

# Workshop 5.16.22 Interaction between Monopiles and the Local Ecosystem

## **Chat Window**

**From Frances Bradfield to Everyone 10:09 AM**

Hi Everyone

Frances here from Ramboll in Copenhagen

**From USAD672589 to Everyone 10:09 AM**

Hello Everyone Ankit Desai, PE. - Sr. Structural Engineer

WSP, Offshore Wind

**From Peter Schaumann to Everyone 10:10 AM**

Prof Peter Schaumann, Leibniz University Hannover, Institute for Steel Construction

Schaumann@stahl.uni-hannover.de

Hi everybody

**From Mike Pol, ROSA to Everyone 10:10 AM**

Greetings, Mike Pol from the Responsible Offshore Science Alliance (ROSA: [www.rosascience.org](http://www.rosascience.org)), fish, fisheries and OSW

From anthonysetiadi to Everyone 10:10 AM

**Anthony Setiadi - Wood Thilsted, materials and corrosion engineer**

**From Nils Bolgen, MassCEC to Everyone 10:10 AM**

Nils Bolgen, Massachusetts Clean Energy Center (MassCEC)

**From Mohsen Minaeijavid to Everyone 10:11 AM**

Mohsen Minaei Javid, PhD student, Tufts University

**From Lars Lichtenstein DNV to Everyone 10:11 AM**

Lars Lichtenstein

Principal Specialist, Steel Structures & Corrosion

DNV Renewables Certification

**From KRICAR to Everyone 10:11 AM**

Kristin Carman, Offshore Permitting Manager with DNV Energy USA

**From Emily Shumchenia to Everyone 10:11 AM**

Emily Shumchenia, director of the Regional Wildlife Science Collaborative for Offshore Wind (RWSC - [www.neoceanplanning.org/rwse](http://www.neoceanplanning.org/rwse))

**From Drew Carey (INSPIRE Environmental) to Everyone 10:11 AM**

Links to papers described in next presentation.

Multi-modal Approach for Benthic Impact Assessments in Moraine Habitats: a Case Study at the Block Island Wind Farm

Offshore Wind Farm Artificial Reefs Affect Ecosystem Structure and Functioning: A Synthesis

Effects of the Block Island Wind Farm on Coastal Resources: Lessons Learned

Turbine Reef Report – Nature-Based Designs Offshore Wind Structures – The Nature Conservancy and INSPIRE Environmental 2022

Offshore wind energy development: Research priorities for sound and vibration effects on fishes and aquatic invertebrates

Offshore wind farm effects on flounder and gadid dietary habits and condition on the northeastern US coast

Demersal fish and invertebrate catches relative to construction and operation of North America's first offshore wind farm

**From Birit Buhr to Everyone 10:11 AM**

Birit Buhr, senior lead corrosion specialist, Ørsted with a green heart, [www.orsted.com](http://www.orsted.com), [birit@orsted.com](mailto:birit@orsted.com) - good to be here

**From Torsten Krebs to Everyone 10:11 AM**

Torsten Krebs, GCP German Cathodic Protection, Essen, Germany.

**From Ralph Rösler to Everyone 10:12 AM**

Ralph Rösler

Lead Engineer Corrosion Protection in

Vattenfall Europe Windpower,

based in Hamburg, Germany

**From Rebekah Nagy (S&L) to Everyone 10:12 AM**

Hello! Rebekah Nagy engineer with Sargent & Lundy

**From MarcelRoz to Everyone 10:12 AM**

dr. M.J.C. Rozemeijer (Marcel)

Marine ecologist, policy advisor

Wageningen Marine Research

Ijmuiden, The Netherlands

**From Omar.Rosas to Everyone 10:12 AM**

Hello Everyone, I am Dr. Omar Rosas, Corrosion Scientists (and crazy scientist) in Deepwater Corrosion Services in Houston TX.

