

Assessing environmental research needs across three communities in the Torres Strait

Synthesis Report

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Acronyms Used In This Report

| | |
|--------------------|--|
| CDEP | Community Development Employment Projects |
| LSMU | Land and Sea Management Unit (TSRA) |
| MTSRF | Marine and Tropical Sciences Research Facility |
| PBC | Prescribed Body Corporate |
| RTC | Rural Transaction Centre |
| TSRA | Torres Strait Regional Authority |

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Executive Summary

Having locals identify environmental research needs for their own community is a key and important step to ensuring that research is relevant, appropriate and needed for communities. Communities of the Torres Strait are no exception to this and three island communities in particular are the focus of this research project. The Torres Strait is a region that holds special significance in the protection of Indigenous Australian culture and land rights, and is becoming an important site for climate change impacts and adaptation.

It is desirable and important to consult with end-users and communities on their environmental research needs to achieve maximum return on public investment in future applied research. This project attempts to contribute to our understanding of how knowledge generated from future applied research arrangements can be made more appropriate and useful for communities and end-users in Torres Strait communities. Such end-users would include government agencies, such as the Torres Strait Regional Authority, leaders and representatives, such as Island Councilors and Island Managers, elders, and all locals living within these communities.

This assessment of environmental research needs in three island communities, and with staff from the Torres Strait Regional Authority (TSRA) has been achieved through structured surveys. These surveys aim to identify end-user needs for the future as well as provide opportunities for respondents to reflect on past research activities in the region or in their island community. This synthesis report details these findings to hopefully inform future applied environmental research initiatives on common issues across the Torres Strait.

1. Introduction

This report presents the environmental research needs of locals living in three island communities in the Torres Strait region. It is an output of an Australian Government funded Marine and Tropical Sciences Research Facility (MTRSF) research program. Under the MTRSF, the research presented in this report is considered to be for 'public good', and attempts to largely be stakeholder-driven. The stakeholders for this research project included the Torres Strait Regional Authority (TSRA), Torres Strait Island Councilors and Island Managers; Prescribed Body Corporate (PBC); elders within these communities; and locals of these communities.

The Torres Strait region consists of a group of over 100 islands that spread beyond 48,000km² (see www.tsra.gov.au). This region, situated between the southern coastline of Papua New Guinea and the tip of Cape York on mainland Australia, is home to a unique set of histories, traditions, laws and customs. Approximately 7,105 Torres Strait Islanders live in 19 communities and across 16 inhabited islands (Human Rights and Equal Opportunity Commission, 2009). By comparison, it is estimated that there are over 47,000 Torres Strait Islanders living throughout Australia (ABS, 2006).

This project seeks to conduct an assessment of environmental research needs in a number of Torres Strait communities, and also involve some TSRA Land and Sea Management Unit (LSMU) staff. The core aim of this project is to attempt to ensure that knowledge generated from future applied research arrangements is appropriate and useful for end-users throughout the Torres Strait. These end-users for future research include government agencies such as the TSRA, leaders and representatives (such as Island Councilors, Island Managers and PBC members), elders, and locals living in the communities where research is being conducted.

Involving and consulting with end-users in a number of communities in the Torres Strait to understand their research needs is desirable to achieving maximum return on public investment in future applied environmental research. Having community members identify environmental research needs for their own community is a key and important step to ensuring that research is relevant, appropriate and needed for communities. As argued by Sorum (2007):

'Culturally appropriate research is vital to the success of any proposed project. There are ways to ensure the needs and priorities of a community are well thought-out.' (Sorum, 2007: 1)

To assist the process, this project worked closely with staff of the TSRA LSMU to ensure that as many community members were involved as possible.

