November 20, 2023

Zachary Jylkka, Project Coordinator
Bureau of Ocean Energy Management
Office of Renewable Energy Programs
45600 Woodland Road
Sterling, VA 20166

RE: BOEM-2023-0054 – Draft Wind Energy Areas – Commercial Leasing for Wind Power Development on the Gulf of Maine Outer Continental Shelf (OCS)

Dear Zachary Jylkka,

On behalf of Maine Audubon, Mass Audubon, American Bird Conservancy, and our members and supporters, we appreciate the opportunity to comment on the Bureau of Ocean Energy Management's (BOEM) Draft Wind Energy Area Notice, which was published to the Federal Register on October 19, 2023.

The Gulf of Maine is an ecological system unlike anywhere else in the world, and it contains some of the best offshore wind resources in the nation. We support the responsible development of renewable energy sources in the Gulf so long as such development protects the region's unique collection of interconnected species and habitats. In the Gulf of Maine, that includes birds, bats, marine mammals, sea turtles, fish, and invertebrates.

The selection of Wind Energy Areas (WEAs) in the commercial leasing process is a critical opportunity to avoid species and habitats that are particularly vulnerable to such development. We appreciate BOEM's efforts to avoid areas of potential conflict identified in our previous comments, including all areas within 24nm of the Maine coast and islands, habitat areas important to marine mammals including the North Atlantic Right Whale, and Platts Bank. Moving beyond 24nm from the coast and islands will reduce the potential harm to birds and bats migrating seasonally along the coast, as well as shorebirds and seabirds that forage off the coast of Maine while nesting and staging on Maine's coast and islands. The removal of North Atlantic Right Whale Restricted Areas and Platts Bank will benefit marine mammals and seabirds that feed and move through these important habitat areas.

In the Federal Register Notice, BOEM requested specific information from interested or affected parties regarding specific features, activities, mitigations, or concerns within or around the Draft WEA and Secondary Areas. Our comments regarding those specific items will be restricted to those within our areas or expertise. Specifically:

Secondary Areas

Along with the WEA, BOEM has identified three Secondary Areas for Further Analysis for potential consideration as Final WEAs. Two of these Secondary Areas (A and B) are located

almost entirely within the 24nm buffer from the mainland and islands off of Maine. This proximity to Maine's coastal islands and its coastline would increase the risk of collision and/or displacement to nesting shorebirds and seabirds during their normal activities in the breeding season and migration.

The Gulf of Maine is used by a tremendous number of birds year-round, including Maine's Nationally Significant Population of seabirds. More than 90% of terns, puffins, and razorbills nest on 12 islands in the Gulf of Maine. Additionally, these seabird species, among others, "island hop" among Maine's 4,600 coastal islands and ledges. In addition to hopping from one island to the next, research has shown that some birds fly from Nova Scotia over the Gulf of Maine; birds (and bats) are routinely found much farther from the mainland than observed in other regions.[1]

The U.S. Fish and Wildlife Service, National Audubon Society, and other conservation partners intensively manage 13 islands in the Gulf of Maine. Breeding seabirds must return to these island colonies to feed chicks; thousands of birds make multiple foraging flights to and from these islands every day. The location of foraging habitat changes frequently and little information exists on the habitat characteristics of seabird foraging habitat, as well as migration pathways.[2] During the breeding season, Gulf seabird species are at risk of prolonged (i.e. months-long) exposure to offshore wind development while foraging. Birds in the Gulf of Maine are at risk from offshore wind energy development in three primary ways: (1) direct mortality through collision events or secondary entanglement for diving birds; (2) displacement and increased energy expenditure through avoidance behavior to individual turbines or entire arrays; and/or, (3) changes to their prey populations due to benthic and pelagic habitat features altered by offshore wind energy projects. These risks must be addressed in order to avoid, minimize and mitigate potential harm from the development of offshore wind energy projects.

New data from bird tracking studies conducted in the Gulf of Maine show movements of Arctic Terns, Common Terns, and Atlantic Puffins all foraging in or traveling through these Secondary Areas, and they even show some puffin movements into the WEAs. Note the data clouds are limited to the individual birds tracked from a small proportion of the occupied islands; additional tracking of birds from the other managed colonies would likely only increase the evidence of bird use of these Secondary Areas.

