



FRDC

FISHERIES RESEARCH &
DEVELOPMENT CORPORATION

Marine Discovery Centres Australia

Annual network meetings

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**Marine Discovery Centres Australia
2011/401 Marine Discovery Centres Australia annual network meeting**

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Abbreviations

AAEE – Australian Association for Environmental Education

AMSA - Australian Marine Science Association

BMDC - Ballina (High) Marine Discovery Centre, Ballina, NSW

CEC – Coastal Environments Centre, North Narrabeen, NSW

CCMDC - Central Coast Marine Discovery Centre, Terrigal, NSW

DDC - Dolphin Discovery Centre, Bunbury, WA

DoFWA – Department of Fisheries WA

GBR – Great Barrier Reef

GBRMPA – Great Barrier Reef Marine Park Authority

HBMD - Henley Beach Marine Discovery Centre, Adelaide, SA

MDC – Marine Discovery Centre

MDCA – Marine Discovery Centres Australia

MESA – Marine Education Society of Australasia

MTA – Marine Teachers Association

NMDC - Naturaliste Marine Discovery Centre, Perth, WA

QMDC – Queenscliff Marine Discovery Centre, Queenscliff, Victoria

QMFDC - Queenscliff Marine and Freshwater Discovery Centre, Queenscliff, Victoria

RDAF – Regional Development Australia Fund

RGS – Reef Guardian Schools

SCMDC - Sapphire Coast Marine Discovery Centre, Eden, NSW

SIMS – Sydney Institute of Marine Science

TIMDC - Thursday Island Marine Discovery Centre, Thursday Island, Queensland

TQUAL – Tourism Australia accreditation program

WMDC - Woodbridge Marine Discovery Centre, Woodbridge, Tasmania

Executive Summary

Stewardship of our aquatic natural resources is vital for today and tomorrow. Marine Discovery Centres Australia (MDCA) is a network of marine education facilities across Australia that provides high quality education and engagement experiences for the wider community. These learning experiences promote sustainable behaviour in, and stewardship of, our fisheries and aquatic natural resources. Through annual meetings held around Australia, MDCA members were able to gain greater knowledge and understanding of issues affecting our aquatic natural resources and then share this with the Australian community. MDCA has become the leading national marine education organisation in the country.

Background

Support for Australia's commercial and recreational fisheries, and for the management of the aquatic environments that support them, requires engagement with and understanding by the community. Better understanding leads to empathy for fisheries and fisheries management and promotes behaviours that contribute to the sustainability of our fisheries and the aquatic environment.

Sustainable management of the marine environment requires up-to-date scientific data and research; appropriate policies and management tools; and industry and the community working together to ensure that the policies and management tools. Getting stakeholders on board needs good communication (the what) and good education (the why). Marine discovery centres provide the vehicle for the communication of this information and the education about why it is important.

A national network of marine discovery centres was formed in 2005 at a workshop in Ballina, NSW, initially with six centres involved. By 2010 the network had steadily increased to a total of 11 centres representing Queensland, New South Wales, Victoria, Tasmania, South Australia and Western Australia. Since that time, and with the support of FRDC funding, MDCA held annual workshop meetings to enhance the delivery of aquatic natural resource education and communication around Australia.

Objectives

The MDCA organisation saw an opportunity to support government agencies, such as FRDC, and industry in delivering key aquatic natural resources management messages to the broader community

1. To enable representatives to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.
2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.
3. To provide a vital link of information between industry, FRDC and the wider community.

Methodology

Through the support of this project, MDCA members were able to organise and attending annual network meetings held at different centres around Australia. Meetings were hosted by a member centre, with the MDCA executive and the host centre organising and coordinating the meeting agenda.

Experts in the fields of marine science, fisheries management, climate change and marine education presenters were invited to present at each meeting. Field trips to relevant specialist facilities, such as public aquariums and marine research institutions, were also arranged for each meeting.

Up-to-date information about fisheries and marine management, marine science and marine education were shared with participants at each meeting. Ideas about marine education activities and resources were also shared. This information was also relayed back to members who were unable to attend meetings.

Results/key findings

Through the support of this project, on average 80% of MDCA members were able to attend five annual network meetings. These meetings provided members the opportunity to hear from over 20 different presenters on a range of fisheries management, marine science and climate change topics.

Visitation figures provided by MDCA members showed that approximately 900,000 people visit the network of centres each year. Given that MDCA has members in each state and territory, except the ACT, this shows a high degree of engagement with the Australian community. A significant component of this engagement is through, genuine, long-term learning experiences that are structured and, most importantly, evaluated. These learning experiences often integrate research data that has been shared across the network by stakeholders.

Implications for relevant stakeholders

The MDCA network provides industry, managers and scientists with a vehicle that readily communicates and educates the community about fisheries management and the marine environment. Not only does the network have a national reach to a large audience (~900,000 visitors p/a), it also communicates and educates in a way that truly engages with the community.

If the community is engaged, educated and provided with current scientific information and data, they are more likely to care about the marine environment and support the industries that rely on the sustainable management of aquatic natural resources.

Recommendations

Given the current status of marine education across Australia; the importance of consistent and balanced messaging around fisheries and marine management; and the need to communicate this information to the Australian community, it is vital that support for the MDCA network and its member centres continues. Better liaison with and communication between MDCA, FRDC and key FRDC partners would greatly improve the ability of MDCA members to deliver key messages to the community.

Keywords

Education, engagement, extension, fisheries management, marine discovery centre, marine education, marine science, sustainability.

Introduction

Background

The Fisheries Research Development Corporation (FRDC) had previously supported the Marine Discovery Centres Australia (MDCA) network through funding that enabled network members to meet annually to share ideas, resources and materials. The network had grown to 11 centres in 2010/11 and 14 centres by 2014 (see appendix 1). These centres are located across a diverse range of marine bioregions around Australia and had proven to be a valuable link between industry, government agencies (particularly FRDC), coastal communities, education providers and research bodies. MDCA members were either not-for-profit community organisations or under the umbrella of Government agencies such as education and/or fisheries management. As such, funding was very limited and restricted the staff of the various centres from meeting regularly for vital networking opportunities.

A marine discovery centre is a designated education centre that uses discovery-learning techniques to inspire visitors and impart knowledge and skills for the enjoyment and sustainable use of Australia's marine and coastal environments (see appendix 2).

Centres disseminate research data and information compiled by FRDC and other key government and non-government agencies to the wider community through a group of professionally operated Marine Discovery Centres across Australia. MDCA member centres provide a cost effective way for FRDC, as well as other fisheries and marine researchers, to deliver key messages about its objectives, goals and achievements to the wider community. Marine Discovery Centres Australia (MDCA) was formed in 2005 at a workshop in Ballina, NSW, with a small number of Centres involved. Since that time, and with the support of FRDC funding, MDCA held annual workshop meetings at the following Centres:

- Henley Beach Marine Discovery Centre, Adelaide, SA, May 2006
- Naturaliste Marine Discovery Centre (Perth)/Dolphin Discovery Centre (Bunbury), WA, June 2007
- Woodbridge Marine Discovery Centre, Tasmania, May 2008
- Queenscliff Marine Discovery Centre, Victoria, May 2009
- Sapphire Coast Marine Discovery Centre, Eden, NSW, April/May 2010

In 2009 Thursday Island Marine Discovery Centre (Qld) joined the group, with Central Coast Marine Discovery Centre (Terrigal, NSW) joining in 2010. Port Macquarie (NSW), the Coastal Environment Centre (NSW) and Indo-Pacific Marine (NT) were the last centres to join the network. Visitation rates at all Centres greatly increased over this period, with the MDCA network reaching a larger audience than ever before. All Centres employ highly qualified and experienced staff. As a combined entity, the network members educate the wider community through specialised, hands-on, curriculum-based education programs.

Whilst not an incorporated body, the MDCA network has a defined organisational structure, with clear roles and responsibilities. The network is also guided by a mission statement and a set of clear objectives (appendix 3).

Need

In order to deliver key messages to the wider community and industry partners using a consistent approach, MDCA supports agencies such as FRDC in disseminating these messages. Other organisations such as OceanWatch Australia, SeaNet, Redmap and a number of universities also benefit from the network. Each Centre hosts the annual event at their Centre, in a diverse range of marine bioregions around Australia. The meetings also provided an opportunity for FRDC representatives to share information and knowledge with MDCA members face-to-face.

This also addresses the following priority questions in the National Climate Change Adaptation Research Plan - Marine Biodiversity and Resources:

1. Aquaculture: many Centres are located in areas supporting aquaculture industries. Centres are a link with these industries and the broader community and provide information to assist them to adapt to climate change impacts.
2. Commercial and Recreational Fishing: some Centres work closely with industry representatives in community based research projects. The Centres are a central contact point for industry and community members to access data and research results that may address key issues for their specific adaptation needs. Many Centres deliver programs and resources that educate the community about fisheries management across both the recreational and commercial sectors.
3. Conservation Management: Marine Discovery Centres are well-placed to deliver up-to-date educational programs and resources about the changes occurring in the marine and coastal environment and the programs in place that address the impacts of these change to marine and coastal ecosystems.
4. Tourism and recreational needs: Marine Discovery Centres are considered by the tourism industry as a link to important information about the impacts of climate change, both on capital assets as well as the environments in which they operate. All Marine Discovery Centres are located in key coastal regions and are a respected source of key information.
5. Cross-cutting issues: Marine Discovery Centres are central points that link research institutions, Government agencies, industry and local communities to deliver important adaptation messages.

Objectives

The broad aim of this project was to develop a program that utilised the collective knowledge, skills and abilities of the diverse group of Marine Discovery Centres Australia members, and their staff, as a conduit to share information about natural resource management in, and education for, the marine environment.

In order to do this, the project had three objectives, as outlined below:

1. To enable representatives from Marine Discovery Centres (MDCs) across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.
2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.
3. To provide a vital link of information between industry, FRDC and the wider community.

Method

The key activity that enabled MDCA to achieve the objectives of the project was through the organisation and delivery of an annual meeting. Funding for the annual meeting enabled MDCA representatives to meet at different centres around the country to share ideas and resources, learn more about research and development in fisheries and marine science, and to grow and develop the organisation.

Annual meetings were developed using the following framework:

- A host centre was identified and confirmed, followed by confirmation of workshop dates.
- The host centre worked with the MDCA executive (chairperson, treasurer and secretary) to determine an appropriate program for the meeting. The program was developed giving due consideration to the host location; type of education programs delivered; local, state and national marine management issues; and availability of presenters.
- The key points for each program included:
 - Sharing of education programs and resources.
 - Participation in relevant field visits and activities.
 - Guest presenters, providing information on current research, programs and issues related to marine and fisheries education
 - Updated information from FRDC and key FRDC stakeholders, where possible.
 - MDCA business - the management, growth and development of the organisation.
- Each Centre was represented by one or two staff at the workshop meeting. To ensure continuity and consistency of messaging, at least one representative from each centre was the main contact for that centre and attended each annual meeting.

In order to disseminate updated information post-workshop, MDC representatives were able to:

- Develop and implement new education activities and resources at their respective centres, based on the learnings from the annual workshops. Examples of these can be seen at appendix 4.
- Develop new displays and interpretive material that communicate information about fisheries research, development and extension.
- Provide relevant publications (e.g. FRDC's *Fish* magazine) to centre visitors.
- Further links to industry and government information were made available on the MDCA (www.mdca.org.au) and member websites.

Results and Discussion

Objective 1: To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

During the course of this project, MDCA members were able to attend five separate meetings in the following locations, with agendas and outcomes for each meeting identified in the appropriate appendices:

- Marine Environments Field Study and Resource Centre, Hastings Point, NSW (appendix 5)
- Central Coast MDC, Terrigal, NSW (appendix 6)
- Port Macquarie MDC, Port Macquarie, NSW (appendix 7)
- Thursday Island MDC, Tagai State College, Thursday Island, Queensland (appendix 8)
- Coastal Environment Centre, North Narrabeen, Sydney, NSW (appendix 9)

Each member centre had the opportunity to send two representatives to each meeting. Attendance by staff from member centres and topics and activities presented at the meetings are summarised in Table 2 below.

Year	State	Centres represented (total centres)	Attendees	Nos. of presenters	Activities/Topics
2011	NSW	10 (11)	16	5	Plankton, Climate Change, Rec Fishing Research, MESA, school education resources, FRDC, Oceanwatch
2012	NSW	9 (13)	13	6	AMSA, Redmap, Earthwatch, Marine Parks, National Rec Fishing Education Strategy, school education resources, FRDC
2013	NSW	12 (13)	16	4	Mangrove Watch, underwater habitats, catchment management, raising aquarium fish, school education resources
2014	Qld	12 (14)	14	4	Torres Straight indigenous fisheries, turtle and dugong research, AFMA, FRDC resources, school education resources
2016	NSW	9 (14)	12	4	FRDC update, Oceanwatch update, Marine Stewardship Council (MSC) and third-party fisheries certification, Sydney Institute of Marine Science projects, marine education/engagement resources.

Table 2: Summary of attendance and activities at MDCA annual meetings

Meetings were scheduled to minimise impact on centre operations, such that the majority of centres could be represented at the meeting. In most cases, member centres nominated a staff member as an on-going representative, ensuring continuity and consistency of messaging. The results show that the lowest attendance achieved was 65% of member centres (2016), whilst the highest attendance was achieved in 2011 and 2013 (91% and 92% respectively).

In some cases, centres were unable to attend meetings. This was either due to staff being needed to meet operational requirements at their centre or uncertainty about the long-term future of their centre. Minutes from meetings and presentations and other resources were shared with member centres. Updates on activities and key issues for each centre were also provided, such as in appendix 10.

Resource sharing was one of the primary objectives of the network, with the annual meetings providing a face-to-face opportunity to showcase resources developed by centres. As can be seen in appendix 11, a wide range of resources and activities suitable for both school and community education and engagement were shared with members. Many of these resources and activities were specific to the fishing industry and fisheries management (see appendix 11).

Members are able to integrate research data into the development of their education programs. As a network, outcomes of such research can be shared and then integrated into programs and delivered to the wider community through displays and exhibits and hands-on education activities, providing a unique opportunity that is not readily available to other stakeholders.

For example, the Sapphire Coast Marine Discovery Centre is engaged in a 3-year ARC Linkage Grant project in relation to the impact of the introduced marine pest European Green shore crab on the oyster industry. Data from this project is available through MDCA as an educational tool for the public about the impacts of introduced pests.

Resource sharing was not restricted to education and engagement activities and programs. One of the most highly valued benefits of the MDCA network has been the sharing of knowledge and expertise in other areas of managing a marine discovery centre. This expertise and knowledge includes areas such as aquarium management, animal husbandry, display development, image sharing and program evaluation. The sharing of knowledge and expertise across the network continues to be of great importance to members.

Objective 2: To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

Guest presenters with expertise in a range of marine related topics were invited to attend each MDCA meeting. The number of topics presented that were specific to climate change topics was:

2011 – 3

2012 – 3

2013 – 2

2014 – 1

2016 – 4

A range of resources were identified and at presented at each meeting and included:

- School education activities/lessons/field work.
- Community engagement activities e.g. seminars, shows and events, guest presenters.
- Education displays and interactives (a display that has some form of direct input from a participant).

MDCA members deliver a range of education programs and interpretive displays that are directly linked to climate change or are relevant to this issue. Appendix 11 shows a sample of some of the education activities that are delivered to school groups and, in some cases, to community groups. Climate change specific activities include *The Science of Climate Change*, *Ocean Acidification* and *Global Homeostasis*.

MDCA members have been able to share these activities and other relevant resources amongst the network

Through attendance at MDCA meetings, members have increased their knowledge and understanding of a range of initiatives related to global warming. Projects such as Redmap, Climate Watch citizen science are being used by members as innovative ways to deliver climate change education, with students engaged in experiential education that involves less talk and more action. The results of the engagement in these programs can not only be readily seen by participants, they also show the widespread impact of climate change around Australia.

Objective 3: To provide a vital link of information between industry, FRDC and the wider community.

The number of centres that form the MDCA network has grown from 8 to 14 members since the first meeting in 2005. This growth in the network has seen representation in all states and territories of Australia, apart from the ACT (the only land-locked territory).

Annual visitation figures are shown in Table 3 below. These figures show that MDCA, as a network, has the ability to engage with, educate and inform a large number of people. Over the course of this project, this represents over 975,000 visitors to member centres around Australia.

Table 3 - Approximate annual visitation at MDCA member centres/facilities

Centre location	School visitors	Community visitors	Total visitors
Ballina (NSW)	3,710	170	3,880
Bondi (NSW)#	-	-	-
Bunbury (WA)	1,870	60,000	61,870
Central Coast (NSW)	800	4,400	5,200
Darwin (NT)	900	8,100	9,000
Eden (NSW)	1,700	5,800	7,500
Hastings Pt (NSW)	7,544	2,767	10,311
Henley Beach (SA)	5,904	1,415	7,319
Hillarys (WA)	5,000	5,500*	10,500
North Narrabeen (NSW)	10,053	8,934	18,987
Port Macquarie (NSW)	2,652	572	3,224
Queenscliff (Vic)	24,320	14,792	39,112
Thursday Island (Qld)	12,800	0**	12,800
Woodbridge (Tas)	5,000	1,000	6,000
Total	82,253	113,450	195,703

* This figure was taken as the average annual public visitation over the duration of the FRDC project, taking in to account the closure of the Naturaliste MDC in 2013.

** Thursday Island MDC is a schools education centre only.

Figures for this centre were not provided.

Of these visitors, 42% are school students participating in structured, genuine, hands-on learning experiences that are long-term and (importantly) evaluated. Whilst community education and engagement programs and activities are important and highly valued, the impact of school education programs can be significantly longer lasting, broader (across curricula) and far more effective in bringing about attitudinal and behaviour change.

Many of the activities and programs delivered by MDCA members have a direct link to Australian and global fisheries, fisheries management and FRDC programs. Appendix 11 provides a range of examples of those programs and activities that have a direct link to fisheries. Over 50 fisheries and FRDC relevant programs and activities are being delivered to schools and the community by the network each year.

