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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
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March 15, 2019

James Bennett
Chief, Office of Renewable Programs
Bureau of Ocean Energy Management
Environmental Branch for Renewable Energy
45600 Woodland Road, VAM-OREP
Sterling, Virginia 20166

**Re: Comments for the Bureau of Ocean Energy and Management's Draft
Environmental Impact Statement for the Vineyard Wind Proposed Wind Energy
Facility, Docket Number BOEM-2018-0069**

Dear Mr. Bennett:

We reviewed the Draft Environmental Impact Statement (DEIS) received December 7, 2018, and published under the *Federal Register* Docket No. BOEM-2018-0069 regarding the Construction and Operation Plan (COP) submitted by Vineyard Wind LLC (Vineyard Wind) for the construction, operation, maintenance, and decommissioning of a commercial scale offshore wind facility within Lease Area OCS-A-0501. We conducted this review from a unique perspective: not only are we a cooperating agency with expert understanding and jurisdiction over marine trust resources, but we are also a consulting agency under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and Section 7 of the Endangered Species Act (ESA), as well as an action agency to the extent NOAA provides Incidental Take Authorization (ITA) under the Marine Mammal Protection Act (MMPA). Accordingly, this National Environmental Policy Act (NEPA) document must also satisfy important NOAA specific priorities, perhaps the most prominent being that this DEIS must be sufficient to satisfy NOAA's own legal NEPA responsibilities as part of the agency's MMPA ITA analysis. Provided we determine the document is sufficient to do so, we intend to rely on and adopt your FEIS to satisfy our independent legal obligations to prepare an adequate and sufficient NEPA analysis in support our proposal to issue the ITA for this project. This approach is directed by the One Federal Decision policy under Executive Order 13807.

This letter provides an overview of our most significant comments and concerns related to the DEIS. Specific comments by section are provided as an attachment to this letter (Attachment A). We are providing these comments to you now because, as noted in our February 22, 2019, letter, the January government furlough prevented us from completing our review and providing comments to



you earlier. We consider these comments to be a priority as you work to develop the FEIS for the project.

Designation of Scale of Impact

Months ago during our review of the preliminary DEIS, we expressed concern that certain DEIS conclusions appeared to lack sufficient support in the record. While we appreciate BOEM's work in providing increased rationale in this present DEIS iteration, many of our same concerns remain. For example, we determined that many of the conclusory statements relating to the scale of impacts for biological and socioeconomic resources are not well supported in the document. Specifically, impacts categorized as major appear under-inclusive, while impacts designated as moderate seem overly inclusive. In some cases, the identified scale of impacts does not appear to meet the definition of impact levels outlined in Chapter 3 of the DEIS. To help address this concern, the document should clearly identify whether impacts are considered beneficial or negative, the anticipated duration of the impacts, and the intensity of impacts. This information should also include substantive documentation that supports the conclusions made regarding the anticipated scale of impacts.

Further, the DEIS reduces the scale of impacts with the incorporation of mitigation measures. The mitigation measures, however, are not identified nor analyzed in the document. For example, the document suggests mitigation is relied upon to reduce impacts to commercial fishing vessels from major to minor, but the exact nature and scope of that mitigation is not defined in the document, nor was it articulated for all aspects of the commercial and recreational fishery. The analysis is solely dependent upon an undefined financial mitigation package, while impacts to the fishing communities go beyond just revenue loss. It is not clear how a simple financial package could reduce a major impact to minor. Furthermore, the document should not assume that mitigation is an automatic positive across all resources. Specifically, mitigation to one part of the fishery may exacerbate impacts in another, or act in synergy with or antagonism to impacts to marine trust resources, such as whales, fish, and communities. Although the interconnectedness of the resources adds a certain amount of imprecision to the analysis, a qualitative analysis is possible. Even a qualitative analysis needs some specificity on the nature of the mitigation itself. Accordingly, if the document is going to conclude that mitigation will minimize the scale of impacts, that proposed mitigation should be clearly described and analyzed to support any change in the anticipated scale of impacts.

As we noted in our February 22nd letter, new information relevant to our authorities has recently come to light. Much of the new information is directly associated with mitigation measures related to marine mammals and fishing activities; however, these measures are neither identified in the DEIS nor analyzed. Understanding how the mitigation measures affect the impacts of the project continues to be one of our more significant issues with the document. Absent this information, it is difficult to understand how the scale of impacts is reduced.

In addition to mitigation, there are some potential impacts to biological resources that do not appear to be fully evaluated or analyzed in the document. For example, there is limited discussion and no full analysis related to potential impacts to pelagic habitat or alteration of habitat from project operation. Discussion related to impacts on larval transport is limited to one sentence in the document; however, pelagic habitat and potential impacts to that habitat is an important component of the project area that warrants full analysis. Furthermore, there is limited analysis on impacts to Habitat Areas of Particular Concern (HAPC) for juvenile Atlantic cod, which is expected to be impacted by the project, as the cable route runs directly through this sensitive habitat. It is important

to ensure all potential impacts of the project are evaluated in the document to adequately support conclusions related to the scale of impact.

We also have concerns related to the analysis of Alternative D2, which addresses an alternative spacing and orientation of the turbine layout. Data provided by the fishing industry as well as Automatic Identification System (AIS) and vessel monitoring system (VMS) data show clear patterns of east-west orientation of fishing activity throughout much of the lease area. However, it is not clear in the document that this information was considered and analyzed. We understand that other developers with adjacent projects are proposing expanded distances among turbines and an east-west orientation at the request of the fishing industry; however, this does not appear to be addressed in the socioeconomic or cumulative analysis. While Alternative D2 would not fully eliminate impacts to fishing operations, available information suggests impacts would be minimized for some fishing vessels, allowing them to continue to fish the area and thus reducing the negative economic impacts they incur. Despite the available information, the analysis comparing the alternatives suggests the net benefits of the different alternatives are limited and the scale of impacts for Alternative D2 is considered the same as the proposed action. This conclusion does not appear to be supported by the limited analysis.

Fisheries Economic Impact/Revenue Analysis

In our review of the socioeconomic impacts on fisheries, we noticed that the most accurate or updated data on fishery landings and associated revenue have not been integrated into the DEIS, and in some cases, the data are not used in the proper context. To help address our concerns and augment data included in the document, we provide additional analysis of landings and revenue by fishery and ports as an attachment to this letter (Attachment B). As noted in the attachment, some of the most prominent fisheries that operate in the lease area do not appear to be fully characterized in the DEIS. For example, based on our analysis, the squid fishery landings in 2016 appear to be underrepresented, the Jonah crab and American lobster fisheries are not sufficiently characterized, and the analysis of fixed gear and recreational trips is outdated. An analysis that relies solely upon AIS or even our own VMS data often under-represents affected fishing activities, as not all vessels or fisheries are required to use these systems. We recommend the FEIS include the most recent information available to accurately characterize all fisheries affected by the proposed action.

In addition to our concerns related to data, we are concerned that both the cumulative analysis (Appendix C) and the analysis under Chapter 3 do not appear to sufficiently address potential economic impacts to the fishing industry. For example, the DEIS does not fully address impacts associated with the displacement of fisheries. In some cases, if fishermen are displaced from an area they will move somewhere else which can have direct economic impacts such as increased fuel costs, longer trips, etc., as well as indirect impacts such as increased conflicts with other fishermen. However, it is also possible that the fish are simply unavailable to the fishery outside of the area. That is, sometimes fisheries occur where they do because of the confluence of bio-oceanographic conditions that make fishing possible (e.g., depth, temperature, and habitat type leading to an aggregation of sufficient density to fish effectively). In such cases, moving is simply not an option because the fish would not be there. These impacts are not adequately considered in the document. As part of this analysis, the document should evaluate potential changes in catch and catch rates across the different alternatives and in areas where fishing effort could be displaced as a result of the project. The potential for certain fisheries to be able to relocate should be also be considered. The economic data specific to the fisheries that operate in the project area appears to be limited. To fully evaluate fisheries operations in the area, we recommend evaluating additional

information including the number and type of vessels that may be impacted, their reliance upon this area for fishing revenue, and the scale of potential impact to these and other vessels directly or indirectly affected by the displacement of effort. In addition, we did not find a comprehensive cost-benefit analysis of the proposed action in the DEIS. While impacts to affected components of the natural and human environment are discussed, an overall evaluation of whether the potential cumulative benefits outweigh the potential cumulative costs is important to include in the analysis.

In addition to impacts associated with revenue, potential social and cultural consequences of the project, such as time away from home, economic uncertainty, cultural affiliation, identity, and safety are important components of an assessment of impacts to fishing communities. These types of impacts are not adequately considered in the document. In addition, safety issues, including elevated risk of collision and injury/mortality of vessel operators and crew, are not discussed in any detail in the DEIS. Information that addresses the potential for accidents, deaths, and injuries for commercial fishing due to adaptation to restrictions imposed by construction and operation of wind farms is important to include in the analysis.

Pile Driving Analysis

The concerns we raised in our cooperating agency review of the preliminary DEIS related to the pile driving analysis remain. The analysis of impacts on pile driving to sea turtles, marine mammals, and fish (including ESA-listed Atlantic sturgeon) and fisheries does not sufficiently address our requirements as written in the DEIS. The analysis of potential impacts to biological resources is very limited in scope and at numerous points it is unclear what scenario is being presented. Related to fish and fisheries, there is limited analysis of areas of mortality, injury, and behavioral impacts, particularly spawning activity for relevant species and potential loss in catch resulting from pile driving activities. Regarding the analysis of pile driving impacts to marine mammals, instead of relying heavily on numbers provided by the applicant in the COP (i.e., take numbers, percentages of stocks taken, and sizes of harassment zones), which are still preliminary at this time, we recommend including a summary of the impacts of pile driving noise on marine mammals based on available literature to reach conclusions on relative impact levels.

Cumulative Impact Analysis

During our cooperating agency review of the preliminary DEIS, we raised concerns related to the cumulative impacts analysis, and these concerns remain after our review of the publicly released DEIS. The cumulative impacts analysis is too narrow. Specifically, related to other offshore wind leases, the analysis focuses on the Tier 1 and Tier 2 projects which is limited in scope given the fact that there are several more lease areas with projects planned and anticipated dates for receipt of COPs. Further, on December 14, 2018, BOEM concluded expansive lease sales for offshore energy valued at a total of \$405 million, located immediately adjacent to the Vineyard Wind proposed project area. The areas included in the December 2018 lease sale should be considered in the cumulative impact analysis, even if the project specific parameters are not fully understood. The companies that have secured leases to these offshore wind development sites have made a substantial investment, and it is reasonably foreseeable to anticipate this investment will lead to offshore wind development. We consider these to be “reasonably foreseeable” projects, and including them in the cumulative assessment is essential for a meaningful understanding of the impact of wind energy on our trust resources and fishing communities.

A more meaningful cumulative analysis of all the alternatives would greatly assist our overall understanding of project impacts. This is the case even for the projects currently included in the

evaluation. We are particularly concerned with the lack of cumulative analysis related to biological, social, and economic impacts. For example, it is not clear that there has been a consideration of how any anticipated displacement of fishing or vessel activity from the project area may result in a change in risk of interactions between those activities and protected species and other fishery resources outside the project area. It is important for the analysis of cumulative impacts to address these non-linear impacts from multiple stressors.

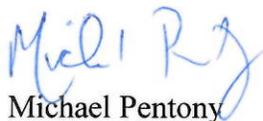
Federal Fisheries Surveys and Stock Assessments

We are concerned with the lack of adequate analysis in the DEIS on impacts to scientific and research surveys. There is only a limited discussion related to impacts to scientific surveys, which do not appear to specifically address the existing long-term surveys occurring in the project area. The conclusion that scientific research and surveys would have minor beneficial impacts as a result of the project is not supported by the analysis, which does not appear to take into account impacts to existing surveys. Most importantly, the DEIS does not analyze the potential impacts to NOAA surveys or the management decisions that rely on these surveys. To help address this concern, we provide additional information related to impacts on NOAA surveys in the attached document (Attachment A).

Conclusion

We appreciate your willingness to work with us to improve the document and to address issues in a proactive and cooperative manner. As mentioned above, NOAA has significant experience and expertise on issues relating to our marine trust resources. Continued collaboration and incorporation of this expertise will undoubtedly strengthen the document and assist the public and decision-makers with a better understanding of this project. We will provide our comments related to additional information needs for our ESA and Essential Fish Habitat consultations under a separate cover. We would be happy to discuss our comments and information needs in greater detail at your convenience. Should you have any questions related to these comments, please contact Sue Tuxbury (susan.tuxbury@noaa.gov, 978-281-9176).

Sincerely,



Michael Pentony
Regional Administrator

cc: Michelle Morin, BOEM
Brian Krevor, BOEM
Tim Timmerman, USEPA
Tom Chapman, USFWS
Christine Jacek, USACE
Ed LeBlanc, USCG
Mary Krueger, NPS
Cindy Whitten, FAA
Cheri Hunter, BSEE
Lisa Berry Engler, MACZM
Grover Fugate, RI CRMC
Candace Nachman, NOAA
Tom Nies, NEFMC
Chris Moore, MAFMC
Lisa Havel, ASMFC

ATTACHMENT A
National Marine Fisheries Service's Comments on
BOEM's Draft Environmental Impact Statement (DEIS) for the
Vineyard Wind Offshore Wind Energy Project (BOEM 2018-0069)

SECTION 1 | Introduction

We recommend you include a statement about NMFS adopting this EIS as the basis for our decision about whether to issue the incidental take authorization (ITA) to the applicant (Vineyard Wind). Since NMFS has an independent requirement to comply with NEPA, and our action to authorize incidental take under the MMPA is not substantially the same as BOEM's proposed action to approve or disapprove the COP to construct, operate, and decommission the ~ 800 MW commercial-scale wind energy facility within Lease Area OCS-A 0500 under the authority of other laws, we request a second paragraph in Chapter 1 under Section 1, before Section 1.1 be added regarding NMFS' intentions to adopt this EIS. The paragraph should read as follows:

"The National Marine Fisheries Service (NMFS), as a result of BOEM's proposed action, received an application pursuant to the Marine Mammal Protection Act (MMPA) for an Incidental Take Authorization (ITA) from Vineyard Wind and has an independent responsibility to comply with NEPA. Consistent with the One Federal Decision (OFD) requirements, NMFS is relying on the information and analyses in BOEM's EIS as it intends to adopt this EIS and sign a Record of Decision (ROD), if NMFS determines BOEM's EIS to be sufficient to support its separate proposed action and decision under the MMPA."

