United States Department of the Interior

FISH AND WILDLIFE SERVICE
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March 4, 2021

David Bigger, Ph.D.
Office of Renewable Energy Programs
Bureau of Ocean Energy Management
45600 Woodland Road, VAM–OREP
Sterling, VA 20166

Re: South Fork Wind Farm and South Fork Electrical Cable Commercial Wind Energy Project

Dear Dr. Bigger:

This letter is in response to your January 8, 2021, request for the U.S. Fish and Wildlife Service's (Service) review of the Bureau of Ocean Energy Management's (BOEM) "South Fork Wind Farm and South Fork Export Cable – Development and Operation Biological Assessment: Biological Assessment," (BA) dated January 2021. BOEM has determined that approving a Construction and Operations Plan (COP) for the South Fork Wind Farm (SFWF) and South Fork Export Cable (SFEC), a commercial wind energy facility (Project) "may affect, but is not likely to adversely affect", federally listed species under the jurisdiction of the Service, including roseate tern (*Sterna dougallii dougallii;* endangered), piping plover (*Charadrius melodus;* threatened), rufa red knot (*Calidris canutus rufa;* threatened) (red knot), seabeach amaranth (*Amaranthus pumilus*; threatened), and northern long-eared bat (*Myotis septentrionalis*; threatened) and have no effect on sandplain gerardia (*Agalinis acuta*; endangered). BOEM's request and the Service's response are made pursuant to section 7 of the Endangered Species Act, as amended (87 Stat. 884, as amended; 16 U.S.C 1531, et seq.) (ESA).

These comments do not necessarily reflect our position on the effects of this Project on other trust resources, including non-listed avian, bat, and plant species, which are present in the Project area in different numbers and frequency, and which exhibit different life histories, ecology and behaviors. Nor do they represent comments we may have on impacts of the Project to other fish and wildlife and their supporting habitats. Accordingly, the Service will provide comments on the January 2021 South Fork Wind Project Draft Environmental Impact Statement (DEEIS) (BOEM 2021b) in separate correspondence.

The comments below following the major sections of the BA. The project effects that were evaluated for each species in the BA include collision risk (monopoles and turbine blades), noise effects (airborne and underwater), habitat disturbance or loss (seabed, water column, beach, or trees), vessel and vehicle traffic, and electromagnetic frequency. Where necessary we provide comments on the specific sections in the BA, and use these to support our concurrence included at the end of the section by section review.

Section 1.5 Consultation History

Service Comments:

- Section 1.5, paragraph 2: Please amend the BA to reflect that the Cape Wind Energy Project consultation was initiated on the finding that the Cape Wind Energy Project would be "likely to adversely affect" piping plovers and roseate terns, and that an incidental take statement was provided to address mortality of these species due to the potential for rotor swept collisions. We note that the Service did determine in the Cape Wind Energy Project Biological Opinion dated November 21, 2008, that effects due to monopole collisions, habitat loss and disturbance, prey species attraction, barriers and displacement, increased predation, lighting, oil spills, pre- and post- construction activities, routine maintenance activities, and decommissioning activities were insignificant and discountable.[1]
- Section 1.5, paragraph 7: Please update the BA to indicate that the Service provided an ESA concurrence letter to BOEM dated October 16, 2020, for the Vineyard Wind 1 Offshore Wind Energy Project.
- For this project: Please add, "BOEM provided a draft BA to the Service via email correspondence on January 8, 2021, for review and/or concurrence.

Section 1.6, Project Area and Action Area

Service Comments: No Comment.

Section 2 – Description of the Proposed Action

The Proposed Action is described on pages 5 through 15 of the BA. In summary, it consists of BOEM's approval of the Construction Operation Plan (COP) for the construction, operation, maintenance, and decommissioning of a commercial-scale offshore wind energy facility within Lease Area Outer Continental Shelf (OCS)–A 0486. The project action area, which defines all areas where the project may affect listed species, includes offshore and onshore locations. The offshore areas include the footprint of the offshore wind turbine generators (WTG), which constitutes the wind development area (WDA)[2], as well as the offshore and onshore cable routes, offshore cable landfall either at Beach Lane in East Hampton or Hither Hills in Montauk, an

[1] Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur (USFWS and NOAA 1998).
[2] This project's WDA is located in the larger Rhode Island/Massachusetts Wind Energy Area (RI/MA WEA).

offshore substation, and an onshore operations and maintenance facility in Lake Montauk Harbor, Montauk, NY. The Project would have an operations term of 25 to 30 years.

Service Comments: We note that supplemental information on the Operations and Maintenance facility was provided to the Service via email on February 1, 2020.

