



18 September 2020

[Tethys](#) is an online knowledge base that facilitates the exchange and dissemination of information on the environmental effects of wind and marine renewable energy (MRE). 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 MRE communities, please send it to tethys@pnnl.gov for consideration.

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Announcements

Risk Retirement Webinar

OES-Environmental will be hosting a [webinar](#) on risk retirement for MRE from 8:00-9:30am PDT (3:00-4:30pm UTC) on 24 September 2020. The webinar will provide an overview of the risk retirement process, its development, and several related tools, including the data transferability process and monitoring datasets discoverability matrix. OES-Environmental's outreach and engagement efforts in the development of the risk retirement and data transferability processes will also be highlighted, as well as the feedback received from the greater MRE community on risk retirement for underwater noise, electromagnetic effects, and habitat change. Register [here](#).

Triton Survey

The Triton Field Trial Team is gathering feedback from MRE stakeholders, including regulators, legislators, and developers, on how to best create guidelines for MRE environmental monitoring methodologies and instrumentation. Triton wants to hear from you! To join the conversation, take this quick, 8-minute [survey](#).

U.S. Collegiate Competitions

The U.S. Department of Energy's Water Power Technologies Office (WPTO) is now accepting applications for the [2021 Marine Energy Collegiate Competition \(MECC\)](#). The competition challenges undergraduate and graduate students to explore opportunities for MRE technologies in existing maritime industries via real-world concept development. Applications are due 30 September 2020. Learn more about the competition and application process during an informational webinar at 1:00pm PDT (8:00pm UTC) on 23 September 2020. Register [here](#).

The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) is now accepting applications for the [Collegiate Wind Competition \(CWC\)](#) in May of 2022. The competition challenges students to design, build, and test a model wind turbine, and plan and financially analyze a wind power plant. Applications are due 8 December 2020. Learn more about the competition and application process during an informational webinar at 11:30am PDT (6:30pm UTC) on 30 September 2020. Register [here](#).

UK Consultation

The UK Department for Business, Energy & Industrial Strategy (BEIS) has launched a [consultation](#) on how the government can support MRE projects, such as floating offshore wind, tidal, and wave energy. The consultation invites views from developers and other interested parties on project funding and costs, environmental impacts, and supply chain benefits. The consultation closes at 11:45pm BST (10:45pm UTC) on 30 September 2020.

Calls for Abstracts/Papers

The Journal of Marine Science and Engineering is still accepting manuscript submissions for the special issue, [Environmental Interactions of Marine Renewable Energy Installations](#). Manuscript submissions are due 27 September 2020.

The University of Plymouth is now accepting abstract submissions for the [14th European Wave and Tidal Energy Conference \(EWTEC 2021\)](#) in Plymouth, UK from 5-9 September 2021. Relevant EWTEC 2021 themes include resource characterization, environmental impact and appraisal, and more. Abstract submission closes on 1 November 2020.

Funding/Testing Opportunities

Interreg North-West Europe's [Ocean DEMO](#) (Demonstration Programme for Ocean Energy Pilot Farms and Supporting Technologies) [3rd Call for Applications](#) at 7:00pm CEST (5:00pm UTC) on closes 18 September 2020. Successful applicants will receive free access to test their ocean energy products and services in real sea environments at the project's network of test centers.

The Offshore Wind Growth Partnership (OWGP) has issued [two calls](#) to enable diversification, improve competitiveness, and drive innovation across the UK offshore wind supply chain. The Cross-Sector Support Call closes 18 September 2020 at 5:00pm BST (4:00pm UTC).

The Swedish Energy Agency [recently opened](#) a call for the development of cost-effective and sustainable marine energy systems. The call is open for project proposals related to generation, reliability and survivability, environmental impact, operational and maintenance strategies, and testing and demonstration. Applications are due 21 September 2020.

The Interreg Atlantic Area-funded [PORTOS \(Ports Towards Energy Self-Sufficiency\) Project](#), which aims to promote the implementation of wave, tidal, and wind energy at Atlantic Area ports, has opened its 2nd call for renewable energy device testing. Applications are due by 2 October 2020.

The Supergen Offshore Renewable Energy (ORE) Hub is accepting applications for the [Early Career Researcher \(ECR\) Research Fund](#), designed to be a flexible research fund for ECRs to support small activities that either supports and develops your existing research activities, or develops your skills further. Research activities should be aligned with the objectives of the Supergen ORE Hub and should be directed at offshore wind, wave, or tidal energy research. Applications are due by 12:00pm BST (11:00am UTC) on 9 October 2020.

