



NCCARF

National
Climate Change Adaptation
Research Facility

Adaptation Research Network
MARINE BIODIVERSITY AND RESOURCES

What the Marine Adaptation Network has achieved to date and what the Network continues to offer you as:

a Researcher

[Early Career Researcher](#)

[Experienced Researcher](#)

a Member

All [members](#) have access to the website resources, the [calendar](#) of events, [conference listings](#), a regularly updated [annotated bibliography](#), links to associated [websites](#) and the [online forum](#) where they can contact other members and develop a specific network or focus group.

They receive informative e-news bulletins and the quarterly [Marine Adaptation Bulletin](#) with local and international feature articles.

a Post graduate

[Honours and Masters](#)

[Doctoral Candidates](#)

a Stakeholder

[Aquaculturist](#)

[Conservation practitioner](#)

[Commercial Fisher](#)

[Recreational Fisher](#)

[Government representative](#)

[Peak body representative](#)

[Tourism Operator](#)

Achievements in Collaboration and Interdisciplinary Research

The network fosters/facilitates interdisciplinary and world-class research by providing intelligence to encourage effective collaborative links.

[Growth of membership](#)

[Focused Strategy Meetings](#)

[Community based participatory research](#)

[Conference participation](#)

[AODN data sharing](#)

[Development of Adaptive Capacity paradigm](#)

Achievements in Communication

The network provides communication, information, tools and support to meet marine stakeholder and end-user needs. Development of the Network website offers online access to additional links.

[Cross-sectoral Roundtable Discussions](#)

[Markets Toolkit](#)

[Quarterly Marine Adaptation Bulletin](#)

[Publications](#)

[Community based participatory research](#)

[AODN data sharing](#)

[e-news Bulletin](#)

[Information Sheets](#)

[Conferences](#)

[Facebook and Online Forum](#)

Achievements in Education

The network is committed to educating the next generation of marine climate change adaptation researchers.

[Summer School December 2009](#)

[Graduate School August 2011](#)

[ECR support for postgraduate activities](#)

[Research Support Grants 2010](#)

[Research Support Grants 2011](#)

1 Early Career Researcher

As an ECR working in marine research you can benefit from greater networking opportunities provided by the Network to engage with - and to expand your profile in - the wider research community, e.g. in one project a team was assembled to write a review paper for impacts of climate change on range shifts.

1. With [AODN data sharing](#) you can discover and download research data sets and contact other researchers about their projects. You can also upload your data for safe archiving, with limited or general access by others, further promoting your work and forging more research connections.
2. An online list of [upcoming conferences](#) and past conferences, relating to marine adaptation to climate change and closely related themes, is maintained by the Network. We welcome notification from members of conferences they deem suitable for inclusion.
3. An [annotated bibliography](#) of relevant publications is available online. We welcome members' publications to add to this list, giving you citation opportunities and possible interaction with other researchers.
4. The [Markets Toolkit](#), a web-based toolkit providing decision-makers and researchers with an overview of the ways in which economic (market-based) instruments and policy can be used in the marine environment to incentivize private sector adaptation to climate change
5. Your authorship of [Information Sheets](#) and articles in the [Marine Adaptation Bulletin](#) is welcomed and will further promote your research to the network.



Please also see [Network Member benefits](#), and find Marine Adaptation Network on [Facebook](#).

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2 Experienced Researcher

Researchers working in marine research can benefit from greater networking opportunities provided by the Network to engage with the wider research community.



1. The [AODN data sharing](#) network where you can discover and download research data sets and contact the other researchers about their projects. You can also upload your data for safe archiving, with limited or general access by others, further promoting your work and forging more research connections.
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Please also see [Network Member benefits](#).