Conclusion

Marine Discovery Centres are quite different to public aquariums. Education for and about the marine environment is the core focus of a marine discovery centre. Given that education is the primary focus, marine discovery centres have an important role in providing relevant and up-to-date information about the marine environment and, in particular, the management of the marine environment, to the community.

The MDCA network is the most active, national representative body of marine educators in Australia, particularly since the demise of MESA. It is important to maintain a truly representative national body to ensure that balanced, current information is delivered to the community in a way that is relevant, understandable and promotes stewardship.

The three core objectives of this project – enabling members to meet and share ideas and resources; identifying new information and resources about climate change; and providing a link between industry, FRDC and the wider community - have clearly been achieved. Through the period of this project, the network has grown and been able to provide support to its members, whilst providing important information from stakeholders to the community in ways that are meaningful and generate interest and action.

Implications

With a network that covers all the states and territories of Australia that manage fisheries and the marine environment, MDCA provides a nationally recognised and trustworthy avenue for the dissemination of current information from key stakeholders in fisheries and aquatic natural resource management. Disseminating this information through MDCA members not only increases the uptake of the information, but it is also seen as coming from a reliable source.

Recommendations

MDCA will continue to have annual meetings and share information and resources amongst the member centres beyond the terms of this project.

However, given that all member centres continue to face significant financial challenges and have a range of priorities, the ability of members to send a representative to these meetings will be significantly impacted on without on-going resourcing. It is strongly recommended that the MDCA organisation continues to investigate on-going funding support from FRDC and other key stakeholder organisations. This will enable MDCA to develop ways to better support fisheries and marine education in Australia in the long term.

Further development

The membership of MDCA comes from a variety of backgrounds – state government fisheries agencies, state and non-government schools, local government, community not-for-profit, and private enterprise. Each of these parent organisations has their own key messages and priorities. It is important that key stakeholders, including funding organisations, understand that not all members will be able to, or be in a position to, place some messaging and information before (or in place of) their own priorities.

The MDCA Executive has acknowledged that the network requires clear objectives and a simple strategy for continued success. In light of this, the MDCA Executive is developing a strategic plan for consideration and adoption by its members.

Extension and Adoption

MDCA members will continue to meet, network and share information and ideas. The development of the network has seen a strong level of internal support for each centre that, collectively, promotes an ethos of professionalism and integrity in the education and engagement programs that they provide to the community. On-going involvement in the network will see this not only continued, but also enhanced amongst member centres.

As the leading national marine education organisation in Australia, the MDCA network will continue to promote and share information from FRDC, fisheries management and research agencies and the fishing industry as a whole, to their visitors and the wider community.

Appendices

APPENDIX 1: MARINE DISCOVERY CENTRES AUSTRALIA MEMBER CENTRES

- Ballina Marine Discovery Centre, Ballina, New South Wales
- Bondi Beach Marine Discovery Excursions, Bondi, New South Wales (Formerly Bondi MDC)
- Central Coast Marine Discovery Centre, Terrigal, New South Wales
- Coastal Environment Centre, North Narrabeen, New South Wales
- Department of Fisheries, Hillarys, Western Australia (formerly Naturaliste MDC)
- Dolphin Discovery Centre in Bunbury, Western Australia
- Henley Beach Marine Discovery Centre, Henley Beach, South Australia
- Indo Pacific Marine, Darwin, Northern Territory
- Marine and Freshwater Discovery Centre, Queenscliff, Victoria
- Marine Environments Field Study and Resource Centre Hastings Point, New South Wales
- Port Macquarie Marine Discovery Centre, Port Macquarie, New South Wales
- Sapphire Coast Marine Discovery Centre, Eden, New South Wales
- Thursday Island Marine Discovery Centre, Thursday Island, Queensland
- Woodbridge Marine Discovery Centre, Woodbridge, Tasmania

APPENDIX 2 - DEFINITION OF A MARINE DISCOVERY CENTRE

A Marine Discovery Centre is a designated education centre that uses discovery learning techniques to inspire visitors and impart knowledge and skills for the enjoyment and sustainable use of Australia's marine and coastal environments.

A set of criteria was formulated to distinguish Marine Discovery Centres from other providers.

Marine Discovery Centres must:

- be marine based
- have their own facility
- educate for conservation and the sustainable use of our marine resources
- provide high-quality interactive marine-based experiences
- deliver programs 'face to face'
- deliver programs that are curriculum aligned and overseen by professional educators
- maintain and use aquaria or appropriate marine interpretive displays
- acknowledge a code of conduct (to be developed by the network)
- be recognized as Centres of Excellence
- promote current scientific and cultural research
- provide a link between science, education, industry and the broader community
- embrace indigenous and cultural diversity
- participate and support the MDCA network
- nominate MDCA liaison person in their Centre

Strategic directions for the future of MDCA

- transition to an executive-based administration of MDCA network
- continually reassess priorities for the MDCA for the next 1 – 5 years
- continue to build relationships with external bodies

APPENDIX 3: MARINE DISCOVERY CENTRES AUSTRALIA ORGANISATIONAL STRUCTURE

MISSION STATEMENT

To facilitate the sharing of expertise and to assist, encourage and expand opportunities for member Centres.

DEFINITION of MDCA

Marine Discovery Centres Australia is a collaborative network of education centres which use hands-on experiences to inspire visitors, and to help them discover and learn about Australia's extensive marine and coastal environments.

Marine Discovery Centres Australia's purpose is to:

- provide opportunities to gain an understanding of each centre within the network, sharing information, resources and expertise.
- provide opportunities for mentoring within the network.
- present a national identity that expands opportunities for members.
- enhance national support for funding and programs.
- provide a hub or central contact point.

ORGANISATIONAL STRUCTURE

MDCA members will:

- elect an executive committee from member organisations
- maintain and update MDCA website
- process applications by potential new MDCs
- conduct an annual workshop

General Network Communication

- By email. These need to be prioritised in order to ensure appropriate response and action. Emails requiring a response need to be marked Urgent and need to have a Reply needed by (date) included in subject line. A reasonable time needs to be set for this date – two weeks is suggested. No reply by given date will be taken as agreement.
- Emails need to include MDCA Google group in Address list.
- Executive meeting minutes and outcomes to be circulated to members for discussion.
- Executive committee to report to network at annual workshop.
- All official documents – submissions, progress reports, workshop minutes – to be lodged on members forum of MDCA website.
- individual centre's newsletters to be available on web.

Grant submission:

Individual member applications for funding requiring network support need to be circulated for approval via the executive to all members.

Applications for funding of projects or resources applicable to more than one member of the network must be presented to the executive and distributed to all members for approval/comment.

All applications should be received at least one month before the closing date for submissions. Members should confirm their support, or advise suggestions, in writing. No reply by due date will be taken as agreement.

Representing MDCA at conferences and events:

MDCA will be represented at conferences or events by the executive or if that is impractical due to distance or other commitments, someone nominated by the network.

MDCA Committee

Executive Committee will be made up of the following roles: Chairperson, Secretary and Treasurer.

The committee will be elected for a period of 12 months with an annual election of committee members to be held at the end of the Annual Workshop. Vacancies on the executive at other times can be filled by nomination and election facilitated by the executive.

A person may only serve two consecutive terms in a particular committee role, however may be elected to another role on the committee or be re-elected to a particular role at a later date. The committee would deal with general network business. Working groups could be formed by interested members from the wider network for particular projects.

General role descriptions:

Chairperson

- Act as a 'communications facilitator' including acting as a moderator for email discussions
- Convene and chair MDCA Committee meetings (4 per year)
- Liaise with annual workshop host to provide support
- Chase up responses to particular issues from members

Secretary

- Receive and send all formal correspondence to/from MDCA
- Take minutes of meetings (MDCA Committee) and distribute to MDCA network
- Maintain full and accurate email list/Google group registry
- Maintain documents from grants, meetings etc on a central access point, such as the member login area of the MDCA website
- Website liaison with Kaye

Treasurer

- Maintain financial records for network meetings (as provided by workshop host) on member login area of MDCA website
- Maintain financial records for funding grants (as provided by project manager of grant) on member login area of MDCA website
- Scrutiny of budgets for meetings and grants – a 'double check' role

APPENDIX 4: FRDC funded science equipment feedback from Woodbridge Marine Discovery Centre June 2011 (FRDC Project 2009/308)

- Spark Datalogger for PASPort, PASPORT Water Quality Sensor, PASPORT Turbidity Sensor and PASPORT Weather/Anemometer Sensor

This allows us greater flexibility in the field. Previously we would transport the meters used on the RV Penghana onto Snake Island via tender with students. These are large, cumbersome and expensive and very difficult to carry around the 8 hectare island to groups working at different parts of the foreshore. The datalogger is light and easy to use and has improved the ability of secondary students to record environmental parameters in the field. The simplicity of display and resilience of datalogger also allows primary students to record environmental parameters on the foreshore.

- microEYE discovery microscope and 24" TEAC LED screen + brackets

This has been a fantastic hit with students, teachers and volunteers. The ease of use and resilience of the unit means that it has huge potential for allowing people of all ages to view both live and preserved specimens with ease and great success. Normal light microscopes can be very frustrating to use and less-able students lose interest when frustrated. At this stage we have explored otoliths from different commercial species, the patterns on preserved specimens, the tube feet of live stars and the structure and function of sea urchin pedicellaria.

- Leica BME compound microscope system

This is in use in the primary classroom and has dramatically improved the ability of students to be guided through the species in a plankton sample in a whole class session. This session is used as a lead into the importance of microscopic life in the food web and can be used with students of all ages. A normal individual light microscope is very difficult for younger students to use.

All of the equipment purchased with these funds has had a significant input into the experience of visiting students and our ability to connect students with the marine environment and the research that is being conducted.

APPENDIX 5 – 2011 MEETING AGENDA AND OUTCOMES, HASTINGS POINT, NSW

Friday 24 June

8.00 am Working breakfast - Continental and Hot Breakfast - Palms restaurant 2010/2011 in each Centre – new developments 5 mins max each

Centres updating verbally can use the breakfast session to do so with other updates in the conference room if needing PowerPoint.

Ballina MDC
Bondi MDC
Central Coast MDC
Hastings Marine Environments Field Study and Resource Centre
Naturaliste MDC
Dolphin Discovery Centre
Henley Beach MDC
Queenscliff MDC
Sapphire Coast MDC
Thursday Island MDC
Woodbridge MDC

9.30 am Guest speaker OCEAN WATCH NSW - Conference Room

10.00 am MDCA Business – Conference room

Report by executive on tasks set at 2010 workshop at Sapphire Coast MDC in Eden – mission statement, definitions and new members.

Workshop outcome: MDCA will have a clear mission statement and consistent approach to new members and potential sponsors

10.30 am Morning Tea

11.00 am MDCA Business (cont.)

FRDC Grants: projects' progress, financial details and lessons learnt by Principal Investigators

- 2008 – 2010 Workshops project – Tim Hoile
- Website, interactive models, science equipment, dissection DVD, consultancies project – Tim Hoile
- 2011 – 2014 annual workshops project – Pam Elliott

Workshop outcome: all members will have a clear understanding of these projects and the expectations that go with FRDC funding

12.00 pm Using FRDC funded resources - Marine museum - Peter Horvat to attend this session. Interactive models and the new science equipment – feedback from students and teachers and how we are using them

12.30 pm Lunch - Barbeque area

1.00 pm Focus Session: Plankton populations in relation to climate change - Marine museum

Guest speaker: Plankton ecologist/ biologist/ CPR specialist

Using plankton with classes:

- techniques for collecting and preserving
- The Hastings Point marine centre has prepared an activity which highlights the multi-use of the museum. (30-45 mins)

All other centres please bring along an idea for a 15 min plankton activity to run with students which we can share

Workshop outcome: the ideas and activities shared in this session together with the science presented will be collated into a resource kit for members and potentially teachers

2.30 am Afternoon kayak - 2 min walk away – all gear supplied

4.00 pm Afternoon Tea - Camp kitchen

4.30pm Resource sharing (cont)

Early childhood classes - ideas on environmental games and activities for younger students – please bring along some things that you run in your centre

Workshop outcome: a bank of ideas and activities that can be used with the new equipment and with young students

7.30 pm Workshop Dinner – meet 6.30pm at Palms restaurant for transport by local bus which departs 7pm from the front of North Star

Saturday 25 June

7.00am Breakfast - Palms restaurant- Continental and Hot Breakfast

Be ready to snorkel

8.00 am Meet at front reception Walk to Low tide Rocky Platform trek and snorkel and whale watch. Wetsuit jackets, mask, snorkel and fins supplied.

10.30am Morning Tea - Conference room

11.00am

11.00 am Marine WATERS project Michael Burke

11.30 am Conference updates:

- Global Eco Asia-Pacific Tourism Conference in Noosa - Phil Coulthard
- IPMEN – Tim Hoile
- QMTA & FRDC Extension & Adoption network – Pam Elliott

12.30 pm Lunch - Barbeque area

1.30 pm Invited guest session:

1.30 pm FRDC Peter Horvat & Matt Barwick (RecFish Research Extension Officer)

2.00 pm Ben Stockwin, Primary Industries Education Foundation

www.primaryindustrieseducation.com.au

2.30 pm National Curriculum

3.00 pm MESA – Michael Burke

4.00 pm Future Growth:

- Which areas/skills need the most support/development?
- Options for future projects and funding
- Election of new executive
- 2012 workshop

2011 Meeting Outcomes– Marine Environments Field Study and Resource Centre, Hastings Point, NSW

PROJECT PROGRESS AGAINST PROJECT OBJECTIVES

Objectives

1. To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

The Marine Discovery Centres Australia 2011 network workshop was hosted by the Marine Environments Field Study and Resource Centre in Hastings Point, NSW on 24 and 25 June 2011.

The meeting was attended by representatives from ten of the eleven member Centres. It is important to note that this workshop was held just after the eruption of the Puyehue Volcano in Chile and so several members' flights were disrupted. This meant that some items on the agenda had to be shortened or carried over to email discussion or next year's workshop.

- Naturaliste Marine Discovery Centre (NMDC): Michael Burke & Carina Gemignani
- Ballina (High) Marine Discovery Centre (BMDC): Mick O'Connor & Lynda Hourigan
- Sapphire Coast Marine Discovery Centre (SCMDC): Sheree Epe & Kerryn Wood
- Henley Beach Marine Discovery Centre (HBMDC): Tim Hoile & John Agnew
- Woodbridge Marine Discovery Centre (WMDC): Pam Elliott & Tim Nossiter
- Dolphin Discovery Centre, Bunbury WA: Phil Coulthard and Jan Tierney
- Marine Environments Field Study and Resource Centre, Hastings Point NSW: Kerrie Trees, Rhett & Tedd Brambleby
- Thursday Island Marine Discovery Centre (Qld): Andrew Denzin
- Central Coast Marine Discovery Centre (NSW): Jane Smith
- Bondi MDC (NSW): Kate Kilgour

Absent

- Queenscliff Marine Discovery Centre (QMDC) – Phil Armato & Julie Murphy

At the beginning of the workshop, each Centre provided an update of its operation and achievements over the past year. Queenscliff MDC, who were unable to attend, sent a presentation to the Workshop. Details of these updates are provided in the next section.

2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

Over several sessions members shared resources and activities that they have developed for educating students and other visitors. As each Centre has varying expertise, all members recognise this as a most useful part of the workshop. It provides an opportunity for their staff to broaden their skill base so improving the way they communicate and engage the community in current research and marine issues. During the planning stages of this year's workshop staff at member Centres were asked which topics they would like the workshop to focus on in the resource sharing sessions. This resulted in the following list being included:

- *Activities used by the host Centre - Marine Environments Field Study and Resource Centre, Hastings Point*
- *Exploring the marine environment with very young children*
- *Activities based on using plankton samples*
- *Outreach programs – making it easy to go on the road- Queenscliff MDC trailer*
- *NMDC website - Marine Waters*
- *Update and feedback on the FRDC funded equipment*

Details about these discussions appear in the next section of this report.

3. To provide a vital link of information between industry, FRDC and the wider community.

Expert speakers from industry, FRDC and the extended marine education community were a feature of this workshop:

- Guest Speaker: Associate Professor Anthony Richardson: *Plankton as an Indicator of Climate Change and especially Impacts of Acidification of Oceans*
- Peter Horvat, FRDC Communications Manager
- Matt Barwick, RecFish Research Extension Officer
- President of MESA, Michael Burke
- Andy Myers, Oceanwatch NSW

1. ORIGINAL MILESTONE DATE AND TITLE:

Milestone 2: 01 December 2011

Marine Discovery Centres Australia Annual Network Meeting

3. PROGRESS AGAINST MILESTONE: Achieved

Project Objective:

- ***MDCA continues to develop:***

Formation of Executive: There have been a number of new developments in the network since the last workshop. The most significant of which is the formation of an Executive. Elections were held and unfortunately only the positions of Chair, Pam Elliott (WMDC) and Treasurer, Harry Thorman (QMDC) were filled. Members decided to continue with this arrangement and try and fill the Secretary position during the year. This highlighted the time constraints of staff in small Centres and the need in the future for there to be a paid Secretariat.

The Executive met twice in January and April/May to attend to the tasks set at the workshop in Eden in 2010. The results of these meetings were tabled at the workshop and are included in Appendices 3 and 4.

Unfortunately Harry Thorman left QMDC in June.

Potential new members: There have been three expressions of interest for new Centres to join MDCA. All had been provided with information about the network and the benefits of joining, as well as Application forms. Two of the groups enquiring are some way from operating as an MDC and were grateful for advice they received from the executive about MDCA. One in particular was very keen in the future to join the network when they are better established. The third enquiry was from Warren Bridge from Newman Senior Technical College in Port Macquarie, NSW. Warren recently visited Woodbridge MDC and Henley Beach MDC to see each operation and get advice about setting up a Marine Discovery Centre. He will be submitting an application in the near future which will be sent around the network for approval.

This application was received by the Executive and approved by members in October. MDCA now has 12 member Centres with Port Macquarie Marine Discovery Centre being our newest member.

