertebrates includes the entire OCS south to Cape Hatteras, NC. This is not a reasonable analysis area to evaluate the project as it only serves to dilute the effects of the project specific impacts to invertebrates. A more reasonable geographic analysis area, that allows for a meaningful evaluation of the proposed action and proposed alternatives, should be selected.
3.6.1.2	134-141	Similar to the comment on Benthic Habitat, the No Action alternative for Invertebrates focuses on the planned development of all other wind lease areas with some analysis provided for potential climate change effects. We understand that BOEM is coordinating with the agencies to address No Action scenario concerns. However, the conclusion states "moderate" adverse impacts would occur from "reasonably foreseeable activities other than offshore wind" but the listed activities are not discussed or addressed in the analysis. Further, it is stated that all other foreseeable offshore wind development would similarly result in "moderate" adverse impacts, as well as "moderate beneficial impacts." The provided impact assessments and rationale do not include support for these impact determinations. The No Action alternative should be modified to allow a meaningful evaluation of the No Action alternative, inclusive of a scientifically supported analysis for all activities listed in the concluding effects determination.
3.6.2.3	163; 170	Please include the best available science for the analysis of noise impacts. This includes: Sole et al. 2022; Jezequel et al. 2022; van der Knapp et al. 2022; Siddagangaiah et al. 2022
3.6.2.3	171	If sound data from Block Island Wind Farm are used in the analysis, please provide a comparison of specifications of BIWF turbines with those planned for Revolution Wind.
3.6.2.3	172	Non-native species have been observed on offshore wind structures throughout Europe and at Block Island. Please integrate the best available science into the analysis of non-natives and characterize the potential for structures to facilitate the establishment and range expansion of non-native species.
3.6.2.3	172-173	The characterization of hydrodynamic effects relies entirely on Johnson et al. 2021, a BOEM report that did not undergo traditional peer-review. There is a growing body of scientific knowledge on wind wake effects and their potential impacts. Please include the best available science in this analysis. This includes the following: Christiansen et al. 2022; Dorrell et al. 2022; Daewel et al. 2022; Raghukumar et al. 2022; Floeter et al. 2022; Chen et al. 2021;
Section 3.9 – Commercial Fisheries and For-Hire Recreational Fishing		
3.9	General	<p>Please update project-specific analysis and discussion to correct for outdated shapefiles of the Revolution Wind project data acquired from references NMFS 2021b and NMFS 2021c. This issue affects Tables 3.9-9, -19, -20, -21, and -22 and associated narrative discussions on pages 3.9-14 and 3.9-20. These sources include landings and revenue data for the Revolution Wind and other project areas posted on the NMFS GARFO website and accessed August 7, 2021. The wind energy areas available at those times have since changed. In addition, the shapefile used to generate our socioeconomic impact report and data for Revolution Wind lease area is smaller and inconsistent with the shape identified in the DEIS (see image). Although we have not evaluated the difference between the areas, resulting analysis will underestimate fishery impacts for any analysis using that data due to the evaluation of a smaller area than the area proposed. Therefore, the information used based on reports on our website should be updated based on the full lease area. The data provided by a specific data request in January 2022 (referenced as NMFS 2022) is not affected by this issue.</p> 
3.9.1	General	For tables and narrative descriptions of regional analysis using federal VTR data (Tables 3.9-1 through 16, Table 3.9-19 through 22, Table 3.9-25 through 27, Figure 3.9-6), please note in each instance that federal VTR data likely substantially underestimate landings and revenue for state-managed fisheries (conch, menhaden, etc.) and lobster, particularly for Maine lobster vessels, due to historical and existing reporting requirements. Therefore, any regional estimates of landings and revenue will be underestimated due to limited data on such fishing activity. Please see the data limitations listed in Appendix A of BOEM's Draft Guidelines for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf available

		at: https://www.boem.gov/sites/default/files/documents/renewable-energy/Appendix%20A%2006232022_0.pdf and our data limitations at https://media.fisheries.noaa.gov/2022-02/Socioeconomic-InfoNeeds-OSW-GARFO.pdf .
3.9.1	General	In all tables, please clarify how revenue were adjusted for inflation to ensure consistency with data provided by NMFS and used in other tables. Use of different inflation methods can result in different estimates. Totals for each table would also help validate some percentage conclusions listed in the text, but not in the tables themselves (e.g., Table 3.9-10 indicates skates represented 30% of total landings from the lease area, but no totals are provided and the other columns do not show this information).
3.9.1	General	Social impacts to fisheries are not analyzed here or in the cultural impacts section. In the Affected Environment section for fisheries, insert a discussion of and applicable references to social and well-being impacts of fishing industry participants. Fisheries are part of social-ecological systems that take into account inter-relationships between ecological functions and human communities that depend on ecosystem services for their well-being. As previously commented, the DEIS has limitations in understanding full impacts without considering social impacts that go beyond ex-vessel landings. Similar to assessing the economic impacts based on historic catch and VMS data, discussion of and research on social wellbeing in the region should be discussed where available to consider the full impacts of the alternatives. The brief discussions on cultural importance and identity can be supported by numerous studies on traditional values and historical significance of fishing areas in the region. Examples of available social research include: 1) Job satisfaction and well-being studies, including safety considerations, have been done in the region for decades -see Pollnac et al. (2014) and it's citations, Smith and Clay (2010), 2) Silva et al. 2021, Cutler et al. 2022 and Henry and Olson (2014) provides an overview of commercial fishing crew demographics and changes over time. 3) Resilience and vulnerability data can be found at Jepson and Colburn (2013). A study was also done on commercial and recreational fishing industry's adaptive capacity in NY and NJ (Seara et al. 2012). Well-being topics relevant to offshore wind are listed below based on Van Holt et al. (2016) and Smith et al. 2020 and should be considered in BOEM's impact assessment with description of relevant research in the region. Where data is not available this should also be noted. Well-being objectives to consider include: Impacts to income and employment, infrastructure investment, community economic impacts, equitable distribution of fisheries benefits, maintaining fishing opportunities for small-scale operators, reducing conflict in the fishery, improving safety at sea, promoting food security, and maintaining cultural importance of fishing to the community.
3.9.1	197	Please verify whether statistical area 612 or 613 is included in the evaluation of the Regional Fisheries Area and associated analysis. This text suggests 612 is included, but not 613, while Figure 3.9-2 suggests that statistical area 613 is included, but not 612. Please correct figures, descriptions, and associated analysis to ensure the right data are used to describe fishery operations within the Regional Fisheries Area. This was raised during our cooperating agency comments in May.
3.9.1	197	Please consider using a broader range of historical data to reflect interannual variation in fishing operations and resource availability. The analysis uses the fishing footprints for 3 years only (2016-2018) as shown in Figures G-1 through G-13 in Appendix G. Additional data available on the Northeast Ocean Data Portal (www.northeastoceandata.org) show similar patterns in more historic data, indicating some fisheries experienced the highest concentrations of fishing effort within the proposed project area and lower fishing effort concentrations outside of the area. Using a shorter timer series is not consistent with BOEM's compensation guidance which is based on our socioeconomic impact guidance highlighted in a previous comment that recommends at least 10 years of data should be used in analyses to avoid under representing fishing in the area and accounting for interannual variability in fishery operations.
3.9.1	198	Please identify how ports were determined to have commercial fishing activity or not in Figure 3.9-1. Are these ports that have landings from within the lease area? The RFA? Greater Atlantic Region? Note that port dependence is not only from landings but fishing businesses and infrastructure- some vessels may land in one or multiple ports, but depend on businesses and infrastructure in others. A more thorough analysis of port usage that includes both commercial, recreational fishing, and wind ports should be conducted separately and included in the EIS as commented on previous projects.
3.9.1	199	Please note that project-specific standardized reports available on our website only include 2019 data, but more recent data through 2020 are available upon request. More updated data through 2020 should be utilized in the FEIS per our socioeconomic impact recommendations found at: https://media.fisheries.noaa.gov/2022-02/Socioeconomic-InfoNeeds-OSW-GARFO.pdf