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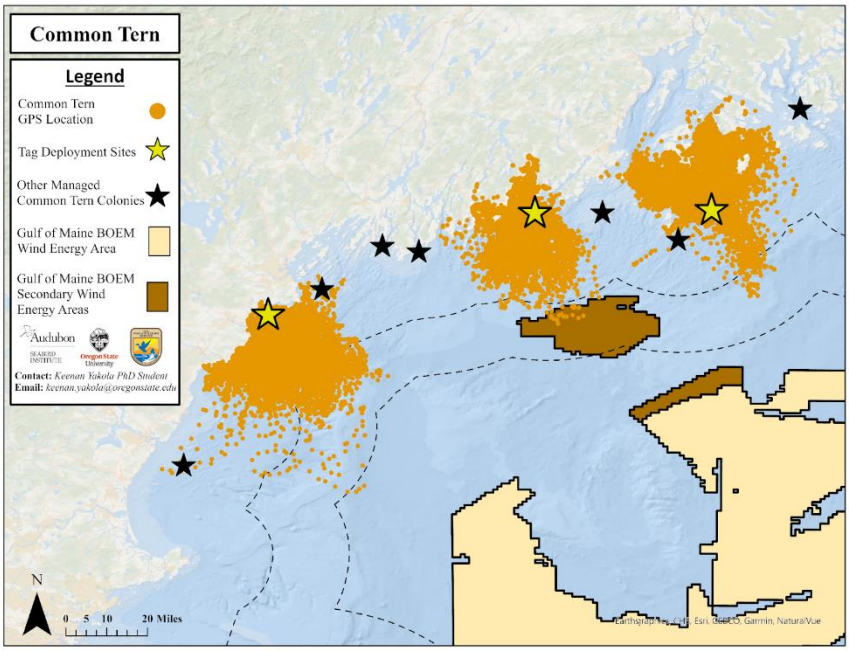
[1] Linda Welch, Maine Coastal Islands National Wildlife Refuge Amanda Cross, Ecological Services - Maine Field Office, Presentation: U.S. Fish and Wildlife Service Trust Resources and Responsibilities, Intergovernmental Renewable Energy Task Force Meeting for the Gulf of Maine (May 19, 2022): https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/USFWS-Presentation.pdf

[2] Linda Welch, Maine Coastal Islands National Wildlife Refuge Amanda Cross, Ecological Services - Maine Field Office, Presentation: U.S. Fish and Wildlife Service Trust Resources and Responsibilities, Intergovernmental Renewable Energy Task Force Meeting for the Gulf of Maine (May 19, 2022): https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/USFWS-Presentation.pdf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Other Managed Common Tern Colonies
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SEABIRD INSTITUTE
Oregon State University
Contact: Keenan Yakola PhD Student
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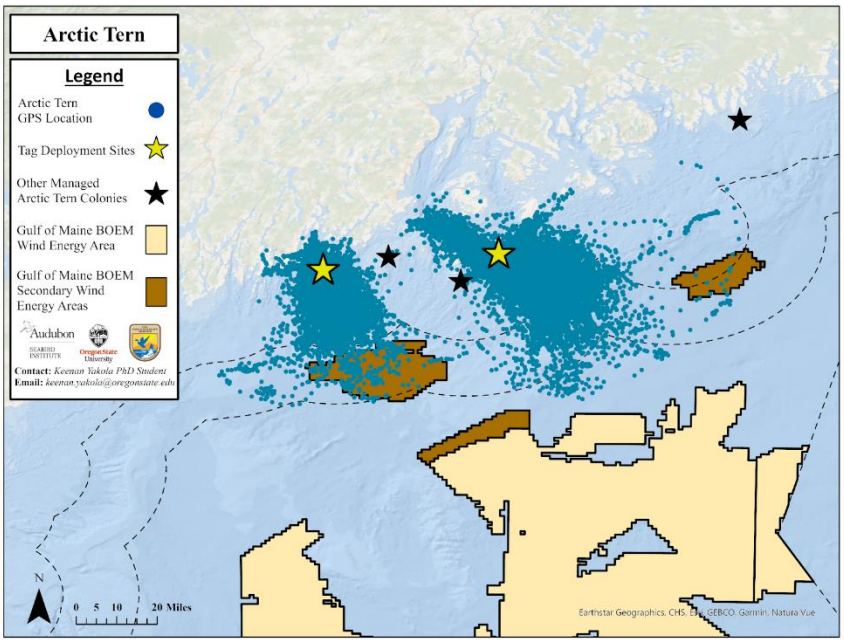
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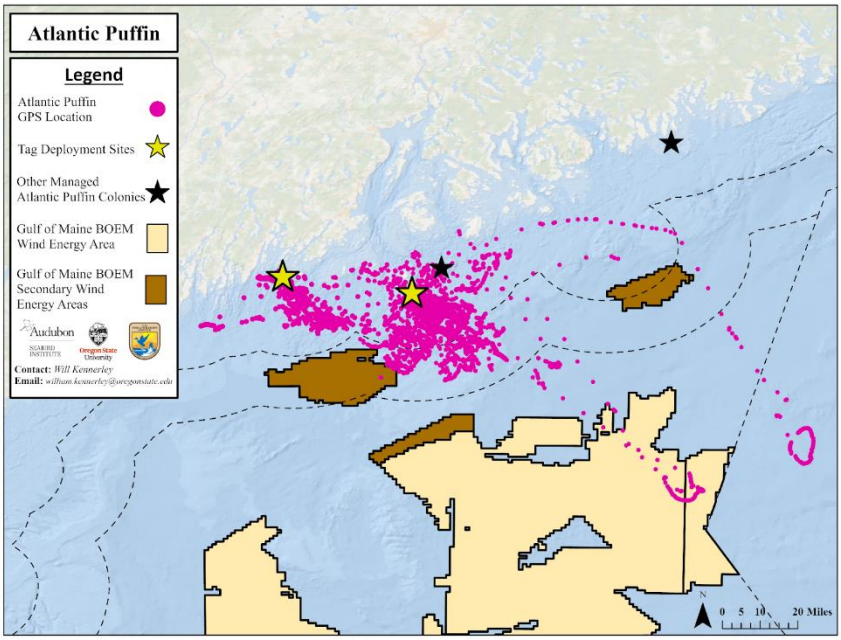

Figure 1: Foraging movements of Common Tern, Arctic Tern from individuals tagged in summer 2022 and Atlantic Puffins tagged in summer 2022 and 2023. The Gulf of Maine Draft Wind Energy Areas and Secondary Wind Energy Areas are indicated, as are black hash lines indicating 12 and 24 nautical miles from shore. Note additional breeding islands of all species from which no birds were tracked, but from which individuals would likely interact with Secondary Areas A and B.

