

Oysters close their shells in response to low-frequency sounds

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Electric oyster MolluSCAN eye project. Credit: Jean-Charles Massabuau

Oysters rapidly close their shells in response to low-frequency sounds

characteristic of marine noise pollution, according to a study published October 25, 2017 in the open-access journal *PLOS ONE* by Jean-Charles Massabuau from University of Bordeaux, France, and colleagues.

Noise pollution is a major problem in the [marine environment](#), yet little is known about its impact on invertebrates. Unknowns include whether invertebrates "hear"—that is, perceive—sounds and whether noise pollution can affect what they hear normally.

Massabuau and colleagues investigated the impact of noise on 32 oysters in the laboratory, using a loudspeaker to play sounds under water in a range of frequencies. Behavioral assessments included how many oysters closed their shells as well as how soon and how much they closed them in response to noise. Shell position is an index of welfare in oysters, which keep with their shells wide open when settled but rapidly close them in response to threats or stress.

The researchers found that when acoustic energies were high enough, oysters rapidly closed their shells at sound frequencies between 10 and 1000 hertz. Their maximum sensitivity was at low frequencies (between 10 and to 200 hertz).

The sounds and vibrations from breaking waves and currents are in the oysters' sensitivity range, and the researchers propose that oysters may "hear" tidal cues that trigger appropriate behavior as the tide rises. In addition, most marine noise pollution is due to cargo boats, and most of the noise from shipping is at [low frequencies](#) that oysters "hear" best. Other sources of marine [noise pollution](#) also generate [low-frequency sounds](#), including explosions, seismic research, pile driving, wind turbines. All of these noises can thus muddle the normal [oyster](#) sound landscape. In contrast, small recreational boats, jet skis, and water bikes produce sounds that are too high for oysters to "hear."

"Noise pollution in the oceans is a growing problem and we have all heard about its impact on whales," Massabuau states. "But the oceans are full of different animal types. What are their sound perception capacities? This paper talks about the sense of hearing in oysters and they can hear a lot from 10-1000 Hz."

More information: Charifi M, Sow M, Ciret P, Benomar S, Massabuau J-C (2017) The sense of hearing in the Pacific oyster, *Magallana gigas*. *PLoS ONE* 12(10): e0185353.

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