



1 October 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](#)
[Upcoming Events](#)

[Marine Energy Documents](#)
[Wind Energy Documents](#)

[Marine Energy News](#)
[Wind Energy News](#)

Announcements

[New Tethys Story](#)

[Introducing New Tethys Resources to Support Wind Energy Research](#) by *Tethys Wind*

To help users discover and navigate the resources available on *Tethys*, the [Wind Energy page](#) has been redesigned to highlight key features, such as the Knowledge Base, Map Viewer, and *Tethys Blast*. The new Wind Energy page also showcases three wind energy research efforts supported by the U.S. Department of Energy, so it's now easier than ever to explore these efforts, their outcomes, and related resources. Read more [here](#).

[Calls for Abstracts](#)

The Call for Abstracts for the [VII Marine Energy Conference](#) will close on 20 October 2021. The conference will take place in Bilbao, Spain on 9 November 2021.

The Call for Abstracts for the [WindEurope Annual Event 2022](#) is now open through 31 October 2021. The event will take place in Bilbao, Spain on 5-7 April 2022.

The Call for Abstracts for the [Floating Wind Solutions Conference & Exhibition \(FWS 2022\)](#) will close on 1 November 2021. FWS 2022 will take place in Houston, US on 1-3 March 2022.

The Call for Abstracts for the [6th International Conference on Wind Energy and Wildlife Impacts \(CWW 2022\)](#) will close on 11 November 2021. CWW 2022 will take place in Egmond aan Zee, Netherlands on 4-8 April 2022. Registration will open in early October 2021.

Calls for Papers

The *Journal of Marine Science and Engineering* is accepting submissions for several Special Issues, including "[Impacts of Offshore Wind Farms on Marine Ecosystems, Fisheries and Societies](#)" (due 31 October 2021), and "[Renewable Energies and Ocean Technologies: Challenges to the Green and Blue Economy](#)" (due 31 December 2021).

Call for Workshops

The Business Network for Offshore Wind has opened the [Call for Workshops](#) for the [2022 International Partnering Forum \(IPF\)](#) through 29 October 2021. IPF 2022 will take place on 26-28 April 2022 in Atlantic City, US.

Funding & Testing Opportunities

The Horizon Europe Framework Programme has launched the [European Innovation Council \(EIC\) Accelerator Challenges](#) to support small and medium enterprises developing game-changing innovations, including renewable energy. Applications are due by 6 October 2021.

The Supergen Offshore Renewable Energy Hub is inviting applications for the [Early Career Researcher \(ECR\) Research Fund](#), which is designed to support ECRs involved in offshore wind, wave, or tidal energy research with up to £5,000. Applications are due 18 October 2021.

The Danish Energy Agency opened a [Technology Neutral Tender](#) of aid for electricity generated by onshore wind turbines, open door offshore wind turbines, wave power plants, hydroelectric power plants, and solar installations. The deadline for bids is 22 October 2021.

The Basque Energy Agency, Ente Vasco de la Energía, launched a [Call for Applications](#) for its €2.5 million aid program, which aims to promote the demonstration and validation of emerging marine energy technologies within the Basque Country. The call closes on 29 October 2021.

The US Department of Energy's (DOE's) National Renewable Energy Laboratory has opened a [Request for Proposals](#) to support research into behavior of bats at wind turbines and responses by bats to deterrent stimuli. Goals for awarded projects include understanding bat-turbine interactions to help minimize collisions and improving deterrent effectiveness. Awardees will receive \$450k to \$700k each to fund the research. Applications are due 8 December 2021.

The California Energy Commission (CEC) recently released a Grant Funding Opportunity titled, "[Propelling Offshore Wind Energy Research](#)", which will fund R&D projects to demonstrate,

test, and validate innovative floating offshore wind components and tools. CEC staff will host a [Pre-Application Workshop](#) on 1 October 2021 from 10:00am-12:00pm PDT (5:00-7:00pm UTC) to discuss the solicitation with potential applicants. Applications are due 15 December 2021.

The US DOE recently launched the [Inclusive Energy Innovation Prize](#), which will provide cash prizes of up to \$250,000 to groups and organizations that support entrepreneurship and innovation in communities historically underserved in climate and energy technology funding. Phase One Submissions are due by 5:00pm EST (10:00pm UTC) on 25 February 2022.

Student & Employment Opportunities

The Royal Belgian Institute of Natural Sciences is looking for a [Scientific Collaborator](#) to monitor sediment plumes around offshore wind turbines. Applications are due 10 October 2021.

WavEC Offshore Renewables is recruiting a [Marine Biology Researcher](#) to research underwater noise propagation in the aquatic environment. Applications are due 14 October 2021.

Aquatera is looking for junior, senior, and expert [Technical and Environmental Consultants](#) in several areas, including energy systems, environment, and project delivery and management.