The introduction refers to impacts associated with the project/wind farm itself, which occupies a subsection of the Lease Area; however, there may also be impacts to the lease area on the portion of the lease area on which the wind farm is not located. We recommend the FEIS also include discussion of how conditions in the remaining lease area might change once project construction activities begin and during operation.

SECTION 2 | Alternatives Including the Proposed Action

SECTION 2.1.1.1 | Proposed Action (Alternative A) | Construction and Installation

The cable installation methods that will be used for the proposed action are not clearly described. This section lists a number of potential ways a cable may be buried during construction of the project including jet plow, mechanical plow, and/or mechanical trenching and discusses the dredging technology options available. However, it does not describe these methods in detail or when and under what environments these methods might be used. We suggest you provide a clearer explanation of construction methods to be used and the total area of impact for all technology proposed for construction.

The DEIS states, "In certain areas, alternative installation methods may be needed." As commented above, these alternative methods should be described in detail, to allow for evaluation of impacts to habitat and species that may be affected. Similarly, it is noted that

Vineyard Wind could use several techniques to complete the dredging; however, these specific technique(s) are not described, but should be included in the evaluation of impacts.

The DEIS states that up to 10 percent of the inter-array and offshore export cable corridor (OECC) would require protective measures. Justification for such a high percentage of cable protection along the project should be included and described in detail. Areas of anticipated cable protection should also be identified and described.

The DEIS states that Vineyard Wind will not propose, direct or implement any port improvements (page 2-8) for construction, operation, or maintenance of the project. Any port modifications or improvements conducted to accommodate this project, even if not directly conducted by Vineyard Wind, would be a direct result of the proposed action and must be described and analyzed in the EIS.

Table 2.1-2, only provides a list of potential ports to be used for the project. More detail should be provided about which ports would be used and in what capacity.

SECTION 2.1.1.2 | Proposed Action (Alternative A) | Operation and Maintenance

The last paragraph under this subsection on page 2-10, describes a potential transit corridor through the project that will be determined based on stakeholder input. This section should provide more information on what stage in the process these corridors will formally be established, and how they will be integrated into the project analysis.

SECTION 2.1.7 | Alternatives Considered but not Analyzed in Detail

Under the “Alternative Location for the Wind Energy Facility Further Offshore in Lease OCS-A 0501” and under the “Alternative Spacing between Energy Turbines,” the DEIS describes as a reason for not considering these alternatives; delays to permits due to additional surveys requirements and potential impacts of the proposed Project’s inability to meet the requirements of the power purchase agreement, “foreclosing its economic feasibility.” It also suggests such alternatives would be inconsistent with EO 13807, with no explanation as to how these alternatives are inconsistent. This reasoning should be further clarified or removed from the DEIS. Other alternatives evaluated in the DEIS suggest potential delays due to the need for more survey work; however they are included as alternatives for consideration. Based on the description in this paragraph, a project that requires additional survey work would not be economically feasible. This is concerning, as this language suggests such these alternatives are already deemed “infeasible”. This language should be clarified or removed. We would also add that meeting the requirements of the power purchase agreements is not described under the purpose and need of the project so this language should be further clarified or removed.

SECTION 3 Affected Environment and Environmental Consequences

In general, the DEIS heavily relies on cross-referencing the COP. During our review of the DEIS, we found it difficult to look up the referenced material. In a number of cases, information

that was referenced in the DEIS was not accessible from the COP included on your website. When attempting to review referenced sections in the COP, many sections were redacted and inaccessible. In some cases, when the references were accessible, they were not referencing the correct sections or Appendices, as information did not match the discussion in the DEIS. There were also references to Appendices that did not have a table of contents or specific sections, making it difficult to find the specific material being referenced. Prior to issuance of the FEIS, all references should be verified to ensure they are accurate and accessible. We would also recommend providing hyperlinks to the specific referenced sections of the COP to provide easy access to the information considered in the analysis.

Throughout Section 3, the DEIS should qualify whether impacts would be negative or positive in addition to providing the magnitude (e.g., the impact would be negative, but minor). When possible, note whether impacts will occur over the short term or the long term. If alternatives are to be combined “mix and match,” a matrix of impacts would help the public understand how the impacts would change if alternatives were mixed and matched.

There is no discussion in this section about how the impact analysis would be changed by applying mitigation measures to the alternatives. The mitigation measures should be described in detail and assessed if they are to be used in making determinations about the scale of impacts.

The document states repeatedly that impacts will be mitigated through monitoring. While we certainly believe that monitoring is a critical component for a project of this size and scale, we do not consider monitoring as a means of compensating for lost functions and values of marine resources. While some types of monitoring, such as real-time passive acoustics, may be considered mitigation, monitoring of project impacts should not be considered a measure to reduce impacts. We would recommend monitoring be considered as a separate entity of the project and that mitigation and monitoring not be used interchangeably in the document.

The comparison of alternatives considered in the DEIS is limited, making it difficult to understand the differences in potential impacts among the alternatives considered. The DEIS does not quantify or provide details on the differences of impacts, but rather suggests impacts would be less, more, or the same as the proposed action. Absent a detailed comparison, there is limited support for the determination of differences among alternatives.

SECTION 3.3 Biological Resources

SECTION 3.3.4.1 Biological Resources | Coastal Habitats | Description of Affected Environment for Coastal Habitats

The habitat types should be described in detail under the Project Area description.

The COP sections referenced under “Aspects of Resources Potentially Affected” cannot be accessed on your website, as these sections have been redacted. This section refers to various Zones of habitat but there are no maps to accompany these descriptions and the references cannot be accessed. A map depicting the delineation of habitat in the project area should be included.

On page 3-49, the DEIS states that Vineyard Wind routed the OECC to avoid sensitive habitats (referred to as SSU, special, sensitive, and unique habitats). However, this is not accurate, as on that same page the document describes how the cable route will encounter hard/complex bottom habitats. It appears as though the project avoided previously mapped habitat, but did not, in fact, avoid sensitive habitats that were not previously mapped. This section should not state that sensitive and unique habitats were avoided, as that is not accurate. The DEIS should also describe what was done, if anything, to minimize impacts to hard bottom habitats that were found during surveys of the project area.

Page 3-49 also describes eelgrass that was found “nearby” the project area. The distance from the eelgrass should be provided as well as an accessible reference to an eelgrass survey report.

Under “Condition and Trend” on page 3-51, it states that “hard/complex bottom coastal habitat in this area is subject to change over time,” however, there is no evidence to support this conclusion. It is our understanding that the historical maps that are referred to in this document were not fully ground-truthed and a detailed survey of this area to delineate all hard bottom habitat was never conducted. Therefore, this conclusion cannot be substantiated. This paragraph is misleading and should be modified or removed.

SECTION 3.3.4.3 Biological Resources | Coastal Habitats | Impacts of Alternative A (Proposed Action)

The development of an anchoring plan to avoid and minimize impacts to sensitive habitats should be included under the description of potential mitigation measures to minimize impacts of anchoring on coastal habitats.

When describing the extent of cable impacts (69 acres), it is not clear that this estimate includes indirect impacts, such as impacts from suspended sediment. This should be clarified. Both direct and indirect impacts should be evaluated and included in the estimate of project impacts.

The terminology for construction activity is not clearly explained or used consistently throughout the DEIS. For example language describing methods to bury the OECC was described on page 3-53, but is not consistent throughout the DEIS. In addition, when describing the potential impacts of sedimentation on this page, it is not clear which construction method was considered in the analysis.

When describing the distance from the eelgrass bed, it should be clarified if this 380 feet is from the centerline of the cable corridor, the edge of the corridor, or the edge of the entire work area. This information is important to clarify as impacts to eelgrass could still occur from construction activities, such as vessel anchoring, even if the cable itself is avoiding eelgrass beds.

Shellfish beds are located within the project area; however impacts to shellfish beds are not discussed. This section should also evaluate impacts of sedimentation on shellfish beds from project activities.

This section describes monitoring of coastal habitats as a mitigation measure. While monitoring is important to understand impacts of the project, it should not be considered mitigation. Further

discussion is necessary regarding how impacts from the project on coastal habitats will be mitigated. In addition, we have concerns that the benthic monitoring plan, as proposed in the COP, would not be sufficient to understand impacts of the project. Vineyard Wind and BOEM should work with the resource agencies to modify the benthic monitoring plan and in the development of additional resource monitoring plans.

The conclusion of net negligible impacts to coastal habitats is not fully supported by the document. In particular, the DEIS suggests the addition of hard protection would result in negligible to minor beneficial impacts. The extent of impacts and whether or not they are beneficial or negative may be dependent upon the location and habitat types to be impacted. While the project suggests 10 percent of the cable may require protection, it does not describe the location or habitat types that would be impacted, making it difficult to support conclusions related to the scale of impacts.

SECTION 3.3.4.3 Biological Resources | Coastal Habitats | Impacts of Alternative B

It would be helpful if the analysis of this alternative provided more details related to the differences in impacts on coastal habitats from the Covell's Beach and the New Hampshire Avenue landfall site. For example, it estimates less protection required when compared to the maximum impact scenario of both sites, but it does not adequately analyze the difference between the two proposed cable corridors. This would be important for any analysis of coastal habitats as the habitats present along the two proposed cable routes are quite different, with one route impacting estuarine habitat in Lewis Bay. However, as written, this analysis does not clearly differentiate the two cable routes.

SECTION 3.3.4.8 Biological Resources | Coastal Habitats | Cumulative Impacts

We have concern that the cumulative impact analysis only includes other projects that overlap the project area as well as a 1-mile buffer on all sides. Based on the modeling provided, impacts of sedimentation, particularly from inshore dredging, are expected to exceed 1 mile. A one mile restriction would not allow for indirect impacts to be evaluated and considered in the cumulative analysis.

The DEIS states that Vineyard Wind is working with NMFS, as well as S Mast and BOEM on fisheries monitoring programs. We would note that our coordination to date has been relatively limited, as we have only had preliminary discussions related to fisheries monitoring and we have only just received a proposed monitoring report at the end of February. Based on our initial feedback, we do expect to receive a monitoring plan from Vineyard Wind in the near future.

The cumulative impacts analysis should also include dredging projects, including Federal Navigation Channels, as part of the cumulative analysis. This would be particularly important for analysis of cumulative impacts to coastal habitats.

SECTION 3.3.4.9 Biological Resources | Coastal Habitats | Incomplete or Unavailable Information for Coastal Habitats

Language regarding the Vineyard Wind anchoring management plan should be clarified (page 3-57). Specifically the statement, “Although the above information was not available at the time of the preparation of this document, sufficient information exists to support the findings presented herein.” The document should clarify when the “sufficient information” described and analysis of that information would be made available.

SECTION 3.3.5.1 Biological Resources | Benthic Resources | Description of Affected Environment

On page 3-58, the last paragraph under Regional Setting refers to section 5.1.1 of the COP for more information on benthic faunal communities, however, this section of the COP provides a limited description of dominant habitat types rather than information on benthic faunal communities. References throughout the document should be verified to ensure they are accessible and referencing the correct information.

Under Project Area, the DEIS refers to Table 3.2-2 in the COP; however this reference is not accessible from your website, as it suggests this section is “redacted”. This has occurred in other sections of the document that reference the COP and should be addressed throughout the document to ensure the public has the opportunity to review all of the referenced materials.

SECTION 3.3.5.3 Biological Resources | Benthic Resources | Impacts of Alternative A (Proposed Action)

We agree with the statement in the DEIS that the “degree of potential impacts would vary seasonally depending on the life histories of benthic organisms.” However, there is limited information related to the timing of each construction activity. The timing of construction activities should be described and incorporated in the analysis. This is particularly important for sensitive life stages, such as spawning activity and demersal eggs.

The conclusion that impacts to benthic resources would be negligible from the project is not supported by the information provided in this section. This section outlines a list of potential impacts but does not describe the extent of impacts or provide an adequate analysis to support a finding of negligible impacts. Overall, the conclusion that impacts from routine activities are negligible do not appear to meet the definition of impact level as described in Table 3.1-1.

Additional detail should be provided related to activities impacting benthic resources. Specifically, on page 3-61 clarify which construction and installation activities are being considered for the combined area of impact of 221 acres. More detail should be included in the document.

References should be provided for the sensitivity thresholds stated for sediment deposition on demersal eggs (pages 3-61 to 3-62). References for these thresholds should be included rather than simply referencing the COP.

This section does not provide any discussion of how impacts to benthic resources would be minimized. It only discusses monitoring and mitigation measures that were considered but eliminated. The section should describe why hard bottom habitats were not avoided, and what would be done to minimize impacts when determining the final cable alignment. The project is expected to directly and indirectly impact hard bottom habitat, including designated Habitat Area of Particular Concern (HAPC) for juvenile Atlantic cod, but the analysis of these impacts is limited. Furthermore, the DEIS should justify the estimated 10 percent of the cable area requiring protection. These areas requiring additional protection should be identified and illustrated.

More information should be provided on the model that was done to estimate impacts to suspended sediment, specifically what construction method and sediment type was used in this evaluation.