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3 Aquaculturist

Workshops were held at Bateman's Bay and at Forster in New South Wales in May 2010; in Streaky Bay and at Port Lincoln in South Australia in May 2010, and at Campbell Town, Tasmania in June 2010 with representatives from the Australian Edible Oyster industry. As a result of these workshops, an Information sheet and report are now available (click on the link below):

[Leith, P.B. and Haward, M. \[2010\] Potential climate change impacts and adaptation pathways for the Australian edible oyster industry. University of Tasmania, Hobart, Tasmania.](#)

Leith, P.B and Haward, M. 2010. Climate Change Adaptation in the Australian Edible Oyster Industry: an analysis of policy and practice - Executive Summary. University of Tasmania, Hobart, Tasmania.

Leith, P.B and Haward, M. 2010. Climate Change Adaptation in the Australian Edible Oyster Industry: an analysis of policy and practice. University of Tasmania, Hobart, Tasmania.

The Network has offered stakeholders from government, industry, NGOs and Peak Bodies opportunities to engage in roundtable discussions of issues relating to their sector and interfacing sectors within the marine community.

In 2010 the Marine Adaptation Network facilitated a series of focused strategy meetings across all states and the Northern Territory. These cross-sectoral discussion groups aimed to identify the research needs of stakeholders in all sectors, including commercial fishing, recreational fishing, aquaculture, tourism and conservation, and how climate change affected those needs in various jurisdictions. The role of NCCARF and the Marine Adaptation Network was explained and information gathered from the meetings will inform the Marine Climate Change Impacts and Adaptation Report Card, scheduled for 2011. The previous publication was Marine Climate Change in Australia – Impacts and Adaptation Responses 2009 Marine Report Card www.oceanclimatechange.org.au



See also [Focused Strategy Meetings](#) and [Network Member benefits](#).

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4 Conservation practitioner

The Network offers conservation practitioners and other stakeholders from government, industry, NGOs and Peak Bodies opportunities to engage in roundtable discussions of issues relating to their sector and interfacing sectors within the marine community.

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Please also see [Network Member benefits](#), and [Focused Strategy Meetings](#)

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5 Commercial Fisher

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Network members gave presentations at a symposium, the QSIA Seafood Forum held in Brisbane in March 2011, which was of great interest and benefit to fishers.

Please also see [Network Member benefits](#), and [Focused Strategy Meetings](#)

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National Research Infrastructure Australia
NCCARF
www.oceanclimatechange.org.au

6 Recreational Fisher

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The previous publication was Marine Climate Change in Australia – Impacts and Adaptation Responses 2009 Marine Report Card www.oceanclimatechange.org.au

Please also see [Network Member benefits](#), and [Focused Strategy Meetings](#)

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7 Government Representative

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The previous publication was Marine Climate Change in Australia – Impacts and Adaptation Responses 2009 Marine Report Card www.oceanclimatechange.org.au

Please also see [Network Member benefits](#), and [Focused Strategy Meetings](#)

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8 Peak Body Representative

The Network offers stakeholders from government, industry, NGOs and Peak Bodies opportunities to engage in roundtable discussions of issues relating to their sector and interfacing sectors within the marine community.

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The previous publication was Marine Climate Change in Australia – Impacts and Adaptation Responses 2009 Marine Report Card www.oceanclimatechange.org.au

Please also see [Network Member benefits](#), and [Focused Strategy Meetings](#)

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9 Tourism Operator

The Network offers stakeholders from government, industry, NGOs and Peak Bodies opportunities to engage in roundtable discussions of issues relating to their sector and interfacing sectors within the marine community.

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The previous publication was Marine Climate Change in Australia – Impacts and Adaptation Responses 2009 Marine Report Card www.oceanclimatechange.org.au

Please also see [Network Member benefits](#), and [Focused Strategy Meetings](#)

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10 Honours and Masters Students

The Network gives Research Students online access to relevant information and news updates relating to studies of adaptation in the marine environment, eg the adaptation of species to changing conditions, or adaptive management of resources or of an ecosystem.

Publications and references for related fields of study can be sourced in the [annotated bibliography](#).

