UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
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Informational Report 3
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Via Electronic Mail

Doug Boren, Regional Director
Pacific Outer Continental Shelf (OCS) Regional Office
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Re: Humboldt Wind Energy Area Draft Environmental Assessment

Dear Director Boren:

The National Oceanic and Atmospheric Administration (NOAA) is pleased to submit these comments in response to the Bureau of Ocean Energy Management's (BOEM) draft environmental assessment (EA) under the National Environmental Policy Act (NEPA) to consider potential environmental consequences of site characterization activities (i.e., biological, archeological, geotechnical, and geophysical surveys and ocean use surveys) and site assessment activities (i.e., installation of meteorological buoys and scientific sampling equipment) associated with issuing wind energy leases and associated easements in the Humboldt Wind Energy Area (WEA).[1]

NOAA recognizes the importance of offshore wind development off the U.S. West Coast to help achieve the Administration's goal of tackling the climate crisis by deploying 30 gigawatts of offshore wind power nationwide by 2030.

NOAA's National Weather Service (NWS) reviewed the EA and found no issues with this proposed action and the WSR-88D Radar. Please direct questions for the NWS to Mark Miller (mark.b.miller@noaa.gov).

The NOAA U.S. Integrated Ocean Observing System (IOOS) Office's Surface Currents Program, in NOAA's National Ocean Service, requests that the BOEM Office of Renewable Energy Programs (OREP), in its assessments of the Morro Bay WEA, take into account the need to mitigate the wind turbine interference (WTI) this project will cause to the oceanographic high-frequency (HF) radars in this region due to the implications to maritime safety, navigation, U.S. Coast Guard (USCG) search-and-rescue, weather forecasting, and other applications. IOOS asks that BOEM OREP include the requirement that WEA Lessees must enter into a mitigation agreement with the NOAA IOOS Surface Currents Program, for purposes of implementing measures that correct for this WTI, which include sharing real-time telemetry of surface currents and other oceanographic data with the Surface Currents Program into the public domain, measured at locations in the Project confirmed by the Surface Currents Program and its HF radar operators as sufficient to allow NOAA IOOS mission objectives to be met. The Surface Currents Program point-of-contact for development of the agreement is Brian Zelenke (brian.zelenke@noaa.gov), NOAA IOOS Surface Currents Program Manager.

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

NOAA's National Centers for Coastal Ocean Science (NCCOS), in NOAA's National Ocean Service, recently (November 2021) released marine spatial planning atlases for Aquaculture Opportunity Areas (AOAs) in the Southern California Bight and the Gulf of Mexico. These atlases provide marine spatial planning analyses that encompass more than 200 datasets providing holistic spatially explicit ecosystem planning. Suitability models were used to weight and score the interactions of data layers providing heatmaps of the ocean regions identifying areas that present the lowest and highest natural resource and ocean use conflicts. Extensive stakeholder engagement by NOAA provided new insights into ocean use and new modeling methods were developed to identify ocean areas that are most sensitive to development.

NCCOS, in cooperation with **NOAA's National Marine Fisheries Service (NMFS)**, is presently supporting the identification of Wind Energy Areas in the Gulf of Mexico through development of spatial suitability models. This effort is leveraging on the previous Gulf of Mexico spatial analyses for AOAs including data and modeling methods. This collaboration between BOEM and NOAA is providing new capacity to BOEM for more comprehensive spatial planning supporting not only the designation of Wind Energy Areas but throughout the wind development process including precision location of turbines and transmission lines.

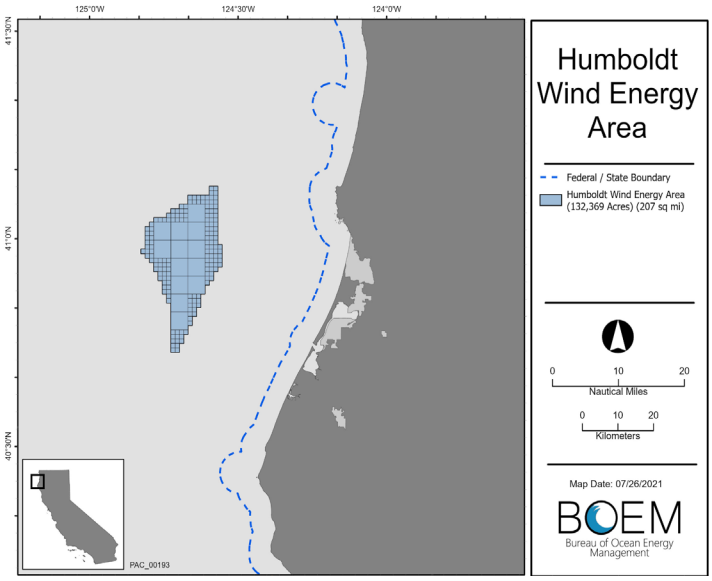
We encourage BOEM to collaborate with NCCOS on marine spatial planning for wind energy development along the west coast as early as possible in the planning process. This collaboration will build upon methodologies for marine spatial planning development within NOAA including data resources and modeling methods. Further, this collaboration will ensure that NOAA trust resources and operations are adequately conserved from the outset. Engaging NOAA earlier in the wind planning process will provide the highest level of ocean intelligence including suitability modeling, scenario analyses, and trade off analyses to inform the most sustainable development of wind energy in U.S. waters. To discuss this opportunity, please contact James Morris, NCCOS, (James.Morris@noaa.gov).

NMFS West Coast Region (WCR), Northwest Fisheries Science Center (NWFSC), and Southwest Fisheries Science Center (SWFSC) [collectively NMFS WC] provides the following comments on issues and alternatives to be considered in the EA for the Humboldt WEA pertaining to NMFS' trust resources (i.e., protected species and their habitats, managed fish stocks and their habitats), fisheries, and NMFS scientific surveys, as well as information regarding permitting, authorizations, and consultations under NMFS' jurisdiction for potential survey activities.

Focus of the EA

The Humboldt WEA is located approximately 20 miles offshore of the northern California coastline and contains approximately 132,368 acres (206 square miles), and the estimated water depth is between 500 to 1,100 meters (m).

Figure 1: Humboldt WEA.



The Proposed Action for this EA is the issuance of commercial wind energy leases and associated easements within the WEA. The lease areas might be used for offshore wind energy production, collection, and transmission. BOEM's EA analyzes issuance of up to three leases within the WEA, as well as the issuance of easements and grants associated with each lease for subsea cable corridors and areas for associated offshore collector/converter platforms. The Proposed Action may result in site assessment activities and site characterization activities focused within the leases and easements.

- ***Site characterization activities*** include biological, geophysical, geotechnical, archaeological, and ocean use surveys.
- ***Site assessment activities*** include temporary placement of meteorological buoys (i.e., metocean or met buoys) and scientific sampling equipment (e.g., oceanographic buoy deployment).

The latter two activities would be performed by lessees in their lease area(s) after lease issuance. The EA does not consider construction and operation of any commercial wind power facilities, which would be evaluated in a separate NEPA analysis later in BOEM's process if a lessee submits a Construction and Operations Plan (COP).