Additionally, numerous species of bat have been detected in a variety of locations across the Gulf of Maine, with highest detection rates during the migration season and closer to the shore. At land-based wind facilities, pre-construction bat activity does not correlate with post-construction fatalities,[3] likely due to bats' attraction to turbine structures.[4] Recent research at buoys, vessels, and the two Coastal Virginia Offshore Wind pilot project wind turbines found considerable differences in bat activity in the presence of turbines as compared to open water.[5] The presence of Endangered northern long-eared bats on both Martha's Vineyard and Nantucket indicates that this species can cross open water, and this species has been tracked making long distance flights over water in the Gulf of Maine.[6] Further, in a study of bat presence offshore from 2016, *Myotis* species were present at 89 percent of sites surveyed across the Gulf of Maine, Mid-Atlantic, and Great Lakes. [7]

[3] Donald Solick et al., Bat activity rates do not predict bat fatality rates at wind energy facilities, Acta Chiroptera (June 2020); Cris D. Hein et al., Relating pre-construction bat activity and post-construction bat fatality to predict risk at wind energy facilities: A synthesis, Nat'l Renewable Energy Lab. (NREL) (Mar. 2013)

[4] Additionally, low levels of bat calls in acoustic surveys do not necessarily indicate that bats are not present. Aaron J. Corcoran et al., Inconspicuous echolocation in hoary bats (Lasiurus cinereus), Proceedings Royal Soc'y B (May 2, 2018).

[5] Clerc, J. and J.R. Willmott. "Towards Understanding the Potential for Offshore Wind to Impact Bats." Normandeau Associates. Presentation at State of the Science Virtual Session, 09/21/2022.

[6] Bird Studies Canada 2018.

[7] Peterson, Trevor S, Steven K Pelletier, and Matt Giovanni. 2016. "Long-Term Bat Monitoring on Islands, Offshore Structures, and Coastal Sites in the Gulf of Maine, Mid-Atlantic, and Great Lakes—Final Report." Topsham, ME, USA. Prepared for the U.S. Department of Energy.

Although limited data exist on bats' use of the offshore environment and their interactions with offshore WTGs, research at land-based wind facilities reveals that bat fatalities are common,[8] with the potential for cumulative impacts to cause population-level declines.[9]

We strongly recommend Secondary Areas A and B be removed from consideration as potential Final WEAs.

Division of Final WEAs into Lease Areas

The final distance between leases, as well as the configuration and orientation of the wind turbine arrays, can affect what impacts the arrays have on wildlife and habitats in the Gulf of Maine. For example, some bird species are more likely to fly around an entire wind turbine array, while others would fly through the array. For species that must fly around, energy is lost in this avoidance behavior. By creating corridors between arrays – and possibly even between turbines within an array – birds and other wildlife such as marine mammals could avoid the turbines and associated underwater cables by utilizing these corridors for travel. However, if these corridors also concentrate vessel traffic, efforts should be made to reduce the potential for vessel strikes.

Phased Leasing

BOEM has expressed interest in advancing a phased commercial leasing program for the Gulf of Maine, through which multiple lease sales may occur. This would be extremely beneficial as it could allow for more time to conduct wildlife survey efforts in the Gulf and at the Research Array proposed by the State of Maine. With so little time between the expected approval of the Research Array and the development of commercial arrays, the ability to apply the lessons learned at the Research Array to commercial development will be limited. By phasing the leasing, more time will allow for more data collection and analysis to provide guidance on reducing harm to wildlife and wildlife habitats for later commercial arrays.

Insufficient data exists to appropriately avoid and minimize impacts to wildlife and habitats from commercial offshore wind development, and recent studies are providing critical new insights. For example, tagging data for Roseate Tern in the Gulf of Maine from the summer of 2023 documented this Endangered seabird traveling directly across the open Gulf of Maine to forage off of Cape Cod during the nesting season. Prior to this tagging study, it was not known whether this species was more likely to travel along the coast or across the Gulf. With a very small and geographically limited sample size and a very short sampling period, the movements of Roseate Terns are still not well understood in the Gulf of Maine. Additional tracking of individuals nesting on islands further north would likely show movements during the breeding season through the areas proposed as WEAs and/or Secondary Areas.

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[8] Arnett, Edward B., and Erin F. Baerwald. 2013. "Impacts of Wind Energy Development on Bats: Implications for Conservation." In Bat Evolution, Ecology, and Conservation, 435–56. New York, NY: Springer New York. https://doi.org/10.1007/978-1-4614-7397-8_21.

