# TETHYS BLAST

# 16 September 2022

*Tethys* is an online knowledge hub 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. Email tethys@pnnl.gov to contribute!

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## Announcements

Request for Information

The U.S. Department of Energy's (DOE) Wind Energy Technologies Office has issued a Request for Information (RFI) seeking input on the status and research needs related to bat deterrent technologies. The RFI will inform a potential Funding Opportunity Announcement and seeks input related to 1) bat behavior research needed to inform advanced deterrents, 2) field research needed for validation and acceptance, and 3) deterrent hardware research needs to ensure seamless deterrent integration. Responses are due 16 September 2022.

ORISE Application Opens

The U.S. DOE's Water Power Technologies Office and the Oak Ridge Institute for Science and Education (ORISE) recently opened applications for the next cohort of students for the Marine Energy Graduate Student Research Program. The program is now accepting applications from all graduate-level (master's and doctoral) students with a marine energy-focused research thesis and/or dissertation at a U.S. institution. Applications are due 2 December 2022.

UMERC Survey

The University Marine Energy Research Community (UMERC) is conducting its Annual Survey to understand how foundational research for marine energy in the United States can be supported and integrated into the needs for the marine energy sector.

BOEM Seeks Comments

The U.S. Bureau of Ocean Energy and Management (BOEM) is seeking public comments on the Draft Environmental Impact Statement for the proposed Revolution Wind energy project offshore Rhode Island through 17 October 2022.

INORE BECS

The International Network on Offshore Renewable Energy (INORE) has announced a Call for Blue Energy Collaborative Scholarships (BECS) Proposals, targeted at INOREans from Latin America, Africa, and Asia. If you have a research project that can provide collaborative work with other INOREans, the grant can be used for travel expenses and accommodation at the institution where the work will take place or be presented. Applications are due 31 October 2022.

Calls for Abstracts

WindEurope has opened the Call for Abstracts for the WindEurope Annual Event 2023 through 30 September 2022. The event will take place 25-27 April 2023 in Copenhagen, Denmark.

The European Energy Research Alliance (EERA) has opened the Call for Abstracts for the EERA DeepWind Conference through 15 October 2022. The conference will take place 18-20 January 2023 in Trondheim, Norway.

The Business Network for Offshore Wind has opened the Call for Workshops for the 2023 International Offshore Wind Partnering Forum (IPF) through 1 November 2022. IPF will take place on 28-30 March 2022 in Baltimore, U.S.

Funding & Testing Opportunities

Iberdrola, through its start-ups program PERSEO, is inviting innovative proposals that seek to develop, test, or monitor nature-inclusive solutions that could be implemented in an offshore wind farm environment, with a focus on habitats and species of conservation importance. Applications are due 30 September 2022.

The U.S. Testing and Expertise for Marine Energy Research (TEAMER) program is now accepting Request For Technical Support (RFTS) 8 applications through 14 October 2022. Developers can apply for support in numerical modeling and analysis, bench/lab or tank/flume testing, and open water activities. Visit the TEAMER website for RFTS updates.

The California Energy Commission (CEC) has released a solicitation entitled "Advancing Environmental Monitoring Technologies for Floating Offshore Wind", which aims to fund applied research and development projects. Applications are due 17 October 2022.

The European Commission has launched the LIFE Programme 2022 Calls for Project Proposals for nature conservation, environmental protection, climate action, and clean energy transition projects. Application deadlines vary, but most are due between September and November 2022.

Student & Employment Opportunities

Environmental Research Institute is recruiting for a Research Fellow in Electronic Engineering to lead development, upgrade, and deployment of autonomous marine multi-sensor platforms to investigate the environmental effects of large-scale offshore renewable energy. Applications are due 19 September 2022.

France Energies Marines is recruiting a Researcher specialized in trophic models for the application of an ecosystem approach to the development of offshore renewable energy in the Gulf of Lion. Applications are due 27 September 2022.

Oregon State University is seeking a Safety and Compliance Officer to join the PacWave team and ensure compliance with all safety and environmental regulations and requirements through the construction and operational phases of the project. Applications are due 31 October 2022.

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# Upcoming Events

Upcoming Webinars

The Portal and Repository for Information on Marine Renewable Energy (PRIMRE) is hosting a webinar to highlight the release of the new Marine Energy Projects Database, which provides a catalog of devices, projects, and test sites around the world, on 20 September 2022 from 8:00-9:00am PDT (3:00-4:00pm UTC). Register here.

