TETHYS BLAST

6 August 2021

Tethys is an online knowledge base that facilitates the exchange and dissemination of information on the environmental effects of wind and marine energy. The bi-weekly *Tethys* Blast highlights new publications in the *Tethys* Knowledge Base; relevant announcements, opportunities, and upcoming events; and news articles of international interest. ORJIP Ocean Energy has partnered with OES-Environmental to provide additional content. If you have specific content you would like circulated to the greater wind and marine energy communities, please send it to tethys@pnnl.gov for consideration.

Announcements

New WREN Short Science Summary

WREN (Working Together to Resolve Environmental Effects of Wind Energy) published a new Short Science Summary on White Storks and Onshore Wind Energy. Check it out on *Tethys*!

ETIPP Seeks Regional Partner

The US Department of Energy's (DOE's) Energy Transitions Initiative Partnership Project (ETIPP) is seeking a regional partner in the Pacific Northwest to engage and support remote and island communities as they plan for energy resilient solutions. With support from the Water Power Technologies Office and others, ETIPP expands on the work of the US DOE's Energy Transitions Initiative. Regional partner proposals are due August 31.

Calls for Abstracts

The Marine Technology Society and Oceanic Engineering Society are now accepting abstracts for OCEANS 2022 Chennai. The conference and exposition will take place in Chennai, India on 21-24 February 2022. Abstracts are due by 15 August 2021.

The Marine Alliance for Science and Technology for Scotland (MASTS) is now accepting abstracts for the 11th Annual Science Meeting, which will take place virtually and in Glasgow, Scotland on 5-7 October 2021. Abstracts are due by 3:00pm UTC on 23 August 2021.

Calls for Papers

The *Journal of Marine Science and Engineering* is inviting submissions for several Special Issues, including "Offshore Renewables for a Transition to a Low Carbon Society" (due 20 August 2021), "Offshore and Onshore Wave Energy Converters: Engineering and Environmental Features" (due 30 September 2021), and "Impacts of Offshore Wind Farms on Marine Ecosystems, Fisheries and Societies" (due 31 October 2021).

Energies is inviting submissions for several Special Issues, including "Women's Research in Wind and Ocean Energy" (due 1 September 2021), "Policy and Technology for Ocean Renewable Energy" (due 15 September 2021), and "Marine Renewable Energies: From Technological Advancements to Environmental Impact Assessment" (due 30 September 2021).

Funding & Testing Opportunities

The Offshore Renewable Energy (ORE) Catapult's Marine Energy Engineering Centre of Excellence (MEECE) has launched an Innovation Challenge to support United Kingdom (UK)-based applicants developing monitoring methodologies for tracking underwater species behavior in and around tidal stream turbines. Applications are due 11 August 2021.

The US DOE has issued a Funding Opportunity Announcement (FOA) titled "Advancing Wave Energy Technologies through Open Water Testing at PacWave" to support research and development at PacWave South and advance wave energy technologies toward commercial viability. Concept papers are due by 5:00pm EDT (9:00pm UTC) on 13 August 2021 and full applications are due 5 October 2021. View the FOA for more details here.

Innovate UK has launched another round of Smart Grants for eligible UK organizations to apply for a share of up to £25 million for game-changing and commercially viable research and development innovation. Applications are due by 10:00am UTC on 25 August 2021.

Interreg North-West Europe launched the 4th Ocean DEMO (Demonstration Programme for Ocean Energy Pilot Farms and Supporting Technologies) Call for Applications. Successful applicants will receive free access to test their ocean energy products in real sea environments at the project's network of test centers. Applications are due 10 September 2021.

The US Testing Expertise and Access for Marine Energy Research (TEAMER) program is now accepting applications for its 4th Request for Technical Support (RFTS) through 16 September 2021. Applications will now be reviewed on a quarterly basis and those submitted after the due date will be considered for the next RFTS. Check out the TEAMER website for more details.

Student & Employment Opportunities

France Énergies Marines is seeking candidates for a PhD position to work on the numerical simulation of scour around wind turbine foundations. Applications are due by 31 August 2021.

The American Wind Wildlife Institute (AWWI) is seeking a Solar/Wind Energy Wildlife Scientist to support the development and implementation of AWWI's Research Program and other initiatives. The position will remain open until filled.

Vineyard Wind has several Environmental and Permit Compliance Manager positions available to support the company's efforts in developing, constructing, and operating offshore wind projects. Visit Vineyard's Career page for details. These positions will remain open until filled.

Upcoming Events

Upcoming Webinars

The Institution of Engineering and Technology in Malaysia is organizing a webinar, "Ocean Thermal Energy – Driven Development for Sustainability", from 11:00am-12:00pm UTC on 11 August 2021. Register here.