**From David Bigger (BOEM) to Everyone 10:12 AM**

Hello everyone, David Bigger from Bureau of Ocean Energy Management, Office of Renewable Energy Programs.

**From Sihang Wei to Everyone 10:13 AM**

Sihang Wei, Bintong Engineering, based in Shanghai China

**From MarcelRoz to Everyone 10:13 AM**

expert on European lobster and brown crab and multi use

**From Annie Murphy to Everyone 10:13 AM**

Hi Everyone - Annie Murphy, Senior Scientist, marine sediment biogeochemist and ecosystem ecologist, INSPIRE Environmental (Newport, RI but based in MA)

**From Krish Sharman to Everyone 10:13 AM**

Krish Sharman, Dept. Mech. Ind. Eng. Univ. Massachusetts Amherst. kthiagarajan@umass.edu. We have an ongoing project with University of Nantes on biofouling on offshore wind turbine structures and mooring lines. We are conducting field measurements offshore France this year, and propose to do experiments later this year.

**From ARC Marine- Tom Birbeck to Everyone 10:14 AM**

Hi everyone- Tom Birbeck ARC Marine. Focused on accelerating reef creation around offshore wind sites. Working closely with European partners and have deployed over 700 units. tom@arcmarine.co.uk

**From Mark Severy to Everyone 10:15 AM**

<https://tethys.pnnl.gov/seer>

**From Ellen van den Brom to Everyone 10:15 AM**

Hi everyone - Ellen van den Brom, Environmental Engineer at Boskalis. Ellen.vd.brom@boskalis.com

**From Monica.Maher to Everyone 10:16 AM**

Monica Maher, contractor with DOE's Wind Energy Technologies Office, and previously researched monopile interior corrosion protection at Florida Tech.

**From Katarina Halldén to Everyone 10:17 AM**

Hi everyone! Katarina from Seatower - we design gravity based foundations!

**From Brandon Jensen (BOEM) to Everyone 10:17 AM**

Hello from Brandon Jensen, Fisheries Biologist BOEM; Office of Renewable Energy Programs

**From Trine Viveke Salvesen to Everyone 10:18 AM**

Hi everyone - Trine Viveke Salvesen, materials engineer at Multiconsult in Oslo, Norway.  
trine.salvesen@multiconsult.no

**From Claire Wright to Everyone 10:19 AM**

Hi everyone! Claire Wright, civil engineering masters student at Tufts University

**From Colin Arrow to Everyone 10:19 AM**

Hi everyone, Colin Arrow, Engineering Support Mgr for Metallisation, TSA equipment manufacturer and automation machine supplier UK

**From Sid Falk(BOEM) to Everyone 10:19 AM**

Hello Everyone, I'm Sid Falk Structural Engineer for BOEM, US Federal Regulatory Agency.  
sid.falk@BOEM.gov

**From Liam De Bisschop to Everyone 10:20 AM**

Hallo! Liam De Bisschop, dehumidifying air inside wind infrastructures. Aalst, Belgium

**From Azin Mehrjoo to Everyone 10:20 AM**

Hello!

Azin Mehrjoo, PhD candidate at Tufts University. I am working on structural health monitoring of offshore wind turbines.

**From Rebecca Green to Everyone 10:21 AM**

Greetings! Rebecca Green, PhD, Senior Scientist, National Renewable Energy Laboratory (NREL) - Environmental, Siting, Multi-Use, and Feasibility considerations for offshore wind development.

**From Stefanie Scholtes to Everyone 10:21 AM**

Hi all, Stefanie Scholtes, master student Aquaculture and Marine Resource Management at Wageningen University and Intern at Boskalis. Working on nature enhancement in offshore wind parks in the North Sea. Stephanie.scholtes@boskalis.com

**From Charles Bocklet to Everyone 10:21 AM**

Hello everyone, Charles Bocklet, Consultant at Power Advisory LLC. Graduate of Tufts University Offshore Wind Engineering Program.