Upcoming Events

Upcoming Webinars

The American Wind Wildlife Institute is hosting a webinar titled, “[Minimizing Collision Impacts for Bats at Operational Wind Facilities, Part 1: Curtailment](#)”, on 4 October 2021 from 12:00-1:30pm EDT (4:00-5:30pm UTC). Register [here](#).

The European Technology and Innovation Platform for Ocean Energy is hosting a webinar titled, “[Benefits & tips for local community engagement](#)”, on 21 October 2021 at 10:00am BST (9:00am UTC). Register [here](#).

The Nova Scotia Offshore Energy Research Association is hosting a webinar titled, “[Testing of 360-Degree Imaging Technologies for Improved Animal Detection around Tidal Energy Installations](#)”, on 21 October from 1:00-2:00pm ADT (4:00-5:00pm UTC). Register [here](#).

Upcoming Conferences

The Marine Alliance for Science and Technology for Scotland (MASTS) is hosting the [MASTS Annual Science Meeting 2021](#) online on 5-7 October 2021. Register [here](#).

The [Marine Renewables Canada 2021 Conference](#) will take place in Halifax, Nova Scotia on 24-25 November 2021. Early bird [registration](#) has been extended to 8 October 2021.

New Documents on *Tethys*

Marine Energy

[Experimental study of fish behavior near a tidal turbine model under dark conditions](#) – Yoshida et al. 2021

Understanding the risk of collision between tidal stream turbines and marine species is required for environmental impact assessment. Field observations are often limited by sensor capabilities. This study used a laboratory-scale water tank to monitor fine-scale fish behavior near a model of rotating turbine blades. Differences in behavior between three species were investigated: *Oryzias latipes*, *Gnathopogon elongatus*, and *Rhodeus ocellatus ocellatus*. Behavioral response under dark conditions was further investigated for *Gnathopogon elongatus*, as it showed active behavior near the turbine under bright conditions. 71% of fish actively avoided or swam away from the turbine during bright conditions. Under dark conditions, 92% avoided or swam away; fish approached less frequently and retreated sooner than in bright conditions.

[Refined hydro-environmental modelling for tidal energy generation: West Somerset Lagoon case study](#) – Guo et al. 2021

An accurate assessment of the hydro-environmental impacts of tidal range energy schemes, where the performance of the scheme has an impact on the marine environment and ecology, is crucial in optimising the design and development of such schemes. A proposal for a new coastally-attached impoundment, namely West Somerset Lagoon, has been investigated in this research and the numerical model TELEMAC-2D has been refined to model the impacts of this scheme on the Bristol Channel and Severn Estuary. Domain decomposition was applied and full momentum conservation between the subdomains was included in the model by implementing momentum source terms at the turbine locations. The results have confirmed the importance of including full momentum conservation in modelling the effects of turbo-machinery in tidal lagoons.

[The Permitting, Licensing and Environmental Compliance Process: Lessons and Experiences within U.S. Marine Renewable Energy](#) – Barr et al. 2021

The marine renewable energy industry has a vital role in the U.S. clean energy strategy as we progress to meet U.S. electricity and blue economy needs with renewable, domestic energy sources. However, a thorough assessment of the U.S. marine energy permitting process from the viewpoints of both developers that propose projects and regulators that permit them has not been performed. Sharing practical experiences in this new industry is vital to increase the efficiency and effectiveness of the permitting process, identify data and information gaps, develop lessons learned, and advance the industry. This paper is a case study of qualitative findings, lessons learned, and recommendations from guided discussions, workshops, and webinars with both marine renewable energy developers and state and federal regulators that have experience in the permitting process in the U.S.

Wind Energy

[Risks to different populations and age classes of gannets from impacts of offshore wind farms in the southern North Sea – Pollock et al. 2021](#)

The southern North Sea holds the world's highest concentration of offshore wind farms (OWFs). Northern gannets (*Morus bassanus*), a species considered at high risk from OWF impacts, show a strong seasonal peak there in November, but it is unclear which populations and age classes are most at risk of collision with wind turbines. We tagged adult and juvenile gannets at the world's largest colony (Bass Rock) and reviewed two sources of survey data for different age classes to study their movements through southern North Sea waters. Tracked birds showed peak numbers in the southern North Sea in mid-October, with much smaller numbers there during November. Adults were distributed throughout the area, including waters close to OWFs, whereas juveniles were confined to the coast.

[Three-dimensional analysis of bat flight paths around small wind turbines suggests no major collision risk or behavioral changes – Hochradel et al. 2021](#)

Small wind turbines (SWTs) have become increasingly common in several European countries, but knowledge of their impact on wildlife, especially bats, remains relatively scarce. We applied an operational experiment at 10 SWTs in Northern Germany to determine the bat species commonly found at those SWT sites and whether the operational state of the SWT affects bat activity or behavior. During the experiment, the SWT operational state ("ON", "OFF") was altered and the flight trajectories of bats around the SWTs were documented using a specifically designed 3D camera with a high spatial resolution able to capture collisions with the structures. Several bat species were detected in the close vicinity (20 m) of the SWTs at all study sites.

