TETHYS BLAST

December 9, 2016

Welcome to the latest bi-weekly Tethys Blast, which will update you with new information available on Tethys, new features of Tethys, and current news articles of international interest on wind and marine renewable energy. We hope that this becomes a valuable tool to help you stay connected to your colleagues and to introduce you to new research, new contacts, and ongoing milestones in wind and marine renewable energy development.

WREN Releases Adaptive Management White Paper

WREN has just released a white paper on adaptive management in the wind energy industry. This paper is written from an international perspective and discusses the science of adaptive management as well as its intersection with policies and management practices that are most common to WREN member nations. The paper is available on Tethys at: https://tethys.pnnl.gov/publications/assessing-environmental-effects-wren-white-paper-adaptive-management-wind-energy

Job Opportunity at ERI

The Environmental Research Institute (ERI) is hiring a scientist to lead their research in 'Renewable Energy and the Environment.' ERI is a research center associated with the University of Highlands and Islands, and is situated in the town of Thurso in the northern Highlands of Scotland. More information is available here: http://eri.ac.uk/lead-scientist-renewable-energy-and-the-environment/

New Documents on Tethys

New documents regularly added to Tethys, hand-selected for their relevance to the environmental effects of wind and marine renewable energy. Short introductions to new or popular documents are listed below, accessible by the accompanying Tethys links:

Assessing the Cumulative Environmental Effects of Marine Renewable Energy Developments: Establishing Common Ground - Willsteed et al. 2017 (early release)

> Assessing and managing the cumulative impacts of human activities on the environment remains a major challenge to sustainable development. This challenge is highlighted by the worldwide expansion of marine renewable energy developments (MREDs) in areas already subject to multiple activities and climate change. This review investigates the origins and evolution of cumulative effects assessment to identify why the multitude of approaches and pertinent research have emerged, and discusses key considerations and challenges relevant to assessing the cumulative effects of MREDs and other activities on ecosystems.

Effects of Pile Driving on the Residency and Movement of Tagged Reef Fish - Iafrate et al. 2016

> The potential effects of pile driving on fish populations and commercial fisheries have received significant attention given the prevalence of pile driving occurring in coastal habitats throughout the world. Behavioral impacts of sound generated from these activities on fish typically have a greater area of influence than physical injury, and may therefore adversely affect a greater portion of the local population. This study used acoustic telemetry to assess the movement, residency, and survival of 15 sheepshead and 10 grey snapper in Port Canaveral, Florida, USA, in response to 35 days of pile driving at a wharf complex.

Bird Migration Intensity and Number of Collision Victims at the Wind Power Plant Le Peuchapatte (Switzerland) - Aschwanden & Liechti 2016

> Exploitation of wind energy holds a potential for conflict with bird life. Next to changes in habitat and loss of habitat, mortality of breeding and migratory birds from collisions is globally perceived to be one of the major problems. The solutions discussed in Switzerland to reduce the number of collisions of birds migrating on a broad front included the proposition to temporarily shut down wind turbines when migration intensity is high.

The Impacts of Wind Farms on Animal Species - Jana & Pogacnik 2008

> Wind farms are constructed in various areas without considering the protected animal species that are present there. In problem areas, there are some mitigation measures taken. In 55% of the studies, bird mortality rates ranges from 0.0 to 2.0 fatalities/turbine/year. 79.4% of the evaluated mortality rates for raptors range from 0.0 to 0.1 fatalities/turbine/year. The highest number of wind turbine fatalities has been recorded with a raptor *Buteo jamaicensis*, followed by seagull *Larus argentatus*, passerine *Eremophila alpestris* and domestic pigeon *Columbia livia*.

Events:
ORJIP Ocean Energy (http://www.orjip.org.uk/) is a UK-wide collaborative programme of environmental research with the aim of reducing consenting risks for wave, tidal stream and tidal range projects. Partnering with Annex IV, ORJIP provided content input to this Tethys Blast. ORJIP also wishes to make you aware of the following opportunities:

- Canadian OERA has launched a call for research proposals in the area of tidal energy, marine geoscience, and seismic and marine sound.

Industry News

Current news articles of international interest on wind and marine renewable energy include:

Marine Renewable Energy

Bombora eyes Oz wave test

> Wave developer Bombora is to test its first full-scale device components in Henderson, Western Australia during the first half of next year. The Perth outfit had planned to install a completed 1.5MW mWave device off the coast of Portugal early next year.

Wave energy device takes shape in Pembroke Dock

> A new wave energy device is taking shape in an engineering workshop in West Wales. The WaveSub wave energy converter has been designed by Swansea-based Marine Power Systems. Earlier this year the company awarded the tender for the manufacture of the device to Ledwood Mechanical Engineering, an engineering company based in Pembroke Dock. Ledwood is constructing a quarter scale prototype of WaveSub, which it's hoped will be deployed early next year to provide crucial data on the operation of the device.

Strategic plan for Europe's ocean energy

> During this year's Ocean Energy Forum, a new roadmap was released which identifies actions that should be taken to facilitate the emergence of a market for ocean energy in Europe. The Ocean Energy Strategic Roadmap sets out a strategy to deliver 10% of Europe's electricity from wave and tidal energy by the year 2050. This includes the need for a €250m investment package and a €70m insurance fund to attract investors and offset risk.

MeyGen turbine hits full power

Atlantis confirmed one of its MeyGen turbines achieved full power. Each MeyGen turbine is capable of generating 1.5 megawatts of power when the water speed reaches just over 3.0 meters per second, or around six knots of flow.

Wind Energy

Japan green light for WindFloat

Principle Power's WindFloat floating offshore wind foundation has been approved for use in Japanese waters. Japanese classification society ClassNK has issued an approval in principle for a WindFloat foundation that features a 5MW turbine, Principle Power said.

The first offshore wind farm in the U.S. is about to go online, despite a malfunctioning turbine

One of the five newly installed turbines off the shore of Block Island, Rhode Island, will be late getting spinning because someone at the General Electric factory in Saint-Nazaire, France, left a six-inch drill bit inside it, which damaged critical magnets. Fortunately, the turbine is still under warranty, so it's GE's responsibility to pay for floating new 60-pound magnets out to the broken turbine, hoisting them 330 feet into the air, and repairing the turbine's generator.

Apple Enters Agreement With World's Largest Wind Turbine Maker for Clean Energy Projects

Apple recently struck a deal with Xinjiang Goldwind Science & Technology, known as the world's largest wind turbine maker, which will bring clean energy into the production processes and manufacturing plants of Apple's partner facilities in China. Specifically, Goldwind's wholly-owned subsidiary Beijing Tianrun New Energy Investment will transfer a 30 percent stake each in four project companies to Apple.