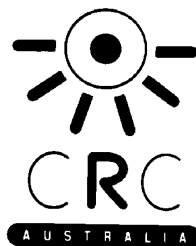




# CRC Torres Strait Ltd

## Annual Report 2003-04



*Established and supported under the Australian Government's Cooperative Research Centres Programme*

CRC Torres Strait Ltd (ABN 79 107 479 452) is a company limited by guarantee. Its members are Australian Fisheries Management Authority, Australian Institute of Marine Science, CSIRO Marine Research, CRC Reef Research Centre Ltd, Geoscience Australia, James Cook University, National Oceans Office, Department of Primary industries and Fisheries and the Torres Strait Regional Authority. Supporting participants include Great Barrier Reef Marine Park Authority, Great Barrier Reef Research Foundation and Queensland Seafood Industry Association.

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## EXECUTIVE SUMMARY

Torres Strait is in a critically important region of Australia's ocean territory. It is a key boundary with both Papua New Guinea and Indonesia. Torres Strait traditional inhabitants have strong cultural ties to the sea and believe strongly in maintaining a healthy marine environment.

This is the first annual report of CRC Torres Strait Ltd, which was established to encourage cooperation among researchers and the users of the research results, particularly the Torres Strait Island people who are represented in the Centre by the Torres Strait Regional Authority.

The research and education work begun by this new cooperative venture is aimed to: support the sustainable development of marine resources and minimise impacts of resource use in Torres Strait; enhance the conservation of the marine environment and the social, cultural and economic well being of all stakeholders, in particular the Torres Strait peoples; contribute to effective policy formulation and management decision making; improve links between research and Torres Strait communities to maximise relevance and benefit. The priorities were determined by the Board of Directors which includes almost all of our members and supporting participants. The Board of CRC Torres at 30 June 2004 were:

Ms A Clarke, DPI&F  
Mr M Fordham, TSRA  
Dr C Foster, Geoscience Australia  
Mr J Gunn, CSIRO  
Mr T Kris, TSRA  
Prof N Palmer, JCU  
Prof R Reichelt, CRC Reef  
Mr L Roberts, AFMA  
Mr S Sullivan, NOO

New procedures are being established to encourage more communication between researchers and the communities in the region to maximise relevance and benefit of the research and will achieve our aim of supporting social, cultural and economic wellbeing in the region. The appointment of Mr Toshio Nakata as our Marine Research Liaison Officer has proved extremely effective in this respect and is one of the highlights of the program.

The Board has acknowledged the tremendous contribution made by Dr Bruce Mapstone in the development phase of the new Centre, and there has been a smooth transfer of program leadership from Dr Mapstone to Dr David Williams. The CRC Torres Strait Company was incorporated in December 2003 and the Deed of Variation to the Commonwealth Agreement signed in January 2004 following extended negotiations with the Commonwealth.

Much of the time and efforts of management and the research leaders during February, March and April were occupied in preparing a re-bid for a new CRC beyond 2005-06 that was unsuccessful in the April 2004 review round. The extraordinary efforts of all involved was a team effort and a credit to all. The results will not be wasted and will be used in subsequent bids for funding of this important cooperative venture.

Despite these challenges, the proposed research program involving nine organisations and 22 individual projects is up and running with most of the major projects on time and others still scheduled to be completed within the scheduled three-year program.

A major success for the education project is the development of a formal partnership between CRC Torres Strait and the Thursday Island State High School.

In the coming year, CRC Torres Strait will focus on developing an effective working relationship with the newly formed Torres Strait NRM Body and further clarifying IP relationships with island communities, recognising the importance of traditional inhabitants' knowledge of the seas.

Sir Sydney Schubert, Chairman  
Dr David Williams, Research Director

## AIMS

The establishment of a coordinated and integrated research program to:

- support the sustainable development of marine resources and minimise impacts of resource use in Torres Strait;
- enhance the conservation of the marine environment and the social, cultural and economic well being of all stakeholders, in particular the Torres Strait peoples;
- contribute to effective policy formulation and management decision making;
- improve links between research & Torres Strait communities to maximise relevance and benefit.

This program brings together the main resource management agencies, research institutions and stakeholders in Torres Strait as well as the Torres Strait Regional Authority (TSRA), representing the Torres Strait community. The participants bring substantial resources (over \$13 million over three years) to the Program as well as scientific and management expertise and are combining their efforts into a single, integrated, multi-disciplinary research, education and communication program, directed towards the identified needs of stakeholders and end-users. Their expertise derives from considerable experience in Torres Strait and the adjacent Great Barrier Reef World Heritage Area (GBRWHA).