3.9.1	200	In Table 3.9-1, clarify whether Surfclam, Ocean Quahog data is included separately or under the "Other FMPs" row, as indicated by the asterisk footnote and in the text above. This contradictory messaging should be rectified.
3.9.1	201	In Table 3.9-2, ensure the table reflects the order from high to low of pounds landed per the notes below the table. The current table is not organized in this way. It is unclear why some tables are ordered in this way, while others are ordered alphabetically. We recommend the FEIS order tabular data consistently by value or alphabetically to minimize confusion.
3.9.1	203	In Table 3.8-4, please use the Engagement and Reliance scores for "Point Pleasant Beach, NJ" not "Point Pleasant, NJ" Point Pleasant beach is the geographic location where catch is landed and therefore the scores are reported here on the Social Indicators data tool. Commercial Fishing Engagement= high; Commercial Fishing Reliance= Medium
3.9.1	210	Please delete the text regarding reductions from the call areas or move it to a background discussion in Section 1 instead. As we noted previously, it suggests such reductions were part of the proposed action and increases confusion relative to the evaluation of no action impacts. Additionally, citing Smythe et al. 2016 here is misleading as this report was on the RI Ocean SAMP state process, which did not evaluate the MA/RI WEAs.
3.9.1	217	Please provide the total number of vessels that use the lease area (e.g., transit). The VMS analysis currently discusses fishing vessels under 5 knots who are presumed to be actively fishing. In order to better characterize use within the lease area and impacts, all uses should be characterized for mitigation purposes (e.g., changes in transit and fuel costs). Further, the data provided in January 2022 also contains a count of the number of vessels and trips that occurred in each area analyzed for this project, including areas listed in each alternative.
3.9.1	222	Revise the text above Table 3.9-14 to reference landings instead of revenue.
3.9.1	225	Please insert a discussion and analysis of state permitted fishery landings and revenue data along the export cable corridor and the lease area, as appropriate, given the admission federal VTR data presented previously in this section does not include such data. The same applies for highly migratory species, as landings/revenues for these species are recorded in vessel logbooks issued by the Southeast Regional Office and Science Center, separate from those referenced in this section issued by the Greater Atlantic Regional Fisheries Office. These data are necessary to fully describe the potential impacts of this project relative to the no action alternative. Otherwise, insert a justification why such data are not included in the DEIS and note in the text that such data underestimate landings and revenue.
3.9.1	226	Please correct footnote 19 to indicate that all federally permitted party/charter vessels must submit a VTR for every fishing trip. The regulatory reference is correct, but the application is incorrect. Groundfish vessels, for example, must submit VTRs.
3.9.1.1.1	235	Under Light, revise the impact conclusions to long-term to be consistent with impact definitions in Table 3.3-4. Lighting for construction and operations/maintenance activities could continue for several years as other projects are built and become operational. This is beyond the "several months" listed for short-term impacts in Table 3.3-4.
3.9.1.1.1	236	Under Noise, insert a discussion of research related to injury and mortality to certain species in close proximity to noise impacts (pile driving), startle behavior that could affect spawning activities and recruitment success in social spawning species such as cod and longfin squid, and bivalve closure response to noise that could affect respiration and feeding (see Roberts and Elliott, 2017 (Good or Bad Vibrations? Impacts of Anthropogenic Vibration on the Marine Epibenthos available at https://reader.elsevier.com/reader/sd/pii/S0048969717306290?token=C441F4E5607842CC831E40C2A78CE074876745A457C83262E689ADE59738BCC4454808E6ADC95427569999F9C1D5AD6E&originRegion=us-east-1&originCreation=20220308144935). Also, insert justification why noise from all other wind projects occurring for upwards of 10 years within the Regional Fisheries Area and overlapping with the distribution of regionally important fishery species distributions would not result in population-level effects for target species (all species harvested in the region are target species), particularly sensitive populations such as Southern New England cod. Justification for the conclusions reached should reflect the criteria in Table 3.3-2. Cumulative impact of such noise and associated behavior and physiological changes could have measurable impacts on species, which would, in turn, impact fisheries. This is similar to our comment 7 for Section 3.9 during the cooperating agency review.

3.9.1.1.1	236	Under Presence of Structures, please note that predator-prey relations may be impacted, which could benefit some species (black sea bass, striped bass), but harm others (lobster, cod juveniles).
3.9.1.1.1	238	Please identify the FMP or species-specific cumulative revenue impacts from all wind projects combined. This would provide a sense of which fisheries would be more impacted than others. Presenting only total revenue impacts from all FMPs combined does not provide fishery-based impacts, which could have different implications on domestic and international markets and particular communities if particular fisheries are important to specific communities (i.e., the squid fishery and Rhode Island vessels).
3.9.1.1.1	239	Please describe the methodology used to generate Table 3.9-22. There is insufficient description to replicate this table to assess the accuracy of the data presented and our efforts to replicate methods were unsuccessful. For example, how was revenue exposure extrapolated across projects outlined in Appendix E? Was the average annual revenue exposure for each FMP from each project summed based on when each project was expected to be constructed using project-specific or lease area data from NMFS 2021b? If not, please describe how revenue exposure was calculated. Also, please clarify whether non-federally managed species revenue is included in this table, as the footnote denoted with an asterisk (*) does not clearly describe applicable species (e.g., is Atlantic menhaden from state-permitted vessels included instead of relying only on bycatch of Atlantic menhaden by federal vessels described in federal VTRs). Further, was there any consideration for future species status, as discussed during BOEM's fishery compensation technical working group? Because this table is used as a proxy for cumulative impacts for wind projects other than the proposed action, it is important that this table accurately depicts the potential impacts.
3.9.1.1.1	241	Under Regulated Fishing Effort, please note that while the survey mitigation strategy could potentially reduce impacts to NMFS survey efforts over the long term and the indirect impacts of increased uncertainty on management and fishing communities, it would not affect the overall impact categorization for NMFS surveys. Further, there are no dedicated resources in place nor implementation plans yet developed for any potential survey mitigation measures. Therefore, it is speculative to suggest that such efforts would also reduce effects on commercial and for-hire fishing operations at this time. We recommend removing the impact conclusions from this discussion.
3.9.1.1.1	241	The DEIS in its current state as well as the mitigation measures, oversimplifies fishing behavior changes and resulting vessel traffic, gear interactions and other space-use conflicts. The DEIS conclusions are based on assumptions that fisheries will be able to quickly adapt to fishing within a project area or adjust to new fishing grounds. The region has a long history of traditional fishing practices and fishermen of different gear types have established social relationships to avoid space-use conflicts. Research has found a decrease in local knowledge passed down through generations of fishing (Farr et al. 2018) and should be considered when determining the ability to adapt to new uses such as offshore wind development in the region. The quality of knowledge will determine the ability of fishermen to adapt, avoid space-use conflicts and find alternative fishing grounds. See other relevant research: Stoll JS, Fuller E, Crona BI (2017) Uneven adaptive capacity among fishers in a sea of change. PLoS One 12https://doi.org/10.1371/journal.pone.0178266 15 Stoll, Beiti, and Wilson. 2016. How Access to Maine's Fisheries Has Changed over a Quarter Century: The Cumulative Effects of Licensing on Resilience. Global Environmental Change 37:79-91 DOI:10.1016/j.gloenvcha.2016.01.005 16Holland and Sutinen. 2000. Location Choice in New England Trawl Fisheries: Old Habits Die Hard. Land Economics Vol. 76, No. 1 (Feb., 2000), pp. 133-149 https://doi.org/10.2307/3147262 . Decisions made at sea have been found to be dependent upon social factors in addition to economics (Kraan et al. 2020), including business structure (family owned vs. corporations). Corporations might have different protocols in operating within wind areas. Research in the Northeast (Murray et al. 2010. Cumulative effects, creeping enclosure, and the marine commons of New Jersey. International Journal of the Commons 4(1) DOI:10.18352/ijc.148) has shown that the cumulative restrictions on space over time on fishermen can cause loss of flexibility, change the employment structure (owner vs. employer) and increase corporatization of the fishery. All of these social factors should be included in the EIS and considered when analyzing the impacts of offshore wind development of the project alternatives.
3.9.1.1.1	242	Under Port Utilization and other relevant IPFs, please note that increased utilization of ports by wind project vessels could also lead to higher costs for support services and other downstream impacts if vessels change ports. For example, O'Farrel et al., 2019 discusses three behavior types that could be affected by disturbances in the system; 1. Fishermen with low mobility and less explorative behavior who are risk averse and carry out short trips; 2. Fishermen with high mobility and more explorative behavior are more risk tolerant and conduct longer trips, and; 3. Fishermen have explorative and