The US DOE Water Power Technologies Office (WPTO) is hosting "Seeding Water Power Innovation: An R&D Showcase" from 1:00-5:00pm EDT (5:00-9:00pm UTC) on 11 August 2021. During the webinar, WPTO will host a showcase of different projects funded by their novel National Lab Seedlings Program. Register here.

The New York State Energy Research and Development Authority (NYSERDA) is hosting a webinar, "Learning from the Experts: Offshore Wind Construction and Operations Plan Review Process", from 1:00-2:00pm EDT (5:00-6:00pm UTC) on 11 August 2021. Register here.

NYSERDA is also hosting the Offshore Wind Youth Action (OWYA) Launch from 3:00-4:00pm EDT (7:00-8:00pm UTC) on 17 August 2021. During the webinar, NYSERDA's Offshore Wind Team will introduce OWYA, a new initiative for middle- and high-school-aged students across New York to learn about and get involved with offshore wind. Register here.

OES-Environmental is hosting a public webinar, "Guidance Documents for Risk Retirement", from 8:00-9:00am PDT (3:00-4:00pm UTC) on 31 August 2021. This webinar will provide an overview of the risk retirement process, including data transferability, and an update on the new guidance documents, which aim to bridge between scientific evidence and application for consenting/permitting processes. Register here.

Upcoming Conferences

The Business Network for Offshore Wind is hosting the 2021 International Partnering Forum (IPF) Together on 24-26 August 2021 in Richmond, Virginia (US). Register here.

The Supergen Hubs are convening online at the Supergen Net Zero Conference on 1-3 September 2021 to explore the role of energy research in the pathway to net zero. Register here.

The Association of Fish & Wildlife Agencies (AFWA) is hosting the 2021 AFWA Annual Meeting on 8-14 September 2021 virtually and in Providence, Rhode Island (US). Register here.

New Documents on *Tethys*

Marine Energy

Review of monitoring methodologies and technologies, suitable for deployment in high energy environments in Wales, to monitor animal interactions with tidal energy devices – Clarke et al. 2021

> The Welsh Government has commissioned a review of current and emerging monitoring tools and methodologies to identify the monitoring technologies which are most suitable for monitoring interactions between key marine animals (cetaceans, seals, fish, and birds) and tidal (stream and range) renewable energy developments around Wales. The review has built upon a recent review by Associated British Ports marine environmental research (ABPmer) (2020) commissioned by Natural Resources Wales (NRW). It has included literature review, discussions with equipment manufacturers, leading research groups, developers, Non-Governmental organisations, and consultants. The scope of the review includes marine mammals, sea birds and fish.

Tidal stream use by black guillemots *Cepphus grylle* in relation to a marine renewable energy development – Johnston et al. 2021

> Seabirds that forage within tidal streams may be vulnerable to collision or habitat change due to tidal stream turbines. The black guillemot Cepphus grylle is considered to be the seabird species most at risk from tidal stream turbines in UK waters. Using GPS tracking of adult breeding black guillemots, carried out on the island of Stroma, Caithness, in 2016 and 2017, we examined habitat use within the Inner Sound of the Pentland Firth in relation to the MeyGen tidal lease area (MTLA). We found foraging areas of black guillemots within the Inner Sound to be influenced by tidal velocity and seafloor depth. The velocities and depths which black guillemots selected while foraging within a 1 km boundary of the lease area significantly differed from those concurrently occurring within the MTLA.

Exposure to Electromagnetic Fields (EMF) from Submarine Power Cables Can Trigger Strength-Dependent Behavioural and Physiological Responses in Edible Crab, Cancer pagurus (L.) – Scott et al. 2021

> The current study investigated the effects of different strength Electromagnetic Field (EMF) exposure on the commercially important decapod, edible crab (*Cancer pagurus*, Linnaeus, 1758). Stress related parameters were measured in addition to behavioural and

response parameters over 24 h periods. EMF strengths of 250 µT were found to have limited physiological and behavioural impacts. Exposure to 500 µT and 1000 µT were found to disrupt the l-Lactate and d-Glucose circadian rhythm and alter Total Haemocyte Count. Crabs showed a clear attraction to EMF exposed (500 µT and 1000 µT) shelters with a significant reduction in time spent roaming. Consequently, EMF emitted from marine renewable energy devices will likely affect crabs in a strength-dependent manner thus highlighting the need for reliable in-situ measurements.

Wind Energy

When speed matters: The importance of flight speed in an avian collision risk model – Masden et al. 2021

To date, avian collision mortality has received the most attention and collision risk models have been developed to estimate the potential mortality caused by wind turbines. The utility of these models relies not only on their underlying assumptions but also on the data available to ensure the predictions are informative. Using a stochastic collision risk model (sCRM; based on the Band collision risk model) as an example, we explore the importance of bird flight speed and consider how the assumptions of the model influence the sensitivity to flight speed. Furthermore we explore the consequences of using site-specific GPS-derived flight speed rather than a standard generic value, with Lesser Black-backed Gulls *Larus fuscus* as an example, and consider how this generic value is currently used.

