United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, New Jersey 08205
Tel: 609/646 9310
www.fws.gov/northeast/njfieldoffice/

In Reply Refer To:
2022-0080500

December 1, 2023

Kimberly Sullivan, NEPA coordinator
Environment Branch for Renewable Energy
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Dear Ms. Sullivan:

This transmits the U.S. Fish and Wildlife Service's (Service) final Biological Opinion (BO) and concludes consultation and conference for the for the Atlantic Shores Offshore Wind South (ASOWS) projects pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq*.) (ESA). This letter also transmits the Service's response to comments received on the draft Biological Assessment (BA). The Bureau of Ocean Energy Management (BOEM) prepared a BA for the ASOWS projects to assess the effects on 10 federally listed species, 1 species proposed for listing, 1 candidate for listing, and 1 species being evaluated for possible listing (13 species total) (BOEM 2023). The enclosed BO addresses only the risk that one or more federally listed (threatened) piping plover (*Charadrius melodus*) or rufa red knot (*Calidris canutus rufa*) or federally listed (endangered) roseate tern (*Sterna dougallii dougallii*) will collide with any of the ASOWS wind turbines over the operational life of the project. This letter addresses all other aspects of the consultation.

This letter does not address all Service concerns for fish and wildlife resources. The Service has provided or may provide separate comments and recommendations for the ASOWS projects pursuant to other authorities such as the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq*.) (NEPA); the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712); the Bald and Golden Eagle Protection Act (54 Stat. 250; 16 U.S.C. 668-668d); the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq*.), if any permits are required from the U.S. Army Corps of Engineers; and the December 22, 1993 Memorandum of Agreement among the U.S. Environmental Protection Agency, New Jersey Department of Environmental Protection (NJDEP), and the Service, if project implementation requires any permits from the NJDEP pursuant to the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B *et seq*.).

PROJECT DESCRIPTION

In 2021, Atlantic Shores Offshore Wind, LLC (Atlantic Shores) submitted a Construction and Operations Plan (COP) for the ASOWS projects to BOEM (COP lasted updated May 2023). The Federal action under consideration is approval by BOEM of a COP that would authorize the construction, operations and maintenance (O&M), and eventual decommissioning of two offshore wind energy projects within BOEM Renewable Energy Lease Area OCS-A 0499 (Lease Area) located on the OCS approximately 8.7 miles east of Atlantic City, Atlantic County, New Jersey. Detailed information on all aspects of the projects is available in the COP and the Environmental Impact Statement. The following summary information is paraphrased from the BA (BOEM 2023).

The two projects would be electrically distinct from each other. However, the ASOWS Project Design Envelope allows for allocating wind turbine positions within an Overlap Area to either project; thus, the final delineation of Lease space and infrastructure between Projects 1 and 2 will be determined at a future date. Within the Lease Area, ASOWS Projects 1 and 2 would be located in an approximately 102,124-acre Wind Turbine Area (WTA) (Figure 1). Project 1 would be in the western 54,175 acres of the WTA, and Project 2 in the eastern 31,847 acres. The proposed action includes a 16,102-acre Overlap Area that could be used by either Project 1 or Project 2. The WTA consists of the combined spatial extent of ASOWS Projects 1 and 2 and occupies a portion of the Lease Area. Project 1 has a capacity of up to 1,510 megawatts, while the capacity of Project 2 is to be determined. For consultation purposes, BOEM assumes that the proposed projects would have an operating period of 30 years. The ASOWS projects include up to 200 wind turbine generators (WTGs) as follows:

- Project 1: 105 to 136 WTGs
- Project 2: 64 to 95 WTGs
- Overlap Area: 31 WTGs (may be part of either project)

Proposed spacing is 0.6 by 1.0 nautical mile between WTGs in a nearly east-west orientation. Under the maximum design scenario, the nacelle of each proposed WTG would be 574 feet above mean sea level, and the rotor swept area would extend from 76 feet to 1,047 feet above mean sea level. The ASOWS projects also include: up to 10 offshore substations (OSSs) (with up to 5 in each of the two projects); up to 1 permanent meteorological tower (in Project 1); up to 4 temporary meteorological and oceanographic buoys (up to 3 in Project 1 and up to 1 in Project 2); and interarray and interlink cables connecting WTGs and OSSs within the WTA.

The projects also include onshore components proposed in Monmouth and Atlantic Counties, New Jersey. This letter concludes consultation and conference for onshore portions of the project as described in the BA (BOEM 2023). Via letter dated November 13, 2023, BOEM responded to notification that Atlantic Shores plans to submit minor updates to the onshore route. Upon submission of changes to any aspect of the onshore project components, the Service will work with BOEM to determine if the conservation measures, effects analysis, and/or conclusions in this letter need to be reconsidered. According to the BA, proposed onshore elements include the landfall sites for the submarine export cables, underground onshore export cable routes, onshore substations/converter stations, interconnection cables linking the onshore substations/converter stations to the Points of Interconnection (POI) to the existing grid, and an O&M facility.

Project 1 would utilize the Cardiff route, starting at the Atlantic Landfall that involves Horizontal Directional Drilling (HDD) under the beach to a parking lot in Atlantic City, Atlantic County, New Jersey. The Cardiff route generally follows developed rights-of-way (*e.g.*, roadways, railroad corridors, recreational trails) for approximately 12 to 14 miles to the existing Cardiff Substation POI. Project 2 would utilize the Larrabee route, starting at the Monmouth Landfall and involving HDD under the beach to a parking lot located on the U.S. Army National Guard Training Center, Sea Girt Borough, Monmouth County, New Jersey. The Larrabee route generally follows developed rights-of-way for approximately 12 miles to the existing Larrabee Substation POI. Open trenching is proposed for most upland portions of the cable routes, with trenchless installation (*e.g.*, HDD, jack and bore, pipe jacking) proposed for crossings of most wetlands and water bodies.