General Issues and Concerns

Offshore wind energy development activities generally include: pre-construction survey activities; installation operations, and maintenance of an offshore wind facility; running cables among the turbines, and from facility to shore; and shoreside infrastructure needs, such as potential port expansions/deepening, and a fleet of support vessels. The EA explained that only a portion of these activities are addressed in the EA, in accordance with BOEM's offshore wind energy development process. However, as lease issuance is the first step in the process, it is worth considering even in a general manner the types of issues NMFS will need to consider for our consultations and authorizations throughout the process, e.g., the extent that leases can be conditioned to alleviate major concerns regarding effects of activities throughout the process of development of the Humboldt WEA. General issues of concern with offshore wind development that we have raised with BOEM and are committed to working with BOEM to explore include:

- entanglement risks (primary and secondary) to marine mammals and sea turtles listed under the Endangered Species Act (ESA) and/or protected under the Marine Mammal Protection Act (MMPA);

- vessel strikes to marine mammals and ESA-listed species, including sea turtles;
- chemical and toxic pollutant runoff into the water from increased vessel traffic and shoreside activities that can affect the health of: marine mammals; ESA-listed species, including sea turtles, invertebrates, and fish; fish stocks managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA); and their forage species and prey;
- impacts to habitat, including essential fish habitat, habitat areas of particular concern, ESA-designated critical habitat, and other biologically important areas from site assessment and characterization activities, in the nearshore from cables and shoreside infrastructure, and offshore to benthic habitat (primarily rocky reefs) and deep sea corals from turbine installation/anchors, cable laying, cable electromagnetic fields (EMFs), and toxic runoff from turbine maintenance;
- noise from surveys and other wind energy activities, offshore and nearshore, at a level that could impact biologically significant behaviors (e.g., foraging, migrating, resting, reproduction) of marine mammals, ESA-listed species, and fish stocks;
- impacts that could cause changes in the abundance, distribution, or migration patterns of living marine resources (e.g., due to new physical structures, acoustics);
- impacts of EMFs on marine animal sensory systems and movements (e.g., sea turtles, some marine mammals, and elasmobranchs);
- impediments to conducting NMFS scientific surveys and safety risks around offshore wind turbines for our scientific operations;
- impacts to West Coast fisheries and fishing communities now and in a future under different climate conditions, including impacts to fish and invertebrate stocks, access to fishing grounds, gear entanglement, conflicts with increased non-fisheries vessel traffic, safety-at-sea, and shoreside infrastructure necessary for fisheries operation and resilience; and
- impacts from full build out on wind fields and other oceanic and atmospheric processes, particularly seasonal upwelling and the resulting effects on nutrient transport, vertical mixing, and eddy and front formations.

Following are our comments on BOEM's draft EA for the Humboldt WEA. The 30-day comment period provided limited time for review, and we may have additional comments on the various issues in subsequent consultations, authorizations, or stages in BOEM's offshore wind energy development process.

Species Listed and Critical Habitat Designated Under the Endangered Species Act

Available information indicates that the following ESA-listed species (including evolutionarily significant units (ESU) or distinct population segments (DPS)) and designated critical habitats (see Table 1) occur within the WEA and surrounding area. More information about these species and their critical habitats is available on our website.[2] Maps of critical habitat should be reviewed to determine if any proposed activities may overlap with these habitats.

[2] ESA-listed species information found here https://www.fisheries.noaa.gov/species-directory/threatened-endangered?title=&species_category=any&species_status=any&regions=1000001126&items_per_page=all&sort= and critical habitat found here https://www.fisheries.noaa.gov/resource/map/critical-habitat-maps-and-gis-data-west-coast-region

Table 1. ESA-listed species that occur within the WEA and surrounding area, their listing status (endangered (E), threatened (T)) and designated critical habitat (CH).

Species	Status and CH	Listing and CH Code of Federal Regulations (CFR) Citations
Marine mammals		
Southern Resident killer whale (*Orcinus orca*) ➢***Also a NMFS Species in the Spotlight***[3]	**E** / CH	50 CFR 224.101; 50 CFR 226.206
Blue whale (*Balaenoptera musculus*)	**E**	50 CFR 224.101
Fin whale (*Balaenoptera physalus*)	**E**	50 CFR 224.101
Gray whale (*Eschrichtius robustus*) - Western North Pacific stock	**E**	50 CFR 224.101
Humpback whale (*Megaptera novaeangliae*) - 2 DPSs		
-Central America DPS	**E** / CH	50 CFR 224.101; 50 CFR 226.227
-Mexico DPS	T / CH	50 CFR 223.102; 50 CFR 226.227
North Pacific right whales (*Eubalaena japonicus*)	**E** / CH	50 CFR 224.101; 50 CFR 226.215
Sei whale (*Balaenoptera borealis*)	**E**	50 CFR 224.101
Sperm whale (*Physeter macrocephalus*)	**E**	50 CFR 224.101
Guadalupe fur seal (*Arctocephalus townsendi*)	T	50 CFR 223.102
Sea turtles		
Pacific Leatherback sea turtle (*Dermochelys coriacea*) ➢***Also a NMFS Species in the Spotlight***[4]	**E** / CH	50 CFR 224.101; 50 CFR 226.207
Chinook salmon (*Oncorhynchus tshawytscha*) - 3 ESUs		
Sacramento River winter-run Chinook salmon ESU	**E** / CH	50 CFR 224.101; 50 CFR 226.204
Central Valley spring-run Chinook salmon ESU	T / CH	50 CFR 223.102; 50 CFR 226.204
California Coastal Chinook salmon ESU	T / CH	50 CFR 223.102; 50 CFR 226.211
Coho salmon (*Oncorhynchus kisutch*) - 2 ESUs		
Central California Coast coho salmon ESU ➢***Also a NMFS Species in the Spotlight***[5]	**E** / CH	50 CFR 224.101; 50 CFR 226.210
Southern Oregon/Northern California Coast coho salmon ESU	T/CH	50 CFR 223.102: 50 CFR 226.210
Steelhead (*Oncorhynchus mykiss*) - 3 DPSs		
California Central Valley steelhead DPS	T/CH	50 CFR 223.102; 50 CFR 226.211
Central California Coast steelhead DPS	T/CH	50 CFR 223.102; 50 CFR 226.211
Northern California steelhead DPS	T/CH	50 CFR 223.102; 50 CFR 226.211
Sturgeon		
North American Green Sturgeon (*Acipenser medirostris*) - Southern DPS	T/CH	50 CFR 223.102; 50 CFR 226.219
Eulachon		
Pacific Eulachon *(Thaleichthys pacificus*) - Southern DPS	T/CH	50 CFR 223.102; 50 CFR 226.222

[3] https://www.fisheries.noaa.gov/species/killer-whale#spotlight
[4] https://www.fisheries.noaa.gov/species/leatherback-turtle#spotlight
[5] https://www.fisheries.noaa.gov/species/coho-salmon-protected#spotlight

The EA should consider the effects of leasing, including any activity that would not occur but for the proposed lease sales and is reasonably certain to occur, such as site characterization and site assessment activities, on all ESA-listed species and critical habitat that occur in the WEA, as well as to ESA-listed species and critical habitat that occur outside the WEA, such as effects to nearshore critical habitat, and effects of vessel traffic to/from the lease areas that could result in vessel strikes and disturbance. Types of "take"[6] include: capture, collection, harassment, harm[7], injury, and death.

The EA states (pg 3) that "while site characterization activities that extend into state waters and onshore to ports or existing substations are a reasonably foreseeable result of a wind energy lease issued in the Humboldt WEA, BOEM is not authorizing any activities in state waters and onshore areas and does not have regulatory authority to apply mitigation measures outside of the OCS[8]." However, BOEM also explains in section 2.1, "[t]he [rights-of-way] and [rights-of-use and easement] would all be located within the northern California OCS, extending from the WEA through to state waters and to the onshore energy grid."

BOEM must consider the effects of its action as defined in NEPA's implementing regulations at 40 CFR 1508.1(g). This includes "those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." *Id*. Thus, BOEM's duty to evaluate effects extends to the geographic extent of the effects of the proposed action even if those effects occur beyond the WEA or lease boundaries. In addition, BOEM also has a duty to evaluate effects that are reasonably foreseeable and have a close causal relationship to the proposed action. The effects of these actions must be analyzed regardless of the sponsor of the activity, whether or not the sponsor is Federal. BOEM also has a duty to identify and evaluate reasonable mitigation measures to avoid, minimize, mitigate or compensate for the adverse effects of the proposed action, including when those effects extend beyond the geographic boundary of the action itself. 40 CFR 1508.1(s). The EA is an analytical document, and therefore, BOEM must identify and evaluate reasonable mitigation measures for adverse effects in the EA. A decision on whether to adopt those measures for mitigation will be made in the finding of no significant impact or related decision document.

For the purposes of the ESA, BOEM must also consider the effects of the action as defined in the ESA implementing regulations at 50 CFR 402.02, including any activity that would not occur but for the proposed lease sales and is reasonably certain to occur (e.g., new and increased vessel traffic between the WEA and ports). BOEM's duty to consider the effects of their action regardless of where the effects occur is made clear in the regulatory definitions of effects of the action and action area. In addition, cumulative effects of non-federal actions must also be identified by BOEM and evaluated by NMFS if a formal consultation occurs. If BOEM's proposed action will cause effects that rise to the level of take, regardless of where the take occurs, then BOEM must comply (or must ensure that any applicant complies) with the terms and conditions specified in an incidental take statement to be exempt from take prohibitions of the ESA.

