



NCCARF

National
Climate Change Adaptation
Research Facility

Adaptation Research Network
MARINE BIODIVERSITY AND RESOURCES

marine adaptation bulletin

volume two, issue two | winter 2010

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At a glance

The Adaptation Research Network for Marine Biodiversity and Resources will foster an inclusive, collaborative and interdisciplinary research environment that generates outputs relevant for policy-makers and managers to develop appropriate climate change adaptation responses.

FUNDING

\$1.6m direct funding

\$1.9m cash and in-kind partner contributions

INVESTMENT

Australian Government Department of Climate Change through the National Climate Change Adaptation Research Facility (NCCARF) hosted by Griffith University

FRAMEWORK

Five interconnecting themes (integration, biodiversity & resources, communities, markets, policy)

HOST INSTITUTION

University of Tasmania

CONVENOR

Associate Professor Neil Holbrook

TIMEFRAME

2009-2012

Convenor's Spot



Welcome to the second issue of the Marine Adaptation Bulletin (MAB) for 2010.

The recent Global Oceans

Conference 2010, held at UNESCO Paris from 3-7 May, focused on three interlinked themes – 1 Ensuring Survival; 2 Preserving Life; and 3 Improving Governance. Climate change adaptation, building resilience, preserving marine biodiversity, and improving governance and marine management practices were major emphases of this forum. Reflections on this conference are provided on page 2 of this issue – it is notable that the conference panel sessions and discussions, aimed primarily at addressing ocean policy issues at all scales and jurisdictions, provided an important international context for the key issues and concerns of the Marine Adaptation Network.

In this issue, we remind the MAB readership of the network's strong philosophy of encouraging data sharing – with the approaching launch of the network's link with the marine data facility at the Australian Ocean Data Network. We announce the launch of a new network interactive

webpage generated as a tool for improving knowledge and practice of community-based participatory research. We look at marine biodiversity and profile the research project of Fiona McDuie, one of five successfully funded Marine Adaptation Network Hons/Masters research support grant applicants in the first round. The MAB's third international perspective article is kindly provided by Sabine Jessen and Veronica Lo, focusing on what climate change means to Canada's Pacific coast region. This issue concludes with some reflections on the National Aquaculture Council Conference in Hobart from 23-26 May 2010, and recent research at the Western Australian Marine Science Institution.

A brief article is provided by Colin Creighton from the Fisheries Research and Development Corporation outlining some of the challenges associated with collectively coordinating outcomes and maximising benefits from funded research projects associated with the National Adaptation Research Plan for Marine Biodiversity and Resources. The estimated timing for notification of successful expressions of interest is also provided by Creighton.

Neil Holbrook.

Reflections on Global Oceans Conference 2010 – Paris, 3-7 May 2010

Assoc Prof Neil Holbrook, Convenor of the Marine Adaptation Network

I had the great privilege to represent Australia's National Climate Change Adaptation Research Network for Marine Biodiversity and Resources at the Global Oceans Conference 2010 (GOC2010) held at UNESCO¹ in Paris from 3-7 May 2010 – this being the Fifth Global Conference on Oceans, Coasts, and Islands [www.globaloceans.org]. More than 800 delegates from 80 countries world-wide participated in GOC2010. Delegates represented all sectors of the global oceans community including governments, international agencies, nongovernmental organisations, industry, scientific groups, academia, museums and aquaria. The conference involved a mixture of presentations, panel sessions and discussion sessions.

A fundamental goal of this forum is to address the major policy issues affecting the oceans at global, regional, national and sub-national scales, and to make progress in advancing the global oceans agenda. Global Oceans Conference 2010 focused on three interlinked themes. These were:

1. **Ensuring Survival:** oceans, climate and security; and major issues in mitigation and adaptation;
2. **Preserving Life:** marine biodiversity (2010 global goal); networks of marine protected areas (2012 global goal); and celebrating the 2010 International Year of Biodiversity; and
3. **Improving Governance:** achieving integrated, ecosystem-based ocean and coastal management (2010 global goal) at national and regional levels, and in areas beyond national jurisdiction.

GOC2010 also celebrated the 50th anniversary of the Intergovernmental Oceanographic Commission (IOC) - a UNESCO Commission that has contributed important advances in ocean science and policy over its 50-year lifetime – together with the International Year of Biodiversity 2010.

