

The overlooked commotion of particle motion in the ocean

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Most aquatic species sense sound via particle motion, yet few studies on underwater acoustic ecology have included measurements of particle motion.

In response, researchers from the Universities of Exeter, Bristol and Leiden and CEFAS have developed a user-friendly introduction to particle motion, explaining how and when it ought to be measured, and provide open-access analytical tools to maximise its uptake.

A growing number of studies on the behaviour of [aquatic animals](#) are revealing the importance of underwater sound, yet these studies typically overlook the component of sound sensed by most species: particle motion.

Lead author, Dr Sophie Nedelec from the University of Bristol said: "The pressure component of underwater sound is commonly measured; this is the component of [sound](#) heard by mammals and also some fish, but all fish and many invertebrates predominantly or exclusively detect particle motion. Fish and invertebrates are far more numerous than mammals, they underpin aquatic food webs, and are socio-economically important across the globe. So if we want to understand underwater acoustic ecology it is vital that we consider particle motion."

Co-author, Dr Steve Simpson from the Biosciences department at the University of Exeter said: "Sound is an important orientation cue and communication channel for many species, but man-made noise is on the

increase, affecting behaviour, physiology and development. Measurement of particle motion will enable us to better understand the threats that many [aquatic species](#) face, from their perspective."

"We've known that particle motion was important for years but until recently the availability of instrumentation and a lack of understanding of particle motion has held many back from measuring and reporting it. This paper and the tools that go with it will provide support and tools to researchers, consultants and policy-makers," said Dr Andy Radford from the University of Bristol.

This research is published in *Methods in Ecology and Evolution*: "Particle motion: the missing link in underwater acoustic ecology"

More information: Sophie L. Nedelec et al. Particle motion: the missing link in underwater acoustic ecology, *Methods in Ecology and Evolution* (2016). [DOI: 10.1111/2041-210x.12544](https://doi.org/10.1111/2041-210x.12544)

Provided by University of Exeter

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