The Offshore Wind Farm Round-Up

Number 2 June 13, 2022

The Offshore Wind Farm Round-Up endeavors to periodically provide a review of recent research efforts in which the effects of offshore wind farms have been studied. Like the popular FAQ produced by a coalition of researchers and writers last year, the Round-Up points you in the direction of the science and assumes no point of view one way or the other regarding the presence of offshore wind farms off our shore. Read and draw your own conclusions.

This Round-Up edition includes links and information related to

- the effect of the wind turbines on right whales
- the impact of the wind farm on migratory birds
- aviation lighting at night on the wind turbines
- fact checking, per readers' questions

RIGHT WHALES: It is unclear what effect the presence of offshore wind farms will have on the health or the migratory habits of the North American right whale population because no definitive, seminal studies have been found that have focused on these topics.

However, we do know 1) where they are and the areas off the East Coast that are the most important to them, 2) what scientists from the Anderson Cabot Center for Ocean Life at the New England Aquarium and the Woods Hole Oceanographic Institution have to say; 3) a new study has been proposed that specifically targets North Atlantic right whales, and 4) details about a technology system that is being developed that can find and identify whales within a specific area in real time.

1) Where They Are

Species Directory: North Atlantic Right Whale, Overview, on the website of the National Oceanic and Atmospheric Administration ("NOAA"), U.S. Department of Commerce, May 2022.

Access by clicking on the following link:
https://www.fisheries.noaa.gov/species/north-atlantic-right-whale

HIGHLIGHTS:

- North Atlantic right whales primarily occur in Atlantic coastal waters on the continental shelf, although they also are known to travel far offshore, over deep water.
- Right whales migrate seasonally and may travel alone or in small groups. In the spring, summer and into fall, many of these whales can be found in waters off New England and further north into Canadian waters, where they feed and mate.

- Each fall, some right whales travel more than 1,000 miles from these feeding grounds to the shallow, coastal waters of their calving grounds off of South Carolina, Georgia, and northeastern Florida, though migration patterns vary.
- NOAA Fisheries has designated two areas as critical habitat for North Atlantic right whales. These areas provide important feeding, nursery, and calving habitat: 1) Off the coast of New England (foraging area); and 2) Off the southeast U.S. coast from Cape Fear, North Carolina, to below Cape Canaveral, Florida (calving area)

2) What Scientists Say

"Right whale coalition calls for moratorium on wind turbines to protect endangered species", Rachael Devaney, *Cope Cod Times*, November 21, 2021

Access the complete article by clicking on this link:
https://www.capecodtimes.com/story/news/2021/11/25/new-group-tries-stop-offshore-wind-turbine-vineyard-wind-project-protect-right-whales/8692329002/

HIGHLIGHTS

Jessica Redfern, senior scientist and Chair of the Spatial Ecology, Mapping, and Assessment Program at the Anderson Cabot Center for Ocean Life at the New England Aquarium[1] in Boston:

- She stated that the situation for right whales is dire. The latest estimates show the total right whale population at 336 in 2020, an 8% percent decrease from 2019 and a 30% decrease since 2011, according to the New England Aquarium website.
- "One of the stressors for right whales is climate change and offshore wind is something that will help reduce climate change — which we know for sure is having negative impacts on the right whales."
- While the impact of offshore wind projects "remains largely unknown," Redfern said, Vineyard Wind hopes to eliminate 1.68 million metric tons of carbon dioxide emissions annually — the equivalent of taking 325,000 cars off the road, according to Vineyard Wind's website.
- In order for offshore wind development to move forward, Redfern said, development must be done in a manner that "minimizes potential impacts" to the right whale and

[1] **From its website:** "The Anderson Cabot Center for Ocean Life at the New England Aquarium is a groundbreaking initiative designed to expand the Aquarium's cutting-edge applied marine research and data-driven conservation solutions.

