Australian National University

Climate change and global warming's evil (?) cousin, ocean acidification: effects on metabolic performance in coral reef fishes

Thursday 23 May 2013, 1pm

Dr Jodie Rummer, Super Science Research Fellow,
ARC Centre of Excellence for Coral Reef Studies

Gould Seminar Room, (Rm 235) Gould Building (Bldg. 116), Linnaeus Way, ANU

Climate change models project – by the end of this century – tropical oceans will have increased in temperature by 2-3ºC due to global warming and become more acidic (pH decrease by >0.3) due to the uptake of anthropogenic CO_2. Tropical species, especially equatorial populations, are predicted to be most impacted because they may be adapted to a narrow range of temperatures in their local environment. Elevated temperatures and CO_2 are suggested to impact marine ecosystems by decreasing the capacity for fish and other water-breathers to take up oxygen. Reductions in aerobic scope (the difference between resting and maximal oxygen consumption rates) result in less energy available for vital life-history processes such as growth and reproduction. In my talk, I will discuss two recently completed projects where I investigated the following:

1. The thermal optima for aerobic scope in equatorial populations of damselfishes and cardinalfishes in northern Papua New Guinea held at temperatures incorporating their existing narrow thermal range (29-31°C) as well as 33 and 34°C to include projected end-of-century conditions. Comparisons were made to high latitude populations of the same or sister species along the Great Barrier Reef.

2. The aerobic scope of one Great Barrier Reef species (*Acanthochromis polyacanthus*) when acutely (17d) exposed to control (451µatm CO_2) or projected end-of-century CO_2 conditions (946µatm CO_2).

Understanding the variability among species and populations regarding the effects of temperature and CO_2 on aerobic performance will be critical in predicting the impacts of global warming and ocean acidification on marine communities and ecosystems. Information derived from this research will also be imperative to identifying vulnerable geographic locations and species at risk in potential climate change "hot spots", where extinction intensity could be the greatest.

Presented by

Research School of Biology

ANU College of Medicine, Biology & Environment

Contact details

E lisa.schwanz@anu.edu.au T 02 612 52040
This lecture is free and open to the public

EEG seminar information:
http://biology.anu.edu.au/News/events-eeg.php

CRICOS# 00120C

PUBLIC LECTURE