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[6] The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. 16 U.S.C. 1532(19).

[7] 50 CFR 222.102 provides, "Harm in the definition of 'take' in the [ESA] means an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering."

[8] https://www.boem.gov/environment/outer-continental-shelf

We are concerned about effects of vessel traffic from surveys and site characterization activities on both ESA-listed species (e.g., leatherback sea turtles and listed whales) and non-listed marine mammals. Within the U.S. West Coast exclusive economic zone (EEZ), ship strikes continue to be a threat to all large whale populations, as well as non-listed marine mammals, from commercial, industrial, and recreational vessels, with higher speeds more likely to result in strikes. More information about vessel strikes on marine mammals and sea turtles can be found on our website.[9]

We are pleased to see that BOEM is requiring the mitigation measures in Appendix D (BOEM's Marine Mammal Mitigation) as part of the proposed action, and note that the EA assumes lessees would adhere to those measures.[10] The intent of these measures is to reduce the risk of vessel strikes, avoid injury and minimize potential disturbance during geophysical survey operations, and avoid entanglements during activities to support offshore wind projects. Even though the EA correctly states that endangered leatherback sea turtles are typically uncommon in the Humboldt area, given climate change and greater oceanographic variability, we recommend including them in the required mitigation and monitoring to avoid vessel strikes and entanglement, as well as reporting requirements. To further reduce the risk of vessel strikes, we also recommend making particular note of NMFS' Marine Life Viewing Guidelines[11], which, for example, highlight the importance of these measures for avoiding impacts to mother/calf pairs.

Page D-3 of Appendix D, section B, states that "[a]ll vessels associated with survey activities (transiting or actively surveying) must comply with the vessel strike avoidance measures specified below." Similar language appears in sections B2, B3, and D4.[12] Since vessels are transiting from ports in state waters to and from the WEA in federal waters, it appears that these mitigation measures would apply anywhere a vessel that is engaged in activities associated with the proposed action transits, which would contribute to the intent of these measures to reduce the risk of vessel strikes, avoid injury, and minimize potential disturbance during geophysical survey operations, and avoid entanglements during activities to support offshore wind projects and appears consistent with BOEM's duties under NEPA, the ESA, and implementing regulations described above. However, this appears to contradict the statement in the EA (noted above) that BOEM does not have regulatory authority to apply mitigation measures outside of the OCS. The EA should clarify whether BOEM assumes Appendix D mitigation measures are required to apply only in federal waters or in both state and federal waters, i.e., the full transiting range for survey vessels associated with BOEM's proposed action. Also, Appendix D should be clear about where these measures apply.

The EA also states (pg 35) that "[v]essel speeds during site characterization surveys within the Proposed Action Area will be limited to less than 5 knots (2.57 m/s), but transit speeds will vary." As noted in NMFS Southeast Regional Office's Vessel Strike Avoidance Measures[13] to protect ESA-listed and MMPA-protected species, "The most effective way to avoid vessel strikes is to travel at a slow, safe

[9] https://www.fisheries.noaa.gov/west-coast/marine-mammals-west-coast-vessel-strikes, https://www.fisheries.noaa.gov/national/vessel-strikes, and https://www.fisheries.noaa.gov/insight/understanding-vessel-strikes

[10] Page 7: "National guidelines are applicable for certain resource areas along the U.S. west coast. For the purpose of the Proposed Action scenario, BOEM assumes that the lessee would employ these methods to acquire the information required under 30 CFR 585.610–611 and that these activities would not be conducted concurrently with biological surveys for marine mammals and sea turtles." Page 35 states that these vessel strike avoidance measures and reporting requirements are required.

[11] https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#guidelines-&-distances

[12] Section B2: Any time a survey vessel is underway (transiting or surveying), a PSO must monitor a Vessel Strike Avoidance Zone…, Section B3: To monitor the Vessel Strike Avoidance Zone, a PSO (or crew lookout if PSOs are not required) must be posted during all times a vessel is underway (transiting or surveying)..., Section D4: A minimum of one PSO (assuming condition 5 is met) must be observing for protected marine mammal species at all times when noise-producing equipment is operating, or the survey vessel is actively transiting.

[13] https://media.fisheries.noaa.gov/2021-06/Vessel_Strike_Avoidance_Measures.pdf?null

speed." The endangered Southern Resident killer whale (SRKW), ESA-listed humpback whales, and gray whales feed and move between high-use foraging areas close to shore. Therefore, there is risk of ship strikes in waters between the shore and the WEA. The EA states (pg 35) "the project-related vessel traffic would increase the overall vessel traffic and risk of collision with marine mammals in the Proposed Action Area; however the required vessel strike avoidance measures, as well as reporting requirements (Appendix D), will minimize vessel interactions with protected species to negligible levels." There should be more discussion in the EA about how BOEM reached this conclusion given that speed limits are not required during transit, yet there is increased vessel traffic risk during transit.

Entanglement in fishing gear has the potential to result in serious injury or mortality of marine mammals and sea turtles. Of note, the EA does not consider potential effects on ESA-listed species and marine mammals that are otherwise protected under the MMPA resulting from potential displacement of fishing effort to new or different areas and other existing uses as a result of leasing and related activities. The EA should consider these potential impacts.

ESA Section 7 Consultation

Under Section 7(a)(2) of the ESA, each federal agency is required to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. The consultation process identified in section 7 of the ESA is outlined in joint NMFS and U.S. Fish and Wildlife (USFWS) regulations (50 CFR Part 402). The ESA implementing regulations state that for any federal action that may affect listed species or designated critical habitat, federal agencies must provide NMFS with a written assessment of the effects of that action (50 CFR 402.13(c)(1) and 402.14(c)). This written assessment can be included in the EA provided that specific reference is made to the appropriate sections within the EA for this use when requesting consultation (50 CFR 402.14(c)(2)). A number of activities that may affect ESA-listed species and critical habitat are reasonably certain to occur as a result of lease issuance, including site characterization and site assessment activities. Note that the definition of "action area" includes all areas that may be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (i.e., the Humboldt WEA)(50 CFR 402.02). As such, consultation pursuant to section 7 of the ESA on any proposed lease issuance is required.

To improve the efficiency of the consultation process, we recommend that BOEM consider requesting from NMFS WCR programmatic consultation on multiple, similar actions occurring from the lease sales versus requesting individual consultations for leases issued for the WEA. We anticipate that such a consultation would address site characterization and site assessment activities within the WEA and surrounding area, including fisheries surveys and other activities that may affect ESA-listed species and/or critical habitat. Following the lease sale, if any COPs are submitted to BOEM, site specific effects of construction, operation, and decommissioning of any future wind projects would be considered in later consultations on BOEM's proposed approval of the COPs.

Below is additional information about some of the listed species identified in Table 1.

Southern Resident Killer Whales (Orcinus orca) (SRKW)

SRKW are one of NMFS' nine Species in the Spotlight, given their high risk of extinction.[14] There are less than 75 animals left in the endangered SRKW DPS. Over the last decade, the DPS's population trend

[14] https://www.fisheries.noaa.gov/species/killer-whale#spotlight and see priority actions needed in 2021-2025 for SRKW at https://media.fisheries.noaa.gov/2021-04/SIS-Action-Plan-2021-SRKW-FINAL%20508.pdf

has been decreasing. Two (K and L) of the three pods of SRKW have been documented using areas off the northern California coast, primarily from January through April. Satellite telemetry shows that tagged whales used a relatively narrow north-south corridor off the coast of California, with a median depth of waters at 45 m and a median distance from shore at 6.3 kilometer (km), well inside of the Humboldt WEA. Designated critical habitat for SRKW includes the northern California coast, from the Oregon/California border south to Cape Mendocino, between the 6.1 and 200 m isobath contours.

Three main threats to SRKW survival are vessel traffic noise and disturbance, health and contaminants, and prey availability (i.e., primarily Chinook salmon). The northern California coast is an important feeding area for SRKW and an important area for SRKW prey species, which are an essential feature of SRKW critical habitat, as well as passage and water quality.

Potential impacts on SRKW of site assessment and site characterization activities off the northern California coast could include: disturbance from sound in water column during high resolution geophysical surveys; and collision risk and sound disturbance from offshore wind energy vessel traffic and biological surveys.