While the conference was both fascinating and vibrant, at the same time it was also very serious, endeavouring to tackle some of our greatest global challenges – those represented by the three interlinked conference themes. Early in the conference, the President of Kiribati, H.E. Mr Anote Tong, speaking on behalf of small island developing countries, pointed out that not only does climate change remain the greatest moral challenge of our time, but for small atoll nations rising no more 2m above the ocean surface (including Kiribati and Tuvalu), this is also an emotional challenge with the relocation of the nations' people likely this century as these nations submerge under sea level rise.

Common threads running through the conference included

the importance of interdisciplinary governance approaches and building resilience. We are proud that Australia's Marine Adaptation Network governance structure and overall considered approach, which was presented orally by myself and Dr Julie Davidson, is well in keeping with the key messages aired at the conference.



Three draft recommendations were prepared as a result of the presentations, panel sessions and discussions held at GOC2010. These draft recommendations, provided below, were provided to delegates at the close of the conference.

Recommendation 1: Launch a comprehensive ocean and climate initiative within and outside UNFCCC² negotiation process. [Such an initiative could include elements of mitigation, adaptation, capacity development, public

education and awareness, and measures to address possible displacement of coastal populations associated with climate change.]

Recommendation 2: In the context of the 2010 International Year of Biodiversity, it is recommended that:

- within the CBD³ process, a Nagoya Oceans Mandate⁴ should be developed to provide for the renewal of the Jakarta mandate of marine and coastal biodiversity; and
- the establishment of the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES) should be promoted.

[Such initiatives would aim to support the development of ecosystem-based management at the appropriate scale, including the increase of MPA⁵ coverage and establishment of MPA networks representative of the full range of biodiversity in the oceans.]

Recommendation 3: Adequate and nested strategies at different scales (from local to global) must be developed for Ecosystem-based Ocean and Coastal Management at Local, National, and Regional Levels, and in Areas Beyond National Jurisdiction.

Finally, aside from the excellent presentations and discussions from the science-policy delegates, further inspiration was provided by Jean-Michel Cousteau and H.S.H. Prince Albert II of Monaco, in their addresses to the conference.

¹ United Nations Educational, Scientific and Cultural Organization

² United Nations Framework Convention on Climate Change

³ Convention on Biological Diversity

⁴ The Tenth meeting of the Conference of the Parties will be held in Nagoya, Japan from 18-29 October 2010 (COP 10), with Oceans Day proposed for 23 October 2010.

⁵ Marine Protected Area

Link Between the Network and Data Sharing Capability

The Marine Adaptation Network has established an important link with the Australian Ocean Data Network (AODN) to facilitate the sharing of marine related data.

Australian marine researchers collectively have large amounts of valuable marine ecological and socio-economic data. These data have often already been used to generate vast amounts of published research, but much value is yet to be tapped. The Marine Adaptation Network wants to encourage a philosophy of data sharing within an interdisciplinary and collaborative framework.

Data sharing has the potential synergistic outcome of valuable expanded datasets, and analysis of these can inform decision makers who manage the impacts of climate change. Improved adaptive management strategies will lead to less vulnerability, greater sustainability and better conservation of social-ecological systems.

The AODN provides a secure data storage system for data

sharing of interdisciplinary and collaborative marine research, where you can

- DISCOVER AND DOWNLOAD datasets, and discover researchers and their projects; and
- UPLOAD your data for archiving, and for access by nominated members.

A direct link is provided from the Marine Adaptation Network to the AODN data storage facility via the AODN Metadata Entry and Search Tool (MEST).

Metadata describes data. Metadata in the AODN MEST,

because it adheres to international standards, can be (and already is) incorporated into other metadata catalogues nationally and internationally. The metadata can describe projects, researcher details and data, even at the planning stage, and this alone is a great way to discover other collaborative opportunities.

For more information, visit the website at <http://www.nccarf.edu.au/marine/content/index.php/site/aodn/>.



Community Based Participatory Research Interactive Webpage



The Marine Adaptation Network announces the launch of an interactive web document generated as a tool for improving knowledge and practice of community-based participatory

research (CBPR) among Network members.

The Communities Theme has developed 12 guiding principles of CBPR that highlight important methodological and process considerations. The principles are accompanied by descriptive text to provide further clarification. This work has been expanded and adapted from the URP Tool Box (<https://app.secure.griffith.edu.au/03/toolbox/>). In addition, a desk-top review of relevant case studies was undertaken to identify and document the practical application of these principles in a range of contexts and across various sectors.