The Marine Adaptation Network was pleased to offer [Honours and Masters Research Support Grants again in 2011](#) to enrolled students in an Australian Higher Education Institution undertaking their research Honours or Masters degree full time. Research proposals in a range of disciplines, including marine policy, fisheries economics, marine biodiversity, social science, and relevant to the area of climate change adaptation for marine biodiversity and resources were sought. The aim is to provide data that will inform recommendations for policy or management.

Projects undertaken by [successful 2010 applicants](#) have now been completed and summaries of their work have been featured in Marine Adaptation Bulletins. The 2011 offer attracted many applications and up to 10 research grants valued at up to \$7000 each will be presented after the final review. These grant funds can be used to cover costs related to the research project, including attendance at an Australian conference.

The Marine Network conducted a [Summer School in December 2009](#) and plans to hold a [Graduate School later in 2011](#). These events offer graduates the opportunity to meet and network with peers and with experienced marine researchers in specialised workshops and field trips.

Please also see [Network Member benefits](#) and find us on [Facebook](#).

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11 Doctoral Students

The Network offers postgraduate researchers resources which include references in the [Annotated Bibliography](#) and [Information Sheets](#) on specific topics. Send your own papers, or a summary of your completed thesis, to us for inclusion in the [Annotated Bibliography](#).

The Marine Network conducted a [Summer School in December 2009](#) and plans to hold a [Graduate School later in 2011](#). These events offer graduates the opportunity to meet and network with peers and with experienced marine researchers in specialised workshops and field trips.

Data sharing with the [Australian Oceans Data Network \(AODN\)](#) provides a secure data storage system for data sharing in interdisciplinary and collaborative marine research and enables you to contact other researchers, to download datasets or upload your own data for archiving.

[Upcoming Conferences](#) are listed on the Network website.

Please also see [Network Member benefits](#) and find us on [Facebook](#).

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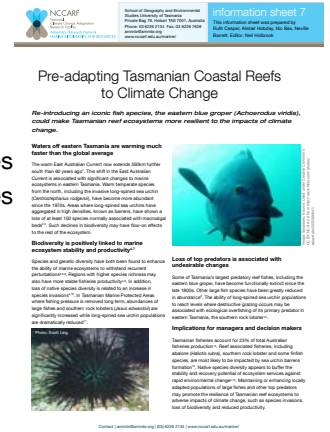
12 Member

All members have access to the [website resources](#), the [calendar of events](#), [conference listings](#), an [annotated bibliography](#), [links to associated websites](#) and the [online forum](#) where they can contact other members and develop a specific network or focus group. Find the Marine Adaptation Network on [Facebook](#).

As a member you will receive

- Network e-news bulletins, which include notification when Network research grants, which would be of benefit to your students, are made available and other items of interest, e.g. dates for conferences, workshops and graduate schools updates of events which offer opportunities to engage with the wider research community.
- the quarterly [Marine Adaptation Bulletin](#) with informative local and international articles; and
- topical [Information Sheets](#) written by marine researchers, currently working in the field.

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13 Conference listings

An online list of upcoming conferences and past conferences, relating to marine adaptation to climate change and closely related themes, is maintained by the Network. We welcome notification from Network members of conferences they deem suitable for inclusion.

http://arnmbr.org/content/index.php/site/events_extended/category/conferences/

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14 Marine Adaptation Bulletin

The Marine Adaptation Network produces an eight page Bulletin on a quarterly basis. The publication is a great resource for those interested in climate change adaptation work and research taking place in Australia and Internationally. It is also a great way for researchers and students to make their work known to the adaptation community and policy and management. The most recent Marine Adaptation Bulletin is at:

