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[Tethys](#) is a knowledge hub with information and resources on the environmental effects of wind and marine energy. The bi-weekly [Tethys Blast](#) highlights announcements and upcoming events; new documents in the [Knowledge Base](#); and international energy news. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. [Email us](#) to contribute!

[Announcements](#)
[Upcoming Events](#)

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

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

Announcements

Introducing Offshore Wind Metadata on Tethys

The Tethys team has launched a new tool, [Offshore Wind Metadata](#), that provides information on offshore wind energy projects around the world and the environmental monitoring conducted at each, including links to related publications and datasets. Join the public a webinar, “[Introducing Offshore Wind Environmental Metadata on Tethys](#)”, on 10 October 2023 from 8:00-8:30am PDT (3:00-3:30pm UTC) for a live demonstration of the new tool and to learn how project developers can contribute. Register [here](#).

CMTS Proposed Guidance

The U.S. Committee on the Marine Transportation System (CMTS) recently published a notice of availability for public comment on the [Proposed National Guidance for Industry on Responding to Munitions and Explosives of Concern in U.S. Federal Waters](#), intended for the offshore energy industry. The public comment period closes on 25 September 2023.

RWSC Science Plan

The Regional Wildlife Science Collaborative for Offshore Wind (RWSC) has released the [Draft Integrated Science Plan for Wildlife, Habitat, and Offshore Wind Energy in U.S. Atlantic Waters](#) for review and comment. The Plan describes recommendations for data collection, research, and coordination compiled by expert subcommittees. Comments are due 30 September 2023.

Calls for Abstracts

The [Call for Abstracts](#) for [OCEANS 2024 Singapore](#) are now open through 15 October 2023. OCEANS will take place in 14-18 April 2024 in Singapore.

The [Call for Abstracts](#) for the [43rd International Conference on Ocean, Offshore & Arctic Engineering \(OMAE 2024\)](#) is now open through 26 October 2023. OMAE 2024 will take place 9-14 June 2024 in Singapore.

Funding & Testing Opportunities

The U.S. Department of Energy (DOE)'s Wind Energy Technologies Office and Water Power Technologies Office, and the Department of Interior's Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement have published a [Notice of Intent](#) to issue a funding opportunity to improve the reliability of mooring lines and to reduce noise associated with installing fixed-bottom offshore wind energy foundations. This funding opportunity is expected to be released in October 2023.

The European Commission is accepting proposals for the [Innovation Fund's Third Small-scale Call for Projects](#) through 19 September 2023. The call will provide grants to small-scale projects with a capital expenditure between €2.5 and €7.5 million in the areas of renewable energy, decarbonization, energy storage, and carbon capture, use, and storage.

The Scottish Government is inviting a [tender](#) from a suitable contractor to provide recommendations to design effective monitoring approaches for commercial fisheries in relation to offshore wind farms. The deadline is 29 September 2023.

The U.S. DOE is now accepting applications for the [Renewable Energy Siting through Technical Engagement and Planning \(R-STEP\)](#) program, which seeks to expand the decision-making capacity and expertise of state and local governments around large-scale renewable energy planning, siting, and permitting. Applications are due 3 November 2023.

Career Opportunities

France Energies Marines (FEM) is seeking a [Researcher/Research Engineer](#) to support projects aiming at improving and developing automated methods to characterize the temporal evolution of marine mammal occurrences and behavior in relation to underwater noise from offshore wind farms. Applications are due 22 September 2023.

FEM is also seeking a [Researcher/Research Engineer](#) will be responsible for enhancing the Institute's skills in developing Deep Learning algorithms and research and development to support long-term monitoring of marine ecosystem. Applications are due 22 September 2023.

Pacific Northwest National Laboratory (PNNL) is seeking a [Post Bachelor Research Associate - Marine Technology Electrical Engineer](#) to join its multidisciplinary team of engineers and

scientists developing and assessing technology for the marine environment. Applications are due 24 September 2023.

PNNL is also seeking a [Post Doc Research Associate - Coastal Ocean Modeling](#) to conduct coastal modeling research related to: 1) wave and/or tidal modeling for energy resource characterization using unstructured-grid models; 2) modeling of wave-current interaction; and 3) multi-scale modeling and analysis of coastal processes under further climate. Applications are due 1 October 2023.