**From Kristian Rogers to Everyone 10:23 AM**

Hello everyone, Kristian Rogers, Project Biologist at DNV. Graduate of University of Miami's Rosenstiel School of Marine and Atmospheric Science master's program

**From Caglar Erdogan to Everyone 10:24 AM**

Thanks for sharing the papers, Annie!

**From Fara Courtney to Everyone 10:24 AM**

Hi all - Fara Courtney, Outer Harbor Consulting...part of the Tuft et al project advisory team. Very interested in the potential for NID to advance a positive change in the fisheries-offshore wind conversation.

**From Drew Carey (INSPIRE Environmental) to Everyone 10:26 AM**

drew@inspireenvironmental.com

**From Krish Sharman to Everyone 10:26 AM**

A one day workshop in Nantes on June 15, with emphasis on social and environmental aspects of biofouling - invite above.

**From Justin Skenyon, CRMC to Everyone 10:27 AM**

Hello All, Justin Wolf Skenyon, Ocean Engineer at the Rhode Island Coastal Resources Management Council

**From Sabina Aghasibayli to Everyone 10:27 AM**

Hello All, Sabina Aghasibayli - ScottishPower Renewables (Asset Integrity, Offshore O&M) and University of Strathclyde PhD candidate (Corrosion Engineer)

**From Caglar Erdogan to Everyone 10:27 AM**

Thank you, Krish!

**From Birit Buhr to Everyone 10:30 AM**

some links in relation to ReCoral

Press release:

<https://orsted.com/en/media/newsroom/news/2022/05/13650474>

Landing page:

<https://orsted.com/en/sustainability/our-priorities/nature/recoral>

YouTube video:

<https://youtu.be/qvLWG4ZvxQE>

**From Shiladitya Paul to Everyone 10:31 AM**

Shiladitya Paul, TWI and Materials Innovation Centre, Cambridge, UK

**From Aloysius Udenweze to Everyone 10:34 AM**

Hi Everyone!

I'm Aloysius Udenweze, an Offshore Wind Energy Engineering PhD Student at Tufts University.

**From Geoffrey Swain to Everyone 10:35 AM**

Anthony Dvaskas. Is there any evidence that biodiversity is influenced by the choice of structure ie. monopile or jacket. Thank you

**From MarcelRoz to Everyone 10:42 AM**

Hi Geoffrey, see the DGraer article shared

**From Fara Courtney to Everyone 10:43 AM**

Drew Carey, on the big issue of connectivity - as the US shifts from looking at individual projects to thinking about OSW as a system of critical energy infrastructure in the ocean - how would you approach modelling this cumulative interaction...is that possible?

**From Amin Nozari to Everyone 10:45 AM**

Hello everyone,

Amin Nozari, Discipline Lead for Integrated Load Analysis at COWI, NY; and former Postdoctoral Scholar at Offshore Wind Energy Engineering program at Tufts University.

**From David Ciochetto, RI CRMC to Everyone 10:51 AM**

@Jamie - what materials are being used in your 3D printing process?

**From Jamie Lescinski to Everyone 10:52 AM**

Hi David, we have used different types of mortars and concretes. For the Monaco pilot project, we used a lower carbon concrete which reduced the OPC by utilizing volcanic ash for binding

**From Frances Bradfield to Everyone 10:54 AM**

Sorry about that everyone.

**From Drew Carey (INSPIRE Environmental) to Everyone 10:54 AM**

Fara, connectivity has a number of different aspects; broadly these fall into the fixed fauna and the mobile fauna. Fixed fauna distribution may be affected by the introduction offshore of intertidal habitats and more hard surfaces than currently exist, 'stepping stone' concept demonstrated at BIWF. This can affect both native and non-native species. Not sure that we have effective models for this process. Mobile fauna connectivity represents both presence/absence (biodiversity) and energy flow (food webs). The latter could be modeled particularly as we gather more relevant data. Hard to apply North Sea data directly to either situation, so the first gen monopile farms like SFW and VW will be very useful to predict cumulative effects.

