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Meredith Bennett
Duquesne University

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Noise Pollution with Deadly Potential

By Meredith Bennett

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Staff Article

Oceans face ever-increasing hazards, including rising sea temperatures, plastic pollution, agricultural runoff, and oil spills. Noise pollution is a less-understood threat to marine life. One source of this pollution is seismic mapping, an acoustic imaging technique that uses powerful, low-frequency impulses to search for oil deposits in the ocean. In the journal *Nature Ecology & Evolution*, a [study](#) conducted by Robert D. McCauley and his colleagues demonstrates the harmful effects of seismic mapping operations on zooplankton, a species vital to ecosystem health. The costs of seismic mapping are especially relevant today. The Trump administration is currently distributing permits to companies that will allow the use of seismic mapping to search for oil and gas sources in the Atlantic Ocean. This raises major concerns about the effects of these actions on ocean environments.

Zooplankton, also known as krill, are some of the most important organisms in marine ecosystems. All organisms, from the smallest crustacean to the fiercest predator, rely directly or indirectly on the health these plankton. In their research on zooplankton, McCauley and his team used an air gun like those used in commercial seismic mapping. They then exposed the plankton to air gun signals. Seismic air guns release high-pressure air into the ocean, creating powerful blasts that travel over extremely large distances.



After they exposed the plankton to the blasts, the researchers compared their abundance with that before the blast. The

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A group of Antarctic krill.

number of zooplankton was significantly reduced, and the amount of dead plankton in the waters increased by 2 to 3 times. Large scale depletion of these microorganisms will affect the structure of entire ecosystems, indicating the danger seismic mapping poses to oceans.

The minimal research that has been done on seismic mapping has generally focused on its impact on whales. Concern for whales has been renewed recently, because of the potential seismic blasting in the Atlantic Ocean. The Trump administration, in addition to standard permits, is issuing “incidental take” permits that excuse companies who harm marine mammals like whales. Because many whales feed primarily on zooplankton, they are also impacted by the depletion of plankton caused by seismic air gun operations. Virtually no research had been done on plankton’s responses to seismic mapping before McCauley’s study. His research confirms both the destructiveness of seismic mapping and the importance of plankton in ecosystems.



"2005: Right Whales Offshore of Georgia" by Georgia Wildlife Resources Division is licensed under [CC BY-NC-SA 2.0](https://creativecommons.org/licenses/by-nc-sa/2.0/)

A North Atlantic Right Whale with her calf.

The effects of seismic air gun operations on marine ecosystems are substantial. It significantly reduces the abundance of important microorganisms like zooplankton, which serve as the basis for ocean food webs. This disruption can be especially detrimental to whale species who are often already endangered. The issue of seismic mapping has been brought to national attention with the government’s decision to issue permits to companies that will employ this surveying technique. Although the situation seems dire, there are environmental groups and governmental officials who are opposed to seismic blasting and who are speaking out against it. With the voices of those who care for our oceans, we can fight to limit the destructive effects of seismic mapping.

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