The [Marine Renewables Infrastructure Network \(MaRINET2\)](#) has opened its fifth and final call for fully funded access to a world-leading network of testing and research infrastructures in Europe. An open call for [virtual access](#) to data sets and a free-of-charge [training programme](#) are also available through the project. Applications are due 16 October 2020. A webinar recording to assist candidates with their application and share updates on the process is available [here](#).

Upcoming Events

Upcoming Workshops

The Triton Field Trials Team is hosting a virtual workshop on [Collaboration for Marine Renewable Energy Environmental Monitoring Guidelines](#) from 4:00-8:00pm UTC on 12 October 2020 as part of the [Global OCEANS 2020 Conference & Exhibition](#). The workshop strives to work with MRE stakeholders to gather information toward creating guidelines for MRE environmental monitoring. Register for the conference [here](#).

The Responsible Offshore Development Alliance, National Marine Fisheries Service, and the Bureau of Ocean Energy Management are convening a virtual workshop, [State of the Science: Fisheries and Offshore Wind Interactions](#), on 15, 16, and 30 October 2020. The workshop will engage key experts, including fishermen, fishing industry and agency representatives, wind energy developers, relevant fisheries managers, and expert scientists and academics to build and refine a regional fisheries and offshore science agenda, including through the Responsible Offshore Science Alliance. Sign up to receive more information [here](#).

New York State Energy Research and Development Authority (NYSERDA) is hosting the [State of the Science Workshop on Wildlife and Offshore Wind Energy 2020: Cumulative Impacts](#) online from 16-20 November 2020. Plenary presentations and Q&A panel discussions will occur

throughout the week, with smaller taxon-specific working meetings in late 2020 and early 2021, and a final group webinar in the spring of 2021. Register for free [here](#) by 30 October 2020.

Upcoming Webinars

National Renewable Energy Laboratory and Defenders of Wildlife are hosting a nine-part webinar series, *Wildlife & Wind Energy Webinar Series: Considerations for monitoring and managing impacts*, through mid-November 2020. Register [here](#) for the fourth webinar, “Bats: Methodologies and technologies used to study impacts of wind turbines on bats”, at 11:00am PDT (6:00pm UTC) on 24 September 2020. Sign up [here](#) to receive updates on and invitations for all remaining webinars in this series. All webinars will be recorded and available on *Tethys*.

The Schatz Energy Research Center at Humboldt State University is hosting a five-part webinar series through mid-October 2020 on [Exploring the Feasibility of Offshore Wind Energy for the California North Coast](#). Each webinar will begin at 2:00pm PDT (9:00pm UTC).

- 21 September: Ecological and Geological Environment (Register [here](#))
- 28 September: Port and Coastal Infrastructure (Register [here](#))
- 5 October: Community Perspectives on Regional Impacts/Opportunities (Register [here](#))
- 12 October: Reflections and Next Steps (Register [here](#))

Upcoming Conferences

The American Wind Energy Association’s [Wind Project Siting & Environmental Compliance Virtual Summit](#) will be held online from 30 September to 2 October 2020. Register [here](#).

The [Marine Alliance for Science and Technology for Scotland \(MASTS\) Annual Science Meeting](#) will be held online from 5-9 October 2020. Registration is now open [here](#).

The Swedish Energy Agency’s Wind Power Research in Focus 2020 Conference will be held online on 13 October 2020. Register [here](#) by 2 October 2020.

The [13th National Wind Coordinating Collaborative \(NWCC\) Wind Wildlife Research Meeting](#) will now be held online from 1-4 December 2020. Registration is now open [here](#).

New Documents on *Tethys*

Marine Renewable Energy

[Applying Two Active Acoustic Technologies to Document Presence of Large Marine Animal Targets at a Marine Renewable Energy Site](#) – Staines et al. 2020

Coastal regions are highly used by humans. The growing marine renewable energy (MRE) industry will add to existing anthropogenic pressures in these regions. Regulatory bodies require animal risk assessment before new industrial activities can progress, and

MRE is no exception. Preliminary data of marine mammal use of an MRE device deployment location could be informative to permitting. A combination of downlooking hydroacoustics using an echosounder and acoustic camera (imaging sonar) was used to provide a number of large targets (proxy for large fish and marine mammals) in an area of interest for MRE tidal turbine deployment in Western Passage, Maine, USA.

Review of underwater video data collected around operating tidal stream turbines – Hutchison et al. 2020

One of the most significant barriers to sustainable commercial scale development of the tidal energy sector is the level of uncertainty around the potential environmental risk posed by operating tidal turbines to protected marine wildlife. In order to reduce this uncertainty and better understand near-field behaviour of ecological receptors around operating devices, significant effort is being put into strategic monitoring and research projects around the world to gather data around the first single devices and arrays. Monitoring data are needed to validate predictive models that describe the behaviour of key species around tidal turbines, in order to improve and refine input parameters for better estimates of collision risk and avoidance.