Finally, impacts to nearshore habitat for Chinook salmon (i.e., from shoreside support activities) will be an important consideration for SRKW conservation as the process moves forward.

Humpback Whales (Megaptera novaeangliae)

Both the Central America (endangered) and Mexico (threatened) DPSs of humpback whales feed off the West Coast. Critical habitat for humpback whales[15] has been designated off the West Coast, including northern California. Based on satellite telemetry data, humpback whales are documented to use very nearshore areas and offshore waters within and outside of the EEZ.

NMFS delineated specific areas off the West Coast and Alaska that meet the definition of critical habitat for one or more of three DPSs of humpbacks, and the WEA falls within the Southern Oregon/Northern California Area (Unit 14).[16] Unit 14 is bounded in the north at 42°10' N latitude extending south to the Mendocino escarpment at 40°20' N latitude. The nearshore boundary is defined by the 50-m depth contour, with the seaward boundary defined by a 2,000-m depth contour. This unit encompasses a biologically important area (BIA)[17] that includes Point St. George, which is north of the Humboldt WEA, and satellite telemetry data indicate that feeding occurs throughout Unit 14, aggregating humpback whales from July to November. Photo-identification data confirms that this area is a destination for both DPSs.

Tables 2 and 3 in the final rule[18] and Tables 3(B) and 3(C) in the Biological Report, shows that Unit 14 received a **"high"** conservation value rating for the endangered Central America DPS and a **"high"** conservation value rating for the threatened Mexico DPS.

NMFS has identified offshore alternative energy activities as a potential threat to humpback whale critical habitat because large, permanent structures within the designated area may impede humpback whale movement (i.e., access to prey concentrations) and feeding behavior, and chemical leaks or use of biocides to control growth of marine organisms may pollute the ecosystem, harming prey.[19] Potential

[15] https://www.fisheries.noaa.gov/action/final-rule-designate-critical-habitat-central-america-mexico-and-western-north-pacific, Map https://www.fisheries.noaa.gov/resource/map/humpback-whale-critical-habitat-maps-and-gis-data
[16] See map on pg 73 of the 2020 Biological Report, and page 83 for Unit 17 description: https://media.fisheries.noaa.gov/2021-04/Biological%20Report_HWCH_081420_updated_508.pdf?null
[17] https://cetsound.noaa.gov/important and https://www.cascadiaresearch.org/files/publications/Calambokidisetal2015BIAs.pdf
[18] 86 FR 21082, 21145 (April 21, 2021)(https://www.govinfo.gov/content/pkg/FR-2021-04-21/pdf/2021-08175.pdf)
[19] https://repository.library.noaa.gov/view/noaa/29488

impacts on the two humpback whale DPSs of site assessment and site characterization activities off the northern California coast could include: disturbance from sound in water column during high resolution geophysical surveys; and collision risk and sound disturbance from offshore wind energy vessel traffic and biological surveys.

Marine Mammal Species

All marine mammals receive protection under the MMPA of 1972, as amended. Several marine mammal species occur in the WEA or nearby coastal area where support activities will occur (see Table 2), and some of these species are also listed under the ESA (see also Table 1). Stock assessments can be found on our website.[20]

Table 2. Marine mammals that occur within the WEA and surrounding area (status for ESA-listed species: endangered (E), threatened (T), and designated critical habitat (CH)). (Underlined content = not identified in the Draft EA for Humboldt WEA.)

Non-ESA-listed marine mammals	ESA-listed marine mammals (see also Table 1)
Gray whale (*Eschrichtius robustus*) - Eastern North Pacific stock	Gray whale (*Eschrichtius robustus*) - Western North Pacific stock - **E**
Minke whale (*Balaenoptera acutorostrata*)	Fin whale (*Balaenoptera physalus*) - **E**
Killer whale (*Orcinus orca*) - Eastern North Pacific Offshore stock	Killer whale – Southern Resident killer whale – **E** / CH
Mesoplodont beaked whales (Mesoplodon spp.)	Blue whale (*Balaenoptera musculus*) - **E**
Bryde's whale (*Balaenoptera edemi*)	Humpback whale (*Megaptera novaeangliae*) - 2 DPSs
Cuvier's beaked whale (*Ziphius cavirostris*)	-Central America DPS - **E** / CH
Baird's beaked whale (*Berardius bairdii*)	-Mexico DPS - T / CH
Northern right-whale dolphin (*Lissodelphis borealis*)	North Pacific right whales (*Eubalaena japonicus*) - **E** / CH
Long-beaked common dolphin (*Delphinus capensis*)	Sei whale (*Balaenoptera borealis*) - **E**
Short-beaked common dolphin (*Delphinus delphis*)	Sperm whale (*Physeter macrocephalus*) - **E**
Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)	Guadalupe fur seal (*Arctocephalus townsendi*) - T
Risso's dolphin (*Grampus griseus*)	
Dall's porpoise (*Phocoenoides dalli*)	
Harbor porpoise (*Phocoena phocoena*) – Northern California/Southern Oregon stock	
Northern elephant seals (*Mirounga angustirostris*)	
*Steller sea lion (*Eumetopias jubatus*)	
Harbor seal (*Phoca vitulina*)	
Northern fur seal (*Callorhinus ursinus*)	
California sea lion (*Zalophus californianus*)	

*Although the eastern DPS of Steller sea lions were delisted from the ESA in 2013 (78 FR 66140; Nov. 4, 2013), critical habitat remains designated for major Steller sea lion rookeries, including Sugarloaf Island and Cape Mendocino (south of the WEA at 40° 26' N latitude; 124° 24.0' W longitude), Humboldt County, California. NMFS determined that critical habitat for the Steller sea lion should remain in effect for the listed, endangered western DPS, as the designated critical habitat continued to support the western DPS's important biological functions (e.g., feeding and resting); however, the western DPS of Steller sea lions is not found breeding, resting or foraging at or near these rookeries

[20] https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

MMPA Incidental Take Authorizations

The MMPA prohibits the "take"[21] of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1371 (a)(5)(A) and (D)) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, take of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the take is limited to harassment, a notice of a proposed incidental take authorization is provided to the public for review.

The proposed action may result in the take of a marine mammal incidental to all or a subset of the activities considered in the EA (e.g., HRG surveys, fisheries surveys). Marine mammals can be injured or killed from certain fishery survey gear or be harassed from noise-generating activities such as site characterization surveys. NMFS recommends the lease sale be conditioned with measures to avoid take of marine mammals from fisheries surveys and avoid and/or minimize take of marine mammals from site characterizations surveys. MMPA authorization needs should be carefully considered by developers and discussed with NMFS well in advance of any planned activities. More information on the MMPA incidental take authorization process is available on our website at: https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.

As the National Academies of Sciences, Engineering, and Medicine described with regards to cumulative effects of stressors on marine mammals,[22] marine mammals face a large array of anthropogenic and natural stressors, including, for example, noise pollution, loss of habitat, vessel traffic, fishing, competition for prey, and predators. Cumulatively, these stressors may compromise an individual's capacity to successfully thrive in the wild, affecting their physiological well-being or subtly altering their behavior. Multiple stressors may cumulatively affect marine mammal populations, particularly those with restricted ranges, narrow migratory routes, or low abundances. Recognizing the complexity of the interaction and cumulative effects of stressors on marine mammals and affected stocks is important in considering any activity(ies) associated with offshore wind energy within and adjacent to the Humboldt WEA.

Habitat under the Magnuson-Stevens Fishery Conservation and Management Act (MSA)

The WEA and associated activities will occur within designated Essential Fish Habitat (EFH) for many of the 100+ species managed by the Pacific Fishery Management Council (PFMC) for four Federal Fishery Management Plans (FMP's)[23]:

- Pacific Coast Salmon (PFMC 2016)
- Coastal Pelagic Species (PFMC 2019a)
- Pacific Coast Groundfish (PFMC 2019b)
- Highly Migratory Species (PFMC 2018)

[21] "Take" means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. "Harassment" means any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment). 16 U.S.C 1362.