Through the work of the Anderson Cabot Center, our researchers offer practical solutions to mitigate human impacts on our oceans. We promote these science-based solutions in New England and beyond, building on the Aquarium's nearly 50-year legacy of protecting our blue planet and advocating for vital and vibrant oceans."

advocates for visual observations in the air and on the ocean, as well as passive acoustic monitoring.

Mark Baumgartner, senior scientist and marine ecologist at Woods Hole Oceanographic Institution[2]:

- Vessel activities and associated construction can seem alarming, but he said he doesn't envision a lot of impact on the right whale from wind farms. The plans that he has seen for wind farm construction show the turbines about a mile apart from one another and he does not envision a lot of impact that would affect food resources.
- "Offshore wind is just one more industrial activity that these animals that live in the ocean have to deal with. I absolutely understand the concern. But hopefully we are doing our part trying to help these industries figure out how to minimize their impact on a species like the right whale."
- "Human populations need to be less reliant on fossil fuels in order to successfully boost right whale populations. Continuing to rely on fossil fuels is not good for the planet and not good for right whales — we know that. They are likely already responding to climate change as conditions in the ecosystem change in the Gulf of Maine and in the wider northwest Atlantic Ocean."

3) What Scientists Can Do: A New Study Has Been Proposed

On May 19, 2022, the NJ Department of Environmental Protection announced a request for proposals ("RFP"). A brief overview, reproduced below, and information about submission deadlines and contact information were also included in the announcement.

> "The New Jersey Research & Monitoring Initiative is seeking proposals to provide information about the movement and distribution of marine mammals through bottom mounted archival passive acoustic monitoring (PAM). The request for proposals (RFP) details can be found at https://www.nj.gov/dep/bids.html
>
> The waters off New Jersey's coast are part of the migratory corridor for several baleen whale species, including the critically endangered North Atlantic Right Whale. Understanding the temporal and spatial use of the waters of the inner and outer continental shelf by these species is essential for planning mitigation measures for offshore wind development. NOAA and BOEM have jointly made recommendations for the use of PAM for monitoring and mitigation programs supporting offshore wind energy development. . . .:"

[2] **From its website:** "Woods Hole Oceanographic Institution is the world's leading, independent non-profit organization dedicated to ocean research, exploration and education. Our scientists and engineers push the boundaries of knowledge about the ocean to reveal its impacts on our planet and our lives."

4) Technology: Digital Acoustic Monitoring

"Can wind developers and ocean scientists work together to get U.S. offshore wind cranking?" by Evan Lubofsky[3] on the website of Woods Hole Oceanographic Institution, February 6, 2019

Access the complete article by clicking the following link:
https://www.whoi.edu/oceanus/feature/harnessing-the-power/

HIGHLIGHTS

- Installing offshore wind facilities is a noisy business. When developers pile-drive turbine supports into the seabed, it radiates sound into the ocean that can interfere with the ability of whales to communicate with each other, which impacts locating mates and finding food.
- As a result, developers are under pressure to avoid construction when marine mammals are around. They rely on the "spotter approach" i.e., human observers on boats and planes who scan wind farm construction areas during peak activity months in that area for whales, dolphins, seals, and other marine animals.
- This spotter approach helps meet guidelines developed by the federal government aimed at mitigating noise-related impacts in the ocean, but it does not completely solve the problem -- nothing stops a right whale from unexpectedly showing up in wind farm construction areas during off-peak months.
- Woods Hole Oceanographic Institution engineers and Mark Baumgartner developed a tool known as a Digital Acoustic Monitoring (DMON) instrument. It uses a hydrophone mounted on a buoy or autonomous vehicle to listen for the telltale sounds of right whales and other marine mammals underwater. Representations of those sounds are transmitted in near real time to scientists in the lab, who use the data to determine what species are present and could be in harm's way.
- The data is published on a public website and pushed out to stakeholders, including developers, by text and email.
- Baumgartner and the engineers at the Woods Hole Oceanographic Institution hope to work toward a new solution that puts the existing hydrophone technology on wave gliders—surfboard-looking robots that could acoustically monitor a construction area around the clock to determine the position of animals passing by.