[9] Frick, W. F., E. F. Baerwald, J. F. Pollock, R. M. R. Barclay, J. A. Szymanski, T. J. Weller, A. L. Russell, S. C. Loeb, R. A. Medellin, and L. P. Mcguire. 2017. "Fatalities at Wind Turbines May Threaten Population Viability of a Migratory Bat." Biological Conservation 209: 172–77. https://doi.org/10.1016/j.biocon.2017.02.023; Population-Level Risk to Hoary Bats Amid Continued Wind Energy Development: Assessing Fatality Reduction Targets Under Broad Uncertainty. EPRI, Palo Alto, CA: 2020. 3002017671; Friedenberg, N. A., & Frick, W. F. (2021). Assessing fatality minimization for hoary bats amid continued wind energy development. Biological Conservation, 262, 109309. https://doi.org/10.1016/J.BIOCON.2021.109309.

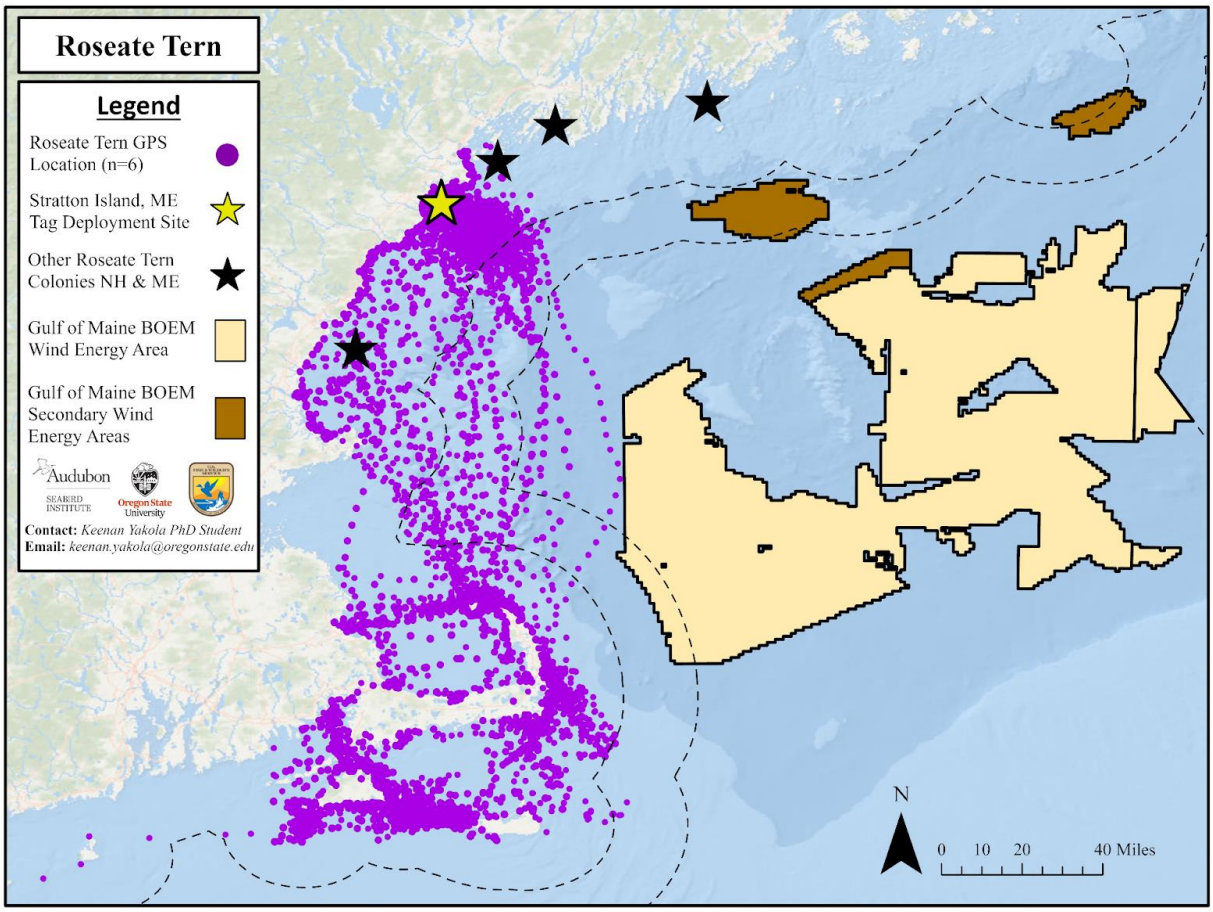

Figure 2: Foraging movements of 6 individual Roseate Terns (federally Endangered) tagged in summer 2023. The Gulf of Maine Draft Wind Energy Areas and Secondary Wind Energy Areas are indicated, as are black hash lines indicating 12 and 24 nautical miles from shore. Note additional breeding islands from which no birds were tracked, but from which individuals would likely interact directly with the Draft Wind Energy Areas. These data are the result of a single breeding season and show the likelihood of new data that could undermine assumptions made prior to data collection.