		<p>risk tolerant behavior but also have higher variability in trip duration and revenue. This could also be applied relevant to port utilization. Papaioannou et al. 2021 note that vessel shifts to different ports could result in economic loss to ports and communities, especially small ports, due to changes in fishery landings. As found in the literature, established fishing communities are forced to adapt to new social, economic, and environmental conditions and as a result many fishing communities in the Northeast have been supplemented with technology-based industries and tourism, and are heavily impacted by coastal development, gentrification and the emergence of retirement communities (Claesson, Robertson and Hall-Arber, 2006). Increased tourism and recreational boating & fishing infrastructure as a result of gentrification has also resulted in space use conflicts both onshore and offshore between commercial and recreational fishing (Jepson and Colburn 2013, Thompson 2012, Hall Arber et al. 2001) that could be exacerbated by the proposed action and other projects. Offshore wind development can be another industry providing pressure to these communities, so recognizing those communities that are vulnerable is important. See NMFS Gentrification summaries: https://storymaps.arcgis.com/stories/56781eb366f1485e8ffd7c96b16f133f. Without modelling the human components of socio-ecological systems, impacts will not be effectively recognized and mitigated.</p>
3.9.2.1	243	<p>Please revise the impact conclusions to reflect a range of impacts (i.e., minor to major) consistent with the previous discussions. Further, references to additional information later in this section that would support this conclusion should be included, or this discussion should be removed from this part of the section. The text immediately below Table 3.9-23 seems sufficient to discuss the general influence of potential mitigation measures in this introductory section. The introduction does not include sufficient supporting information to justify conclusions, rather such information is contained later in the document. Therefore, we recommend that the document reserve conclusions regarding impact levels until later in the document when supporting information is presented in greater detail.</p>
3.9.2.1	245	<p>In Table 3.9-24, acknowledge that impacts to commercial and for-hire fishing activities will be higher or lower for each impact-producing factor even if it would not change the ultimate impact category. For example, the discussion of accidental releases indicates impacts under Alternatives C-F would be lower than that of the proposed action due to fewer turbines built under these alternatives even though the impact conclusions would remain the same as the proposed action. That should be repeated for each impact-producing factor such as light and anchoring.</p>
3.9.2.1	245	<p>In Table 3.9-24 under Climate Change, please copy the Alternative A text indicating minor to major beneficial impacts to fishery operations for those targeting species beneficially impacted by climate change to the discussion of Alternatives B-F. This more accurately reflects a range of both beneficial and adverse impacts from climate change to different species and fisheries. The table's impact conclusions are not substantiated by any real discussion in the following section and should be further supported.</p>
3.9.2.1	245	<p>In Table 3.9-24, under Light, please note that light effects are long-term during operations and maintenance given that such effects would last for years through decommissioning.</p>
3.9.2.1	245	<p>In Table 3.9-24, under Noise, please note that some species may experience mortality at close range to construction noise or due to long-term operational noise and vibrations that may cause shellfish to close their shells and reduce respiration and feeding.</p>
3.9.2.1	245	<p>In Table 3.9-24, under Port Utilization, please revise impacts to long term, including for construction, to be consistent with Table 3.3-4 given that port activities associated with wind development projects will occur over decades.</p>
3.9.2.1	245	<p>In Table 3.9-24, under Presence of Structures, please revise impact conclusions under Alternative B from "temporary minor" to "long-term moderate" at the end of the third and seventh paragraphs to be consistent with impact definitions in Table 3.3-2. If mitigation in the form of gear conflict prevention and claim procedure is a remedial or mitigation measure, then impacts cannot be listed as "minor" based on Table 3.3-2, which indicates minor impacts do not need remedial/mitigation measures and would not return affected entities to a condition with no measurable impacts given current policies would not fully cover opportunity costs for lost fishing activities while gear is repaired. Further the presence of structures disrupts the normal and routine functions of the fishing industry even with mitigation measures, which is inconsistent with "minor" impacts in Table 3.3-2.</p>
3.9.2.1	245 and 266	<p>In Table 3.9-24, under Regulated Fishing Effort, please note our earlier comment that the survey mitigation strategy would not affect the overall impact categorization for NMFS surveys given the current lack of dedicated resources and implementation plans, which is not expected to affect impacts to regulated fishing effort for commercial or for-hire fisheries. Also, please revise the conclusions under Alternative B to match those discussed under</p>

		Alternative A. While this table concludes that ongoing management actions for the lobster and Jonah crab fisheries would result in major adverse impacts, there are no conclusions reached for other fisheries. Therefore, it is inaccurate to conclude that regulated fishing effort for all other fisheries would similarly have a major impact on those fisheries. In fact, prior discussion in Section 3.9.1 suggested that regulated fishing effort would have long-term positive impacts on fisheries by achieving maximum sustainable yield. This should be reflected in this table.
3.9.2.1	245	In Table 3.9-24, under Vessel Traffic, please revise impact conclusions from "short term minor" to "long-term moderate" throughout to be consistent with impact definitions in Tables 3.3-2 and 3.3-4. Construction activities will occur for at least a year for the proposed project and likely all other projects. This suggests impacts from construction will be long-term per Table 3.3-4 as it will exceed several months. Further, because vessel traffic from the proposed and other wind projects will disrupt normal fishing operations, this should be characterized as "moderate" impacts per the definitions in Table 3.3-2. There is no information to support that a communications plan alone would mitigate impacts from vessel traffic within or outside of ports given the lack of detail provided on the number of vessel trips that may be required or from which ports they would be entering/exiting for the proposed action or other projects. It is not sufficient to just state that it is expected that impacts would be low; such claims should be supported by information justifying that conclusion. Finally, it is inaccurate to conclude that vessel traffic impacts for at least Alternative D would be the same as the proposed action. Alternative D was specifically intended to facilitate transit in various directions. Therefore, at least Alternative D would result in lower vessel traffic impacts than the proposed action. This should be noted in this discussion.
3.9.2.2	253	Please integrate the above comments on Table 3.9-24 for each impact-producing factor. For example, under Light, please note that such impacts will be long term given they will persist over the life of the project and under Noise, indicate that some species could die due to noise exposure and that noise that disrupts spawning behavior could result in ongoing recruitment impacts for certain fisheries like cod and squid that could, in turn, negatively impact fisheries. In addition, for New Cable Emplacement/Maintenance, please note that surface preparation may relocate boulders and other obstructions that could cause gear damage/loss (e.g., this could go in the discussion on page 3.9-67).
3.9.2.2	257	In the discussion of Table 3.9-27, please clarify the methods used to calculate the percentages listed, as it is not clear from the table column headings. Did this calculation take revenue in a particular port from vessels fishing within the lease area or export cable corridor and divide it by the total landings from ME-NC within each port? If so, the calculations appear to correctly reflect the impacts to port. If not, please clarify how the data were analyzed. It would be inaccurate to take port-specific landings from within the lease/export cable corridor and divide by the total landings from ME-NC for all ports.
3.9.2.2	258	Please revise impact conclusions in the second to last paragraph to "minor to major adverse" and the "minor" conclusion in the last paragraph to "moderate" to accurately reflect the discussion in this section and impact definitions in Table 3.3-2. It is more accurate to reflect the full range of impacts than to discount the potential major impacts of vessels heavily dependent upon an area for a substantial portion of annual fishing revenue because not many vessels are dependent upon this area (i.e., average impacts). Further, despite the gear conflict claim procedure, the impact conclusion should be "moderate" to be consistent with Table 3.3-2, which indicates moderate impacts would return the affected activity to a condition with no measurable impacts when mitigating action is taken.
3.9.2.2	259, 263, 266	Under Regulated fishing effort, please revise the impact conclusions to NMFS ongoing scientific research to "major" consistent with previous NMFS comments, including those mentioned above.
3.9.2.2	259	Under Vessel Traffic, please revise impact conclusions to "moderate" consistent with the impact definitions in Table 3.3-2, as noted above. Vessels will have to adjust somewhat to increased vessel traffic. Further, because a communication plan is necessary and that is listed as a mitigation measure, impacts should be classified as "moderate." This is consistent with conclusions on page 3.9-68.
3.9.2.2	262	In addition to port revenue exposure as a percentage of total fishing revenue from the Regional Fishing Area, please include an estimate of the shoreside support service impacts that may result due to vessel revenue exposure. This will help estimate impacts if vessels are no longer able to fish within the project area or move to a different port.

