

CHARACTERIZATION OF THE ACOUSTIC ACTIVITY OF BIVALVE *Perna perna* (LINNAEUS, 1758)

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In coastal regions, bivalves have great social, economic and ecological importance (Di Iorio et al., 2012). *Perna perna* is a Mytilidae that presents a wide distribution in the Brazilian coast, being much used in the mussel farming (Resgalla et al., 2007). Although widely studied, there is no previous research using the acoustic approach for the specie.

This study aims to characterize, in the laboratory, the sound emitted by the mussel *Perna perna* and analyze the variation of its acoustic activity rate regarding the sample densities of the population. Six treatments were defined, divided in two groups of three, containing 10, 40 and 80 individuals each. In the first group the mussel signals were recorded with the fully submerged individuals and in the second the mussels were kept partially submerged, simulating intertidal zone. The acquisition time of the signal was 10 minutes per treatment, and each treatment was recorded eight times, totaling eight hours of recordings. The recordings occurred in a tank with acoustic insulation, built for this study.

In the end of the recordings, after identification of the signals, 4.344 selections of bivalve acoustic activities were performed. The sounds were related to valve movements and identified as impulsive events. The mussel's peak frequency ranged from 0.14 to 23.90 kHz ($= 8 \pm 6$ kHz). The highest activity concentration occurred in the 4 - 6 kHz band ($N = 1.665$). The peak power ranged from 43 to 105 dB re 1 μ Pa ($= 63 \pm 7$ dB re 1 μ Pa). Regarding signal duration, the data showed that up to 95% of activities had a duration of up to 0.03 seconds ($= 0.02 \pm 0.01$ s / $N = 4.115$), with a higher concentration in the class of 0.01 - 0.02 s ($N = 2.121$). According to kruskal Wallis test, the acoustic activity rate is dependent on the sample densities of the population. The results provided subsidies for population density estimation of the mussel from its acoustic activity. In addition, can be an important step for its monitoring over a spatial and temporal scale.

Di Iorio, L., Gervaise, C., Jaud, V., Robson, A. A., and Chauvaud, L. (2012). "Hydrophone detects cracking sounds: Non-intrusive monitoring of bivalve movement," J. Exp. Mar. Bio. Ecol., 432–433, 9–16.

Resgalla, C., Elisângela, J., Brasil, D. S., and Salomão, L. C. (2007). "The effect of temperature and salinity on the physiological rates of the mussel *Perna perna* (Linnaeus 1758)," Brazilian Arch. Biol. Technol., 50, 543–556.