[3] Evan Lubofsky is a science writer and editor at Woods Hole Oceanographic Institution. From its website: "Woods Hole Oceanographic Institution is the world's leading, independent non-profit organization dedicated to ocean research, exploration and education. Our scientists and engineers push the boundaries of knowledge about the ocean to reveal its impacts on our planet and our lives."

MIGRATORY BIRDS: "Bat & Bird Interactions with Offshore Wind Energy Development," U.S. Offshore Wind Synthesis of Environmental Effects Research ("SEER")[4], February 8, 2022[5]

Access the slides of the complete presentation by clicking on this link:
https://tethys.pnnl.gov/sites/default/files/events/SEER-Bat-Bird-Webinar-Slides.pdf

HIGHLIGHTS:

- Given the limited offshore wind deployments in the U.S., potential risk can be evaluated based on information from studies in Europe, known offshore movement patterns and land-based wind farms.
- Worldwide, studies at offshore wind farms have not reported any bat fatalities and only a handful of bird fatalities, but systematic studies have not been conducted.
- The lack of data stems from the absence of a practical approach to measuring collision-related mortality offshore.
- Conditions such as weather, time of day, visibility and farm configuration may influence avoidance rates and extent of movement around the wind farm.
- Birds display a range of avoidance actions in response to the presence of wind turbines and wind farms: fly around them; adjust their trajectories while flying through the wind farm; miscalculate and adjust at the last second to avoid a collision with a blade; and avoid the area entirely or limit its use as an area to rest, roost or as a forage habitat.
- Attraction to the wind farm may be associated with roosting or perching opportunities, or the creation of new favorable foraging habitat, as has been observed in Great Cormorants and Northern Gannets.
- Seabirds with potential risk for collision include gulls, cormorants, jaegers and skuas, among others.

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[4] **From its website**: "At the direction of the U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy Wind Energy Technologies Office, Pacific Northwest National Laboratory and National Renewable Energy Laboratory ("NREL") are jointly leading a multi-year collaborative effort to facilitate knowledge transfer for offshore wind research around the world.

The U.S. Offshore Wind Synthesis of Environmental Effects Research ("SEER") effort aims to synthesize key issues and disseminate existing knowledge about environmental effects, inform applicability to U.S. waters, and prioritize future research needs."

[5] **Author**: Cris Hein, Ph.D. and senior project leader at the National Renewable Energy Laboratory. He has studied bat behavior and ecology for more than two decades and wind energy and wind energy issues for more than ten years. His research focuses on developing strategies to monitor and minimize wildlife interactions with wind turbines.

- Collecting data before, during and after construction is necessary to understand changes to normal behavior, distribution and movement patterns of bats and birds. Carcass searches and the associated statistical tools used to estimate mortality at land-based wind farms are not possible at offshore wind farms.

LIGHTS AT NIGHT:

- How many flights actually pass by our shores? How many at night?
- Aircraft Detection Lighting System ("ADLS"): How often would it be activated? The ADLS is a system of lights that automatically activates when an aircraft is in the vicinity; at all other times, the lights are off.
- What kinds of night lighting are mentioned by Atlantic Shores in its Construction and Operations Plan ("COP")?

1) Frequency Of Flights

"Air Traffic Flow Analysis", which was commissioned and paid for by Atlantic Shores Offshore Wind, was prepared by Capital Airspace Group and published August 2021.[6]

Access the full analysis by clicking on this link:
https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Appendix-II-T3-Air-Traffic-Flow-Analysis.pdf

This report is part of the Construction and Operations Plan ("COP") submitted to the Bureau of Ocean Energy Management ("BOEM") by Atlantic Shores. That is why when you click on the link, you end up at the BOEM website where the COP is available for public scrutiny. The COP has numerous appendices attached to it, including Appendix II – T3 Air Traffic Flow Analysis, where you arrive when you click the link above.