Investigating the foraging ecology of black guillemots *Cephus grylle* in relation to tidal stream turbines and marine protected areas – Johnston 2019

The black guillemot *Cephus grylle*, an inshore, diving seabird known for benthic foraging has been identified as a species vulnerable to tidal turbines due to its use of tidal streams. Additionally, the species has been designated as a feature of six Marine Protected Areas (MPAs) across Scotland. Both of these developments highlighted gaps in our knowledge of black guillemot foraging ecology, and the need to address the extent tidal stream turbines may affect, and MPAs will protect, black guillemots. The aim of this thesis is to investigate these knowledge gaps relating to black guillemot foraging ecology, with a particular focus on tidal stream use.

Wind Energy

Comparison of Environmental Effects from Different Offshore Wind Turbine Foundations – Horwath et al. 2020

The development of the offshore wind industry along the Atlantic coast of the United States has raised concern from the public and throughout New England and the mid-Atlantic, about the potential effects of offshore wind foundations on the marine environment. This white paper provides a summary of currently available science that addresses potential effects of offshore wind foundations on the marine environment and provides a comparison of different foundation types. This summary has been developed to provide information to stakeholders concerned about foundations' effects on marine resources and to explain which foundations are suitable to use under certain conditions.

Assessing Cumulative Exposure of Northern Gannets to Offshore Wind Farms – Goodale and Milman 2020

Offshore wind farms are rapidly being permitted along the Atlantic Coast of the United States. Exposure of northern gannet (*Morus bassanus*) to multiple wind farms could affect the population because gannets are vulnerable to both displacement and collision. A critical question is whether wind-farm siting decisions can reduce cumulative exposure of gannets. We quantified how 3 different wind-farm siting scenarios would cumulatively expose gannets. Our results indicate that for initial development, projects sited close to shore and in shallow areas exposed gannets at the greatest rates; however, no siting scenario effectively avoided exposing gannets because of the birds' broad distribution across the outer continental shelf.

Bat Activity Rates do not Predict Bat Fatality Rates at Wind Energy Facilities – Solick et al. 2020

Bats are found as fatalities at most wind energy facilities around the world, creating a challenge for wind developers to predict risk to bats in an area before building a new facility. Sites with relatively low pre-construction bat activity rates are predicted to yield relatively low post-construction fatality rates (i.e., low risk), and vice-versa. To test this hypothesis, we ran simple linear regressions on bat activity rates and fatality rates from 49 paired pre- and post-construction studies across the United States and Canada. Bat activity rates did not predict bat fatality rates at wind energy facilities by detector height, by call frequency category of bats, or by season ($P > 0.10$).

News & Press Releases

Marine Renewable Energy

New floating device to undergo two years of trials at BiMEP facilities – Biscay Marine Energy Platform (BiMEP)

This year, the Basque Country will be the venue for trials on a new floating wave energy converter from Finnish technology developer Wello, to be installed at the BiMEP marine energy test site off the coast at Armintza (Bizkaia). An agreement was signed this month and the device is expected to be installed in the second half of October. The device will now undergo a two-week journey from its current location in northern Scotland. It will then take up position at its moorings in BiMEP, an open sea restricted site for trialling floating electricity generation (wave and wind powered) devices, located 1.5 km off the coast at Armintza.

Canada boosts tidal power sector with \$9.4 million – Offshore Energy

Canada is investing \$9.4 million in four tidal energy projects that will bring clean energy technologies to the Atlantic region. Nova Innovation has secured \$4 million to build a

tidal turbine array in the Bay of Fundy. \$1.58 million will go to the University of Manitoba to advance research on river and tidal energy technologies. Offshore Energy Research Association of Nova Scotia will get a \$2-million boost to research an environmental effects monitoring solution for the tidal energy industry. Finally, \$2 million will go to Fundy Ocean Research Centre for Energy to outline a plan to assess the encounter risk for fish with tidal devices and create a tool to support the regulatory authorization process for tidal energy projects.

Microsoft Share Findings Following Data Centre Trials at EMEC – European Marine Energy Centre (EMEC)

Earlier this summer, marine specialists reeled up a shipping-container-size datacenter coated in algae, barnacles and sea anemones from the seafloor of the European Marine Energy Centre's Billia Croo test site, located off Scotland's Orkney Islands. The retrieval launched the final phase of a years-long effort that proved the concept of underwater datacenters is feasible, as well as logistically, environmentally and economically practical. Microsoft's Project Natick team deployed the Northern Isles datacenter 117 feet deep to the seafloor in spring 2018. For the next two years, team members tested and monitored the performance and reliability of the datacenter's servers.