There is no discussion in this section on impacts of the project to epifauna which is an important benthic resource found on hard/bottom/complex habitats. Impacts to hard bottom habitat, including juvenile cod HAPC, should be better characterized and described in detail.

This section does not provide any analysis or evaluation of impacts from project noise, such as pile driving. Acoustic impacts, particularly to benthic organisms, eggs and larvae should be analyzed and addressed. The WDA and cable route are known to support a number of shellfish species and represents one of the primary documented spawning locations for longfin squid, which have demersal eggs. Impacts of benthic resources from pile driving activities should also be analyzed.

Page 3-64 refers to a benthic monitoring plan prepared by Vineyard Wind. While monitoring is important, it is not clear how this is considered a method to minimize impacts of the project. Furthermore, we have reviewed the benthic monitoring plan provided in the COP. Our agency was not consulted in the development of this plan and we have significant concerns with the ability of this plan to detect any benthic habitat impacts of the project. The sample size is inadequate and we have concerns that the proposed methods will not be sufficient to identify impacts, particularly to sensitive habitat areas that are expected to be impacted by this project. This monitoring plan should be revised in consultation with the resource agencies.

More information should be provided related to the habitat in the project area, particularly delineation of habitat types, including the transition from sand to mud in the wind development area and delineation of habitat types along the cable route.

The document concludes that the impact of scour on benthic resources is minor, but the information provided does not sufficiently support this conclusion. The extent of impacts resulting from scour, including turbidity from scour, are not clearly analyzed in the document.

The document concludes that impacts of EMF on benthic resources is negligible, but the information provided does not sufficiently support this conclusion. The DEIS should evaluate existing literature and recognize information that remains unknown around EMF. Without adequate study on the effects of EMF and heat from transmission cables on invertebrates, the conclusion that impacts would be negligible for demersal species and life stages is not supported.

SECTION 3.3.5.4 Biological Resources | Benthic Resources | Impacts of Alternative B

The difference between the two cable routes should be compared in this analysis.

There is still dredging associated with HDD but this is not described in the document. These impacts should be described and analyzed in the document.

SECTION 3.3.5.5 Biological Resources | Benthic Resources | Impacts of Alternative C

The document states that “there is no evidence that the assemblages found in the southern WDA are of greater ecological importance than assemblages in the northern WDA.” It is not clear if this statement is based on samples that were collected by Vineyard Wind. This statement should be clarified and the evidence used to conclude this statement should be provided.

SECTION 3.3.5.6 Biological Resources | Benthic Resources | Impacts of Alternative D

The document refers to impacts of additional surveys that would be needed for Alternative D1 and D2. Please clarify why this analysis is part of the DEIS. It is our understanding that all site characterization activities were evaluated as part of the SAP. As a result, it is not clear why these are considered an additional impact of this alternative.

SECTION 3.3.5.9 Biological Resources | Benthic Resources | Impacts of Alternative E

This section states “BOEM cannot at this time calculate the magnitude of reduction.” However, the reduction in size alternative is calling for 84 turbines specifically. It is not clear why at least an estimate of reduced project footprint or benthic impacts would not be included in this section.

SECTION 3.3.5.9 Biological Resources | Benthic Resources | Comparison of Alternatives

Some of the conclusions drawn related to the extent of impacts to benthic resources has not been adequately supported by the information provided in the document.

This section suggests the proposed action and Alternative B differ only on their impact to horseshoe crabs. There is no mention of winter flounder benthic life stages or shellfish resources. There are differences in the benthic resources found along the two proposed cable routes and this should be described and analyzed in the document.

This section also seems to compare all the alternatives to the Proposed Action rather than comparing impacts of the alternatives to each other.

SECTION 3.3.5.10 Biological Resources | Benthic Resources | Cumulative Impacts

It is not clear why 10 mg/L was selected as the criteria for limiting the cumulative impacts analysis on benthic resources to a ten-mile radius of the project. A broader consideration of the cumulative impacts should be considered, or a justification for this criteria should be clearly articulated in the document.

This section does not address cumulative impacts of turbidity from scouring associated with the project or adjacent projects. This analysis should be included.

The cumulative impacts of this project and other activities to benthic resources would expect to be at least the level identified in the project analysis. The conclusion that cumulative impacts would be negligible to minor for benthic resources is not well supported. Activities in adjacent areas conducted either simultaneously or sequentially could result in greater impacts to shellfish resources and demersal sensitive life stages.

We have concerns about the conclusion that fisheries management measures alone would be able to ensure the cumulative impact would be unlikely to cause population-level effects, as suggested on page 3-71. It is not the responsibility of fishery management measures to account for all impacts to marine resources, regardless of the source. Fishery management measures cannot control for or mitigate the impacts caused by other projects, including the proposed action, and can only affect fishery removals.

More information should be provided related to how potential population level impacts are assessed. A conclusion that population level impacts would not occur needs to be supported.

SECTION 3.3.5.11 Biological Resources | Benthic Resources | Incomplete or Unavailable Information

Maps from the Massachusetts Ocean Management Plan referenced in this section were not fully ground-truthed. This should not be the only source used to make a conclusion that hard/bottom habitats were avoided to the greatest extent practicable. Surveys conducted for the project should be used to further avoid/minimize impacts to hard bottom. This section also states that Vineyard Wind would minimize the amount of impacts “to the greatest extent possible”. This should be described in the analysis as it is not clear how this would be done.

SECTION 3.3.6 Biological Resources | Finfish, Invertebrates, and Essential Fish Habitat | Project Area

This section indicates that the project area overlaps with Habitat Areas of Particular Concern (HAPC) for juvenile Atlantic cod. However, it does not provide any information or details related to the extent of HAPC impacts. Rather, the DEIS only states that the proportion of HAPC affected is small compared to all the HAPC that extends to the Canadian border. This is not a sufficient analysis of impacts to HAPC. HAPCs are designated as high priorities for conservation due to the major ecological functions they provide and their vulnerability to degradation. More information should be provided in the analysis related to the extent and type of impacts, how impacts to this important habitat would be minimized, and proposed mitigation for any unavoidable impacts to this habitat.

This section references the analyses of effects to ESA listed fish, including Atlantic sturgeon, which is included in the Biological Assessment (BA). However, because the BA is not an appendix to the DEIS, the DEIS actually contains little analysis of effects of the project on Atlantic sturgeon. While we recognize the page restrictions that BOEM is working under, the

DEIS should at least provide a summary of anticipated effects to ESA listed fish for all alternatives considered.

SECTION 3.3.6.3 Biological Resources | Impacts of Alternative A (Proposed Action) on Finfish, Invertebrates, and Essential Fish Habitat

The conclusion that impacts to fish, invertebrates, and EFH is likely to be negligible at a stock level is not well supported by the information in this section. There is limited discussion related to spawning and reproduction occurring in the project area and how the project may impact spawning events and habitat.

While we would agree that habitat alteration is an impact of construction, this should also be evaluated as an impact associated with operation of the project. The DEIS suggests habitat alteration would be a “long-term” and “temporary” impact. However, we would consider habitat alteration to be a permanent impact given the life of the project may exceed 25 years.

While we agree that long-term regional monitoring is necessary for this and other offshore energy projects, such monitoring will not reduce impacts and should not be considered a mitigation measure. Further, it is not clear if BOEM will require such monitoring as a condition of COP approval. We would recommend coordination with the resources agencies be conducted during the development of any monitoring plan.

More information should be provided related to the expected area of impact from turbidity plumes and sedimentation. The analysis should evaluate the area of impact and the resources to be impacted. Further analysis is needed to support the conclusion that impacts associated with turbidity and sediment deposition would be minor.

The DEIS only discusses impacts to hard bottom habitat occurring from sedimentation. It is our understanding that the cable will be run through hard bottom habitat, including HAPC for juvenile Atlantic cod. The method for laying cable through hard bottom/complex habitats should be described in detail and impacts of this construction activity should be evaluated in the document.

The pile driving section does not adequately address the impacts of particle motion on fish species. The extent of area impacted by particle motion from pile driving activities should be illustrated and impacts to fish and invertebrates, including mortality, injury, and behavioral responses should be discussed. Table 3.3.6-1 should also include expected areas of impact for invertebrates as well as fish.

It is not clear why impacts of pile driving is classified as minor when the area of impact extends substantially outside the project area. This conclusion is not well supported. The DEIS classifies impacts of pile driving to be the same as impacts of vessel noise during construction which does not seem to be supported by the expected noise levels and area of impact. The DEIS also states the duration of time is short; however it is our understanding that pile driving may be ongoing for 6-8 months. More specific information related to timing and time of year of pile driving activities should be included. The detailed schedule for pile driving is redacted as

confidential business information (COP Chapter 4, Figure 4.1). This information should be made available and incorporated in the analysis.

The DEIS classifies impacts of reef effect as a moderate beneficial impact (page 3-79). However, the DEIS also cites a previous MMS report from 2009 which suggests the vertical monopile structures are not anticipated to provide a true artificial reef due to the low quality of interstitial spaces available. Another citation referenced indicates the benefits to fish and invertebrates are inconclusive (Causon and Gill 2018). The studies referred to in the analysis do not support the conclusion related to the scale of impacts. In addition, the discussion on reef effect does not include an analysis on potential shifts in distribution of species that may prefer more complex structures. For example, black sea bass are a species that migrate through the project area to move inshore to rocky habitats to spawn. There is no discussion on how the introduction of hard habitat offshore may impact migration or nearshore populations. Further analysis should be conducted and additional studies should be referenced to support this conclusion of a moderate beneficial impact.

More specific information should be provided related to the proposed cable protection and habitats that would be impacted from that protection. Absent that information, it is difficult to generalize that cable protection would result in a moderate beneficial impact. The limited information provided in the DEIS does not support that conclusion.

The assessment of operational impacts on habitat should not be limited to reef effect. The DEIS should evaluate operational impacts of habitat alteration including habitat conversion and pelagic habitat impacts of the project. There is one sentence under the conclusion section that addresses a modeling study related to larval transport. While it is important to discuss this modeling study, this subject warrants a specific analysis that addresses potential pelagic impacts of project operation, including larval transport, hydrodynamics and mixing. This discussion should not be limited to the conclusion of the section.

Loss of demersal eggs and impacts of disruption of larval transport and recruitment is not limited to unspecified flounder stocks. Among commercially important species, American lobster, Atlantic mackerel, longfin squid, monkfish, Atlantic sea scallops, and Atlantic surfclams are affected by these factors. In many instances throughout this document, impacts are noted for only a subset of the species likely affected by various elements of this action. This implies that the impacts are limited to a select few species rather than the full range of species that would actually be affected. The FEIS should reflect impacts to all species or species groups rather than singular examples.

The conclusion suggests that activities will primarily impact benthic habitat and are not as likely to impact species or life stages that depend on pelagic habitat. While we agree that benthic habitats will be impacted, this statement downplays the impacts to pelagic habitats, which are not adequately addressed in this analysis.

The analysis related to EMF impacts is limited. The DEIS does not present sufficient evidence with two references to support the claim that there “is no evidence that EMF would result in population-scale negative impacts,” (p 3-80). The document suggests impacts will be mitigated by burial or shielding of the cable; however, there is no discussion of how or to what extent these

methods minimize impacts to marine species. While additional references to studies have been added since our preliminary cooperating agency review, the analysis provides limited discussion on the lack of information that exists related to EMF impacts on marine fish and invertebrate species.

SECTION 3.3.6.4 Biological Resources | Impacts of Alternative B on Finfish, Invertebrates, and Essential Fish Habitat

This section does not provide any information on the difference between the two cable routes or the locations where the cable would come to shore. There are differences in the fish and invertebrate species comprising the two locations; however, they are not analyzed in this DEIS.

SECTION 3.3.6.5 Biological Resources | Impacts of Alternative C on Finfish, Invertebrates, and Essential Fish Habitat

The DEIS states that “an indirect impact of reducing conflict with commercial fishing vessels is the potential for slightly higher harvests of commercial fish species that might be shielded from harvest under the Proposed Action.” This statement is unclear - it seems to suggest that commercial fishing activity will be excluded from the project area, and therefore some fish will be inaccessible to harvest, while also suggesting this will lead to higher commercial catch rates. This is inconsistent with other sections of the DEIS that indicate commercial fishermen would not be excluded from fishing in the WDA (Table ES-2, page ES-8).

SECTION 3.3.6.6 Biological Resources | Impacts of Alternative D1 and D2 on Finfish, Invertebrates, and Essential Fish Habitat

The DEIS suggests new surveys to establish site conditions are impacts of this alternative. It is our understanding that impacts of site assessment activities are analyzed in the Site Assessment Plan. It is not clear why additional site characterization surveys would be considered an impact under this alternative.

The DEIS does not provide any quantitative information related to the extent of extra cable that would be required under this alternative. This should be included in the analysis.

SECTION 3.3.6.7 Biological Resources | Impacts of Alternative E on Finfish, Invertebrates, and Essential Fish Habitat

The DEIS does not provide any quantitative information related to the extent of impacts that would be reduced under this alternative. This should be included in the analysis.

SECTION 3.3.6.9 Biological Resources | Comparison of Alternatives for Finfish, Invertebrates, and Essential Fish Habitat

This section is limited and does not adequately compare the alternatives. The comparison of these alternatives should be more clearly defined and analyzed.

SECTION 3.3.6.10 Biological Resources | Finfish, Invertebrates, and Essential Fish Habitat | Cumulative Impacts

The analysis under cumulative impacts is limited and the scale of impacts identified is not supported by the information provided.

The cumulative impacts analysis suggests cumulative impacts of EMF is negligible. However, impacts of the proposed action evaluated in the earlier section identifies EMF as a minor impact. It is not clear how impacts to EMF would be considered less with multiple projects than it would with the proposed action. This conclusion is not supported by the information provided and does not appear to meet the definition of negligible impacts as described in section 3.1.