HIGHLIGHTS:

- Capitol Airspace conducted an air traffic flow analysis for the Atlantic Shores offshore wind project. The main area of focus was the southern portion of Atlantic Shores' leased area, permitted in June 2021 to deliver 1,510 megawatts of wind energy to the State of New Jersey.

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[6] **Authors** are uncredited; Dan Underwood and Candace Childress are the designated contact people for questions about this analysis.

Capital Airspace Group is located in Alexandria VA and describes itself on its website as follows: "Capitol Airspace is an aviation consulting firm that provides analytical, strategic, and advocacy services to airports, commercial developers, and communities around the world. Capitol Airspace specializes in Airspace, Air Traffic Control Operations, FAA Terminal Instrument Procedures (TERPS) design, ICAO Procedures for Air Navigation Services (PANS-OPS), Obstacle Evaluation (OE) and Flight Procedures Development." http://www.capitolairspace.com/

- All of the data collected by the Federal Aviation Administration's ("FAA") National Offload Program ("NOP") between January 1, 2019 and December 31, 2019 about aircraft activity in this area were evaluated.[7] NOP collects operational data daily from existing radar systems throughout the country about all aviation and air traffic activities.
- FAA NOP data indicate that 537 flight operated within two statute miles[8] of the entire study area during this twelve-month period. That is an average of 1.47 flights per day or an average of three flights every two days.

2) Duration Of Night Lighting

"Visual Impact Assessment Wind Turbine Area Atlantic Shores Offshore Wind OCS-A 0499," prepared by Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. ("EDR")[9] The report was updated March 2022.

Access the EDR report by clicking on this link:
https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Appendix-II-M1-Visual-Impact-Assessment_0.pdf

This report is also part of the Construction and Operations Plan ("COP") submitted to BOEM by Atlantic Shores, so by clicking the link above, you end up at the BOEM website where the COP is available for public scrutiny. You arrive at Appendix II – M1 Visual Impact Assessment when you click the link above.

The pertinent portions of this report are Section 3.2.1.2 and Section 3.3, Nighttime Visual Impact Results and General Mitigation, respectively.

HIGHLIGHTS:

- Navigation lighting and aviation obstruction warning lights ("AOWL") could strongly attract viewer attention in a setting that normally appears dark and undeveloped. The alternating blinking associated with navigation lights and AOWL will be distracting to viewers.
- An Aircraft Detection Lighting System (ADLS), however, would significantly reduce the amount of time the aviation obstruction warning lights (AOWL) would be activated by detecting the presence of aircraft. If the ADLS is used, nighttime visual impacts associated with the AOWL would become intermittent and minor.
- National Offload Program ("NOP") data were collected and analyzed to determine when and for how long in a given year aircraft traverse within the airspace of the Atlantic

[7] Pre-covid, before the world paused
[8] A statute mile is a land mile (5,280 feet), as opposed to a nautical mile which is used to measure distances on the ocean and relies on a different calculation base.
[9] Individual authors are uncredited. EDR's website is https://www.edrdpc.com/

Shores project during times that would require the aviation obstruction warning lights (AOWL) to be activated.

- Based on past flight data, the aviation obstruction warning lights (AOWL) would be activated for a total of approximately 10.9 hours over a 1-year period if an aircraft detection lighting system (ADLS) was in place. The maximum monthly activation time would occur in November when past flight data suggest activation times would increase to approximately 2 hours and 45 minutes over the entire month. April, May, June, August and September had the lowest activation frequency with average activation time of 21 minutes per month.
- Considering the low frequency of light activation, nighttime visual impacts associated with the aviation obstruction lights would become intermittent and minor.

