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UNH Research Finds Oceans of the Future Require Healthy Soundscapes

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UNH Research Finds Oceans of the Future Require Healthy Soundscapes

Thursday, February 4, 2021

(HTTPS://WWW.UNH.EDU/UNHTODAY/NEWS/2021/02/04/unh-research-finds-oceans-of-the-future-require-healthy-soundscapes)
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DURHAM, N.H.—Since the beginning of the Industrial Revolution, the world’s oceans have become substantially busier and noisier. Increased shipping, fishing and recreational crafts are just a few ways in which humans and their inventions have added to the noise levels in the Earth’s oceans. Research from the University of New Hampshire indicates that this escalation in sound level can potentially have negative impacts on the ocean soundscape upon which marine life and its ecosystems rely and offers possible solutions for reducing the noise and returning the soundtrack of the healthy ocean.

“What is unique about this work is that it goes beyond just pointing out and describing the societal concern of rising sound levels,” said Jennifer Miksis-Olds, research professor and director of UNH’s



DIRECTOR OF UNH’S CENTER FOR ACOUSTICS RESEARCH AND EDUCATION, JENNIFER MIKSIS-OLDS, IN THE FIELD CONDUCTING ACOUSTIC RESEARCH TO DEVELOP A DEEPER UNDERSTANDING OF THE EFFECT OF HUMAN ACTIVITY ON SOUNDSCAPES IN THE WORLD’S OCEANS.

Center for Acoustics Research and Education. “It identifies ocean users that have already made a positive, progressive difference in addressing the challenge and proposes action that will guide future ocean users to being sound environmental stewards.”

The paper (<https://science.sciencemag.org/content/371/6529/eaba4658.abstract>), published in the journal Science, brought together a global team of researchers to understand how changing ocean soundscapes affect wildlife, from invertebrates to whales, in the oceans. They gathered, assessed and consolidated evidence from more than 10,000 papers that looked at how anthropony, or sounds generated by humans, can potentially adversely affect marine animals at multiple levels, including their behavior, physiology, and, in extreme cases, survival.

“Underwater soundscapes are not an aspect of the ocean that people naturally relate to because humans are visual creatures, but sound is the dominant sensory mode for life underwater and the masking of biologically significant sounds by elevated sound levels can be detrimental to the health of ocean creatures,” said Miksis-Olds.

Climate change is also a contributor leading to the deterioration of marine habitats, such as coral reefs, seagrass meadows and kelp beds, and has further silenced their characteristic sound—the soundtrack of a healthy ocean—that guides the larvae of fish and other animals home. It is no longer audible for many ecosystems and regions. The paper highlights new knowledge gained during the human lockdown under COVID-19 as evidence for the potential rapid recovery of ocean soundscapes when human activity is reduced.

“The deep, dark ocean is conceived as a distant, remote ecosystem, even by marine scientists,” said Carlos M. Duarte, professor of marine science at King Abdullah University of Science and Technology (KAUST) and lead author. “However, as I was listening, years ago, to a hydrophone recording acquired off the U.S. West Coast, I was surprised to hear the clear sound of rain falling on the surface as the dominant sound in the deep-sea ocean environment. I then realized how acoustically-connected the ocean surface, where most human noise is generated, is to the deep sea; just 1,000 m, less than 1 second apart!”

The researchers hope this study inspires management to increase their actions to mitigate the impacts of noise from humans and their activities on soundscapes. They identify a number of options, like regulating speed and noise in major shipping routes as well as reducing the emissions of chemical pollutants and greenhouse gases, which they say could have immediate effects and allow marine animals to reestablish their use of ocean sound as a central ecological trait in a healthy ocean.

The University of New Hampshire (<http://unh.edu>) inspires innovation and transforms lives in our state, nation, and world. More than 16,000 students from all 50 states and 71 countries engage with an award-winning faculty in top-ranked programs in business, engineering, law, health and human services, liberal arts and the sciences across more than 200 programs of study. As one of the nation’s highest-performing research universities, UNH partners with NASA, NOAA, NSF and NIH, and receives more than \$110 million in competitive external funding every year to further explore and define the frontiers of land, sea and space.

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Credit: UNH

Caption: Director of UNH’s Center for Acoustics Research and Education, Jennifer Miksis-Olds, in the field conducting acoustic research to develop a deeper understanding of the effect of human activity on soundscapes in the world’s oceans.

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