3.9.2.2	264	Under Port Utilization, please revise impact conclusion to "moderate" to be consistent with Table 3.3-2 given that ongoing port activities in affected fishing ports would require vessels to adapt their behavior and reduce access to port services. This is more consistent with the "moderate" impact definition than "minor."
3.9.2.2.3	264	Ensure that this section accurately reflects the scope of regional impacts to fishery operations, noting that cumulative impacts will be higher than those of the proposed action even if the impact definitions will remain the same in some limited circumstances. Existing leases cover 2.5 million acres from Maine to North Carolina and fishery operations occur in all lease areas and vessels operate out of ports that will also support wind projects. Thus, there are measurable impacts from many of the impact producing factors that are over and above those of the proposed action, and most impacts should be listed as "moderate" to be consistent with impact definitions in Table 3.3-2. For example, while anchoring may be localized and temporary, vessels from multiple areas will have to adapt to such anchoring, which is consistent with at least "moderate" impacts per Table. 3.3-2. Similarly, the need for cable armoring and associated mitigation measures for gear damage/loss would result in "moderate" impacts.
3.9.2.2.3	264	Under Climate Change, please insert text from Table 3.9-27 that some fisheries for species positively affected by climate change (squid) may benefit from climate change; the impacts are not exclusively adverse.
3.9.2.2.3	267	Please provide justification to support the conclusions that the long-term major adverse impacts to fishing operations are driven by climate change and regulated fishing effort. As noted before, there are positive fishery impacts due to climate change benefitting some species and that the only fishery which it was noted could experience major impacts from fishery regulations was the lobster/Jonah crab fishery due to North Atlantic right whale restrictions. Because limited detail is available for most of the mitigation measures for non-approved projects, consider revising characterization of mitigation measures to reduce impacts from "would" to "could." This is consistent with text on page 3.9-75.
3.9.2.3	268-271	Please provide a summary of the number of vessels and trips that would be affected under each alternative and evaluate which fisheries would be impacted by the removal of turbines under each alternative. Data on vessels impacted by each alternative were made available as part of the project's data request in January 2022. Such data indicate the number of entities that would be affected by each alternative and the scale of such impacts between alternatives. This is another important metric that could more effectively assess impacts to fishing operations and associated communities than proportion of regional revenues. Comparison with fishing footprint information (as used in figures in Appendix G) can identify where certain fisheries operate relative to the alternative configurations. This will identify which fisheries and communities may be affected most. This is similar to our comment 32 for Section 3.9 during the cooperating agency review.
3.9.2.4	272	Please clarify if these are developer-proposed mitigation measures or those that BOEM may require as part of the approval of the COP. It is unclear if the developer has proposed these and whether/if they will be required by BOEM.
3.9.2.4	273	In Table 3.9-28 under compensation for lost fishing income and the following narrative text, please revise the text suggesting this measure "would" reduce impacts from major to moderate to "could" reduce such impact. There is insufficient information available to support that claim at this time. BOEM's mitigation guidance is not finalized and no details of a proposed mitigation plan are available for this project. Therefore, it is not possible to determine the scale of impact reduction that would be realized from this measure. If compensation does not fully compensate for losses, which is possible under the draft guidance, an affected entity could still have measurable impacts even after partial compensation. If that occurs, impacts would still be classified as "major" under the definitions in Table 3.3-2. Given the uncertainty in final mitigation measures, we recommend retaining the impact range as "negligible to major."
Section 3.12 – Environmental Justice		
3.12	General	Please include findings of Hoagland et al. (2015) which state that displacement of fishing vessels from Point Judith, RI and New Bedford, MA will impact a wider spatial area than would be expected, including communities inland. This study found communities in MA such as Boston, Fall River and Brockton, MA as well as Pawtucket, RI had highest level of impacts per household (see Figure 5 in article). "The figure reveals that five census tracts (colored in dark red) would bear the largest impacts, which, at \geq \$140 year ⁻¹ would be an order of magnitude larger than those of the next group of impacted census tracts. These tracts (circled in Fig. 5) are located in Pawtucket (RI), Fall River (MA), Brockton (MA), between Boston South End and Fenway/Kenmore (MA), and between Mattapan and Roslindale (MA). Without providing analyses that will ensure all impacted communities are

		evaluated with the best available science, BOEM is not presenting an analysis that fully considers the impacts to underserved communities (most of the identified communities in this study have high levels of poverty and diversity). https://www.sciencedirect.com/science/article/pii/S0308597X15000871
3.12	General	The Marine Recreational Information Program (MRIP) provides a list of publicly accessible fishing sites. Underserved communities often practice subsistence fishing in low income areas. Thank you for including this information in the recreation and tourism section. However, impacts to subsistence fishing is listed in the DEIS as a potential unavoidable adverse impact of the Proposed Action and BOEM should make an effort in this section as well to identify those specific fishing sites that are within areas of environmental justice communities of concern, including a summary of these access sites within these communities. Consider noting which sites will be impacted and overlap with offshore wind infrastructure on land and cable placement during both construction and operation. See the Site Register here: https://www.st.nmfs.noaa.gov/msd/html/siteRegister.jsp
3.12	General	Ensure that the conclusions on the impacts to fishing community members match those in section 3.9 Commercial and For Hire fisheries unless specific mitigation measures are established for limiting the impacts to underserved communities.
Section 3.13. – Finfish and Essential Fish Habitat		
3.13	Global	Global comment: The Finfish and Essential Fish Habitat analyses are flawed and we strongly recommend they be substantially revised prior to publication of the FEIS. In our comments on this section we highlight concerns with the evaluation of impacts to regional resources of significant concern and the approach to the analysis which does not allow for a meaningful evaluation and analysis between the project alternatives. Alternative C would eliminate development in a known cod spawning location and reduce impacts to vulnerable and sensitive EFH by approximately one-third, yet that is not apparent from the analysis. Impacts from Alternative C could be further reduced when combined with Alternative F, but there is no discussion or analysis of this in the document. This project is proposing development in a highly complex, sensitive habitat area; the consequences of that should be transparent to the public and the decision makers. Please see comments specific to the selected geographic analysis area for each resource, and the global comment related to complex habitat and cod spawning below. The analysis approach should be revised to provide a reasonable evaluation of project alternatives and to reflect the extent (both temporal and areal) of adverse impacts that would occur from development in the highly complex habitats of Cox Ledge within the lease area, including a discussion and analysis of the project impacts to Atlantic cod that are likely to occur under the Proposed Action.
3.13	Global	Global comment: Analyses overall are brief and would benefit from consideration of relevant project details in order to better understand the relevant project activities and impacts associated with them. Additionally, impact definitions make it difficult to understand what the actual impact on the species/taxa will be.
3.13	Global	Global comment: We appreciate that you have expanded the DEIS to note the project overlap with cod spawning and Cox Ledge, however the document is still lacking substantive analyses and evaluations of impacts that are likely to occur to cod spawning activity and the highly complex habitats on Cox Ledge. Further, the document relies on the success of unproven mitigation measures to offset the impacts that are identified and analyzed. For example, it is acknowledged that pile driving may adversely affect cod spawning, potentially resulting in a major impact, but the DEIS concludes that this impact can successfully be mitigated through the implementation of an untested monitoring plan. We have significant concerns with such an approach, and the assumptions that are required for such an approach to be successful. Additionally, project activities that are likely to disrupt and adversely affect cod spawning aggregations are either not analyzed at all (e.g., seafloor preparation), or dismissed without any supporting rationale (e.g., vessel noise and HRG surveys). The evaluation and analysis of project activities should be revised to include an evaluation and analysis of all activities that could disrupt spawning activity. Particular emphasis should be placed on activities that will result in benthic disturbance or generate noise as such activities may disrupt aggregations or mask vocalizations. Further, spawning cod exhibit strong site-fidelity to spawning grounds. The potential for abandonment of the spawning grounds within the lease area due to the extensive modification of habitats within the lease area that would occur under the proposed action should be acknowledged and included in the analysis.
3.13	Global	Global comment: We appreciate that additional literature and supporting information is included in the DEIS, including a more thorough evaluation of some impact producing factors (IPFs) for Atlantic cod. However, the provided analysis remains incomplete and does not include pertinent information relevant to the assessment of project impacts in the context of the existing environment and resources on Cox Ledge. We also appreciate that the