Environmental Effects Assessment for Proposed Offshore Wind Farm off the Coast of Grays Harbor, Washington: Environmental Effects Assessment – Severy et al. 2021

Grays Harbor Wind LLC (GHW) is proposing to develop a floating offshore wind farm offshore of west Grays Harbor County, Washington. The proposed GHW Offshore Wind Project would entail construction, installation and operation of a 1,000-megawatt (MW) offshore wind farm consisting of approximately 75 floating units, each containing a floating foundation and wind turbine generator (WTG). This Study report provides an initial assessment, using publicly available data, of the Project effects, both negative and positive, on the marine environment. Species of particular interest, including those of commercial importance or special environmental status, were reviewed to provide an initial assessment of potential environmental effects of the offshore wind development.

Research Goals for Studying Bat Behavior at the Wind Turbine-scale – Bats and Wind Energy Cooperative (BWEC) 2021

As research progresses, it is important to articulate the goals that will enhance our understanding of how bats perceive wind turbines. At the BWEC 2018 Science Meeting, several priorities for understanding bat behavior at the wind-turbine or wind energy-facility scales were established. One of these priorities was to develop a list of research questions for behavioral studies. In January 2020, the National Renewable Energy Laboratory, on behalf of the BWEC, organized a forum with subject matter experts to

discuss next steps for research pertaining to bat and wind turbine interactions. The participants discussed several research questions related to the available technology used to study bat behavior, the behavior of bats flying near wind turbines, the conditions when collisions occur, and improving the effectiveness of minimization strategies.

News & Press Releases

Marine Energy

FORCE welcomes multi-sensor platform for in-stream tidal energy monitoring – Offshore Energy

A multi-sensor platform developed by DP Energy to track environmental effects of in-stream tidal turbines has been deployed in the Minas Passage in Canada's Bay of Fundy. The platform includes sensors from Ocean Sonics, RBR, AML Oceanographic, and more, according to DP Energy, which has plans to develop tidal energy projects in the area. The multi-sensor platform has been deployed as part of Offshore Energy Research Association's 'Pathway Program: Validating reliable environmental monitoring for ocean energy projects', run in collaboration with the Fundy Ocean Research Centre for Energy (FORCE) and DP Energy. Subject to regulatory approval and final investment decision, the first of the three 1.5MW turbines planned for the first phase of the Uisce Tapa project is scheduled to be installed and commissioned in 2023.

Two million VOLT sparks Scottish tidal energy scale up – Nova Innovation

TIDAL energy leader Nova Innovation has been awarded a £2 million cash injection from the Scottish Government to advance tidal turbine manufacturing to a global level. The funding, delivered through Scottish Enterprise, is directed at Nova's VOLT (VOlume Manufacturing and Logistics for Tidal Energy) project that will develop the first European assembly line to mass manufacture tidal turbines, and trial innovative techniques and tools to ship, deploy and monitor turbines around the world – meeting the challenge of the climate emergency. The project will examine how to improve turbine performance, logistics for mass manufacture, and develop new techniques to ensure cost-effective delivery of tidal turbines. VOLT will also deliver an adaptable Remote Observation Platform (ROP) for rapid environmental monitoring of tidal energy sites.

WaveRoller emerges from the depths of Atlantic – Offshore Energy

Finnish wave energy company AW-Energy has refloated its first commercially ready WaveRoller wave energy device after two years of constant operation on the seabed offshore Portugal. The 350kW WaveRoller unit has been towed to the port for its first inspection, after spending two years submerged 820 metres offshore Peniche, a seaside municipality in Portugal. The WaveRoller device consists of a single movable panel and a power take-off system, submerged on a foundation. Deployed in October 2019, the WaveRoller underwent extended sea trials which served for fine-tuning of the device's

control system and monitoring its performance. AW-Energy said it plans to release updates on the insights gained through the WaveRoller deployment to the wider market over the coming months as more information from its technical teams becomes available.

Ingine Inks Deal with Mowachaht Muchalaht First Nation to Prepare Installation of an Onshore Wave Energy System in Canada – Ingine

South Korean wave energy developer INGINE is delighted to announce the recent signature of a two-party contract for the detailed engineering design of an onshore wave energy system in Yuquot, Canada. The project proponent and other party to the contract is the Mowachaht Muchalaht First Nation (MMFN), supported by the Federal Government of Canada. The Yuquot Wave Project is led by a consortium of parties under the Department of Natural Resources of Canada, including the Pacific Regional Institute for Marine Energy Discovery at the University of Victoria, the Barkley Project Group as well as EDI Environmental Dynamics Inc. After INGINE completes the detailed engineering design, the second phase of the project, which includes construction and commissioning, is scheduled to begin in the second half of 2022.

