Impact of CO2-Driven Ocean Acidification on Marine Animals - Toward a Predictive Model

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As a consequence of increasing atmospheric CO2, the world's oceans are slowly becoming more acidic and profound changes in marine ecosystems are certain. Alarmingly little is known about the long term impact of predicted climate changes (both ocean acidification and global warming) on marine invertebrate in general and larval development in particular and available data reveal contradictory results and apparent paradoxes [1]. We start to understand that more physiological studies are needed to understand contradictory results (e.g. species-specific responses in closely related taxa) and solve apparent paradoxes (e.g. positive impacts in notionally at risk species such as calcifying sea urchins). We have investigated the impact of both ocean acidification and global warming on the larval physiology of several animal species using a broad range of approaches: respiration, feeding, swimming, calcification, growth rates, etc. These data and the available literature will be summarized as a predictive physiological model and we will link inter- and intra-specific variability to life-history strategies and historical environmental variability. I will emphasize gaps in knowledge and how to define life-cycle bottlenecks and species physiological tolerance to future climate change

References

[1]   S. Dupont, O. Ortega-Martinez and M. Thorndyke, *Ecotoxicology.* **19** (2010).