- ***All member Centres participate in the annual network workshop***

The 2011 workshop was planned by the executive and workshop host in consultation with members and stakeholders. Two representatives from each member Centre were invited to the annual workshop hosted by the Marine Environments Field Study and Resource Centre in Hastings Point, NSW on 24 and 25 June 2011. As outlined above all Centres were represented either in person or by sending a report to the workshop.

Workshop Outcome: Each Centre reported on the developments to date:

Bondi MDC, NSW

Outline of new developments towards introducing secondary activities.

Central Coast MDC, NSW

No report provided as representative was absent during this session.

Hastings Marine Environments Field Study and Resource Centre, NSW

- Building better marketing strategy and developing volunteer program.
- Minor changes to Seascape access to allow students entry through own door and minor changes to catering area approved by North Star.
- Dedicated attempt to find sponsorship/patron, develop improved primary program and day visit and camp attendance.

Naturaliste MDC, WA

- Marine WATERS launched March 2011 – see report later.
- Field guides were being redeveloped on waterproof paper.
- Naturaliste MDC developing a new website.
- Completion of the DVD “Fish dissection” and a copy provided to each centre.

Dolphin Discovery Centre, WA

- Stage 1 Redevelopment – through the state government, the DDC was able to secure one million for redevelopment of current building. The redevelopment included a new 360 degree theatre called the Digital Dolphinarium. It is seven metres wide and five metres high and features three major events in a dolphin’s life over a six minute screen time. Very impressive and lifelike with sound recordings from Koombana Bay used to complete a unique dolphin experience without getting wet.
- Education – Continue to offer FREE education programs through a corporate sponsorship program. DDC will see a total of 1000 students through this year completely funded by the Water Corporation. Phil Coulthard encouraged all centres to look at this model for their own use in the future.
- Tourism – A major downturn in tourism over the next 2-5 years has been predicted. DDC’s marketing and business development strategies are now challenged to come up with alternate opportunities for income. One option would be to develop a Singapore-based education product where new opportunities for 3-5 day programs are possible. DDC will be engaging agents in Singapore over the next six months with a proposed visit to the country to organise a meeting and sell the product. DDC staff are happy to provide them with the same information for other interested centres’ within the MDCA network.

Henley Beach MDC, SA

- Adopt a Creature has been an excellent initiative providing extra income for feeding of animals. Tim Hoile provided members with a sample creature so they could use this strategy if they wished.
- HBMDC have a new coastal signage project to do three new signs in their local area.
- Copies of the Alphabet Chart were given to each centre.

Queenscliff MDC, VIC

- The Marine Discovery Trailer with touch tank has been very successful. It has been used by a number of Fisheries Victoria staff, led by the MDC, even appearing on the national TODAY Show on Channel 9, during the weather report one morning. Two requests for the trailer were received from event organisers in Sydney by the end of that day, great exposure.
- This success has initiated planning around developing another trailer with an inland/freshwater focus. It won’t have a touch tank, but more likely a set of display tanks and rubber fish models for that tactile engagement opportunity.

- The Queenscliff MDC is over the next 12 months going to be the hub for all Fisheries Victoria Education - marine and freshwater. Phil Armato reported that while the planning is in the early stages the profile and title of QMDC may change slightly to reflect the new direction, but hopefully it wouldn't be too much of a change, as they have a brand and recognition that has taken 28 years to develop.
- Climate Change Education Project - the development of an interactive model similar to the FRDC-MDCA model developed last year. It will be loaded onto the DPI website in July. This model is accompanied by middle and upper secondary school programs for students on Climate Change and Fisheries Management, utilising four iPads as well as a 3D TV in the Discovery Lab and interactive whiteboard in the science lab .
- Career Discovery Days - these career focussed sessions are being offered once every school holidays. They give middle-years secondary students the opportunity to investigate and experience what it would be like to be a fisheries officer or marine scientist. It gives QMDC the opportunity to offer students an alternative when requesting work experience.

Sapphire Coast MDC, NSW

- Eden Marine Laboratory was opened in August 2010.
- TQUAL funded masterplans have been launched and SCMDC are now seeking RDAF money (approx. \$5 million) to implement stage 1 (interior of SCMDC).
- Now have a work vehicle to get 'on the road' and sell education programs.
- A number of small grant projects have been completed
 - biodiversity project with local gifted and talented high school students working with a local sculptor to create cetacean models for display in Centre.
 - Clean up under local wharves with school students, teaching about marine debris and responsible rec fishing techniques.
 - Grow your own oyster project where local students work with oyster growers, visit their leases and learn about the industry.

Thursday Island MDC

Thursday Island has a new Centre building in 2011 and is in the process of developing curriculum programs across the regional schools to compliment the new Centre design.

Woodbridge MDC

- In Jan/Feb Woodbridge MDC received funding from the Department of Education to extend facilities for secondary students and provide a much-needed facelift for the front of the building. The extension doubles the size and functionality of the Secondary Laboratory (the previous classroom had carpeted floors, old cupboards and could fit only 15 students comfortably) and provides a large outdoor/learning area for secondary students being built out over the water. The Department also funded a staged improvement plan for the Centre as a whole to take place over the next four years. Funding from a previous FRDC project allowed Woodbridge MDC to tap into the expertise of Bruce Mackay from Naturaliste MDC to provide advice on upgrading the aquaria facilities as part of this plan.
- The Primary Coordinator, Ros Asten, set up a resource area for teachers enabling them to borrow resources like activity kits and books to use in their classroom. This has been very successful and popular particularly with primary teachers.
- Unfortunately Ros decided to take six months leave to go travelling in the second half of 2011. Her professionalism, support and friendship will be missed by staff immensely.

Ballina MDC

Ballina MDC representatives were absent from this session.

Workshop outcome: New activities and resources will be shared at the workshop and available on the MDCA website www.mdca.org.au

Host activities

As the host of the workshop Hastings Marine Environments Field Study and Resource Centre shared a number of activities with members that they conduct with students. Housed in the museum onsite there is an amazing collection of live and preserved marine animals that are used extensively in the programs run for students and visitors to the Centre.

- Name tag activity - members had to research facts about their allocated ocean creature and present four of them to the group. One of the facts presented had to be untrue and members of the group had to guess which fact was incorrect. An adaption of the activity was to ensure one of the facts related back to the animal's connection to plankton through energy pathways.

As well as using the museum, staff from Hastings Point use their beautiful, varied coastal environment in their education programs, so members were treated to two excursions:

- Kayak The afternoon kayak highlighted the biota of the local Cudgera Creek and aspects of the content taught to visiting students discussed along the 1 ½ hour session.
- Snorkel - Rocky Platform and rock-pool snorkel

These were a fantastic opportunity to share techniques and discuss risk assessments and activities among members as most run similar excursions with students visiting their own centres.

Exploring the marine environment with very young children

Due to restrictions in time this agenda item was deleted from the meeting and Carina Gemignani (NMDC) volunteered to collate ideas. Members were asked to forward these to Carina. Once collated these will be put on the MDCA website for all members to access.

Outreach programs – making it easy to go on the road

The success of the Queenscliff Marine Discovery Trailer with touch tank, stimulated discussion about outreach programs in other Centres:

- Sapphire Coast MDC is in the process of selling their trailer as the original trailer design is no longer practical. The Sapphire Coast MDC is looking at developing an outreach program that can be delivered using their new work vehicle.
- Woodbridge MDC usually run three travel programs where activities are set up in host schools in different regions of the state. A trailer would be attractive to staff at WMDC if funding could be secured.
- WA Fisheries use a number of outreach education officers to deliver their programs.

NMDC/Department of Fisheries website - Marine Waters

The Marine WATERS project was presented to the workshop by Michael Burke (NMDC). Two \$100,000 grants provided by Woodside Energy Ltd over two years enabled the development of this website. The project went online on March 3 2011. Michael informed members of the uses and capacity of the website for teachers from K – 12 in a range of marine issues.

Michael showed a range of lesson plans and additional resources that are being added on an ongoing basis. NMDC runs workshops for teachers so they gain experience and skills in using the website's resources. All members were impressed by the sophistication of the website, and its links to other resources and the National Curriculum. Peter Horvat (FRDC) enquired about funding for the long term that would be needed for the Marine WATERS site to be adapted for use in other states.

Members agreed that it would be extremely useful in its current form but that further discussion on providing additional material more applicable to other states would be included in the next workshop.

Update and feedback on the FRDC-funded equipment

FRDC Communications Manager Peter Horvat was invited to the MDCA workshop to receive feedback about the equipment bought as part of the funding in FRDC Project 2009/308. Peter had a guided and interactive overview of the equipment set up around the host MDC at Hastings Point. This new microscopic capability increases the Centre's capacity to provide a detailed look at many marine organisms including aspects and adaptations of temporary zooplankton metamorphosis. Kerrie Trees (Hastings Point MDC) showed how they examine urchins, seastars, tube worms, barnacles feeding, the radula of a marine snail, slides of diatoms and coccolithophores etc. using the MicroEye. Comments from the visitors' book suggest a very high level of enjoyment and appreciation of the access to such visual and learning opportunities provided to students that are not available in the mainstream classroom.

Members from other Centres who received this equipment spoke directly to Peter Horvat on their use of the interactive models, the new science equipment and the feedback from students and teachers.

As Woodbridge MDC staff missed this session due to the disruption of their flights caused by the volcanic eruption in Chile, the feedback from staff and students visiting their Centre is included in appendices.

Workshop outcome: all members will have a clear understanding of all FRDC funded projects and the expectations that go with FRDC funding

FRDC Grants: projects' progress and financial reports tabled. Discussion was held on the details of final budgets.

- FRDC Project 2008/312; Annual workshops 2008 – 2010.
Tim Hoile (HBMD) presented a summary and thanked all involved.
- FRDC Project 2009/308: Website, model, science equipment, dissection DVD and consultancies.
Discussion was held about ongoing maintenance costs and best use of the website. Members were unsure on where we were placed with hours accrued for maintenance. Pam Elliott (WMDC) to follow up and clarify what is left for the group to use into the coming months to add content and maximise the use of the site. Carina will establish a link to Marine WATERS on the MDCA website.
Follow-up: Kay Smoljak from Clever Starfish has offered to maintain the site until hours assigned in agreement are used up. Kay also to provide regular updates on hits to the site.

It was suggested the website could be used to present a snapshot to teachers about how each centre in the network can demonstrate links to Australian Curriculum outcomes/content through visitation and support of the network. Pam, Michael and Kerrie will review opportunities and communicate these over the coming months.

- FRDC Project 2011/401: Annual workshops 2011 – 2014
Pam Elliott tabled the final submission for this project and was able to announce that the application was successful. This ensures the future of the network by providing financial support for the annual workshop. Pam thanked Jenny Robb (SCMDC) and Harry Thorman (QMDC) for their help in getting this application together at short notice.

FISHERIES RESEARCH & DEVELOPMENT CORPORATION and MDCA

FRDC Communications Manager Peter Horvat spoke to the workshop participants about the progress and mission of the FRDC Extension and Adoption network. MDCA has representation on this network and this was an opportunity for all members to appreciate its importance.

Peter told the members about the initiatives in place to utilise the findings of fisheries research in a more efficient way so as to bring the science and research into a framework that can be used in the wider community.

He explained that research indicated 70% of people surveyed believed that Australian fisheries are not sustainable but in reality, research shows that management practices have been more successful than is understood by the community.

From July a new framework will be developed "Pathways to extension" highlighting that:

- Research can be national
- Development can be regional
- Extension should be local

Peter also informed the workshop about a new National Database for Science Events that is being developed by FRDC.

Project objective: The MDCA will take an active role in the FRDC Extension and Adoption Network

A representative of MDCA has attended and taken an active role in discussions at all meetings of the FRDC Extension and Adoption network. Harry Thorman (Queenscliff MDC) attended the first meeting, Pam Elliott (Woodbridge MDC) attended the second and Julie Murphy (Queenscliff MDC) the third.

Workshop outcome: MDCA will have a clear mission statement and consistent unified approach to new members and potential sponsors

A report was tabled by Pam Elliott as Chair of the Executive on tasks set at the 2010 workshop held at the Sapphire Coast MDC in Eden. This involved the formulation of a mission statement, definitions, organisational structure and processes and is included as Appendices 2 and 3.

Project objective: Ongoing sharing of educational resources, ideas, materials relating to climate change, the marine environment, sustainable use of marine resources

Workshop outcome: At each workshop there will be a session focussing on current FRDC funded research and the development of strategies to incorporate this research into MDC educational programs

FOCUS SESSION

The research focus of this workshop was the role of plankton species as indicators of climate change and how members can use this in their educational programs. In consultation with FRDC staff, plankton biologist Associate Professor Anthony Richardson was invited to the workshop to share his research with workshop participants.

Associate Professor Anthony J. Richardson ARC Future Fellow (2010-2013) Plankton as an indicator of Climate Change and especially impacts of acidification of oceans

This was an informative session highlighting the role plankton plays as climate change indicators and the importance of long term data in interpreting this. Assoc. Prof. Richardson cited examples of findings in the Northern Atlantic as data has been collected there since 1951. Australia is

lacking that length of data, but he also mentioned the IMOS network which is collecting data about a number of oceanographic parameters in the waters around Australia.

Associate Prof Richardson informed members of the use of the BLUELINK program that provides and collates real-time data from the oceans which can be accessed by centres and teachers in the classroom.

He also showed that research indicates that both warm (up) and cold water (down) plankton species populations have fluctuated, subsequently effecting the cod population. Cod hatchlings need the cold water species to bloom in the right numbers when the hatchlings are at their biggest numbers.

Assoc Prof Richardson said that this is a complex problem with overall management issues related to pollution, fisheries, biodiversity, conservation, invasive species and harmful algal blooms worldwide also effecting plankton populations e.g, salp populations have increased as waters have warmed.

http://www.tos.org/oceanography/issues/issue_archive/issue_pdfs/22_3/22-3_brasseur.pdf

Members were most appreciative of this opportunity and his presentation will be made available to all centres in the network.

USING PLANKTON WITH STUDENTS

Carina Gemignani (NMDC) highlighted the availability to all group members of using the plankton sections of the Marine WATERS website:

- The Plankton Challenge about constructing a plankton model – adapted from an activity used by WMDC.
- Sea Monkey Science -providing the online links to buy the larvae to complete this project.

The group participated in a Plankton Marine Bingo game to demonstrate the opportunities that may be offered as an extra group activity for students.

Hastings Point MDC Plankton activity: MDC members were asked to trial a worksheet that is designed as a 2-3 day activity for visiting students to complete a comprehensive overview of plankton, its role in the oceans and its threats in the wake of climate change.

The group briefly discussed adaptations of each of the activities and explained similar activities run at other centres.

It was suggested by all that more time be allocated to this activity and resources would be sent to Carina Gemignani (NMDC) who volunteered to collate these so a bank of activities could be put on the MDCA website.

Project objective: Increased awareness by relevant agencies (government and non-government), the wider community, educational institutions (inc. universities, schools, colleges, TAFE) of the network and its objectives.

WEBSITE

www.mdca.org.au – Several enquiries are received by MDCA each week through the website. This shows a growing awareness of the network and the opportunities it provides. These enquiries vary from volunteer opportunities, potential school bookings, career information or specific species or environment information. Until this workshop, all enquiries were received by Pam Elliott (WMDC) who fielded them out to the relevant Centre. After the workshop, Kay Smoljak was approached and has since changed the enquiry portal to be Centre-specific where possible. This has improved response time and shared the workload, as this can be time consuming.

RECREATIONAL FISHING COMMUNITY

Matt Barwick (RecFish Research Extension Officer) presented an overview of the recreational fishing program and current priorities - enhancing skills, knowledge and responsibilities of recreational fishers through education as well as collating good data to monitor sustainability. Extension is the key part of the program and Matt was keen to connect with MDCA in order to enhance the recreational fishing research program.

MESA

Michael Burke (NMDC) is also President of the Marine Education Society of Australasia (MESA) and he was able to outline MESA's current position and asked for ideas on how it might be possible for MESA and MDCA to work together. A discussion was held about the benefits of centres to be active members of both organisations and the consensus from MDCA members was that there should be links to MESA from our own individual websites and a link to MDCA on the mesa website.

OCEAN WATCH

OceanWatch Australia Ltd is a national not-for-profit environmental company that works to advance sustainability in the Australian seafood industry. OceanWatch key activities involve:

- enhancing fish habitats and improving water quality in estuaries and coastal environments
- working with industry and local communities to minimise environmental impacts
- introducing industry and communities to sustainable technologies and behaviours.

Andy Myers from Oceanwatch NSW presented an excellent overview of some aspects of their work e.g Tide to Table, educational opportunities for oyster farmers, the Sydney Fish Market, and Adopt a Fisherman. He also highlighted opportunities for member centres to work more closely with the Seaset Officers in individual states.

CONTACT WITH BENEFICIARIES:

Minutes from the workshop have been disseminated to all members. Ongoing communication between members is maintained through:

- regular email discussions
- the members only section of the MDCA website
- telephone discussions
- Executive meetings
- face-to-face meetings where possible
- ongoing sharing of resources through the above communication channels

PROGRESS AGAINST COMMUNICATION & EXTENSION PLAN:

The Marine Discovery Centres Australia network assists FRDC communicate its mission, objectives, research outcomes and educational material to the wider community by disseminating up-to-date information about the marine environment, sustainable use of marine resources and links between community and the fishing industry.

By attending MDCA annual workshops, FRDC staff are able to consult and inform member centres of relevant fisheries research for extension and adoption. They also have access to expertise that can feed back into advice on extension and adoption techniques for research projects.

All MDCA members provide marine education programs to the wider community using unique, hands-on, experiential learning programs. These programs are delivered in a number of ways:

- through the Centres' interactive displays
- through specialised school programs linked with the relevant school curricula
- through community engagement programs
- website links
- newsletters
- workshops
- marine science forums

In addition, many Centres receive regular publicity in local radio, TV and print media through which positive messages about FRDC's work and achievements are included.

Information and resources are shared amongst members of MDCA, FRDC and other relevant agencies and organisations through electronic media. Information is disseminated through websites (both individual centres and MDCA website), newsletters, TV, radio and print media.

