

Noise pollution in the Mediterranean

European Commission

The eye-sight of whales and dolphins is not very efficient underwater, so they rely on their sonar capabilities to learn about their immediate surroundings. Loud noises from maritime transport propellers, experimental underwater acoustic devices, industrial or military sonar can incapacitate whales and dolphins; they are unable to hear the sounds necessary for their survival. Sound travels very well underwater; in the open sea there is little chance for marine animals to avoid the human-made invasion of noise. Everyday tasks become difficult for the animals and they can not as readily find prey or orientate themselves.

Although the negative effects of underwater noise pollution may seem straightforward, scientific data is limited indeed. Researchers use hydrophones (microphones designed for underwater use) to collect new data in deep waters, up to thousands of metres below sea level. An array of such devices can also be used to locate the source of any sound nearby. Arrays deployed on the sea bed create an acoustic observatory that does not interfere with marine life, compared with using ordinary listening devices aboard a ship. It also allows for continuous access to data.

Such acoustic observatories have been installed as part of the European demonstration mission called LIDO (Listening to the Deep Ocean environment). The sound data collected is sent to onshore laboratories via optical fibre cables. Sounds made by whales and dolphins can be heard in real time, with a range of several kilometres. LIDO is coordinated from the Laboratory of Applied Bioacoustics in Vilanova i la Geltrú, near Barcelona. It is here where all the sound data is analysed. The sound data is sent from eleven acoustic observatories across Europe that together are known as ESONET (the European Sea-Floor Observatories Network).

At the Laboratory of Applied Bioacoustics the data is filtered to find all interesting acoustic events – whistles or sonar sounds from whales and dolphins or human generated noises. This base of classified sounds should eventually allow for the automatic identification and classification of different sounds by computers. Distinguishing the sound of, for example, a ship from that of a sperm whale may be easy for a human, but it is quite difficult for a machine. An automatic method of identification has been a challenge for researchers.

Once the remaining technical issues have been resolved, the system will be able to continuously monitor populations of marine animals. Of particular interest are their migration patterns and their reaction to man-made noise. The information will be made available on a website where the public can listen to real-time sounds being received from the observatories. The sounds will also be visualised as a sonogram, indicating the presence and position of the sound source (e.g. a whale or a boat).

The role of sound in life underwater is not yet clear. But, as it would seem in this

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case, listening is the correct step towards understanding.

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