

An intertidal host-parasite system: predicting some of the effects of climate change

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Seawater temperature rise and increased input of freshwater into the oceans, resulting from atmospheric carbon dioxide build-up, are among the most important climate change related factors affecting costal marine ecosystems. These changes are likely to impact many biotic interactions, including host–parasite interactions which are particularly dependent on temperature conditions.

For the Ria de Aveiro coastal lagoon (Portugal), by the end of the century, projections describe an increase of water temperature by 2 °C and a decrease of precipitation and average water discharges. In this way, in the present study we tested the hypothesis that *Cerastoderma edule* exposure to different pH, salinity and temperature levels, as proxy for climate change, modified the infection success of the trematode parasite *Himasthla elongata*. Accordingly, a series of laboratory experiments were conducted by exposing cockles to *H. elongata* cercariae, in distinct experimental conditions, differing in terms of seawater pH, salinity and temperature, during 96 h. At experiment completion, success of infection and biochemical responses of cockles were analysed.

The results showed that 1) the cercariae infection success increased with water acidification and higher temperature, while different salinities showed no influence and 2) cockles biochemical responses differed when each stressor (parasitism or climate change variables) was acting alone in comparison to the combination of parasitism with each of the three variables tested. The present findings emphasize the increased impact of parasites on cockle populations in a global warming scenario.



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