Workshop Outcome: Communication & Extension

Members of the network attended a number of conferences which provided the opportunity to promote the work of individual centres as well as the opportunities provided by the MDCA:

Global Eco Asia-Pacific Tourism Conference, Noosa - Phil Coulthard outlined that tourism is 85% of the Bunbury Dolphin Discovery Centre business model so the conference was very relevant. Phil's report was also of great interest to other Centres as a number rely on tourist traffic. Two trends were highlighted:

- It is anticipated that inter-state and international tourism is on a downward spiral and expected to continue to decline in the face of the high Australian dollar into the coming months/years.
- Despite a push to make marine education free at the DDC, the response was less than adequate (2000 spots were made available with only 600 taking up the offer).

One option to combat this trend would be to develop a Singapore-based education product where new opportunities for 3-5 day programs are possible. DDC will be engaging agents in Singapore over the next six months with a proposed visit to the country to organise a meeting and sell the product. DDC staff are happy to provide them with the same information for other interested centres within the MDCA network.

The International Pacific Marine Educators Network (IPMEN), Hawaii – Tim Hoile outlined his experience and presentation at the conference in Fiji 2010. He presented to approx 100 delegates on the educational initiatives happening in Australia, hands-on learning, immersion into the environment and inspiring a passion for the marine environment. He discussed the possibilities for a small centre that has the potential of developing into a better equipped MDC.

The next IPMEN is in Chile in 2012. It was suggested we have representation at this meeting and Peter Horvat from FRDC mentioned that there are FRDC-funded travel bursaries that MDCA members could apply for in order to attend this conference.

Marine Teachers Association of QLD (MTAQ), Launceston – Pam Elliott gave a presentation about the MDCA network as well as opportunities at individual centres. Participants at MTAQ were very interested in the abilities of MDCs to engage a large number of students and visitors in the marine environment and inspire stewardship. Several teachers approached Pam after the presentation with ideas and questions about setting up their own MDC. One group visited Woodbridge MDC to see the facility to discuss options. They were very keen to explore funding and facility possibilities on their return to Queensland.

Other communication opportunities:

Some discussion was held about the usefulness of centres using social media like Facebook and TripAdvisor to communicate their programs to their potential visitors. The general consensus was that it is time-consuming and that you have very little control over the comments posted.

FUTURE GROWTH OF MDCA

A number of items were discussed pertaining to the future priorities of the network:

Visitation rates. Members felt that it was important to have a realistic estimate of the actual visitation rates at each of the Centres. Due to time restrictions this was coordinated after the workshop. This will be a standing item at each workshop so that estimates used in publicity and funding submissions are a true reflection of the network's capacity.

Membership of MDCA: It was decided to have on the agenda at each workshop a review of membership criteria and the benefits of being a member of MDCA. Some discussion was held about the future need for some form of membership fee.

Australian Curriculum: Brief discussion was held on the use of the MDCA website as a possible tool for teachers to have the opportunity to see the links between the new Australian Curriculum and the capacity of the network to deliver on some of the outcomes. It was also suggested other subjects such as geography and art could be integrated into providing valuable MDCA curriculum links. Michael Burke (NMDC), Kerrie Trees (Hastings Point) and Pam Elliott (WMDC) volunteered to work on this project.

Accreditation of environmental education centres: Concern was raised over a Federal Government proposal to encourage school excursions only to environmental education centres that employ qualified teachers. Whilst most of our centres employ qualified teachers, there are some that have extremely well qualified and experienced staff but who may not have formal educational qualifications.

OTHER BUSINESS

Election of new executive: Jane Smith from CCMDC undertook to administer the elections of the new Executive in November 2011.

2012 workshop: Michael Burke volunteered to host the 2012 workshop. Due to the distance to WA and the growing number of members in the network, a discussion was held about how best to financially support members to attend this and future workshops. Phil Coulthard volunteered to collate member proposals after this workshop as meeting time was short. Since the workshop, a number of scenarios have been put forward by members and a lively discussion by email has ensued.

APPENDIX 6 – 2012 MEETING AGENDA AND OUTCOMES, TERRIGAL, NSW

Friday 19th October

9:00 am	Welcome, Program and housekeeping Central Coast Marine Discovery Centre (see map attached)
9:15 am	Presentation: Latest Development in Marine Parks Dr Belinda Curley <i>Marine Ecologist, Sydney Institute of Marine Science (Honorary Associate)</i>
10:00 am	Morning tea
10:30 am	What's New (each centre present for ~5 minutes) <ul style="list-style-type: none">• Naturaliste MDC• Sapphire Coast MDC• Woodbridge MDC• Torres Strait
11:00 am	Presentation: Climate Change and the World's Oceans Dr Ross Hill <i>Vice-Chancellor's Postdoctoral Research Fellow</i> <i>University of New South Wales</i>
12:00 pm	Lunch
12:30 pm	What's Newcontinued <ul style="list-style-type: none">• Port Macquarie• Queenscliffe• Hastings Point• Coastal Environment Centre• Bondi MDC• Central Coast MDC
1:15 pm	Presentation: Earthwatch Chris Gillies
2:15 pm	Tour and time to explore CCMDC
3:00 pm	Afternoon tea
3:30 pm	Travel to Avoca Lagoon – car pooling
4-5:00pm	Guided Paddle on Avoca Lagoon

Saturday 20th October
Conference – Day No. 2

	Breakfast at accommodation (<i>included in reservation</i>)
8:00 – 9:00 am	Snorkel at Terrigal Haven Meet a Terrigal Dive Centre, The Haven – 8:00am
9:30 am	Morning tea Central Coast MDC
10 am	Speakers / presentations <ul style="list-style-type: none">• AMSA Conference & Argo project –<i>Pam Elliot</i>• Recreational Fishing Education workshop – <i>Michael Burke, Warren Bridge</i>• REDMAP – <i>Jane Smith</i>

11:15 am	MDCA Business <i>including new funding opportunities, what commitment you make as being part of MDCA, planning for next year (theme), how the executive should operate (term) etc.</i>
1:00 pm	Lunch
1:30 pm	Workshop – school holiday activities See attached program
2:30 pm	Workshop – Primary or Secondary school activity (school education specific) See attached program
3:00 pm	Afternoon tea
3:30 pm	Workshop – continued
4:30 pm	Finalise MDCA business

Sunday 21st October

	Breakfast at accommodation (<i>included in reservation</i>)
9:00 am	Check out from hotel Meet at bus – at accommodation
9:00-10:30 am	Travel to Coastal Environment Centre
10:30 – 11:30 am	Tour and time to explore Coastal Environment Centre
11:30 – 12:30 am	Travel to Bondi, visit Bondi MDC
	Workshop close

2012 Meeting Outcomes – Central Coast MDC, Terrigal, NSW

PROJECT PROGRESS AGAINST PROJECT OBJECTIVES

Objectives

1. To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

The Marine Discovery Centres Australia 2012 network workshop was hosted by the Central Coast Marine Discovery Centre located at Terrigal on the NSW central coast on the 19th – 21st October 2012.

The meeting was attended by representatives from nine of the thirteen member Centres:

- Naturaliste Marine Discovery Centre (WA): Michael Burke & Carina Gemignani
- Sapphire Coast Marine Discovery Centre (NSW): Sheree Epe & Jillian Riethmuller
- Woodbridge Marine Discovery Centre (TasC): Pam Elliott & Andrew Walsh
- Marine Environments Field Study and Resource Centre, Hastings Point (NSW): Kerrie Trees
- Thursday Island Marine Discovery Centre (Qld): Tim Hillier
- Central Coast Marine Discovery Centre (NSW): Jane Smith
- Port Macquarie Marine Discovery Centre (NSW): Warren Bridge
- Coastal Environment Centre (NSW): Toni Wilson
- Queenscliff Marine and Freshwater Discovery Centre (Vic): Julie Murphy and Phil Armato

Absent

- Henley Beach Marine Discovery Centre (SA)
- Bunbury Dolphin Discovery Centre (WA)
- Bondi Marine Discovery Centre (NSW)
- Ballina (High) Marine Discovery Centre (NSW)

During the workshop, each Centre present provided an update of its operation and achievements over the past year. Details of these updates are provided later in this report.

2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

Over several sessions members shared resources and activities that they have developed for educating students and other visitors. As each Centre has varying expertise, all members recognise this as a most useful part of the workshop. It provides an opportunity for their staff to broaden their skill base so improving the way they communicate and engage the community in current research and marine issues. This year's workshop focussed on school holiday activities.

Details about these discussions appear in the next section of this report.

3. To provide a vital link of information between industry, FRDC and the wider community.

Expert speakers from the extended marine education community were again a feature of this workshop:

Dr Belinda Curley - Sydney Institute of Marine Science

- Latest Development in Marine Parks

Dr Ross Hill - University of NSW

- Climate change and the world's oceans

Chris Gillies – Earthwatch

- Climatewatch online program.
- TeachWild marine debris survey and mapping program.

Dr Jeff Guy, National Marine Science Centre, Southern Cross University

- National recreational fishing education program.

Pam Elliott, Woodbridge MDC

- Report on attendance at the Australian Marine Science Association conference.
- Presented on 'Marine Discovery Centres - Engaging and challenging students to build ownership of our marine environment.'
- Pam also provided MDCA with an overview of the ARGO float deployments and the opportunity for schools and MDCs to 'adopt a float'.

Jane Smith, Central Coast MDC

- Jane provided an overview of Redmap, a marine fauna range extension database and mapping project, that will be launching nationally at the end of 2012.
- The aims of the project are to engage the wider community in large scale monitoring.

1. ORIGINAL MILESTONE DATE AND TITLE:

Milestone 3: 01 December 2012

Marine Discovery Centres Australia Annual Network Meeting

3. PROGRESS AGAINST MILESTONE: Achieved

Project Objective:

- ***MDCA continues to develop:***

Formation of Executive: Elections for Executive Committee positions were completed in November 2011 with the following positions elected:

Chair: Michael Burke, Naturaliste MDC

Secretary: Carina Gemignani, Naturaliste MDC

Treasurer: Sheree Epe, Sapphire Coast MDC

Potential new members: Since the last workshop, MDCA has accepted two new members to the network and has received an application from a third.

Port Macquarie Marine Discovery Centre was appointed in October 2011.

Coastal Environment Centre was appointed in July 2012.

The network now has 13 member centres.

- ***All member Centres participate in the annual network workshop***

The 2012 workshop was planned by the MDCA executive and workshop host in consultation with members and stakeholders. Two representatives from each member Centre were invited to the annual workshop hosted by the Central Coast Marine Discovery Centre from 19th – 21st October. Although Bondi MDC could not attend the workshop in Terrigal, workshop attendees visited Bondi MDC before leaving Sydney on Sunday 21st October. Attendees also had the opportunity to visit our newest MDCA member, Coastal Environment Centre located at Narrabeen in NSW.

Workshop Outcome: Each Centre reported on the developments to date:

Bondi MDC, NSW

Workshop participants visited Bondi MDC during the conference and were shown the new facilities and resources, which included a virtual underwater tour of Bondi.

Central Coast MDC, NSW

As Central Coast hosted the conference, attendees were given a tour of the centre as well as an outline of the educational programs offered.

Hastings Marine Environments Field Study and Resource Centre, NSW

- On site purpose built student and teacher accommodation.
- Field and ecology centre.
- Massive sand build-up in the rocky shoreline, estuary and the snorkelling area.
- Issues with local developments e.g. catchment pond.
- Bookings for visits going well always have gaps though.

Naturaliste MDC, WA

- Changes in staff and restructure.
- Statewide education officers appointed.
- Touch screens replaced with iPads.
- Touch screen panels replaced with text panels.
- Replaced large screen and projector with LCD Scitech.
- Foyer display semi-permanent loan of recycled materials -fish and jelly Fish tails.
- New display: *How do you measure up?* - shark lengths.
- LCDs in the scientific trail.
- LCD in display cabinet in foyer.
- Lost 'Codspot' classroom to another agency.
- Trialled late opening for specific events such as Seaweek.

Dolphin Discovery Centre, WA

- Did not attend conference.

Henley Beach MDC, SA

- Did not attend conference.

Queenscliff Marine and Freshwater DC, VIC

- New name.
- New freshwater display area.
- Revamp of existing marine areas.
- New technology in the centre.
- New freshwater outreach program.
- Closer links with Community Engagement Officer.
- New staff member - trainee education officer, aboriginal.
- \$250,000 infrastructure grant received to revamp centre.
- New shark display - sustainable fisheries and protected shark spp.
- Freshwater trailer - 3 tanks on display; plus live fish transporter, chiller, solar panels, flow through system.
- Marine trailer that travels to events.
- Just purchased hydrophone.
- Staffing levels have reduced.

Sapphire Coast MDC, NSW

- 2 new staff members appointed.
- New educational programs on offer - crazy critters outreach - biology requirements, adaptations of marine organisms.

- K-6 School holiday activities - plaster painting, making slime, marine fossils, seaweed bath jelly, ocean in a bottle, marine mobiles. Advertised by program flyer through caravan parks, school, school newsletters, website, FaceBook page.
- Ongoing projects - grow your own oyster project - 4 schools involved currently.
- National science week – held a marine mania trivia night, open day, slime workshop, touch tank, speakers.
- Marine science forum in March, planning for next year.
- Octopus had babies!
- Adding new casual staff member for Christmas holiday period.
- Upgrading facilities including building frontage and public toilets.
- Strengthening relationships with number of universities.
- Displays constantly updated and changing.

Thursday Island MDC, Qld

- The representative from Thursday Island, Tim Hillier, is newly appointed and provided a slideshow of photos illustrating the facilities available at their MDC and the range of educational programs offered.

Woodbridge MDC

- Lots of supporting organisations.
- Continue to deliver both primary and secondary marine education programs.
- Visiting scientists program.
- Conduct outreach programs and community events.
- Offer school holiday programs.
- Offer work experience programs and work placements.
- Continue to grow volunteer base.
- New staff members on board.
- New monitor out on the deck of research vessel allows educators to show images/presentations etc.
- Of the boat Coast watchers launch Fish care volunteers training workshop.
- Received an NRM South Naturally Inspired Grant to collate the last 14 years of environmental data collected on sheets in the field.
- Developing MDC species ID app.

Ballina MDC

- Did not attend the conference.

Port Macquarie MDC, NSW

Catholic school system, 1 km from the Hastings River.

- 9 classes of year 11 & 12 marine studies students use the centre.
- Lord Howe Island display showcases ecology and biology of LHI.
- New digital Microeye microscope.
- Divers helmet on display from Pearl Harbour.
- Predator tank river system (fresh) tank.
- Model of XLCR ... and a restored boat!
- Commercial hatchery facility.
- Have had success in rearing clownfish ... not so much success with sea horses!
- Propagating coral.
- Have set up a freshwater system with aquaponics.

Coastal Environment Centre, NSW

Council facility, on the shores of the lagoon, adjacent to a caravan park

- Provide environmental education for schools.
- Also provide community environmental education and eco tours.
- Capacity building in marine and coastal education.

- Focus on a range of topics, both marine and terrestrial including freshwater wetlands, rainforests, bushlands, coastal lagoons and rocky shores.
- Range of secondary school programs offered - available on website.
- Community engagement - coastal ambassadors, catchment health and biodiversity and volunteer programs available.

Workshop outcome: New activities and resources will be shared at the workshop and available on the MDCA website www.mdca.org.au

Host activities

As the host of the workshop, Central Coast MDC gave members a tour of their facility, highlighting the range of displays and educational programs on offer.

Members were also treated to two excursions:

- Kayak - The afternoon kayak was run by a knowledgeable local operator, who gave us a guided tour of Avoca Lagoon and highlighted some of the environmental issues facing the lagoon.
- Snorkel – The snorkel provided an opportunity to examine some local marine wildlife as well as some local wrecks whilst examining risk management and safety of students whilst snorkelling.

Each centre present also demonstrated a school holiday activity. These are outlined later in the report.

Workshop outcome: all members will have a clear understanding of all FRDC funded projects and the expectations that go with FRDC funding

MDCA members have been provided with a copy of the original FRDC funding grant. Members are also provided with copies of Milestone Progress Reports as they become available.

Members are also kept up to date with other FRDC projects through the FRDC *Fish* magazine and access to the FRDC website.

Project objective: The MDCA will take an active role in the FRDC Extension and Adoption Network

MDCA will continue to take an active role in the FRDC Extension and Adoption Network. An MDCA representative will attend meetings wherever possible.

Workshop outcome: MDCA will have a clear mission statement and consistent unified approach to new members and potential sponsors

The mission statement, definitions, organisational structure and processes was formulated in 2010 and is included as Appendices 3 and 4.

During the 2012 meeting, members voted to change the length of term of the executive from one year to two years.

Project objective: Ongoing sharing of educational resources, ideas, materials relating to climate change, the marine environment, sustainable use of marine resources

This year's meeting featured a session where members were asked to provide information or a demonstration of a school holiday or educational activity that might be of interest to other centres.

The activities demonstrated included:

- Making seaweed bath jelly – Sapphire Coast MDC
- Beach Survivor activity – Coastal Environment Centre
- Marine 'claymations' using iPads – Queenscliff MDC
- Edible coral creations – Naturaliste MDC
- Crazy Critter outreach program – Sapphire Coast MDC

- Seagrass monitoring program – Thursday Island MDC
- Ecology of Rock platform (Yr 11 Biology) – Coastal Environment Centre
- Dangerous marine debris – Woodbridge MDC
- Aquaponics for Secondary Students – Port Macquarie MDC
- Marine Connections – Naturaliste MDC

All members present agreed that these resource sharing workshops are of the greatest benefit as it provides members with new ideas for educational activities as well as useful feedback about how these activities can be run and improved.

Workshop outcome: At each workshop there will be a session focussing on current FRDC funded research and the development of strategies to incorporate this research into MDC educational programs

Unfortunately, FRDC staff were not able to attend this year's meeting to discuss current FRDC research and priorities.

The presentation from Dr Jeff Guy on the development of a national recreational fishing education strategy and program prompted discussion about what programs and information centres currently provide around recreational fishing and how this might be enhanced:

Queenscliff

- Provide a holiday program - 2 hour fishing experience (including 1 hour travel).
- Education about catch and release and catch care.
- Offered once a week during the holidays.
- All education programs have fishing focus.