Overall, the project aimed to identify the key environmental research needs across the Torres Strait region, including an assessment of past environmental research activities and ways in which improvements can be made in the future. In line with this overarching aim, there were two key objectives (and hence outputs) of this project. The first was to gather views and opinions (through structured surveys) of peoples' environmental research needs in a number of communities, as well as those of some TSRA staff members. The second key objective was to compile these findings into this synthesis report. The focus of this report is to provide a brief assessment, according to the views of community respondents, of past environmental research activities and their future environmental research needs in their communities. Based on a structured survey which set out to identify end-user needs and gaps for future relevant research in the tropics, this report details the key findings from surveys conducted in three communities and with some TSRA staff. It is hoped that these report findings go some way to informing decisions about future applied environmental research across the Torres Strait.

2. Methodology

This report provides an assessment of the environmental research needs of three island communities across the Torres Strait, as well as the views of some LSMU staff of the TSRA. In order to ascertain the research needs of locals in a number of Torres Strait communities as well as those of LSMU staff, structured surveys were employed as the key methodology.

The views and opinions on environmental research needs for individual communities or the region as a whole were sought through a structured survey (see Dunn (2005) for a discussion on this methodological approach). The rationale for using a structured survey as the preferred method was predominately due to time and financial constraints involved with visiting numerous island communities, and a project objective to ascertain research needs across a number of communities. We adopted surveys as the most effective method to compare responses (due to a strict ordering of questions) and generate a data set across a number of communities in the region. Unfortunately more participatory action research techniques were not used for this project (for instance, workshops or focus groups), but it could very well be an option for any follow-up work of this kind.

The authors accept that the use of this methodology presents a number of limitations for this project. First, the surveys were largely quantitative and as such did not allow community members an opportunity to participate in more participatory forms of data collection such as workshops, which would have most likely yielded more prolific data. Second, the authors were not present on the islands when the surveys were administered, which also presents limitations in that the authors could not explain the survey to participants in person. To overcome these limitations, the survey was kept short to hopefully increase participant response rate. Moreover, one co-author worked very closely with the council office and rangers in these communities to ensure that they were confident in describing the project to participants. Finally, the front page of the survey also contained a description of the project along with its aims and details concerning participant anonymity.

The authors were also mindful of the phenomenon known as Social Desirability Bias when developing the survey instrument and also in discussing the findings. This phenomenon is described by Thompson and Phua (2005) as the tendency for respondents to reply in a way that will be viewed favourably by others. Generally, this takes the form of over-reporting perceived 'good' behaviour or under-reporting perceived 'bad' behaviour. In the case of this research, it was expected that respondents' would report more extensively on 'good' behaviour by researchers or projects that have occurred in the past. This is likely to be because of the favourable relationship between one co-author and the island communities, the respondents from which may have rated past research activities in a 'good' light so as not to offend the co-author.

The survey was developed in consultation with the TSRA. One co-author administered the short, two-page survey to the most relevant LSMU staff at TSRA. Drawing on her local language skills and personal knowledge of cultural protocols and people generally, one co-author also sent the surveys to representatives of five island communities in the Torres Strait after gaining permission from the Island Councilors. These island communities included Boigu Island, Erub Island, Mabuiag Island, Warraber Island and Yam Island. The rangers on each of these islands were asked to help drive this project in getting the surveys completed on their islands and they agreed. However, surveys were only returned from three of the above islands (discussed in further detail in the following section), despite the efforts of this one co-author who spent much time trying to solicit responses from people. Completed surveys were returned to the authors for inputting, collation and analysis, using the Statistical Package for the Social Sciences (SPSS, version 18.0). Twenty-four surveys were completed and returned to the authors in October 2010.

Both open-ended and closed questions were included in the surveys to enable quantitative data to be supported by unguided qualitative information. The type of questions that were asked in the survey included:

- A number of socio-demographic questions, including age, gender, where participants were born and live, and participants' fields of work. Responses to these socio-demographic questions were then correlated with participants' responses to environmental research needs to see if any trends emerged;
- Respondents' views on the types of environmental research they would like to see conducted in their community;
- The level of importance respondents' assigned to certain environmental research activities; and
- Respondents' levels of satisfaction with current environmental research initiatives conducted in their community.