While this section discusses cumulative impacts of long-term conversion of habitat within the Northeast Shelf LME, this is not analyzed specifically for the project. Only reef effect is analyzed. The impact of habitat alteration from operation of multiple projects should be evaluated for both the proposed action and the cumulative impacts analysis. The expected timing of construction and overlapping or consecutive seasons of construction should be also be evaluated in assessing cumulative impacts to finfish, invertebrates, and EFH.

The cumulative impacts section discusses fisheries use and management programs that regulate fishing in and around the project and suggests that the project would have minor cumulative impacts on these management programs. However, information to support this conclusion is not provided in the analysis.

SECTION 3.3.6.11 Biological Resources | Incomplete or Unavailable Information for Finfish, Invertebrates, and Essential Fish Habitat

It is not clear why some of the information listed in this section is not yet available. For example, the amount of hard bottom habitat should be included in the COP and is necessary to assess impacts to juvenile cod HAPC. The DEIS should clarify when this information will be made available. Furthermore, the absence of such information, particularly the acoustic impacts of large monopile pile driving on juvenile and adult fish and invertebrate species, makes it difficult to support the conclusion that effects on such species are minor.

SECTION 3.3.7 Marine Mammals

For Sections 3.3.7 through 3.3.7.9, and all referenced and associated materials and appendices, we suggest that you review the FEIS to ensure certain terminology is correct and used consistently throughout. Specifically, type of harassment (Level A and Level B), use of whales versus marine mammals, listed versus not listed, and overall consistency associated with use of common name, species name or just marine mammals. For example, there are still instances where terminology is not correct (i.e., “Level A threshold” “Level A and Level B Acoustic thresholds” when it should be “Level A Harassment” and “Level B Harassment”). Additionally, because the definitions of “harassment” are different under the ESA and the MMPA it is important that the document clarify, wherever relevant, which definition is being referenced.

SECTION 3.3.7.1 Marine Mammals | Description of the Affected Environment

Marine mammals are protected under the MMPA, not listed. For the last sentence in the first paragraph on page 3-87, we suggest you rephrase it to say: “All marine mammals occurring in the proposed project area are protected under the Marine Mammal Protection Act. There are thirty-three marine mammal species, not listed under the ESA, that may be found in the region, including 2 baleen whale species, 27 toothed whale species, and 4 seal species.”

On pages 3-86 through 3-93, the discussion about the marine mammal species in the project area is incomplete. Including a table listing all marine mammal species or tables showing other data about marine mammal species occurrence is fine. However, only describing a few marine mammals and not others is misleading and does not provide the correct context associated with conclusions about negligible, minor, moderate, or major impacts to marine mammals later in this section. For example, all discussion points under “*Current Conditions and Trend*” on page 3-89 to the top of 3-93 does not link to why these specific points about some marine mammal species is relevant to the environmental consequences discussion for each alternative.

SECTION 3.3.7.2 Marine Mammals | Environmental Consequences

Please provide (page 3-93) an introduction to marine mammal hearing and effects of sound, a discussion about the analysis approach and methodology, and other relevant information about the assessment of impacts to marine mammals. For example, all the information about acoustic sources, marine mammal hearing, and effects of sound should be provided as baseline and qualitative discussion about impacts to marine mammals, in layman’s terms so the public can understand. There is good information in this section of the draft, however, certain explanations (i.e., the technical discussions about takes and take estimates) should be moved to an appendix so this information does not detract from the explanations and analysis we need the public to understand. This can be replaced with a brief explanation about how take estimates are factored into the overall determinations about effects to marine mammals, with a reference to an appendix containing a quantitative analysis. In other words, we recommend a qualitative analysis about impacts to marine mammals within Chapter 3 and to work with our agency on the methodology for estimating takes as an appendix for the quantitative analysis.

SECTION 3.3.7.3 Marine Mammals | Impacts of Alternative A (Proposed Action) on Marine Mammals

Regarding pages 3-93 through 3-97, the discussion under impacts of Alternative A to marine mammals relies too heavily on reciting numbers provided by the project proponent in the COP (i.e., take numbers, percentages of stocks taken, and isopleths to harassment zones). Use of specific take numbers, including percentages of populations taken, and isopleths to thresholds are not adequate to draw conclusions about impacts to marine mammals. This section should instead provide a summary of available literature on impacts of pile driving noise on marine mammals to reach conclusions on relative impact levels (similar to how impacts of vessel traffic are treated, starting on p. 3-97). The numbers and information derived from the COP are not a substitute for this analysis. Also, please note, take numbers provided in the COP are preliminary – the take numbers ultimately proposed for authorization by NMFS may be different than the numbers provided in the COP, thus inclusion of these preliminary numbers in the EIS will result in

confusion. Any inclusion of these numbers should be moved to an appendix and clearly explain in layman's terms, the methodology used in the modeling approach.

It is not clear how the discussion of the risk of vessel strike considers the operation of vessels outside the immediate project area and the transit routes to the primary ports to be used for crew transport. For example, it does not appear that the vessel strike assessment considers the vessels that are anticipated to travel to the project area from ports in Canada. This assessment also does not appear to consider how any anticipated shifts in baseline (i.e., non-project) vessel traffic due to the construction and operation of the project may alter the risk of vessel strike to marine mammals.

SECTION 3.3.8 Sea Turtles

SECTION 3.3.8.1 Description of the Affected Environment for Sea Turtles

It is unclear how this section considers the distribution and abundance of sea turtles along the transit routes to and from ports in Canada. For example, the project area is described as including the "vessel transit to and from ports that will support proposed Project activities..." but the information in this section only appears to address sea turtles off Rhode Island and Massachusetts.

SECTION 3.3.8.3 Impacts of Alternative A (Proposed Action) on Sea Turtles

There are numerous points in this section where the BA is referenced with conclusions reached in the DEIS with no supporting information (e.g., noise associated with the operations of the WTG). Because the BA is not appended to the DEIS, this results in an incomplete analysis of effects of the action on sea turtles in the DEIS.

Please provide an introduction to sea turtle hearing and the thresholds being used as the basis for the analysis. While this information is included in the BA, the BA is not an appendix to the DEIS, and this information is critical to understanding the effects of the action on sea turtles. The use of the "Level A threshold" and "Level B threshold" terminology is inappropriate when considering effects of sound exposure to sea turtles as those are terms of art related to the MMPA. This section needs to be written in the context of the appropriate ESA terminology and be consistent with current definitions of take, including harm and harassment.

It is our understanding that the DEIS estimates the number of adult sea turtles that will be exposed to potentially disturbing levels of noise each day. The document notes that the "number of juveniles is not available"; no information is provided on how you considered juveniles in this analysis. If juveniles were not considered in the analysis, the analysis is incomplete and would not represent an accurate and reasonable assessment of effects of pile driving on sea turtles in the project area. The pile driving analysis also fails to address what the impacts to individual sea turtles are from exposure to disturbing levels of noise, including impacts of avoiding the noisy areas during construction. Further, while the document concludes that no mortal injury is anticipated, there is no conclusion reached regarding lesser injuries and their impacts to individuals.

It is not clear how the discussion of the risk of vessel strike considers the operation of vessels outside the immediate project area and the transit routes to the primary ports to be used for crew transport. For example, it does not appear that the vessel strike assessment considers the vessels that are anticipated to travel to the project area from ports in Canada. This assessment also does not appear to consider how any anticipated shifts in baseline (i.e., non-project) vessel traffic due to the construction and operation of the project may alter the risk of vessel strike to sea turtles. We note your statement that the use of AIS on all project vessels would decrease the potential for vessel strikes against sea turtles; it is not clear to us how that decreased risk is achieved through the use of AIS.

You conclude that the “reef effect” would be beneficial for sea turtles; however, there is no analysis about how any increase in fishing activity associated with the “reef effect” may increase the risk of interactions between sea turtles and fishing activity.

SECTION 3.4 Socioeconomic and Cultural Resources

SECTION 3.4.1.2 Socioeconomic and Cultural Resources | Environmental Consequences

In the section on Potential Variances in Impacts (beginning on p 3-121) there is a need to be circumspect about the magnitude of impacts on regional economies. The Borges et al. 2017 study appears to be based on an Input/Output model. Depending on regional purchasing coefficients embedded in these models, even purchases from local vendors may have relatively low impact. This section suggests that a significant amount of labor will not come from labor in the study area and most materials will not be manufactured in the study area.

SECTION 3.4.1.3 Socioeconomic and Cultural Resources | Impacts of Alternative A

This section provides analysis and results based only on the Vineyard Wind activities. The DEIS lacks any comprehensive analysis of the positive effects of job creation of the proposed action and any positive or negative impacts of other activities such as recreational and commercial fisheries.

SECTION 3.4.2.3 Socioeconomic and Cultural Resources | Impacts of Alternative A (Proposed Action) on Environmental Justice

The DEIS states that members of environmental justice communities who rely on offshore fishing for subsistence may also experience minor benefits (page 3-133); however the Vineyard Wind site is located a considerable distance from shore and any subsistence benefits will likely be limited to people that have a boat of sufficient size to access the area, which is likely to be above the means of members of environmental justice communities. It is not clear if this section is a reference to vessel owners, crew or processing employees, etc.

SECTION 3.4.4.3 Socioeconomic and Cultural Resources | Impacts of Alternative A (Proposed Action) on Recreation and Tourism

We are concerned that in this section (p 3-151) and elsewhere in the DEIS, the potential navigational hazards, particularly for vessels under sail and in poor weather or visibility

conditions, appear to be trivialized. While the likelihood of a crash into WTGs may be low, the consequence may be catastrophic and should be considered in the document.

SECTION 3.4.5.1 Socioeconomic and Cultural Resources | Description of the Affected Environment for Commercial Fisheries and For-Hire Recreational Fishing

Throughout this section, different and often conflicting estimates of fishery landing values are presented. The FEIS should more accurately characterize the value of each fishery using the same metric. The sources of fisheries revenue data cited in the document were generated using different methods, and therefore cannot always be directly compared. The document should clearly explain why estimates differ when these different sources are used. For example, Table 3.4.5-7A depicts fishery values from the WDA based on a personal communication with Geret DePiper, while Table 3.4.5-6 shows different fishery values for the lease area based on Livermore 2017.

Tables and figures should clearly indicate if the pounds are landed or live-weight, and if revenue is in nominal or real dollars. Throughout the DEIS, please clarify how the stated values have been adjusted for inflation. In the first table in the section (Table 3.4.5-1), 2016 dollars are used; please clarify if that is the standard throughout the document.

For Figure 3.4.5-1, provide justification for clipping the top 5 percent of revenue - in doing so you are removing the highest-value revenue areas. While these earnings may not be 'average,' they are real. If the concern is about the skewing the appearance of revenue values, instead of truncating the data you can re-bin the color ramp values.

All tables and figures in this section should be updated to include landings from the most recently available information. During 2016, fishing activity within and around the WDA increased dramatically due to the abundance of longfin squid. The FEIS should include squid landings through at least 2016 to more accurately depict the likely fishing activity and revenues to be expected throughout the duration of the proposed project. For example, if higher 2016 revenues would be included in Table 3.4.5-5, the average share of total revenue harvested from the MA WEA would be higher. Without the most recent data, it is not accurate to claim that this data represents the best available science for characterizing commercial fishing in the proposed Project Area, as suggested on page 3-163. Similarly, relying on an analysis of recreational trips through 2012 from the Kirkpatrick et al, 2017 report is inadequate and should be updated in the FEIS.

We recommend using a shapefile with a projection matched to the projection of the revenue raster.

Consistent references to the Northeast Fisheries Science Center should be used throughout the document. In some instances, it is referenced as NEFSC, but in others the acronym NFSC is used instead (p 3-161, 3-162, 3-174).

On page 3-161 and for Table 3.4.5-2, insert an explanation why revenues within the WDA represent a small fraction of the annual fishing revenues in some ports by noting that revenues in

ports such as New Bedford are dominated by high-value Atlantic sea scallop landings that mask the importance of other species landed in this port.

Table 3.4.5-3 appears to substantially underestimate port landings in 2016, especially when compared to FMP-specific landing revenues depicted from the same source in Table 3.4.5-6. Without fully exploring methodological differences, this table conflicts with NMFS landing data indicating 2016 landings were much higher than previous years based primarily on very high longfin squid landings from this area (see Attachment B). Using inaccurately low landings and revenues reduces the importance of the area to the fishery when describing conditions and trends in later sections such as on page 3-176. Updated NMFS data from 2016 should be included in the FEIS whenever data describing fishery value and trends are discussed.

We recommend that you confirm the 2011 Bottom Trawl revenue value stated in Table 3.4.5-4.

In table 3.4.5-5, please clarify the column labels. It should be made clear how the share of total revenue harvested from the MA WEA for each FMP is being calculated - this information is not included. In regards to the table, which states that 0.0% share of total sea scallop revenue harvested from MA WEA, please clarify if this data had the top 5% clipped, as described in Figure 3.4.5-1.

The text (p 3-163) describing sea scallop FMP landings values in Table 3.4.5-6 should be corrected to state the indicated peak scallop years were in 2011 and 2014, as it incorrectly states the peak years were 2011 and 2015.

It should be clarified that the \$280,000 of lobster pot gear revenue from the MA WEA, referenced from Kirkpatrick (et al. 2017) is based on 2007-2012 data, and was stated in USD\$2015.