Hastings Point

- Don't offer any fishing programs.
- Envisage a three lesson program during the holidays.

Woodbridge

- Provide a marine education kit that includes information on recreational fishing.

Port Macquarie

- Marine studies students go fishing regularly.
- Take primary students fishing - year 11/12 marine studies students facilitate.

Thursday Island

- Take kids fishing at every available opportunity to engage students.
- Encourage returning undersize fish back.

Sapphire Coast

- Have offered recreational fishing workshops in the past but no longer conducted/offered.
- Some educational programs offered have a commercial fishing focus.
- Provide recreational fishing information flyers to visitors.

Naturaliste

- Each visiting school group is given an overview of recreational fisheries management.
- Educational fishing game offered in the centre.
- Education programs focus on the science behind the management - fish dissections, fish of ages, and science of sampling.
- Holiday program - catch fish, dissect, fillet, cook.

Central Coast

- FishCare volunteers run recreational fishing activities during school holidays.
- NSW Fisheries paid for some display material in MDC.

Coastal Environment Centre

- Offer a school holiday fishing program.
- Run three times per year.
- Fishcare volunteers run program.

MDCA will liaise with Jeff Guy regarding the recreational fishing education program.

Project objective: Increased awareness by relevant agencies (government and non-government), the wider community, educational institutions (inc. universities, schools, colleges, TAFE) of the network and its objectives.

WEBSITE

www.mdca.org.au – Several enquiries are received by MDCA each week through the website. This shows a growing awareness of the network and the opportunities it provides. These enquiries vary from volunteer opportunities, potential school bookings, career information or specific species or environment information. There are an increasing number of overseas hits to the MDCA website. Website analytics are provided to members on a regular basis.

A short article about MDCA was published in the spring edition of the Marine Adaptation Bulletin that is published by the National Climate Change Adaptation Research Facility. The article discussed the work of the various MDCs and how they are uniquely positioned to observe and note changes in the marine environment as a result of climate change.

CONTACT WITH BENEFICIARIES:

Minutes from the workshop have been disseminated to all members. Ongoing communication between members is maintained through:

- regular email discussions;
- the members only section of the MDCA website;
- telephone discussions;
- Executive meetings;
- face-to-face meetings where possible; and
- on-going sharing of resources through the above communication channels.

PROGRESS AGAINST COMMUNICATION & EXTENSION PLAN:

The Marine Discovery Centres Australia network assists FRDC communicate its mission, objectives, research outcomes and educational material to the wider community by disseminating up-to-date information about the marine environment, sustainable use of marine resources and links between community and the fishing industry.

By attending MDCA annual workshops, FRDC staff are able to consult and inform member centres of relevant fisheries research for extension and adoption. They also have access to expertise that can feed back into advice on extension and adoption techniques for research projects.

All MDCA members provide marine education programs to the wider community using unique, hands-on, experiential learning programs. These programs are delivered in a number of ways:

- through the Centres' interactive displays;
- through specialised school programs linked with the relevant school curricula;
- through community engagement programs;
- website links;
- newsletters;
- workshops; and
- marine science forums.

In addition, many Centres receive regular publicity in local radio, TV and print media through which positive messages about FRDC's work and achievements are included.

Information and resources are shared amongst members of MDCA, FRDC and other relevant agencies and organisations through electronic media. Information is disseminated through websites (both individual centres and MDCA website), newsletters, TV, radio and print media.

Workshop Outcome: Communication & Extension

Members of the network attended a number of conferences which provided the opportunity to promote the work of individual centres as well as the opportunities provided by the MDCA:

AMSA Conference July 2012, Hobart Tasmania: Pam Elliott from Woodbridge MDC attended and presented on how Marine Discovery Centres engage and challenge students to build ownership of our marine environment.

NSW Coastal Conference November 2012, Kiama, NSW: Sheree Epe from Sapphire Coast MDC attended and presented on how to engage the public in marine education, highlighting the work of MDCA.

Australian Association of Environmental Education (AAEE) Conference October 2012, Melbourne, Victoria: Michael Burke from the Naturaliste MDC attended and presented on how membership of MDCA and partnering with FRDC provides opportunities through collaboration.

Other communication opportunities: promotion of MDCA through media articles when opportunities arise.

FUTURE GROWTH OF MDCA

A number of items were discussed regarding the future priorities of the network:

Incorporation of MDCA: The members present discussed the idea of making MDCA an incorporated body, including the advantages and disadvantages of doing so. It was decided that this is something to look at in the future.

Membership of MDCA: It was decided to have on the agenda at each workshop a review of membership criteria and the benefits of being a member of MDCA. Discussion was held about the need for some form of membership fee. Kerrie Trees from Hastings Point will investigate setting up a separate bank account for membership fees. There was discussion about use of membership fees to fund an MDCA member to attend a conference. The Executive will develop guidelines on how membership money would be spent. The proposal for the implementation of MDCA membership fees will be considered further.

Representation of MDCA at conferences: The Chair will develop a charter for members attending conferences as a representative of MDCA. This would include guidelines for presentations and reporting back to the group on conferences that members represented MDCA.

OTHER BUSINESS

Future workshops: There are a number of new members to MDCA and those present decided it is not fair to ask a new member to host a workshop until they have attended two workshops themselves. Therefore, the next workshop will be held at one of the MDCs that have already hosted in the past. Possible options include Henley Beach or Naturaliste.

APPENDIX 7 – 2013 MEETING AGENDA AND OUTCOMES, PORT MACQUARIE, NSW

Friday 25th October

	Breakfast at accommodation (<i>included in reservation</i>)
9:00 am	Welcome, Program and housekeeping Port Macquarie Marine Discovery Centre
9:15 am	Presentation: Lloyd Godson View details of Lloyd's exciting next project re underwater habitats and marine education at http://startsomegood.com/Venture/tik_and_bubbles_foundation/Campaigns/Show/underwater_superhero_headquarters
10:00 am	Morning tea
10:30 am	What's New (each centre present for ~5 minutes) <ul style="list-style-type: none">• Naturaliste MDC• Sapphire Coast MDC• Woodbridge MDC• Torres Strait
11:00 am	Presentation: Brian Hughes Brian will present the "Bag It" shopping bag campaign and discuss recent research findings on soft corals, turtles, black cod and white sharks - check them out at http://www.youtube.com/user/HCRCMA
12:00 pm	Lunch
12:30 pm	What's Newcontinued <ul style="list-style-type: none">• Port Macquarie• Queenscliff• Hastings Point• Coastal Environment Centre• Bondi MDC• Central Coast MDC
1:15 pm	Presentation: TBA
2:15 pm	Tour and time to explore PMMDC
3:00 pm	Afternoon tea
4-5:00 pm	Guided paddle around Pelican Island – Hastings River estuary fieldtrip

Saturday 26th October

	Breakfast at accommodation (<i>included in reservation</i>)
8:00 – 9:00 am	Explore Shelley Beach– swim, snorkel in the lagoon, rockpool ramble or nature walk
9:30 am	Morning tea - PM MDC
10 am	MDCA Business <i>including new funding opportunities, what commitment you make as being part of MDCA, planning for next year (theme), how the executive should operate (term) etc.</i>
12pm	Lunch

1:00 pm	Workshop – Curatorial Each centre to describe their top three (or more) display tips – the purpose, the message(s), the medium, the design, the construction, the product and evaluation. Come prepared to share – tips can as be simple or as complex, cheap or expensive as you like!
2:30 pm	Workshop – open-ended field activities + school holiday activities Share your open-ended field work activities or school holiday activities. Please provide multiple copies of activity descriptions to distribute.
3:00 pm	Afternoon tea
3:30 pm	Presentations
4:30 pm	Finalise MDCA business and workshop close

2013 Meeting Outcomes – Port Macquarie MDC, Port Macquarie, NSW

Project progress against Project Objectives

Objectives

1. To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

The Marine Discovery Centres Australia 2013 network workshop was hosted by the Port Macquarie Marine Discovery Centre located at Port Macquarie on the mid-north coast of NSW on the 24th – 27th October 2013.

The meeting was attended by representatives from twelve of the thirteen member Centres:

- Naturaliste Marine Discovery Centre (WA): Michael Burke
- Sapphire Coast Marine Discovery Centre (NSW): Jillian Riethmuller
- Woodbridge Marine Discovery Centre (Tas): Andrew Walsh and Claire Blichfeldt
- Marine Environments Field Study and Resource Centre, Hastings Point (NSW): Kerrie Trees
- Thursday Island Marine Discovery Centre (Qld): Tim Hillier and Steve Hill
- Central Coast Marine Discovery Centre (NSW): Jane Smith and Kate Smellie
- Port Macquarie Marine Discovery Centre (NSW): Warren Bridge
- Coastal Environment Centre (NSW): Toni Wilson
- Queenscliff Marine and Freshwater Discovery Centre (Vic): Phil Armato
- Henley Beach Marine Discovery Centre (SA): Tim Hoile and John Agnew
- Bondi Marine Discovery Centre (NSW): Will Jones
- Bunbury Dolphin Discovery Centre (WA): Phil Coulthard

Absent

- Ballina (High) Marine Discovery Centre (NSW)

During the workshop, each Centre present provided an update of its operations and achievements over the past year. Details of these updates are provided later in this report.

2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

Over several sessions members shared resources and activities that they have developed for educating students and other visitors. As each Centre has varying expertise, all members recognise this as a most useful part of the workshop. It provides an opportunity for their staff to broaden their skill base, so improving the way they communicate and engage with the community in current marine research and management issues. This year's workshop focussed on open-ended field activities and school holiday programs.

Details about these discussions appear in the next section of this report.

3. To provide a vital link of information between industry, FRDC and the wider community.

Expert speakers from the extended marine science and education community were again a feature of this workshop:

Dr Norm Duke – James Cook University

- Mangrove Watch – a community mangrove monitoring program

Brian Hughes – Catchment Management Officer, Great Lakes-Port Stephens MP, Hunter-Central Rivers Catchment Management Authority

- 'Bag It' shopping bag/litter campaign

Lloyd Godson – marine edutainer

- Underwater habitats and marine education

Warren Bridge – Port Macquarie Marine Discovery Centre

- Raising tropical fish for the aquarium trade

1. ORIGINAL MILESTONE DATE AND TITLE:

Milestone 3: 01 December 2012

Marine Discovery Centres Australia Annual Network Meeting

2. PROGRESS AGAINST MILESTONE: Achieved

Project Objective:

- ***MDCA continues to develop:***

Formation of Executive: Elections for Executive Committee positions were completed in October 2013 with the following positions elected:

Chair: Michael Burke, Naturaliste MDC

Secretary: Phil Coulthard, Bunbury Dolphin Discovery Centre

Treasurer: Kerrie Trees, Marine Environments Field Study and Resource Centre

Potential new members: Since the last workshop, MDCA has been assessing an application from Indo Pacific Marine, a public marine education facility in Darwin, NT.

The network currently has 13 member centres.

- ***All member Centres participate in the annual network workshop***

The 2013 workshop was planned by the MDCA executive and workshop host in consultation with members and stakeholders. Two representatives from each member Centre were invited to the annual workshop hosted by the Port Macquarie Marine Discovery Centre from 25th – 27th October. Ballina MDC was unable to attend.

Workshop Outcome: A summary of each Centre's developments over the previous year:

Bondi MDC, NSW

- Bondi MDC closing to the public on the 31st October, however the school education program is continuing. Will Jones provided a brief history of the centre, noting the partnership with Safcol fishing pole and line fishing.
- Activities such as Salinity Detectives, opening eyes and hearts, our Aboriginal heritage education activities.
- Possibilities for the future positive e.g. mobile aquarium bus.

Central Coast MDC, NSW

- Fine tuning the programs - rely on partnerships.
- Bush stone curlew project.
- Virtual excursion of MDC being developed.
- Environmental biodiversity program.
- Redmap (Range Extension Data Mapping project) grant.
- New website.

Hastings Marine Environments Field Study and Resource Centre, NSW

- On site purpose built student and teacher accommodation.
- Field and ecology centre.
- Massive sand build-up in the rocky shoreline, estuary and the snorkelling area.
- Issues with local developments e.g. catchment pond.
- Bookings for visits going well always have gaps though.

Naturaliste MDC, WA

- Possible new direction for education across the Department of Fisheries.
- New activities introduced at NMDC, including food webs for junior students.
- Some staffing changes, new staff and others directed elsewhere.
- New units developed for Marine WATERs education resource.
- Budget issues have had an impact on education delivery at the NMDC and state-wide, however visitation has not changed.

Dolphin Discovery Centre, WA

- New social media presence – ‘Squirt Story’.
- Planning new \$10 million stage 1 and 2 of the Centre.
- Developed new funding brochures, trying to diversify the funding,
- Proposing a marine sanctuary zone including a no boat zone.

Henley Beach MDC, SA

- Video concept - learning and sharing.
- Winner NAB schools award.
- Centre surviving through diversity e.g. interactive signs, website and various programs.

Queenscliff Marine and Freshwater DC, VIC

- New stream, educating for compliance which is a Department of Fisheries Victoria priority.
- Developed an intertidal zones activity – visit two platforms.
- A mobile outreach program.
- Incursions to schools.
- New freshwater trailer developed. Trialled operating an outreach program for Mildura and Shepparton.

Sapphire Coast MDC, NSW

- Change of staff – centre now being run by two staff members. Long term staff members Jenny Robb and Sheree Epe have left.
- Have recently celebrated 5 years at the centre.
- The annual Marine Science Forum is very big.
- Run national science week activities.
- New shore bird display.
- New Eden port development.

Thursday Island MDC, Qld

- Tagai State College Environmental Education - coordinator for 12 schools.
- IRC pilot funding for Year 11-12 certificate 1 and 2 program in Conservation and Land Management eg turtle tagging, weed control.
- Joined the AMSA 6 program and the Wonders of Science program.

Woodbridge MDC, Tasmania

- Time-lapse photography,
- Dissection activities introduced to the program.
- New year-by-year strategy, linked to the Australian curriculum. This includes new Year 4 strands Primary connections/Marine Connections, new strategy for Year 5 and writing new units on invasive species for Year 11.
- New touch tank poster.
- Visits to different festivals.
- Continuing to develop new ideas.

Coastal Environment Centre, NSW

North Shore Council facility, on the shores of the lagoon, adjacent to a caravan park

- Provide environmental education for schools, mainly high schools and field work.
- Repeat business is important. Also have an online booking system.
- Also provide community environmental education and eco tours.
- Capacity building in marine and coastal education.
- Focus on a range of topics, both marine and terrestrial including freshwater wetlands, rainforests, bushlands, coastal lagoons and rocky shores.
- Range of secondary school programs offered - available on website.

Ballina MDC

- Did not attend the conference.

Port Macquarie MDC, NSW

Host activities

As the host of the workshop, Port Macquarie MDC gave MDCA members a tour of their facility, highlighting the range of displays and educational programs on offer. The features of the centre included:

- A Lord Howe Island display, showcasing the ecology and biology of LHI.
- A digital microEye video microscope.
- Divers helmet on display from Pearl Harbour.
- Predator tank river system (fresh) tank.
- Model of the XLCR, a wooden boat owned by the MDC!
- Commercial fish hatchery facility, including successful clownfish rearing and coral propagation sections.
- A freshwater system with aquaponics.

Port Macquarie also took MDCA members on an evening cruise on the Hastings River, aboard the refurbished wooden boat the 'XLCR'.

Members were also given the opportunity to participate in three field excursions:

- Mangrove field study – Dr Norm Duke took participants on a tour of a mangrove community near the Port Macquarie MDC, identifying the key features of mangroves, identifying different species of mangroves and highlighting the importance of mangroves to marine ecosystems.
- Kayak The afternoon kayak was conducted by a Warren Bridge from the Port Macquarie MDC. He gave a guided tour around Pelican Island and the Hastings River estuary, and highlighted some of the environmental and marine management issues facing the estuary.
- Snorkel – The snorkel field trip provided an opportunity to examine some local marine wildlife and habitats whilst examining risk management and safety of students whilst snorkelling.

Workshop outcome: all members will have a clear understanding of all FRDC funded projects and the expectations that go with FRDC funding

MDCA members have been provided with a copy of the original FRDC funding grant. Members are also provided with copies of Milestone Progress Reports as they become available.

Members are also kept up to date with other FRDC projects through the FRDC *Fish* magazine and access to the FRDC website. Member centres are provided with multiple copies of *Fish* magazine and distribute this to visitors to their centres. The magazine has proven to be very popular with these visitors.

The MDCA executive is considering plans for MDCA members to attend the 2015 Seafood Directions Conference in Perth. Attendance at this conference will enable MDCA members to better understand the issues affecting the seafood industry and its future directions. These plans will be further discussed at the next MDCA annual workshop.

Project objective: The MDCA will take an active role in the FRDC Extension and Adoption Network

MDCA will continue to take an active role in the FRDC Extension and Adoption Network. An MDCA representative will attend meetings wherever possible.

Workshop outcome: MDCA will have a clear mission statement and consistent unified approach to new members and potential sponsors

The mission statement, definitions, organisational structure and processes was formulated in 2010 and is included as Appendices 3 and 4.

During the 2012 meeting, members voted to change the length of term of the executive from one year to two years.

New member applications are assessed by all members of MDCA against the mission statement and definitions as outlined in Appendices 2 and 3.

Project objective: Ongoing sharing of educational resources, ideas, materials relating to climate change, the marine environment, sustainable use of marine resources

This year's meeting featured a session where members were asked to provide information on the curation of displays and information/demonstration of open-ended and field activities.

The curatorial discussions included:

- Magnetic displays to allow change.
- LCD screens with interactive puzzles on iPads – does require a specialised application.
- Large map on an LCD touch screen.
- Low cost ideas - lightboxes with led and fluorescent lights, stickers, free websites and free apps.

All members present agreed that these resource sharing workshop sessions are of the greatest benefit as it provides members with new ideas for educational activities as well as useful feedback about how these activities can be run and improved.