3) Aviation Lighting At Night In Atlantic Shores' COP[10]

Section 5.3 "Lighting and Marking," Atlantic Shores Offshore Wind Construction and Operations Plan Lease Area OCS-A 0499, Volume I: Project Information, September 2021

Access this section and the entire COP by clicking on the following link:
https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Atlantic-Shores-COP-Volume-1-Project-Description.PDF

HIGHLIGHTS:

- All wind turbines will contain aviation obstruction lights, which, based on current guidance, will include red flashing lights at the center of the blades with an additional level of red lights on the tower, visible by a pilot approaching from any direction.
- Atlantic Shores is considering use of an Aircraft Detection Lighting System (ADLS) subject to FAA and BOEM approval, which could substantially reduce the amount of time that aviation obstruction lights are actually illuminated.

Update

In a March 17, 2022 email to the Round Up production team, Karen Hershey, Atlantic Shores Community Liaison Officer, wrote the following:

> "I can confirm that Atlantic Shores intends to seek FAA and BOEM approval for the ADLS. Again, it's up to the FAA in consultation with BOEM to determine if it can be safely employed based on area aviation; however, Atlantic Shores' studies indicate that ADLS is possible for this project."

[10] The COP is the **C**onstruction and **O**perations **P**lan submitted to the BOEM by Atlantic Shores. It must be approved by BOEM before Atlantic Shores may proceed.

FACT CHECKING, PER READERS' QUESTIONS: Many LBI residents had questions about the survey referenced in a letter to the editor, titled "Killer Wind", published on page 6 of *The Sandpaper* on May 18, 2022. Specifically, they were interested in verifying the number of people the survey was originally sent to, understanding how many people actually responded and finding out who initiated it.

Who sent it? The survey was sent out by Save LBI Inc. a k a LBI Coalition for Wind Without Impact.[11]

To how many people was it sent? The spokesperson for Save LBI Inc. reported that the only database they were able to access was for prior renters; the source of the database and the number of email addresses contained in that database were not shared.

How many responses were actually received? Each question in the six-question survey garnered between 608 – 614 responses, which, based on a database of 10,000, is a response rate of 6%.

Here are the survey's questions, answer options and percent of respondents who checked each option:

Question: Before starting the survey, were you aware that the federal government and some states on the Atlantic coast are considering offshore wind power as an energy source?

60% yes
39% no

Question: Have you ever seen first-hand a land-based or ocean-based wind power project?

63% yes
36% no

Question: People have different attitudes towards wind power as a source of energy in the United States. Some favorite it, others do not. Where do you stand on wind power as a source of energy in the United States?

35% favor
21% somewhat favor
16% neither favor nor oppose
10% somewhat oppose
15% oppose

[11] From its website: "We are proponents of a sensible approach to wind energy and alternative/renewable energy solutions. However, we are opposed to the location, scope and size of this project as currently proposed by Atlantic Shores." See more by clicking on this link: https://www.savelbi.org/about

Question: Thinking about the simulation you just viewed, how would the presence of the wind farm have affected your experience/enjoyment on your last vacation to LBI? It would have made my experience/enjoyment:

46% worse
16% somewhat worse
29% neither better nor worse
1% somewhat better
5% better

Question: Assuming you had been aware of the wind farm BEFORE taking your last vacation to Long Beach Island, would its presence have caused you to rent at another beach town or vacation somewhere else instead?

50% I would have still rented on Long Beach Island
39% I would have rented at another beach town instead
10% I would have taken a different type of vacation

Question: What is your view regarding placing wind turbine projects like this farther out from shore so they cannot be seen?

45% strongly favor that
26% favor that
24% have no opinion on that
3% can place them closer to shore

This Round-Up was prepared by a group of writers and researchers from Long Beach Island, New Jersey. Round-Ups are distributed by the Joint Council of Taxpayers Associations of LBI (JCTA) to the voting representatives of its eleven member organizations, who distribute this information to the members of their individual taxpayer or property owner associations via newsletters, websites and social media.

Questions about the content of Round-Ups and suggestions for topics to be covered in future issues can be directed to readers' local taxpayer or property owner associations.