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[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

Contribute to *Tethys*

If you have any new publications (e.g., journal articles, conference papers), announcements, funding or job opportunities, or upcoming events, please email tethys@pnnl.gov to contribute them to the [Tethys Knowledge Base](#), [Events Calendar](#), and/or [Tethys Blast](#) newsletter!

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.

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.

Calls for Abstracts

Energy Technology Partnership (ETP), an alliance of 14 Scottish universities, has opened the [Call for Abstracts](#) for the [ETP Annual Conference 2022](#) through 16 September 2022. The ETP Conference will take place on 1 November 2022 in Edinburgh, Scotland.

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

Natural Power is looking for a [Commercial Manager - Environmental Technology](#) to identify and pursue new opportunities to deploy the Natural Power Detection and Active Response Curtailment (DARC) system, and to work with the Environmental Technology team to create proposals, negotiate contracts, and execute projects. Applications are due 9 September 2022.

Marine Renewables Canada is seeking a [Policy and Communications Lead](#) who will play a vital role in its advocacy, government relations, strategy, and communications efforts. Applications are due 9 September 2022.

European Marine Energy Centre is looking for a [Marine Bio-Acoustician](#) to develop and support delivery of its environmental monitoring services, including acoustics, for clients and within national and internationally funded projects. Applications are due 9 September 2022.

Pacific Northwest National Laboratory is seeking a [Postdoctoral Researcher](#) to conduct coastal modeling, including for numerical predictions of waves, tidal streams, ocean currents, and salinity gradients for marine energy assessments. Applications are due 14 September 2022.

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.

Duke University is seeking to hire an experienced [Project Planner I](#) who will be responsible for the overall administration of the Wildlife and Offshore Wind (WOW) project, which aims to provide a long-term, adaptive roadmap for assessment of the potential effects of offshore wind.

Upcoming Events

Upcoming Webinars

The Renewable Energy Wildlife Institute is hosting a webinar, “[Eagle Mitigation Models Update: Alternative Options for Offsetting Golden Eagle Take at Wind Energy Facilities](#)”, on 14 September 2022 from 4:00-5:00pm EDT (8:00-9:00pm UTC). Register [here](#).

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](#).

Upcoming Conferences

The Supergen Offshore Renewable Energy (ORE) Hub is hosting an [Early Career Researchers \(ECR\) Forum 2022](#) on 28 September 2022 and its [Autumn Assembly](#) on 29 September 2022 in Oxford, England. Register [here](#) for the Forum and [here](#) for the Assembly.

American Clean Power is hosting the [Offshore WINDPOWER 2022 Conference & Exhibition](#) from 18-19 October 2022 in Providence, Rhode Island (U.S.). Register [here](#).

The Basque Energy Cluster and Ocean Energy Europe have teamed up to host a joint ocean energy event, [International Conference on Ocean Energy & Ocean Energy Europe 2022](#), on 18-20 October 2022 in Donostia-San Sebastián, Spain. Register [here](#).

New Documents on *Tethys*

Marine Energy

[Modeling the Probability of Overlap Between Marine Fish Distributions and Marine Renewable Energy Infrastructure Using Acoustic Telemetry Data](#) – Bangley et al. 2022

Acoustic tags provide unique individual ID codes at an ultrasonic frequency, which are then detected and recorded by acoustic receivers deployed in the area of interest. By matching detection locations of fish species with environmental conditions at proposed sites for tidal energy infrastructure, species distribution models can be developed to predict the probability of species occurrence at sites of current and planned tidal power development. This information can be used to develop statistically robust encounter rate models to aid in quantifying the risk of tidal power development to migratory fish species. We used this approach to develop a predictive model of striped bass (*Morone saxatilis*) distribution within Minas Passage in the upper Bay of Fundy, Nova Scotia. Model results suggested increased probability of striped bass presence in Minas Passage during late ebb tide conditions and at relatively high water temperatures.

[Minimizing Ecological Impacts of Marine Energy Lighting](#) – Reilly et al. 2022

Marine energy is poised to become an important renewable energy contributor for the U.S., but widespread deployment of the technology hinges on its benefits outweighing the potential ecological impacts. One stressor marine energy installations introduce is light, which is known to cause varying responses among wildlife and has not yet been addressed as an environmental concern. This review discusses requirements and

regulations for similar structures and how lighting design choices can be made to meet these requirements while minimizing environmental consequences. More practical guidance on implementing lighting for marine energy is needed, as well as updated guidelines to reflect technological and research advances. Known responses of wildlife to light are introduced in addition to how the responses of individuals may lead to ecosystem-level changes.