		temporal impacts are defined in a manner consistent with our recommend timeframes, however the timeframes do not appear to be consistently applied. Further, and as noted in comments below, the provided analysis-relies heavily on perceived beneficial effects from the construction and installation of artificial structures and materials, as well as unsupported statements and conclusions. Please refer to our prior comments on other OSW NEPA documents to assist you in developing a more accurate analysis of the expected project impacts.
3.13	Global	Global comment: The impact analysis for this section largely ignores the complex benthic habitats present in the lease area and the species that use these habitats. The lease area is on Cox Ledge and supports a highly complex mix of substrates, with more than half of the lease area supporting highly complex natural rocky habitats. The analysis largely ignores the long-term to permanent effects of the proposed action for both finfish and EFH. For those impacts that are identified, the adverse impacts that are acknowledged are largely minimized based on the potential, perceived beneficial "reef effects" to balance/offset the extensive adverse impacts to important, highly complex natural rocky habitats that would occur under the proposed action. The Proposed Action analysis should include a reasonable analysis of the expected long-term and permanent effects to finfish and EFH, in the context of Cox Ledge. This should include the potential adverse effects that may occur as a result of the expected artificial reef effects that will occur to the highly complex, natural rocky habitats that occur throughout the lease area.
3.13	Global	Global comment: Please check and clarify all presented calculated impact areas. Similar to the Benthic Resources section, the presented calculated areas in the tables and text do not align and the reason is unclear. Specific examples of inconsistencies are provided below.
3.13.1.1	Global	Global Comment: As the DEIS is revised, to ensure consistency between documents please refer to the recent comments we have submitted to BOEM on the BA prepared for the ESA section 7 consultation.
3.13.1.1	410	This section notes that "Geographic Analysis Areas (GAAs) are not used as a basis for analyzing the direct and indirect effects of the Proposed Action, which represent a subset of these broader effects and expressed over a smaller area. These impacts are analyzed specific to each IPF." This language is also used in other sections of the document, but in general, the intent and relevance of this statement are unclear as written, and it should be revised to ensure analysis areas for all impacts are clear. Additionally in this section, on page 3.13-31, the text does seem to use the GAA as a basis for analyzing the effects from the Proposed Action, when it notes that "...2) the loss of individuals would likely be insignificant relative to natural mortality rates for planktonic eggs and larvae across the GAA, which can range..." Please see additional comments on GAAs and scale of impacts in the attached letter.
3.13	410; 421	The geographic analysis area does not match the scale of project activities. The analysis area is the entire OCS from the Gulf of Maine to Cape Hatteras. However, there are no project activities occurring in the Gulf of Maine and project activities (vessels) only travel as far south as Virginia. Further, there is no rationale for the size of the analysis area, which serves to dilute the effects of the project specific impacts to finfish and EFH. Of particular concern is the lack of consideration of regional scale importance of Cox Ledge in supporting finfish and the unique features that provide EFH for managed fish species. A more reasonable geographic analysis that allows for a meaningful evaluation of the impact producing factors (IPFs) of the proposed action, and alternatives, should be selected.
3.13.1.1	410; 421	We appreciate that you have included the newly proposed Council HAPC designation for southern New England. However, it appears that the two separate habitats (cod spawning habitat and complex habitats) are being conflated as a single habitat - cod spawning locations within complex habitat. The New England Fishery Management Council approved an HAPC for: 1) cod spawning; and 2) complex habitats that occur anywhere within the defined area (approximately a 10 km buffer surrounding the RI/MA WEA). The description and analysis of impacts to the HAPC should be revised to clearly distinguish the two habitats designated as an HAPC.
3.13.1.1	410	Under Affected Environment, please describe the status of important finfish stocks that are primarily affected by this project. The current status of affected stocks is an important element to include when considering impacts to finfish species and should be integrated into the DEIS. For example, the Georges Bank cod stock, the stock affected by this action, has experienced declining biomass levels for some time and has a long history of low recruitment. Activities that may affect spawning success and future recruitment may exacerbate such trends and result in population-level impacts. A preliminary list of fish stocks affected by this project can be found on our commercial fisheries socioeconomic impact reports on our website (https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/WIND_AREA_REPORTS/Revolution_Wind.html#Revenue_by_Port). Stock

		status and trends for individual species can be found on our Stock Smart webpage (https://www.st.nmfs.noaa.gov/stocksmart?app=browse-by-stock) or on our FishWatch website (https://www.fishwatch.gov/).
3.13.1.1	413	The use of other environmental review documents to justify impacts for other projects is not appropriate. This section uses other EISs as evidence that species will not be affected without any context or rationale. E.g. "BOEM (2021) has concluded that vessel encounters would have no effect on this species [oceanic whitetips]; therefore, it is not considered further in this EIS." Additionally, documents like BOEM 2021 (SFW BA) should not be used for this purpose. Citations should be reviewed throughout this section to ensure that they provide information that supports the conclusion being made. The rationale/analysis should be carried out in this document, citing primary literature as needed.
3.13.1.1	414	Atlantic sturgeon critical habitat is mentioned but no further analysis included. The document should state whether project activities will occur in critical habitat and evaluate any potential impacts.
3.13.1.1	414	It appears Shortnose sturgeon and Atlantic sturgeon are mixed up in the first paragraph on this page. Please ensure references to these species are correct and consistent.
3.13.1.1.1	414	Water withdrawals from DC converter stations, lighting, vessel traffic, and habitat disturbance should be considered as IPFs.
3.13.1.1.1	416	Under Climate Change, please note that there will be both beneficial and adverse impacts from climate change. Hare et al. (2016 - available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0146756) indicate that while some species are negatively affected by climate change, others are either neutrally or positively affected by climate change.
3.13.1.1.1	416	The bycatch IPF references inverts when it should be on finfish.
3.13.1.1.1	417	Under EMF, please revise the impact conclusions from "negligible to minor" to "negligible to moderate" because existing information indicates that both HVAC and HVDC cables will be routed through the Geographic Analysis Area from other projects based on existing information. This is consistent with text provided in this section.
3.13.1.1.1	417	It is unclear why Shortnose sturgeon are mentioned in the last sentence of the page. Please review for the FEIS.
3.13.1.1.1	418	Under Noise, please insert a discussion on impacts to other finfish species beyond just Atlantic sturgeon and the giant manta ray to fully describe potential impacts to finfish species. Startle and flee/avoidance responses should be discussed and noise masking impacts should be discussed for species for which sound is important such as Atlantic cod. Existing research indicates pile driving noise could elicit behavioral responses in certain species as far away as 7.5 km from the source. Given the proximity of adjacent wind projects, such noise could have impacts on species in adjacent projects. If behavioral responses to noise disrupt spawning aggregations or activity, impacts could occur for the duration of such noise. This should be noted in this section.
3.13.1.1.1	418-419	Under Presence of Structures, please include a more comprehensive discussion of peer reviewed literature on oceanographic wake effects from offshore wind projects, including those from the BOEM/NMFS/RODA Synthesis of the Science white paper (under review for publication) and other European papers discussed by the International Council for the Exploration of the Seas. This will ensure that the analysis in this section is based upon the best scientific information available, which indicates wind wakes may have broad scale effects on biological and physical oceanography with implications for all trophic levels. We are concerned that the impact conclusions are based solely on the Johnson et al. 2021 report, which is not peer reviewed. Our scientists reviewed this paper and have expressed several concerns with the methodology and result interpretation. This section should also include a discussion of the implications of egg/larval transport into unfavorable locations could result in increased mortality and reduced recruitment for certain species, particularly those stocks/species in poor condition such as Atlantic cod. Because this section notes impacts are measurable for at least two species, permanent, and could affect the regional distribution of a species, impacts from the presence of structures should be classified as at least "moderate" and possibly "major" to be consistent with impact definitions in Table 3.3-2.
3.13	420 - 425	Similar to the comments in the Benthic Habitat and Invertebrates section, the No Action alternative for Finfish and EFH focuses entirely on the planned development of all other wind lease areas, with the addition of climate change for the evaluation and analysis. However, the conclusions state that OSW, in combination with ongoing activities are expected to result in "moderate adverse impacts and could potentially include moderate beneficial

		impacts" for finfish and EFH. This statement is predicated by the determination that "moderate" adverse impacts only would occur from other activities that are not discussed or addressed in the analysis, specifically referencing "ongoing fishing activities" in both the finfish and EFH determinations. However, the provided impact assessments and rationale do not include support for these impact determinations. This approach dilutes the project specific effects of the Proposed Action and does not provide any support for the effects determination of non-OSW related impacts. The analysis should be modified to include a meaningful evaluation of the No Action alternative and an analysis for all activities considered in the concluding effects determination.
3.13.2	429	Table 3.13-2, Noise IPF - The determination about Shortnose sturgeon is too vague. If noise producing activities (pile driving, cable installation, vessels...etc) are in nearshore or river environments where the species occurs, then the species may be impacted. This should be revised for the FEIS.
3.13.2.2	437	Revise the description of the acreage of large-grained complex and complex habitat affected by the maximum work area to 2,576 acres based on the information provided in this paragraph (2,576 acres = 49% of 3,163 acres + 44% of 2,333 acres).
3.13.2.2	437	The only IPF analyzed for listed fish (sturgeon) is noise and the analysis is cursory. The section is missing IPFs and associated analysis that should be considered for listed fish (i.e., habitat disturbance, cable laying, pollutants/discharges, lighting, EMF, surveys/monitoring, vessels). The ESA Info Needs document and prior EISs should be consulted to see the appropriate IPFs to be analyzed.
3.13.2.2	438-445; 448-450	Please characterize all elements of noise: sound pressure, particle motion, and substrate vibration.
3.13.2.2	439	Citations are needed for text related to auditory masking.
3.13.2.2	440	The text states that "As shown in Table 3.13-3, impact pile driving used to install the RWF monopile foundations is the most intense source of noise resulting from the Project and would produce the most significant and extensive noise effects on fish." However, UXO detonations are actually the activity most likely to cause injury-level effects.
3.13.2.2	444-455	BOEM acknowledges that noise could cause moderate to major adverse impacts on spawning cod and proposes requiring developers to have an acoustic monitoring plan and adaptive approach. What this entails is unclear, so it is not possible to determine whether this is sufficient to mitigate project impacts. Please provide information on the proposed methodology to assess the acoustic monitoring plan and adaptive approach. This should include sufficient details to understand the scientific limitations and assumptions necessary for the plan and adaptive approach to be successful. For example, if PAM glider monitoring is proposed, the glider must be within approximately 0.1 km of cod vocalizations for detection, and the assumption must be made that ongoing activities (e.g., seabed preparation, pile driving, etc) would not result in avoidance behaviors of cod. Details should be included on the proposed monitoring, detectability range, and assumptions made that would directly affect the success of the proposed monitoring, as well as a detailed methodology on the proposed adaptive approach.
3.13.2.2	446-448	Only a small number of species have ever been studied for responses to EMF although there are many species of EMF sensory species living in this ecosystem. NEFSC does not agree that the science on EMF impacts is settled. Please include the best available science in your analysis given that much work has been conducted since the BOEM reports cited from 2011 and 2019. Other IPFs in this DEIS are acknowledged to have species specific effects (e.g., noise, hydrodynamics) but in the case of EMF, it is assumed in the DEIS that studies on a limited number of species and life stages is sufficient to address all species.
3.13.2.2	449	Please provide a comparison of the structure size and operational sound emissions between BIWF and those planned for RWF if the BIWF data is used to represent expected operational sound emissions from RWF.
3.13.2.2	449	This text should be re-evaluated: "This suggests that operational noise exceeding ambient levels could cause masking effects that reduce the effective communication range for these species and reduce reproductive success and future recruitment for species like cod and haddock. The likelihood of these effects are unclear however they are likely to be species specific." The analysis on operational noise requires more consideration and a more precise conclusion. Impacts on vital population rates of cod and haddock represent potential major adverse impacts for these species. Of particular concern is the project overlap with identified Atlantic cod spawning grounds.