The core participants are Australian Fisheries Management Authority (AFMA), Australian Institute of Marine Science (AIMS), CSIRO Marine Research, CRC Reef, Geoscience Australia (GA), James Cook University (JCU), National Oceans Office (NOO), Queensland Department of Primary Industries and Fisheries (DPI&F) and the Torres Strait Regional authority (TSRA). Supporting participants include Great Barrier Reef Marine Park Authority (GBRMPA), Great Barrier Reef Research Foundation (GBRRF) and Queensland Seafood Industry Association (QSIA).

This program offers a unique opportunity to bring efficiencies and synergies to the current research effort, to improve the delivery of information needed for sustainable development of Torres Strait and peoples and to add considerably to the value of current research and extension efforts. The result is an integrated, multi-disciplinary applied program of research far beyond that which could be done previously or by any of the participants acting independently.

Research is directed in three key areas: Harvested Marine Resources, Biophysical Processes, and Marine Systems Management Evaluations and Risks. Education and training is offering postgraduate scholarships as well as secondary or undergraduate and community level training for Torres Strait peoples. Training for researchers, stakeholders and communities is focussed on improving the understanding and uptake of research results. Research is being conducted using culturally sensitive research protocols and procedures.

## RESEARCH HIGHLIGHTS

- Major survey of critical habitats adjacent to the Prince of Wales Shipping Lane and Port of Thursday Island completed which will assist environmental planning, management of the Port of Thursday Island and regional oil spills.
- A baseline survey of Thursday Island harbour found no introduced marine species. Samples from the survey are still being analysed to confirm this preliminary finding and will be of extreme benefit to assist in environmental management and protection of natural resources.
- Surveyed the fish and crustaceans on the seafloor between reefs in Torres Strait. Another survey next year will focus on seabed habitat, sediment and less mobile animals.
- Analysed historical catch and effort data of commercial islander fishers in the eastern Torres Strait reef line fishery which is now available for assessment of alternate management strategies (funded by Australian Fisheries Management Authority).
- A survey for exploited sea cucumbers on Warrior Reef in Torres Strait was completed, including information about burrowing behaviour and the benthic habitat to assist interpretation of changes in abundance.
- Using high-resolution swath surveys, discovered large underwater sand waves in the Torres Strait that move rapidly associated with changes in wind and wave direction which may significantly impact on distribution of seagrass.
- Seagrasses in Thursday Island harbour appear healthy and have a similar distribution to a baseline survey undertaken in April 2002.
- Seagrass monitoring site established at Back Beach, Thursday Island, by Torres Strait High School and TAFE students under the Seagrass Watch program.
- Appointment of an Indigenous Aquaculture Extension Officer, Mr Brian Singleton.
- Protocols for research in the Torres Strait developed which are available on the new CRC Torres Strait website and help to facilitate strong communication between researchers and Torres Strait communities.
- 20 CRC Reef and CRC Torres Strait staff and students completed cultural awareness training with the JCU School of Indigenous Australian Studies.
- Research in Torres Strait greatly assisted by the appointment of Marine Research Liaison Officer, and Torres Strait islander, Mr Toshio Nakata, who is based at Torres Strait Regional Authority on Thursday Island.

## RESEARCH SUMMARIES

### ***Sustaining the harvest of marine resources (Project T1)***

*Project Leader: Dr Gavin Begg, JCU*

This Project has initiated research on a diversity of culturally and economically important marine resources in the Torres Strait. This Project is designed to provide information about the sustainability of key marine resources including turtle, dugong, tropical rock lobster, prawn, reef fish, mackerel and beche-de-mer. In addition, this Project plans to identify candidate species and opportunities for aquaculture that will enhance the economic wellbeing of Torres Strait Islanders, while potentially reducing impacts on wild harvest species. Although research has only recently commenced in several tasks, initial progress has been satisfactory with extensive communications between researchers, stakeholders and Torres Strait communities ensuring the success of preliminary field trips and the strategies to collect data.

Historical catch and effort data of commercial Islander fishers in the eastern Torres Strait reef line fishery has been analysed and will be integrated into management strategy evaluations designed to assess the fishery. Similar data sources will be compiled for commercial non-Islander and traditional Islander fishers. Catch and effort data, as well as biological samples of key reef fish species have also been collected from non-Islander commercial fishers during observer surveys in March and May. Analogous data for the Islander sector will start being collected in July 2004. These data may also supplement other data sources that are currently being compiled for the task that are designed to assess the eastern Torres Strait Spanish mackerel fishery.