http://arnmbr.org/content/index.php/site/resources_extended/mab_vol_2/

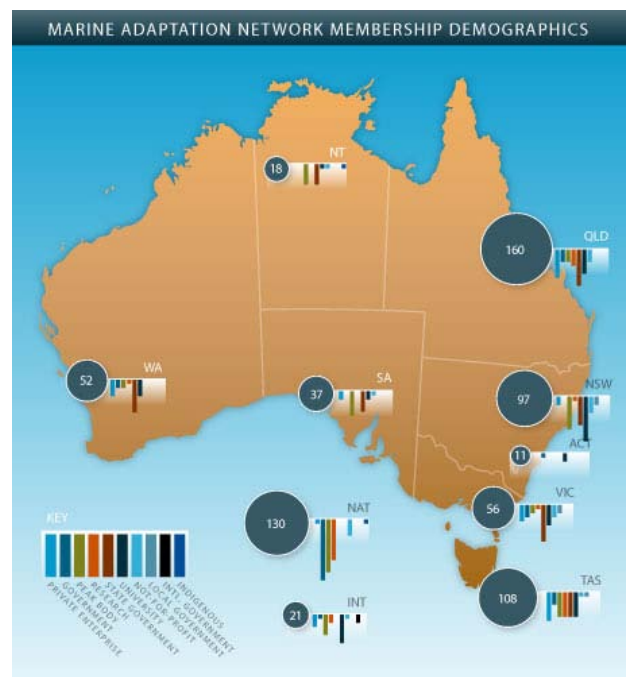
Earlier issues are at: http://arnmbr.org/content/index.php/site/resources_extended/Marine_adaptation_bulletin/

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15 Growth of Membership

The Marine Adaptation Network membership continues to grow. We currently have approximately 700 members. Of these members, approximately 50% are stakeholders, and 50% are researchers.

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16 Focused Strategy Meetings

In October and November 2010, the (National Climate Change) Adaptation Research Network for Marine Biodiversity and Resources (a.k.a. the Marine Adaptation Network) held a series of focused strategy ('roundtable') meetings with key marine stakeholders across Australia to assess the concerns and needs of industry, government, and non-government organisations (NGOs) in attempting to reduce and manage the risks associated with climate change impacts on the marine environment and various marine sectors.

Key representatives from each State and the Northern Territory (NT), as well as Federal, were invited - one leader from Government and one peak body leader representing marine aquaculture, commercial fishing, recreational fishing, marine biodiversity, and marine tourism.

The contribution to each of the meetings by all marine stakeholders was excellent. This enabled very productive roundtable discussions that resulted in informed priority selections by the participants largely taking into account cross-sector interests and considerations. In particular, the commonly identified 'flexible or adaptive management' priority tended to typify the considered and combined needs of fisheries/aquaculture and marine conservation.

The overall aim of the focused strategy meetings was to scope marine stakeholder needs to respond to, prepare for, and manage the risks associated with climate change impacts on marine biodiversity and resource sectors, including tourism.

Objectives: The key stated objectives of the meetings were:

6. to identify the research/adaptation needs of marine stakeholders (government, NGOs, industry and conservation groups) in the face of climate change;
7. to inform existing and future national research and action plans, and across national agencies (e.g., DCCEE, DEWHA, DAFF);
8. to establish and consolidate the Marine Adaptation Network's links with key marine biodiversity, resource and tourism stakeholder groups;
9. to inform key marine stakeholder groups about the role of the National Climate Change Adaptation Research Facility and the Network in helping to meet government/industry/NGO management needs; and 5. to provide information that will feed into the development of the 2011 Marine Climate Change Impacts and Adaptation Report Card (the previous Marine Climate Change Impacts and Adaptation Report Card 2009 can be downloaded from: <www.oceanclimatechange.org.au>) - this assessment will inform report card design to better deliver outputs beneficial to marine stakeholders.

Marine Aquaculture was represented in each of the six States and the Northern Territory for both Government and Industry/Peak Body organisations.

Commercial fishing was represented in each of the six States and Northern Territory from Government and five of the six states and NT from Industry/Peak Body organisations.

Government

(1) flexible or adaptive management; (2) consultation and collaboration; (2) risk and impact assessments; (4) communication education; (4) biosecurity and disease; (4) climate modelling.

Industry/Peak Body

(1) consultation and collaboration; (2) flexible or adaptive management; (2) biosecurity and disease; (2) risk and impact assessments

Recreational Fishing was represented in each of the six States and Northern Territory from Government organisations. This sector was also represented in five of the six States from Industry/Peak Body organisations. Queensland was not represented as either Industry/Peak Body or NGO. Northern Territory representation from non-government was an NGO.