Upcoming Events

Upcoming Webinars

The National Oceanic and Atmospheric Administration and Open Communications for the Ocean (OCTO) are hosting a webinar, “[Developing Offshore Wind in US Waters Part 2: Offshore Wind Development and the Structure and Function of Marine Ecosystems](#)”, from 10:00-11:00am PDT (5:00-6:00pm UTC) on 21 September 2023.

Australia’s Blue Economy Cooperative Research Centre (CRC) is hosting a webinar, “[A Framework for Evaluating and Guiding Ocean Energy Technology Developments: Presentation of the OES Framework and Application](#)”, from 4:00-5:30pm AEST (6:00-7:30am UTC) on 27 September 2023. Register [here](#).

OES-Environmental is hosting a public webinar, “[Coordinating and Disseminating Research on Environmental Effects of Marine Renewable Energy](#)” from 8:00-9:30am PDT (3:00-4:30pm UTC) on 28 September 2023. During the webinar, the team will provide updates on progress and what's to come in the 2024 State of the Science report, and then be joined by two presenters to highlight research on underwater noise and collision risk, as well as practical applications of OES-Environmental resources. Register [here](#).

The National Renewable Energy Laboratory and the Renewable Energy Wildlife Institute are hosting the second webinar in the [Compensatory Mitigation for Land-Based Wind Energy](#) series on 2 October 2023 at 2:00pm MDT (8:00pm UTC). This webinar will introduce two of the more common methods for instituting compensatory mitigation: mitigation banks and in lieu fee programs. Register [here](#).

The Tethys team is hosting a webinar, “[Introducing Offshore Wind Environmental Metadata on Tethys](#)”, on 10 October 2023 from 8:00-8:30am PDT (3:00-3:30pm UTC). The webinar will include a live demonstration of the new tool, which features information on the environmental effects of offshore wind energy projects around the world, and detail how offshore wind project developers can contribute. Register [here](#).

The Offshore Wind Environmental Technical Working Group’s (E-TWG) [Avian Displacement Committee](#) is hosting a webinar on 16 October 2023 from 11:00am-1:00pm EDT (3:00-5:00pm UTC) to gather stakeholder input on a draft document, “Guidance for Pre- and Post-Construction

Monitoring to Detect Changes in Marine Bird Distributions and Habitat Use Related to Offshore Wind Development”. Register [here](#).

Upcoming Conferences

The University Marine Energy Research Community (UMERC) is hosting the [2nd Annual UMERC Conference](#) on 4-6 October 2023 in Durham, New Hampshire, U.S. Register [here](#).

The [North American Wind Energy Academy \(NAWEA\)/WindTech Conference](#) is taking place from 30 October to 1 November 2023 in Broomfield, Colorado, U.S. Register [here](#).

Upcoming Workshops

PNNL and the Atlantic Marine Energy Center (AMEC) are hosting two stakeholder workshops on environmental effects of marine energy on [3 October 2023 from 8:30-12:30 EDT](#) and on [7 October 2023 from 12-4 EDT](#), before and after [UMERC](#). The workshops will discuss the effects of tidal energy on the marine environment. Anyone is welcome to attend the workshops, but online registration is encouraged. Additional information on the workshops will be available on the event pages soon, and shared via emails with those who register.

The Argentine Network of Marine Energies, in collaboration with the Center for Ocean Energy Research (COER), Maynooth University, Ireland, and the Marine Offshore Renewable Energy Lab are hosting the [8th Wave Energy Workshop](#) in conjunction with the 2023 Argentine Meeting on Marine Energies (ENAEM 2023) on 6-8 November 2023 in Buenos Aires, Argentina.

National Oceanic and Atmospheric Administration (NOAA) Fisheries is convening a [North Atlantic Right Whale Vessel Strike Risk Reduction Technology Workshop](#) on 13-15 February 2024 in Washington, DC, U.S. and virtually to explore and promote new technologies to reduce the risk of vessel strikes.

New Documents on Tethys

[Tethys](#) hosts thousands of documents on the environmental effects of marine and wind (land-based and offshore) energy, including journal articles, conference papers, and reports.