On page 3-163, the second paragraph states “Comparison of VMS data in 2015-2016 shows intensive use of the area for squid fishing (Figure 3.4.5-2). That is not an accurate description of the data. The data used for Figure 3.4.5-2 do not indicate squid fishing intensity, but rather the relative squid fishing vessel intensity during the year 2015-2016. VMS data show vessel presence, but do not indicate whether the vessel is fishing or not. This should be clearly indicated in the text, figure caption, and map legend. It has become a standard practice to “speed filter” VMS data so that maps better indicate likely fishing activity. Both speed-filtered and unfiltered VMS data are available from the Northeast Ocean Data portal for most fisheries. This figure should be created using the speed-filtered VMS data, which indicates vessels traveling at speeds less than four knots, which would more accurately depict squid fishing activity.

We recommend that you revise Figure 3.4.5-3 because it is confusing. It appears that the purple trend line shows percentages, despite the legend indicating the purple line is the total revenue value.

Please clarify the source of the “expanded data set” used here; previous references to (G. DePiper, personal communication, August 2016) were for a data set from 2007 to 2015.

For describing Figure 3.4.5-3, we recommend the following wording for the last sentence in the “Wind Development Area” section’s first paragraph (p3-165): “Looking at the value of catch within the WDA for each FMP as a percentage of the total revenue for each FMP in the region, the largest absolute shares occur in the northeast multispecies (small mesh) and mackerel/squid/butterfish FMPs, but in each case, less than 0.5% of the FMP’s total revenue is harvested within the WDA.”

Regarding Figure 3.4.5-4, you should note that lobster pot landings may be underestimated due to incomplete reporting for trap vessels that are not subject to mandatory reporting. We also suggest moving Figure 3.4.5-4 to earlier in the text, as it seems somewhat out of place in its current location.

In Table 3.4.5-6, you should note that Small Mesh Multispecies is not its own FMP. Small Mesh Multispecies are still regulated under the Northeast Multispecies FMP. Also note that Atlantic Halibut are regulated under the Northeast Multispecies FMP and can be included with totals for that FMP.

For Table 3.4.5-7a, clarify if the values are in real or nominal dollars.

For Table 3.4.5-7b, clarify the table title. This is supposed to be the percentage of each FMP’s revenue from landings within the WDA compared to each FMP’s total revenue from landings in the entire region, but that is not clear as written.

On page 3-168, we suggest using the following wording for the last sentence of the first paragraph: “Between 2007 and 2017, annual revenue from landings of summer, scup, and black sea bass in the WDA ranged from less than \$4,000 to approximately \$90,000.”

On page 3-168, we recommend directing the reader more specifically to Table 3.4.5-7a for revenue values by year for each FMP. Please also clarify why the text highlights revenue ranging from \$100-300,000 from the Atlantic Mackerel, Squid, Butterfish FMP, as it is not clear what is referenced with this range. The year noted for the peak revenue (\$932,616) is incorrectly written as 2017, while the table indicates the peak year was 2016.

Discuss trends in revenue for the sea scallop FMP, given the discussion of revenue trends for the other FMPs that are included in this section.

In the text describing fishing activity under the Surfclam and Ocean Quahog FMP (p 3-168), the text should be revised to state: “VMS data *indicates* that surfclam/ocean quahog are not typically targeted...” because fishing vessels are not targeting VMS data.

As noted previously for VMS data used in Figure 3.4.5-2, the maps in Figures 3.4.5-5 and 3.4.5-6 should include the explanation that the data represents fishing vessel intensity and not fishing activity or fishing revenue. These figures all should use data that is speed-filtered to show fishing vessel presence when vessels are travelling at less than 4 knots, which means they are more likely to be fishing. The maps look very different when built with speed-filtered data. If there is a reason the maps are using data that has not been filtered by speed, that point should be clearly noted in the text.

The discussion of federal fisheries affected by the offshore export cable corridor relies upon fishing activity covered by VMS. However, many of the potentially affected fisheries, including the whiting, summer flounder, scup, and black sea bass are not required to use VMS. Therefore, these fisheries are underrepresented in evaluations of impacts from the cable corridor. The FEIS should note that point, and evaluate the potential impacts to these fisheries.

The text on page 3-174 seems like an appropriate place to reference what is currently labeled as Figure 3.4.5-4, Lobster Pot Landings 2001-2010. We recommend updating this figure to include more recent years.

In the second sentence of the last paragraph on page 3-174, we suggest rephrasing the text to say: “Table 3.4.5-8 shows the average annual number of for-hire recreational boat trips by port group based on....”

On page 3-176, we suggest changing the third sentence in the second paragraph to read: “In general based on catch data for the last decade, the total annual revenue from landings within the WDA usually varied from \$200,000 to \$550,000, but peaked in 2016 at a high of \$1.2 million.”

In regards to the second “Aspects of Resource Potentially Affected” beginning on page 3-176, there is no mention of the potential increase in risk for fishermen mortality or morbidity, or to the possibility of increased collisions; nor regarding displaced fishermen being forced to fish in less familiar waters, coping with gear issues that might arise, etc. The only mention of collision risk is in the context of a risk of an oil spill or discharge. The FEIS should include at least a qualitative discussion of and any empirical information on accidents, deaths, and injuries for commercial fishing due to adaptation to restrictions imposed by construction and operation of wind farms.

Although the text describes the “displacement” of fishing vessels as leading to increased conflict over other fishing grounds, the potential loss of activity of fishing vessels (and thus lost harvest revenue) should be considered if the displaced fishing vessels do not opt to or cannot fish in alternative fishing grounds. This would also apply to the operations and maintenance phase. There is evidence in the literature that shows fishermen do not always adapt to changing conditions by going to their next best alternative location. Therefore, economic loss in one area cannot always be compensated by revenue gains in another area.

We suggest changing Figure 3.4.5-11 title to read “Popular Recreational Fishing Spots”

SECTION 3.4.5.2 Socioeconomic and Cultural Resources | Environmental Consequences

Any additional mitigations that Vineyard Wind may offer as part of current or future negotiations with industry (page 3-178), whether in the form of compensation funds or otherwise, must be documented in the FEIS if either Vineyard Wind or BOEM intend to use such mitigations to offset anticipated impacts of the proposed action.

SECTION 3.4.5.3 Socioeconomic and Cultural Resources | Impacts of Alt A (Proposed Action) on Commercial Fisheries and For Hire Recreational Fishing

We have concerns that the analysis in this section is not adequate and does not provide sufficient support for conclusions related to the scale of impacts. The analysis should provide meaningful estimates of the economic impact to all federally managed fisheries impacted directly, indirectly, and cumulatively by the project. The DEIS provides overall general estimates of trip revenue with no analysis of impacts on individual fisheries. Moreover, at the bottom of page 3-180, the DEIS indicates that impacts to individual fishermen heavily dependent upon fishing within the WDA may be moderate to major, but mitigation through construction disruption payments would reduce those impacts to minor. However, the document provides no detail on the mitigation proposal or analysis of how mitigation packages would be sufficient to reduce impacts to minor. The DEIS suggests that compensation would be directly negotiated between the lessee and impacted fishermen, making it unlikely that additional detail about the nature of the impacts to such vessels and the degree of compensation would be available in the FEIS. As a result, the suggestion that impacts could be reduced to minor cannot be supported.

At the top of page 3-179, we recommend recognizing that some fishermen may not adapt by choosing or finding alternative fishing locations. It cannot be assumed that all fishermen will, particularly if those alternative locations are unfamiliar or necessitate significant gear changes.

On page 3-179, in *Navigation - Port Impacts*, the analysis should consider the available fishing infrastructure (supplies, repairs, etc.) at smaller ports, which this has likely declined in recent years. While a marine coordination center may reduce impacts associated with potential vessel collision and allision, the analysis in this section does not address potential competition for dock services and supplies or increased demands for services.

More recent data than the 2012 data referenced in Kirkpatrick et al. 2017 should be used to characterize revenue in the pot and gillnet fisheries in this section.

The document suggests that seasonal restrictions on construction activities would not benefit squid eggs; however, the statement is not supported. Although fishing effort does occur during spawning season, this analysis does not specifically address potential impacts of the project on squid eggs or spawning activity (i.e. acoustics, sedimentation, abrasion, etc.). We would expect both squid spawning activity and eggs/larvae may be disrupted or harmed beyond that which normally occurs with existing fishing activities. The statements on page 3-181, related to impacts to the resource and associated economic impacts to the fishing industry are not supported by the analysis.

On page 3-182, please clarify if there are 256 crew transfer vessel *trips* estimated per year; the same for the 110 multipurpose trip vessels and 26 service operation vessels.

On page 3-182, in the first paragraph in the “Disruption of Fishing in the WDA/OECC” section, we recommend clarifying why BOEM anticipates moderate impacts on commercial fisheries, “in particular trawlers.” In assessing impacts to fishing operations, the FEIS should include a discussion of decisions BOEM *has made* that affect impacts such as potential COP conditions

requiring cable burial at a minimum of 6.5 feet (page. 3-182), rather than speculate that BOEM *could make* those decisions and influence expected impacts.

The DEIS states that the addition of hard bottom structures in the WDA could partially offset the adverse impacts of the loss of access to fish on sandy or soft bottoms (bottom of page 3-182); however, the document does not provide any economic analysis or details related to any potential offset of impacts. As noted in the document, the fish species that are impacted by altered habitat (due to the addition of hard bottom structures) would be different. In turn, the vessels that target these species are likely to be different, resulting in either positive or negative economic impacts to individual vessels and associated fishing communities based on the whether the habitat used by species targeted by those vessels increases or decreases. However, this section does not provide any evidence to support the claim that a beneficial impact to hard-bottom fish populations will offset adverse impacts to sandy-habitat fish populations. It is also not clear if the section is referring to biological or economic impacts.

On page 3-183, while the stated purpose is to estimate the impact of longer trips to steam around the WDA, the section does not attempt to estimate these costs. The text states that “fishing vessels traveling to more distant fishing locations would incur additional expenses if fishing within the WDA is no longer an option...Depending on fishing locations, the total trip time and catch revenue, the additional fuel costs associated with transit around the WDA could have a substantial impact on fisheries profits”; however, there is no analysis of the potential impact on fisheries and fishing communities. This analysis is necessary to support the conclusion related to the anticipated moderate effects on commercial fisheries and for-hire recreational fisheries.

We recommend rephrasing the sixth sentence in the first paragraph to read: “The average trip (or operating) cost for a single-day trip...” In the third-to-last sentence in that paragraph, we recommend removing the word “total” from “the total average cost is highest for fuel...” given it is referring to components of total trip costs, which are components of total costs. We also suggest explicitly noting in this section (page 3-183) that it is possible some fishermen may reduce their number of trips or become inactive if they cannot cover their trip costs.

We recommend that you revisit your choice of language on page 3-183, in describing the impacts on families as a "non-market" impact. In the context of cultural impacts, this is not an accurate of the term. There is insufficient analysis and discussion of these potential impacts on fishing communities. The DEIS should address both the potential social and economic impacts of the proposed action and alternatives, such as the impacts of increased time away from home and family and economic uncertainty.

On page 3-184, the last sentence at the end of the first paragraph speaks to the risk to fishermen safety - the possibility of death or injury - and damage to the vessel. A technical assessment ("objective" measure of risk) is an important consideration; however, we suggest considering the fact that a seasoned fisherman is more likely to go with their subjective perceptions of risk. It should be noted here that it is possible some fishermen may opt to stop fishing entirely, as they may not be willing to incur the possible safety and financial risks associated with seeking out alternative locations. It should also be noted that choosing an alternative location may increase risk to fishermen.

The statement that suggests mitigation measures will serve to reduce impacts from “moderate to major” to “minor to moderate” cannot be supported as these mitigation measures have not been identified or analyzed in the document.

We are also concerned about how the concept of mitigating negative impacts to fishermen is described in the DEIS. Compensation for negative impacts and mitigation of negative impacts are not quite the same thing. Fishermen have value for fishing that goes beyond expected profit; for many, it is an identity and source of social capital. Fishermen often gain utility from being able to fish in locations that are known to them and also fished by their peers - the presence of other boats in the area can contribute to the fishermen's sense of safety. Mitigation or minimization of such impacts are not discussed in the DEIS, but are important components of impacts to the fishing industry that should not be ignored in the FEIS.

In the last sentence on page 3-184, the number of maintenance vessel trips each year should be clarified, as noted previously. The text currently suggests the use of almost 400 vessels.

Reference to a regional monitoring initiative for fishery impacts as noted on page 3-186 should be updated to reflect the recent developments of fishing industry and wind developer plans to collaborate on that subject.

SECTION 3.4.5.3 Socioeconomic and Cultural Resources | Impacts of Alternative A (Proposed Action) on Commercial Fisheries and For Hire Recreational Fishing

We recommend that you clarify why for-hire fishing would have more flexibility for use of the WDA during construction and installation. Although these vessels may be able to fish in the area, construction noise will likely cause fish to leave the area. This statement suggests that recreational fishing vessels will experience less intense impacts of construction activity because of smaller and more maneuverable vessels, but does not seem to recognize the potential impact on target recreational species.

SECTION 3.4.5.5 Socioeconomic and Cultural Resources | Impacts of Alternative C on Commercial Fisheries and For Hire Recreational Fishing

This section states that scallop and surfclam/ocean quahog concentrations vary from year to year, and concludes that therefore the benefits of access to this area also vary each year (through the Alternative C shifting WTG locations south). This section should provide data to support this statement and explain why concentrations may vary each year, (e.g. management, stock availability, etc.). In addition, this section does not discuss other fisheries that are active in this area such as the longfin inshore squid fishery. This section does not provide a complete analysis on how moving WTGs further south within the WDA will impact fishery resources and commercial fisheries that target those resources.

SECTION 3.4.5.6 Socioeconomic and Cultural Resources | Impacts of Alternative D1 on Commercial Fisheries and For Hire Recreational Fishing

The DEIS concludes that mitigation for Alternative D1 will reduce scale of impacts (from the range “moderate to major” down to “minor to moderate”); however, detailed mitigation plans

have not been identified or analyzed. It is not clear from the analysis how impacts would be reduced.