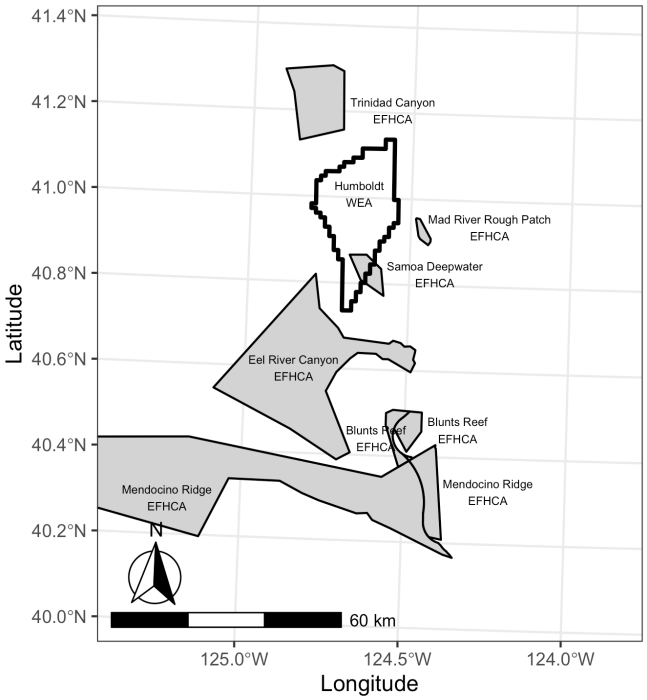
[22] https://doi.org/10.17226/23479

[23] https://www.pcouncil.org/managed_fishery/habitat/

You can find information on species with designated EFH in and around the project area at https://www.habitat.noaa.gov/apps/efhmapper/?page=page_4.

The WEA falls within designated Rocky Reef Habitat Areas of Particular Concern (HAPCs)[24] for the Pacific Coast Groundfish FMP.[25] These include canopy kelp, seagrass, rocky reefs, and areas of interest that have unique geologic or ecological characteristics and represent high priority habitats for conservation, management, and research. It is also likely that the transmission lines and other interrelated activities may also fall within other designated HAPC's. Essential Fish Habitat Conservation Areas (EFHCA) were updated in 2020 under Amendment 28 of the Pacific Coast Groundfish Fishery Management Plan (FMP). EFHCA's are spatially discrete areas closed to bottom trawling and, in some cases, other types of bottom contact fishing gear, to protect the important habitat features found there. The Humboldt WEA overlaps with the Samoa Deepwater EFHCA and is adjacent to the Mad River Rough Patch EFHCA (see Figure 2). The Mad River Rough Patch EFHCA is characterized by complex topography, rocky ridges, and diverse habitats with abundant fauna. Research in the Mad River Rough Patch EFHCA has identified an abundance of corals, sponges, and sea pens (pennatulids). The significance of the ecological resources in this area were the focus of a collaborative effort among the fishing industry and environmental groups to protect these sensitive features from activities that would disturb them. The 2020 amendments to the Pacific Coast Groundfish FMP also identified other EFHCA's in the vicinity which may overlap with the WEA, including the Trinidad Canyon and Eel River Canyon EFHCA's[26].

Figure 2. EFHCAs in and around the Humboldt WEA. Source: NMFS EFH Data Inventory: https://www.habitat.noaa.gov/application/efhinventory/index.html.



[24] HAPCs are subsets of EFH that are identified based on one or more of the following considerations: the importance of the ecological function provided by the habitat; the extent to which the habitat is sensitive to human-induced environmental degradation; whether, and to what extent, development activities are, or will be stressing the habitat type; and the rarity of the habitat type (50 CFR 600.815(a)(8)).

[25] https://www.fisheries.noaa.gov/west-coast/habitat-conservation/habitat-areas-particular-concern-west-coast and map at https://media.fisheries.noaa.gov/dam-migration/map-gfish-hapc.pdf

[26] More information and locations of the EFHCA's can be found at: https://www.fisheries.noaa.gov/west-coast/sustainable-fisheries/west-coast-groundfish-closed-areas#essential-fish-habitat-conservation-areas

Habitats affected by the site characterization activities and installation of meteorological buoys or towers should be mapped (characterized and delineated) and impacts to these habitats should be better described. If impacts cannot be avoided, the EA should discuss potential mitigation. The geotechnical sampling proposed will disrupt and disturb the benthic environment as far as 25 meters deep into the substrate. Boring, core sampling, benthic sleds, anchors, and other activities to evaluate the benthic parameters within the WEA will likely impact and destroy sensitive deepwater invertebrates and corals. As BOEM notes in the EA, structure-forming invertebrates, such as corals and sponges, provide both habitat and food for other species and these essential features are expected to be smothered, crushed, injured, or killed by the proposed surveying activities. BOEM should ensure locations of the buoy anchors and the geotechnical elements of the proposed surveys minimize impacts to EFH and the unique habitat features within the EFHCA's for their continued function. BOEM should incorporate mitigation for all impacts to sessile deepwater organisms [corals, sponges, and pennatulids (sea pens)] that occur during the geotechnical surveys. Measures taken to avoid, minimize, and mitigate impacts to ecologically sensitive habitats should also be included in both the EA and the EFH Assessment required by the MSA as described further below.

EFH Consultation

The MSA requires federal agencies to consult with the Secretary of Commerce, through NMFS, with respect to "any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act" (16 U.S.C. 1855(b)(2)). This consultation process is described in our EFH regulations at 50 CFR 600.905 through 600.930. The EFH regulations state that for any federal action that may adversely affect EFH, federal agencies must provide NMFS with a written assessment of the effects of that action on EFH (50 CFR 600.920(e)). This EFH Assessment should include analyses of all potential impacts, including temporary, permanent, direct, indirect individual, cumulative, and synergistic impacts, of the proposed project.

The EFH consultation is a separate review mandated pursuant to the MSA, although BOEM may rely on other existing procedures (such as ESA) to fulfill the EFH consultation obligations. If BOEM does so, the EFH Assessment should be included within a separate section or appendix of the Biological Assessment that is prepared for ESA consultation and be clearly identified as an EFH Assessment. To aid BOEM and developers in the development of comprehensive and complete EFH Assessments, NMFS' Greater Atlantic Regional Office (GARFO) has published Recommendations for Mapping Fish Habitat.[27] NMFS WC will be reviewing those Recommendations and amending them, as appropriate, for waters off the U.S. West Coast. In the interim, we request that BOEM and developers follow GARFO guidance when operating off the West Coast.

Potential MSA Compliance for Surveys and Monitoring Plans

The EA stated that developers will carry out fish surveys as part of site characterization (pgs 7-10), including up to once per day of the site assessment plan (SAP) (Table 2-3). These surveys and any other activities as part of the proposed action (e.g., potential monitoring plans) that engage in "fishing" as defined by the MSA[28] must comply with all applicable fishery management regulations. The MSA

[27] Found here: https://www.fisheries.noaa.gov/new-england-mid-atlantic/science-data/offshore-wind-energy-development-new-england-mid-atlantic-waters

[28] Fishing, or to fish means any activity, other than scientific research conducted by a scientific research vessel, that involves: (1) The catching, taking, or harvesting of fish; (2) The attempted catching, taking, or harvesting of fish; (3) Any other activity that can reasonably be expected to result in the catching, taking, or harvesting of fish; or (4) Any operations at sea in support

defines “fish” as “finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds” (16 U.S.C. 1802(12)).

MSA Letter of Acknowledgement for “scientific research”

Monitoring or survey activities that meet the definition of “scientific research activity” from a “scientific research vessel” (e.g. a vessel chartered and controlled by a university/scientific institution and operating under a scientific research plan), as defined in MSA implementing regulations at 50 CFR 600.10, are not considered to be fishing and are not subject to MSA fishery management regulations. This means that such vessels are not restricted by fishing regulations established under 50 CFR Part 300 for U.S vessels operating in internationally-managed fisheries, 50 CFR Part 600 for U.S. fisheries generally, or 50 CFR Part 660 for fisheries off the West Coast, including quotas, gear restrictions, or area closures. The full scope of vessel activity must be consistent with the definition for scientific research activity, and the scientific research vessel may not conduct fishing and research activities on the same trip.