Workshop outcome: At each workshop there will be a session focussing on current FRDC funded research and the development of strategies to incorporate this research into MDC educational programs

Unfortunately, FRDC staff were unable to attend this year's meeting to discuss current FRDC research and priorities.

Michael Burke updated members on the development of the Commonwealth Government funded National Recreational Fishing Strategy education project (http://www.frdc.com.au/environment/recreational_fishing/Pages/rec_fishing_industry_dev_strat.aspx). MDCA members will continue to provide input, where appropriate, to the national recreational fishing education project.

Project objective: Increased awareness by relevant agencies (government and non-government), the wider community, educational institutions (inc. universities, schools, colleges, TAFE) of the network and its objectives.

Website (www.mdca.org.au): Several enquiries are received by MDCA each week through the website. This shows a growing awareness of the network and the opportunities it provides. These enquiries vary from volunteer opportunities, potential school bookings, career information or specific species or environment information. There are an increasing number of overseas hits to the MDCA website. Website analytics are provided to members on a regular basis.

General promotion: Each centre promotes the network through attendance at meetings, events and conferences, highlighting the benefits of being a member to each centre. Some centres also use their own web sites to increase awareness of the national network.

CONTACT WITH BENEFICIARIES:

Minutes from each workshop are disseminated to all members. Ongoing communication between members is maintained through:

- regular email discussions;
- telephone discussions;
- Executive meetings;
- face-to-face meetings where possible; and
- on-going sharing of resources through the above communication channels.

PROGRESS AGAINST COMMUNICATION & EXTENSION PLAN:

The Marine Discovery Centres Australia network assists FRDC communicate its mission, objectives, research outcomes and educational material to the wider community by disseminating up-to-date information about the marine environment, sustainable use of marine resources and links between community and the fishing industry.

By attending MDCA annual workshops, FRDC staff are able to consult and inform member centres of relevant fisheries research for extension and adoption. They also have access to expertise that can feed back into advice on extension and adoption techniques for research projects.

All MDCA members provide marine education programs to the wider community using unique, hands-on, experiential learning programs. These programs are delivered in a number of ways:

- through the Centres' interactive displays;
- through specialised school education programs linked with the relevant school curricula;
- through community engagement programs;
- website links;
- newsletters;
- workshops; and
- marine science forums.

In addition, many Centres receive regular publicity in local radio, TV and print media through which positive messages about FRDC's work and achievements are included.

Information and resources are shared amongst members of MDCA, FRDC and other relevant organisations through electronic media. Information is disseminated through websites (both individual centres and MDCA website), newsletters, TV, radio and print media.

Workshop Outcome: Communication & Extension

Members of the network attend a number of conferences, which provides the opportunity to promote the work of individual centres as well as the opportunities provided by the MDCA:

Other opportunities: promotion of MDCA through media articles when opportunities arise.

FUTURE GROWTH OF MDCA

A number of items were discussed regarding the future priorities of the network:

Incorporation of MDCA: Further discussion by the members present resulted in no further action on the proposal for MDCA to become an incorporated body at this stage. It was agreed, however, to, set up a MDCA bank account, enabling grant funds to be deposited in a central account as opposed to a member's account.

New members: An application from Indo Pacific Marine in Darwin NT to join the MDCA network was discussed. Members present agreed to approve Indo Pacific's application, on a probationary period where further clarification of their application could be sought.

Membership of MDCA: A review of MDCA membership criteria and the benefits of being a member have now been included in the agenda for annual meetings. Discussion was held about the need for some form of membership fee. Kerrie Trees from Hastings Point will investigate setting up a separate bank account for membership fees. There was discussion about use of membership fees to fund an MDCA member to attend a conference. The Executive will develop guidelines on how membership money would be spent. The proposal for the implementation of MDCA membership fees will be considered further.

Representation of MDCA at conferences: The Executive will develop a charter for members attending conferences as a representative of MDCA. This would include guidelines for presentations and reporting back to the group on conferences that members represented MDCA.

OTHER BUSINESS

Future workshops: Members discussed the location for the next MDCA network meeting. Discussion centred on the opportunity for the next meeting to take place at the Thursday Island MDC. Executive undertook to investigate this opportunity with Thursday Island representatives.

APPENDIX 8 – 2014 MEETING AGENDA AND OUTCOMES, THURSDAY ISLAND, QLD

Friday 17th October

8.25am	McDonalds Ferry to Thursday Is. Request courtesy bus to Thursday Is. Secondary Campus (High School)
9.00 am	Sign in, Welcome, Program and housekeeping Thursday Island Marine Discovery Centre
9:15 am	Presentation: Carolyn Luder Great Barrier Reef Marine Park Authority. Reef Guardian Schools. Information and resources.
10:00 am	Morning tea
10.30 am	Presentation: Daniel Takei Indigenous Fisheries: Crayfish in Torres Strait
11.00am	Jeremy Smith TSRA- Indigenous fisheries
11.30am	Tour of crayfish export facility followed by tour of Thursday Is.
12.30 pm	Lunch Bach Beach
1.30 pm	Transport back to High School - What's New (each centre present for ~10 minutes) <ul style="list-style-type: none">• Naturaliste MDC• Sapphire Coast MDC• Star of the Sea MDC, Henley Beach• Central Coast MDC
2.15 pm	Presentation: TSRA Sea Turtle and Dugong research Torres Strait
2.40pm	What's Newcontinued <ul style="list-style-type: none">• Port Macquarie MDC• Queenscliff MFDC• Hastings Point• Bondi MDC
3.15 pm	Afternoon Tea
3.30pm	What's Newcontinued <ul style="list-style-type: none">• Coastal Environment Centre• Ballina MDC• Indo Pacific Marine
4.00 pm	Tour and time to explore Thursday Island Land and Sea Discovery Centre
4.30 pm- 5.30pm	Optional Shower and change of clothes prior to heading out for evening.
6.00 pm	MESA tribute at Green Hill Fort for sunset

Saturday 18th October

7:55 am	Meet at front of Gateway Resort to walk to McDonalds Ferry
8.25am	McDonalds Ferry to Thursday Is. Request courtesy bus to Thursday Is. Secondary Campus (High School)
9.00 am	Meet at High School to be transported to Friday Is. by boat to participate in Marine Debris survey - hats, sunnies, long sleeved shirt and pants recommended, water bottle
10.30am	Morning Tea -Fruit on beach
11.00am	Complete debris survey and completion of documentation.
12.30pm	Lunch and travel back TI
1.45pm	MDCA Business Including: <ul style="list-style-type: none">• Where to from here?• Seafood Directions 2015.• Current and new funding opportunities.
2.45pm	Afternoon Tea
3.00 pm	Workshop – Completing draft and final reports. Each centre to provide the following information: <ul style="list-style-type: none">• Annual total visitor numbers for your centre.• The number of marine education programs currently offered. (e.g. Year 11 Biology).• Annual student numbers involved in syllabus specific activities (as a subset of the above).• Specific programs with a fisheries/FRDC link.• New resources developed and shared (either at the annual meeting or via email).
4.00 pm	Finalise MDCA business and workshop close.

2014 Meeting Outcomes – Thursday Island MDC, Tagai State College, Thursday Island, Queensland

PROJECT PROGRESS AGAINST PROJECT OBJECTIVES

Objectives

1. To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

The 2014 Marine Discovery Centres Australia network meeting was hosted by the Thursday Island Marine Discovery Centre, Tagai State College, Thursday Island 17th – 19th October 2014. Eleven of the thirteen MDCA members attended the workshop. As identified in the workshop agenda, members had a number of opportunities to share new ideas and educational resources and materials. In particular, the update sessions from each centre continued to provide an excellent opportunity for members to share school education activities.

2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

MDCA members continue to share information about adaptations to the impacts of climate change and how best to share that information with the community. This includes identifying resources available through the FRDC website and in FISH magazine that are appropriate to incorporate into schools education programs, or provide to teachers as background information for their own teaching-learning programs.

Discussions at the 2014 MDCA workshop included how to further promote the Redmap. Redmap is a citizen science project that enables members of the community to log marine species found outside of their normal area of distribution. This information can then be utilised by scientists to track the impact of water temperature change and how marine species react. Redmap provides an ideal opportunity for any member of the community to engage with marine science and further dialogue about climate change.

The development of display components continued to be a workshop topic leading to the sharing of ideas. Through the discussions about Redmap, the Department of Fisheries Western Australia was able to highlight how they have promoted the program to the community through displays at their Hillarys facility and at events and shows around the state. This has seen further discussions about display development post workshop.

3. To provide a vital link of information between industry, FRDC and the wider community.

As a part of the 2014 workshop, a session was devoted to identifying ways in which MDCA members could better link their programs and activities to industry and FRDC and then disseminate this information to the community. This session proposed two ways in which this objective could be better achieved:

- Hold the next MDCA annual workshop in Perth to coincide with the Seafood Directions Conference, with members attending the conference. It was noted that this would require a variation to the project milestones. Attendance at this conference will enable MDCA members to better understand the issues affecting the seafood industry and its future directions.
- Establish an inventory of activities and programs delivered by member centres that show a clear link to recreational and commercial fishing and aquaculture. The MDCA Executive has started collating this information as provided by member centres.

It was also noted at the workshop that the Marine Education Society of Australasia (MESA) had ceased operations. Up until 2014, MESA was the foremost national marine education organisation

in Australia. Whilst marine education is now represented nationally through the Australian Association for Environmental Education (AAEE), the importance of the Marine Discovery Centres Australia network cannot be underestimated. MDCA provides a strong, united voice promoting and supporting marine education initiatives across Australia.

1. ORIGINAL MILESTONE DATE AND TITLE:

01 December 2014

Marine Discovery Centres Australia Annual Network Meeting report

3. PROGRESS AGAINST MILESTONE (Achieved):

Objectives

1. To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

The Marine Discovery Centres Australia 2014 network meeting was hosted by the Thursday Island Marine Discovery Centre, Tagai State College, Thursday Island 17 – 19 October 2014. The workshop agenda is provided above.

The meeting was attended by representatives from eleven of the thirteen member Centres:

- Department of Fisheries (formerly Naturaliste Marine Discovery Centre), WA: Michael Burke
- Sapphire Coast Marine Discovery Centre, NSW: Jillian Riethmuller and Kerryn Wood
- Marine Environments Field Study and Resource Centre, Hastings Point, NSW: Kerrie Trees
- Thursday Island Marine Discovery Centre, Qld: Tim Hillier
- Ballina (High) Marine Discovery Centre, NSW: Linda Hourigan
- Central Coast Marine Discovery Centre, NSW: Jane Smith and Kate Smellie
- Port Macquarie Marine Discovery Centre, NSW: Warren Bridge
- Coastal Environment Centre, NSW: Toni Wilson
- Marine and Freshwater Discovery Centre Queenscliff, Vic: Phil Armato
- Henley Beach Marine Discovery Centre, SA: Tim Hoile
- Marine Discovery Excursions Bondi (formerly Marine Discovery Centre Bondi), NSW: Will Jones
- Indo Pacific Marine Discovery Centre, NT: John Astara

Absent

- Woodbridge Marine Discovery Centre, Tasmania
- Dolphin Discovery Centre, Bunbury, WA

During the workshop, each Centre present provided an update of its operations and achievements over the past year (see below).

2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

Over several sessions, members shared resources and activities that they have developed for educating students and other visitors. As each Centre has varying expertise, all members recognise this as a most useful part of the workshop. It provides an opportunity for their staff to broaden their skill base, so improving the way they communicate and engage with the community in current marine research and management issues. This year's workshop focussed on utilising the FRDC website and resource base.

All members present agreed that these resource sharing workshop sessions are of the greatest benefit as they provide members with new ideas for educational activities as well as useful

feedback about how these activities can be run and improved. Details about these discussions appear in the next section of this report.

3. To provide a vital link of information between industry, FRDC and the wider community.

Centres identified as delivering specific content around commercial and recreational fishing and aquaculture were:

- Henley Beach MDC, SA
- Hastings Point Marine Environments and Field Study Centre, NSW
- Marine and Freshwater Discovery Centre, VIC
- Department of Fisheries (formerly Naturaliste MDC), WA
- Port Macquarie Marine Discovery Centre, NSW
- Sapphire Coast Marine Discovery Centre, NSW
- Bondi Marine Discovery Excursions, NSW
- Ballina (High) Marine Discovery Centre, NSW
- Dolphin Discovery Centre, WA
- Thursday Island MDC, Qld
- Central Coast MDC, NSW
- Woodbridge MDC, Tas

Expert speakers from the extended marine science and education community were again a feature of this workshop:

Tristan Simpson Senior NRM Officer (Sea) Torres Strait Regional Authority Land and Sea Management Units Project

The project is funded by the working on Country element of the Australian Governments National Landcare Program and is administered and delivered by TSRA Land and Sea Management unit.

The rangers outlined to the group the role of the Torres Strait Turtle and Dugong Community Rangers programs using Dugong and turtle community management plans. The presentation covered how the ranger program:

- Encourages and supports Traditional Owners in sustainability managing land and sea resources
- Enables and encourages learning about the natural and cultural environment and best practice natural resource management
- Addresses local and regional planning issues and align land and sea management with communities, existing plans aspirations and priorities
- Provides a framework to mitigate the impacts of marine debris, pollution from local shipping and boating activities and minimizing land based pollution in the region

Andrew Cox, AFMA Fisheries Management Torres Strait

- Outlined to the group the management tools - output controls, licensing, data collection, consultation with groups, enforcement and compliance monitoring aspects of the department
- E-monitoring (cameras on board) \$13-14k per boat, works well and cheaper.
- AFMA's role in compliance in Torres Strait (TS) is for foreign vessels fishing in Australian waters.
- AFMA spends about \$500k on fisheries research in the TS. Projects include tropical rock lobster stock assessment, beche-de-mer surveys, subsistence fishing in Papua New Guinea villages.
- AFMA, Qld Fisheries and TSRA work together to manage.
- TS Fishing - traditional (no limits for non-commercial) and commercial and community fishing Issues for AFMA - fishing interactions with protected species, balancing

expectations, reducing the complexity of fisheries management, using new technology to cost-effectively manage fisheries.

Carolyn Luder, Great Barrier Reef Marine Park Authority (GBRMPA) Reef Guardian Schools

The Great Barrier Reef is a large reef system, with a complicated range of stakeholders and a long history.

- Reef Guardians holds MDCA network in high stead in regards to marine education.
- Program is all about students. YouTube video for the GBRMPA channel ReefTube.
- Reef Guardians is a student stewardship program that works because most of the community cares about the GBR.
- 307 schools, over 126,000 students, over 8200 teachers, from as far south as Brisbane. Been going for 13 years. Annual activities - four newsletters, action plan, network meetings, curriculum resources, future leaders Eco Challenges, annual awards and grants, assistance with projects, partnerships and events.
- Importance of being seen - working one on one. Have a team that includes Cairns, McKay, Townsville and Rockhampton.
- Schools program leads on to other community programs - eg Reef Guardian Councils, Fishers and Graziers.
- Need to change with research, attitudes of community.
- GBRMPA starting to use the term cumulative, and looking at indicators.
- Crown of Thorns - lots of money keeping it under control, native pest species that is influenced by human impacts.
- 5 pillars of RGS - curriculum resources, on-ground projects, partnerships, educating the community, reducing your carbon footprint.
- Key projects addressing the threats to the GBR: climate change, catchment run-off, degradation of coastal systems, direct use marine debris, direct use responsible reef practices.
- Action plan outline Schools summarised where their needs were and identified, tree planting and marine debris surveys as two key areas to be improved as planned activities. Activity in groups focusing on one of the key threats to the reef.

FRDC Resources

This year's meeting featured a brief session where members were asked to provide information on utilising FRDC resources.

FRDC resources identified as being used in a class room/lecture or for student research were:

- The *Status of Key Australian Fish Stocks Reports /Sharks/Molluscs/Crustaceans/Finfish*.
- Eight centres have the *Key to Australian Fish species* posters displayed.
- Included in power point presentations slides of Turtle exclusion devices.
- Student participation in discussing the *Status of Key Australian fish stocks reports 2014*.
- Utilising the reference and image resource links for students.
- FISH magazine (hard copy and on-line) for senior biology classes with case studies and latest issues and methodology in fisheries and marine research.

MDCA members will continue to provide input, where appropriate, to the national recreational fishing education project.

CONTACT WITH BENEFICIARIES:

Minutes from each workshop are disseminated to all members. Ongoing communication between members is maintained through:

- regular email discussions;
- telephone discussions;
- Executive meetings;
- face-to-face meetings where possible; and
- on-going sharing of resources through the above communication channels.

PROGRESS AGAINST COMMUNICATION & EXTENSION PLAN:

The Marine Discovery Centres Australia network assists FRDC communicate its mission, objectives, research outcomes and educational material to the wider community by incorporating up-to-date information about the marine environment, sustainable use of marine resources and links between community and the fishing industry into the education programs delivered at each Centre. The network members also disseminate this information through other means, such as displays at centres and events and through the distribution of related publications, such as FRDC's *Fish* magazine.

When FRDC staff are able to attend MDCA annual workshops, they consult with and inform member centres of relevant fisheries research for extension and adoption. They also have access to expertise that can feed back into advice on extension and adoption techniques for research projects.

All MDCA members provide marine education programs to the wider community using unique, hands-on, experiential learning programs. These programs are delivered in a number of ways:

- through the Centres' interactive displays;
- through structured school education programs linked to the relevant school curricula;
- through community engagement programs;
- website links;
- newsletters;
- workshops; and
- marine science forums.

In addition, many Centres receive regular publicity in local radio, TV and print media through which positive messages about FRDC's work and achievements are included.

Information and resources are shared amongst members of MDCA, FRDC and other relevant organisations through electronic media. Information is disseminated through websites (both individual centres and MDCA website), newsletters, TV, radio and print media.

Workshop Outcome: Communication & Extension

Members of the network attend a number of conferences, which provides the opportunity to promote the work of individual centres as well as the opportunities provided by the MDCA.

Other opportunities include the promotion of MDCA through media articles when opportunities arise.