Section 2.1, South Fork Wind Farm

The offshore facility will consist of an array of 15 WTGs with a maximum turbine capacity of 6 to 12 megawatts (MW) per turbine for a total of 90 to 190 MW within the 9 square mile (mi.) WDA. BOEM evaluated the maximum configuration of 15 WTGs sized at 12MW in its Effects of the Proposed Action (Section 4 of the BA). This component also includes the cable array, the offshore substation, and subtidal portions of the Operations and Maintenance facility in Lake Montauk, NY.

The Lease Area is located about 19 mi. southeast of Block Island, Rhode Island, and 35 mi. east of Montauk Point, NY. The WTGs will be laid out in a grid-like pattern with spacing of roughly 1.15 mi. between turbines.

Service Comments: No Comment.

Section 2.1.2 Operation

This section is introduced here due to its association with operation of the SFWF WTGs and construction activities. An Aircraft Detection Lighting System (ADLS), which is expected to limit Federal Aviation Administration (FAA) and BOEM-required lighting to less than 4 hours a year, would be used on the WTGs. During construction or post-construction activities (e.g., maintenance) down-shielded lighting will be used to reduce the likelihood of attracting birds to the WTGs, to the extent allowed by health and safety protocols.

Service Comment: No comment.

Section 2.2 – SFEC

The SFEC is broken into three discrete segments: the offshore SFEC – OCS and SFEC – NYS segments, and the SFEC – Onshore segment. The SFEC – OCS and SFEC – NYS segments would be approximately 57.9 mi. and 3.5 mi. in length, respectively, for a potential total length of 61.4 mi. There are two possible SFEC – Onshore alignments: 1) a 4.1-mi. route from the Beach Lane landfall in East Hampton, NY; and 2) an 11.9-mi. route from the Hither Hills landfall in Montauk, NY.

Service Comments: No comment.

Section 3 – Threatened and Endangered Species Occurrence in the Action Area

Pages 15–32 of the BA describe the listed species in the action area including piping plover, roseate tern, red knot, northern long-eared bat, seabeach amaranth, and sandplain gerardia. Their occurrences in the WDA and SFEC area are summarized below.

For the purposes of our biological analysis, the WDA includes the air space habitat above the water to any elevation known to be occupied by roseate terns, piping plovers, red knots, and northern long-eared bats, as well as foraging habitat used by roseate terns. The SFEC– Onshore includes the beach habitat as it pertains to piping plover, roseate tern, red knot, and seabeach amaranth, as well as upland habitat for the northern long-eared bat and sandplain gerardia.

Section 3.1.1 – Piping plover and Section 4.1.1.1.1 – Effects on Piping Plover

The BA (pages 16–19) summarizes the Atlantic Coast piping plover's population status, breeding range, habitat use, and migration patterns. Piping plovers are known to occur within the SFEC– Onshore action area and BOEM anticipates plovers would occur within the WDA. Atlantic Coast piping plovers breed along the coasts of Massachusetts, New Hampshire, Maine, Rhode Island and Canada may pass through the WDA during their spring and fall migrations between wintering and breeding grounds. The BA describes that some portion of the entire breeding piping plover population for Eastern Canada, Maine, New Hampshire, and Massachusetts, estimated to be 2,066 adults in 2019, could migrate north through the WDA. Fall migration would include young-of-the-year, based on the average productivity for each state.

In terms of the SFWF offshore action area, the BA states, "Due to the difficulty in detecting piping plovers in the offshore environment during migration because of the assumed nocturnal and high-elevation migratory flights, there are no definitive observations of this species in offshore environments greater than 3 miles from the Atlantic coast (Normandeau et al. 2011 as cited in BOEM 2021a). There are no records of piping plovers in the offshore Action Area during surveys" (USFWS 2018d as cited in BOEM 2021a). The BA further states, "Adult and subadult migrant piping plover have also been documented in the offshore component of the action area. The RI/MA WEA lies within the migratory corridor for plovers leaving nesting and staging grounds in and north of Massachusetts in the fall."

As noted in Section 4.1.1.1.1, the Band Model (Band 2012) was used to estimate the risk of bird collision with operating WTGs in offshore wind farms (BOEM 2021a). The modelling results indicate that plover may encounter the RSZ and some individuals may have to alter their flight path to avoid the visual barrier, but the risk of injury or mortality from rotor collision is discountable (BOEM 2021a). Effects due to noise, vessel and vehicle traffic, and habitat disturbance or loss was determined to be insignificant and discountable.

Service Comments:

As noted above, the BA indicates that plovers have and have not been detected in the SFWF action area. This should be clarified.