It was difficult to obtain individual written informed consent for this project as it was not desirable for participants to sign a consent form that was attached to a completed survey that could become identifiable. It was more appropriate that community members read the following consent statement on the front page of the survey and decided from there if they wished to participate. If they completed and submitted the survey, then it was presumed that individual consent had been given. The following consent statement was included on the front page of the survey:

'This study examines the **environmental research needs** of people and communities across a number of communities in the Torres Strait. To do this, a survey is provided below to gather your opinions on the environmental research needs of your community. Please note that your participation is entirely **voluntary** and **confidential** and you will not be identified in the report. You have the right to withdraw from this study at any time. Upon completing and submitting this survey form, the research team at JCU recognises that you have consented to participate in this study.'

Potential participants were asked to read this consent statement prior to undertaking the survey form so that they could make an informed decision concerning their participation.

3. Respondents' socio-demographic characteristics

This section details the socio-demographic characteristics of the 24 survey respondents. Surveys were sent to five island communities and administered to the most appropriate LSMU staff at TSRA. While this section might not appear to be very relevant given the small sample group, it remains important to briefly mention these characteristics as they are used in the sections that follow to help us better understand respondents' opinions and views.

3.1 Location of participants

Surveys were sent to the island communities of Boigu Island, Erub Island, Mabuiag Island, Warraber Island and Yam Island. Surveys were completed and returned from three of these islands. Twenty surveys were also distributed to the most appropriate LSMU staff at TSRA, and 11 staff members completed the surveys. Overall, 24 surveys were completed and returned (Table 1).

Table 1: Locations from which completed surveys were received, number of surveys, and percentage of overall sample.

| Location | Number of completed surveys received | Percentage of overall sample |
|------------------------------|--------------------------------------|------------------------------|
| LSMU (TSRA), Thursday Island | 11 | 45.8 |
| Boigu Island | 8 | 33.3 |
| Mabuiag Island | 3 | 12.5 |
| Warraber Island | 2 | 8.4 |
| Erub Island | 0 | 0 |
| Yam Island | 0 | 0 |
| Total | 24 | 100% |

3.2 Gender, place of birth and where participants currently live

Survey respondents were asked to indicate their gender, as well as their place of birth and where they currently live. From the sample (n=24), 77.3% of respondents were male and 22.7% were female. Figure 1 provides a summary of respondents' places of birth and where they currently live.

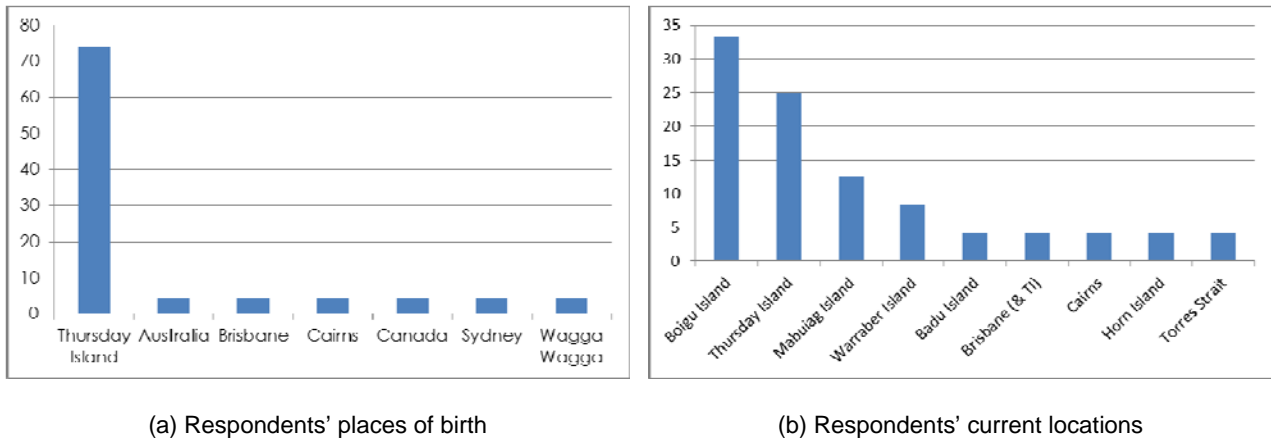


Figure 1: Survey respondents' places of birth and current locations (percentage of total respondents).