Based on this work, an online interactive document has been generated in collaboration with Paul Raffety Pty Ltd. The web document allows the user to navigate between principles and their definitions, while simultaneously linking to examples of these principles in practice. The aim of this web document is to assist those in the research community with interest in developing CBPR projects. It is expected to be of use for those who are seeking to increase their knowledge of CBPR methodologies and process. It also provides practical assistance - by highlighting management approaches, benefits and strengths - and important lessons learned from researcher experience. This online interactive document is housed on the Marine Adaptation Network website (see <http://www.nccarf.edu.au/marine/content/index.php/site/cbpr/>).

The tool will continue to be developed and enhanced over the next 12 months (2010-2011) based on user feedback and ongoing research, both desk-top and field-based. To assist with this refinement, we encourage interested Network members to access the webpage through the Marine Adaptation Network website and to provide any responses and suggestions directly to the Communities Theme (for further information or comments contact Craig Stephenson (cstephe1@usc.edu.au) or Stephen Myers (smymers@usc.edu.au)).

What Do We Know About Marine Biodiversity?

Dr Anna Lucas, Marine Adaptation Network

During this International Year of Biodiversity 2010, it is apt to review our knowledge and understanding of marine biodiversity. Certainly we know more about the biodiversity of terrestrial regions than we do of marine biodiversity, which has recently been estimated at only 4% of the global total¹.

Marine biodiversity can be defined as the degree of variation of genes, species and ecosystems within the marine realm. Some species are restricted to the marine environment, while others are able to move from marine to freshwater to terrestrial habitats. Areas such as coral reefs can possess exceptional biodiversity, with the highest species richness of vertebrates of any habitat on earth. These and other marine areas may also have high numbers of endemic species (i.e. those with limited range), an indication that resident populations may be vulnerable to threats from abiotic and biotic factors.

Australia's oceans contain hundreds of thousands of species including zooplankton and other micro-organisms, invertebrates, marine mammals, more than 4000 fish species, some of the most expansive coral reefs on the planet, and forests of sea-grasses, kelp and mangroves. Biodiversity generally declines from very high in the northern tropical regions to lower levels in southern temperate areas, but with increased endemism in the temperate waters, where about 80% of species are found no-where else. Climate change, alteration in cloud cover and rainfall patterns, rising sea water temperatures, changing warmer currents, ocean acidification, introduced species, overfishing and disastrous oil spills all contribute to a decline in biodiversity. Bleaching of corals in the Great Barrier Reef and range shifts to higher latitudes of some fish populations represent two of the observed effects². The Leeuwin Current, which extends along Australia's western and southern coastlines in winter, and the East Australian Current, greatly influence local marine ecosystems. The effects of climate change on these

poleward flowing currents is expected to subsequently affect marine distribution and biodiversity, including facilitation of range shifts of populations, particularly of temperate species.

Vulnerable species may be able to adapt in part to new conditions through genetic and behavioural changes. Another factor contributing to long-term survival of species is the adaptive ability of those with responsibility for managing marine ecosystems. Ecologists and oceanographers can assist in this process by monitoring changes and disseminating information, and by predicting possible ecological and environmental effects of altered conditions, while policy makers and managers who are receptive to recommendations and prepared to employ new strategies will also contribute to conservation of marine populations.

Fisheries practices, which contribute significantly to the economy, can impact on marine biodiversity. Trawling may diminish areas of sensitive habitat. Over-fishing of larger predators, with additional indeterminate numbers of by-catch, can lead to changing food webs and altered composition of marine populations². With concurrent effects of climate change, the socio-economics of marine resources will be severely affected. Current awareness of the potentially devastating results of exploitation, and the implementation of practices of sustainable harvesting, are more likely to contribute to the mitigation of the combined impacts of commerce and climate change.

To implement best practice management of marine ecosystems and consequently conserve marine biodiversity, more information is needed. With better data sets and a philosophy of data sharing, managers and the science community will be better placed to safeguard marine biodiversity through the long-term. The Australian Ocean Data Network (AODN) provides the mechanism to effectively facilitate shared data available online.

The Census of Marine Life will report in October 2010 on a decade of data

gathering by various teams in projects world-wide. The report will be made at a special news conference at the Royal Institution in London, and will be produced in collaboration with the National Geographic magazine (<<http://www.coml.org/results-publications/october2010>>).

The Australian division of the Census of Marine Life is involved with surveys of Antarctic marine life, ecosystems of coral reefs, seamounts, and other ecosystems (<<http://www.coml.org.au/index.html>>). Other projects include tagging of Pacific predators, mapping, and uploading data to the Ocean Biogeographic Information System (OBIS - <<http://www.iobis.org>>).

