



MEDIA RELEASE

NEWS FROM THE INSTITUTE FOR MARINE AND ANTARCTIC STUDIES

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Marine reserves enhance resilience to climate change

Fish communities in marine reserves have the potential to resist the impact of climate change better than communities on fished coasts, a study published today **[Monday 2 December 2013]** in the journal *Nature Climate Change* suggests.

The study was undertaken by a research team from the University of Tasmania's Institute for Marine and Antarctic Studies and the CSIRO Marine and Atmospheric Research.

The authors have taken advantage of a two-decade-long data series of fish abundance from the Maria Island Marine Reserve, collected by Dr Neville Barrett and Professor Graham Edgar with support from the Tasmanian Parks and Wildlife Service and the Marine Resources Division of DPIPW.

They focused on how the biodiversity and biological characteristics of fish communities changed in the marine reserve following a sustained period of sea warming in comparison to nearby sites open to fishing.

"This study looks at different types of fish community responses to both short- and long-term environmental variability," says co-author Dr Rick Stuart-Smith.

"What we found is that marine reserves have the potential to build community resilience through mechanisms that promote species and functional stability, and resist colonisation by warm water vagrants."

In addition, some ecological signals were consistently noted in both the reserve and fished sites, such as an increase in the number of herbivorous fish. Their results therefore suggest that persistent long-term warming in south-east Australia will lead to major changes in the structure and function of shallow reef fish communities.

“What I found most striking about this work”, comments lead author Dr Amanda Bates, “is that marine reserves have an important role to play in understanding ecological change in the absence of fishing – the knowledge that we have gained was only possible because the long-term data on fish species were available from a marine reserve and could be usefully compared against nearby sites that were open to fishing.”

Authors: Amanda E. Bates, Neville S. Barrett, Rick D. Stuart-Smith, Neil J. Holbrook, Peter A. Thompson and Graham J. Edgar.



Rocky reef community in southeast Tasmania. Large-bodied species such as the blue-throated wrasse were observed in greater numbers in a marine reserve following protection from fishing, leading to greater community stability and resilience. Image Credit: Dr Rick Stuart-Smith.

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