3.3 Age

Respondents were asked to indicate the year in which they were born. The mean year was 1968, making 42 years the average age of respondents. The earliest year that a respondent was born was 1948 while the most recent was 1990. Figure 2 provides a summary of the age groupings of respondents from less than 30 years to over 50 years, and highlights the relatively even spread of respondents across these decadal groupings.

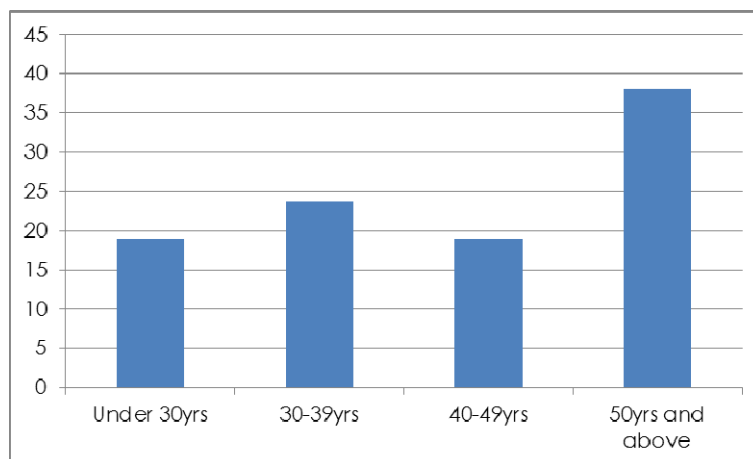


Figure 2: Age of survey respondents (as a percentage of total respondents).

3.4 Occupation

Respondents were asked to select their field of work based on a given list of fifteen occupation titles. An open-ended response, 'other' could be selected if there were no titles that best described the respondent's occupation. Figure 3 illustrates a summary of respondents' occupations.

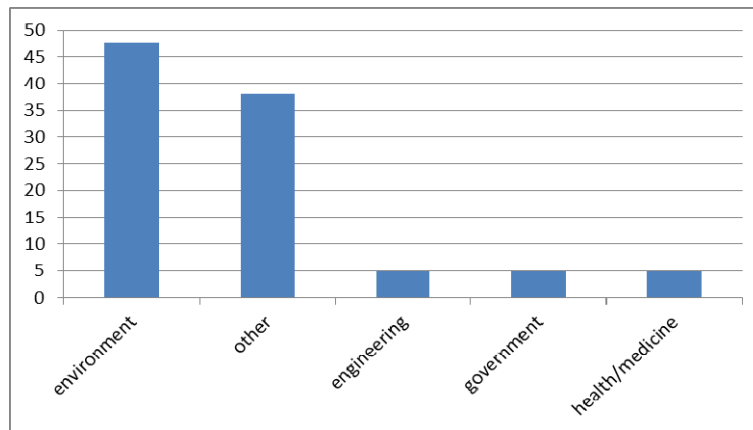


Figure 3: Occupations of survey respondents (as a percentage of total respondents).

While fifteen employment types were listed in the survey, only five were selected. Many respondents (38.1%) selected 'other'. Some examples that were included in 'other' were 'administration', 'CDEP', 'police officer', 'RTC administration', and 'sports and recreation'.

4. Desired environmental research areas of focus

This section details some of the quantitative and qualitative (open-ended) data from the survey regarding environmental research activities. These results contain some of the more pertinent issues considered in terms of environmental research for communities and also public servants working in the region.

