

The impact of climate change on larval energetics of molluscs on the southeast coast of Australia

ARC Discovery Scholarship – Indigenous PhD Candidate sought

The School of Science and Health at the University of Western Sydney, Australia, is seeking a PhD candidate to work on an ARC Discovery Indigenous project in conjunction with School of Biological Science, University of Sydney. To be supervised by Prof. Pauline Ross and Dr. Laura Parker (previous ARC Discovery Indigenous Research Fellow).

Ocean acidification (OA), caused by the increased absorption of anthropogenic atmospheric carbon dioxide (CO₂) emissions by the ocean, is occurring at an alarming rate. Current emissions scenarios suggests that by the end of this century the pH of the surface oceans will have dropped by an average of 0.3-0.5 pH units compared to present day levels. Those marine organisms which are most sensitive to OA are the shelled molluscs with the early life history larval stages being more sensitive than the juvenile and adult stages. To date most studies on mollusc larvae focus on the impacts of OA as a sole stressor. This ignores the 'real world' situation, where these critical life history stages will be impacted by multiple environmental stressors.

Mollusc larvae distributed along the southeast coast of Australia are particularly vulnerable because this is a climate change 'hotspot' characterised by rising sea-surface temperatures & fluctuations in salinity. While a limited number of studies have investigated the synergistic impacts of OA and temperature and OA and salinity on mollusc larvae, our lack of understanding of the synergistic impact of all three stressors (OA, temperature and salinity) limits predictions about the fate of larval molluscs and adult populations. Mollusc larvae develop and survive within an optimal temperature and salinity threshold range. If these physiological thresholds are breached, fitness and performance will be compromised. It has been found that previous exposure of mollusc populations to OA may reduce the energetic costs required to cope with OA stress.

We have reared a unique population of Sydney rock oysters which are resistant to OA, having been exposed to OA for two generations. We want to know whether the offspring of these OA resistant oysters will have a better capacity to cope with the combined synergistic impact of environmental stressors (OA, temperature and salinity). This project will be done in association with the Department of Primary Industry, in their state of the art laboratories at Port Stephens.

It will use NMR spectroscopy and other techniques including analysis of fatty acids to determine the energetic reserves of a range of mollusc larvae including the Sydney rock oyster.

Candidates will:

- demonstrate excellent academic performance related to the research proposed.
- be enthusiastic and highly motivated to undertake further study at an advanced level
- excellent written and communication skills and capacity to work both independently and as a team member

What does the Scholarship Provide?

The successful candidate will receive \$34,653 per annum for three years. Includes opportunity to travel to Tasmania and work in the state of the art laboratories in the Institute for Marine and Antarctic studies.

Need more information?

Contact Prof. Pauline Ross to discuss the project: pm.ross@uws.edu.au or +61 2 4570 1306. Contact the Research Scholarships Development Officer Ms Tracy Mills to discuss enrolment and scholarship: HDRscholarships@uws.edu.au or +61 2 4736 0966

How to apply

Submit an application form, and CV by the closing date, 27 November 2014. The application form can be downloaded from the web at www.uws.edu.au/research/scholarships

APPLICATIONS CLOSE 27 NOVEMBER 2014