SECTION 3.4.5.7 Socioeconomic and Cultural Resources | Impacts of Alternative D2 on Commercial Fisheries and For Hire Recreational Fishing

The DEIS does not provide sufficient discussion regarding an east-west orientation of the WTGs. The text notes that Rhode Island-based commercial fisheries groups and the Rhode Island Coastal Resources Management Council have asserted that the east-west layout would improve maritime navigation and facilitate continued fishing operations and practices, compared to the Proposed Action. However, the DEIS does not provide or evaluate the Automatic Identification System (AIS) and vessel monitoring system (VMS) data that show clear patterns of east-west orientation of fishing activity throughout much of the lease area. An east-west orientation would align the orientation of the WTGs with the predominant direction of fishing activities, increasing the ability of many commercial fishing vessels to continue operating in the wind development area (WDA). While it may not eliminate all impacts, we would expect this orientation to minimize impacts of lost revenue associated with reduced access to the WDA. This section also fails to discuss that an east-west orientation would be consistent with the intended layout of adjacent wind projects and potential future construction in the Vineyard Wind lease area. These foreseeable future project should be considered in an analysis how the different alternative spacing and layout may impact navigation and safety of fishing vessels. The analysis of Alternative D2 does not provide sufficient information to support the conclusion that the scale of impacts would be the same as the Proposed Action.

SECTION 3.4.5.10 Socioeconomic and Cultural Resources | Comparison of Alternatives for Commercial Fisheries and For Hire Recreational Fishing

This comparison on alternatives is very limited. As indicated in the previous comments, the DEIS suggests Alternative D2 would have the same impacts as the proposed action. However, the analysis does not provide information that would help support this conclusion. In addition, this section suggests impacts would be reduced with mitigation, but does not describe or evaluate the mitigation measures proposed.

The second-to-last sentence of the paragraph in this section states that overall net benefits of the alternatives are limited; however, this analysis does not measure net benefits of each alternative.

SECTION 3.4.5.11 Socioeconomic and Cultural Resources | Cumulative Impacts

In the second paragraph on page 3-194, we suggest rephrasing the text to read: "All of the above activities and events can cumulatively reduce the availability of fish stock to commercial fisheries and for-hire recreational fisheries, or increase the costs of fishing, *which may decrease the volume of landed catch and fishing revenues, leading to decreased profits.*" Note that this assumes the price of fish remains constant.

SECTION 3.4.7.1 Socioeconomic and Cultural Resources | Description of the Affected Environment for Navigation and Vessel Traffic

As presented in a vessel transit workshop hosted by RODA, when presented on an annual scale, commercial fishing vessel operation patterns are masked by the higher transit volume of other vessels, including tankers and other commercial traffic, transiting the area to different locations. Only when examining the data on a finer scale are more definitive operation patterns evident. The FEIS should include a more thorough evaluation of seasonal patterns or utilize different filters to avoid obscuring commercial and recreational fishing vessel transit patterns.

Many commercial and recreational fishing vessels do not use AIS. Therefore, AIS data likely underestimates fishing-related vessel traffic. Using VMS data can provide greater insight into commercial fishing traffic for most federally managed fisheries, but is also not fully representative of vessel activity. The FEIS should consider integrating an assessment of VMS data to characterize commercial fishing vessel traffic patterns in the WDA.

SECTION 3.4.7.6 Socioeconomic and Cultural Resources | Impacts of Alternative D on Navigation and Vessel Traffic

Although Alternatives D1 and D2 may not change the impact category for vessel traffic, the impacts on commercial fishing vessel traffic are not the same as the proposed action. As noted on page 3-212, Alternatives D1 and D2 would decrease impacts on commercial fishing vessel traffic compared to the proposed action. The conclusion of this section should be revised to reflect this.

SECTION 3.4.7.10 Socioeconomic and Cultural Resources | Cumulative Impacts

The DEIS does not provide evidence to support the statement that the cumulative impacts of Alternatives D1, and D2 are the same as those of the Proposed Action. As discussed above, under Alternative D2 the WTG layout will use an east-west orientation, which is more aligned with existing fishing practices. We also understand that other developers with adjacent projects are proposing expanded distances among turbines and an east-west orientation at the request of the fishing industry; however, these reasonably foreseeable future activities are not addressed in the socioeconomic or cumulative analysis. This section does not evaluate potential impacts to fishing vessels if the spacing and orientation of adjacent projects differ, which is an important component of the cumulative analysis.

SECTION 3.4.8 Socioeconomic and Cultural Resources | Other Uses

The analysis of impacts to scientific and research surveys outlined in the DEIS is inadequate. While the analysis discusses monitoring that will be conducted as a result of project construction, there is minimal discussion on the impacts to existing long-term surveys conducted in and adjacent to the project area. Our existing surveys and others (i.e. NEAMAP) are not specifically discussed in this analysis. The information provided is very limited and does not support the conclusion of minor beneficial impacts.

Under Section 3.4.5.3 there is reference to the potential need for NMFS survey methodology to be changed in order to account for inability to sample certain areas. However, the DEIS lacks any analysis on the potential impacts to NOAA surveys, or the management decisions that rely on these surveys. The NEFSC has indicated that this project in conjunction with other foreseeable offshore wind development projects would result in the exclusion of potential sampling area. This project would have direct impacts on the federal multi-species bottom trawl survey (BTS) conducted on *FSV Henry Bigelow*, the Surfclam/Ocean Quahog clam dredge survey conducted on chartered commercial fishing platforms, the integrated benthic/sea scallop habitat survey, and the shelf-wide Ecosystem Monitoring Survey (Ecomon). Any un-towable areas (and their vicinities) along the submarine cable routes would create additional exclusions to current sampling protocols. The Vineyard Wind and other wind energy project developments would also impact surveys conducted for marine mammals and sea turtles, including North Atlantic Right Whale aerial surveys.

The federal bottom trawl survey is conducted 2 times per year, has been running for over 50 years, and is the single longest running standardized survey of its kind internationally. Data collected from the bottom trawl survey supports a significant scientific enterprise, including the assessments of approximately 63 fish stocks conducted by the NEFSC. The Federal Surfclam/Ocean Quahog survey is conducted on an annual basis and the data from this survey is necessary to perform quantitative stock assessments used to establish catch limits for the clam dredge fishery. The NEFSC integrated benthic/sea scallop survey provides data necessary to perform a quantitative stock assessment used to establish catch limits for the commercial scallop fishery. NEFSC EcoMon survey program is one of the longest continuous ecosystem monitoring programs at the Center with zooplankton monitoring beginning in 1977. The survey provides important hydrographic data with many applications. Larval fish and eggs from the surveys are used to calculate estimates of spawning stock biomass and overall fish biodiversity.

Based on preliminary analysis, the area covered by turbine footings would result in either a loss of sampling area and/or require the development of new alternative survey methodologies and protocols. The development of changes in survey methods may include the design, experimental evaluation, and calibration with existing survey methods; and would be subject to peer review processes consistent with federal fisheries stock assessment processes. While the area of the Vineyard Wind Project may not on its own result in a substantive loss of sampling area for these federal surveys, taken in conjunction with the impending development of other foreseeable future lease developments, the removal of large areas of habitat available to these surveys would have deleterious impacts on federal survey operations and would have consequent impacts on a multitude of fisheries stock assessments.

Based on standard operating practices conducted by the NOAA Office of Marine & Aviation Operations, wind turbine arrays would preclude safe navigation and safe and effective deployment of mobile survey gear on NOAA ships. It is anticipated that NOAA Fisheries chartered commercial vessel survey operations would similarly be affected.

The required analyses to determine the full range of impacts of these sampling area exclusions on the myriad of stocks dependent on these data streams has not yet been conducted. Some examples of likely impacts include the following: removal of sampling area from assessments may reduce the precision on stock assessment indices of abundance and the accuracy of

assessment indices due to survey availability effects; impacts due to required changes in random survey design protocols; and efforts to design and conduct new survey methodologies and protocols that could effectively sample in wind energy areas would also impact precision due to the time to build robust/usable time series. Additionally, any environmental impacts due to the construction and operation of wind farms could result in impacts to survey gear performance, gear efficiency, and availability (e.g., increased sedimentation and water clarity impacts on video or drop-camera survey operations; lighting effects on fish behavior). In addition, any displacement of vessels due to changes in transit corridors or displacement of recreational/commercial fishing effort could further exacerbate the availability of sampling area for NOAA survey operations. As project monitoring plans are further considered and developed we urge that a regional approach be employed; and due to the impacts on existing fisheries survey operations, the design of future site/regional monitoring programs are coordinated with the NEFSC. We encourage you to work closely with our agency in your evaluation of potential impacts to our survey operations and consequent impacts to fisheries stock assessments.

SECTION 4 Consultation and Coordination

SECTION 4.2.2 Consultation and Coordination | Endangered Species Act

In the third sentence of the ESA paragraph, we suggest that you replace "NOAA Fisheries Services" with "NMFS." The use of NOAA, NOAA Fisheries and NMFS should be consistent throughout the Final EIS.

SECTION 4.2.2.1 Consultation and Coordination | National Marine Fisheries Service

We suggest that you delete all use of the phrase "NMFS listed species" and replace with "ESA-listed species." The reason to do this is because a species is listed as threatened or endangered under the ESA. However, it is correct to indicate consultation with NMFS for listed species under our jurisdiction since both NOAA and USFWS administer the ESA jointly. Generally, NOAA exercises jurisdiction over marine and anadromous species and FWS over terrestrial and freshwater species. ESA Section 4(a) (1), 16 U.S.C. § 1533(a)(1), provides for listing species as endangered or threatened.

SECTION 4.3 Consultation and Coordination | Development of the Draft Environmental Impact Statement

SECTION 4.3.2 Consultation and Coordination | Cooperating Agencies

NMFS' purpose as a Cooperating Agency must be adequately explained. Since NMFS is planning to adopt BOEM's EIS, the utility of this EIS and reasons we are considered a cooperating agency is not limited to "coordinating and synchronizing the authorization and consultation reviews" with BOEM's schedule to prepare this EIS and issue a ROD per the One Federal Decisions process. As a cooperating agency, NOAA has a duty to provide information relevant to resources over which it has legal jurisdiction and/or special expertise. This mandate is broad in scope as NOAA has jurisdiction by law and special expertise for the entire suite of marine resources affected by this project (e.g. marine mammals, T&E species, and commercial and recreational fisheries). When NMFS serves as a cooperating agency and

adopts another agency's EIS, we ensure all marine resources under our jurisdiction by law and special expertise is sufficient, considered and addressed in the other agency's EIS. This includes internal coordination across NOAA via NMFS. This is a primary part of our role and purpose as a cooperating agency per 40 CFR 1501.6 and in determining whether the EIS is suitable for adoption per 40 CFR 1506.3 and NOAA Policy and Procedures for implementing NEPA.

For consistency and accuracy regarding NMFS jurisdiction and purpose to serve as a cooperating agency, the following language should be added to address the above comment: "NMFS is serving as a cooperating agency pursuant to 40 CFR 1501.6 because the scope of the proposed action and alternatives involve activities that have the potential to affect marine resources under their jurisdiction by law and special expertise. As applicable, permits and authorizations are issued pursuant to the Marine Mammal Protection Act, as amended (MMPA; 16 U.S.C. 1361 et seq.); the regulations governing the taking and importing of marine mammals (50 CFR Part 216); the Endangered Species Act (ESA; 16 U.S.C. 1531 et seq.); and the regulations governing the taking, importing, and exporting of threatened and endangered species (50 CFR Parts 222-226). In accordance with 50 CFR Part 402, NMFS also serves as the Consulting Agency under Section 7 of the ESA for federal agencies proposing action that may affect marine resources listed as threatened or endangered. NMFS has additional responsibilities to conserve and manage fishery resources of the United States, which includes the authority to engage in consultations with other federal agencies pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and 50 CFR Part 600 when proposed actions may adversely affect Essential Fish Habitat (EFH)."

The section is also missing a description of the MMPA process. A description of the MMPA process must be included in this EIS. Currently, Chapter 1, Section 1.1.1 "Other Permits and Authorizations" has a Table depicting federal, state, regional, and local permits and authorizations required for all action alternatives and indicates that consultations are addressed in Chapter 4. However, Chapter 4 does not include a description of the authorization process under the MMPA.

The explanation below should be added to Chapter 4 before the explanation of the National Historic Preservation Act (NHPA) on page 4-2, and carry over the footnote for the definition of take, as provided in the footnote herein.

A new subheading for the Marine Mammal Protection Act should be added, with this description: "Section 101(a) of the MMPA (16 U.S.C. 1361) prohibits persons or vessels subject to the jurisdiction of the United States from taking any marine mammal in waters or on lands under the jurisdiction of the United States or on the high seas (16 U.S.C. 1372(a) (1), (a)(2)). Sections 101(a)(5)(A) and (D) of the MMPA provide exceptions to the prohibition on take, which give us the authority to authorize the incidental but not intentional take¹ of small numbers

¹ The term "take" means "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. §1362(3)(13)). The incidental take of a marine mammal falls under three categories: mortality, serious injury or harassment (i.e., injury and/or disruption of behavioral patterns). Harassment, as defined in the MMPA for non-military readiness activities (Section 3(8)(A), is any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment) or any act of

of marine mammals, provided certain findings are made and statutory and regulatory procedures are met. Incidental Take Authorizations (ITAs) may be issued as either (1) regulations and associated Letters of Authorization (LOA) or (2) an Incidental Harassment Authorization (IHA). LOAs may be issued for up to a maximum period of five years and IHAs may be issued for a maximum period of one year. NMFS also promulgated regulations to implement the provisions of the MMPA governing the taking and importing of marine mammals (see 50 Code of Federal Regulations (CFR) part 216) and published application instructions that prescribe the procedures necessary to apply for incidental take authorization. U.S. citizens seeking to obtain authorization for the incidental take of marine mammals under NMFS' jurisdiction must comply with these regulations and application instructions in addition to the provisions of the MMPA.

