

Adaptation and acclimation in a rapidly changing marine environment: A case study of the brown seaweed *Dictyota dichotoma* in Europe

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Global climate change is affecting marine species and assemblages worldwide. While a tremendous effort has already been done to assess the impact of changing environmental conditions on marine life, there are some important knowledge gaps that hamper our ability to accurately predict the persistence of marine species under global climate change. Most importantly, little is still known about the occurrence of intraspecific variation in fitness-related traits, which may allow populations from the same species to withstand different levels of stress. Relying on tolerance estimates from a single population may therefore lead to incorrect assessments of species responses to climate change, especially in the context of thermal tolerance limits, since it will underestimate the vulnerability of central populations to warming and/or overestimate the sensitivity of warm-edge populations.

To address this issue, we are evaluating the thermal response of growth rate and photosynthesis for different populations of the brown seaweed *Dictyota dichotoma*. In order to define the vulnerability of these different *D. Dichotoma* populations to global warming, we are constructing thermal performance curves for each trait, which allows us to identify the optimum temperature for growth and photosynthesis as well as the thermal limits for performance and tolerance in each population.

Keywords: Climate change, Intraspecific variation, *Dictyota dichotoma*