BOG TURTLE

Onshore portions of the action area support the federally listed (threatened) bog turtle (*Glyptemys muhlenbergii*). Bog turtles do not occur offshore. Thus, offshore components of the ASOWS projects will have no effect on this species.

Both direct (*e.g.*, injury, disturbance) and indirect (*e.g.*, habitat modification) effects to the bog turtle along the Cardiff route are expected to be insignificant and/or discountable based on habitat conditions, the distribution of known species occurrences in this part of the State, and several conservation measures included in the BA to follow best practices for sediment and erosion control.

Extant, occupied bog turtle habitat occurs along the Larrabee route, including areas to be crossed by HDD. Accidental releases of fuel, hazardous materials, and trash and debris occurring at the onshore Project components have the potential to affect bog turtles present in this area (BOEM 2023). In addition to sediment and erosion control best practices, the BA also includes measures for proper storage and handling of waste and hazardous materials, and onshore spill-prevention protocols. The Service has also reviewed Atlantic Shores' Inadvertent Release Contingency Plan (IR Plan) to minimize wetland and water body impacts from any inadvertent release of nontoxic drilling mud that may occur during HDD activities. As discussed during a January 13, 2023 coordination call, bog turtles and their habitats may be affected both by a release of drilling mud and by any cleanup/containment response (*e.g.*, due to wetland entry by response personnel, vehicles, and equipment). To address this risk, BOEM adopted the following conservation measure via email dated November 27, 2023: "*BOEM will require that Atlantic Shores provide for a recognized, qualified bog turtle surveyor to be on site when HDD activities occur in the vicinity of wetlands where bog turtles are known or presumed to occur. Atlantic Shores must coordinate with USFWS to determine the specific areas where this measure applies, for approval of the selected surveyor and the role of the surveyor during HDD (e.g., communication plan), and to determine if any updates to the Inadvertent Release Contingency Plan are needed*." Based on this conservation measure, the Service concurs that risks to bog turtle from HDD are discountable. We request a meeting to discuss implementation of this and other conservation measures for the bog turtle along the Larrabee route.

SALT MARSH BIRDS

The action area supports the following listed species or species of concern:

- eastern black rail (*Laterallus jamaicensis jamaicensis*), threatened
- saltmarsh sparrow (*Ammodramus caudacutus*), Service Bird Species of Conservation Concern; Service Priority At-Risk Species for the Northeast Region; Atlantic Coast Joint Venture Focal Species. This species is being evaluated for possible listing under the ESA, with a determination expected in Fiscal Year 2024. The saltmarsh sparrow is not afforded any substantive or procedural protections under the ESA at this time; however, including this species in the ASOWS effects analysis will minimize project delays if the species is listed before or during project construction.

Onshore

Within the onshore portion of the project area, habitat for the eastern black rail and salt marsh sparrow is limited to the vicinity of the Cardiff route. All areas of habitat for these species (*e.g.*, salt marsh) will be crossed via HDD, and all entry pits will be sited in previously disturbed upland areas. The Service has reviewed the IR Plan to minimize wetland and water body impacts from any inadvertent release of nontoxic drilling mud that may occur during HDD activities. The BA includes the following measures to avoid adverse effects to the eastern black rail and salt marsh sparrow.

- BA Table 2-6, Measure BIR-10: "*Bury onshore cables, avoiding collision risk to birds associated with overhead structures and conductors*." (On p. 29 the BA also clarifies that there are no overhead powerlines proposed as part the projects.)
- BA Table 2-6, Measure BIR-11: "*HDD at the landfall site and trenchless cable installation techniques for wetland crossings will be used to avoid impacts on wetlands and shoreline habitats . . .* "
- BA Table 2-6, Measure BIR-13: "*Onshore construction lighting will be temporary and localized to the work area.*"
- BA Table 2-6, Measure BIR-14: "*Limit lighting during onshore operations to the minimum required by regulation and for safety, minimizing the potential for any light driven attraction of birds.*"
- BA Table 2-7, Measure 1.d: "*Both during and after construction, Atlantic Shores must avoid Project-related intrusion (i.e., access through or disturbance from personnel or equipment) into any . . . tidal marsh area from March 1 to August 31. In the event that emergency access to this area is needed during the restricted season, Atlantic Shores must coordinate with the [Service] and the [NJDEP's] Endangered and Nongame Species Program to seek approval*."
- BA Table 2-7, Measure 1.i: "*Eastern black rail and saltmarsh sparrow: No planned or routine Project entry or intrusion into wetlands either during or after construction will occur. Emergency access must be coordinated with [the Service and NJDEP]. If areas of suitable eastern black rail and/or saltmarsh sparrow habitat will be impacted by Project activities, Atlantic Shores must coordinate with [the Service] to develop appropriate conservation measures that Atlantic Shores is required to implement to avoid adverse effects to these species. Conservation measures will include that construction activities and other*

Project-related intrusions into areas of suitable habitat will be seasonally restricted from April 1 through September 30 (April 1 through September 30 for eastern black rail and May 1 to September 30 for saltmarsh sparrow) in order to minimize the risk of directly disturbing or injuring adults, eggs, or chicks during sensitive periods of the breeding season."