In an open-ended question, respondents were asked to think about the type of environmental research they would like to see happen in the region and/or in their island community and describe this research in their own words. Only four respondents declined the opportunity to provide suggestions on the type of environmental research they would wish to see conducted in the future.

The main themes for LSMU staff revolved around marine and island biodiversity, climate change and coastal erosion, soils research, and coral bleaching and coral reef health. A complete list of responses from LSMU staff is provided here:

- 'Turtle, dugong, seagrass' (Respondent 1, LSMU);
- 'Ecosystem health, climate change impacts and adaptation, and coastal erosion' (Respondent 2, LSMU);
- 'Soils research, as well as botanical surveys of plants for each island – identify food uses, medicine uses, other island/community values such as culture and buildings' (Respondent 4, LSMU);
- 'Biodiversity on islands flora and fauna' (Respondent 5, LSMU);
- 'Marine based research – monitoring of marine biodiversity, and assessing and monitoring of reefs, sea-beds and fisheries by communities and rangers' (Respondent 6, LSMU);
- 'Coral bleaching, crayfish (marine)' (Respondent 8, LSMU);
- 'Coral bleaching' (Respondent 9, LSMU);
- 'Coral reef health' (Respondent 10, LSMU); and
- 'Impacts of coral bleaching on reef ecosystem – particularly if they occur more frequently, for example due to climate change' (Respondent 11, LSMU).

Island community participants were also asked to reflect on and describe the environmental research activities that they would like to see occur on their island in the future. The responses from island community participants largely centered on climate change impacts and coastal erosion, soil test, fisheries and sustainable land use. A complete list of responses from island community participants is provided here:

- 'Seaweed, tides and currents, movement of sandbanks and environmental change and impacts' (Respondent 12, Boigu Island);
- 'Protect water front, traditional swamp areas, traditional gardening areas' (Respondent 13, Boigu Island);
- 'Sustainability of land use, viability of swamps and rivers for future business and economic development' (Respondent 14, Boigu Island);
- 'Research on prawn and barramundi and also other native trees' (Respondent 15, Boigu Island);
- 'Soil tests, fisheries test, flora and fauna' (Respondent 16, Boigu Island);
- 'Soil tests, fresh water tests' (Respondent 17, Boigu Island);

- 'Fisheries, tourism/hospitality, engineering, environment' (Respondent 19, Boigu Island);
- 'Climate change impacts and coastal erosion – most of the Torres Strait is getting washed away' (Respondent 20, Warraber Island);
- 'Erosion – our island is getting washed away' (Respondent 21, Warraber Island);
- 'Erosion – traditional knowledge and marine species' (Respondent 22, Mabuiag Island); and
- 'Research for weeds to be killed, school rangers, elder rangers' (Respondent 23, Mabuiag Island).

A series of 16 environmental research areas, which largely reflect past research agendas from CRC Torres Strait and the MTSRF program, were provided in the survey. Respondents were asked to indicate how important these areas of environmental research have been and currently are to their community and island. This level of importance was assessed based on a Likert scale ranging from 'not at all important' (equal to 1) to 'extremely important' (equal to 4).

The 16 environmental research areas and activities that were described in the survey (in this order) included:

- Health of ecosystems;
- Traditional environmental knowledge;
- Traditional knowledge systems (all-encompassing);
- Climate change impacts;
- Climate change adaptation;
- Coastal erosion;
- Ecology and economic value of sponges;
- Hand-collectable fisheries;
- Status/trends of marine species (turtle, dugong);
- Sustainable use of marine species (turtle, dugong);
- Status/trends of fisheries;
- Sustainable use of fisheries;
- Develop and implement marine strategies;
- Regional marine planning;
- Impacts of resource exploitation; and
- New aquaculture industries.