Piping plovers migrating south from their breeding grounds in Massachusetts and Rhode Island primarily used offshore routes during initial migration prior to stopping at areas in the mid-Atlantic (Loring et al. 2019). Plovers fly generally at altitudes which are at the upper range and above the rotor swept zone (roseate; Loring et al 2019; this study assumed the RSZ was less than 820.2 feet (ft.). Loring et al. (2019) observed that 15.2 percent of plover flights occurred within the RSZ of the RI/MA WEA. However, confidence intervals were extremely large indicating significant uncertainty in the flight height estimates and all plovers tracked during their migratory departure had a south-southwest trajectory. Relatively high-altitude flights allowed greater detection of tagged birds in offshore areas than was found for roseate terns, although the detection probability decreased the farther offshore plovers migrated, or if they flew at lower altitudes (Loring et al. 2019, Figure 64).

The BA (page 18) stated there was no evidence to suggest piping plovers fly near or through the WDA in the spring during their northward migration, based on data from a radio telemetry pilot study of plovers (n=10) tagged prior to spring departure in the Bahamas (Loring et al. 2019, Appendix I). A limited number of birds were detected by stations in the U.S. Atlantic Coast; only 20 percent (n=2) were tracked over a significant portion of their route. Lack of detections could be attributed to tag loss and the absence of active receiving towers maintained by Motus network partners during the winter. No plovers were documented flying beyond Long Island Sound. However, piping plovers were documented flying across Federal waters of the mid-Atlantic and New York Bight, indicating offshore flights to reach breeding habitat were more direct than following the coastline. Therefore, it is reasonable to expect a portion of the piping plovers migrating to breeding habitat in Massachusetts, New Hampshire, Maine, and eastern Canada could fly across the WDA.

BOEM estimated in the BA that 7 percent of the Massachusetts population would fly through the WDA during their southbound migration, based on the proportion of Motus-tagged piping plovers documented flying through the WDA. Loring et al. (2019) calculated a high probability density of piping plover tracks with exposure to the offshore lease areas and acknowledged that low-flying plovers would not be detected by land-based receiving towers. Likely flight paths of piping plovers between receiving towers were coarse estimates based on interpolation and flight speed and had spatial error in the range of +/– 48 mi (Loring et al 2019). Despite these limitations, some of the interpolated tracks intersected with the WDA, indicating piping plovers may occur in the WDA, but additional, finer-scale information is needed to assess risk more completely. Therefore, while we do not have enough information at this time for a more accurate estimate, we suspect low-flying piping plovers are not captured in BOEM’s estimate, and 7 percent should be considered a minimum estimate.

Due to the lack of site-specific observational data, there is great uncertainty associated with estimating the piping plover population at risk of collision with the WTGs. We anticipate that a small percent of the fall migrating piping plover may pass through the WDA. The number of piping plovers that may pass through the WDA during spring migration is unknown due to lack of data on spring migration routes.

As noted in the BA, piping plovers breed along the Atlantic Coastline near the offshore cable landfall locations in East Hampton, NY. They are also present around Lake Montauk. We recommend a time of year restriction of April 1 to September 1 to avoid impacts to the species for any land-based operations within 1,000 meters of these plover breeding areas.

Section 3.1.2 – Roseate Tern and 4.1.1.1.2 – Effects on Roseate Tern

Roseate tern occurrence within the action area is summarized on pages 19 through 28 of the BA.

The BA notes, "The breeding population of roseate terns is currently restricted to a small number of colonies located on predator-free islands from Nova Scotia to Long Island, New York, with as many as 87 percent breeding within just three colonies on islands off of Massachusetts and New York (BOEM 2012; USFWS 2010). Since 2010, the number of breeding pairs of roseate terns in the US and Canada has increased 45 percent from 3,013 to 4,374 in 2019 (USFWS 2020). Breeding sites have also been documented on Little Gull and Gardiners islands north of the action area in Block Island Sound (Stantec 2018). Although roseate terns historically occurred in Rhode Island, there are currently no breeding colonies in the state (Paton *et al.* 2010; USFWS 2020a)." It further states, "…based on the behavioral and foraging ecology, the telemetry data, the survey data, very little, if any, Roseate Tern activity is expected within marine waters in and around the WDA and should birds pass through the area they will be flying relatively close to the ocean surface during good weather conditions."

