BOEM Bureau of Ocean Energy Management

South Atlantic Fishery Management Council
Habitat and Ecosystem Advisory Panel

Seth Theuerkauf[1*] & Tamara Arzt[2]

[1]Bureau of Ocean Energy Management, Office of Renewable Energy Programs

[2]Bureau of Safety and Environmental Enforcement

**Presenter*

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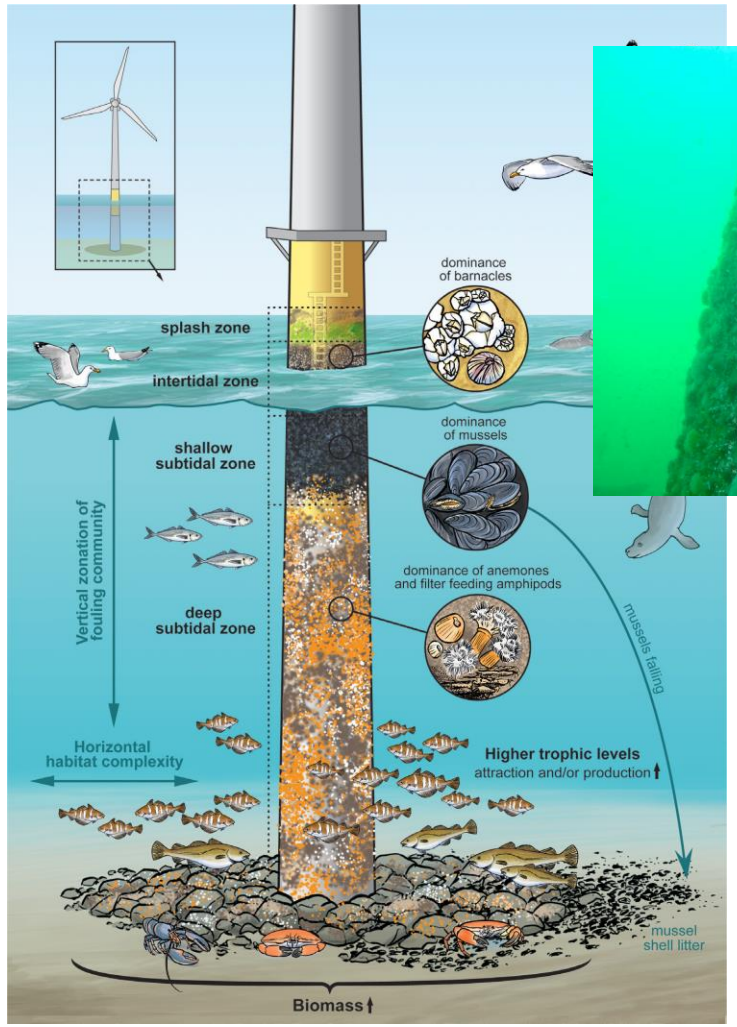
Topics to be Covered

- Long-term effects of offshore wind facility structures on habitat
- Offshore wind facility materials and effects on biofouling
- Decommissioning regulations and process
- Questions and requests

Long-term effects of offshore wind facility structures on habitat

- Any new wind turbine foundations, scour protection, transmission cable mattressing, metocean towers or buoys, or other offshore wind infrastructure components could create benthic relief.
- Benthic species dependent on hard bottom habitat could benefit from an increase in hard surfaces resulting in an increase in benthic diversity.
- However, such high initial diversity levels may decline over time as early colonizers are replaced by successional communities (Degraer et al. 2018).



Images from Degraer et al. 2020

Long-term effects of offshore wind facility structures on habitat

- Novel habitat could also be colonized by invasive species (e.g., certain tunicate species).
- Soft bottom is the dominant habitat type in the mid-Atlantic region, and species that rely on this habitat would not likely experience population-level impacts (Greene et al. 2010; Guida et al. 2017) and would result in a minor impact.
- In addition, moderate beneficial impacts could result from habitat alteration from soft to hard bottom "reefing" habitats which would benefit hard bottom and structure-oriented species as well as their predators.

Offshore wind facility materials and effects on biofouling

Evaluating the Effectiveness of Nature Inclusive Design Materials

Purpose: Test the effectiveness of different materials in promoting marine growth and enhancing habitat. Materials will be monitored for epifaunal growth and habitat utilization.