**From Anthony Dvaskas to Everyone 11:09 AM**

Hi Geoffrey. On the monopiles versus jackets question, there is the analysis from Belgium (LeFaible) looking at areas around the turbines (not the structures themselves) and indication of larger effect in areas near jackets, but not sure if there are other examples (others on chat may know others). Also can be tough to isolate foundation versus site effects to do cross comparisons.

**From Fara Courtney to Everyone 11:10 AM**

Andrew Want - how are you incorporating accelerating ocean warming into considerations of biofouling community composition in different regions?

**From Drew Carey (INSPIRE Environmental) to Everyone 11:12 AM**

Geoffrey there are data from gravity bases vs natural reefs and others mostly cited in the DeGraer et al., 2020 paper.

**From Andrew Want to Everyone 11:21 AM**

Hi Fara: great question - yes, this is a critical issue. One of my current projects (CHASANS) is looking at connectivity provided by hard substrate infrastructure in the North Sea. We are using our knowledge of currents flows and larval dispersal mechanisms to model connectivity and to compare this with predicted changes expected in the upcoming decades...

**From anthonysetiadi to Everyone 11:23 AM**

Is there an issue with the bio-fouling or fish species on the cables or attachments internally of the monopile? There have been stories (unverified) of some species eating the cables or rope suspending the anodes internally

**From David Ciochetto, RI CRMC to Everyone 11:33 AM**

For the flow v. water replenishment holes - can you share any of your results on dominant current v. hole orientation? also are you considering depth dependent currents or more barotropic flow?

**From bruinsma to Everyone 11:41 AM**

Hi David, we can have a chat about the effect of the hole orientation. What we do is evaluate the waterreplenishment design, where the structure dimension is taken into account as well as the orientation and size of the holes, with the direction and strength of the waves and currents in a certain area. Here we look at the depth integrated profile of both the waves and the current. Happy to talk more about this. Cheers, Niek

**From Drew Carey (INSPIRE Environmental) to Everyone 11:46 AM**

We know that openings allow mobile organisms to enter the monopile, has anyone studied the interaction of predation on biological growth inside the monopile?

**From Daniel Kuchma to Everyone 11:50 AM**

<https://www.menti.com/gwo1sq5rt5>

**From John Cushing to Everyone 11:53 AM**

With regard to "sealed" vs. "perforated" monopiles, I wasn't clear on what is the current practice with the wind farms in Europe - are they mostly sealed or perforated, or does it just vary from project to project?

**From Shiladitya Paul to Everyone 11:59 AM**

We did some tests with 90% exposed steel and Al 1050 and found the amount of Al in synthetic seawater solution after 7 days was 2.45 mg L<sup>-1</sup>

**From Birit Buhr to Everyone 11:59 AM**

It is not popular to retrofit holes, but limiting the amount of anode material in different depth is an option. Some guidance on current density relative to oxygen content can be found in the upcoming ISO 24656.

**From Brandon Jensen (BOEM) to Everyone 12:01 PM**

Thank you everyone. Highly informative.

**From KRICAR to Everyone 12:01 PM**

Thank you all for your efforts on this topic - some amazing science and progress! Further, thank you for your time today, this was a fantastic presentation. Looking forward to following and keeping tabs on all of the research

**From Mike Pol, ROSA to Everyone 12:01 PM**

Thanks for a very informative workshop!

**From Rebecca Green to Everyone 12:01 PM**

Thank you all for a great workshop!

**From Andrew Want to Everyone 12:01 PM**

Thank you Dan and all!

**From Cristina Garcia-Galan to Everyone 12:02 PM**

thanks all, good day!

**From Anthony Dvarskas to Everyone 12:02 PM**

Thanks all!

**From Trine Viveke Salvesen to Everyone 12:02 PM**

Thank you!