BOEM used the Band Model to evaluate risk of injury or mortality to Roseate Tern from collision with turbines (BOEM 2021a). BOEM found that roseate terns could encounter the WTGs in any given year, and that some of these individuals may have to alter their flight path to avoid the visual obstruction and collision risk. They noted that the likelihood of injury or mortality from rotor collision is discountable under even the most conservative behavioral assumption (BOPEM 2021a). Further finding that any associated behavioral effects are likely to be insignificant because this species would be able to detect and avoid the WTGs from a distance with only a minimal change in course (BOEM 2021a).

BOEM concluded that roseate terns were unlikely to occur in the action area based on assumptions that the WDA did not provide suitable foraging habitat, boat and aerial survey data did not document the presence of roseate terns, and that a study examining the offshore movements and flight altitudes of terns and plovers fitted with digital very high frequency (VHF) transmitters (Motus[3] tags) (Loring et al. 2019) did not document roseate terns flying through the WDA. Effects due to noise, vessel and vehicle traffic, and habitat disturbance or loss was determined to be insignificant and discountable.

Service Comments: Roseate terns are likely to occur in the action area, albeit in small numbers. Breeding and non-breeding terns, including 2-year-old birds and adults, may occur in the action area in spring, late summer, and early fall resting on the water, foraging, or traveling across the WDA to adjacent foraging habitat in Nantucket Shoals. Roseate terns may also pass through the WDA during their spring and/or fall migration.

Loring et al. (2019) detected roseate terns in Federal waters during the breeding period through post-breeding dispersal. Data from the Loring et al. (2019) study were not sufficient for determining presence of roseate terns within the WDA. Loring et al. (2019) tracked roseate terns with a network of land-based radio telemetry stations with a limited range (generally less than a 20 km radius from each station) to detect signals from tagged terns in flight (see Loring et al.

[3] Motus Wildlife Tracking System is an international collaborative network of researchers that use automated radio telemetry to simultaneously track hundreds of individuals of numerous species of birds, bats, and insects (motus.org).

2019, Appendix G – 'Detection probability of BOEM automated radio telemetry stations'). Coverage maps for land-based automatic receiving towers showing the probability of detecting a bird flying at altitudes of 65 ft. did not include the WDA within the area of detectability, because the WDA is located more than 12 mi. offshore. Flights at altitudes of 656 ft. had partial coverage of the WDA. Specifically, "…the land-based tower array had limited range to detect flights far from shore, particularly for species flying at low altitudes, further reducing the probability of detection in offshore areas…" (Loring et al. 2019, page 21). The lack of observations was attributed to the inability to detect roseate terns flying below the receivers' detection capabilities. Roseate terns typically fly below 39 ft. when feeding and less than 98 ft when traveling (Loring et al. 2019). Therefore, because high flying birds were able to be detected at greater distances by land-based receivers than low-flying birds (piping plovers for instance were detected during migration), we conclude that roseate terns may pass through the WDA during feeding forays, traveling between staging and foraging areas, and during migration despite the lack of detections in the Loring et al. (2019) study. Thus, based on the low detectability for roseate terns, we cannot confirm their presence or absence based on this study alone.

Roseate terns forage primarily on sand lance (*Ammodytes spp.*) in both nearshore and offshore environments (Goyert 2014; Goyert et al. 2014; USFWS 2020), although they will also feed on herring (*Clupea spp.* and *Alosa spp.*) and hake (*Urophycis spp.* and *Enchelyopus cimbrius*) (Staudinger 2019; Yakola 2019; USFWS 2020). There is no evidence that roseate terns feed exclusively on inshore sand lance as noted on page 19 of the BA. Mean lengths of fish taken as prey were estimated to range between 2.17 – 3.15 inches (in.) (Nisbet et al. 2014). Herring, hake, and offshore sand lance in this range size are likely young-of-the-year or juvenile fish. For avian predators such as roseate terns that swallow prey fish whole, prey body depth (as opposed to total body length) is the limiting factor that restricts what can be consumed. Sand lance remain viable prey and are easy for seabirds to swallow even at large body sizes, because they have narrow body depths and lack defensive structures such as spines (M. Staudinger 2019). Offshore sand lance occur at Nantucket Shoals and the shallows of Georges Bank, east of the WDA; therefore, it is reasonable to expect that roseate terns may travel from breeding and/or staging areas through the WDA to forage on Nantucket Shoals or Georges Bank.

The highest probability for exposure to wind energy facilities may occur during post-breeding dispersal and migration (mid-July through late September) (Loring et al. 2019). Roseate terns may pass through the WDA during migration or when initiating their migration from staging areas on Cape Cod, Martha's Vineyard, or Nantucket. However, the available information is inconclusive regarding the elevation at which roseate terns are likely to fly through the WDA during migration. Using documented common (*Sterna hirundo*) and arctic tern (*Sterna paradisaea*) behavior as a surrogate for the rate at which roseate terns ascend during migration departure (I. Nisbet, pers. comm. 2019) suggests roseate terns leaving Massachusetts staging areas would fly above the RSZ within the action area. Conversely, Loring et al. (2019) found no evidence of high-altitude migratory departure flights of roseate or common terns tracked with automated radio telemetry, indicating terns leaving Massachusetts staging areas may be flying within or below the RSZ.

