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HEARING UNDERWATER: THE IMPACT OF NOISE ON THE MECHANORECEPTION OF THE COLONIAL ASCIDIAN *BOTRYLLUS SCHOSSERI*

L. Manni[1], G. Sabbadin[1], S. Domenichi[1], L. Ballarin[1], V. Zaffaroni-Caorsi[2], G. Zambon[2]

[1]Dept. of Biology, University of Padova, Italy; [2]Dept. of Earth and Environmental Sciences, University of Milano-Bicocca, Milan, Italy.
E-mail: lucia.manni@unipd.it

Although underwater noise is considered a highly pervasive pollutant in our basins, its effects on marine invertebrates are mostly unknown. Sessile animals, such as ascidians, cannot escape underwater noise generated by maritime traffic; nonetheless, they are provided with a variety of mechanoreceptors, possibly affected by noise. Among these receptors, there are both epidermal peripheral neurons (primary receptor cells), and the secondary sensory cells of the coronal organ considered homologues to vertebrate hair cells of the inner ear and the lateral line system. Both ascidian primary and secondary mechanoreceptor cells are involved in controlling the oral siphon activity, so in the physiological control of feeding and respiration, and in defense responses. Here, we present our results on the effects of anthropogenic underwater noise on the colonial ascidian *Botryllus schlosseri*. We exposed colonies, sampled in the Venetian Lagoon close to Chioggia (Italy) to noise (peak bands 63-125 Hz), mimicking the low frequency maritime traffic noise. After measurements of the lagoon soundscape, we tested noise levels (138.36-163 dB) comparable to those produced by boats passing close to Chioggia. To verify the effects induced by treatments, we used behavioral assays testing the mechanoreceptor ability to detect stimuli, and physiological assays. Results show that noise has negative effects on mechanoreceptors, reducing their sensitivity. The study evidences the necessity to monitor this pollutant for reaching the Good Environmental Status of European basins.

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