To officially launch the new Wind Energy Monitoring and Mitigation Technologies Tool on *Tethys*, Working Together to Resolve Environmental Effects of Wind Energy (WREN) is hosting a short, instructional webinar on 21 September 2022 from 8:00-8:30am PDT (3:00-3:30pm UTC). The free, online tool will serve as a reference of available technologies for monitoring and mitigating the environmental effects of land-based and offshore wind energy. Register here.

OES-Environmental is hosting a webinar, "From Science to Consenting: OES-Environmental 2022 Highlights", on 22 September 2022 from 8:00-9:00am PDT (3:00-4:00pm UTC). During the webinar, the OES-Environmental team will provide updates on risk retirement, guidance documents, and outreach efforts, and will detail current focus areas for research. Register here.

PRIMRE is also hosting a webinar, "Wave Hindcast Webinar: High-resolution regional hindcast datasets for wave energy resource characterization in US coastal waters", on 27 September 2022 from 8:00-9:00am PDT (3:00-4:00pm UTC). During this webinar, the Marine Energy Resource Characterization Team will discuss the overall effort and highlight some technical details and challenges. Register here.

As part of its *Learning from the Experts* series, the New York State Energy Research and Development Authority's Offshore Wind Team is hosting a webinar on Offshore Wind Flow Modeling on 21 September 2022 from 1:00-2:00pm EDT (5:00-6:00pm UTC). Register here.

Upcoming Workshop

The National Renewable Energy Laboratory (NREL) and the Hydropower Foundation are hosting an International Workshop on Marine Energy Workforce Development and Education Efforts on 20 October 2022, as part of the International Conference on Ocean Energy in Donostia-San Sebastián. Email Arielle Cardinal with any questions and to RSVP.

Upcoming Conferences

The University of the Highlands and Islands and Heriot Watt University are hosting Environmental Interactions of Marine Renewables (EIMR 2022) on 4-6 October 2022 online. Register here. Student tickets are available at a discounted rate.

The National Offshore Wind Research & Development (R&D) Consortium is hosting the National Offshore Wind R&D Symposium 2022 on 5-6 December 2022 in Boston, U.S. and virtually. Register here. Virtual attendance is free.

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# New Documents on *Tethys*

## Marine Energy

**A Summary of Environmental Monitoring Recommendations for Marine Energy Development That Considers Life Cycle Sustainability – Amerson et al. 2022**

> Recommendations derived from papers documenting the Triton Field Trials (TFiT) study of marine energy environmental monitoring technology and methods under the Triton Initiative (Triton), as reported in this Special Issue, are summarized here. Additionally, a brief synopsis describes how to apply the TFiT recommendations to establish an environmental monitoring campaign, and provides an overview describing the importance of identifying the optimal time to perform such campaigns. The approaches for tracking and measuring the effectiveness of recommendations produced from large environmental monitoring campaigns among the stakeholder community are discussed.

**ORJIP Ocean Energy Information Note: Cumulative Impact Assessment – Offshore Renewables Joint Industry Programme (ORJIP) 2022**

> This Information Note has been co-produced by the Welsh Consenting Strategic Advisory Group's Science and Evidence subgroup in order to support the consenting of wave and tidal stream energy projects. The Information Note has been developed to establish the current position of key stakeholders in Wales on the evidence available on interactions of wave and tidal energy technologies with the marine environment. The

Welsh National Marine Plan contains a policy framework designed to guide marine decision making in Wales, including policies relating to cumulative impact assessment and in the context of supporting sustainable development of the Welsh Marine Area and achieving Good Environmental Status.

**Environmental impact of renewable energy source based electrical power plants: Solar, wind, hydroelectric, biomass, geothermal, tidal, ocean, and osmotic – Rahman et al. 2022**

Renewable energy source (RES) based electrical power plants are widely considered green and clean due to their contribution to decarbonizing the energy sectors. It is apparent that RESs do not produce carbon dioxide, however their significant negative impacts on the environment are still found and cannot be ignored. In this paper, the environmental impacts of RES based power plants are analyzed through a comprehensive review considering solar thermal, solar photovoltaic, wind, biomass, geothermal, hydroelectric, tidal, ocean current, oceanic wave, ocean thermal, and osmotic effects. A strength, weakness, opportunity, and threat (SWOT) analysis is carried out and discussed for all RES based power plants.