One important management tool is the development of a network of marine protected areas which, in the case of Commonwealth waters, are managed by the Australian Government under the Environment Protection and Biodiversity Conservation Act 1999. State and Territory governments are also actively engaged in the development of a National Representative System of Marine Protected Areas. Management aims to protect and maintain biological biodiversity and the natural resources of these areas, while also considering cultural, economic and social concerns. A map showing the location of national marine reserves is available at <<http://www.environment.gov.au/coasts/mpa/index.html>>.

The National Strategy for the Conservation of Australia's Biological Diversity outlines objectives and actions that are guides for implementation (<<http://www.environment.gov.au/biodiversity/publications/strategy/index.html>>).

Australia's marine biodiversity depends on policies that reflect a commitment to sustainable use of marine resources, to sustainable tourism, to endangered species, and to conservation.

¹ Sala and Knowlton (2006). Annual Review of Environment and Resources, 31, 93-122.

² Poloczanska et al (2007). Oceanography and Marine Biology: an Annual Review. 45, 407-478.

An FRDC update: Marine NARP project challenges ahead

Colin Creighton, Chair, Climate Change Adaptation – Marine Biodiversity, Resources and Fisheries Chair, Science Review Panel and National Coordinating Committee

The Science Review Panel and National Coordinating Committee for the Marine Biodiversity, Resources and Fisheries R&D call have reviewed and assessed over 60 applications following the close of the Expressions of Interest Call.

All applicants are expected to be advised by late July / early August of the success or otherwise of their Expressions of Interest. The more detailed project proposals will then be prepared so that the research teams can be delivering to their contracts as 2011 progresses.

There are many challenges ahead. Above and beyond of course selecting the best proposals from the many applications received, these challenges include:

- ensuring synergies between the activities within this Call and the whole host of R&D already being undertaken through other funding sources;
- utilising a systems approach in collating outputs across projects, regardless of funding source, so that the relative influence of climate change along with all other influences on marine resource condition is understood and collectively these influences and variations in condition

inform marine biodiversity, resources and fisheries management;

- securing additional resources so that many of the smart ideas not able to be funded through this Call do receive support;
- communicating research findings in forms that foster improved policy and management of Australia's marine, nearshore and estuary ecosystems; and
- building, probably in consort with IMOS and key research groups, a much more precise, readily available, common and predictive platform of biophysical understanding of marine, nearshore and estuary ecosystems.

Of course underpinning all these science challenges is the need to deliver outputs that will allow our marine communities to adapt to our changing climate. Adaptation will be multi-objective and multi-issue – to commodity prices, changing community needs, regulations and management plans, a changing climate and changing biotic assemblage.

Clearly, this Call is just one contribution to improved adaptation and smart resource management and clearly the challenges to us all lie ahead.

Research Support Grant Student Profile: Fiona McDuire

The Adaptation Research Network for Marine Biodiversity and Resources has recently initiated provision of Research Support Grants for Honours and Masters students through its quest to facilitate and encourage student interest and engagement in, and highlight the importance of, marine climate change adaptation research. The grants of up to \$7000 provide project support for students researching climate change adaptation of Australia's marine biodiversity and resources. Outputs and outcomes must provide managers and policy makers with adaptation recommendations. Below is the abstract from one of the successful applicants from the first round of research support grants, Fiona McDuire (School of Marine and Tropical Biology, James Cook University), providing a short overview of her proposed project.



Climate change has been shown to significantly affect seabird reproductive parameters at various locations throughout the world. Seabirds' reliance on marine resources makes them excellent predictors of the impacts that climate change has on oceanographic processes and productivity. Wedge-tailed shearwaters are an ideal species for modelling potential climate change

impacts at upper trophic levels in the Great Barrier Reef and a population breeding on Heron Island constitutes the largest seabird population of the Pacific Ocean. Behavioural and developmental divergences are exhibited by this population and it is not known if these differences are facultative or

colony-specific adaptations maintained by natural selection. Therefore I am investigating the behavioural and developmental ability of Heron Island wedge-tailed shearwaters to cope with significant variations in background food availability known to be linked to climate driven variation in oceanography.

This study will maximise our awareness of the affect climate change scenarios might have on this and potentially even other seabird colonies. We can then understand and predict the level of threat to various seabird populations and minimise those threats to areas or resources necessary to their survival. This study will lead directly to advising appropriate organisations on policy making decisions and management of this key seabird population. It will ensure effective conservation strategies are utilised to ultimately ensure their survival.



