# Metabolic responses of local vs invasive crab species to warming mediated by different levels of environmental predictability

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Commentato [AB1]: Anche io sono NBFC!

## Abstract

Coastal environments are vulnerable to the impacts of human activities and climate change. The increased frequency of extreme events such as heat waves and the decreasing average oxygen levels in coastal environments make it crucial to study the combined impact of warming and lack of oxygen. Yet, water temperature and dissolved oxygen oscillate on multiple scales, from daily to seasonal and decadal, sometimes in a way which is quite regular and so potentially predictable by coastal species, which may tune their metabolism to increase their fitness under these oscillating environmental regimes in the face of climate change. A good example of such environmental predictability is the constant, regular daily fluctuations of temperature and dissolved oxygen that occur in the euphotic zone, whose physiological implications have only recently begun to be explored. Thus, examining metabolic responses to varying levels of environmental predictability can help us understand future responses of species to changing climate. The Venice Lagoon, the largest in the Mediterranean, experiences strong environmental fluctuations on multiple spatio-temporal scales and is an ideal case study to understand the ecological implications of environmental predictability through an interdisciplinary approach combining experimental work and modelling. This work compares the metabolic responses of two species found in the Venice Lagoon: the native green crab *Carcinus aestuarii* and the invasive Atlantic blue crab *Callinectes sapidus*. In an aquarium experiment, we compare the metabolic response (oxygen consumption rate. $P_{O2\ Crit}$) to increasing temperature and under different treatments of oxygen and temperature fluctuations (and so, environmental predictability) of the former species, adapted to the local environment, and the blue crab, an invader native from the Atlantic coast. Our results can help understand how organisms naturally living in fluctuating environments can adapt to climate change and contribute to the natural science basis needed to make more accurate predictions for the future.

Commentato [AB2]: Levo i riferimenti a environment, perché il tuo studio è in lab, e community, perché lavori su specie.

Boxes: Poster