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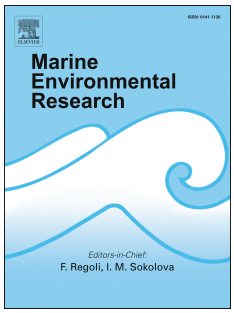


Transgenerational deleterious effects of ocean acidification on the reproductive success of a keystone crustacean (*Gammarus locusta*).

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# Transgenerational deleterious effects of ocean acidification on the reproductive success of a keystone crustacean (*Gammarus locusta*).

**Francisco O. Borges[1*], Cátia Figueiredo[1], Eduardo Sampaio[1], Rui Rosa[1], Tiago F. Grilo[1]**

[1]MARE – Marine and Environmental Sciences Centre, Laboratório Marítimo da Guia, Faculdade de Ciências da Universidade de Lisboa, 2750-374 Cascais, Portugal.

*Corresponding author. Email: franciscoomcborges@gmail.com

## Abstract

Ocean acidification (OA) poses a global threat to marine biodiversity. Notwithstanding, marine organisms may maintain their performance under future OA conditions, either through acclimation or evolutionary adaptation. Surprisingly, the transgenerational effects of high $CO_2$ exposure in crustaceans are still poorly understood. For the first time, the present study investigated the transgenerational effect of OA, from hatching to maturity, of a key amphipod species (*Gammarus locusta*). Negative transgenerational effects were observed on survival of the acidified lineage, resulting in significant declines (10-15%) compared to the control groups in each generation. Mate-guarding duration was also significantly reduced under high $CO_2$ and this effect was not alleviated by transgenerational acclimation, indicating that precopulatory behaviours can be disturbed under a future high $CO_2$ scenario. Although OA may initially stimulate female investment, transgenerational exposure led to a general decline in egg number and fecundity. Overall, the present findings suggest a potential fitness reduction of

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