Efforts to understand the movement patterns of seabirds and shorebirds that utilize the Gulf of Maine, including populations and individuals that may nest outside the U.S. but that move through and forage in the Gulf of Maine, are also still incomplete. The data we do have suggest that seabird movement patterns in the Gulf of Maine are unlike those of the same species in other areas such as the mid-Atlantic. This is likely the result of the unique topography of the Gulf of Maine that creates a basin with important foraging areas associated with upwellings where topography changes occur. It is unclear from the modeling results if the data that do exist from these studies have been fully incorporated into the modeling utilized in the development of the Draft WEAs. Phased leasing could allow BOEM the necessary time to incorporate all available datasets.

Additionally, it is unclear how impacts to bats will be avoided. This is another area where data are severely lacking. A phased leasing approach might allow for more time for data collection at the Research Array or in general across the Gulf of Maine, and it could also allow for the development of an avoidance and minimization strategy. Because bats are often attracted to

structures such as wind turbines[10], and because they are at particular risk of collision, developing and implementing a research, monitoring, and mitigation strategy to avoid harm to bats is imperative. What little survey data there is on bats in the Gulf of Maine show that bats can be found all across the Gulf[11], but it is unclear exactly what they are doing or what effect the development of extensive offshore wind energy projects would have on their populations. Without a better understanding of bat use in the Gulf of Maine, it may be more difficult to reduce collision risk. Curtailment has been a successful technique used to reduce the impacts to bats associated with onshore wind energy development projects, and it may be useful in the offshore arena as well, but much more research is needed to be certain or to identify other risk reduction tools. New technologies in collision detection and deterrence are currently in development, and developers should incorporate the most effective tools to minimize bird and bat collisions, and phased leasing could provide time for evaluations of these technologies to be completed.

Bidding Credits and Lease Stipulations

BOEM has the authority to utilize a multiple factor bidding format in order to allow bidders to offset some of their direct lease costs with separate expenditures that address other values associated with BOEM's mission. In a multiple factor bidding format, BOEM limits the total value of bidding credits to 25% of the winning bid, and those bidding credits have traditionally addressed such things as potential impacts to the fishing industry through the development of a Compensatory Mitigation Fund for Fishing Communities. Avoiding, minimizing, and mitigating impacts of offshore wind development on fishing communities and wildlife and their habitats is critical to advancing responsible offshore wind development in the Gulf of Maine. Ensuring appropriate compensation mechanisms for any impacts that are unavoidable is also a necessary step. We strongly support addressing conflicts with the fishing industry, and strongly recommend addressing impacts to wildlife and their habitats in the same way. Just as funds for fishing communities would be directed at offsetting any losses, funds for wildlife could be utilized to enhance populations of impacted species through measures that could augment populations where impacts occur. For example, monitoring, fencing, and predator control can significantly increase nesting success and productivity of shorebirds that could be harmed by offshore wind development, but funding is needed for staffing during the breeding season to conduct these protective measures. We urge BOEM to incorporate a minimum of 5% bidding credits to address potential impacts to wildlife and their habitats.

We also urge BOEM to implement knowledge and best practices that will be learned as offshore wind energy development advances around the world. We want to ensure that developers of offshore wind in the Gulf of Maine take lessons learned from the Maine State Research Array and elsewhere, and continue to develop best practices for operations, mitigation, and monitoring. This can be done in part through phased leasing, but should also include extensive lease stipulations to ensure the responsible and equitable development of offshore wind in the Gulf of Maine.

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[10] Cryan, P.M.; Gorresen, P.M.; Hein, C.D.; Schirmacher, M.R.; Diehl, R.H.; Huso, M.M.; Hayman, D.T.S.; Fricker, P.D.; Bonaccorso, F.J.; Johnson, D.H.; et al. Behavior of bats at wind turbines. Proc. Natl. Acad. Sci. USA 2014, 111, 15126–15131.

[11] Peterson, T.S.; Pelletier, S.K.; Boyden, S. A.; Watrous, K.S. 2014. Offshore Acoustic Monitoring of Bats in the Gulf of Maine. Northeastern Naturalist. Vol 21. No. 1, pp 86-107