Ocean Harvesting Technologies secures €300 000 investment from the Lundin Foundation – Ocean Harvesting Technologies

Ocean Harvesting Technologies, a Swedish pre-commercial renewable energy company striving to be a market leader in wave energy technology, recently announced a €300 000 investment from Lundin Foundation. The investment matches a €300 000 grant from the Swedish Energy Agency to provide Ocean Harvesting Technologies with the required funding to prototype the next development phase of the company's novel InfinityWEC technology. InfinityWEC is a modular and scalable wave energy conversion system that is capable of capturing and converting wave energy to electricity in a highly effective and cost-efficient manner.

Souped-Up STEM Portal Broadens Horizons of Prospective Water Power Workforce – National Renewable Energy Laboratory (NREL)

In July, as part of an effort to recruit the best and brightest to the water power workforce, the U.S. Department of Energy's Water Power Technologies Office and NREL, partnering with the Hydropower Foundation, launched the Science, Technology, Engineering, and Math (STEM) workforce development and education portals for water power technologies. Developed to support the future water power workforce in their exploration of these growing industries, the resources offered via the STEM Marine Renewable Energy Portal will foster a better understanding of water power technologies and their potential, introducing tomorrow's workforce to exciting career opportunities within the sectors.

Wind Energy

[GE Renewable Energy, EDF Renewables and Enbridge are celebrating the production of the first nacelle for the first French offshore wind farm at Saint-Nazaire](#) – GE

Jérôme Péresse, President and CEO of GE Renewable Energy, as well as Bruno Bensasson, EDF Group Senior Executive Vice-President Renewable Energies, representing the consortium formed by EDF Renewables and Enbridge, recently celebrated the production of the first GE Renewable Energy nacelle, for the future Saint-Nazaire wind farm implemented by EDF Renewables-Enbridge. This wind farm, already under construction for one year, will be composed of 80 wind turbines spaced one kilometer apart and located 12 to 20 km off the coast. When it goes operational in 2022, it will produce enough power to supply 20% of the electricity consumption of the Loire-Atlantique department.

[Airborne Wind Energy Company Closes Shop, Opens Patents](#) – IEEE Spectrum

This week, a 13-year experiment in harnessing wind power using kites and modified gliders finally closes down for good. But the technology behind it is open-sourced and is being passed on to others in the field. As of 10 September, the airborne wind energy (AWE) company Makani Technologies has officially announced its closure. Meanwhile, Makani's parent company, X, Alphabet's moonshot factory, has made a non-assertion pledge on Makani's patent portfolio. That means anyone who wants to use Makani patents, designs, software, and research results can do so without fear of legal reprisal.

[From Concept to Commercialization: Bat Deterrent for Wind Energy Goes Global](#) – U.S. Department of Energy Office of Energy Efficiency & Renewable Energy

For the past two decades, the U.S. Department of Energy's (DOE's) Wind Energy Technologies Office (WETO) has worked on ways to protect bats at wind farms. One such solution is the development of an ultrasonic bat deterrent technology, from initial concept to recent commercial deployment at wind farms domestically and abroad. As wind energy installation increases, so does the potential impact on various wildlife species, including bats. Based on available data, migratory tree-roosting bats, such as the Eastern Red Bat and the Hoary Bat, are at the highest risk, though much is still unknown regarding bat interactions with wind turbines.

[bp makes first move into offshore wind](#) – bp

bp has announced a new strategic partnership with Equinor to develop major offshore wind assets in the fast-growing US market and to jointly pursue further offshore wind opportunities in the country. The announcement marks bp's first venture into offshore wind – a clean energy source which is forecast to grow six-fold globally in the next 10 years, according to BloombergNEF. The move comes a month after bp announced a new strategy, which includes the ambitious aim to increase annual low carbon investment 10-

fold to around \$5 billion a year by 2030. And grow developed renewable generating capacity from 2.5 gigawatts (GW) in 2019 to around 50GW by 2030.

Australians Unveil 1.1 GW Offshore Wind Project – Offshore Wind

Australian oil and gas specialist Pilot Energy Limited is starting a feasibility study to pursue the development of an offshore wind project off the coast of the Mid West Region of Western Australia. The wind farm is part of a larger renewable energy project. The Mid West Wind and Solar Project combines the offshore wind farm with an onshore wind farm and a solar farm. For the purposes of undertaking the feasibility studies, Pilot Energy has developed a conceptual development layout for a four-stage development of up to 1.1 GW of offshore wind capacity. The wind farm is comprised of up to 78 14 MW wind turbines installed at least 14 km offshore and in water depths of between 20-40 m.