

New international standards needed to manage ocean noise

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As governments and industries expand their use of high-decibel seismic surveys to explore the ocean bottom for resources, experts from eight universities and environmental organizations are calling for new global standards and mitigation strategies.

Their goal is to minimize the amount of sound the surveys produce and reduce risks the surveys and other underwater human [noise pollution](#) poses to vulnerable marine life.

Firms and agencies conducting the surveys would benefit from these new measures, the experts assert, because instead of having to navigate

an assortment of rules that vary by nation or region, they would have a uniform set of standards to follow.

"In recent years, we've seen an increase in the use of seismic surveys for [oil and gas exploration](#) and research, and for establishing national resource claims on ever-larger geographic scales. Surveys are now occurring in, or proposed for, many previously unexploited regions including parts of the Arctic Ocean and off the U.S. Atlantic coast," said Douglas P. Nowacek, an expert on marine ecology and bioacoustics at Duke University.

"The time has come for industries, governments, scientists and environmental organizations to work together to set practical guidelines to minimize the risks," he said.

Nowacek and his colleagues published their recommendations in a peer-reviewed paper today (Sept. 1) in the journal *Frontiers in Ecology and the Environment*.

Seismic survey impulses are among the loudest noises humans put into the oceans, and in some cases can be detected more than 2,500 miles away. The increase in ocean noise they cause can mask sounds whales and other species rely on to communicate, navigate, find food or avoid predators. Long-term exposure to the noise can also lead to chronic stress and disorientation in animals, and auditory damage.

To reduce these risks, the new paper recommends that ocean noise be recognized globally as a pollutant - something the European Union already recognizes - and managed through a revision to the existing International Convention on the Prevention of Pollution from Ships. This will allow the establishment of consistent, scientifically based standards and monitoring programs for [ocean noise](#) levels, Nowacek said.

Using empirical data from this monitoring and from ongoing field studies the convention would support, scientists could more thoroughly assess surveys' cumulative long-term impacts on marine life and identify areas where seismic activities should be prohibited or temporarily limited to protect important habitats or vulnerable populations.

Wider use of multi-client surveys could also cut risks. By collecting data simultaneously for two or more firms or agencies, these surveys significantly reduce the number of surveys required in a region, without forcing clients to share proprietary data. They've been successfully tested in Norway.

Emerging technologies could further reduce a survey's acoustic footprint. Many of these technologies, including the marine vibrator - which conducts surveys using a steady pulse of low-pressure sound waves over a longer period - are "not that far away from industrial scale use," Nowacek said.

The need to implement these new protective measures and scale up these technologies is urgent, he stressed. As sea ice in the Arctic Ocean rapidly diminishes, bordering nations are eyeing new underwater oil and gas exploration and research prospects there. Increased activity is also proposed for lower latitudes.

"Survey permits are now being considered for oil and gas exploration along the U.S. East Coast that would allow surveys to occur as close as three miles from the coast. However, the current draft of the U.S. Bureau of Ocean Energy Management's five-year plan for East Coast oil and [gas exploration](#) allows oil and gas lease areas to be no closer than 50 miles offshore. That's a pretty big difference," Nowacek said. "While gathering some data from beyond a lease area is necessary, allowing these industries to survey to within three miles of the coast is excessive."

More information: "Marine Seismic Surveys and Ocean Noise: Time for Coordinated and Prudent Planning," Douglas P. Nowacek, Christopher W. Clark, David Mann, Patrick J.O. Miller, Howard C. Rosenbaum, Jay S. Golden, Michael Jasny, James Kraska, Brandon L. Southall, Sept. 1, 2015, in *Frontiers in Ecology and the Environment*.
[dx.doi.org/10.1890/130286](https://doi.org/10.1890/130286)

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