On p. 121 of the BA, BOEM states that aircraft (*e.g.*, helicopters, fixed-wing) may be used intermittently during both construction and O&M, usually operating at altitudes ranging from 500 to 1,000 feet above sea level. Although aircraft flights associated with the ASOWS projects are expected to be minimal in comparison to baseline conditions, the low altitude could potentially disturb breeding birds. However, the Service concludes that disturbance from aircraft is insignificant and/or discountable, based on the environmental baseline and the distribution of salt marsh relative to nearby airfields and urbanized areas.

Based on the above information, the Service concurs that both direct (*e.g.*, injury, collision, disturbance) and indirect (*e.g.*, habitat modification) effects to the eastern black rail and salt marsh sparrow from onshore project activities are expected to be insignificant and/or discountable.

Offshore

We have no evidence that the above-listed salt marsh bird species migrate or venture offshore. Any individuals of these species that may occur offshore over the life of the ASOWS projects are expected to be storm-blown or otherwise accidental strays. Thus, the risk of any adverse effects to these species from the offshore components of the ASOWS projects is discountable.

OTHER LISTED BIRDS

The action area supports the following listed bird species (collectively referred to as "listed birds"):

- piping plover (*Charadrius melodus*), threatened
- rufa red knot (*Calidris canutus rufa*), threatened
- roseate tern (*Sterna dougallii dougallii*), endangered

Onshore

There is a recent history of piping plover nesting at the U.S. Army National Guard Training Center in Sea Girt, the site of the Monmouth Landfall. Nonbreeding piping plovers, rufa red knots, and roseate terns may occur in the vicinity of both the Cardiff and Larrabee routes in areas of sandy beach, tidal flats, and unvegetated portions of salt marsh. Roseate terns may also utilize coastal waters (both ocean and back bay). Roseate terns and rufa red knots may occasionally roost on human-made rocky structures (*e.g.*, groins, jetties). All areas of habitat for these species will be crossed via HDD, and all entry pits will be sited in previously disturbed upland areas. The Service has reviewed the IR Plan to minimize wetland and water body impacts from any inadvertent release of nontoxic drilling mud that may occur during HDD activities.

The BA includes the following measures to avoid adverse effects to these listed birds.

- BA Table 2-6, Measure BIR-10: "*Bury onshore cables, avoiding collision risk to birds associated with overhead structures and conductors*." (On p. 29 the BA also clarifies that there are no overhead powerlines proposed as part of the projects.)
- BA Table 2-6, Measure BIR-11: "*HDD at the landfall site and trenchless cable installation techniques for wetland crossings will be used to avoid impacts on wetlands and shoreline habitats, including any potential shoreline nesting areas, such as those for the federally listed threatened piping plover and red knot*."
- BA Table 2-6, Measure BIR-13: "*Onshore construction lighting will be temporary and localized to the work area.*"
- BA Table 2-6, Measure BIR-14: "*Limit lighting during onshore operations to the minimum required by regulation and for safety, minimizing the potential for any light driven attraction of birds.*"
- BA Table 2-7, Measure 1.d: "*Both during and after construction, Atlantic Shores must avoid Project-related intrusion (i.e., access through or disturbance from personnel or equipment) into any beach, dune, or tidal marsh area from March 1 to August 31. In the event that emergency access to this area is needed during the restricted season, Atlantic Shores must coordinate with the [Service] and the [NJDEP's] Endangered and Nongame Species Program to seek approval*."
- BA Table 2-7, Measure 1.e: "*Atlantic Shores must avoid the use of HDD at the Monmouth Landfall location during the piping plover nesting season (March 15 to the fledging of the last chick), unless coordination with [the Service] deems not necessary due to a review of noise impacts*."
- BA Table 2-7, Measure 1.f: "*Both during and after construction, Atlantic Shores must avoid Project activities within 500 feet of any beach or dune from March 15 to August 31. In the event that essential access to this area is needed during the restricted season, Atlantic Shores must coordinate with the [Service and NJDEP's] Endangered and Nongame Species Program to seek approval*."
- BA Table 2-7, Measure 1.g: "*Rufa red knot: Along onshore export cable routes, Atlantic Shores must avoid permanent modification of suitable red knot habitats. Where temporary habitat disturbance is unavoidable, Atlantic Shores must develop a restoration plan in coordination with [the Service for Service] approval.*"
- BA Table 2-7, Measure 1.h: "*Roseate tern: Atlantic Shores must avoid disturbing roosting terns to the extent practicable during construction and operations and maintenance, affording at least a 300-foot buffer for people on foot and for vehicles to avoid flushing the birds. [The Service] anticipates most staging flocks of terns will occur from July through September*."

On p. 121 of the BA, BOEM states that aircraft (*e.g.*, helicopters, fixed-wing) may be used intermittently during both construction and O&M, usually operating at altitudes ranging from 500 to 1,000 feet above sea level. Although aircraft flights associated with the ASOWS projects are expected to be minimal in comparison to baseline conditions, the low altitude could

potentially disturb breeding birds. In July 5, 2023 comments, BOEM indicated willingness to work with the Service and Atlantic Shores on the development of an aircraft altitude buffer for piping plover nesting areas.

Based on the above information, the Service concurs that both direct (*e.g.*, injury, collision, disturbance) and indirect (*e.g.*, habitat modification) effects to the piping plover, rufa red knot, and roseate tern from onshore project activities are expected to be insignificant and/or discountable. We request a meeting to discuss development of an aircraft altitude buffer.

Offshore

Behavioral Change – Project Construction

The Service concurs that any adverse behavioral effects (*e.g.*, attraction, avoidance) to listed birds from noise or lighting in the offshore portion of the action area during project construction (*e.g.*, from vessels, aircraft, pile driving) are expected to be insignificant. This concurrence is based on available information regarding the use of the offshore environment by piping plovers, rufa red knots, and roseate terns, as well as the expected types and duration of offshore construction activities as described in the BA. This concurrence is also based on our understanding that offshore lighting used during construction will be the minimum necessary, and will be flashing instead of steady burning.