[Residency, demographics, and movement patterns of North Atlantic right whales *Eubalaena glacialis* in an offshore wind energy development area in southern New England, USA – Quintana-Rizzo et al. 2021](#)

Offshore wind energy development is growing quickly around the world. In southern New England, USA, one of the largest commercial offshore wind energy farms in the USA will be established in the waters off Massachusetts and Rhode Island, an area used by the Critically Endangered North Atlantic right whale *Eubalaena glacialis*. Prior to 2011, little was known about the use of this area by right whales. We examined aerial survey data collected between 2011-2015 and 2017-2019 to quantify right whale distribution, residency, demography, and movements in the region. Right whale occurrence increased during the study period. Since 2017, whales have been sighted in the area nearly every month, with peak sighting rates between late winter and spring.

News & Press Releases

Marine Energy

[Oscilla Power to Deploy Triton-C Wave Energy System in Hawaii](#) – Oscilla Power

Oscilla Power recently put its revolutionary new wave energy system, the Triton-C, on a barge to Kaneohe, Hawaii, where it will be deployed offshore of the Marine Corps base and will generate clean, renewable power from the waves of the Pacific Ocean. This is the first commercial-scale demonstration of the Triton technology, which has been under development for more than a decade, supported by the State of Washington, the U.S. Department of Energy, and private funders. The Triton-C is the first and largest wave energy platform ever produced in Washington State. The Triton-C is a 100 kW rated power system designed for remote or isolated coastal communities, or small facilities, while the Triton is a 1 MW rated power system that is designed to be installed in large arrays to provide utility-scale power.

[Minesto awarded funding by Swedish Energy Agency to facilitate commercial scale-up](#) – Minesto

The Swedish Energy Agency has awarded Minesto a SEK 5.8 million grant to the ongoing commercialisation of Minesto's ground-breaking Deep Green technology. The grant co-funds a project through which Minesto will develop and verify a next generation tether system to facilitate the commercial scale-up of the company's marine energy technology. The tether system connects Minesto's marine energy power plants with the seabed foundation and is composed of the tether rope and cables for communication and power. It is a unique subsystem of Minesto's Deep Green technology with great impact on the levelised cost of energy. The project aims to develop a next generation tether system that will optimise functionality and performance and allow for future scale-up of power plants to 3 MW and beyond with a serial production design.

[TECNALIA creates the largest floating test laboratory for the offshore industry](#) – TECNALIA

Since 2018, Basque companies have had a laboratory to test materials and solutions in a real offshore environment, developed by the TECNALIA research and technological development centre with the backing of the Basque Government and the support of the Basque Energy Cluster. Following the success of this offshore laboratory, known as HarshLab and located at BiMEP, Biscay Marine Energy Platform, the research and technological development centre has developed a new laboratory, which is bigger, unique in Europe and connected, with increased features and capabilities to carry out new tests and R&D activities to address the needs of offshore industries and increase their competitiveness. For example, it will enable the operation of equipment on board to be tested and samples to be lowered to the seabed.

Qair partners up with Bretagne Ocean Power for tidal energy, green hydrogen and floating wind – Offshore Energy

French independent renewable energy producer Qair has signed a partnership agreement with business accelerator for marine renewable energy Bretagne Ocean Power to jointly contribute to the deployment of floating offshore wind, renewable hydrogen and tidal stream energy in the French region of Brittany. Qair plans to promote the marine renewable energy know-how of the Brittany region by associating various such projects in the area as early as possible, while also connecting the clusters and organisations from the sector operating in the region. Qair also aims to deepen the link between the Brittany universities concerned with marine renewables research, as well as the environmental organisations with the general public in order to increase the involvement of the citizens in the energy transition of their region.

Integrated Ocean Energy Marketplace – Australian Ocean Energy Group (AOEG)

AOEG is establishing the world's first Integrated Ocean Energy Marketplace ("Marketplace" or IOEM) in Albany, Western Australia. When developed, the Marketplace will 'mirror' a commercial, integrated ocean energy system that generates and sells electricity to its customer. By seeing diverse renewable technologies working together, AOEG anticipates markets will witness the advantages of developing integrated energy systems and will be motivated to pursue development for themselves. Key objectives of the IOEM are to serve as a catalyst for commercial project development planning, including permits and consent processes and to serve as Australia's ocean energy centre of excellence and trusted 'operational advisor'.