International Perspective: Canada's Pacific Coast and Climate Change

Sabine Jessen and Veronica Lo, from the Canadian Parks and Wilderness Society, write about climate change impacts and management of Canada's coastal marine ecosystems

Canada's Pacific coastal and marine ecosystems are extraordinarily diverse and productive. These nutrient-rich waters are home to nearly 7000 marine species – 4% of the world's total marine species. These include the endangered southern resident orca, blue and sei whales, globally unique glass sponge reefs, and internationally significant populations of breeding seabirds.

Two national conservation organisations, Canadian Parks and Wilderness Society (CPAWS) and World Wildlife Fund (WWF) Canada, conducted recent research documenting the observed and predicted impacts of climate change on Canada's Pacific Ocean and coastal ecosystems, and the potential mechanisms to address these impacts. Based on an extensive literature review, expert interviews and workshops with scientists and managers from academic and government institutions, this research is intended to provide a basis for ocean resource managers to address climate change impacts through a variety of management actions.

Climate Change Impacts on Canada's Pacific Marine and Coastal Ecosystems

Ocean and coastal ecosystems in Canada's Pacific region are being affected by climate change. Observed ocean temperatures indicate a warming trend consistent with global models identified by the IPCC (AR4, 2007). Various parts of the coast will experience increases in precipitation, declines in spring snowpack, changes in stream runoff and salinity, decreasing oxygen concentrations, sea level rise, changes in winds and currents, and increased intensity and frequency of storm events.

Physical and oceanographic changes are already affecting marine organisms and ecosystems in British Columbia (BC). Poleward shifts in species ranges are occurring, with appearances of new species like the Humboldt squid that are

usually limited to more southern waters, and the possible extirpation of some salmon species from the southern area as ranges shift north. In addition to the observed changes, it is predicted that new introduction pathways for invasive species will be created, and the removal of physiological barriers that previously



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limited invasion success, such as temperature, may allow new species to spread. Climate change will also result in changes in the timing of plankton lifecycles, limiting plankton availability as food for other species.

A Way Forward

Experts generally concluded that management should be ecosystem-based to ensure that overall ecosystem functioning is maintained and resilient to climate change impacts, as opposed to managing for species-by-species impacts. While widely considered international best practice, ecosystem-based management has yet to be fully implemented in BC, although the need for this shift in management approach has been acknowledged.

The reduction of multiple stressors was identified as a crucial measure to ensuring ecosystem resilience to climate change impacts in the region. These stressors include fishing pressures - particularly destructive fisheries such as bottom-trawling and those with significant by-catch. Aquaculture, pollution, and coastal development are other stressors that decrease biodiversity and habitat availability,

and thus reduce resilience of species and ecosystems in the face of climate change impacts.

Establishing a network of marine protected areas (MPAs) was another measure identified as key to maintaining ecosystem resilience. This would protect habitats and special features and provide refugia for species. Currently, there are several marine areas in BC being considered for protection through MPAs – but progress is slow, with some sites taking over twenty years to implement. A framework for the development of an MPA network is also being considered by federal and provincial government agencies. In order for the proposed MPAs and network to be effective, general best practices around MPA size, connectivity and ecological linkages, representivity, and replication of ecosystem types should be incorporated. Given the slow pace of MPA establishment in Canada, and with less than 1% of Canadian waters in any form of MPA, this was seen as an urgent issue to address.

The federal government in partnership with local First Nations has recently embarked on an integrated oceans planning process in the northern part of the Pacific region, called the Pacific North Coast Integrated Management Area (PNCIMA). The process provides an important opportunity to implement the above measures that will help to ensure the long-term resilience of the ocean and coastal ecosystems in the region. Our research has influenced the consideration of climate change issues in this process.

The reports from this work will be available soon through CPAWS and WWF Canada. We acknowledge the funding support provided by the Gordon and Betty Moore Foundation, and the research team of Tom Okey, Veronica Lo, Hussein Alidina, Alvaro Montenegro, John Bones, and Julie Gardner.

For further information please contact Sabine Jessen at sabine@cpawsbc.org

National Aquaculture Council Conference - Hobart, 23-26 May 2010



The Australasian Aquaculture Conference was held in Hobart May 23-26 2010 and attended by over 800 delegates from 40 countries. The conference featured keynote speakers, oral presentations addressing

a range of topics, poster sessions, and an impressive trade hall showcasing technology and science solutions for the aquaculture industry. Aquaculture is a rapidly growing industry in Australia, with substantial increases in production needed to keep pace with consumer demand and to reduce pressure on wild marine resources. Appropriately, the focus of the conference was “keeping pace with change”, and featured the themes of markets, international trades, food safety, animal husbandry, selective breeding, and climate variability and change.