Behavioral Change – O&M

Background

The visual intrusion caused by turbines; the rotating blades, noise and vibration resulting from turbine operation; and the human or vessel activity associated with maintenance activities may disturb birds during the operational phase of wind energy development (Drewitt and Langston 2006, Marques *et al*. 2021). Such activities may trigger an avoidance response that can occur at three spatial scales: macro-avoidance when birds avoid the wind-energy facility area as a whole, meso-avoidance if turbine arrays or single turbines are avoided, and micro-avoidance, which consists of last-second evasive movements of the rotor blades (May 2015, Marques *et al*. 2021). Displacement can be observed as a reduced density of birds occurring near wind turbines from the combined effects of macro-avoidance and meso-avoidance (May 2015, Marques *et al*. 2021). Displacement can result in reduced utilization of an otherwise preferred or suitable foraging habitat (Croll *et al.* 2022). Displacement can also cause birds to adjust their migratory routes or local flight paths to avoid wind farms, which may potentially affect survival and fitness of individuals and populations (Drewitt and Langston 2006, Cabrera-Cruz and Villegas-Patraca 2016, Jacobsen *et al.* 2019, Croll *et al.* 2022). The flight distance added to avoid wind farms may result in increased energy expenditure for some bird species, potentially affecting body condition, which is associated with survival (Masden *et al.* 2010, Cabrera-Cruz and Villegas-Patraca 2016). Significant detours around wind farms could also add time to a migratory flight, with the potential to throw off the synchronous arrival at a stopover or breeding location relative to the timing of optimal food, weather, or other conditions. Conversely, attraction to offshore wind energy infrastructure may result in an increase in bird density within or near the wind farm and due to the structures providing favorable roosting conditions and/or acting as a reef thus

increasing food resources (Dierschke *et al.* 2016, Marques *et al*. 2021). For example, roseate terns are known to perch on offshore oil rigs, despite considerable noise and human activity associated with those structures (Loring *et al.* 2023).

Although the effects of displacement due to a single wind farm may be minor, as birds easily fly around a certain area and/or find their food elsewhere, effects of displacement will likely become more severe when a larger area becomes occupied by wind turbines, and birds are less likely to be able to compensate. Effects of displacement may also accumulate over time. Uncertainty regarding potential behavioral effects is high because: 1) the turbine size, spatial arrangement, distance from shore, and anchoring technology of new developments are rapidly changing, and the degree of observed displacement at older wind farms may not predict effects at wind farms of more recent design; 2) surveys often have limited statistical power to detect changes; 3) the influence of displacement on individual fitness is indirect, and thus can be difficult to measure; and 4) detailed information on prey distributions and availability is sparse or absent, making it hard to estimate effects of the loss of foraging habitat (Croll *et al.* 2022).

Marques *et al.* (2021) carried out a meta-analysis of the literature available on bird displacement and attraction due to wind turbines, both onshore and offshore, evaluating 286 trials extracted from 68 peer-reviewed studies conducted around the world. These authors found that displacement was recorded in 40.6 percent of the trials, with offshore wind farms presenting a slightly higher frequency of displacement (43.8 percent) compared to onshore wind farms (39.3 percent). Conversely, attraction effects were recorded in 7.7 percent of the trials, and were also higher (15.0 percent) at offshore wind farms compared to onshore environments (4.9 percent). This study underscores that avian behavioral effects from WTG operation are widespread. This study also shows the high degree of uncertainty that still pervades our understanding of behavioral effects, reporting, ". . . *a large number of studies found no effects or even attraction effects, to a smaller extent, even within the same taxa. The lack of consistency and clear patterns regarding the effects across and within birds' groups suggests that displacement is probably a species-specific issue and dependent on birds' age and life-cycle, as well as local features and on the wind farm characteristics.*" These authors concluded that long-term studies are crucial, as only 14 percent of the studies they assessed continued 10 or more years after the beginning of WTG operation. It is possible that disturbance caused by wind farms, or attraction effects, are temporary, as continuous exposure over time may increase tolerance or reduce risk perception, causing habituation to the infrastructure (Marques *et al.* 2021). Marques *et al.* (2021) found that Charadriiformes, which includes all three of the listed bird species, was among the taxa for which no significant effects were more often observed. Conversely, an earlier meta-analysis by Stewart *et al*. (2007) found that Charadriiformes (along with waterfowl, Anseriformes) were the bird groups most vulnerable to reduced abundance around wind farms; however, these authors also concluded that the evidence base from studies available at the time was poor. In the pooled data, bird taxon was correlated with windfarm location; waterfowl (*i.e.*, sea ducks) were associated with offshore sites while Charadriiformes were often coastal (Stewart *et al.* 2007).

Noise and Lighting

In addition to the potential visual impact of the turbine arrays, the likelihood of listed birds avoiding the ASOWS WTA should be considered given the airborne noise that will result from WTG operation. The BA (p. 104) describes WTG operational noise as "*not much greater than*

ambient noise in a large city." Nearly continual noise at this level, of this type, and across this area of the ocean from a human-caused source will be a novel modification of the offshore airspace in which listed birds are known to occur. Time and energy budgets are very tight for these listed birds during their migratory flights; thus, detours around the WTA could potentially reduce survival rates. For roseate terns, any effects to foraging flights could also impact food intake. Conversely, roseate terns could be attracted to the ASOWS infrastructure due to perching or changes in the area's prey base.