In summary, 2-year old and adult roseate terns may be present in low numbers flying through or foraging in the WDA, primarily in the spring, late summer, and fall. An unknown portion of adults and young-of-the-year likely will fly through the WDA during fall migration. More information is needed to assess specific flight routes and altitudes relative to the WDA and RSZ from spring through late fall in order to predict with greater certainty the likelihood of roseate terns passing through the WDA and RSZ during post-breeding dispersal flights and migration.

Due to the lack of site-specific observational data, there is great uncertainty associated with estimating the roseate tern population at risk of collision with the WTGs. The adult population migrating through the area in spring likely is limited to the northern breeding population of New Hampshire, Maine, and Canada. The fall population would be a portion of the entire adult population (breeding and non-breeding) with the addition of young-of-the-year birds during migration if post-breeding staging occurs in Massachusetts. We do not expect the entire population would fly through the WDA while traveling to foraging habitat or during migration. Moreover, based on coarse estimates of roseate tern flight heights reported by Loring et al. (2019) and flight ascending rates for migration based on information from other tern species, the potential population of roseate terns passing through the RSZ may be small, although more accurate data within the WDA is needed to better assess exposure of terns to the WDA and RSZ. Therefore, it is reasonable to assume that a small but unknown number may traverse the WDA at flight heights ranging from less than 39 ft. to well above the RSZ.

Section 3.1.3 – Red Knot and Section 4.1.1.1.3 Effects on Red Knot

The BA (pages 25 and 26) summarizes red knot occurrence within the action area and anticipates only migrating red knots would occur within the action area. The migrating red knot population on Cape Cod consists of long and short distance migrants (Burger et al. 2012; Loring et al. 2018). The BA estimated that 1,500 red knots may occur in Massachusetts during fall migration (BA page 26).

BOEM used the Band Model to evaluate risk of injury or mortality to red knot from collision with turbines (BOEM 2021a). As noted on page 37 of the BA, "*Rufa* Red Knot do not use offshore habitats for foraging and would only occur in the SFWF area during migration. The information presented in Section 3.1.3 indicates that approximately 5 percent of red knots departing from staging areas in Massachusetts could fly through the RI/MA WEA. Applying this percentage to a staging population estimate of 1,500 migrants (Gordon and Nations 2016) equates to a total of approximately 83 red knots traveling through the SFWF lease area in any given year, 8 in spring and 75 in fall." BOEM concluded, "Given that this species migrates under high-visibility conditions, individual birds would be able to detect and avoid the WTGs with an insignificant behavioral alteration. The risk of collision-related injury or mortality is discountable" (BA at page 37). Effects due to noise, vessel and vehicle traffic, and habitat disturbance or loss were also determined to be insignificant and discountable.

Service Comments: The fall red knot migration population estimate was generated as part of a study assessing the collision risk of a wind farm in Nantucket Sound. The estimated 1,500 red knots were used specifically as a fixed baseline for the collision risk model (Gordon and Nations 2016) and was based on expert opinion of 1,000 to 2,000 red knots staging at Monomoy National Wildlife Refuge.

However, the population of red knots that could migrate through the WDA is likely larger than 1,500, as recent studies of marked and recaptured red knots stopping at staging areas on Cape

Cod estimate an average annual staging population of 4,500 red knots (Lyons and Harrington unpublished data).

A radio telemetry study of red knots captured in Massachusetts and tagged with Motus tags documented a temporal difference in fall migration between adults (early fall, some late fall) and hatch year birds (late fall) (Loring et al. 2018). Short distance migrants are more likely to migrate in late fall than long distance migrants. A recent study on migration speeds suggests that red knots migrate quicker to breeding grounds from their wintering areas, but fly at faster speeds during their fall migration (Duijns et al. 2019). This variation in seasonal migration behavior may affect the potential population that would cross the WDA and supports the contention that far fewer birds may pass through the WDA in spring, because more individuals choose direct, overland flights from the mid-Atlantic to their breeding grounds, rather than following the coastline. With more red knots staging in coastal Massachusetts during fall, we anticipate a larger number passing through the WDA in the fall than the spring.