Marine Energy

[‘Scaling up’ our understanding of environmental effects of marine renewable energy development from single devices to large-scale commercial arrays](#) – Hasselman et al. 2023

Global expansion of marine renewable energy (MRE) technologies is needed to help address the impacts of climate change, to ensure a sustainable transition from carbon-based energy sources, and to meet national energy security needs using locally-generated electricity. However, the MRE sector has yet to realize its full potential due to the limited scale of device deployments (i.e., single devices or small demonstration-scale arrays),

and is hampered by various factors including uncertainty about environmental effects and how the magnitude of these effects scale with an increasing number of devices. This paper seeks to expand our understanding of the environmental effects of MRE arrays using existing frameworks and through the adaptation and application of cumulative environmental effects terminology to key stressor-receptor interactions.

SafeWave Deliverable 2.2 Monitoring of Electromagnetic fields – Imperadore et al. 2023

The SafeWAVE project aims to improve the knowledge on the potential environmental impacts from Wave Energy (WE) projects. In the project scope, Work Package 2 aims to collect, process, analyse, and share environmental data related to four priority areas of research: i) Electromagnetic Fields (EMF), ii) Acoustics (noise), iii) Seafloor integrity, and iv) Fish communities. The Deliverable 2.1 represented the first phase for the fulfilment of the objectives above, namely developing the planification of the monitoring plans for each area of research, to be implemented at three marine renewable energy test sites where different types of wave energy converters are installed: in Portugal, HiWave-5; in Spain, Penguin II; and in France, WAVEGEM. The aim of Task 2.2 and the present deliverable is to present the main findings from EMF monitoring surveys conducted.

Waterbodies thermal energy based systems interactions with marine environment — A review – Bordbar et al. 2023

Waterbodies' thermal energy potential, as a green, renewable, and limitless source of energy, can be exploited in response to the growing energy demands of islands and coastal cities. Up to now, the technologies that have been developed for this purpose include seawater air-conditioning, surface water heat pump, and ocean energy thermal conversion systems or their combinations, which are presented here as Waterbodies Thermal Energy Based Systems (WTEBSs). The growth and development of these technologies raise concerns regarding their potential impacts on sustainability of the marine environment. The present work provides a comprehensive review of the available literature and state-of-the-art technologies describing potential interactions of WTEBSs throughout their life-cycle (i.e. including construction, installation, operation, and decommissioning) with the marine ecology.

Wind Energy

Post-construction Bird and Bat Fatality Monitoring for Onshore Wind Energy Facilities in Emerging Market Countries: Good Practice Handbook and Decision Support Tool – International Finance Corporation 2023

The International Finance Corporation (World Bank), European Bank of Reconstruction and Development (EBRD) and German Development Bank (KfW) have published a Good Practice Handbook on the topic of Post-construction Fatality Monitoring (PCFM) for birds and bats, which is accompanied by an automated Decision Support Tool (DST). Developed by a global team and their advisors, the objectives of these tools are to provide practical guidance for the design and implementation of PCFM methodology at wind

energy facilities in emerging market countries and to promote the global standardization of PCFM methodologies so that fatality rates can be compared across sites, landscapes, countries, and regions. The Handbook and the DST have been designed to be compatible with the wind wildlife mortality estimation software, GenEst.

Environmental life cycle assessment of a novel offshore wind energy design project: A United States based case study – Moussavi et al. 2023

Renewable energy resources, particularly offshore wind energy, and their role in combating global climate change have gained significant interest in recent years. Considering the potential life cycle impacts of such systems is essential to support effective policy and decision making. This study used life cycle assessment to compare the environmental sustainability of an offshore wind farm case study employing a novel foundation design to one employing a conventional foundation design. Literature has not yet examined the life cycle environmental sustainability of large-scale United States based facilities using a detailed data inventory from a real case study. The life cycle environmental single score of the novel design was 18% lower than that of the conventional design, highlighting that alternative foundation materials like concrete can help reduce the overall life cycle impact of a large scale offshore wind farm.