Another factor that can contribute to attraction is lighting. Some migrating birds may become disoriented and circle tall, lighted structures instead of continuing on their migratory path, greatly increasing their risk of collision. Birds are particularly susceptible to light entrapment under conditions of poor visibility (*e.g.*, fog, rain) or low cloud ceiling (Rebke *et al.* 2019). Two types of stationary offshore lighting are required during the O&M phase of the projects: aircraft obstruction lights and marine navigation lights. The BO includes Conservation Measure 2b to utilize an Aircraft Detection Lighting System (ADLS) to minimize the amount of aircraft obstruction lighting. In the BA (p. 110), BOEM estimates that, based on historical air traffic data, light activation under the ADLS would occur only 11 hours per month. Thus, we conclude that aircraft obstruction lighting using the ADLS will have negligible effect on the behavior of listed birds.

However, any effect of marine navigation lighting is unknown. Marine navigation lighting would consist of multiple types of flashing yellow lights on corner WTGs/significant peripheral structures, outer boundary WTGs, and interior WTGs. All WTGs would be equipped with three yellow flashing navigation lanterns, compliant with the requirements for visible spread from 360 degrees as required by BOEM and USCG guidance. Corner WTG lights have visible range of 3 to 5 nautical miles and will all flash in unison with a quick-flash characteristic of 60 flashes per minute. Interior WTG lights have an operational range of 2 nautical miles with a different flash pattern from the corner WTGs. Lights would be mounted on the platform, which would be roughly 60 feet above the sea surface. Shielding of marine navigation lights may adversely affect navigation and is therefore subject to USCG approval and not committed to for the ASOWS projects at this time (BOEM 2023). The BO includes Conservation Measure 2c for BOEM, BSEE, and the Service to work together to evaluate the USCG-approved navigation lighting system, in order to characterize the color, intensity, and duration of any light from maritime lanterns that is likely to reach the typical flight heights of listed birds, and to assess the degree to which the light is likely to attract or disorient listed birds.

Conclusion and Recommendation

The Service remains concerned about the potential for the ASOWS projects to result in behavioral changes for listed birds, which could in turn influence these birds' fitness as well as collision risk. However, there is insufficient information to conclude that adverse behavioral effects are reasonably certain to occur. Further, the BO includes Conservation Measure 2c to discourage roseate terns from perching on offshore infrastructure. The BO also includes Conservation Measure 5 to include among the objectives of the Avian and Bat Post-Construction Monitoring Plan, "*advance[ing] understanding of how the target species utilize the offshore airspace and do (or do not) interact with the wind farm*." Based on these conservation measures and best available information, we concur that adverse behavioral effects are insignificant and/or

discountable, and we conclude that long-term monitoring will reduce uncertainty around this conclusion.

The Service requests that BOEM and Atlantic Shores work cooperatively with us to fully integrate behavioral responses into the Avian and Bat Post-Construction Monitoring Plan. Technologies and methods to assess behavioral changes may be similar, but not identical, to those employed to assess collision risk. Behavioral change studies for the ASOWS projects should be conducted holistically with monitoring at other nearby leases in the region. To detect behavioral changes, studies may need to begin before or during construction, not just post-construction. A long period of study will be needed to determine if the behavioral response of listed species to the WTGs changes over time. Following construction, if the monitoring were to detect behavioral change rising to the level of an adverse effect, consultation would need to be reinitiated.

Collision – Project Construction

The Service concurs that the risk of listed birds colliding with vessels or stationary structures in the offshore environment during daylight hours is discountable. Stationary structures include partially or fully built, but not yet operational, WTGs. This concurrence is based on available information regarding the use of the offshore environment by piping plovers, rufa red knots, and roseate terns, as well as the visual and flight capabilities of these species.

We consider collisions with vessels or stationary structures at night to be more likely, due to limited visibility, the unknown effect of marine navigation lighting, and the known occurrence of listed birds in the offshore airspace after dark. However, based on available information, we conclude that even nighttime collisions during project construction are not reasonably certain to occur. This concurrence based in part on our understanding that offshore lighting used during construction will be the minimum necessary, and will be flashing instead of steady burning.

Collision – O&M

The Service concurs that the risk of listed birds colliding with vessels or stationary structures in the offshore environment during daylight hours is discountable. Stationary structures includes non-movable portions of WTGs, non-operating WTGs, and other infrastructure (*e.g.*, OSSs, meteorological towers and buoys).

We consider collisions with vessels or stationary structures at night to be more likely, due to limited visibility, the unknown effect of marine navigation lighting, and the known occurrence of listed birds in the offshore airspace after dark. However, based on available information, we conclude that even nighttime collisions with vessels or stationary structures are not reasonably certain to occur. This concurrence based, in part, on use of the ADLS and of only flashing, yellow marine navigation lights.

Collisions of all three listed birds with operational WTGs is reasonably certain to occur, as addressed by the enclosed BO.

BATS

The action area supports the following listed or proposed bat species:

- northern long-eared bat (*Myotis septentrionalis*), endangered
- tricolored bat (*Perimyotis subflavus*), proposed for listing as endangered

The northern long-eared bat was recently uplisted from threatened to endangered, and a final rule has not yet been published regarding listing of the tricolored bat. Thus, the effects assessment and conclusions provided below are based on interim Service guidance for these species. If final guidance is issued before the start of project construction, effects to these bat species may need to be reassessed. Please note that the active season and habitat requirements for the tricolored bat may differ slightly from the northern long-eared bat.