3.13.2.2	450-453	The entire narrative around artificial reefs is underpinned by the assumption that aggregating fish at structures is only a benefit. Although the potential for adverse or neutral effects of the reef effect are acknowledged (page 451), these effects do not seem to be considered in the overall conclusion. Further, it is suggested that habitat damage from project construction could take a decade or more to recover from but “those impacts could be offset over a shorter period of time by beneficial reef effects to other species” (page 451). This is an apples and oranges comparison and should be removed from the text.
3.13.2.2	452	The Floeter et al. 2017 citation is not used appropriately. The results of Floeter et al. 2017 do not support the statement that wind farm structures "would be unlikely to negatively affect, and may even strengthen, the stratification patterns that contribute to the cold pool and food web productivity". Floeter et al. 2017 found that the presence of 80 non-operating turbines decreased local water column stratification (i.e., increased vertical mixing). Because turbines were not operational during sampling, this study is not representative of wind wake effects. Rather it focuses on the effects of the structures themselves on hydrodynamics. Furthermore, the work that Floeter et al. 2017 reported was not a long term monitoring program as stated in the DEIS; rather their work was conducted in a single week of July 2014.
3.13.2.2.3	456	The text that states "The Proposed Action could affect the endangered Atlantic sturgeon in the same manner as the No Action Alternative, but no Atlantic sturgeon would be injured or killed" is inconsistent with the determination on pg. 3.13-36 that "effects ranging from short-term behavioral disturbance to short-term or permanent hearing threshold shifts, to barotrauma injury or mortality" are possible.
3.13	459; 462	The evaluation of anchoring and new cable placement/maintenance is a good example of how the complexity of the habitat in the lease area, on Cox Ledge, is not fully considered, analyzed, or evaluated. Specifically, the analysis of the impacts to EFH states the anticipated impacts to 3,178 and 3,410 acres of habitat, respectively, would result in "short-term" disturbance and would constitute a "minor" adverse impact. As stated in Table 3.6-7, the interarray cable installation would result in a total of 1,969 acres of impacts (through habitat conversion) to complex habitats (788 acres in large-grained complex and 1181 acres in complex) this represents approximately 58% of IAC impacts occurring within complex habitats. Anchoring and cable installation through complex, natural rocky habitats would result in long-term to permanent impacts. As noted in prior comments, please refer to our comments on previous documents to assist you in providing a reasonable, supported analysis of expected project impacts.
3.13.2.4	467	Please clarify, or reconsider the text that states that a reduction in extent but not intensity would reduce the impact determination of the Noise IPF to Atlantic sturgeon and giant manta rays, as the intensity (and thus effect) would be the same. Pile driving and UXO activities that were evaluated to potentially result in mortality in Alt. B will still be occurring.
Section 3.15 – Marine Mammals		
3.15	Global	Section 3.15 is missing IPFs and subsequent analysis that should be considered for marine mammals (i.e. habitat disturbance, dredging, lighting, EMF, fisheries surveys/monitoring, etc.). The ESA Info Needs document and prior EISs should be consulted for guidance on the appropriate IPFs to be analyzed.
3.15	Global	The DEIS lacks an analysis on the potential effects from Revolution Wind's request to pile driving during nighttime and impaired visibility conditions. Please be clear on BOEM's intent to limit or approve nighttime/poor vis conditions and an analysis of impacts from that decision.
3.15	Global	Please obtain the most recent exposure/take estimates for the Revolution Wind project from Orsted, and revise table values in the EIS accordingly.
3.15	Global	As the DEIS is revised, to ensure consistency between documents please refer to the recent comments we have submitted to BOEM on the BA prepared for the ESA section 7 consultation.
3.15.1	479	It is unclear why the document references Orsted (2022) when talking about the incidental harassment authorization. The reference would be appropriate if discussing the application. Please revise to say "incidental harassment authorization for the Project, if issued by NMFS, will differ."
Table 3.15-2	485	The population estimate for right whales should be based on Hayes et al. (2022). Please change to Nbest=368 (Nmin=364). Please revise. The EIS can also cite the most recent NARW card population estimate.

Table 3.15-2, 3.15-7, and 3.15-8	485, 509-510	Table 3.15-2 includes hooded and harp seals as species likely to occur in the project area. However, these species are not included in Tables 3.15-7 and 3.15-8. Please include rationale for omitting these animals as potentially impacted from the project given their "likely" occurrence. NMFS notes Revolution Wind did not request incidental take of these species in their MMPA authorization.
3.15.1.1.1	488	Please include UXO detonations in the list of activities in the noise section on this page.
3.15.1.1.1	489	Please specify the type of injury (PTS) in this phrase "marine mammals would have to remain close to the sound source for extended periods of time to experience injury."
3.15.1.1.1	491	Given the uncertainty expressed in this phrase "This suggests that operational noise effects on marine mammals could be more intense and extensive than those considered herein," it seems determining that "operational noise effects from other future actions would likely be minor adverse..." is premature. Please revise the last sentence in this paragraph to express the uncertainty included in the first phrase included here.
3.15.1.1.1	491	Please include the possibility that helicopters will also be used for crew transfers (as an alternative to using vessels).
3.15.1.1.1	491-492	Discussion of potential oceanographic effects should include mention of multiple references instead of solely relying on the Johnson et al. (2021) report. This topic is unsettled and should reflect a diversity of potential outcomes reflected in the literature.
3.15.1.1.1	492	Please discuss entanglement with regards to ghost gear in addition to the potential displacement of fishing effort that is provided.
3.15.1.1.1	493	Please provide supporting evidence that any adverse impacts on marine mammals are limited to "minor" given the "considerable uncertainty" and that the "significance [of these effects] is unknown" as stated in the paragraph.
3.15.2.1	496	There is no Table E2-5 in Appendix E, Attachment E2. The Tables in this attachment are not numbered E2-1, E2-2, etc. Please revise either the tables numbering in the attachment or the references to table numbers in the text to provide clear directions for the reader.
Table 3.15-4	497	Noise/Alternatives C-F cell: Please quantify the anticipated reduction in impact pile driving noise and estimated take should fewer piles be installed per Alternatives C-F.
Table 3.15-4	497	Noise/Alternatives C-F cells: Please change "behavioral effects threshold" to "behavioral harassment threshold."
Table 3.15-4	497	Presence of structures/Alternative B: When discussing potential displacement, the EIS states "cumulative effects are likely to range from minor to moderate adverse varying by species" in one paragraph, but then goes on to say "but there is currently no basis to conclude that these impacts would result in moderate to major adverse long-term effects on any species." Please either correct or explain this inconsistency between these two statements.
Table 3.15-4	497	Vessel traffic/Alternatives B-F: Please include Slow Zones, in addition to SMAs. Slow Zones, by definition, include both DMAs (triggered by visual detection of right whales) and acoustically-triggered slow zones (triggered by acoustic detections of right whales).
Table 3.15-4	497	No Action Alternative/Presence of Structures cell: Please provide supporting evidence that any adverse impacts on marine mammals from existing baseline and future conditions are limited to "minor" given the "considerable uncertainty" and that the "significance [of these effects] is unknown" as stated in the paragraph and the fact that existing baseline impacts to North Atlantic right whales are not currently minor.
3.15.2.2.1	501	The text states that "Impact hammer installation of the RWF WTG and OSS foundations would produce the most intense underwater noise impacts with the greatest potential to cause injury-level effects on marine mammals." However, UXO detonations are actually the activity most likely to cause injury-level effects. Also need to clarify the potential for auditory injury (i.e., PTS) vs. non-auditory injury (e.g., lung injury, gastrointestinal injury) and mortality. While pile driving would occur more often than UXO detonations and therefore it could be said that the magnitude (i.e., amount of exposures) to pile driving is greater, as stated this is not an accurate statement. Please correct this in the text, and throughout where appropriate.
Table 3.15-5	502	While it is true that explosive thresholds for mortality, GI tract injury and slight lung injury are influenced by mass and depth, we suggest including the relevant threshold equations. Please also include the thresholds for PTS, TTS, and sub-TTS behavior specific to UXO detonations (but noting the latter of which is not likely to occur given Revolution Wind would not detonate more than 1 UXO per day). Include a description of the potential for all impacts from explosives and then please distinguish those impacts that are likely to occur from those that are not, based on modeling results and specific proposed mitigation and monitoring measures.