Assessing carcass relocation for offsetting golden eagle mortality at wind energy facilities – Lonsdorf et al. 2023

As wind energy expands to achieve the United States' net zero emission goals, compensatory mitigation will be required to offset negative effects on birds and bats. The golden eagle (*Aquila chrysaetos*) is particularly susceptible to collision with wind turbines, but only 1 option for offsetting mortalities has been approved by the United States Fish and Wildlife Service despite many sources of anthropogenic-caused mortality. We update a previously developed vehicle-collision model with data collected during 3 winters from 2016 to 2019 and integrate a resource equivalency analysis so that relocation of road-killed game animals can be used as mitigation to offset incidental mortality. We parameterized golden eagle behaviors using motion-sensitive cameras placed at roadside carcasses.

News & Press Releases

Marine Energy

Industry unites to praise ‘fantastic day’ for UK tidal energy sector – Offshore Energy

Industry associations, research centers and supported developers have all unanimously welcomed the results of the latest renewables auction in the UK – where 53MW of tidal stream projects won contracts – deeming the outcome a ‘resounding vote of confidence’ in the increasingly mature tidal energy sector. Seven developers including British, Spanish and US companies, secured contracts to develop a total of 53MW of tidal stream

energy across four locations in the UK. These include Orbital Marine Power, which was awarded two further contracts for difference (CfDs) totaling 7.2MW – building on the previous year’s allocation round where it also secured contracts for the same capacity. The CfDs will allow Orbital to expand its development of projects in Orkney with the construction of six floating tidal energy turbines now covered by the CfD scheme.

CorPower Ocean deploys C4 Wave Energy Converter. – CorPower Ocean

CorPower Ocean has successfully installed its first commercial scale wave energy converter in northern Portugal, as it accelerates towards making wave energy a bankable technology for mass deployment. The CorPower C4 device was launched in the port of Viana do Castelo, before being towed to the Aguçadoura site located 4km offshore. After connecting to a pre-installed UMACK anchor on the seabed, the device was connected to the Portuguese national grid through a subsea export cable. The system will now undergo a commissioning program, with functions and operational modes being gradually verified. Operations and Maintenance methods for offshore service access, device retrieval and tow-back to the service base in Viana do Castelo will also be tested.

EuropeWave pre-commercial procurement programme unveils 3 finalists – EuropeWave

Three cutting-edge wave energy projects have been selected to fabricate, deploy and demonstrate their prototype designs in the third and final phase of the EuropeWave Pre-Commercial Procurement (PCP) programme. These projects will share a budget of €13.4 million to continue the development of their wave energy device concepts. Following a thorough evaluation of the designs developed by the five projects in the second phase of the programme, which concluded at the end of June 2023, the three successful projects progressing to phase 3 are (subject to contract): CETO Wave Energy Ireland Limited – ACHIEVE; IDOM Consulting, Engineering, Architecture S.A.U. – MARMOK Atlantic; and Mocean Energy Limited – Blue Horizon 250.

Oscilla Power Completes Preliminary Steps for Launch of Triton-C at Wave Energy Test Site – Oscilla Power

In preparation for launching its Triton-C wave energy converter (WEC), Oscilla Power has completed two key preliminary steps: relocating the Triton-C and performing setup and staging activities at the launch site at the Wave Energy Test Site (WETS) in Hawaii. These steps are necessary precursors to a full, commercial-scale demonstration once work on the WETS site is completed by the U.S. Navy. During the 12-hour effort, the Triton-C was towed from Honolulu Harbor to the grid connection point at the WETS site in Kaneohe Bay where the Triton-C will eventually be tethered for a commercial-scale demonstration. At this location the team was able to rehearse and work through some of the activities needed for the ultimate deployment.

Wave Energy Gets Ready for a Big First – National Renewable Energy Laboratory

Researchers at the National Renewable Energy Laboratory are helping four promising wave energy devices prepare to survive a big first. The four will be the first technologies to face the waves at PacWave South, a new grid-connected wave energy test site off the Oregon coast that opens in 2025. NREL's pre-PacWave lab support, which is funded by the U.S. Department of Energy's Water Power Technologies Office, will help ensure these four devices—as well as three additional earlier-stage designs—can either edge closer to commercial success or ace their open-ocean trial. And the upcoming PacWave trials can help more than just individual devices get that edge; they could also help build confidence in the entire wave energy industry.