Information about the MMPA and 50 CFR 216 is available at

<https://www.fisheries.noaa.gov/topic/laws-policies#marine-mammal-protection-act>

Information on the application process is available at:

<https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>

And the application along with detailed instructions is available at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/apply-incidental-take-authorization>

Once NMFS determines an application is adequate and complete, NMFS has a corresponding duty to determine whether and how to authorize take of marine mammals incidental to the activities described in the application. To authorize the incidental take of marine mammals, NMFS evaluates the best available scientific information to determine whether the take would have a negligible impact on the affected marine mammal species or stocks and an immitigable impact on their availability for taking for subsistence uses. NMFS must also prescribe the “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, and on the availability of those species or stocks for subsistence uses, as well as monitoring and reporting requirements.

NMFS received a request from the project proponent for an ITA pursuant to the MMPA for the take of marine mammals, incidental to the construction of the Vineyard Wind project. As outlined above, NMFS reviews applications to determine whether to issue an authorization for the activities described in the application. NMFS will publish a proposed ITA in the Federal Register for public review once the appropriate determinations are made."

pursuit, torment, or annoyance that has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns (Level B harassment). Disruption of behavioral patterns includes, but is not limited to, migration, breathing, nursing, breeding, feeding or sheltering.

Appendices

Appendix C | Cumulative Impact Scenario

The temporal horizon for reasonably foreseeable future actions seems too constrained in limiting it to Tier 1 and 2 projects. Cumulative impacts from other offshore wind activities do not seem to be incorporated into the impact analysis in more than an extremely general way. There are several more lease areas with projects planned and anticipated dates for receipt of COPs, which should be considered in the analysis. This severely limits the ability to understand the synergistic impacts on different resources from a range of future wind activities.

It is consistent with BOEM's maximum-case scenario to evaluate the cumulative impacts of the broadest range of reasonably foreseeable future actions. Several energy companies have invested large amounts of money in the acquisition of rights to offshore wind energy lease areas, in addition to establishing commercial partnerships. It is reasonably foreseeable that these companies and partnerships will continue their efforts to develop these lease areas. Therefore, consistent with BOEM's maximum-case scenario approach to evaluating impacts, the cumulative impacts section of this EIS should include a qualitative description of the potential impacts associated with development in areas where a lease has been awarded.

We are particularly concerned with the lack of cumulative analysis related to biological, social, and economic impacts. For example, there is no specific information provided for impacts to different species/fishing communities from past, present, or reasonably foreseeable future actions. The cumulative impact analysis should be enhanced to include estimated economic impact from past, present, and reasonably foreseeable future actions that will impact fisheries management plans, and ports. In addition, it is not clear that there has been a consideration of how any anticipated displacement of fishing or vessel activity from the project area may result in a change in risk of interactions between those activities and protected species and other fishery resources outside the project area. The discussion of cumulative impacts from non-linear impacts from multiple stressors needs improvement. As appropriate, discuss how and why multiple stressors of different sources and types are not likely to lead to significant population level impacts for marine mammals.

Appendix D | Mitigation and Monitoring

This Appendix, and in other sections of the document, often discuss monitoring as a form of mitigation in all capacities. While some types of monitoring could certainly be considered a mitigation tool (i.e. real-time passive acoustic monitoring), after-the-fact monitoring of temporary or long-term impacts does not reduce project impacts. The table in Appendix D includes both mitigation measures (such as time of year restrictions) and monitoring studies of project impacts; however both are referred to as mitigation measures. While we consider monitoring of impacts a critical component of a project of this scale, we do not necessarily consider all of these monitoring plans to be mitigation since they would not all reduce the impacts of the project.

The DEIS relies upon mitigation to reduce impacts to fishing entities and marine resources and habitat. However, page D-1 of Appendix D notes that mitigation measures under consideration

may be beyond BOEM's authority to require Vineyard Wind to implement. This suggests that at least some of the mitigation measures are optional and may not be implemented. The uncertainty in whether or if such mitigation measures will be implemented undermines our ability to consider how these measures may reduce impacts of the proposed action. Unless such measures are required or committed to by Vineyard Wind, they should not be considered to reduce impacts identified in the DEIS. The FEIS should clearly identify which mitigation measures will be required or have been committed to and are therefore expected to occur versus those that are optional or aspirational.

As we have noted in our comments the specific fisheries mitigation plans are not included in the document. To date, it is our understanding that only one disruption payment agreement has been made, and only with some fishing entities in the state of Rhode Island. As discussed in our letter, this agreement is not identified nor analyzed in the DEIS, and the potential for this agreement to minimize impacts is unclear.

A fisheries monitoring plan is not included in the COP or the DEIS. Our agency only recently received a proposed monitoring report from Vineyard Wind on February 25, 2019. This report includes a summary of proposed studies and does not provide any specific monitoring plan. As we noted in our comments to Vineyard Wind, the proposed monitoring report lacked sufficient detail and critical information to evaluate its efficacy. Clearly defined objectives, underlying research, methods, and justification would be essential for any monitoring plan given the scale and magnitude of the proposed project. It is our understanding that a more detailed monitoring plan is forthcoming. We recommend BOEM and Vineyard Wind work with our Science Center and regional office staff in the development of any monitoring plan that evaluates impacts to our trust resources.

As we have stated in our scoping comments, and previous letters related to wind projects, we are supportive of a regional approach to monitoring impacts of offshore wind given the extensive amount of wind leases and projects being proposed. While a regional framework for monitoring is developed, any specific monitoring plan proposed by Vineyard Wind should consider what studies would be appropriate on a regional level and how any specific plan proposed by Vineyard Wind would fit into the regional context.

Attachment B

National Marine Fisheries Service Vessel Trip Report Analysis Vineyard Wind Lease Area

This report summarizes fisheries landings and value for trips that occurred within the Vineyard Wind Lease Area from 2008-2017 (calendar year).

Federal vessel trip report (VTR) data were queried for positional data and linked to dealer data for landings and value information. VTR locations were overlaid on a shapefile of the Vineyard Wind Lease Area provided by BOEM.

Landings and value were summarized according to:

1. Species
2. Gear type
3. Port of landing
4. State of landing

In order to meet requirements of maintaining data confidentiality, these stratifications are presented individually. In addition, for records that did not meet the rule of three (≥ 3 unique dealers and ≥ 3 unique permits) to protect confidential data, values were summarized as 'ALL OTHERS.' Complete lists of species, gear etc. were provided as additional description.

Some caveats/notes to data presented in this report:

- Values are reported in 2010 (Q2) dollars for consistency across years.
- Landings are reported in Landed Pounds.
- Data summarized here is from federal sources only.
- Federal lobster vessels, with only lobster permits, do not have a VTR requirement. Trips with no VTR are not reflected in this summary, the data included in this report represent a lower-bound estimate of all trips in this area.
- All summaries presented here are predicated on the accuracy of self-reported VTR locations. Only one VTR location is reported per trip, which is intended to represent where the majority of the fishing took place. This is the best available data, but it may be inaccurate at the scales summarized.

The Vineyard Wind EIS provided landings from 2011-2016, which are markedly different than those shown here.

Figure 1: VMS fishing effort (0-5kts) for Atlantic Mackerel, Squid, and Butterfish trip declarations, 2010-2018. The Vineyard Wind Lease Area is outlined in red.