## Wind Energy

**Commercial cuttlefish exposed to noise from offshore windmill construction show short-range acoustic trauma – Solé et al. 2022**

There is a lack of knowledge concerning the effects of marine renewable energy deviceson benthic invertebrates that live in contact with the seabed. The European common cuttlefish (Sepia officinalis) is the most abundant cephalopod in the Northeast Atlantic and one of the three most valuable resources for English Channel fisheries. A project to build an offshore wind farm in the French bay of Saint-Brieuc, near the English Channel, raised concern about the possible acoustic impact on local cuttlefish communities. In this study, consisting of six exposure experiments, three types of noise were considered: 3 levels of pile-driving and 3 levels of drilling.

**Impacts generated by the materials used in offshore wind technology on Human Health, Natural Environment and Resources – Rueda-Bayona et al. 2022**

Offshore wind energy (OWE) shows rapid growth in reducing CO2 emissions. Although OWE is considered renewable several used materials in their activities, such as manufacturing, installation, maintenance, and dismantling of the wind farms, generate negative impacts on human health, the natural environment, and natural resources. To provide a better insight into these impacts on the OWE industry, this research generated the first detailed relationship between the main activities of the OWE industry, the turbine components, the main used materials, and the environmental impacts according to LCA's impact categories. The findings of this research highlight the need for establishing strategies to replace the most contaminant materials with less harmful ones.

**Offshore and coastline migration of radio-tagged Nathusius' pipistrelles – Bach et al. 2022**

> The wind energy-bat conflict is well documented for the onshore sector, with high numbers of casualties, specifically for migratory bat species. Offshore wind turbines might be a threat to bats as well, yet offshore bat migration is poorly documented. Accordingly, potential conflicts between bat conservation and offshore wind energy production are difficult to evaluate. Here, we used automated radio-telemetry to track 50 km continuous offshore movements of two Nathusius' pipistrelles (*Pipistrellus nathusii*) within the Motus network. After crossing the marine waterbody, tagged bats traveled over several hundred kilometers along the coastline from Germany towards the Netherlands and Belgium.

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# News & Press Releases

## Marine Energy

**CalWave Successfully Concludes Historic Wave Energy Pilot in California with Zero Intervention and 99% Uptime – CalWave Power Technologies**

> CalWave, a leader in wave energy development, has successfully concluded its open-ocean wave energy pilot after 10 months of continuous operation off the coast of San Diego. The project, which deployed in September 2021, was supported by a US Department of Energy award with the goal to demonstrate CalWave's scalable and patented xWave™ technology as a cost-effective, sustainable solution for energy generation. Not only does the demonstration represent California's first at-sea, long-duration wave energy project, but it also serves as a critical step toward proving wave power as a commercially viable renewable resource. The pilot device, named x1™, has now been recovered and decommissioned.

**How do tides and turbines affect sealife? Fundy study hopes to find out – CBC**

> In the Bay of Fundy, tidal power development offers as many challenges as opportunities, and researchers hope that creating a new atlas of vital fish species that depend on the area will answer questions that could lead to more sustainable development. The Fundy Ocean Research Centre for Energy (FORCE) is leading a collaborative project to develop predictive models of where key species will be found in the Minas Passage based on environmental conditions. This would then be used to establish the likelihood that fish would be present in the same area as tidal turbines. The risk assessment project is researching nine species, including ones important for commercial fisheries.

**Sigma Energy deploys full scale WEC prototype – Ocean Energy Europe**

> After two and half years of intensive development, Sigma energija d.o.o. (Sigma Energy) is proud to announce the successful deployment of the full-scale Sigma WEC prototype offshore Bar in Montenegro. The 30-kW device was deployed in mid-July and shows

extremely promising results. The deployment is the result of Sigma Energy's successful application to the public call 'Dopolnjevanje SME Instrumenta – Faza 2' (Supplement to SME Instrument – Phase 2) for co-funding the project of developing the Sigma WEC full-scale device. The investment is co-financed by the Republic of Slovenia and the European Union from the European Regional Development Fund. Watch the deployment video here.

**HPG deploys first European turbine – Hydrokinetic Power Generation (HPG)**

HPG's innovative vertical axis turbine has commenced grid connected power generation at the SEENEOH test site in Bordeaux, France. This is their first turbine to be deployed in Europe. With previous testing having taken place in North America on fixed spanning structures. The 25kW turbine, on its own floating platform was assembled and launched at the Port of Bordeaux and is now installed and connected to the electricity grid at the SEENEOH test site. Over the next few months HPG will demonstrate this commercial version of the turbine, at the site in Bordeaux. Trials will also incorporate new advanced control systems and a novel generator from the University of Edinburgh.