15.5.2.2.1	502	Please fully describe the As Low as Reasonably Practicable (ALARP) approach described by Rev Wind. There are other alternatives to 1) safely relocating UXOs or 2) detonation. For example, Revolution Wind may attempt deflagration prior to resorting to high-order detonation. Please include this in the text at the top of pdf p. 503 and throughout, as appropriate.
Table 3.15-6	502	Please specify in the Table heading whether these are acoustic ranges (R95%) or exposure range (ER95%) values.
Table 3.15-6	505	Please change the number of strikes required to install a 12-m monopile from 6,500 to 10,740 per Revolution Wind here and throughout the document, as appropriate. The strike count in the ITA application correctly specified this, but the acoustic modeling report did not and has now been revised to do so.
13.5.2.2.1	506	The 120dBrms threshold is NMFS' behavioral harassment threshold. Please change the word "effects" to "harassment" in the following phrase: "120 dB re 1 µPa threshold (NMFS 2019) for behavioral effects from continuous noise sources,"
13.5.2.2.1	507	Within the Noise section, among pile driving, UXO detonation, and HRG surveys, the latter was assigned an activity-specific impact level. We recommended identifying an impact level for all noise combined and not segment each noise source as this segments projects impacts for an individual IPF.
3.15.2.2.1	507	As mentioned in a previous comment, the 120dBrms threshold is NMFS' behavioral harassment threshold. Disturbance not rising to the level of harassment, as defined in the MMPA, can happen below this threshold. Moreover, there is no harassment threshold specifically for "auditory masking". Please replace "disturbance" with "harassment, as defined in the MMPA...." and remove "auditory masking". Please do this wherever else there is incorrect references to an auditory masking threshold.
13.5.2.2.1	507	Footnote: Please specify in this footnote that "takes longer than necessary" refers to a single foundation installation, rather than that the broader project schedule. If this is not BOEM's intention, please revise the language in the footnote to provide clarity so that BOEM's intention is clear to the public.
3.15.2.2.1	507	Please clarify whether "the [UXO] devices are distributed such that the exposure areas would not overlap" means that the overlap would not occur in time, in space, or both. Please also clarify that BOEM would condition the permit such that UXO detonation noise would not overlap with noise from other sources (e.g., impact pile driving). Also discuss how noise from UXO is instantaneous and limited to 1 UXO detonation per day so if there is overlap (should BOEM not condition it to be allowed), any impacts would not likely be different than individual exposure from any one source. Also discuss the likely distance between any two noise generating sources as justification for any impact assessment on overlapping noise.
3.15.2.2.1	507	It is not correct to say "The take request associated with UXO detonation includes the potential for non-auditory injury." It is correct to say that the exposure analysis addressed the potential for non-auditory injury. Revolution Wind did not request take for non-auditory injury. Please correct.
Table 3.15-7	508	The values in this table should be updated to include the following number of PTS exposures incidental to UXO detonations: harbor porpoise (49), harbor seal (5), and gray seal (3) These updates resulted from Revolution updating the animal densities used in exposure estimation.
Table 3.15-8	509	Revolution Wind did not specifically estimate TTS exposures. The values in this table (which don't align with Revolution Wind's most recent exposure estimates, and should be revised) are related to behavioral harassment thresholds Please remove "a Temporary Threshold Shift or" from the title, and request the most recent exposure modeling results from Revolution Wind to update the table values.
13.5.2.2.1	511	The beginning of this paragraph introduces vessel noise, and the distance within which a marine mammal would have to remain for 24 hours to incur PTS (400 ft), but the paragraph goes on (three sentences later) to state that a marine mammal could clear the zone of potential noise exposure in 4 hours. Please revise the text to create logical connections between the presented ideas. Also, identify how unrealistic it is for PTS to occur based on the assessment (i.e., animals would have to remain within 400 ft of vessel for 24 hours for the potential for PTS to occur).
3.15.2.2.1	512	It is not clear what the following means: "and 3) construction timing along with development and adoption of an adaptive acoustic monitoring plan for sensitive species that would be intended to avoid noise impacts in areas with sensitive species during spawning periods." Please revise for clarity. What is an adaptive acoustic monitoring plan in this context, and to which species does this refer? How does construction timing avoid impacts to spawning behavior?

3.15.2.2.1	513	The discussion in this paragraph requires substantial revisions. Please provide a more robust, well supported review of potential impacts of the presence of structures on marine mammals. Please refer to the NEFSC's memo to BOEM as a starting point.
3.15.2.2.1	516	Please include Robert et. al (2022) as a reference. Revolution Wind has revised densities and take estimates using the most recent Robert et al. (2022) data. Update the DEIS with this information.
3.15.2.2.1	516	"Due to the low relative densities of those species vulnerable to collisions compared to where the majority of the population is, there is a low risk of marine mammal vessel encounter." This statement still needs to be revised to address the fact that densities fluctuate by season and by species and needs support (note NMFS does not necessarily agree with this statement as is). For example, peaks in humpback whale presence and those for right whale presence in the project area do not occur at the same time of year.
3.15.2.2.2	518	It is more appropriate to say that mid-frequency cetaceans are more likely than low-frequency cetaceans to be able to adapt to operational noise effects, rather than saying that mid-frequency cetaceans are "likely to" adapt. Identify the mechanisms by which marine mammals can adapt. Also, there are also strains associated with having to shift the frequency range in which a marine mammal communicates, so characterizing this ability as a benefit is not accurate.
3.15.2.2.2	522	The EIS states that "localized impacts on zooplankton and fish abundance and distribution are not likely to be biologically significant for marine mammals," but then goes on to say that "hydrodynamic effects on prey distribution could contribute to displacement effects and increased interaction with fisheries for some marine mammal species; however, the likelihood and potential significance of such effects is unknown." Given this uncertainty, it is contradictory and illogical to say that impacts are not likely to be biologically significant. Please revise using the best available science, site specific analysis, and recognition of uncertainty.
3.15.2.2.2	523	Please identify what constitutes a "Project monitoring vessel".
3.15.2.2.3	525	The text states that the Proposed Action combined with all existing and planned future action "would place over 3,000 noise generating structures in the RI/MA and MA WEAs," but then goes on to say that "3,008 foundations...[would be placed]....on the OCS between North Carolina and Maine." Check numbers, spatial distribution, and revise.
Tables 3.15-10, 3.15-11, and 3.15-12	529	As mentioned in a previous comment, Revolution Wind did not evaluate distances to specific TTS thresholds, so the values in this table are distance to the behavioral harassment threshold (160 dB re 1 micropascal). Please remove TTS under "Noise Exposure Type." In addition, please update the number of strikes in the footnote to 10,740.
Table 3.15-13	535	NMFS must approve any modification to the size of the clearance and shutdown zones. Neither BOEM nor BSEE has the authority to do so without NMFS. Please revise Table 3.15-13 to reflect this.
Section 3.16 – Navigation and Vessel Traffic		
3.16.1	538	Please update Figure 3.16.-1 to reflect that Davisville, RI is also a commercial fishing port.
Section 3.17 – Other Uses		
3.17.1.4	561-564	The DEIS states that implementation of the NMFS/BOEM Federal Survey Mitigation Strategy would reduce effects on commercial fisheries and for-hire recreational fishing from a major adverse impact to a long-term moderate adverse impact level. This conclusion is not supported nor is it consistent with the best available analysis conducted by NMFS. Please revise.
3.17.1.4	561-564	The DEIS does not include any discussion nor details on how major impacts will be mitigated at the project level other than referencing the ongoing BOEM/NMFS survey mitigation efforts, suggesting that the project would comply with mitigation measures set forth in the federal survey mitigation strategy. However, the mitigation strategy is not currently resourced and does not set requirements or standards for projects to comply.
3.17.1.4	561-564	In order to minimize the major adverse impacts expected on scientific surveys, we recommend mitigation measures be required and implemented before development moves forward, consistent with our joint survey mitigation efforts. As stated in the DEIS, we will continue to work with you to ensure these details can be included in the FEIS.