Wave Energy Gets Boost to Pioneer Green Economy with EU Patent Approval – AW-Energy

AW-Energy Oy, the world-leading Finnish wave energy technology developer, has taken another major step towards commercialising its WaveRoller® device. It recently announced the approval of the Patent Application in the EU for its new innovation of an arrangement and method in a wave energy recovery system. This brings the total number of approved patents held by the company to 70. The patent provides AW-Energy with broad IP protection of its latest generation WaveRoller® device including a range of operating improvements made to the device's system and infrastructure, particularly on failsafe operating improvements to protect against extreme weather conditions.

Wind Energy

Interior Department Announces Environmental Review of Proposed Wind Energy Projects Offshore New Jersey – US Department of the Interior

As part of the Biden-Harris administration's goal to deploy 30 gigawatts of offshore wind energy by 2030, the Department of the Interior recently announced that the Bureau of Ocean Energy Management will conduct an environmental review of two proposed wind

energy development projects offshore New Jersey. Atlantic Shores Offshore Wind LLC submitted a plan to construct and operate two commercial-scale offshore wind projects in federal waters approximately 8.7 miles from the New Jersey shoreline. The first of the two projects will have a capacity of 1,510 megawatts, enough to power over 700,000 homes. Throughout their lifecycles, the projects are expected to generate over 22,290 jobs. The projects could also help New Jersey meet its ambitious goal to develop 7.5 GW of offshore wind energy generation by 2035.

[Global Offshore Wind Energy Compact signed by the International Renewable Energy Agency and the Global Wind Energy Council](#) – GWEC

The International Renewable Energy Agency (IRENA) and the Global Wind Energy Council (GWEC) recently announced an agenda to ensure sustainable energy for all that helps the global battle against climate change. At its heart is an ambition to increase substantially the share of offshore wind energy in the global energy mix, by 2030. IRENA and GWEC's Compact will help ensure no country or region is 'left behind' by the sector, and make sure untapped resource potential is developed to help the world reach its 2050 goals. The Compact sets a target of 380 GW of energy from offshore wind, installed worldwide by 2030; by 2050 the target is for 2,000 GW of offshore wind installed worldwide.

[TNC Unveils New Offshore Wind Mapping Tool to Protect the Ocean](#) – Nature Conservancy New England / Vimeo

Scientists from The Nature Conservancy recently unveiled a new offshore wind mapping tool that provides localized data to clearly show which marine species are consistently abundant in an area of interest. Similar to Zillow but for offshore wind, anyone from wind energy developers to reporters can use the offshore wind mapping tool to find out what species live in the neighborhood where a project is proposed. This new offshore wind mapping tool, which aggregates ecological data from Maine to North Carolina, allows decision-makers to better understand the natural resource interactions in an area of interest to help develop measures to avoid and minimize them. This ultimately brings marine protection into the offshore wind energy conversations to keep our ocean healthy and protect the places that fish and whales congregate.

[PREDICT project to find better ways of protecting our oceans](#) – University of Aberdeen

Scientists from the University of Aberdeen (UoA) and North Highland College's Environmental Research Institute, part of the University of the Highlands and Islands, will lead a new project to determine where offshore wind developments should be located in order to better protect marine life in the future. The three-year project, PREDICT (Predicting seasonal movement of marine top predators using fish migration routes and autonomous platforms) has received £800K funding from Ørsted. The research will address knowledge gaps in offshore wind environmental characterisation, by improving understanding of fish migration patterns and providing a vision for next-generation monitoring techniques.

A Change in the Wind: Collegiate Wind Competition Will Use a New Team Participation Process for 2023 Event – US DOE

As the U.S. power generation mix incorporates more wind energy, the country will need qualified workers to fill jobs in all roles, including turbine design, project development, construction, operations, finance, and public relations. Since 2014, the U.S. Department of Energy's (DOE's) Collegiate Wind Competition (CWC) has helped meet this need by providing college students with hands-on wind energy technology, project development, and outreach experience. On behalf of the DOE Wind Energy Technologies Office, the National Renewable Energy Laboratory facilitates the CWC, which challenges multidisciplinary teams of undergraduate students to merge academic coursework with hands-on learning, connect with industry leaders, and prepare for jobs in wind energy and other sustainable energy industries.

World's Largest Floating Wind Farm Starts Operating, Statkraft Buys Entire Output – Offshore Wind

The installation of the wind turbines at Kincardine, the world's largest floating wind farm, has marked the start of the long-term Power Purchase Agreement between Statkraft and Kincardine Offshore Windfarm Ltd. The 50 MW Kincardine floating wind farm will provide over 200,000 MWh per year to the Scottish grid, enough to power over 50,000 homes, Statkraft said. Statkraft will purchase all electrical output from the floating wind project with a guaranteed minimum price per MWh until 2029. This long-term route-to-market partnership with Statkraft, which is for 100 per cent of the electricity generated by the project, has been set up with pre-agreed terms for the full duration, reducing the financial risk to its investors.