Information on the impacts of climate change and adaptation options for marine aquaculture industries was delivered in a plenary address by Network theme leader Alistair Hobday (CSIRO). Dr Hobday recognised that while climate is only one of the challenges confronting the aquaculture industry, some major impacts have already been observed, and scientists are confident that these will continue into the future. Increased sea surface temperatures, declines in rainfall, and increases in extreme events will have implications for many farmed species through changes in growth rates and disease risk, while infrastructure will also be challenged. Adaptation is necessary to make the most of climate-related opportunity and reduce the influence of negative impacts. Many forward thinkers in the aquaculture industry have recently begun to prepare for a

Many forward thinkers in the aquaculture industry have recently begun to prepare for a changed future, and are actively identifying adaptation options

changed future, and are actively identifying adaptation options. With regard to climate change and adaptation, Hobday concluded that overall the Australian aquaculture is well aware of climate change issues, but needs greater investment in considering adaptation options. While climate predictions are quite coarse in scale (e.g. 100-200 km resolution in global climate models), information is needed at a local scale to plan adaptation responses. Strategies to address this mismatch in available and desired climate information are needed, and are currently a major research focus through techniques such as downscaling. Partnerships between researchers and

businesses are also needed to deliver adaptation solutions at a local scale; a leading example of this approach is seen in the valuable Tasmanian salmonid industry.

Aside from climate change, climate variability has long confronted aquaculture businesses, and good approaches to handling climate variability will prepare the industry for adaptation to climate change. A special session focusing on variability was hosted by Jean Cannon and featured speakers addressing challenges raised by climate variability, including collecting ocean information, the effect of extreme events, and challenges raised by variation in environmental conditions such as oxygen supply.

In response to requests from industries, the Marine Adaptation Network is planning a series of stakeholder workshops in the coming year and through this engagement hope to connect researchers with businesses to forge new partnerships to address the challenges raised by climate change.

A full program of the conference is available at <http://www.australian-aquacultureportal.com>.

WA Marine Science Research Nears Completion

Sue McKenna, Western Australian Marine Science Institution

Studies into rising sea temperatures, changed marine ecosystems and the increased number of coastal developments along the Western Australian coast are on the brink of being finalised.

Information about how to improve the ocean floor safety of engineering structures for the oil and gas industries and the description and cataloguing of marine species for potential pharmaceutical use is also coming in.

All are projects being carried out from the Western Australian Marine Science

Institution (WAMSI) which has 15 industry, academic and state and federal partners.

“The range of expertise available through the partner agencies is the key to WAMSI’s success to date,” WAMSI Board Chairman, Dr Peter Rogers, said.

“The need for extensive science-based knowledge of WA’s ocean environment is growing with increasing population and new demands placed on marine and coastal ecosystems.

The scale of human activity and use of the marine environment coupled with

predicted climate change means the likely impacts on our marine and coastal environments need to be understood.”

Dr Rogers said one of WAMSI’s research projects at Ningaloo Marine Park had completely mapped the Park’s inshore waters and published new coral and marine life discoveries in the deep water.

“The process of bringing marine research providers together has provided enormous benefits,” he said.

For more information visit <http://www.wamsi.org.au>.

Research Support Grant - Round One Recipients



The Network would like to congratulate the following recipients of the first round of Honours/Masters Research Support Grants:

Fiona McDuire - James Cook University. Project title: Seabirds and Climate Change: Can wedge-tailed shearwaters adapt to changing environmental conditions?

Shawna Andrea Foo - University of Sydney. Project title: The interactive effects of ocean acidification, ocean warming and hypercapnia on larval development of keystone echinoderms.

Christopher Mabin - University of Tasmania / Australian Maritime College. Project title: Effects of climate-driven East Australian Current (EAC) strengthening on kelp morphology and reproduction.

Claire O'Neill - The University of New South Wales. Project title: An integrated approach to the development of climate change adaptation policy and management strategies for marine resources in the Torres Strait.

Erinn Kelly - University of Adelaide. Project title: Establishing marine protected areas in South Australia.



Photo courtesy of Commonwealth of Australia (GBRMPA).

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The Adaptation Research Network for Marine Biodiversity & Resources is an initiative of the Australian Government Department of Climate Change being conducted as part of the National Climate Change Adaptation Research Facility <http://www.nccarf.edu.au>