Table 2 summarises the mean values given to each of these research activities, and also includes the percentage values of each of the scales from 1 ('not at all important') through to 4 ('extremely important').

Table 2: Ranked importance of environmental research activities according to survey respondents (as mean value and percentage of total respondents).

| Environmental research activities | Mean value | Ranked Importance (percentage of total respondents) | | | |
|--|------------|---|--------------------|-----------|----------------|
| | | Not at all important | A little important | Important | Very important |
| Ecosystem health | 3.68 | 0.0 | 0.0 | 31.8 | 68.2 |
| Traditional environmental knowledge | 3.68 | 0.0 | 0.0 | 31.8 | 68.2 |
| Sustainable use of marine species (turtle, dugong) | 3.64 | 0.0 | 0.0 | 36.4 | 63.6 |
| Traditional knowledge systems (all-encompassing) | 3.64 | 0.0 | 4.5 | 27.3 | 68.2 |
| Sustainable use of fisheries | 3.59 | 0.0 | 4.5 | 31.8 | 63.6 |
| Status/trends of marine species (turtle, dugong) | 3.55 | 0.0 | 0.0 | 45.5 | 54.5 |
| Develop and implement marine strategies | 3.50 | 0.0 | 0.0 | 50.0 | 50.0 |
| Coastal erosion | 3.50 | 0.0 | 9.1 | 31.8 | 59.1 |
| Climate change impacts | 3.50 | 0.0 | 13.6 | 22.7 | 63.6 |
| Status/trends of fisheries | 3.45 | 0.0 | 4.5 | 45.5 | 50.0 |
| Regional marine planning | 3.43 | 0.0 | 4.8 | 47.6 | 47.6 |
| Impacts of resource exploitation | 3.41 | 0.0 | 0.0 | 59.1 | 40.9 |
| Climate change adaptation | 3.38 | 0.0 | 19.0 | 23.8 | 57.1 |
| New aquaculture industries | 3.36 | 0.0 | 4.5 | 54.5 | 40.9 |
| Hand-collectable fisheries | 3.09 | 0.0 | 18.2 | 54.5 | 27.3 |
| Ecology and economic value of sponges | 2.84 | 10.5 | 15.8 | 52.6 | 21.1 |

Of particular interest are the top six research activities considered by respondents to be the most important areas of research in the region: ecosystem health, traditional environmental knowledge, sustainable use of marine species (turtle, dugong), traditional knowledge systems (all-encompassing), sustainable use of fisheries, and status/trends of marine species (turtle, dugong). The activities considered least important were new aquaculture industries, hand-collectable fisheries, and ecology and economic value of sponges.

Table 3 compares the level of importance of the 16 environmental research activities with respondents' gender, age and location.

Table 3: Comparison of ranked environmental research activities (importance) to respondents' gender, age and location (as mean values of respondents).

