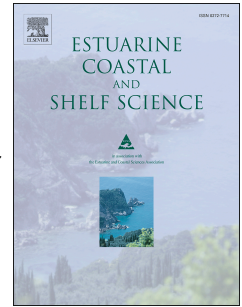


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Effect of the alien invasive bivalve *Corbicula fluminea* on the nutrient dynamics under climate change scenarios

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1 **Effect of the alien invasive bivalve *Corbicula fluminea* on the nutrient dynamics under**
2 **climate change scenarios.**

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23 **ABSTRACT**

24 The main aim of this study was to evaluate the impact of the alien invasive bivalve *Corbicula*
25 *fluminea* (Müller, 1774) in the nutrient dynamics of temperate estuarine systems (oligohaline
26 areas) under climate change scenarios.

27 The scenarios simulated shifts in climatic conditions, following salinity (0 or 5) and
28 temperature (24 or 30 °C) changes, usual during drought and heat wave events. The effect of
29 the individual size/age (different size classes with fixed biomass) and density (various
30 densities of < 1 cm clams) on the bioturbation-associated nutrient dynamics were also
31 evaluated under an 18-day laboratory experimental setup.

32 Results highlight the significant effect of *C. fluminea* on the ecosystem nutrient dynamics,
33 enhancing the efflux of both phosphate and dissolved inorganic nitrogen (DIN) from the
34 sediments to the water column. Both drought and heat wave events will have an impact on
35 the DIN dynamics within *C. fluminea* colonized systems, favouring a higher NH₄-N efflux.
36 The population structure of *C. fluminea* will have a decisive role on the impact of the species,
37 with stronger nutrient effluxes associated with a predominantly juvenile population structure.

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