Priorities:

Government

(1) communication education; (2) consultation and collaboration; (2) flexible or adaptive management; (2) risk and impact assessments; (5) monitoring and benchmarking; (5) climate modelling.

Industry/Peak Body/NGO

(1) risk and impact assessments; (2) consultation and collaboration; (2) communication education; (4) resourcing; (4) flexible or adaptive management.

Marine Conservation was represented in each of the six States and Northern Territory from Government organisations. This

sector was also represented from State/NT NGOs except for South Australia and Western Australia. This sector was further represented from State/NT NRM agencies except for South Australia and Western Australia.

Priorities:

Government

biosecurity and disease; (5) planning – conservation; (5) flexible or adaptive management; (5) monitoring and benchmarking.

NGO

(1) communication education; (2) resilience; (2) flexible or adaptive management; (2) carbon pricing; (2) climate modelling.

NRM

(1) consultation and collaboration; (1) communication education; (1) resourcing; (4) resilience; (4) risk and impact assessments.

Marine Tourism was represented in the Northern Territory and four of the six States from Government organisations – the States not represented were New South Wales and Tasmania.

This sector was also represented in the Northern Territory and three of the six States from Industry/Peak Body organisations – the States not represented were Queensland, Victoria and Western Australia.

Priorities:

Government

(1) risk and impact assessments; (2) infrastructure; (2) communication education; (2) resourcing.

Industry/Peak Body

(1) consultation and collaboration; (1) communication education; (3) branding and marketing. Across State and NT commonalities and differences for all coded priorities identified by the marine tourism sector are reported and summarised in Figure 5.

Discussion

There are numerous differences in the marine sector priorities identified individually by the six States and Northern Territory. The most common themes are 'consultation and collaboration', 'communication education', 'biosecurity and disease', 'flexible or adaptive management', and 'risk and impact assessments'. Future policy development may need to be cognisant of the significance of different priorities.

Based on the facilitators' own observations and listening to all of the discussions across the seven meetings, the most significant message arising from the focused strategy meetings was interpreted to be the high importance placed on science-stakeholder communication and consultation that comprises of targeted, clear and accessible information exchange. For example, plain-English information (e.g. in a fact sheet) was identified as one effective means of providing guidance to marine stakeholders (government/industry/NGOs) about climate change, marine biodiversity and resource risks, and adaptation options. Identifying 'champions' for sciencestakeholder extension was another consideration discussed. The contribution to each of the meetings by all marine stakeholders was excellent. Any possible pre-existing tensions between the sectors were observably small. This enabled very productive roundtable discussions that resulted in informed priority selections by the participants largely taking into account cross-sector interests and considerations. In particular, the commonly identified 'flexible or adaptive management' priority tended to typify the considered and combined needs of fisheries/aquaculture and marine conservation.

Presentations:

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting Tasmania" – presentations re the Network and meeting aims, and also what climate change means for Tasmania. University of Tasmania, Hobart TAS, 27 October 2010.

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting South Australia" – presentations re the Network and meeting aims, and also what climate change means for South Australia. University of Adelaide, Adelaide SA, 1 November 2010.

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting Western Australia" – presentations re the Network and meeting aims, and also what climate change means for Western Australia. Western Australian Marine Science Institution, University of Western Australia, Perth WA, 2 November 2010.

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting Northern Territory" – presentations re the Network and meeting aims, and also what climate change means for Northern Territory. Charles Darwin University NT, 4 November 2010.

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting Victoria" – presentations re the Network and meeting aims, and also what climate change means for Victoria. University of Melbourne, Melbourne VIC, 15 November 2010.

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting New South Wales" – presentations re the Network and

meeting aims, and also what climate change means for New South Wales. Northside Conference Centre, Crows Nest, Sydney NSW, 16 November 2010.