Section 3.18 – Recreation and Tourism		
3.18	General	An analysis of private recreational angler exposure should be included based on methodologies of Kirkpatrick et al. 2017 with updated data that is publicly available through MRIP. See section 3.1.4.2 and 3.1.4.2 for methodologies. https://espis.boem.gov/final%20reports/5580.pdf
3.18	General	Please use the Community Social Vulnerability Indicators (CSVIs) Recreational Indicators to identify the communities that are engaged in and reliant on recreational fishing.
3.18	General	It's difficult to assess the full impacts of recreational fishing by separating private angling into tourism and considering for-hire separate. These are overlapping sectors in the economy. Recreational fishing should provide the same environment description and analysis as commercial and for-hire fishing. This section should include more detail regarding trips, species by trips, effort estimates in the region (see MRIP datasets: Access Point Angler Intercept Survey and Fishing Effort survey. https://www.fisheries.noaa.gov/recreational-fishing-data/types-recreational-fishing-surveys). Data is available for the mode of fishing (shore, head boat, charter, private boat/rental boat), time of year, # of trips, catch, geographic location (i.e., open ocean, >3 miles). Note where the data is limited for private angling.
Section 3.19 – Sea Turtles		
3.19	Global	Global comment: This section notes that "GAAs are not used as a basis for analyzing the direct and indirect effects of the Proposed Action, which represent a subset of these broader effects and expressed over a smaller area. These impacts are analyzed specific to each IPF." This language is also used in other sections of the document, but in general, the intent and relevance of this statement are unclear as written, and it should be revised. Please see additional comments on GAAs and scale of impacts in the attached letter.
3.19	Global	Global comment: The Gulf of Mexico is listed as a potential port and thus at least a portion of the Gulf and connecting waters are part of the Affected Environment; however, the DEIS does not consider hawksbill sea turtles or ESA-listed species that occur in the Gulf of Mexico. This issue should be rectified in coordination with the BA prepared for the ESA section 7 consultation. Revisions may be needed to other chapters in addition to sea turtles if activities are planned in the Gulf of Mexico.
3.19	Global	Global Comment: As the DEIS is revised, to ensure consistency between documents please refer to the recent comments we have submitted to BOEM on the BA prepared for the ESA section 7 consultation.
3.19	Global	Global comment: The sea turtle density estimates do not match those in the South Fork Biological Opinion which seems to be based on the same data sources. In general they are lower than those presented in the South Fork BiOp. For example, Kemp's and greens are 0.009 in the SF BiOp and 0.0001 in the RevWind BA, though they both refer to the SERDP data for these densities. Loggerheads and leatherbacks look the same in the summer and fall, but have different densities in winter and spring (again from SERDP). This issue should be rectified in coordination with the BA prepared for the ESA section 7 consultation.
3.19	Global	Global comment: The section is missing IPFs and subsequent analysis that should be considered for sea turtles (i.e. habitat disturbance, cable laying, pollutants/discharges, lighting, EMF, surveys/monitoring). The ESA Info Needs document and prior EISs should be consulted for guidance on the appropriate IPFs to be analyzed.
3.19	Global	The use of other environmental review documents (e.g. BOEM 2021a, Denes 2021) to describe project activities and justify impacts for other projects is not appropriate. This section uses other EISs and other associated documents prepared specifically for other projects as evidence that species will not be affected without any context or rationale. Citations should be reviewed throughout this section to ensure that they provide information that supports the conclusion being made. The rationale/analysis should be carried out in this document, citing primary literature as needed.
3.19.1.1	1127	UXOs are missing from the Noise IPF; this should be added to the FEIS.
3.19.1.1	1131	Sea turtles nest in areas where potential cable routes come ashore and some onshore activities related to cable laying could have impacts that may affect the marine environment/habitat. Consider revising this section which currently states no impacts from onshore activities will occur.

3.19.2.2	1139	Mitigation and monitoring measures are only briefly referenced with no analysis of their effectiveness. Additionally, measures that are mentioned are very sparse (only a few measures listed in Appendix F with little to no specific details) and there is not adequate information provided to understand what the measures would include. Given the reliance on mitigation measures as part of the analysis, the lack of details regarding the actual measures, how they will be implemented, and their effectiveness is problematic and does not allow for a complete analysis. This should be addressed in the FEIS.
3.19.2.2	Global	Global comment: Analyses overall are brief; the lack of detail on relevant project information limits the ability for a reader to understand the relevant project activities and impacts associated with them. Additionally, the impact definitions used in the analysis make it difficult to understand what the actual impact on the species/taxa will be. It is unclear how BOEM determines that impacts will affect the viability of sea turtle populations given the ESA status of some species.
3.19.2.2	1141	Please add citations for all the thresholds listed in table 3.19-3. Additionally, clarify in the FEIS the ranges of the various threshold distances and any considerations for those distance ranges.
3.19.2.2	1141	The characterization of nighttime pile driving is not consistent with the BA prepared for ESA section 7 consultation. Nighttime pile driving is being proposed by the developer. This is a critical omission and the effectiveness of mitigation measures at night needs to be carefully considered.
3.19.2.2	1142	The text states that "individuals could become habituated to repeated exposures over time and ignore a stimulus that was not accompanied by an overt threat (Hazel et al. 2007)," this suggests that sea turtles may not move away from elevated noise levels (as assumed above) and thus be at risk of exposure to injurious levels of noise. Suggest revising the text for clarity about habituation.
3.19.2.2	1144	Columns in Table 3.19-4 are split for UXO detonations for PTS, please clarify in the table what the two fields are.
3.19.2.2	1150	The consideration of the effects of the presence of structures on oceanographic conditions is improved from the pDEIS but only considers impacts to productivity/stratification. A wind farm/regional analysis is also needed. This section should consider the range of other potential oceanographic impacts, how prey aggregate, how different sea turtles forage, and how the presence of structures may/may not impact their ability to forage efficiently, both in the pelagic zone and near the seafloor. It should also be noted that presently there is no way to mitigate potential oceanographic/atmospheric impacts. Thus this section should thoroughly explain both project oceanographic and atmospheric impacts and subsequent ecosystem impacts.
3.19.2.2	1152	Based on the information presented, we do not agree with the determination that the potential for vessel strikes on sea turtles is negligible adverse. Project vessel traffic will overlap with sea turtles and it is unclear how mitigation measures will reduce the impact to negligible.
Appendix A		
National Marine Fisheries Service	607	The second sentence should refer to consultations, as NMFS does not issue a permit or authorization under the ESA. Critical habitat is missing from the third sentence.
Marine Mammal Protection Act	614	This section is being mischaracterized by its placement in the section called "Consultations". The action being taken under the MMPA is not a consultation; it is an authorization. Please retitle the section "Consultations and Authorizations".
Appendix E (E1 – E4)		
Table E2-5	832	The document states that gray and harbor seals have no PBR estimate, which is incorrect. Please revise.
Table E.4-1	1231	Please clarify what the values in table E.4-1 represent, and how they were calculated. Please provide a clear explanation above the table, and indicate in the table heading what the values represent.
Appendix F		

Appendix F	Global	Please distinguish between the mitigation and monitoring measures proposed by Revolution Wind and those that BOEM is proposing (e.g., restrictions on nighttime pile driving).
Table F-1	1247-1248	Revolution Wind must monitor clearance and shutdown zones, not exclusion and monitoring zones. NMFS requires that PSOs monitor as visibility allows, rather than limit monitoring to a particular zone. Please correct this in Table F-1.
Table F-1	1248	Revolution Wind must conduct sound field verification on the first 3 pile installations, and additional pile installations should installation conditions change (e.g., water depth, substrate), to satisfy the MMPA ITA requirements. Please correct the text to reflect this requirement.
Table F-1	1248	Please include the following: Visual observers may be third-party observers (i.e., NMFS-approved PSOs) or crew members, dependent on ensuring crew members acting as dedicated observers receive prior training on protected species detection and identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements in the IHA.
Table F-1	1248	EPM MM10: Please include time of day restrictions on pile driving if BOEM intends to impose them.
Table F-1	1248	Please include that Revolution Wind would be required to employ trained PAM operators in addition visual PSOs.
Table F-1	1259	Please note that NMFS would require that the PAM Plan, Sound Field Verification Plan, and Pile driving Monitoring Plan be submitted 180 days prior to the start of pile driving.
Table F-1	1260	Please clarify that NMFS will decide whether or not zone sizes may be modified based on Sound Field Verification data. The way it is currently written implies that BOEM and BSEE would be part of that decision-making process.
Appendix K		
Appendix K	2366	Figures should be provided illustrating all available cod spawning data in the project area. For clarity, the habitat complexity delineations with large boulder overlay should also be included.