Wind Energy

[BOEM Completes Environmental Analysis for Proposed Wind Project Offshore New York](#) – U.S. Bureau of Ocean Energy Management (BOEM)

In support of the Biden-Harris administration's goal of deploying 30 gigawatts of offshore wind energy capacity by 2030, the BOEM has completed its environmental review of the proposed Empire Wind Farm Project offshore New York, which BOEM estimates could power more than 700,000 homes with clean renewable energy. Empire Wind, LLC, proposes to construct two offshore wind projects, known as Empire Wind 1 and Empire Wind 2, in its lease area located about 12 nautical miles (nm) south of Long Island, New York, and about 16.9 nm east of Long Branch, New Jersey. The two projects will be electrically isolated and independent from each other. The company proposes to construct up to 57 wind turbines for Empire Wind 1 and up to 90 wind turbines for Empire Wind 2, as well as up to two offshore substations with two cable routes connecting to the onshore electrical grid on Long Island.

[New artificial reefs bring new life to Hollandse Kust Zuid](#) – Vattenfall

Nine artificial reefs were deployed during the construction of the Hollandse Kust Zuid (HKZ) offshore wind farm. Two years on, it's time for a first stock-take. Sytske van den Akker, a marine biologist at Vattenfall's Environment and Sustainability Department, works with the ecological impacts of offshore wind farms. "When you construct an offshore wind farm, you face all kinds of environmental and other permit requirements. For us, too, the environment is a concern when we build a wind farm. With this in mind, we've taken several nature-inclusive measures for the HKZ project to further boost biodiversity. We set out to explore biodiversity trends at three different stages: in 2024, 2028 and 2033, in order to gain an understanding of long-term development." Vattenfall recently became a partner in the KOBINE project, which compares the costs of nature-inclusive measures with benefits to nature.

[Avangrid's Vineyard Wind 1 Begins Wind Turbine Installation Campaign](#) – Avangrid

Avangrid, Inc., a leading sustainable energy company and member of the Iberdrola Group, recently announced the start of the wind turbine installation campaign for Avangrid's Vineyard Wind 1 project. The installation campaign follows the successful

transportation earlier this week of the first GE Haliade-X Wind Turbine Generator (WTG) from the New Bedford Marine Commerce Terminal to the wind energy development area more than 30 miles off the coast of Cape Cod. The project will consist of 62 wind turbines to generate 806 Megawatts, enough to power more than 400,000 homes and businesses in Massachusetts. The massive components were transported by two 400 foot barges, the only two in existence capable of transporting in an upright position GE's massive Haliade-X turbine components. Once installed, the Haliade-X will rise more than 860 ft (or 260 meters) which is equivalent to 3X the height of the Flat Iron Building.

Britain's smallest bird of prey continues to thrive at Ray wind farm – Vattenfall

With only 1000 pairs in the UK, the merlin is red listed in the country. One of the habitats where the bird has successfully bred is Vattenfall's Ray wind farm in north-eastern England. The merlin, Britain's smallest bird of prey, has suffered a decline in the past, with an estimated population of around 1,000 pairs in the UK. In 2015 it was alarmingly added to the UK Red List of Birds of Conservation Concern. One of the sites where merlins breed is Ray wind farm in Northumberland in the north east of England. Since 2017, when the 16 turbine wind farm was inaugurated, 23 merlin chicks have fledged here, making the wind farm area one of the best in the region for merlin, according to Paul Galloway from Northumbria Ringing Group, which is a group of volunteers who monitor bird populations in the area.

Offshore construction in the North Sea begins on RWE's flagship Sofia Offshore Wind Farm – RWE

Offshore construction has officially started at RWE's 1.4 gigawatt (GW) Sofia Offshore Wind Farm, to install essential subsea cable infrastructure from the UK's north east coast to the wind farm site on Dogger Bank, in the central North Sea. The wind farm will use 100 Siemens Gamesa 14 megawatt (MW) offshore wind turbines (SG 14-222 DD), the most advanced offshore wind turbine technology available, and is scheduled to be completed by the end of 2026. Forty-four of the project's 100 turbines will be equipped with recyclable blades. Operations and maintenance activities for the wind farm will be located at RWE's new offshore wind operations base 'Grimsby Hub', which will also support Triton Knoll Offshore Wind Farm and future projects.