Thermal vulnerability and acclimation capacity of tropical and temperate coastal organisms

Conference Programme and Map

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Understanding the impact of global warming on biodiversity is one of the most important challenges faced by mankind. Equally important is the identification of which ecosystems and species are more vulnerable to this threat. The rate of climate warming is predicted to be lower in the tropics than in temperate zones, however, species that live in aseasonal environments may suffer disproportionally from small increases in temperature. Additionally, thermal limits and acclimation capacity remain largely unknown for most species hindering projections of future distribution ranges. The aim of the present work was to (1) estimate the critical thermal maximum (CTMax), (2) the intraspecific variability in upper thermal limits, (3) the warming tolerance (Maximum Habitat Temperature - CTMax) and (4) the acclimation capacity of gastropods, crabs, shrimp and fish commonly found on tide pools in tropical and temperate areas. CTMax was higher for tropical than temperate species. Acclimation capacity, warming tolerance and intraspecific variation was higher for temperate species than for tropical species. Our results strongly suggest that tropical tide pool species are the ones in greatest jeopardy towards future climate warming.