NMFS recognizes, but does not authorize, scientific research activities from a scientific research vessel by providing, upon request, a Letter of Acknowledgement under the MSA (50 CFR 600.745(a)). While a Letter of Acknowledgement is not required, we highly encourage that research programs (those of BOEM’s and/or the developers) obtain such a letter from NMFS WCR to ensure NMFS concurs the criteria have been met and the vessel is not subject to MSA-based fishing regulations. Obtaining a Letter of Acknowledgement minimizes any delays caused by potential U.S. Coast Guard and law enforcement vessel inquiries.

Please note that an MSA Letter of Acknowledgement is not an authorization and is separate and distinct from any permit, authorization, or consultation required under the MMPA, the ESA, or any other applicable law. An MSA Letter of Acknowledgement does not authorize take of marine mammals incidental to fisheries surveys. The issuance of an MSA Letter of Acknowledgement is not considered a federal action that triggers ESA section 7 consultation; as such, if the proposed survey may affect one or more species listed under the ESA (inclusive of capture and release without injury), additional coordination with NMFS is necessary.

MSA Exempted Fishing Permit (EFP)

Monitoring plans or survey activities that do not meet the definition of scientific research activity by a scientific research vessel that deploy fishing gears similar to typical fishing operations may need an exemption from specific fishing regulations. Depending on the monitoring activities, exemptions may be needed for existing possession limits, minimum fish sizes, closure areas, and gear requirements, among other regulations, to support experimental/monitoring activities during trips conducting monitoring activities. Exemption(s) may be obtained by applying for an Exempted Fishing Permit (EFP) by contacting NMFS WCR. Issuance of an EFP is a federal action that may require ESA section 7 consultation and NEPA compliance.

Impacts to NMFS Scientific Surveys

The EA did not include potential impacts to NMFS scientific surveys. Wind farm development in the Humboldt WEA will have impacts on NMFS’ long-term scientific surveys and assessments. The impacts will include: not being able to sample in the WEA; bias introduced in those surveys that depend on a random-stratified statistical design; and alteration of habitat and species abundance and spatial

of, or in preparation for, any activity described in paragraphs (1), (2), or (3) of this definition. 16 U.S.C. 1802(16); 50 CFR 600.10.

distribution in the vicinity of the WEA that may not be detected. These impacts will reduce the accuracy and precision of the catch and biological indices derived from these surveys, which are essential for informing fisheries management decisions and ecosystem-level assessments, and impact the data critical for conservation and recovery of protected species.

With respect to site assessment and characterization activities proposed in the EA, there could potentially be space-use conflicts in the WEA, as surveys and placement of buoys have potential to interfere with NMFS survey plans and sampling sites. Coordination with the NWFSC and SWFSC is requested prior to proposed activities to work out any potential space use conflicts.

NMFS surveys are conducted on NOAA owned and chartered research vessels, chartered commercial fishing vessels, NOAA owned and chartered aircraft and uncrewed platforms. Regardless of the primary survey target or purpose, an essential element of all surveys is that they maintain both survey protocols and allocation of survey effort as consistently as possible over time to avoid introducing bias into the survey results that inform stock assessments, ecosystem assessments, and other science products used to inform the public and marine resources managers. Should leases result in changes to the surveys that are not avoidable (e.g., station grid, transect location, geographic extent, sampling protocols), mitigation will be a costly process that involves developing, evaluating, and calibrating new survey designs that avoid bias and allow continuation of the scientific uses of the survey data.

Impacted NMFS Surveys

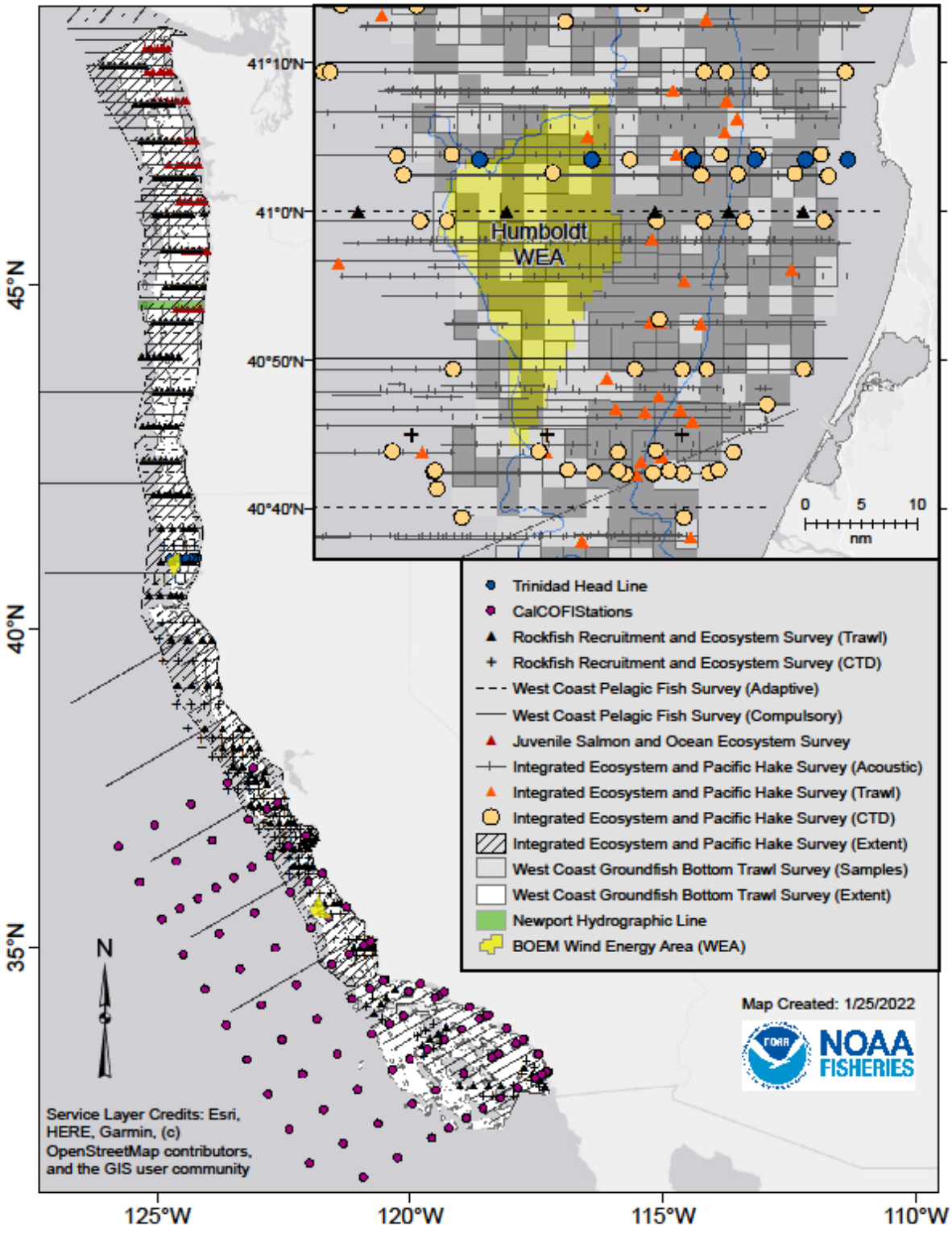
1. **Trinidad Head Line** is an east-west oriented series of stations at approximately 41° North complemented with autonomous glider transects. Seasonal and annual variations in hydrographic and zooplankton populations have been observed continuously since 2007. https://www.fisheries.noaa.gov/west-coast/science-data/ocean-and-ecosystem-observations-trinidad-head-line
2. **West Coast Groundfish Bottom Trawl Survey (WCGBTS)** is the primary source of fishery-independent data used for stock assessments and groundfish management for 90+ groundfish species in the West Coast fishery management plan. The survey employs a random-stratified design and has been conducted annually since 1998 (May to October). https://repository.library.noaa.gov/view/noaa/14179
3. **Joint U.S.-Canada Integrated Ecosystem and Pacific Hake Acoustic Trawl Survey** provides data to support sustainable populations of Pacific hake on the West Coast. The survey consists of a series of onshore-offshore oriented acoustic transects and directed trawl and environmental sampling, and extends along the west coast from British Columbia to Pt. Conception, California. https://www.fisheries.noaa.gov/west-coast/science-data/joint-us-canada-integrated-ecosystem-and-pacific-hake-acoustic-trawl-survey
4. **West Coast Pelagic Fish Survey** is an acoustic trawl survey focusing on coastal pelagic species (e.g. sardine, anchovy, Pacific mackerel, jack mackerel, herring, krill). These forage species are an essential component of the California Current Ecosystem. The survey consists of a series of onshore-offshore oriented acoustic transects and directed trawl and environmental sampling, and extends along the west coast from British Columbia to Baja California. https://swfsc-publications.fisheries.noaa.gov/publications/TM/SWFSC/NOAA-TM-NMFS-SWFSC-625.pdf
5. **West Coast Marine Mammal Survey** is designed to estimate the distribution and abundance of approximately 35 species of marine mammals. It is a line transect survey extending from British Columbia to Baja California and approximately 300 miles offshore. https://www.fisheries.noaa.gov/west-coast/science-data/ship-based-cetacean-and-ecosystem-assessment-surveys-california-current