Onshore

In the BA Table 2-7, Measure 2 says that BOEM will require that Atlantic Shores conducts pre-construction surveys for ESA-listed bats and implements avoidance and minimization measures in coordination with the Service and the NJDEP. To date, we have received only one survey report (August 8, 2023 mist-netting survey for expansion of the Cardiff Substation). Based on this report, the Service concurred via letter dated October 31, 2023 that northern long-eared bat and tricolored bat are not present in the Cardiff Substation Expansion area; this concurrence is valid for 5 years, or until August 1, 2028.

Habitat Impacts – Project Construction

Table 1 gives the acreage of proposed tree clearing as presented in the BA (BOEM 2023, Tables 2-3 and 2-4). On p. 103 of the BA,[1] BOEM states that approximately 19 acres of tree clearing could occur at the Fire Road Onshore Substation/Converter Station site, 4.8 acres of tree clearing could occur at the Lanes Pond Road Onshore Substation/Converter Station site, and 8.8 acres of tree clearing could occur at the Randolph Road Onshore Substation/Converter Station site. Based on the acreage and distribution of tree clearing, we concur that adverse effects to the northern long-eared bat and tricolored bat from permanent habitat modification are expected to be insignificant.

Table 1. Acres of Proposed Tree Clearing

	Cardiff Route	Larrabee Route	Total
Temporary	2.83	2.95 [(a)]	5.78
Permanent	17.93	14.17 [(b)]	32.10
Total	**20.76**	**17.12**	**37.88**

[(a)] Includes 0.40 acre of deciduous forest, 0.13 acre of evergreen forest, 1.94 acres of mixed forest, and 0.48 acre of forested wetlands.
[(b)] Includes 2.38 acres of deciduous forest, 0.08 acre of evergreen forest, 11.62 acres of mixed forest, and 0.09 acre of forested wetlands.

[1] We presume the acreages given on p. 103 correspond to the acreages of permanent tree clearing given in Table 2-3 and 2-4 of the BA, and that discrepancies in the totals (32.1 acres in the tables versus 32.6 acres in the text) are due to uncertainty and/or rounding. These figures do not include approximately 10 acres of tree removal proposed for the Cardiff Substation Expansion Project, as reported in the August 8, 2023 mist-netting report.

An additional 5.78 acres of temporary tree clearing is proposed across the two projects. In the BA Table 2-7, Measure 2.a. says, "*Atlantic Shores must develop and implement a replanting plan in areas of temporary deforestation. The replanting plan must include the identification of specific tree species and densities, timing of planting, protection of saplings from herbivory, monitoring, and invasive species control in order to provide high-quality bat habitat and must be provided to [the Service] for approval prior to commencing onshore construction activities*." Based on the acreage of tree clearing spread across the two onshore routes, and based on Measure 2.a., we concur that adverse effects to the northern long-eared bat and tricolored bat from temporary habitat modification are expected to be insignificant.

Habitat Impacts – O&M

On p. 41 of the BA, BOEM states that no tree clearing is anticipated during the O&M phase of the project. In the BA Table 2-7, Measure 2.b. says, "*Atlantic Shores will coordinate with the [the Service] prior to any clearing of trees (> 3 inches dbh) required during operation and maintenance.*" Based on this information, the Service concurs that adverse effects to the northern long-eared bat and tricolored bat from habitat modification from habitat modification during O&M are expected to be insignificant.

Direct Species Impacts – Project Construction

Northern long-eared and tricolored bats could exhibit disorientation or other behavioral changes as a result of lighting or noise during project construction. Any such effects are expected to be insignificant and/or discountable based on conservation measures includes in the BA (Table 2-6, Measures BAT-09 ("*Onshore construction lighting will be temporary and localized to the work area.*"), BAT-11 ("*BMPs will be implemented to minimize onshore construction noise.*"), and BAT-12 ("*Minimize work at night to the maximum extent practicable*.")).

Northern long-eared and tricolored bats could be injured or killed if roosting in a human-made structure (*e.g.*, building, bridge) at the time it is demolished, painted, power-washed, or otherwise substantially modified. We understand that no such activities are planned for human-made structures as part of project construction.

Northern long-eared and tricolored bats could be injured or killed if roosting in a tree at the time it is cut. The Service concurs the risk of this occurring is discountable based on the following conservation measures included in the BA:

- BA Table 2-6, Measure BAT-08: "*… to avoid potential conflicts, any tree removal activities will take place outside of the "active season" for northern long-eared and tri-colored bats, which is defined as April 1 to September 30.*"
- BA p. 102: "*Atlantic Shores has indicated that tree clearing would not occur from April 1 to September 30.*"

Direct Species Impacts – O&M

Effects to northern long-eared and tricolored bats from lighting noise during O&M are expected to be insignificant and/or discountable based on the project description and conservation measures includes in the BA (Table 2-6, Measures BAT-04 ("*Use down-lighting and down-*

shielding to the maximum extent practicable.") and BAT-10 ("*Limit lighting during onshore O&M to the minimum required by regulation and for safety, minimizing the potential for any light driven attraction of bats or their insect prey and therefore reducing the effects of light on potential collisions of bats at night.*")).