The abundance of tropical rock lobster, prawn and beche-de-mer fisheries were surveyed as part of the Sustainable Harvest Project. Although tropical rock lobsters and prawns are harvested by both Islander and non-Islander fishers, the beche-de-mer fishery is almost exclusively an Islander-only fishery. The initial survey for beche-de-mer was conducted on Warrior Reef, where there were low abundances on the northern section of the reef. Additional information was recorded on burrowing behaviour and benthic habitat that will be examined in relation to abundance levels and population dynamics of local beche-de-mer populations.

The annual survey of the Torres Strait prawn fishery was conducted in February, with bycatch samples retained for later processing. Fishers were interviewed to update vessel and fishing gear information to be used in the assessment of the fishery. The models used in this assessment were refined and updated to include the Australian 2003 logbook data and Papuan New Guinea logbook data for the Torres Strait Protected Zone.

The Sustainable Harvest Project will provide information about the status and trends of important marine resources in the Torres Strait for integrated assessment and management, while contributing to effective policy formulation and management decision making.

## ***Understanding ecosystem processes (Project T2)***

*Project Leader: Dr Alan Butler, CSIRO*

It is essential to manage the marine environment, the marine resources and the conservation values of Torres Strait on a regional, ecosystem basis. This Project aims to provide information about key ecological patterns and processes in Torres Strait that will improve the understanding of the dynamics of the Torres Strait marine ecosystem and hence – working with other researchers in the Program - will provide sound scientific support for coordinated and integrated management.

Mapping and characterisation of key biotic and physical attributes of the Torres Strait ecosystem (led by CSIRO), focussed on the inter-reef seafloor, started with a survey in January 2004 aboard FRV Gwendoline May. The survey concentrated on demersal, motile animals that are sampled by a modified prawn trawl. The component of the work that concerns sessile benthic animals (using towed video, benthic sled and other devices) will be undertaken in early 2005. The data from the 2004 cruise have been logged and specimens have been preserved. Sorting has been underway for several months: fishes and crustaceans at CSIRO in Cleveland, and sponges and other sessile invertebrates at Queensland Museum in South Brisbane.

A high-resolution swath sonar survey and detailed sampling program has been undertaken in two areas near Turnagain Island to reveal bathymetry, sediments and habitats. This is part of a project on biophysical processes in the Torres Strait marine ecosystem (led by GA) which will ultimately produce models of water movement and its influence on sediment movement. The survey was undertaken from 27 March to 17 June 2004 using JCU's research vessel RV James Kirby. The focus of the survey was to understand the movement of the sandwaves and changes to water turbidity as possible mechanisms for widespread seagrass die-back events. The orientations and migration directions of the sandwaves and ridges are affected by the different wind-driven currents of the summer monsoon and winter trade wind seasons. Repeat sonar surveys three weeks apart revealed that the sandwave crests had moved west up to 6-13m, coinciding with a change in wind and wave direction from NW to SE. Data from the survey are still being analysed and hydrological modelling work has commenced. Preliminary results were reported by project scientists at the AMSA conference in Hobart in July 2004. A second survey in October 2004 will determine how far the sandwaves have moved and assess any effects on seagrass distribution.

Four field trips in 2003-04 assessed the distribution and abundance of seagrass in Torres Strait (led by DPI&F). These included a reconnaissance trip, a trip to measure productivity and map the Mabuaig seagrasses, participation in the biophysical processes trip (above) to quantify the effect of sand wave movement on seagrasses, and an exercise to obtain productivity measurements of seagrass at Thursday Island. Data from these trips are being analysed. This work will link with other tasks in the Torres Strait Program, to better understand key ecosystem processes and, in particular, the causes of seagrass die-back.

## ***Evaluating management strategies and risk (Project T3)***

*Project Leader: Dr Rob Coles, DPI&F*

In this first phase of the project, staff made several trips to Thursday Island and nearby islands in the Torres Strait to discuss the strategy for the project and arrangements for basing activities in local communities. The project has used services provided by TSRA and the Torres Strait Island radio to communicate plans and activities to the widest possible audience.

The team has successfully completed a survey of Thursday Island Harbour to set a baseline for introduced marine pests. Fundamental to controlling and managing the spread of pests is knowledge of the marine communities that are present naturally. This is particularly important in the high-risk areas where commercial ships and passing recreational vessel anchor. None of the introduced pest species targeted by the team were found in the baseline survey.

Good progress has been made in surveying critical habitats adjacent to the Prince of Wales shipping lane where large areas of seagrass and dugong feeding grounds are close to shipping traffic. This information is being prepared in a GIS format and will be incorporated into the AMSA oil spill atlas.