Red knots have been documented to fly over Federal waters during migration, including a small number crossing the WDA (Burger et al. 2012; Loring et al. 2018). Likely flight paths of red knots between receiving towers were coarse estimates based on interpolation and flight speed, and had spatial errors in the range of +/– 48 mi. Despite these limitations, some of the interpolated tracks intersected with the WDA, and red knots may occur in the WDA. Additional recent geolocator research documented red knot migration flight trajectories in the vicinity of the WDA, although confirmation of direct passage through the WDA is not possible given the coarse scale at which locational data is collected by the geolocators (USFWS 2019).

The BA analyzed red knot flight heights and noted that the Loring et al. (2018) study estimated 83 percent of 25 modeled flight paths occurring within 65 to 650 ft. above water. However, confidence intervals were extremely large, indicating significant uncertainty in the flight height estimates. BOEM concluded (1) very few, if any, fall migrating red knots will occur within the WDA based on the low number (2 percent) of radio-tagged individuals documented flying through the WDA; and (2) an even smaller number of individuals will fly through the RSZ.

Due to the lack of site-specific observational data, there is great uncertainty associated with estimating the rufa red knot population at risk of collision with the WTGs. We anticipate that a small percentage of the spring and fall migrating red knots may pass through the WDA.

Section 3.2 – Northern Long-eared Bat and Section 4.2 – Direct Effects

The BA notes that NLEB may occur in both the terrestrial components of the action area during non-hibernation periods (May through October). While detected in the marine environment, the occurrence of NLEB in the marine component of the action area will likely be very rare and in very small numbers and very likely when winds are below cut in speed for turbines (BOEM 2021a).

The BA evaluated effects of WTG collision risk, noise, electromagnetic field, and vehicle and vessel interactions on the northern long-eared bat. For WTG, BOEM concluded, "Collectively, the available information indicates that NLEB indicate that occurrence of NLEB in the marine component is likely to very rare and in small numbers occur in the marine component of the action area. Any exposure is unlikely to result in injury-level effects because NLEB are unlikely to fly at operational wind speeds. Although it is possible that NLEB may take advantage of roosting areas provided by offshore structures, the significance of this behavior is unclear, but likely insignificant based on the rare occurrence of this species in the offshore environment." In terms of noise effects, the Applicant would comply with 4(d) Rule requirements for avoiding adverse effects on NLEB. Tree removal, vegetation clearing, and other major noise-producing activities in proximity to potential bat habitat would take place during winter months when NLEB are not present. Other airborne construction and operational noise effects on NLEB are likely to be insignificant.

In terms of electromagnetic field effects BOEM determined that potential EMF effects on NLEB are likely insignificant since 1) NLEB in the terrestrial action area experience baseline EMF levels from existing sources that are much higher than those likely to result from the proposed action and 2) bats have the documented ability to calibrate their magnetic compass to localized field variations using other environmental cues (Greif *et al.* 2014; Holland *et al.* 2010; Tian *et al.* 2015; all cited in BOEM 2021a).

Service Comments: No comment.

Section 3.3.1 – Seabeach Amaranth and Section 4.3 – Seabeach Amaranth

Seabeach amaranth has been observed in annual coastal habitat surveys conducted in immediate proximity to the action area since 2000 (Duryea *et al.* 2018; VHB 2018 as cited in BOEM 2021a).

BOEM has determined that the proposed action would not modify or measurably affect the quantity and quality of shoreline habitat available to this species (BOEM 2021a). Therefore, the direct effects of the proposed action on seabeach amaranth would be insignificant and no indirect effects would occur (BOEM 2021a).

Service Comments: No Comment.

Section 3.3.2 – Sandplain gerardia

The BA notes that the action area is outside the current known distribution of the species and does not contain suitable habitat (VHB 2018 as cited in BOEM 2021a); this species could not occur in the action area under present habitat conditions and is not addressed further in this BA.

Service Comments: No Comment.

<u>Service Concurrence</u>

In this section, we address each component of the overall Project separately in order to provide specific information supporting our concurrence.

SFEC – Onshore

The Service concurs with your determination that SFEC –Onshore activities "may affect, but are not likely to adversely affect", roseate terns, piping plovers, red knots, seabeach amaranth, and northern long-eared bats and will have no effect on sandplain gerardia. Our concurrence is based on the following:

- The DEIS at page H–46 indicates that no dredging activities will occur during the shorebird breeding season near the Operations and Maintenance Facility in Lake Montauk Harbor. This will avoid impacts to breeding plovers.
- The proposed export cable exit locations at Beach Lane and Hither Hills beaches are north of the potential and occupied habitats are not known to provide roosting or foraging habitat for roseate tern or red knot, or growing habitat for seabeach amaranth or sandplain gerardia. Also, these areas are not known as to contain maternity roosts for the northern long-eared bat.
- There will be a tree clearing time-of-year restriction to avoid impacts to northern long-eared bat maternity roost trees. Require that trees greater than 3 in. diameter at breast height not be cleared from June 1 to July 31. If presence/probable absence surveys are conducted pursuant to current Service protocols and no northern long-eared bats are documented, this measure may not be necessary for ESA compliance relative to this species (Table G–2 DEIS).