The Service concurs that the risk of northern long-eared and tricolored bats being injured or killed by O&M activities is discountable based on the following conservation measures included in the BA:

- BA Table 2-7, Measure 2.b.: "*Atlantic Shores will coordinate with the [the Service] prior to any clearing of trees (> 3 inches dbh) required during operation and maintenance*."
- BA Table 2-7, Measure 2.c. "*Atlantic Shores must contact [the Service] to assess the potential risk to ESA-listed bat species should any onshore structures require demolition during the O&M and/or decommissioning phase. If [the Service] determines that adverse effects exist, Atlantic Shores must coordinate with [the Service] to develop appropriate mitigation measures that Atlantic Shores is required to implement to avoid adverse effects to listed bat species.*"

Offshore

Offshore acoustic surveys conducted as part of the ASOWS projects in 2020 and 2021 found no detections of northern long-eared bat and five detections of tricolored bat (BOEM 2023). The BA provides other information from Massachusetts, Rhode Island, New Jersey, Virginia, and North Carolina indicating that occurrence of northern long-eared and tricolored bats in the offshore environment is rare. We generally concur with this assessment. Based on best available evidence, the Service concurs that use of the offshore airspace by northern long-eared and tricolored bats is minimal, and thus the risk of any adverse effects to these species from the offshore components of the ASOWS projects is discountable.

We note, however, that northern long-eared and tricolored bats do occur offshore at least occasionally, that other bat species occur offshore more regularly and in higher numbers, and that our understanding of bats in the offshore environment is far from complete. Thus, we fully support and appreciate the inclusion of bats in the forthcoming ASOWS Avian and Bat Post-Construction Monitoring Plan (as indicated in the BA Table 2-6, Measure BAT-05 and BA Table 2-7, Measure 3).

MONARCH BUTTERFLY

Within onshore portions of the action area, suitable habitat is likely to support the Federal candidate species monarch butterfly (*Danaus plexippus*). A listing determination for this species is expected in Fiscal Year 2024. The monarch butterfly is not afforded any substantive or procedural protections under the ESA at this time; however, including this species in the ASOWS effects analysis will minimize project delays if the species is listed before or during project construction.

Onshore

The BA includes the following measures to avoid adverse effects to the monarch butterfly.

- BA Table 2-7, Measure 6: "*Atlantic Shores must develop a Revegetation Plan for areas of temporary disturbance that includes replanting with native vegetation and monitoring and corrective action for invasive plant species.*"
- BA Table 2-7, Measure 7: "*Atlantic Shores must conduct pre-construction surveys for milkweed (Asclepias spp.) and implement monarch butterfly avoidance and minimization measures in coordination with [the Service] and NJDEP.*"
- BA Table 2-7, Measure 7a: "*For areas where vegetation disturbance will occur during Project construction or post-construction operations and maintenance activities, Atlantic Shores must survey the affected area for milkweed (Asclepias spp.) before the start of work. Atlantic Shores must avoid clearing milkweed to the extent practical from May 15 through September 30 when monarch caterpillars may be present. If/when the monarch is proposed for federal listing, Atlantic Shores will coordinate with the [Service] prior to initiating any in-season vegetation disturbance that may involve milkweed.*"
- BA Table 2-7, Measure 7b: "*[Measure] COA-08 will be modified to enhance monarch butterfly habitat in coordination with [the Service] and NJDEP Atlantic Shores must develop a Revegetation Plan to enhance monarch butterfly habitat for areas of temporary disturbance and incidental to other Project activities. Atlantic Shores must consult the New Jersey Monarch Butterfly Conservation Guide in developing the plan and submit the plan for [Service] review.*"
- BA Table 2-7, Measure 7b: "*Atlantic Shores will not use herbicide for right-of way maintenance and in other portions of the Project where milkweed is likely to occur.*"

Based on these measures, the Service concurs that both direct (*e.g.*, injury, mortality) and indirect (*e.g.*, habitat modification) effects to the monarch butterfly from onshore project activities are expected to be insignificant and/or discountable.

Offshore

We have no evidence that the monarch butterfly migrates or ventures offshore. Any individuals of this species that may occur offshore over the life of the ASOWS projects are expected to be storm-blown or otherwise accidental strays. Thus, the risk of any adverse effects to the monarch butterfly from the offshore components of the ASOWS projects is discountable.

PLANTS

Onshore portions of the action area support the following listed plant species:

- swamp pink (*Helonias bullata*), threatened
- Knieskern's beaked-rush (*Rhynchospora knieskernii*), threatened
- American chaffseed (*Schwalbea americana*), endangered
- seabeach amaranth (*Amaranthus pumilus*), threatened

The above-listed plants do not occur offshore. Thus, offshore components of the ASOWS projects will have no effect on these species. Table 2-7 of the BA, Measure 8 states, "*BOEM will require Atlantic Shores conducts pre-construction habitat surveys for ESA-listed plants and implements avoidance and mitigation measures in coordination with [the Service] and NJDEP*."

As discussed at a January 13, 2023 coordination meeting, swamp pink surveys are recommended in areas where project activities involve disturbance to a wetland or stream, and in areas where such features will be crossed by HDD. If swamp pink is found in or adjacent to HDD crossings, then BOEM will work with the Service to include specific swamp pink measures in the IR Plan. Measures may include, but are not limited to, temporarily marking plants during HDD operations and having a qualified construction monitor on site. Based on Table 2-7, Measure 8, the Service concurs that project activities are not likely to adversely affect swamp pink. We request a meeting to discuss the status of surveys to date and next steps for ensuing that effects to swamp pink are avoided.

Both direct (*e.g.*, injury) and indirect (*e.g.*, habitat modification) effects to Knieskern's beaked-rush along the Cardiff route are expected to be insignificant and/or discountable based on habitat conditions, the distribution of known species occurrences in this part of the State, and several conservation measures included in the BA to follow best practices for sediment and erosion control. The Larrabee route is outside of the range of this species.

As discussed at a January 13, 2023 coordination meeting, American chaffseed surveys may be recommended in certain areas, pending review of project photos and further coordination. Based on Table 2-7, Measure 8, the Service concurs that project activities are not likely to adversely affect American chaffseed. We request a meeting to discuss the status of surveys to date and next steps for ensuing that effects to American chaffseed are avoided.