VARIATIONS TO PROJECT:

At the 2014 meeting, MDCA members proposed to seek a variation to the project. The proposed variation is to extend the project a further 12 months to enable the organisation to hold the 2015 annual MDCA meeting in Perth at the end of October. This would also enable MDCA members to attend the Seafood Directions Conference being held in Perth on the 25-27 October.

By attending the Seafood Directions Conference, MDCA members will be able to gain a greater appreciation of the achievements and issues in fisheries research and management in Australia. MDCA attendance at the conference is seen as an effective means of better educating MDCA members about commercial and recreational fisheries research and management specifically and, more broadly speaking, aquatic natural resource management. This knowledge and the contacts that MDCA members make at the conference can then be incorporated into programs and activities delivered at member centres.

The proposed variation to the project milestones are identified in Table 1:

Original MS date	Original Description	Original Cost	Status	Revised MS date	Revised Description	New Cost
1 Dec 2014	Draft Final Report	\$6,000.00	Not actioned	24 June 2015	Draft Final Report	\$6,000.00
30 April 2015	Final Report	\$6,000.00	Not actioned	1 Dec 2015	Final Report	\$6,000.00

Table 1: Project milestones variation 2015.

APPENDIX 9 – 2016 MEETING AGENDA AND OUTCOMES, NORTH NARRABEEN, NSW

Thursday 23rd June 2016

After 14:00 **Accommodation** Sydney Lakeside Holiday Park Lake Park Road

16:00 Meet everyone at Manly SEA LIFE Sanctuary for an aquarium tour.

17:00 Dinner in Manly, lots of venues to choose from at own expense.

Friday 24th June 2016

9:00 Welcome from Northern Beaches Council Manager or CEC Co-ordinator, Program and housekeeping Coastal Environment Centre – Toni Wilson

9:15 **Presentation: Lowri Pryce Oceanwatch** – program and priorities
Presentation: Peter Horvat, Communications Manager, FRDC
How can MDCA support the FRDC?

10:15 What's New (each centre presents for 10-15 minutes)
 • Coastal Environment Centre - Dave Lowery, Jules Bellamy and Toni Wilson

10:30 Morning tea

10:45 • Torres Strait
 • Henley Beach MDC
 • Dolphin DC
 • Port Macquarie MDC
 • Woodbridge MDC

12:00 Lunch

12:30 **Leave to travel by car to- Sydney Institute of Marine Science** – Park in Georges Head, off Suakim Drive, walk down to Building 19 SIMS.

13:00 **Guest Speaker Dr Emma Thompson** “Future Proofing the Sydney Rock Oyster”, and overview of other SIMS projects including IMOS and the Sydney Harbour Research Program. Tour of the SIMs research aquarium and their new Marine Discovery Centre.

15:00 Walk back up to the cars at Georges Head, then return to CEC before the afternoon traffic.

15:30 • Bondi MDC
 • Central Coast MDC
 • Department of Fisheries WA

Saturday 25th June 2016

08:00 Early fieldtrip to explore North Narrabeen – Toni will lead a walk over the headland or a limited exploration of the Narrabeen Aquatic Reserve, with a 10:14 1.37m High tide.

09:30 Morning coffee – Café at NN SLSC, five minutes' walk back to the CEC.

10:00 **MDCA Business – Where to from here**
including new funding opportunities, what commitment you make as being part of MDCA, planning for next year, how the executive should operate.

10.30 – 11.30	Marine Stewardship Council – Third party sustainable fisheries certification Meredith Epp and Maylynn Nunn
11:30 – 12:30	Stand Up Paddle boarding session on Narrabeen Lagoon. Wetsuits provided.
12:00 -12:30	Lunch at the CEC
13:00	MDCA Members Workshops – ~ 30 mins / centre Each centre to describe their top marine engagement initiative , perhaps an enquiry based field investigation or a school holiday activities. Come prepared to share – perhaps a marketing, funding or a new technology or marine app. Bring a printed copy to hand out or an electronic copy on a USB. Department of Fisheries WA Woodbridge MDC
	MDCA Members Workshops – These sessions are generally the most valuable for our group and the reason why we are meeting. Henley Beach MDC Port Macquarie Coastal Environment Centre Torres Strait
15:00	Afternoon tea
15:20	MDCA Members Workshops - Bondi MDC & Central Coast MDC
16:30	Day 2 close
Sunday 26th June 2016	
8:30	Biodiversity of Aquatic Reserves fieldtrip. Leave for a possible snorkel at Cabbage Tree Aquatic Reserve, Manly, (BYOG wetsuit, snorkelling gear if possible.) All weather permitting. Or Rock Platform Ecosystem Study in the Narrabeen Aquatic Reserve, field equipment, techniques and sample analysis.
10:30	Local Environment Group Presentation Surfrider Northern Beaches President Brendan Donohoe - Reducing Marine Debris – from strategy to solutions - TBC
11:00	MDCA final report draft writing session. Please read through below comments from Jo-Anne Ruscoe, FRDC Projects Manager Research, to see how they would like us to link with the FRDC.
13:00	Lunch CEC
13:30	Conclude and group ASN transport back to the airport for flights

FRDC would like to see the network members consider how we can:

- Engage with FRDC research through receiving FISH magazine and follow FRDC on Facebook/Twitter; and subscribing to updates
<http://frdc.com.au/forms/pages/subscribe.aspx>
- Use as a key reference the status of key Australian fish stocks
<http://fish.gov.au/Pages/default.aspx> and the consumer website
<http://www.fishfiles.com.au/Pages/default.aspx>
- Keep up to date with FRDC's current research
http://frdc.com.au/research/current_research_projects/Pages/default.aspx and completed reports
<http://frdc.com.au/research/final-reports/Pages/default.aspx>
- Incorporate FRDC's fact sheets in education and engagement programs
<http://frdc.com.au/knowledge/publications/Pages/factsheets.aspx> - particularly the "knowing" section.
- Promote the FRDC YouTube channel
<https://www.youtube.com/user/FisheriesResearchAU>.
- Link MDCA members to industry expertise on specific issues e.g. a fisheries manager or researcher.

2016 Meeting Outcomes – Coastal Environment Centre, North Narrabeen, Sydney, New South Wales

Project progress against Project Objectives

Objectives

1. To enable representatives from Marine Discovery Centres across Australia to meet in different marine regions at an annual workshop to share new ideas, educational resources and materials.

The Marine Discovery Centres Australia 2016 network workshop was hosted by the Coastal Environment Centre, located at North Narrabeen on Sydney's northern beaches in NSW on the 23rd – 26th June 2016 (see meeting agenda, above).

The meeting was attended by representatives from nine of the fourteen member Centres:

- Department of Fisheries (WA): Michael Burke
- Woodbridge Marine Discovery Centre (Tas): Claire Blichfeldt
- Thursday Island Marine Discovery Centre (Qld): Tim Hillier
- Central Coast Marine Discovery Centre (NSW): Jane Smith
- Port Macquarie Marine Discovery Centre (NSW): Warren Bridge
- Coastal Environment Centre (NSW): Toni Wilson, Jules Bellamy
- Henley Beach Marine Discovery Centre (SA): Tim Hoile
- Bondi Marine Discovery Excursions (NSW): Will Jones
- Bunbury Dolphin Discovery Centre (WA): Jan Tierney and David Kerr

Absent

- Marine Environments Field Study and Resource Centre, Hastings Point, NSW
- Sapphire Coast Marine Discovery Centre, Eden, NSW
- Queenscliff Marine and Freshwater Discovery Centre, Queenscliff, Vic
- Ballina (High) Marine Discovery Centre, Ballina, NSW
- Indo Pacific Marine Discovery Centre, Darwin, NT

During the workshop, each Centre present provided an update of its operations and achievements over the past year. Details of these updates were as follows:

Henley Beach MDC – Tim Hoile

New intro video on YouTube (<https://www.youtube.com/watch?v=ZvkSJNGkzdM&rel=0>). New school incursion program – clash of cultures indigenous performance show. Volunteers at the centre are highly valued. Evaluation and feedback is also very important. Signage project important as an alternative revenue stream. The centre is \$558k self-funded. Visitation revenue is approximately \$39k. Review and strategic planning – thrive rather than survive, planning for the future.

Dolphin Discovery Centre, Bunbury – Jan Tierney

The Dolphin Discovery Centre is a not for profit community based organisation, committed to education, research and conservation. These objectives are funded primarily through tourism and sponsorships.

Education Programs: school education activities are linked to Australian curriculum; Marine Ranger and Marine Manager programs; school holiday programs, kids fishing clinics; open days; and attendance at community events.

South-West Marine Research Program developed in conjunction with Murdoch University. Provides critical information for assessing potential human impacts on dolphins and assists industry in planning activities in the marine environment to minimise impacts on dolphins.

Conservation activities include attending whale stranding events, marine turtle rehabilitation, community beach clean-ups and participation in whale and dolphin watching guideline reviews.

Hosted a Kids Teaching Kids Conference at the centre.

Department of Fisheries WA – Michael Burke

Since the closure of the Naturaliste MDC, Fisheries have continued to offer school education programs using the Hillarys facilities, including the learning laboratory, research foyer space and local beaches and reefs. School education program still popular, ~5,000 students per year. Offer 10 senior secondary, 6 lower primary, 5 middle and 5 ECE programs as incursions. Also deliver metro incursion programs. Also offer regular professional learning sessions for teachers and other educators (one in January and then one per term).

Citizen Science projects are an important engagement tool with community and schools. Education team play an important role in promoting these projects e.g. Research Angler Program (RAP) – log books; Send Us Your Skeletons (SUYS) – fish frame donation; and Redmap – DoF lead agency in WA. Currently investigating potential research opportunities for schools.

Marine WATERS (<http://marinewaters.fish.wa.gov.au>) continues to be well supported. Contains 229 different resources – lesson plans, fact sheets, posters, teacher guides; presentations, games. Currently have 7,000 registered users. Undergoing a review – site refresh, review current resources, develop new resources.

Central Coast MDC - Jane Smith

Located on the Terrigal lagoon, near beach. Not for profit community initiative. Moved in to the building in 2009. Voluntary mainly, but some short term paid employment. CCMDC views citizen science projects as an opportunity for MDCA members. CCMDC also working with Redmap.

Woodbridge MDC – Claire Blichfeldt

Played new promotional video. Two and a half years ago they were experiencing issues around funding and school numbers dropping off. Grant from Innovation Australia (IA) and local community grant. This has allowed more schools to visit. Have made up a BRUV using a GoPro and PVC pipe. New and refreshed displays developed by Andrew. Andrew films day in progress and then provides school with a copy of the video. Community support from Tasal, allowing better access to aquaculture information, fish pens. Plan for the future of the Centre's facilities taken to the school management team. This saw DoE send in engineers who decided that the centre needed to be raised by 1m, with no funding for redevelopment.

Activity: ocean acidification in a cup, bicarb with vinegar placed at top of cup showing CO₂ gas enters water causing pH indicator change.

Coastal Environment Centre – Toni Wilson and Jules Bellamy

The CEC has had a good past year. Jules Bellamy, our Primary Educator developed a number of new Primary excursions to link in with the *Primary Connections* supporting documents. The primary student numbers continue to rise to now 5808 students in the 2015/2016 financial year.

Jules presented an overview of the Primary program at the 2016 MDCA Annual Meeting.

The CEC is fortunate to receive local government administration support and to be able to run its education programs at cost recovery. This enables a team of eight casual educators to be employed on different programs and to be able to deliver marine education on two local Aquatic Reserves to whole year groups, as well as other coastal fieldtrips.

Toni Wilson developed two new Year 7-8 Geography fieldtrips to meet with the rollout of the Australian Curriculum in NSW and have trialled these with a few schools. We have had a challenging time with the severe June ECL storm recently and lost access to over 1km of beach at Collaroy. We enjoyed hosting the MDCA Annual Meeting and look forward to the CEC's involvement in the coming year.

Thursday Island MDC – Tim Hillier

Seventeen campuses in the island group. Constructing a new MDC on Prince of Wales Island, with the help of students. Year 12 Conservation and Land management project 12 miles from TI. Marine training focus on getting students a commercial marine qualification (boat), year 11 and 12. Worked with International Marine College, Cairns.

Port Macquarie Marine Discovery Centre - Warren Bridge

Warren has worked with a graphic designer to develop a new logo and associated graphics for the Centre. This has been incorporated into a new promotional brochure.

Running programs for both Primary and Secondary students, even though MDC is on a Secondary campus.

Still managing a significant number of aquariums, which are incorporated into marine science programs for students. Support staffing for aquarium management has been significantly reduced, which has meant that Warren works many extra hours (for the love).

Also conducting field activities, including fishing, kayaking and trips on the MDC's wooden boat, the XCLR.

Bondi Beach Marine Discovery Excursions – Will Jones

With the closure of the Bondi Beach MDC, Will has been running marine discovery excursions to the rock pools at Bondi Beach. Unfortunately, with only 6% of expected foot traffic leads to a death spiral. Hard doing it on grants without an overdraft.

Dolphin Discovery Centre Redevelopment Update – David Kerr

David gave a presentation on the proposed redevelopment of the Dolphin Discovery Centre in Bunbury - <http://dolphindiscovery.com.au/the-future/>. Crowd funding for some projects as well as sponsorship, donations and government funding. David now project managing redevelopment of DDC.

2. To identify new resources that will enable MDCs to disseminate essential up-to-date information about adaptation to the impacts of climate change.

MDCA members were provided with the opportunity to gain new information on factors affecting local marine environments, including the impacts of climate change, through visits to local facilities and presentations by their staff.

Manly Sea Life Sanctuary

MDCA members were taken on a behind-the-scenes tour of the Manly Sea Life Sanctuary (formerly Manly Aquarium). The tour covered a range of topics, including aquarium management, animal husbandry, display construction and interpretation of key messages and scientific information.

This tour was very beneficial to MDCA members, as it provided information on aspects of marine education and interpretation outside their main area expertise.

Dr Emma Thompson - Sydney Institute of Marine Science (SIMS)

Emma gave a talk on “Future Proofing the Sydney Rock Oyster” and an overview of other SIMS projects including IMOS and the Sydney Harbour Research Program.

Following Emma's presentation, MDCA members were taken on a tour of the SIMS research aquaria and their new Marine Discovery Centre. The tour of the SIMS Marine Discovery Centre enabled MDCA members to observe first-hand their interactive displays, including digital displays and virtual reality technology.

MDCA Members Workshops

Each centre was asked to share their top marine engagement initiative, including enquiry-based field investigations or school holiday activities, with the MDCA members. These initiatives included science experiments to show the effect of ocean acidification; hands-on fishing games showing the impact of warm-water events and fisheries management; and field activities showing the impact of coastal erosion on the natural and man-made environment.

3. To provide a vital link of information between industry, FRDC and the wider community.

Expert speakers from the extended marine science, extension and education community were invited to share their knowledge and expertise with MDCA members. This provides MDCA members the opportunity to gain new knowledge that can be incorporated into displays and education activities at each centre.

Lowri Pryce – Oceanwatch Australia

Oceanwatch is a not for profit organisation, 25 years old. Role: connecting seafood industry to community and particularly saltwater community. Advocacy for marine environment that underpins the seafood industry protection of habitats, reduce pollution.

Stewardship of our natural resources is vital for today and tomorrow. OW now also working in the recreational sector. Now working with 37 local NRM groups around the country. Lobbied hard to work with NRM groups as it was seen to be an important link between fishers and the community at grassroots level.

Increasing number of fishers practicing sustainable fishing practices. Increasing and engaging community in sustainable NRM.

Oceanwatch Australia Marine NRM – creating national Marine NRM Plan, promoting stewardship of the marine environment. Hosting national forums, rely a lot on web based surveys, social media.

Vision: Australia's marine ecosystems are healthy, productive, valued; and used in a responsible way.

Updating website - <http://www.oceanwatch.org.au/>. Accessible to everybody. Please give feedback to OW on the website. YouTube video (<https://www.youtube.com/user/OceanWatchAustralia>) easy way to explain the story to the community. OW have about 60 videos online, useful for schools.

Role for marine educators to play in lifting the care factor in the community, particularly those that use the marine and coastal environment. Biosecurity, habitat protection and pollution are still key factors that concern the community.

Peter Horvat – Fisheries Research and Development Corporation (FRDC)

Overview of FRDC and its role. \$28 million dollar budget leveraged up to \$70 million. Moved focus away from extension to adoption or uptake of the research outcomes/solutions that have been developed. Goal is to have better practices, particularly as the research takes place/continues.

Work with stakeholders to find the problem, invest in the solution and solve the problem. FRDC creates knowledge, knowledge that helps. They also help connect the dots.

FRDC funding sources – see presentation.

Stock status reports - Status of Australian Fish Stocks (SAFs) www.fish.gov.au is an excellent resource for information about the sustainability of fish species.

Digital platforms – see presentation. 37 domain names, 5 websites, 2 FaceBook, 3 Twitter, 3 YouTube and 1 LinkedIn FRDC, Fishfiles, SAFs. Developing an overarching website – 'FishGoogle'.

Social licence to operate – current community perceptions: 30% community thinks commercial fishing sustainable, 69% recreational fishing sustainable. Glass 100% full (of air)!

Twelve Principal Outrage Components – Peter M Sandman.

Information sources – see presentation

Follow up reading – see presentation

Marine Stewardship Council (MSC) – Meredith Epp and Maylynn Nunn

The MSC presentation started with a video – *Mission: Save the Ocean* (<https://www.youtube.com/watch?v=ZPOTbr3RvMk>).

Also go to <https://www.youtube.com/channel/UCOyikbSTLVihdPaJ1CxeqRQ>.

Overview of the MSC - International, independent not-for-profit organisation; standard setting and eco-labelling program; sustainable fishing standard; traceability and Chain of Custody (CoC) standard.

MSC vision: is of the world's oceans teeming with life, and seafood supplies safeguarded for this and future generations.

Fisheries in Australia: First MSC certified fishery was Western Australian Rock Lobster in 2000. We now have 52 fisheries engaged in the program. More than 50% of wild-caught prawns are in MSC. The WA government has committed \$14.5million to assess its fisheries against MSC standard. More than 300 fisheries are engaged in MSC worldwide.