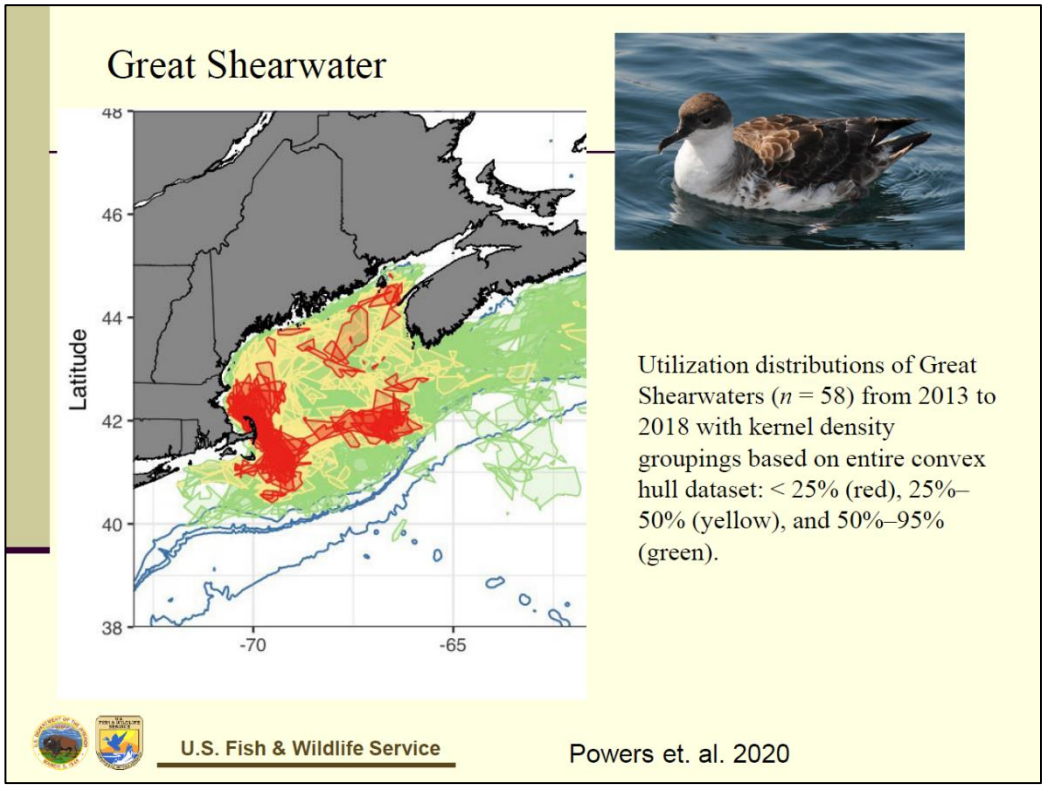
Lease stipulations could also be utilized to reduce the potential harm to birds and bats from lighting on structures and on ships during survey, construction, maintenance, and operations. It is well known that birds and bats can be distracted and become disoriented by lighting, particularly during migration and night foraging, which can lead to significant bird strikes and mortality.

Additional Information

BOEM has requested additional information, particularly spatial data, about potentially conflicting uses of the Draft WEA, including among other things, habitats and protected species. The Protected Species Layer identified habitat areas for 22 species listed under the ESA and/or MMPA and ranked them according to species vulnerability under the ESA or MMPA, population size, and population trajectory is one way to rank Protected Species. However, their vulnerability to offshore wind is a much more appropriate metric to use when assessing the potential impacts of offshore wind energy development projects. In fact, other species which at the moment are not Protected Species, may be more vulnerable to offshore wind development than Protected Species. We wish to avoid undue impacts to Protected Species, but we also want to avoid significant impacts to unprotected species that could lead to required protection under the ESA. Therefore, we strongly recommend conducting evaluations of potentially at-risk species to be based on their specific vulnerability to the effects of floating offshore wind, regardless of protection status, including under the Migratory Bird Treaty Act, rather than only focusing on Protected Species and their ESA status.

For some of these unprotected species, additional data collection is necessary. For example, we know that some seabirds such as shearwaters and gannets can be found foraging off George's Bank and migrating across the Bank rather than only along the coast of Maine, New Hampshire, and Massachusetts. These are species that likely fly within the rotor swept zone and that travel large distances in this area frequently, making them at higher risk of collision or the impacts of displacement.

For example, data provided by the U.S. Fish and Wildlife Service at the Intergovernmental Renewable Energy Task Force Meeting in May of 2022, highlighted the importance of the area along George's Bank for foraging and migration by Great Shearwaters and Northern Gannets. Other species like Leach's Storm Petrel utilize the entirety of the Gulf of Maine for foraging and transit.