A detailed seagrass mapping survey has been completed around reefs in the region to the north east of Mabuiag Island. This is part of a study to examine seagrass distribution and productivity working in conjunction with the Understanding Ecosystem Processes Project. The aim is a better understanding of the dynamics of Torres Strait seagrasses and insight into the reasons for past changes, particularly declines in the seagrass meadows.

## ***Education (Project T4)***

*Project Leader: Prof Helene Marsh*

A strong Education Program is central to all CRCs. The challenge for CRC Torres Strait is to develop a program which is relevant and effective for Torres Strait Islanders.

The Torres Strait Prestige Research Scholarship has been awarded to **Mr Frank Loban** who will undertake a Masters degree at JCU to investigate the prospects for Islanders to become involved in fisheries management especially enforcement.

Following little response to offers of postgraduate scholarships, the Project Leader held discussions with the Principal of Thursday Island High School. As a result, it is proposed that a program is developed that targets OP (Overall Position)-eligible year 11 and 12 students who are studying multi-strand science and marine studies. The objective of the program will be to: raise the profile of natural resource management and marine science as potential careers for Torres Strait Islanders; and provide young Torres Strait Islanders with role models of natural resource managers and marine scientists.

It is envisaged that the program will comprise: a series of talks from visiting CRC Torres Strait scientists (the first talk entitled 'Torres Strait dugong capital of the world' was delivered in February); participation in Seagrass-Watch four times per year; a series of workshops for students developed in conjunction with teachers from the School, especially **Ms Sophie**

**Ramke and Mr Andrew Denzan;** and opportunities for students to undertake structured work placements with CRC Torres Strait scientists undertaking field work in Torres Strait.

A formal partnership arrangement has been signed between CRC Torres Strait and Thursday Island High School (which recently amalgamated with the local TAFE). Proposals being considered under this arrangement include: use of the school's boat and TAFE lecture facilities; structured work placements for Torres Strait Islanders and for Torres Strait Islanders to undertake post-school cadetships in partner organisations.

### ***Extension (Project T5)***

*Project Leader: Dr Annabel Jones*

The Torres Strait Program was conceived as one that would require extension and liaison activities to ensure the research tasks were successful. Liaison and extension activities have been adopted to ensure that research is conducted in culturally appropriate ways and to assist in developing positive relationships between researchers and Torres Strait Islanders. CRC Torres Strait has adopted many extension strategies that have been successful for other research programs in CRC Reef as well as developing a new Communication and Extension Strategy and some new communication methods for work in Torres Strait.

**Mr Toshio Nakata** has been appointed as Marine Research Liaison Officer. He is based in TSRA at Thursday Island in Torres Strait, and is a Torres Strait Islander with a wealth of knowledge and experience in Torres Strait over many years. His assistance and knowledge has been an immense help with many research tasks.

A CRC Torres Strait logo has been developed which is now used on stationary, clothing for researchers, the website and media releases. This will help establish CRC Torres Strait as a distinctive research project of excellence.

CRC Torres Strait has developed a website ([www.crctorres.com](http://www.crctorres.com)) with practical information for researchers working in Torres Strait. The site provides researchers with information about appropriate methods for conducting research in Torres Strait; the best means of communication with Islanders and other CRC Torres Strait researchers; and recommended liaison and extension activities. The website also provides a further method for disseminating information about the program to the wider community.

An email list for researchers, Task Associates and other stakeholders has been created to facilitate communication within the program. It is an efficient method for disseminating up-to-date information to researchers.

Media exposure for CRC Torres Strait has been targeted to ensure that Torres Strait communities are informed about the research. Many visiting CRC Torres Strait researchers have been interviewed by the local radio station which has a large audience throughout Torres Strait. Several articles have also appeared in the local Torres Strait newspaper, and the TSRA Newsletter which has wide circulation throughout the region. Information flyers and posters, which are extremely successful, have been distributed through participating Island Community councils.

A Task Associate program has been implemented for CRC Torres Strait tasks with Associates appointed for projects as well as each task to ensure that relevant stakeholders have an integral role in the development and implementation of tasks.