[A comparative study of laws and policies on supporting marine energy development in China and Korea](#) – Ko et al. 2022

Marine energy technologies in China and Korea are still in the follow-up stage compared to advanced countries. However, both countries have abundant marine energy resources, and the research for early commercialization in development, advancement, and verification of marine energy technology is actively underway. However, for early commercialization of marine energy, national policy support, investment, and development strategies are required. In this study, the current technologies, laws, policies and incentive systems in China were compared to those in Korea, and challenges to be solved were reviewed. As a result, it was found that concrete strategies to support marine energy need to be established, and the subsidy system to induce private company participation should be improved.

Wind Energy

[Powering Healthy Seas: Accelerating Nature Positive Offshore Wind](#) – Royal Society for the Protection of Birds 2022

This collaborative report between nongovernmental organisations (NGOs), with input from offshore wind industry representatives, comes at a pivotal time for nature and net zero. In it, we set out the urgent steps needed to secure a just offshore energy transition, halt nature's decline and restore thriving seas. The time to establish a clear route to market and accelerate offshore wind has never been more urgent. And yet, as top predators, seabirds are clear indicators of the health of our marine environment. Ongoing declines observed in the number of breeding seabirds and the failure to achieve Good Environmental Status are a clear warning that our seas are struggling. In this report we utilise the North Sea as a case study for lessons learnt, providing the principles needed to step change towards Nature Positive offshore wind.

[Diet analysis of bats killed at wind turbines suggests large-scale losses of trophic interactions](#) – Scholz & Voigt 2022

Agricultural practice has led to landscape simplification and biodiversity decline, yet recently, energy-producing infrastructures, such as wind turbines, have been added to these simplified agroecosystems, turning them into multi-functional energy-agroecosystems. Here, we studied the trophic interactions of bats killed at wind turbines using a DNA metabarcoding approach to shed light on how turbine-related bat fatalities may possibly affect local habitats. Specifically, we identified insect DNA in the stomachs

of common noctule bats (*Nyctalus noctula*) killed by wind turbines in Germany to infer in which habitats these bats hunted. Common noctule bats consumed a wide variety of insects from different habitats, ranging from aquatic to terrestrial ecosystems (e.g., wetlands, farmland, forests, and grasslands).

[Mapping the collision risk between two gull species and offshore wind turbines: Modelling and validation](#) – Mikami et al. 2022

While the development of offshore wind facilities/turbines is accelerating, many seabirds have been exposed to collisions with wind turbines. We must identify high collision areas and avoid the construction of wind turbines in these spaces to reduce these conflicts. One solution is to develop useful finer scale sensitivity maps. In this study, we created a fine-scale map of collision risk by spatial modelling using information from bird flights at sea and explored the relative importance of each geographic variable relevant to the risk. Between 2016 and 2019, we collected 3D-location data from 117 black-tailed gulls (*Larus crassirostris*) of three colonies in two areas and 21 slaty-backed gulls (*L. schistisagus*) of four colonies in one area of northern Hokkaido, Japan.

News & Press Releases

Marine Energy

[Resources to Empower the Next Generation of Marine Energy Experts](#) – U.S. DOE Water Power Technologies Office

Marine energy is a growing industry, but many people, including students, may not be familiar with marine energy technologies and the promising career pathways made possible by harnessing this resource. The U.S. Department of Energy's Water Power Technologies Office offers a range of educational resources to teach students of all ages about marine energy. Teachers, parents, and other caregivers can generate buzz about marine energy by sharing materials that thoughtfully explain the science of marine energy and how these technologies can help solve diverse challenges, like producing clean drinking water or protecting marine wildlife. These educational resources are simple enough for elementary school students to digest, but also engaging enough to keep teenagers (and even adults) entertained.

[Wave energy to ensure clear communication in the island of Hawaii](#) – Offshore Energy

US-based wave energy developer Oscilla Power has partnered up with the State of Hawaii and the University of Hawaii to test a new wave energy-powered emergency communication system. The partners are testing a new way to provide 24/7 access to emergency communications systems for island residents by installing a communication equipment on Oscilla Power's Triton-C wave energy device, that will also supply power for the system. Hawaii's unique topography presents a challenge for emergency communication systems. With valleys and waterways separating counties, there are blind

spots for communication signals and it is not practical to install a vastly expensive communication facility on every single ridge, according to Oscilla Power.

Sustainable Marine Energy Canadian Specialists to Enhance Tidal Energy Environmental Monitoring – Sustainable Marine

Sustainable Marine has engaged a series of Canadian specialists to further support its environmental monitoring efforts, regarded as one of the most ambitious and advanced ever delivered in the tidal energy sector. In May, the marine energy pioneer became the first firm to successfully convert floating in-stream tidal power to Canada's grid, after harnessing the enormous tidal currents in Nova Scotia's Bay of Fundy. With the support of fish tracking experts Innovasea, Sustainable Marine is now trialling advanced techniques that could further enhance knowledge of the marine ecosystem - including fish tag triangulation, tests of close-range high-resolution imaging sonar and exploration of artificial intelligence techniques for video processing.