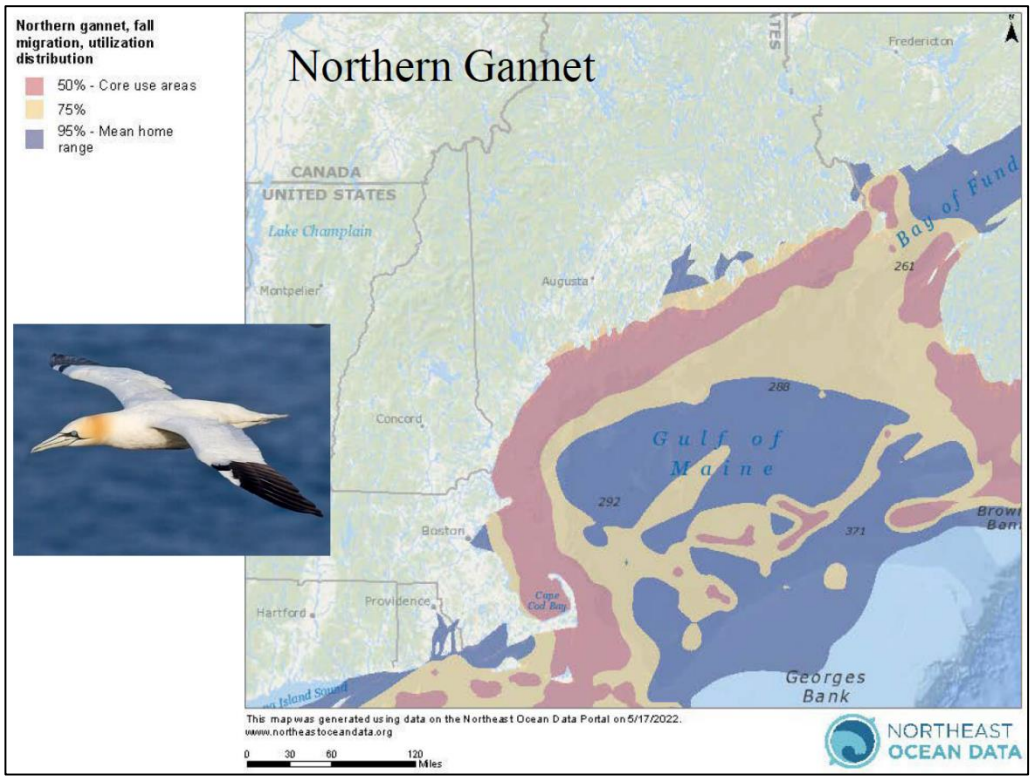


Figure 3: Images extracted from slideshow provided by U.S. Fish and Wildlife Service at the Intergovernmental Renewable Energy Task Force Meeting on May 19, 2022.

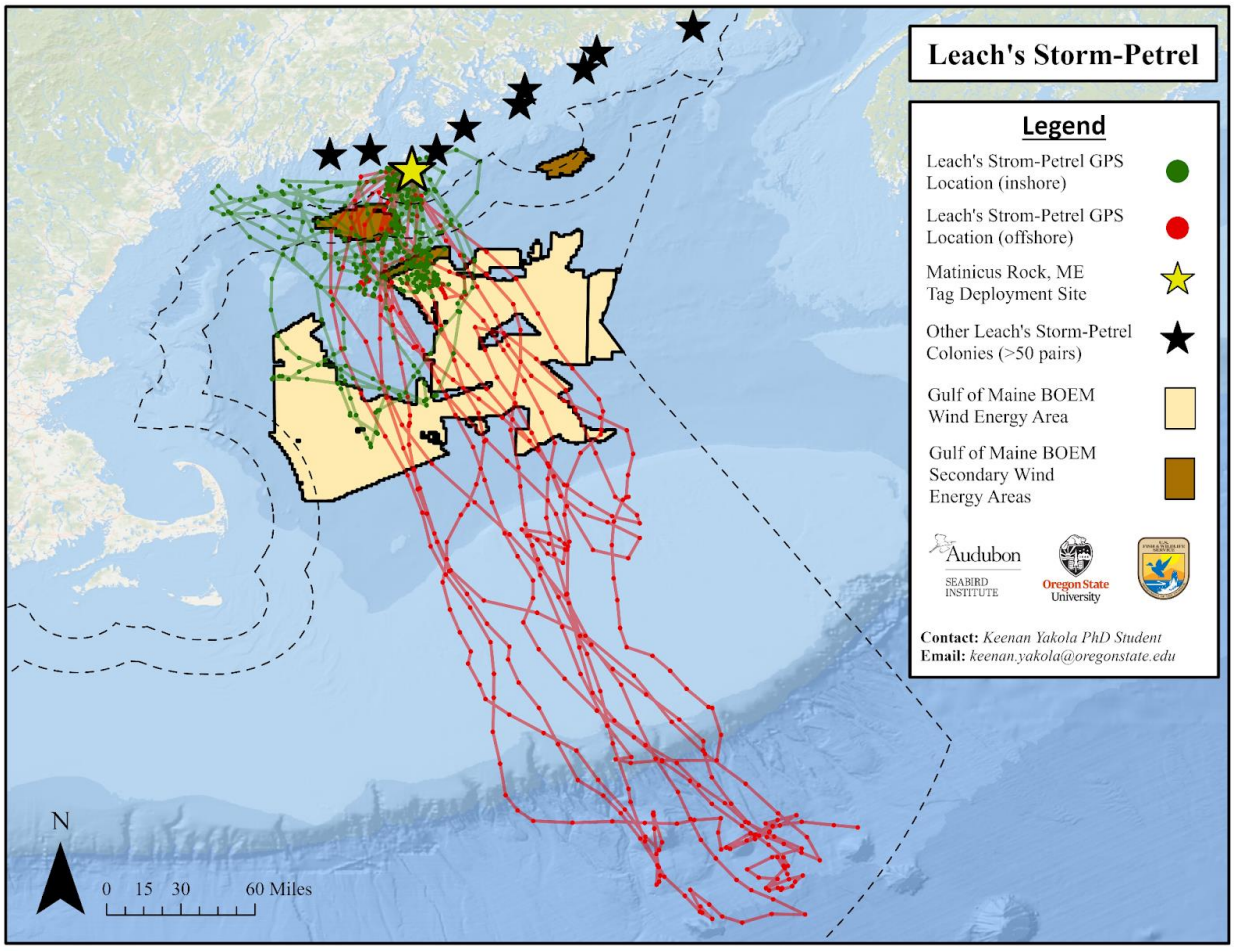


Figure 4: Foraging movements of individual Leach's Storm Petrel tagged in summer 2022 and 2023. The Gulf of Maine Draft Wind Energy Areas and Secondary Wind Energy Areas are indicated, as are black hash lines indicating 12 and 24 nautical miles from shore. Note additional breeding islands from which no birds were tracked, but from which individuals would likely interact with the Draft Wind Energy Areas and Secondary Areas.