### ***CRC Torres Strait – list of tasks at 30 June, 2004***

<b>TASK</b>	<b>RESEARCHER</b>	<b>TASK ASSOCIATE</b>
<b>Sustaining the Harvest of Marine Resources (T1)</b>	<b>Dr G Begg (JCU)</b>	<b>Mr J Prescott (AFMA), Mr P Yorkston (TSRA), Mr B Ehrke (QSIA)</b>
Evaluation of the Eastern Torres Strait reef line fishery (T1.1)	Dr A Williams (JCU)	Mr J Prescott (AFMA), Mr P Yorkston (TSRA)
Status assessment of the Eastern Torres Strait Spanish mackerel fishery (T1.2)	Dr G Begg (JCU)	Mr J Prescott (AFMA)
Sustainability assessment of Torres Strait rock lobster fishery (T1.3)	Dr Y Ye (CSIRO)	Mr J Prescott (AFMA)
Sustainability assessment of Torres Strait sea cucumber fishery (T1.4)	Mr T Skewes (CSIRO)	Mr J Kung (QFS), Mr J Prescott (AFMA)
Towards ecologically sustainable management of the Torres Strait Prawn Fishery (T1.5)	Mr C Turnbull (DPI&F)	Mr J Prescott (AFMA), Mr J Kung (QFS), Mr G Anderson (Torres Strait Prawn Entitlement Holders)
Indigenous aquaculture - extension & community development (T1.7)	Mr C Robertson (DPI&F)	Dr C Battershill (AIMS), A/Prof R de Nys (JCU), Dr M Rimmer (DPI&F), Dr C Jones (DPI&F)
Modelling the impact of multiple harvest strategies in Eastern Torres Strait Reef Line Fishery (T1.8)	PGS Ms S Busilacchi (JCU)	Mr J Prescott (AFMA), Mr J Marrington (AFMA)
Developing collaborative community-based management prescriptives for Torres Strait Indigenous bêche-de-mer & trochus fisheries (T1.9)	PGS Ms A Prichard (JCU)	Mr P Yorkston (TSRA), Mr S Taylor (AFMA)
Information to assist Torres Strait Islanders manage their traditional fisheries for green turtles & dugongs in a sustainable manner (T1.11)	PGS Ms J Grayson (JCU)	Mr P Yorkston (TSRA), Mr S Taylor (AFMA)
<b>Understanding Ecosystem Processes (T2)</b>	<b>Dr A Butler (CSIRO)</b>	<b>Dr V Nelson (NOO), Mr P Yorkston (TSRA)</b>
Mapping & characterisation of key biotic & physical attributes of the Torres Strait ecosystem (T2.1)	Dr R Pitcher (CSIRO)	Mr S Jackson (NOO)
Mapping & characterisation of key biotic & physical attributes of the Torres Strait ecosystem (T2.1a)	Dr R Pitcher (CSIRO)	3rd Party Contract (NOO)
Biophysical processes in the Torres Strait marine ecosystem (T2.2)	Dr P Harris (GA)	Dr V Nelson (NOO), Mr P Yorkston (TSRA)
Distribution & abundance of seagrass in Torres Strait (T2.3)	Dr R Coles (DPI&F)	
<b>Evaluating Management Strategies and Risks (T3)</b>	<b>Dr R Coles (DPI&amp;F)</b>	<b>Dr S Jackson (NOO), Mr P Yorkston (TSRA), Mr J Prescott (AFMA)</b>
Cultural indicators for traditionally-important marine resources in Torres Strait (T3.1)	Dr D Kwan (JCU)	Mr P Yorkston (TSRA), Mr S Jackson (NOO), Mr S Taylor (AFMA)
Management of introduced marine species risks in Torres Strait (T3.2)	Dr K Neil (DPI&F)	Ms S Trimarchi (PCQ)
Integrated ecosystem modelling for evaluating multiple-use management strategies (T3.3)	Dr F Pantus (CSIRO)	Mr J Prescott (AFMA), Dr V Nelson (NOO)
Identification & mapping critical habitats adjacent to shipping lanes & ports in Torres Strait (T3.4)	Dr M Rasheed (DPI&F)	Mr B Brunner (PCQ)
Port of Thursday Island - baseline surveys for introduced marine pests (T3.5)	Dr K Neil (DPI&F)	3rd Party Contract (CRC Reef)
Port of Thursday Island seagrass monitoring (T3.6)	Dr M Rasheed (DPI&F)	3rd Party Contract (CRC Reef)
<b>Education (T4)</b>	<b>Prof H Marsh (JCU)</b>	
Education opportunities for Indigenous involvement in marine ecosystem monitoring (T4.1)	Dr J Mellors (DPI&F)	
Engaging Torres Strait Islanders in dugong & turtle research (T4.2)	Dr I Lawler (JCU)	3rd Party Contract (Dept Environment and Heritage)
<b>Extension (T5)</b>	<b>Dr A Jones (JCU)</b>	<b>Mr T Nakata (TSRA)</b>
Guidelines for ethical & effective communication for researchers working in Torres Strait (T5.1)	Dr A Jones (JCU), Ms B Barnett (CRC Reef)	Mr P Yorkston (TSRA)

**FINANCIALS**