Field Study Timeline: June 2023 – November 2024

Location: Tower Reef (VMRC) 12 nmi offshore Virginia Beach; 12 nmi CVOW

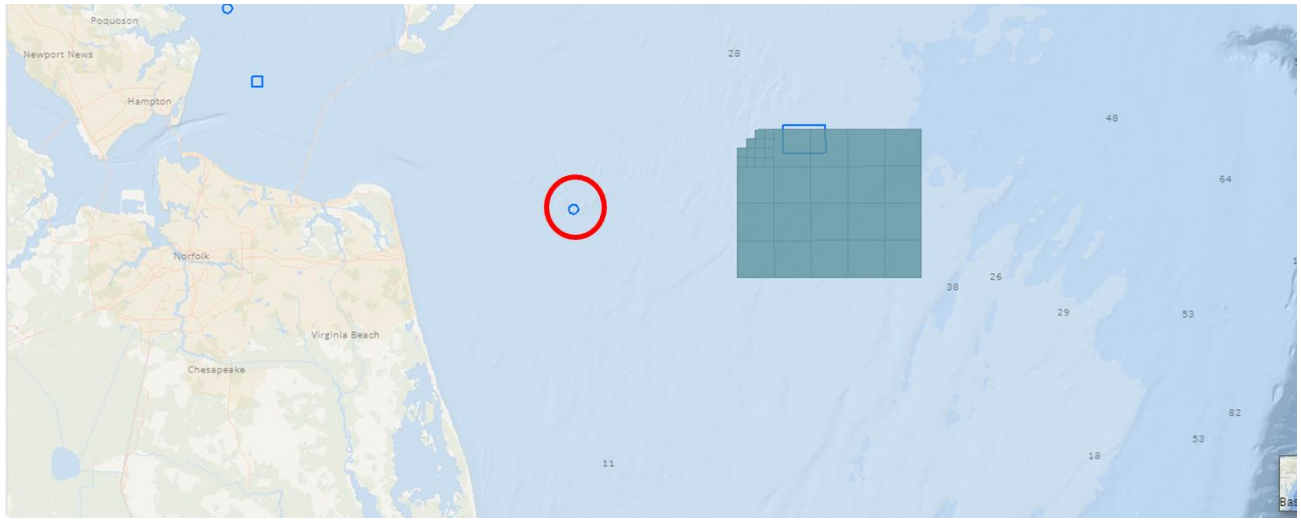
Methods: Deploy test materials and replicates; timelapse camera monitoring. Orthographic mosaicking. Diver quadrat surveys.

Project Update: Field data collection will be complete by May/June 2024. Post-processing Summer 2024. Report available by end of 2024.

Additional references:
Evaluating Effectiveness of Nature Inclusive Design Materials (AT-22-09)

Nature-Inclusive Design: a catalogue for offshore wind infrastructure

Material	Dimensions	m^2	Required for $3m^2$ Coverage
Reef Innovations cube module	22" x 22" x 8"	approx. 0.3	12 (4 per replicate)
Articulating mat	8 ft x 20 ft	14.9	6 (2 per replicate); need to be cut
Repurposed concrete boulders	0.02 m^3	approx. 0.1	36 (12 per replicate)
ECOncrete scour protection units	1.3 ft x 2 ft	0.23	15 (5 per replicate)
Reefmaker units	1.5 m x 1.5 m	2.25	3 (1 per replicate); need to be cut



Decommissioning regulations and process

1. The Bureau of Safety and Environmental Enforcement (BSEE) is the lead agency for enforcing decommisioning of offshore wind facilities in US federal waters.
2. BSEE regulations on decommissioning are available at 30 CFR Part 285 Subpart I, and individual BOEM leases include requirements describing infrastructure decommissioning.
3. Eventual decommissioning of offshore wind infrastructure (e.g., WTGs) will be proposed by leaseholders in a decommissioning application and evaluated in a future environmental analysis conducted under the National Environmental Policy Act (likely taking the form of an Environmental Impact Statement (EIS).

Decommissioning regulations and process

Conceptual Decommissioning:

1. Under 30 CFR Part 285, and as further required under BOEM's Renewable Energy Leases, leaseholders are required to remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seabed of all obstructions created by the Project. All facilities would need to be removed 15 feet (4.6 meters) below the mudline (30 CFR 285.910(a)). Absent permission from BSEE, the leaseholder would have to achieve complete decommissioning within 2 years of termination of the lease and either reuse, recycle, or responsibly dispose of all removed materials. Leaseholders typically submit a conceptual decommissioning plan as part of their Construction and Operations Plan, and the final decommissioning application would outline the leaseholder's process for managing waste and recycling Project components.
2. BSEE would require the leaseholder to submit a decommissioning application upon the earliest of the following dates: 2 years before the expiration of the lease; 90 days after completion of commercial activities in the Lease Area; or 90 days after cancellation, relinquishment, or other termination of the lease (30 CFR 285.905). Upon completion of the technical and environmental reviews, BSEE may approve, approve with conditions, or disapprove the lessee's decommissioning application. This process would include an opportunity for public comment and consultation with municipal, state, and federal management agencies. Within the decommissioning application, the leaseholder may request that certain authorized facilities remain in place or be converted to an artificial reef (30 CFR 285.909). Approval of such activities would require compliance under NEPA and other federal statutes and implementing regulations.
3. If the COP is approved or approved with modifications, the leaseholder would have to submit a bond (or other form of financial assurance) that would be held by the U.S. Government to cover the cost of decommissioning the entire facility in the event that the leaseholder would not be able to decommission the facility.

References

1. Degraer, S., R. Brabant, B. Rumes, and L. Vigin. (eds). 2018. Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea: Assessing and Managing Effect Spheres of Influence. Brussels: Royal Belgian Institute of Natural Sciences, OD Natural Environment, Marine Ecology and Management. 136 p.
2. Greene, J. K., M. G. Anderson, J. Odell, and N. Steinberg, eds. 2010. The Northwest Atlantic Marine Ecoregional Assessment: Species, Habitats and Ecosystems. Phase One. The Nature Conservancy, Eastern U.S. Division, Boston, MA
3. Guida, V., A. Drohan, H. Welch, J. McHenry, D. Johnson, V. Kentner, J. Brink, D. Timmons, and E. Estela-Gomez. 2017. Habitat Mapping and Assessment of Northeast Wind Energy Areas. Sterling, VA: US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2017-088. 312 p.
4. Degraer, S., Carey, D. A., Coolen, J. W., Hutchison, Z. L., Kerckhof, F., Rumes, B., and J. Vanaverbeke. 2020. Offshore wind farm artificial reefs affect ecosystem structure and functioning. Oceanography, 33(4), 48-57.

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Thank you!

Seth.Theuerkauf@BOEM.gov

Tamara.Arzt@BSEE.gov