Seabeach amaranth is restricted to sandy, oceanfront beaches. There is recent history of this species occurring at the U.S. Army National Guard Training Center in Sea Girt, and seabeach amaranth may also occur in beach habitats at the Atlantic Landfall. Both direct (*e.g.*, injury) and indirect (*e.g.*, habitat modification) effects to seabeach amaranth are expected to be insignificant and/or discountable based on the information and conservation measures discussed above for piping plover, rufa red knot, and roseate tern.

OIL SPILLS

Based on information provided in the Environmental Impact Statement (prepared by BOEM pursuant to NEPA) and Construction and Operations Plan, the Service concurs that the risk of adverse effects to listed species originating from an oil spill associated with the ASOWS projects is discountable.

CONCLUSION

As discussed above, the proposed ASOWS projects are not likely to adversely affect the bog turtle, Eastern black rail, saltmarsh sparrow, northern long-eared bat, tricolored bat, monarch butterfly, swamp pink, Knieskern's beaked-rush, American chaffseed, or seabeach amaranth. All project effects to the piping plover, rufa red knot, and roseate tern are expected to be

insignificant and/or discountable *except* for the risk of colliding with an operating offshore WTG, which is addressed in the enclosed BO. This concludes consultation and conference for the ASOWS projects pursuant to Section 7 of the ESA.[2] We appreciate BOEM's ongoing cooperation to assess and abate adverse effects to listed and at-risk species from offshore wind energy development. Please contact Wendy Walsh at wendy_walsh@fws.gov to discuss next steps in implementing the conservation measures referenced in the BA, the BO, and this letter.

Sincerely,

ERIC SCHRADING

Digitally signed by ERIC SCHRADING
Date: 2023.12.01 08:28:09 -05'00'

Eric Schrading
Field Supervisor

Enclosures

REFERENCES

Bureau of Ocean Energy Management [BOEM]. 2023. Atlantic Shores Offshore Wind South Biological Assessment for the United States Fish and Wildlife Service. Office of Renewable Energy Programs, Sterling, Virginia. 144 pp. + Appendices.

Cabrera-Cruz, SA and R Villegas-Patraca. 2016. Response of migrating raptors to an increasing number of wind farms. Journal of Applied Ecology 2016(53):1667-1675.

Croll, DA, AA Ellis, J Adams, ASCP Cook, S Garthe, MW Goodale, CS Hall, E Hazen, BS Keitt, EC Kelsey, JB Leirness, DE Lyons, MW McKown, A Potiek, KR Searle, FH Soudijn, RC Rockwood, BR Tershy, M Tinker, EA VanderWerf, KA Williams, L Young, and K Zilliacus. Framework for assessing and mitigating the impacts of offshore wind energy development on marine birds. Biological Conservation 206(2022):109795.

Dierschke, V.; Furness, R.W.; Garthe, S. Seabirds and offshore wind farms in European waters: Avoidance and attraction. Biological Conservation 2016(202):59-68.

Drewitt, AL and RHW Langston. 2006. Assessing the impacts of wind farms on birds. Ibis(2006)148:29-42.

Jacobsen, E, F Jensen, J Blew. 2019. Avoidance Behaviour of Migrating Raptors Approaching an Offshore Wind Farm. In Wind Energy and Wildlife Impacts (pp. 43-50). Springer. Cham, Switzerland.

Loring PH, TM Kuras, RA Revorêdo, DSD Farias, FJL Silva, PC Lima, S von Oettingen, J Walsh. 2023. Habitat use of Common and Roseate terns tracked with satellite transmitters in northeast Brazil. U.S. Department of the Interior, U.S. Fish and Wildlife Service. State of the Birds Program. 38 p. https://atlanticmarinebirds.org/downloads/Satellite_telemetry_report.pdf [Accessed August 14, 2023]

Marques, AT, H Batalha, and J Bermandino. 2021. Bird Displacement by Wind Turbines: Assessing Current Knowledge and Recommendations for Future Studies. Birds 2021(2):460-475.

Masden, EA, DT Haydon, AD Fox, and RW Furness. 2010. Barriers to movement: modelling energetic costs of avoiding marine wind farms amongst breeding seabirds. Marine Pollution Bulletin 60:1085–1091.

[2] Service comments regarding saltmarsh sparrow and monarch butterfly are provided as technical assistance only.

May, RF. 2015. A unifying framework for the underlying mechanisms of avian avoidance of wind turbines. Biological Conservation 2015(190):179–187.

Rebke, M, V Dierschke, CN Weiner, R Aumüller, and K Hill. 2019. Attraction of nocturnally migrating birds to artificial light: The influence of colour, intensity and blinking mode under different cloud cover conditions. Biological Conservation 233 (2019) 220–227.

Stewart, GB, AS Pullin, and CF Coles. 2007. Poor evidence-base for assessment of windfarm impacts on birds. Environmental Conservation 34 (1):1–11.

cc via email:
subject: Section 7 Consultation for ASOWS
david.bigger@boem.gov
kathy.clark@dep.nj.gov
christina.davis@dep.nj.gov
emily.heiser@dep.nj.gov
william.pitts@dep.nj.gov
MacKenzie.Hall@dep.nj.gov
eric_schrading@fws.gov
ross_conover@fws.gov
michael_ciappi@fws.gov
martin_miller@fws.gov
glenn_s_smith@fws.gov
stephanie_vail-muse@fws.gov
rose_kaforski@fws.gov
pamela_loring@fws.gov
anne_hecht@fws.gov
jane_ledwin@fws.gov