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Temperature effects on larval growth and survival in five species of *Caribbean echinoids*

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Under the climate change scenario, the possible effects of ocean warming were investigated on the larvae of five species of *Caribbean echinoids*: *Echinometra lucunter*, *Echinometra viridis*, *Clypeaster rosaceus*, *Tripneustes ventricosus* and *Lytechinus williamsi*. Their thermal tolerance was evaluated rearing them for six days under different temperature regimes (26, 28, 30, 32, 34, 36°C). The larval sensitivity to the treatments was evaluated on the base of survival and growth. The rearing at higher temperatures has revealed a great suffering state of the larvae by inducing both reduction of live larvae and abnormality in their development. Higher temperature treatments have shown a general lethal threshold at about 34°C for most of the species. As an exception, the lethal threshold of *Echinometra* species was 36°C, few larvae of which being still capable of survival at the temperature of 34°C. The studies have also analyzed the effect of water warming on the larvae development in terms of size and symmetry. The results put in evidence the presence of a critical upper temperature (about 32°C) at which the larvae of all species reveal a great suffering state that translates in the reduction of size (*i.e.*, body, stomach and postero-dorsal arm) and abnormalities (*i.e.*, strong difference in the lengths of the two postero-dorsal arms). As sea surface temperatures are predicted to increase of 4-5°C by 2100, the high percentage of abnormal larvae and their scarce survival observed at 32- 34°C treatments indicate that the early stages of these species could be affected by future global warming.

Biography

Valentina Perricone has completed with honors her Master degree in Marine Biology at the age of 25 years from Alma Mater Studiorum University of Bologna. Previously, she had completed with honors the Bachelor's degree in Natural Science at the Federico II University of Naples in Italy. In 2015, thanks to a fellowship of University of Bologna, she spent six months at the Bocas del Toro Research Station of the Smithsonian Tropical Research Institute (Panama) working on her Master thesis, studying the temperature effects on larval growth and survival of Caribbean Echinoids.

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