Holbrook, NJ (2010) "Marine Adaptation Network Stakeholder Meeting Queensland" – presentations re the Network and meeting aims. Hotel Urban Brisbane, Brisbane QLD, 17 November 2010.

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17 Community Based Participatory Research

Community-based participatory research (CBPR) is research that is conducted as an equal partnership between traditionally trained "experts" and members of a community. In CBPR projects, the community participates fully in all aspects of the research process. CBPR projects start with the community.

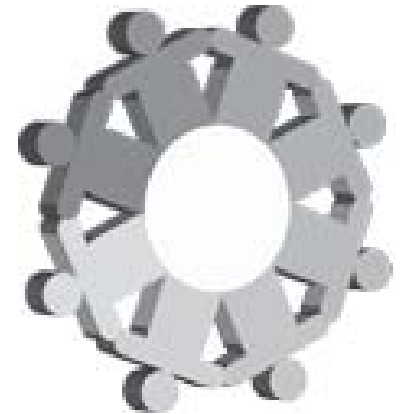
Community is often self-defined, but general categories of community include geographic community, community of individuals with a common problem or issue, or a community of individuals with a common interest or goal. CBPR encourages collaboration of "formally trained research" partners from any area of expertise, provided that the researcher provide expertise that is seen as useful to the investigation by the community, and be fully committed to a partnership of equals and producing outcomes usable to the community.

Equitable partnerships require sharing power, resources, credit, results, and knowledge, as well as, a reciprocal appreciation of each partner's knowledge and skills at each stage of the project, including problem definition/issue selection, research design, conducting research, interpreting the results, and determining how the results should be used for action. CBPR differs from traditional research in many ways.

One of the principal ways in which it is different is that instead of creating knowledge for the advancement of a field or for knowledge's sake, CBPR is an iterative process, incorporating research, reflection, and action in a cyclical process.

Read more at <http://arnmbr.org/content/index.php/site/cbpr/>

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18 Conference participation

Network members regularly present at conferences raising the profile of the Marine Adaptation Network with local and international audiences and furthering network links. Some of the conferences they have presented at are:

Climate Change Effects on Fish and Fisheries: Forecasting Impacts, Assessing Ecosystem Responses and Evaluating Management Strategies April 2010. Sendai, Japan.

5th Global Conference on Oceans, Coasts and Islands May 2010. Paris, France. Presentation: Application of Resilience Thinking to the Organisational Governance of Australia's National Climate Change Adaptation Research Network for Marine Biodiversity and Resources.

2010 International Climate Change Adaptation Conference: Climate Adaptation Futures: Preparing for the unavoidable impacts of climate change July 2010. Gold Coast, Queensland, Australia.

Coastal Zone Asia-Pacific Conference October 2010. Bangkok, Thailand The Network hosted a special session at this conference where Network members detailed the Network's role and approach to coordinating climate change adaptation research in Australia.

Bringing Adaptation to Life: A Workshop to identify strategies for building adaptation knowledge into adaptation practice This was a collaboration between GBRMPA, NCCARF and the Marine Adaptation Network April 2011, Cairns

QSIA Seafood forum March 2011. Brisbane.

Including (but not limited to) these presentations:

Brooker, C., Pecl, G., and Holbrook, NJ. (2010) "Communication to better engage researchers, marine industry stakeholders and

policy-makers in marine climate change adaptation” Australian Marine Science Association (AMSA) New Waves in Marine Science July 2010. Wollongong NSW,

Davidson, J. (2011) “Operationalizing Resilience Thinking in Australian Marine Social-Ecological Systems” Resilience 2011 Conference March 2011. Tempe, Arizona USA.

Davidson, J and Holbrook, N. H. (2010) “Resilience Thinking Applied to Australia’s National Climate Change Adaptation Research Network for Marine Biodiversity and Resources”. Poster presentation.

Frusher, S., Hobday, A., and Pecl, G. (2010) “Beyond biology and oceanography: the need to link the biophysical to the human system”, Coastal Zone Asia Pacific Conference, Bangkok, October 2010.