Education program: Education resource pack is being developed in collaboration with Taronga Zoo. This includes: an interactive microsite; resource pack for teachers and students; video conference of a seal show; and a competition to win a MSC Sustainable lunch and visit from the Zoo mobile. Go to <http://fishforgoodschools.taronga.org.au/>

See presentation for more information

MDCA business and meeting conclusion

A new MDCA Executive was elected by those members present at the meeting. Members agreed that to improve continuity of the MDCA Executive and MDCA management, a new executive position of Deputy Chairperson would be an appropriate addition to the Executive. This new position would be taken up by the immediate past chairperson, to ensure continuity of MDCA management.

The new Executive is as follows:

Chairperson: Tim Hillier (Tagai State College, Thursday Island, Qld)

Deputy Chairperson: Michael Burke (Department of Fisheries, WA)

Secretary: Toni Wilson (Coastal Environment Centre, North Narrabeen, NSW)

Treasurer: Jane Smith (Central Coast MDC, Terrigal, NSW)

The new Executive also met to discuss a draft MDCA strategic plan that was presented by Jane Smith. After some initial discussion, it was decided that Executive members would give the draft plan some further consideration and then meet at a later date (via phone hook-up) to progress the development of the plan so that it could be shared with the MDCA members.

APPENDIX 10: WHAT'S NEW AT EACH CENTRE - 2014

What's new - MDCA Centre summary 2014
<p>Ballina Discovery Centre (NSW)</p> <ul style="list-style-type: none"> • NSW DEC abolished the designated Marine Centre Co-ordinator's position, the last 12 months has seen a change in the operational and organisational structures of the Ballina Marine Discovery Centre. • Ballina Marine Discovery Centre now relies solely on the good will of Ballina High School staff volunteering their time along with a small number of committed and dedicated community volunteers. • Centre can only deliver programs one day per week or at best two days per week despite the demand from schools community groups exceeding this. • This year has seen the continued designing, building and modelling of the Centre's interactive education centre focusing on interactive displays and interpretative signage. This has included the Maritime and Boating Safety section; Rocky shores section; Sandy Beaches; Sustainable recreational fishing section; Seagrass section; Diving section; and the Sharks and marine mammals section.
<p>Hastings Point Marine Environments and Field Study Centre (NSW) Discovery Centre Staffing</p> <ul style="list-style-type: none"> • Trained 2 new part time staff • Work experience students – 9 throughout the year • Improved existing displays/Streamlined room to accommodate larger numbers • New small Rocky Shore species ID and Fish ID holding tank for collection and return of species • National Science Week – Open Day and Climate Watch survey • World Oceans Annual Open Day
<p>Marine and Freshwater Discovery Centre, Fisheries Victoria, DEPI (Vic) Fisheries Victoria (FV) Compliance Priority - Engaging the Culturally and Linguistically Diverse (CaLD) community</p> <p>Fisheries ESL Teaching Resource (308 pages) + Fishing for Culture DVD Why a Fisheries resource for CaLD learners of English? Activities designed to provide teachers with tasks that support the teaching of the ESL Framework - Burmese/Karen, West Papua, Aboriginal, Turkish, Vietnamese. Developed in partnership with Yarraville Community Centre (Melbourne) – assisted in developing the ESL worksheets and activities.</p> <ul style="list-style-type: none"> • Other Partnerships – Surf Life Saving Victoria + Victorian Police • Rock fishing fatalities – highest fatality rate sport in Australia – strong link to CaLD fisher-people • Goal - Long term behavioural change (adults) + generational change • MFDC = engaging schools in compliance hot spots (suburbs postcodes) • Community Education/Engagement – Multicultural Learning Centres, CaLD Community festivals etc. • Aboriginal Fishing Display - MFDC • Aboriginal Education Officer Trainee – Angela Jeffrey – applied for a grant from FRDC to develop posters of national and local • Indigenous fishing practices. • September 2014 - launch of the FRDC funded development of posters promoting and educating on national and local (Vic) level • Traditional fishing practices. • Opening of the Balla-wein Deck (from which the Bellarine Peninsula received its name) and Aboriginal Fishing Display (wall) with traditional nets and a traditional spear presented by one of the Wadawarrung elders.
<p>Star of the Sea/Henley Beach Discovery Centre (SA) Kaurna Initiatives</p> <ul style="list-style-type: none"> • New interactive website game promoting Kaurna knowledge • New Patron: Karl Telfer • Future Plans: Kaurna Marine Leaders. • New interactive models developed for other centres including 2 new models for the Port Macquarie MDC. • Six new interpretive signs including three for northern NSW.
<p>Marine Discovery Excursions Bondi (formerly Marine Discovery Centre Bondi), NSW</p> <ul style="list-style-type: none"> • The Underwater Bondi Experience Centre in the front of Bondi Pavilion closed at the end of 2013 due to funding difficulties. • Rock pool excursions were still conducted for school groups. • Family rock pool tours were also conducted. • Education programs continued to receive support from SAFCOL.
<p>Sapphire Coast Marine Discovery Centre (NSW) Discovery Centre Staffing</p> <ul style="list-style-type: none"> • Trained 8 new volunteers – we now have volunteers coming in regularly • New property manager and financial officer – Tony Millo

- Work experience students – 6 throughout the year
- Jill finished Dip Ed – now a qualified teacher

Discovery Centre

- Extended opening hours – Monday – Friday 10am – 3pm. Will extend further for the summer holidays.
- New displays – Sustainable fishing
- Improved existing displays
- Better tank maintenance and more species

Research

- Abalone – Natalie Moltschaniwskyj (University of Newcastle)
- Hagfish – Trevor Lamb (JCSMR, ANU)
- Sea Urchin – Travis Baulch (IMAS)
- SCURG – Weedy Sea Dragon fin collecting and photographing for David Booth (UTAS)

Events

- National Science Week – Open Day and ClimateWatch survey
- Oceans Connected Launch – survey and information sharing with North Northumberland
- Deep Sea Challenge 3D – movie night fundraiser
- Eden Whale Festival
- Marine Science Forum 2015 – Our Changing Oceans
- Pambula Motorfest

Education – new programs

- Grow Your Own Oysters – Eurobodalla, Shoalhaven, Bega Valley
- Marine Debris – IMB grant
- ClimateWatch surveys with schools – FRRR grant

Coastal Environment Centre (NSW)

The CEC has had a good past year. Jules Bellamy, our Primary Educator has developed a number of new Primary excursions to link in with the *Primary Connections* supporting documents. The primary student numbers continue to rise to now 4021 students in the 2013/2014 financial year.

- We have relocated our environmental reference resources to Council's local library and then developed that area as an interactive space.
- Based on touch tables, seen at Sapphire Coast and Hastings Point MDCs, we designed and ordered two touch tables which have been very popular with our Primary and Kids School Holiday groups.
- There was also some money left in the budget due to some reduced staffing costs, so in late May the CEC was able to purchase a Micro-Eye, which has been in continuous use and is fantastic at Science and Community Environmental Events.
- The CEC is fortunate to receive local government administration support and to be able to run its Education programs at cost recovery. This enables a team of eight casual Educators to be employed on different programs and to be able to deliver marine education on our two local Aquatic Reserves to whole year groups, as well as other coastal fieldtrips.
- Developed two new Year 7-8 and 9-10 Science fieldtrips to meet with the rollout of the Australian Curriculum in NSW and have trialled these with a few schools. It is difficult to incorporate an Enquiry Based program on a single field day as most of the teachers forget to do the Pre-Fieldtrip planning session. We are hopeful that it will run better in the second year.
- We have been using the Atlas of Living Australia website and have found it a great resource and will do a brief introduction to the site at our meeting in October this year.

Central Coast Marine Discovery Centre (NSW)

Centre

- New displays – Turtles, Crab Cove
- Updated displays: Tuggerah Lakes Display
- New activities: Pirate & Turtle treasure hunts

Events

- 2014-15 Central Coast Marine Discovery Series (Grant funding from Greater Sydney Local Land Services) – 6 community talks on a variety of marine & coastal issues (“Seagrass & Sustainable seafood”, “Little Penguins”, “Turtles & Trash”, “Sustainable Seafood & the Local Oyster Industry,” “Great White Sharks,” & “What Lies Beneath: Monitoring changes in the Marine Environment”)
- Ran activities for Gosford Council's Seakids event 2014
- Fish ID workshop

Education

- School programs up and running in 2014 with 6 primary & 8 high school programs on offer
- Primary Marine Discovery Programs (Stg 1, 2 & 3) with multiple activity options for teachers to choose
- New Virtual Excursion based on biodiversity of the Ex-HMAS Adelaide wreck (off Avoca Beach) is currently being developed, to be offered to schools in 2015.
- New casual educators trained

Department of Fisheries (formerly Naturaliste Marine Discovery Centre) WA

- Due to a range of issues, the Naturaliste Marine Discovery Centre (NMDC) closed in April 2014. In reality, this meant the closure of the NMDC exhibition hall and public interpretation programs run at the Centre.
- Education staff continued to run the popular schools education program at the Western Australian Fisheries and Marine Research Laboratories located at Hillarys throughout the year. These made use of the existing Learning Laboratory, the foyer space and field work at local beaches and reefs.
- New school activities developed and delivered in 2014 included *Fishy Features*, a comparison of adaptations across different fish species, and *Sea Connections*, a Primary activity showing students the inter-connections in marine food webs.
- The Department of Fisheries hosted the *Coasts* day of the *Catchments, Corridors and Coasts* three day professional learning workshop conducted by the Australian Association for Environmental Education (AAEE).
- Professional Learning workshops were delivered each term to Primary and Secondary teachers and pre-service teachers, providing an overview of the activities available at our Hillarys facility and how they link in to the resources available on the Department's Marine WATERS website (<http://marinewaters.fish.wa.gov.au>).
- A range of state and national Citizen Science projects were promoted and supported at the Hillarys facility and around the state. This included the national *Redmap* program, as well as other initiatives such as *Send us your Skeletons* (SUYS), *True Blue Swimmer Crab* research, *Research Angler Program* (RAP), *Send us your Squid*, *Pestwatch*, *FishTagWA* and *Prawn Watch*.

Dolphin Discovery Centre Bunbury (WA)

A number of key developments over the past 12 months for the Centre include:

- Teacher PD Program – We now have a functional teacher PD program offered to schools. We ran two half day PD workshops in 2014 and both were very successful. Bookings are now diarised for 2015.
- Cultural Programs – Development of a cultural tour for both tourists and school groups. Working with a local member of the Noongar Wardandi, Troy Bennel from Ngalang Wongii tours now runs 1.5 hour presentations that include on-site and offsite presentations.
- Redevelopment Planning – Next phase of planning for redevelopment (10+ million) included the submission of our Business Case with independent economic impact assessment and an Interpretation Plan commissioned to Earth Story.
- Aquariums – with Lottery West funding the DDC was able to establish a water storage and plumbing system to all free standing tanks saving hours of manual labour and improving the health of the tank environment.
- Research Program – The partnership with Murdoch University (South West Marine Research Program) continues to strengthen with funding for another 3 year research phase secured. Publications from PhD students completing their degrees during the first 2 phases are also now in print.
- Dolphin Sanctuary Zone – The Department of Transport finally approved and gazetted a generous boat exclusion zone within Koombana Bay in summer 2014. The area was identified by the DDC and Murdoch University as a sensitive habitat for local dolphins and in particular the new mums and their calves.
- Citizen Science – We launched our very own Dolphin Watching App available from the I-Tunes store as a free download. Encouraging locals to get involved, the App is an effective way to collect dolphin sighting data.

Port Macquarie Marine Discovery Centre (NSW)

- Aquarist hours cut from 38 to 21 hours per week and Centre's Coordinator had an increased teaching load
- These two issues meant scaling back visitor numbers and restricting the growth of the Centre to be manageable.

Projects

- Assisting Lloyd Godson in his attempt to break the world record for living in an underwater habitat. Our College's Metals Dept is building the habitat with students. Visitors to the MDC learn of the project and its aim of highlighting the future of our oceans, and are kept up to date with the project and will be able to communicate with Lloyd when he is in the sub.
- Secondly, students are building an underwater ROV from a kit sourced from the United States. We are very much looking forward to using it with students and visitors.
- New display: interactive touchscreen stations for 'Sustainable Recreation Fishing' education.

APPENDIX 11 – EDUCATION PROGRAM SUMMARIES FROM MEMBER CENTRES 2013/14

	The number of Marine Education programs currently offered	Annual total visitor numbers	Annual student numbers involved in school excursions/fieldtrips	List any specific programs with a FRDC link	Resources developed and shared
Torres Strait Land and Sea Discovery Centre	High School = 5		Science- 20 x 5 lessons /week = 100pw 4000 /yr MAP- 100 per week- 4000 Science- 50 per week- 2000 Calm- 40 per week- 1600 Outreach outer islands- 1200	All subjects incorporate sustainable fishing as a core learning outcome.	2014 MDCA Annual Conference was held at TI so all facilities were displayed.
Ballina MDC NSW	Pre School 3 Primary – 17 High School 76 Total Marine Ed Programs = COMMUNITY AND NON-FORMAL EDUCATION: Offers a number of marine education experiences to adults. The Centre is heavily involved in and supported by the local community. ACCREDITING TEACHERS: Provides a range of TPL activities for teachers, eg -NAUI Skin diving Instructors -RMS Boating Instructors.	3 884	3 712	Caring for Our Coast What's for Lunch Cycles in the Sea From Sea to Freezer Bait Collection-Blood worming; Worming; Yabbying and Pipping Estuarine and Beach Fishing Beach Fishing Commercial Fishing, Seafood Processing Trapping, Principles of Aquaculture Marine Resource Management Commercial & Recreational Fishing Seafood Handling & Processing	The Centre has seen an overwhelming interest and response by primary schools to the practical programs of General Water Safety, Survival and Swim Training, Fishing and Beach Safety and Survival and the Boating and Watercraft Safety and Survival program
Hastings Point Marine Environments and Field Study Centre NSW	Pre-School 1 Primary 4 High School 15	4 570 + 8 544 = 13 114	8 544 being a combination of overnight and multi day camps.	Weekly MDC Marine Biology Presentations; The Science of Climate Change Ocean acidification Global Homeostasis Human Influence on Coastal ecosystems Biodiversity and Habitat loss	
Queenscliff Marine and Freshwater Discovery Centre Vic	Pre- School 1 Primary 16 High School 38 Ter / Comm 4 Total Ed Programs = 39	37 500	26 500	Fish Dissection Senior Marine Scientist Sustainable Recreational Fishing Global Fishing	Fish/shark Dissection Claymations using iPads. Setting up an intertidal (touch) tank Fishing for Culture
Coastal Environment Centre Narrabeen NSW	Pre School 1 Primary 8 High School 10 Community 8 Including IB and Tertiary Programs Total Marine Ed Programs = 17	23 536	8 916	Learn to Fish	Coastal Dune Enquiry based field session Rock Platform Ecology

	The number of Marine Education programs currently offered	Annual total visitor numbers	Annual student numbers involved in school excursions/fieldtrips	List any specific programs with a FRDC link	Resources developed and shared
Woodbridge MDC Tas	Pre School 1 Primary 7 High School 14 Community 22 Total Marine Ed Programs = 44	7 480	5 100	Sustainable Fishing	Stage 3 Primary Connections linked program, Survival in the Sea Resource.
Star of the Sea Discovery Centre SA	Pre School 12 Primary 24 High School 12 up to Year 7 Community 1 Total Marine Ed Programs =51	7 319	5 904 students 1 126 adults	Sustainable Fishing Fish Forever model Gone Fishing model Good Fishing practice model Kaurna Interactive Website Game	The Kaurna interactive website game was demonstrated to the members at the 2014 meeting.
Port Macquarie MDC NSW	Pre School 4 Primary 6 High School 47 Community Total Marine Ed Programs =57	2 346	1 987	Caring for Our Coast What's for Lunch Cycles in the Sea From Sea to Freezer Bait Collection-Yabbying Estuarine Fishing Beach Fishing Commercial Fishing Seafood Processing Aquaculture Marine Resource Management Commercial & Recreational Fishing Seafood Handling & Processing	IBC Aquaponics system presented at 2012 MDCA meeting; Artemia hatching at 2013 MDCA meeting
Sapphire Coast MDC NSW	Pre School 3 Primary 9 High School 12 Community 4 Total Marine Ed Programs = 28	7 500	1 700	Fishing for answers Inside a dish Grow your own oyster	Crazy Critters at 2012 meeting at Central Coast
Indo Pacific Marine Discovery Centre NT	Unique sunlit closed cycle tanks and interpretive displays. International visitors = 2118	9 070	928	Displays of fish handling, bag limits, barotrauma, invasive species and responsible commercial fishing.	New member who introduced us to his unique set up at the 2014 meeting.
Bunbury Dolphin Discovery Centre WA	Pre School - 3 Primary - 7 High School - 7 Community - 1 Total Marine Ed Programs = 18	60 000	1500	Centre Displays – FRDC fisheries interactive model running every day on the display floor. Fisheries Science – Education Program offered to year 10+ that link management, research, commercial activity and community choice of product within the sustainability discussion)	Jan Tierney (staff member) is currently studying a Diploma in Aquarium Management and is available to the Network as an expert aquarium consultant.

	The number of Marine Education programs currently offered	Annual total visitor numbers	Annual student numbers involved in school excursions/fieldtrips	List any specific programs with a FRDC link	Resources developed and shared
Naturaliste Marine Discovery Centre WA	Pre School - 5 Primary - 6 High School - 10 Community - 12 Total Marine Ed Programs = 33	16,000	5,000	Fishing for sustainability Fish of ages Fish adaptations Shake, settle and roll (rock lobster) Plethora of plankton Bare Bones Fisheries Science Science of Sampling	Marine WATERS Approx. 200 resources including lesson plans, fact sheets, posters etc. http://marinewaters.fish.wa.gov.au
Central Coast MDC NSW	Pre School Primary High School Community Total Marine Ed Programs =	5,200	800	-	-
Subtotals	Pre School 26 Primary 92 High School 230 Community Total Marine Ed Programs = 340	195 703 in one year X 5 = ~ 978 515 individuals over the project duration	76 091	41	12