**Minesto starts commissioning of second "Dragon 4" tidal energy power plant – Minesto**

The second Dragon Class tidal energy power plant "Dragon 4" has now arrived at Minesto's grid-connected site in Vestmanna, Faroe Islands. This power plant commissioning has now commenced, and it will greatly benefit from previous configuration testing executed with the first unit. "As we are now commissioning the second "Dragon 4" unit, it's with vital experience of cost-efficient onshore and offshore operations. In Vestmanna, we have created a flexible setup, where a small team can assemble and launch the kite in a few hours, practically in all tidal conditions. This operating methodology can be transferred to any location," says Dr Martin Edlund, CEO of Minesto.

## Wind Energy

**Biden-Harris Administration Announces New Actions to Expand U.S. Offshore Wind Energy – U.S. White House**

The Biden-Harris Administration recently launched coordinated actions to develop new floating offshore wind platforms, an emerging clean energy technology that will help the United States lead on offshore wind. These new goals, initiatives, and investments focus on floating technologies and build on the Administration's all-of-government approach to developing offshore wind while advancing environmental justice, protecting biodiversity, and promoting ocean co-use. Through the Inflation Reduction Act, President Biden secured clean energy tax credits that will further accelerate this new American industry and a thriving domestic supply chain, with support for Made in America wind turbine blades, fixed-bottom and floating platforms, installation vessels, and more.

**Members of the North Seas Energy Cooperation grasp historic opportunity to accelerate Europe's move towards energy independence – European Commission**

Energy Ministers from the members of the North Seas Energy Cooperation (NSEC) and the European Commission have today announced a significant increase in their collective ambition in the deployment of offshore renewable energy. At their Ministerial Meeting in Dublin, under the Irish Co-Presidency of NSEC, the NSEC ministers have – for the first time – agreed aggregate, non-binding offshore renewable energy targets for the maritime area of the entire NSEC region. The nine NSEC countries have agreed to reach at least 260GW of offshore wind energy by 2050. This will represent more than 85% of the EU-wide ambition of reaching 300GW by 2050.

**Empire Wind and WCS announce extension of acoustic marine monitoring project in New York Bight – Equinor**

Empire Wind and the Wildlife Conservation Society (WCS) recently announced the extension to 2028 of their historic agreement to monitor large whales in the lease area of Empire Wind, an offshore wind project located in the New York Bight, off the southern coast of Long Island. The new agreement ensures that important data to protect wildlife in the New York Bight will be collected during the pre-construction, construction, and post-construction phases of the wind project. Two deployed moored acoustic monitoring buoys located in the New York Bight within Empire Wind's lease area have already compiled more than 2,000 days of monitoring data and have detected more than 18,000 whale sounds in near real-time, including more than 2,600 detections this year alone.

**Jan De Nul installs 80 turbines at the first French commercial-scale offshore wind farm ahead of schedule – Jan De Nul**

Significantly ahead of schedule, Jan De Nul's Offshore Jack-Up Installation Vessel Vole au vent has successfully completed her mission on the Saint-Nazaire Wind Farm project in France. The Vole au vent transported and installed 80 sets of 6 MW Wind Turbine Generators for the very first commercial wind farm in French waters. This wind farm will have, by the end of 2022, a total capacity of 480 MW, which is equivalent to 20% of the Loire-Atlantique's annual electricity consumption. The Vole au vent loaded the 6 MW wind turbines, in sets of four, at the 'Forme Joubert' lock in the port of Saint-Nazaire and then transported the components approximately 12 kilometres offshore for installation in the northern part of the Bay of Biscay.

**SeaTwirl signs LOI for manufacturing and installation of S2x in Norway – SeaTwirl**

The wind power company SeaTwirl has signed a letter of intent with Westcon Yards for the manufacture and installation of the 1 MW S2x on site in Norway. The agreement marks an important step forward in the S2x project. Westcon Yards is an established player with decades long history in the marine and offshore industry. The company builds ships and performs repairs on ships and offshore structures at modern facilities at four different sites in Norway. Specifically, Westcon has experience from working on

structures with similar thickness steel plates, girders, stiffeners, and complexity as the S2x turbine. “This is an important step forward in the realization of S2x”, says Jonas Boström, CTO of SeaTwirl.