Holbrook, NJ and Davidson, JD (2010) “Application of resilience thinking to the organisational governance of Australia’s National Climate Change Adaptation Research Network for Marine Biodiversity and Resources”, Coastal Zone Asia Pacific Conference, Bangkok, October 2010.

Jennings, S. And Vanputten, I. (2010) “The Markets Theme of the Adaptation Research Network for Marine Biodiversity and Resources”, Coastal Zone Asia Pacific Conference, Bangkok, October 2010.

Leith, P. (2010) “Climate adaptation in the Australian edible oyster industry: A socialecological systems approach”, School of Geography and Environmental Studies Conference, University of Tasmania. July 2010. Hobart, Tasmania.

Leith, P. and Haward, M. (2010) “Climate adaptation in the Australian edible oyster industry” Shellfish Futures 2010 Annual Conference September 2010. St Helens, Tasmania.

Leith, P. and Haward, M. (2010) “Climate adaptation in the South Australian oyster industry” PIRSA Aquaculture November 2010. Adelaide.

Leith, P. and Haward, M. (2010) “From principles to policy and practice: building resilience and adaptive capacity through action research with the Australian edible oyster industry”, Coastal Zone Asia Pacific Conference, Bangkok, October 2010.

Myers, S., Stephenson, S. and Smith, T. (2010) “Adapting marine-dependent industries and communities to climate change through transdisciplinary networks”, Coastal Zone Asia Pacific Conference, Bangkok, October 2010.

Smith, T. (2010) “Enhancing adaptive capacity in coastal communities”, Coastal Zone Asia Pacific Conference, Bangkok, October 2010.

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19 AODN data sharing

The Marine Adaptation Network encourages interdisciplinary and collaborative research. The Australian Ocean Data Network (AODN) provides a secure data storage system for data sharing in interdisciplinary and collaborative marine research. The Metadata Entry and Search Tool (MEST) enables you to:

- **DISCOVER AND DOWNLOAD** datasets, and discover researchers and their projects; and
- **UPLOAD** your data for archiving, and for access by nominated members, or for the general public, if you choose.

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

Aims

An important philosophy of Australia’s National Climate Change Adaptation Research Network for Marine Biodiversity and Resources is to encourage collaboration amongst researchers, stakeholders and policy makers and to encourage data sharing. To improve our capacity to adapt to climate change, we first need to know what knowledge already exists. The provision of metadata will facilitate this.

Why share your 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 Network wants to encourage the further use of these data.

Read more at <http://arnmbr.org/content/index.php/site/aodn/>

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20 Development of Adaptive Capacity paradigm

On 16 October 2009 a Stakeholder meeting held at the University of Tasmania brought together some key stakeholders to share their concerns regarding the impacts of climate change on their sectors, their information needs and the potential benefits from a set of guidelines for assessing and reducing vulnerability to climate change.

On 28 October 2009 Network partners participated in a full-day workshop at the University of Tasmania to develop principles and guidelines for assessing and reducing vulnerability to climate change in Australia's marine systems.

Thematic areas reflected the broad stakeholder categories of policy makers and regulatory decision makers, direct and dependent users of marine biodiversity and resources and representatives of interests in marine biodiversity and resources identified in the National Adaptation Research Plan for Marine Biodiversity and Resources (NARP-MBR) Consultation Draft dated November 2008, with the addition of researchers and academics.

Four main areas of relevance were identified in the workshop:

1. Communication – information, debate, media, build common ground, awareness, development of partnerships
2. Policy Development – ensure environmental outcomes are achieved, reduce vulnerability, increase adaptive capacity planning and investment and decisions making
3. Capacity Building Stakeholders - adaptive learning, promote actions, bring stakeholders together to develop partnerships, underpin action and guide environmental outcomes
4. Economic advantage – Competitive edge, guide investment decision.