Offshore Export Cable Installation, Construction and Pile Driving, and Decommissioning

We concur with your determination that this activity "may affect, but is not likely to adversely affect" roseate terns, piping plovers, red knots, and northern long-eared bats. Our concurrence is based on the following:

- We anticipate migrating piping plovers, roseate tern, and red knots would occur within the WDA during spring and fall migration periods when these activities may be underway. However, at any given time, these activities would occur in a very small portion of the WDA, and they would take a relatively short time to complete. Therefore, disturbance from construction associated with these activities to migrating plovers, red knots, or roseate terns would be insignificant; and
- Cable installation construction may impact benthic habitat supporting sand lance, the roseate tern's preferred prey. However, impacts to the sea floor and other effects to the prey base from increased turbidity will be localized and short-term and have an insignificant impact on these species.

Lighting

We concur with your determination that WTG and construction vessel lighting "may affect, but is not likely to adversely affect", roseate terns, piping plovers, and/or red knots. Specifically, we expect either the effects on these species would be insignificant or the likelihood of effects occurring is discountable, because:

- Migrating or traveling roseate terns are not likely to be attracted to refracted light based on observations of nesting colonies near lighthouses (BA page 33).
- The available information does not indicate attraction or disorientation of migrating piping plovers or red knots due to refracted light.

- Lighting during operations would be limited to the minimum required by regulation and for safety, therefore minimizing the potential for attraction or disorientation. Birds (Table G–1 DEIS)
- The Project's proposed lighting incorporates red flashing aviation obstruction lighting, which has been shown to reduce avian collisions at land-based facilities. The proposed use of the ADLS will limit the time lighting will be required.
- Lighting during operations would be limited to the minimum required by regulation and for safety, therefore minimizing the potential for attraction (or attraction of insect prey) and possibly collision of bats at night (Table G–1 of the DEIS).
- An avian management plan for listed species would be prepared for the SFEC – Onshore. (Table G–1, DEIS)

Risk of Collision with the WTGs

BOEM based the "not likely to adversely affect" determination for the piping plover, roseate tern, and red knot, in part, on the analysis provided by the Band (2012) Collision Risk model. We do not rely on the model for our determination, because (1) the model inputs do not incorporate species–specific data; (2) the anticipated numbers of roseate terns, piping plovers, and red knots flying through the WDA are uncertain; and (3) of the model's limitations for predicting collision risk into the future.

Collision risk models rely on information on bird and wind turbine characteristics, including bird morphometrics, flight speed and flight height, and rotor speed and turbine size (Masden et al. 2012). Additionally, species–specific avoidance rates are critical to obtaining realistic and confident estimates of collision events (Masden and Cook 2016). The Band Collision Risk model used in BOEM's estimates of collision risk requires inputs for bird flight height, speed and populations anticipated to occur within the WTG area. The species-specific data for these parameters used to populate the model are associated with large margins of error (Loring et al. 2018; Loring et al. 2019) and are based on surrogate species information developed for European species. Data for piping plovers are based on an avoidance rate calculation for breeding piping plovers moving between foraging and nesting habitat and not migrating piping plovers (Stantial and Cohen 2015).

According to Kleyheeg-Hartman et al. (2018), the lack of species-specific information on species avoidance rates limits the predictive power of the Band Collision Risk model. Also, the Band Collision Risk model does not incorporate variability in population growth or changes in bird behaviors. These factors result in model outputs that lack the sensitivity necessary to develop confident collision risk expectations, even for a single year. Using the model output to extrapolate the collision risk for the 25– to 30– year life of the Project introduces unacceptable error that increases with time. Lastly, the Band model is deterministic, and excludes variability and/or uncertainty from calculations (Masden and Cook 2016).

Therefore, until more precise data on the species' flight heights, avoidance rates, and estimates of the populations that may be passing through the WDA are available, and a model has been developed that incorporates the (1) variabilities associated with calculating risk over a long time span and/or (2) change in population status or bird behavior, our consideration of BOEM's determination and the Project's effects on the subject species relies on other best available information with respect to the species' behaviors and presence within the WDA, irrespective of the outcome of the Band Collision Risk model analyses.