Therefore, we strongly recommend BOEM remove the areas in the southeastern portion of the Draft WEAs (including 5G-I, 6G, 7G-I, 8H), to reduce the potential impacts to seabirds utilizing this area. This area was identified as an area of high seabird vulnerability along with the portion of the Draft WEA in 1G and 1H in the NCCOS model. At the very least, phased leasing in these areas could allow for data collection that could guide the inclusion or exclusion of these areas in future leasing.

Electrical Cable Transmission Routes

The final locations of the electrical cable transmission routes, onshore landing and interconnection points, and the effects of high energy cabling in the water column and on the seafloor all have the potential to have negative effects on wildlife and their habitats. While the effects of Electromagnetic Fields (EMFs), such as those released by the electric cables associated with offshore wind energy projects, are a subject of some research efforts, the effects of EMF on

wildlife are still poorly understood. Studies into the effects of EMF on salmon[12], eels[13], and lobsters[14] in particular (all species groups that are important in the Gulf of Maine) have been inconclusive – neither eliminating or confirming the specific risks to these species. Further studies are needed to understand the true risks in order to avoid and minimize those risks. For example, we do not fully understand what the effects of EMF from cables within the arrays and suspended in the water column will have and how those effects can be reduced or eliminated.

Where the cables come ashore is also a critically important subject to address. Where the cables make landfall should be in an area or areas that are already developed – such as parking lots – in order to reduce impacts to coastal and terrestrial wildlife and habitats. Construction activities should occur when potentially vulnerable species are not using the area; for example, when Piping Plovers are on their wintering grounds and therefore not present on the coast of Maine. Bird and bat migration timing should be avoided during construction, especially if the areas of landfall are in known stopover or staging locations.

Transmission routes and landfall locations should all be coordinated between and among the different leases in order to reduce the actual areas impacted by cabling. Various "backbone" scenarios have been proposed and should be encouraged and pursued in order to reduce the extent of the impacts of trenching and cable laying along the eastern seaboard.

Other Relevant Information

In order to reduce impacts of developing floating offshore wind to wildlife and habitats in and around the Gulf of Maine, additional data are sorely needed. The Gulf of Maine contains an extraordinary diversity of species and habitats, and their distributions and habits within the Gulf of Maine are currently poorly understood. Research should be conducted to understand what species are using the which portions of the Gulf of Maine, and how they may be utilizing the area within in the Draft WEAs, if at all. By conducting this research BOEM and developers can be confident the greatest efforts have been made to avoid and minimize impacts. Research should include tracking data across the entire lifecycle of present species (e.g. include migration data for birds, not just breeding season data), and should be conducted before construction, during construction, and for several years after construction. Only through long-term data collection can developers be confident and able to assure stakeholders that they have minimized risks to vulnerable species. This is particularly important in a time of climate change, when previously understood trends or other data are shifting with time and space.

Standards should also be established for incorporating new data into future and existing developments such that all arrays are held to the highest standards. This sort of adaptive management can be used to develop best practices for operations, mitigation, and monitoring and can be accomplished through lease stipulations that require the incorporation of new information

[12] Wyman, M.T., Peter Klimley, A., Battleson, R.D. et al. Behavioral responses by migrating juvenile salmonids to a subsea high-voltage DC power cable. Mar Biol 165, 134 (2018). https://doi.org/10.1007/s00227-018-3385-0

[13] Hutchison, Z.L., Gill, A.B., Sigray, P. et al. Anthropogenic electromagnetic fields (EMF) influence the behaviour of bottom-dwelling marine species. Sci Rep 10, 4219 (2020). https://doi.org/10.1038/s41598-020-60793-x

[14] Hutchison, Z.L., Gill, A.B., Sigray, P. et al. Anthropogenic electromagnetic fields (EMF) influence the behaviour of bottom-dwelling marine species. Sci Rep 10, 4219 (2020). https://doi.org/10.1038/s41598-020-60793-x

into construction and operations where feasible.

Cumulative impacts

Finally, BOEM is in a unique position to study the potential impacts of offshore wind energy development on wildlife and their habitats over time and space. Such cumulative impacts should be examined across the entire eastern seaboard and Gulf of Mexico, as many of the species impacted by offshore wind energy development move well beyond the areas identified for individual leases or even Call Areas. Many species, including marine mammals, sea turtles, birds, and bats may travel along the entire Atlantic coast and into the Gulf of Mexico and beyond. Therefore, it is incumbent on BOEM to understand what the cumulative impacts of extensive offshore wind energy developments are having on species over time and space, and to apply that knowledge when identifying additional areas for development.

Thank you again for your incorporating our concerns into the identification of Wind Energy Areas and future Lease Areas. We recognize it is not easy to balance so many conflicting values and we commend your efforts to balance the nation's renewable energy goals that include offshore wind energy with the Gulf of Maine's unique natural resource values. We look forward to a continued dialogue throughout this process.

Sincerely,

Sarah A. Haggerty
Conservation Biologist/GIS Manager
Maine Audubon

E. Heidi Ricci
Director of Policy and Advocacy
Mass Audubon

Lewis Grove
Director of Wind and Energy Policy
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