6. **Rockfish Recruitment and Ecosystem Survey** is designed to sample approximately 60 species of rockfish during a short window in their life history when they are distributed in the upper water column and before they have settled to their adult benthic habitat. The survey consists of a series of standard trawl stations and associated ecological observations and informs several stock assessments. https://doi.org/10.5670/oceanog.2021.212
7. **Pacific Orcinus Distribution Surveys** are visual and acoustic shipboard line transect surveys conducted to locate killer whales, particularly endangered SRKW, in the coastal waters of the continental U.S., from northern Washington to central California. These surveys are used to monitor the seasonal occurrence, habitat use, diet, and health of this population. Survey design is a function of the season of interest and duration of vessel availability. When whales are located, focal follows are conducted from small boats, weather permitting.

Four of these surveys (1, 3, 4 and 6) consist of fixed transects and/or stations oriented in an east-west direction and passing through the WEA. Nominal spacing of transects for surveys 3 and 4 is 10 nautical miles (nm). Impact on these surveys may be partially mitigated by establishing two east-west "corridors", one centered on latitude 41° North and another 10 miles south, sufficiently wide to allow a survey vessel to pass and deploy a trawl into the prevailing wind. Accordingly, we request that two areas centered on latitudes 41° 0' North and 40° 50' North by 3 nm wide be excluded from the WEA leasing area. The west coast groundfish survey (2) utilizes a random stratified sampling design and access to blocks of cells within the WEA are requested to maintain sampling in each depth stratum (55-183 m, 183 - 549 m and 550 to 1280 m) currently sampled. Perhaps these could be consolidated with the area requested for surveys (1, 3, 4 and 6) with fixed transects to maximize survey access to usual and accustomed areas while also preserving space for the wind turbines.

We have included a map (see Figure 3, next page) showing where the WEA overlaps with NMFS fisheries and ecosystem surveys (i.e., not including marine mammal surveys) and the recommendations we described above.

Figure 3: Map of NMFS Fisheries and Ecosystem Surveys and Areas of WEA Overlap. Note: For the West Coast Groundfish Bottom Trawl Survey, the darker gray cells are areas sampled at least one time from 2003-2018 and the lighter gray cells are other areas within the survey extent. Any one of these cells (either dark or light gray) could be selected for sampling in a given year. Surveys 5 and 7 are not represented in this map figure.



Commercial and Recreational Fisheries

We recommend BOEM carefully consider in the EA the safety of fishing vessels at sea. Fishing vessel traffic should be included in EA Section 2.2.1.5 and Figure 2.1, as part of the larger suite of vessel activities that could be affected by new activity within and around the WEA related to the leases. BOEM should analyze the potential impacts of vessel traffic resulting from leasing and any activity associated with the proposed lease sales, including site characterization and site assessment activities, as well as impacts from changes to or displacement of existing vessel traffic (e.g., fishing, shipping, scientific). In analyzing the effects of vessel traffic associated with Humboldt WEA, BOEM should coordinate closely with the USCG, including through the USCG's Pacific Port Access Route Study of West Coast vessel traffic, to consider potential effects in or near to areas with historically high levels of maritime hazards and accidents.

We are aware that there have been some conflicts between developers' survey vessels activities and fishing operations along the East Coast.[29] Commercial fisheries use a broad range of gears in and around the Humboldt WEA, including but not limited to: trawl gear, bottom and pelagic longlines, pot/trap tear, seine gear, and others (see Section VI of table at 50 CFR 600.725(v))[30]. The EA states (pg 54) that "[s]ite characterization and assessment activities and Proposed Action marine vessels mobilizing and transiting from ports to the WEA may reduce efficiency of fishing operations due to time delays associated with congestion" and "may accidentally damage fishing gear (e.g., by cutting trap floats)[.]" It mentions mitigation measures, with examples of what may be included, and explains that lessees will develop a SAP that will include site-specific measures to mitigate navigational concerns, which could become terms and conditions of SAP approval. It is unclear if there are minimum required mitigation measures applicable to all SAPs, either nationally or for this WEA, to address and minimize these issues. To avoid such conflicts/interactions, we also recommend all SAPs include a communication protocol between fishermen and developers with points of contact, identification of the responsible agency and contacts where incidents may be reported should they arise, a measure that developers will report any incidents to BOEM, and any other reasonable accountability measures to support the co-existing uses.

We recommend that the EA include a list of the fisheries that may have interaction with the lessees' survey vessels transiting to, from, and within the WEA as a result of lease issuance. BOEM's area identification memorandum establishing the Humboldt WEA[31] includes a list of fisheries in the area, based on CDFW landings data, and fishing grounds that may overlap with the WEA; and this information could be added to the EA. Table 2 of the memorandum noted that the albacore fishery operates greater than 55 km (34 miles) offshore. Therefore, that fishery, including the recreational component, should also be included as there is risk of survey vessels interacting with albacore vessels operating offshore beyond the WEA or transiting through the WEA. Also, the EA states that "Lessees will develop a SAP that will aim to minimize adverse effects from their site assessment and site characterization activities" (pg 54). NMFS recommends making this requirement more specific to adverse effects to commercial and recreational fisheries by adding language such as "The SAP should be developed in consultation with the commercial and recreational fisheries communities within the Eureka Port Complex and account for relevant parameters, including but not limited to timing and location of specific fisheries or fishing seasons in order to minimize adverse effects."

[29] https://www.nationalfisherman.com/northeast/fishermen-say-offshore-wind-surveys-rip-up-gear-there-has-to-be-accountability and https://www.delmarvanow.com/story/news/local/maryland/2021/11/12/ocean-city-md-fishermen-sound-off-us-wind-encroachment-offshore-wind-energy/6391485001/

[30] https://www.ecfr.gov/current/title-50/chapter-VI/part-600/subpart-H/section-600.725

[31] EA Appendix A; see page 14

The Humboldt area has a long history of commercial and recreational fisheries, and multi-generation commercial fishing families. West Coast fisheries, including those in the Humboldt area, are seasonal and target different species in different locations throughout the year. Thus, activities related to wind energy have the potential to negatively affect Humboldt area fisheries to a greater or lesser degree in different months of the year. We recommend that as BOEM analyzes potential impacts on commercial fisheries it address the following:

- Number of vessels likely to be impacted, and percent of revenue estimated to be displaced by the WEA for these vessels (by month, taking into account seasonal nature of fishery and management measures).
- Ports and port infrastructure impacted by the WEA. While existing fisheries data from Vessel Monitoring Systems, observers, and logbooks do not cover all fisheries that may operate in the WEA, it might at least be used to better understand which ports have connections to vessels that operate in the WEA.[32]
- Percent of landings revenue for each impacted port that would be displaced by the WEA.
- Commercial and recreational fishing reliance and engagement in fisheries, along with vulnerability indices for impacted ports[33]. Of particular relevance to Humboldt will be considering the pressures of development and the additional boats (including vessel traffic/safety during the Dungeness crab fishery) required to support the WEA on moorage availability and fisheries support infrastructure, such as ice machines and shoreside seafood processors.
- The impacts of the offshore human activities that may alter the geographic areas available to fisheries, including possible restrictions on gear types and fishing footprint to limit interactions with protected species or prevent overfishing; and potential impacts to fisheries displaced by the WEA taking into account predicted shifts in biomass and distribution associated with climate change.