Italy's ENEA kicks off first national survey on marine energy – Offshore Energy

The Italian National Agency for New Technologies, Energy and Sustainable Economic Developmen (ENEA) has launched the first national survey on new technologies that exploit energy from tidal currents and sea waves. The survey, run as part of a joint campaign with Ocean Energy Europe, European Energy Research Alliance, and ETIP Ocean, is also taking place simultaneously in the 13 other EU countries of the European task force on energy from the sea. The task force will have the task of 'transitioning' the sector of marine energy from the current phase of technological development of devices to full commercial operativity by increasing the level of technological maturity of single experimental devices and of the entire industrial chain, the search for financial instruments and the development of environmental standards and certifications.

Wind Energy

BOEM Advances Offshore Wind Leasing Process in California: Public Input Sought on Offshore Wind Areas off California North and Central Coasts – BOEM

As part of the Biden-Harris administration's commitment to creating nearly 80,000 jobs through developing 30 gigawatts of offshore wind energy by 2030, the Department of the Interior's Bureau of Ocean Energy Management (BOEM) recently announced two actions advancing the federal wind leasing process offshore California. First, BOEM will publish a Call for Information and Nominations to request information from the public and determine industry interest in commercial development for two new areas within a 399-square-mile area located off central California, identified as the Morro Bay Call Area East and West Extensions. Second, BOEM has formally designated the Humboldt Wind Energy Area offshore northern California and will proceed with an environmental review of this area, as required under the National Environmental Policy Act.

Three new test and demonstration floating wind projects in the Celtic Sea to progress to next stage – The Crown Estate

New floating wind technology in the UK has taken an important step forward with the announcement that 300MW of new projects, identified through The Crown Estate's Test and Demonstration leasing opportunity, have been given the green light to progress to the next stage of assessment. The three projects, each located in the Celtic Sea, have satisfied the initial application criteria set out by The Crown Estate, demonstrating technical competence, delivery capability and technological innovation. The next stage will see the projects subject to plan-level Habitats Regulations Assessment to assess possible impacts on protected marine habitats. Subject to the outcome of this assessment, the applicants could then be granted seabed agreements for lease. The three projects are the 100MW Whitecross project and the Llŷr 1 and Llŷr 2 projects.

US Wind Announces Major Offshore Wind Progress – US Wind

US Wind recently announced major steps forward in the development of offshore wind energy for Maryland, including major labor agreements to support US Wind's first major offshore wind project for Maryland, the 22-turbine MarWin project, and all other future projects; a new port facility agreement with Tradepoint Atlantic to develop 90 waterfront acres into a new offshore wind deployment hub, where US Wind will initially invest $77 million via the MarWin project; expansion plans for development of up to an additional 1,200 MW of offshore wind energy with the new Momentum Wind project; and a proposal for a new steel fabrication facility in Baltimore County at the Tradepoint Atlantic site – Sparrows Point Steel – to be built in conjunction with Momentum Wind.

TetraSpar Floating Wind Platform Installed Offshore Norway – Offshore Wind

The TetraSpar Demonstrator floating wind turbine has been installed at the METCentre test site off the island of Karmøy near Stavanger, Norway. Now that the floating wind turbine is installed at its demonstration site, it will wait for the cable installation to be completed, which is planned for late Summer. TetraSpar Demonstrator ApS is owned by Shell, TEPCO Renewable Power, RWE, and Stiesdal Offshore Technologies. The TetraSpar foundation is the world's first industrially manufactured floating offshore foundation and the world's first spar foundation capable of deployment from an ordinary, shallow-water port, according to its developer. The defining feature of the TetraSpar concept is said to be the modular "building block" arrangement: each foundation is assembled from tubular steel modules, most of which are common to all configurations.

U.S. studies plan to pay fishing industry for offshore wind impacts – Reuters

The Biden administration is considering ways to ensure the U.S. commercial fishing industry is paid for any losses it incurs from the planned expansion of offshore wind power in the Atlantic Ocean, according to state and federal officials involved in the matter. Discussions between state and federal officials, which participants described as

being at a very early stage, are aimed at addressing the top threat to President Joe Biden's efforts to grow offshore wind - a centerpiece of his clean energy agenda to fight climate change. The administration’s new effort was prompted in part by a letter to Biden from nine coastal states last month urging the federal government to lead the way in crafting "mitigation frameworks for demonstrated negative impacts" on fisheries from offshore wind projects, according to the officials.