In consideration of the above, we concur with BOEM's determination that the Project "may affect, but is not likely to adversely affect", roseate terns, piping plovers, and/or red knots. The following reasons, based on the best available information, collectively indicate the effects of the Project would be insignificant and/or the likelihood of effects on the subject species is discountable.

- All species would only be seasonally present, limiting the annual exposure to effects from the Project.
- A small portion of the roseate tern population may fly within the WDA during spring migration (mid-April to May) and post-breeding and fall migration (mid-July through September), particularly when staging or breeding roseate terns occur on Muskeget Island.
- A very small subset of the entire population of roseate terns may cross the WDA during travel between staging areas and potential foraging habitat.
- We expect few post-breeding terns will be foraging in the WDA area based on minimal tuna and dolphin activity documented during marine mammal and fish surveys[4] and low numbers of common terns observed in the WDA. We use these survey results as surrogate indicators that the WDA currently provides an inconsistent forage fish base for roseate terns.
- The available information suggests that most foraging roseate terns will be flying below the RSZ and the majority of migrating roseate terns will be flying above the RSZ.
- The available information suggests the majority of migrating piping plovers will be flying above the RSZ during migration.
- The available information (Burger et al. 2012; Loring et al. 2018) suggests only a very small number of red knots may pass through the WDA during spring and fall migration.
- The available information suggests the majority of red knots will be flying above the RSZ during migration.
- The likelihood of collisions caused by attraction to lights is discountable, because the Project will use red lighting and the ADLS during periods of low visibility.
- The turbines would occupy a very small percentage of the airspace in the WDA, making the risk of collision low, even in the absence of lighting minimization measures and avoidance behavior by the subject species.
- We anticipate effects to plovers, red knots, and roseate terns that avoid the WDA (e.g., minor change in flight trajectory slightly increasing energetic demands) would be insignificant.

In conclusion, the estimated small number of individuals of each species occurring in the WDA, most individuals flying at heights outside the RSZ, and the small amount of airspace occupied by the turbines collectively indicate the collision risk to all three species will be discountable based on the best available information and data.

[4] Terns may key in on subsurface predators, such as tuna and relatively high densities of dolphins to find suitable prey (Goyert et al 2014).

Pre- and Post- Construction Monitoring Conservation Measures

The draft Framework for Avian and Bat Monitoring (Table G–2 DEIS) proposes measures to document bird and bat presence within the project area. BOEM will require that an avian and bat monitoring plan (based on the Framework) be finalized prior to the commencement of operations.

The draft Framework proposes:

1. Boat-based surveys will be conducted for 1-year pre-construction and up to 3 years post-construction within the buffered WDA. Pre- and post- construction surveys will monitor for shifts in bird distribution occurring due to the presence of turbines.
2. Development of Monitoring Protocols for Automated Radio Telemetry Studies at Offshore Wind Farms.
3. Up to 150 Motus tags for third-party researchers, including Motus tags for roseate terns will be required. This measure will track roseate terns and other bird species that may pass through or over the project area. The number of offshore Motus receivers would be determined to optimize coverage of the WDA through consultation with BOEM and USFWS.
4. Qualified biologists will be used to conduct observations of birds around the turbines using traditional behavioral study methods, such as time-activity budgets to collect data on bird behavior. Point counts would be conducted in the same years and around the same time as, or in conjunction with, boat-based surveys; and
5. Anti-perching devices and design measures will be implemented to reduce avian perching opportunities.

Further consultation with the Service under section 7 of the ESA is not required at this time. However, the implementing regulations for section 7 of the ESA require reinitiation of consultation if any of the criteria at 50 CFR 402.16 are met. As they relate to this consultation, those criteria are:

1. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered. This could include new information and/or models on species presence, flight heights, avoidance rates, or flight behavior that increase the likelihood of the risk of collision.
2. If the identified action is subsequently modified in a manner that causes an effect to the listed species…that was not considered in the…written concurrence; and
3. If a new species is listed or critical habitat designated that may be affected by the identified action.

If any of these criteria are met, BOEM should contact us immediately to determine the appropriate level of consultation with our office and to identify measures to avoid adverse effects. Thank you for your cooperation, and please contact Steve Papa of the Long Island Field Office at 631-286-0485 if you have questions or need further assistance.

Sincerely,

DAVID STILWELL

Digitally signed by DAVID STILWELL
Date: 2021.03.04 09:47:33 -05'00'

David A. Stilwell
Field Supervisor

cc: NYSDEC, Stony Brook, NY (M. Gibbons)
NEFO, Concord, NH (S. VonOettingen)

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