Some recreational and commercial fishing may be negatively affected by the Humboldt WEA. Wind energy vessel activities in port and in transit to the WEA that take place during the months when the Dungeness crab fishery is open are likely to affect the safety and fishing incomes of fishery participants given the number of participants, volume of the fishery, and compressed season length. Note that while the DEA correctly states that annually Dungeness crab "dominates the value of landings at all ports" (pg. 53), the season runs from December 1 to July 15. BOEM and developers will need to confer with the State of California on Dungeness crab seasons each year. While Dungeness crab landings are generally concentrated over the winter months, fishery start times and inseason closures are affected by environmental conditions each year[34]. Groundfish, particularly sablefish, thornyheads, and Dover sole from the bottom trawl sector, are most likely to be impacted by the WEA, and are critical to maintaining year round employment and infrastructure needed to support both the economically important crab fishery and the sustained participation of the fishing community as a whole.

The PFMC sent BOEM a letter on September 13, 2021,[35] after BOEM designated the Humboldt WEA. That letter includes pertinent information BOEM should consider about commercial and recreational fisheries in the Humboldt WEA vicinity. Vessels, including recreational fishing vessels, targeting highly migratory species, such as albacore, may operate offshore of the WEA, which means that wind energy activities occurring within the WEA may constrain those vessels' access to port.

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[32] Rebecca L Selden, James T Thorson, Jameal F Samhouri, Steven J Bograd, Stephanie Brodie, Gemma Carroll, Melissa A Haltuch, Elliott L Hazen, Kirstin K Holsman, Malin L Pinsky, Nick Tolimieri, Ellen Willis-Norton, Coupled changes in biomass and distribution drive trends in availability of fish stocks to US West Coast ports, *ICES Journal of Marine Science*, Volume 77, Issue 1, January-February 2020, Pages 188–199, https://doi.org/10.1093/icesjms/fsz211

[33] https://www.st.nmfs.noaa.gov/data-and-tools/social-indicators/

[34] https://media.fisheries.noaa.gov/dam-migration/67_ca_crab_request_noaa-sf.pdf

[35] https://www.pcouncil.org/documents/2021/09/sept-2021-letter-to-boem-on-humboldt-bay-wind-energy-area.pdf/

Recommendations that Cross Multiple Issues

While we have provided recommendations throughout this letter, we have several recommendations that apply across multiple issues addressed in this letter, which are described below.

Considerations Due to Site Characterization Surveys

Site characterization activities have the potential to affect living marine resources as well as NMFS surveys that may coincide during the site characterization process. Site characterization activities may include ensonification of the water column and seafloor with vessel-based side-scan and multi-beam sonar, coring, grab sampling, and use of shallow ground penetrating high-resolution seismic systems to map bottom and sub-bottom substrates and benthos. These activities could alter benthic and pelagic habitats as well as the distribution and abundance of fisheries resources and protected species. Given the complex issues associated with site characterization and assessment surveys, we strongly recommend that BOEM and developers contact NMFS WCR well in advance **prior to planned surveys**. This will allow for sufficient time to review plans and obtain any necessary MSA, ESA, and/or MMPA permits or authorizations, and for BOEM and developers to design data-sharing protocols that ensure NMFS has access to data on the physical and biological environment that may be collected as part of the site characterization activities.

Monitoring

We recommend that all alternatives pertaining to living marine resources incorporate the **Passive Acoustic Monitoring (PAM) Framework**[36] that NMFS and BOEM recently jointly developed[37] for monitoring for underwater sounds related to offshore wind development activities. This will ensure consistency in passive acoustic mitigation plans and long-term baseline monitoring programs.

BOEM Pacific and NMFS WC should also work closely together to determine and implement conditions for other types of long-term monitoring standards and best practices pertaining to NMFS trust resources to ensure consistency in long-term baseline monitoring programs.

Mitigation

NOAA's draft Mitigation Policy for Trust Resources[38] and NMFS' California Eelgrass Mitigation Policy and Implementing Guidelines[39] provide that project development should adhere to the mitigation hierarchy of first avoiding the impact; then minimizing the impact if it cannot be avoided; and finally developing offsetting or compensatory mitigation measures to reconcile the effects that cannot be avoided or minimized.

We recommend working with us to develop a programmatic mitigation approach early to identify alternatives in the EA that adhere to the mitigation hierarchy to benefit all stakeholders and achieve efficiencies during development and buildout. The development activities occurring throughout the lease area and shoreside support areas will likely lead to effects to specific habitats that cannot be avoided or minimized, and NMFS encourages BOEM to schedule a meeting with us so that we can work together to identify an effective and transparent mitigation strategy.

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[36] https://www.frontiersin.org/articles/10.3389/fmars.2021.760840/full

[37] https://www.fisheries.noaa.gov/feature-story/new-passive-acoustic-monitoring-framework-help-safeguard-marine-resources-during

[38] The final policy is anticipated early in 2022. The draft policy can be found at: https://www.fisheries.noaa.gov/feature-story/noaas-draft-mitigation-policy-trust-resources-available-public-comment

[39] https://media.fisheries.noaa.gov/dam-migration/cemp_oct_2014_final.pdf

Reasonably Foreseeable Impacts, Climate Change, and an Ecosystem Approach

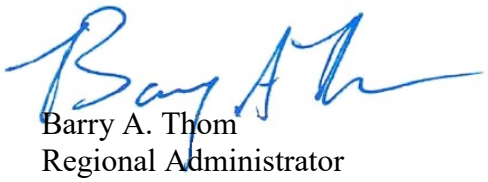
It will be critical to fully consider both the project-specific effects and effects that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action of offshore wind energy development on living marine resources, their habitats, and oceanographic processes (particularly upwelling), and to develop and implement measures to mitigate for the adverse effects of such activities on those species, habitat, and the larger marine ecosystem. It will also be critical for BOEM to assess how the long-term effects of offshore wind energy development will interact with species range shifts and shifts in fishing activity due to anticipated near-term and long-term effects of climate variability and change.

Impact analyses that consider full build-out scenarios within the WEA as well as other offshore wind energy development along the U.S. West Coast are needed to fully understand the potential effects of offshore wind energy installations on living marine resources and habitats, their interactions with each other, and their interactions with human and natural systems. NMFS is involved in multiple interdisciplinary research efforts that provide science support for ecosystem-based management, including the California Current Integrated Ecosystem Assessment (CCIEA).[40] We welcome discussing how NMFS science and data collection could be used to help BOEM in the EA to evaluate impacts of offshore wind energy development off the U.S. West Coast.

Conclusion

NMFS WC recognizes the importance of the Humboldt WEA development contributing to the goal of deploying 30 gigawatts of offshore wind power nationwide by 2030. We look forward to working with BOEM Pacific and other partners to discuss these comments more closely and anticipate providing additional information and comments as this process moves forward, including potentially recommending lease conditions to reduce impacts of future surveys and development on our trust resources and other issues described in this letter. If you have any questions regarding these comments, please contact Jennifer Lilah Isé (Jennifer.Ise@noaa.gov), NMFS West Coast Offshore Wind Energy Coordinator.

Sincerely,



Barry A. Thom
Regional Administrator

cc: Richard Yarde, Regional Supervisor, Office of Environment, BOEM Pacific
Dr. Scott Rumsey, Deputy Regional Administrator, NMFS WCR
Jennifer Lilah Isé, NMFS WCR
Kristen C. Koch, Science and Research Director, NMFS Southwest Fisheries Science Center
Dr. Roger Hewitt, NMFS Southwest Fisheries Science Center
Dr. Kevin Werner, Science and Research Director, NMFS Northwest Fisheries Science Center
Dr. Elizabeth Clarke, NMFS Northwest Fisheries Science Center
Candace Nachman, Senior Policy Advisor, NMFS Office of Policy
Mark B. Miller, NWS Assistant Director for Strategic Planning, Office of Observations
Brian Zelenke, IOOS Surface Currents Program Manager, NOAA Ocean Service
James Morris, National Centers for Coastal Ocean Science, NOAA Ocean Service

[40] https://www.integratedecosystemassessment.noaa.gov/regions/california-current

Craig Shuman, California Department of Fish and Wildlife
Merrick Burden, Executive Director, Pacific Fishery Management Council
RADM Brian K. Penoyer, District Commander USCG 11
RADM Melvin W. Bouboulis, District Commander USCG 13