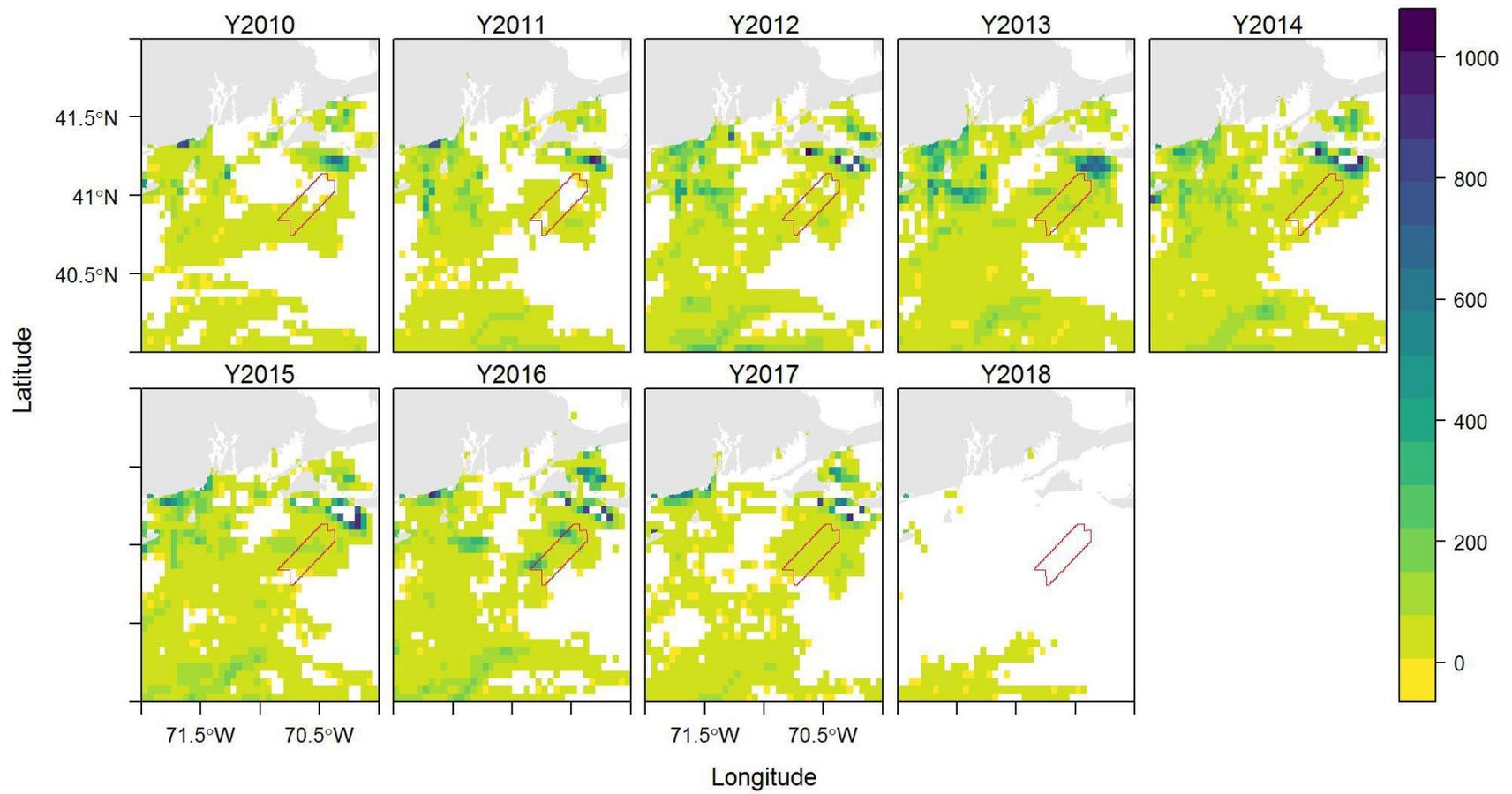


Figure 2: Species value Summary

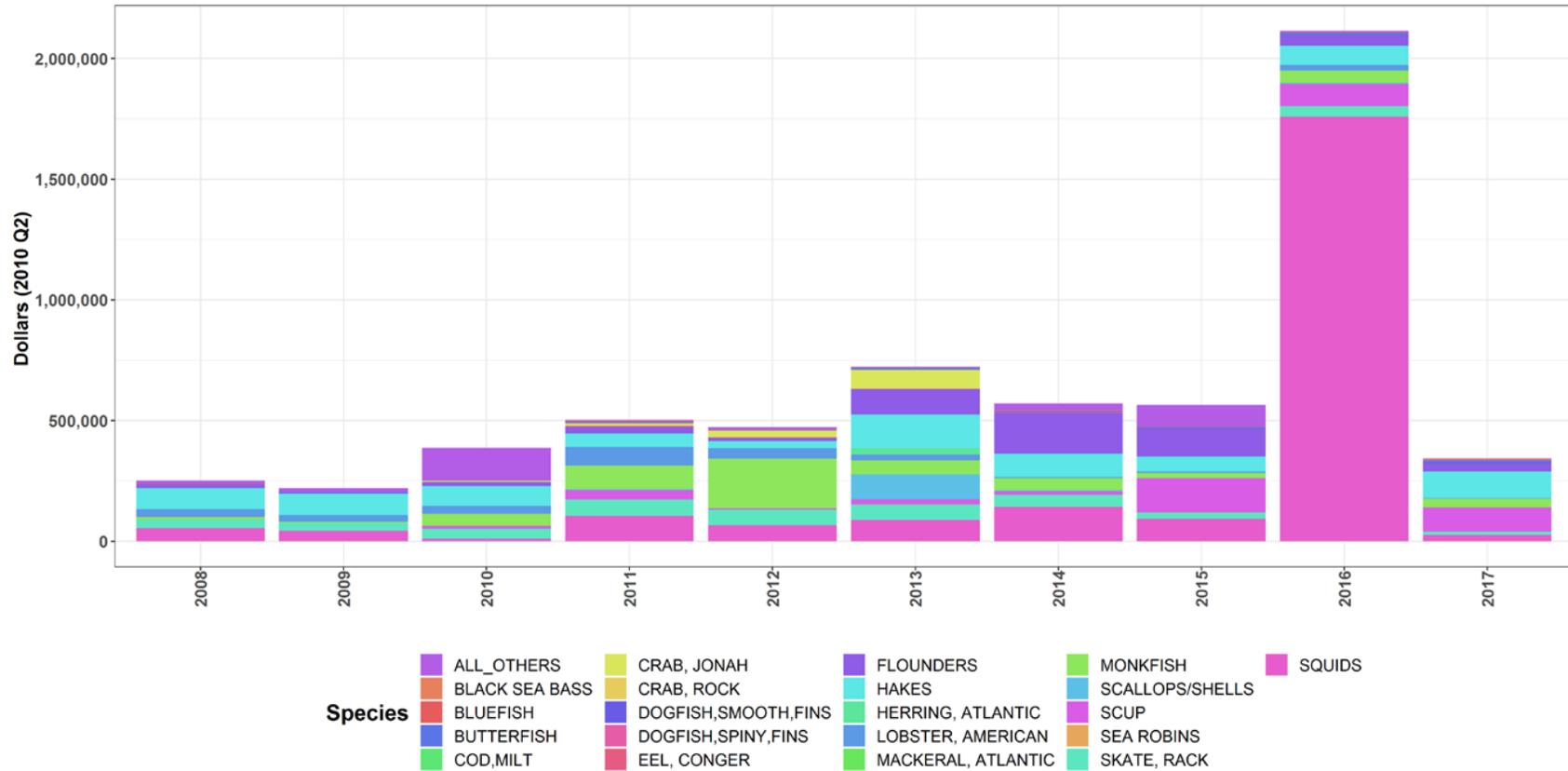


Figure 3: Port Value Summary

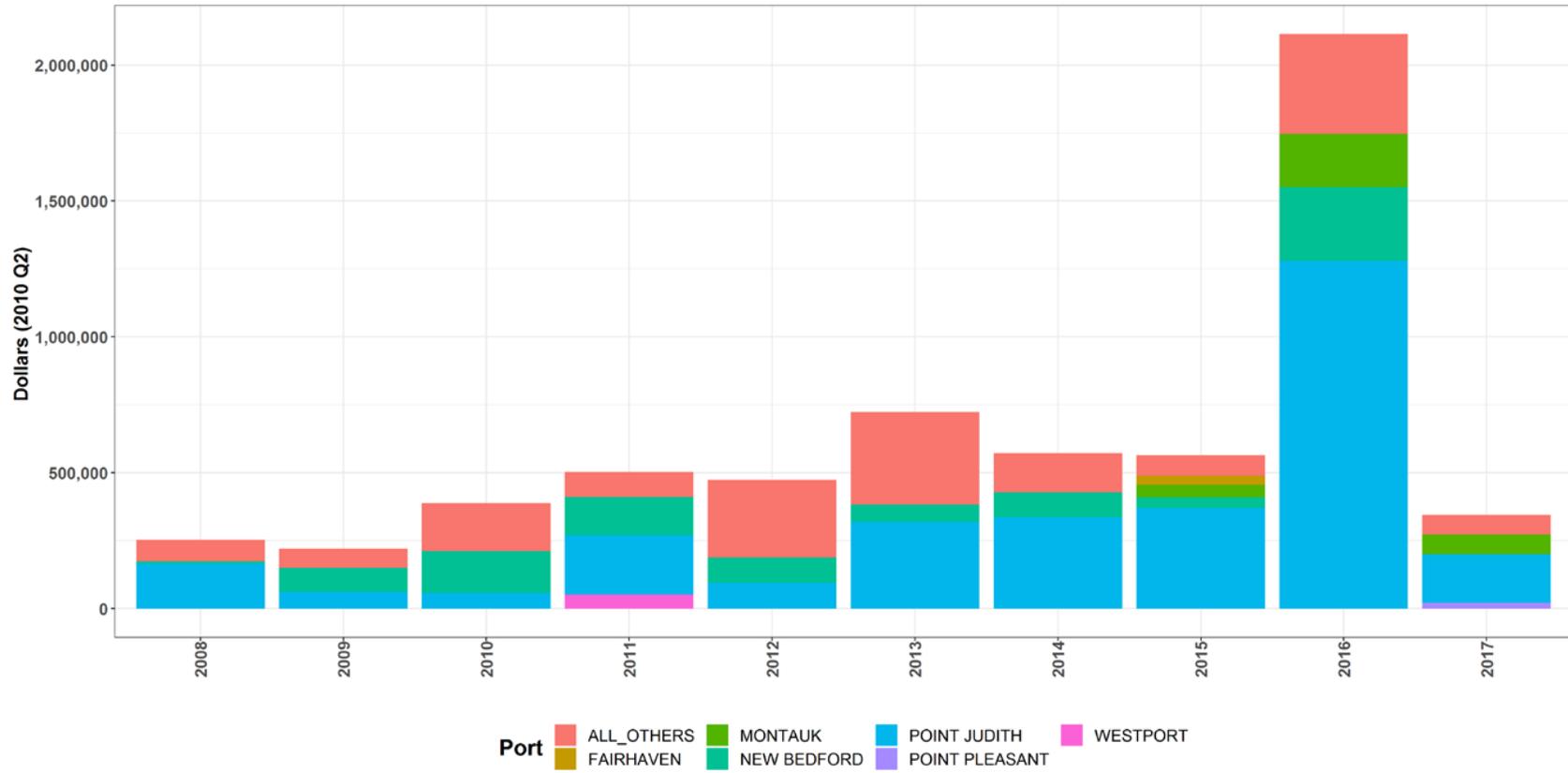


Figure 4: State Value Summary

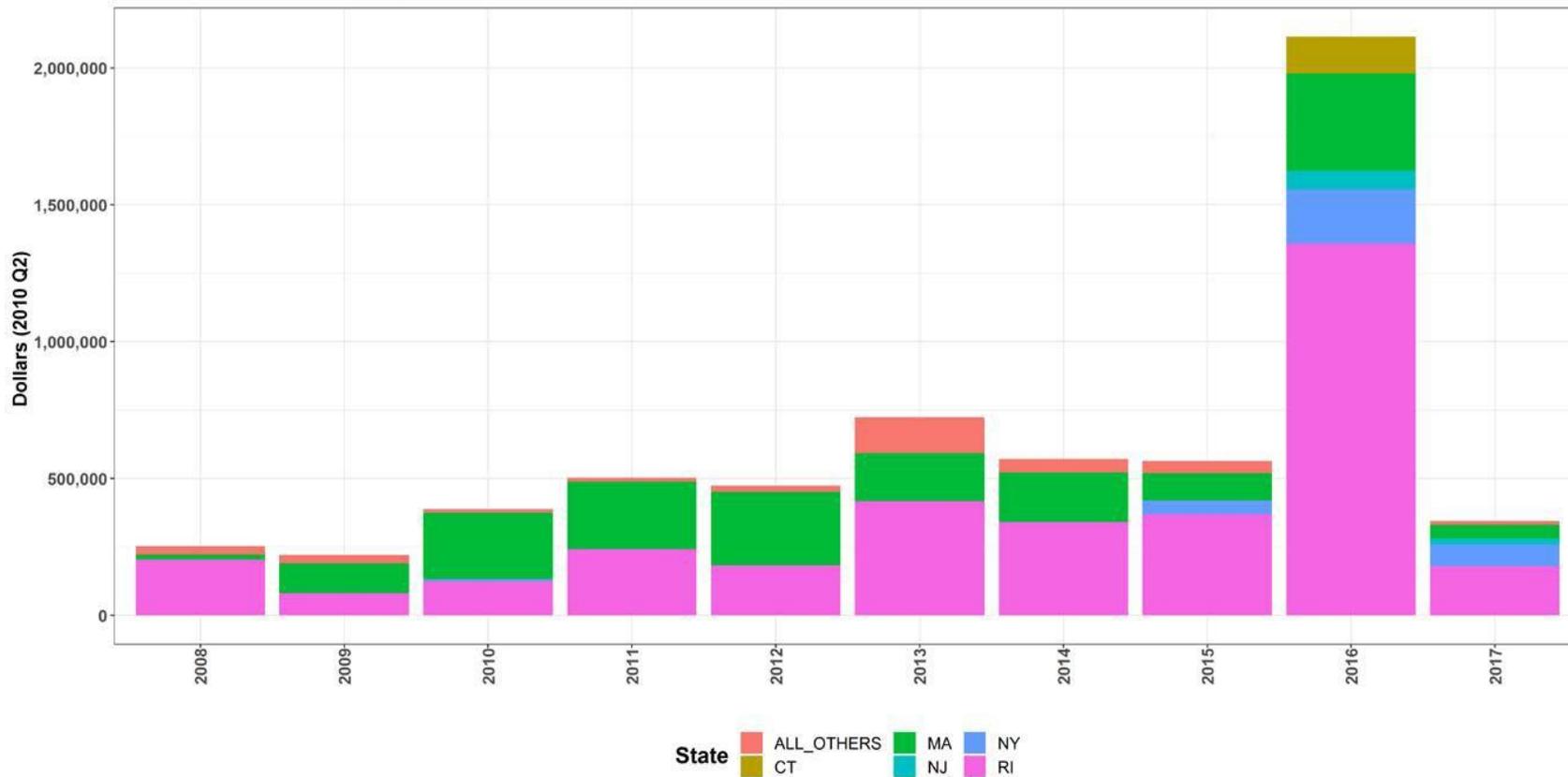


Figure 5: Gear Value Summary

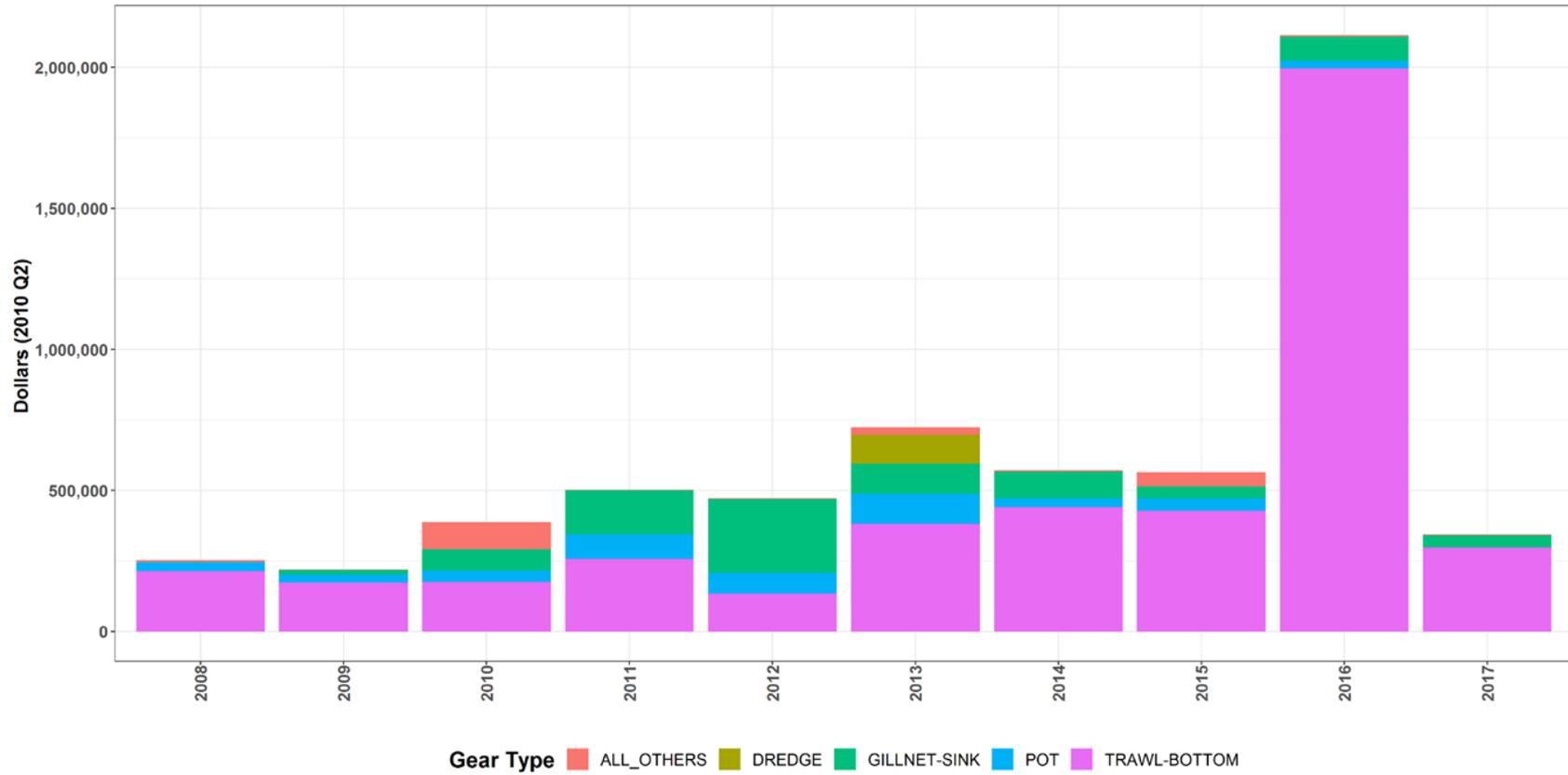


Table 1: Point Judith landings and value (2010 dollars, quarter 2) within the Vineyard Wind Lease Area.

PORT	YEAR	VALUE	LANDINGS
POINT JUDITH	2008	\$165,782	228,566.57
POINT JUDITH	2009	\$61,089	108,567.73
POINT JUDITH	2010	\$57,294	72,107.59
POINT JUDITH	2011	\$217,906	289,724.17
POINT JUDITH	2012	\$94,249	123,316.73
POINT JUDITH	2013	\$319,089	282,119.84
POINT JUDITH	2014	\$335,404	362,755.30
POINT JUDITH	2015	\$369,893	370,415.15
POINT JUDITH	2016	\$1,279,846	1,241,731.68
POINT JUDITH	2017	\$176,442	311,263.92