ORPC launches decarbonization campaign in Chile – Offshore Energy

Ocean Renewable Power Company (ORPC) has partnered up with local communities and businesses in Chile to accelerate the country's transition from diesel to renewable energy with its marine energy technology. Through its wholly-owned subsidiary, ORPC Chile, the company has launched the 'Decarbonization from Patagonia to Cape Horn' initiative, with the support of the US Embassy in Chile, Chilean mayors from nearby municipalities, regional government leaders and other officials. As a developer of renewable power systems that generate electricity from free-flowing river and tidal currents, ORPC recently signed an agreement for its first project outside North America, with the Municipality of Chile Chico, a gateway community to Patagonia.

CorPower Ocean's C4 Wave Energy Converter completes dry test program – CorPower Ocean

CorPower Ocean's first commercial scale C4 Wave Energy Converter has completed a rigorous one-year on-land testing program, following a final 'Ironman' endurance exercise. The dry test campaign was performed on a purpose built test-rig at CorPower Ocean's headquarters in Stockholm, Sweden, where the company has developed the world's largest dry-test facility for Wave Energy Converters. Using simulated wave loading from the 7.2MW test rig, the C4 device has been tested in conditions representing several ocean sites around the world, culminating with a final 'Ironman' phase involving continuous operation and exposure to full range storm loading.

Wind Energy

Hornsea 2, the world's largest windfarm, enters full operation – Ørsted

Ørsted is proud to announce that the world's largest installed windfarm, Hornsea 2, is now fully operational. The 1.3 GW project comprises 165 wind turbines, located 89 km

off the Yorkshire Coast, which will help power over 1.4 million UK homes with low-cost, clean and secure renewable energy. It is situated alongside its sister project Hornsea 1, which together can power 2.5 million homes and make a significant contribution to the UK Government's ambition of having 50 GW offshore wind in operation by 2030. The Hornsea Zone, an area of the North Sea covering more than 2,000 sq km, is also set to include Hornsea 3. The 2.8GW project is planned to follow Hornsea 2 having been awarded a contract for difference from the UK government earlier this year.

[IRENA and Industry Leaders Launch the Alliance for Industry Decarbonization](#) – IRENA

The International Renewable Energy Agency (IRENA), co-founding partner Siemens Energy and 13 companies across all industry sectors have launched the global Alliance for Industry Decarbonization. The new Alliance aims to accelerate net-zero ambitions and the decarbonization of industrial value chains in pursuit of the Paris Agreement climate goals. The Alliance for Industry Decarbonization was created to achieve country-specific net zero goals faster, encourage action for decarbonizing industrial value chains, and enhance understanding of renewables-based solutions and their adoption by industry. The Alliance will also strengthen dialogue and coordinate action by industrial stakeholders from across the public and private sectors.

[Turning North Sea projects into power in offshore wind](#) – Equinor

Equinor is close to first power from the world's first floating wind farm to power offshore oil and gas platforms, Hywind Tampen, and preparing for the start-up of the world's largest wind farm, Dogger Bank. Both wind farms are in the North Sea where Equinor has more than ten years' experience from operating offshore wind farms. The seven first Hywind Tampen turbines will come on stream this year according to plan and the final four will be installed next spring. The Dogger Bank project is moving forward and reached an important milestone when the first foundations were installed in July 2022. First power is expected in the second half of 2023, with commercial operations beginning in 2024 for Dogger Bank A, 2025 for Dogger Bank B and 2026 for Dogger Bank C respectively.

[Baltic Sea Countries sign declaration for more cooperation in offshore wind](#) – WindEurope

On 30 August 2022 the Heads of Governments and Energy Ministers of the 8 countries around the Baltic Sea met in Copenhagen. They committed to new volumes for the build-out of offshore wind in the Baltic Sea and agreed to cooperate more closely on it and on energy more broadly. The Baltic Sea has enormous potential for offshore wind. Today it has just 2.8 GW of installed capacity. The 8 countries have now committed to increase that to 19.6 GW by 2030. And they plan to consider a 2040 target at a later stage. Germany and Denmark are the only Baltic countries with large-scale wind farms in the Baltic Sea and they are determined to further increase their capacity. The other countries are eager to follow soon.

[Australian State Receives 8 Offshore Wind Project Proposals](#) – Offshore Wind

The New South Wales (NSW) Government has received 44 expressions of interest for power generation and energy storage projects at the Illawarra Renewable Energy Zone (REZ), eight of which are offshore wind farms proposed to be built in the Australian state. The REZ has attracted AUD 43 billion (approximately EUR 29.7 billion) in potential investments, with more than AUD 35 billion (approx. EUR 24.2 billion) in potential investment from ten wind generation projects totalling 12.9 GW in capacity, eight of which are offshore. The information provided through the expressions of interest will be used by EnergyCo to inform the timing, capacity, design and location of the Illawarra REZ and is the first step in engaging with industry on its design.