Engle, N.L., Adaptive capacity and its assessment. Global Environ. Change (2011), doi:10.1016/j.gloenvcha.2011.01.019

The above paper summarises two directions – resilience and vulnerability – that the Network has followed in adaptation thinking to develop the concept of adaptive capacity, described by Engel (2011) as the 'common thread between vulnerability and resilience frameworks'.

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21 Markets Toolkit is a web-based toolkit providing decision-makers and researchers with an overview of the ways in which economic (market-based) instruments and policy can be used in the marine environment to incentivize private sector adaptation to climate change.

Read more at http://arnmbr.org/content/index.php/site/themes/category/markets_toolkit/

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22 Marine Adaptation Bulletin

The Marine Adaptation Bulletin (MAB) is a quarterly bulletin of articles written by Network members and Network partners (who give in-kind support to the Network) on issues surrounding climate change adaptation.

http://arnmbr.org/content/index.php/site/resources_extended/Marine_adaptation_bulletin/

http://arnmbr.org/content/index.php/site/resources_extended/mab_vol_2/

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23 Publications

The online [Marine Adaptation Bulletins](#) are published quarterly and sent as e-news bulletins to all members.

2009 Report Card. Marine Climate Change in Australia – Impacts and Adaptation Responses

<http://www.oceanclimatechange.org.au/content/index.php/site/welcome/>

An Aquaculture Case Study Report, was released August 2010.

Leith, P.B and Haward, M. 2010. Climate Change Adaptation in the Australian Edible Oyster Industry: an analysis of policy and practice. University of Tasmania, Hobart, Tasmania.

http://arnmbr.org/content/images/uploads/OYSTER_REPORT_FINAL_web.pdf

Leith, P.B. and Haward, M. [date] Potential climate change impacts and adaptation pathways for the Australian edible oyster industry. University of Tasmania, Hobart, Tasmania.

http://arnmbr.org/content/images/uploads/oysterinfosheet_WEB.pdf

Information Sheets

In addition, working papers, compiled from the contributions of all themes in the Marine Adaptation Network as a knowledge synthesis of marine social-ecological conditions, are being prepared for submission as a set of papers to the international peer-reviewed journal, Global Environmental Change.

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24 Community Based Participatory Research

Community-based participatory research (CBPR) is research that is conducted as an equal partnership between traditionally trained “experts” and members of a community. In CBPR projects, the community participates fully in all aspects of the research process. CBPR projects start with the community. The Marine Adaptation Network “Communities” theme has compiled ideas about Community-based participatory research and has examined case studies - read more at:

<http://www.nccarf.edu.au/marine/content/index.php/site/cbpr/>

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25 Summer School December 2009

The Summer School was held on Friday 4 December 2009 at the Sandy Bay campus of the University of Tasmania with a morning lecture and afternoon workshop.

A barbecue after the event was held to encourage further networking between participants and “expert researchers”, giving students a chance to ask questions of the speakers. Summer School participants had been sent a short list of readings that they should complete prior to attending the Summer School and the Network was able to pay accommodation and airfares for all applicants who applied for funding.



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26 Graduate School August 2011

The Marine Adaptation Network plans to hold a second National Graduate School for graduate students and early career researchers later in 2011. The format will be over two or three days to allow lectures, work-shopping and in field experiences. Applications to attend the Graduate school will be advertised via the website (www.arnmbr.org) and via e-news bulletins.

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27 Research Support Grants 2010

The Marine Adaptation Network established Research Support Grants for full-time Honours/Masters students in 2010. Research was required to be relevant to areas investigating climate change adaptation for marine biodiversity and resources.

First round recipients were:

Fiona McDuie - 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: The Politics of Marine Protected Areas in South Australia: a critical analysis of the establishment of Marine Protected Areas.

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28 Research Support Grants 2011

Following the success of the 2010 Research Support Grants, the Marine Adaptation Network again offered Research Support Grants for full-time Honours/Masters students in 2011 for research investigating climate change adaptation for marine biodiversity and resources.

A total of 17 applications were received by the closing date, have been reviewed and seven offers have been made to high quality applications.

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