| Environmental research activities | Mean value | Male | Female | <30yrs | 30-39yrs | 40-49yrs | >50yrs | LSMU staff | Boigu Island | Mabuiag Island | Warraber Island |
|--|------------|------|--------|--------|----------|----------|--------|------------|--------------|----------------|-----------------|
| Health of ecosystems | 3.68 | 3.69 | 3.80 | 3.75 | 3.80 | 3.50 | 4.00 | 3.82 | 3.83 | 3.00 | 3.50 |
| Traditional environmental knowledge | 3.68 | 3.75 | 3.60 | 3.50 | 3.80 | 3.75 | 3.83 | 3.73 | 3.83 | 3.00 | 3.50 |
| Sustainable use of marine species (turtle, dugong) | 3.64 | 3.69 | 3.60 | 3.50 | 3.80 | 3.50 | 3.67 | 3.73 | 3.83 | 3.33 | 3.00 |
| Traditional knowledge systems (all-encompassing) | 3.64 | 3.69 | 3.60 | 3.50 | 3.80 | 3.50 | 3.83 | 3.73 | 3.83 | 3.00 | 3.50 |
| Sustainable use of fisheries | 3.59 | 3.56 | 3.80 | 3.50 | 3.80 | 3.00 | 3.83 | 3.82 | 3.83 | 2.67 | 3.00 |
| Status/trends of marine species (turtle/dugong) | 3.55 | 3.56 | 3.60 | 3.50 | 3.80 | 3.50 | 3.50 | 3.55 | 3.83 | 3.33 | 3.00 |
| Develop and implement marine strategies | 3.50 | 3.50 | 3.60 | 3.25 | 3.80 | 3.25 | 3.67 | 3.55 | 3.83 | 3.00 | 3.00 |
| Coastal erosion | 3.50 | 3.50 | 3.60 | 3.50 | 3.60 | 3.50 | 3.50 | 3.55 | 3.67 | 3.33 | 3.00 |
| Climate change impacts | 3.50 | 3.50 | 3.80 | 3.75 | 3.60 | 3.25 | 3.67 | 3.64 | 3.67 | 2.67 | 3.50 |
| Status/trends of fisheries | 3.45 | 3.50 | 3.40 | 3.50 | 3.80 | 3.25 | 3.33 | 3.64 | 3.50 | 3.00 | 3.00 |
| Regional marine planning | 3.43 | 3.40 | 3.60 | 3.25 | 3.60 | 3.25 | 3.60 | 3.64 | 3.40 | 3.33 | 2.50 |
| Impacts of resource exploitation | 3.41 | 3.44 | 3.40 | 3.50 | 3.80 | 3.00 | 3.50 | 3.55 | 3.50 | 3.00 | 3.00 |
| Climate change adaptation | 3.38 | 3.47 | 3.40 | 3.50 | 3.40 | 3.00 | 3.80 | 3.70 | 3.33 | 2.67 | 3.00 |
| New aquaculture industries | 3.36 | 3.38 | 3.40 | 3.25 | 3.80 | 3.25 | 3.50 | 3.27 | 3.83 | 3.00 | 3.00 |
| Hand-collectable fisheries | 3.09 | 3.06 | 3.40 | 3.00 | 3.20 | 3.50 | 3.00 | 3.18 | 3.17 | 3.00 | 2.50 |
| Ecology and economic value of sponges | 2.84 | 2.73 | 3.25 | 3.50 | 3.20 | 3.00 | 2.83 | 2.73 | 3.00 | 3.00 | No response |

Grouping respondents according to different variables (gender, age and location), assists us to identify which groups (such as LSMU staff) or island communities might consider certain environmental research activities more important than others.

The younger generation identified the health of ecosystems and climate change impacts as the most important environmental research activities in the region and/or their island community. This may be an overall reflection of Generations 'X' and 'Y' being more aware of environmental problems and issues. Older respondents (>50 years of age) considered the health of ecosystems to be most important. For LSMU staff, the sustainable use of fisheries and health of ecosystems were of paramount importance for environmental research. Boigu Island respondents also saw these two areas as important research activities, along with the status and sustainable use of marine species, marine strategies and new aquaculture industries. For Mabuiag Island respondents, the status and sustainable use of marine species, coastal erosion and regional marine planning were considered to be most important. Finally, respondents from Warraber Island indicated that traditional knowledge, the health of ecosystems and climate change impacts were the most important theme areas for future environmental research initiatives.

5. Levels of satisfaction and areas for improvement

This section presents the survey findings that explored respondents' levels of satisfaction with previous research, as well as their suggestions for improving initiatives in the future.

5.1 Past environmental research: appropriateness, effectiveness, efficiency and community satisfaction

Respondents were asked to indicate their level of satisfaction with previous environmental research in the region (for LSMU staff) and their island communities. This level of satisfaction was gauged according to a Likert scale ranging from 1 ('not at all satisfied') to 4 ('extremely satisfied'). Figure 4 illustrates levels of satisfaction with previous research.

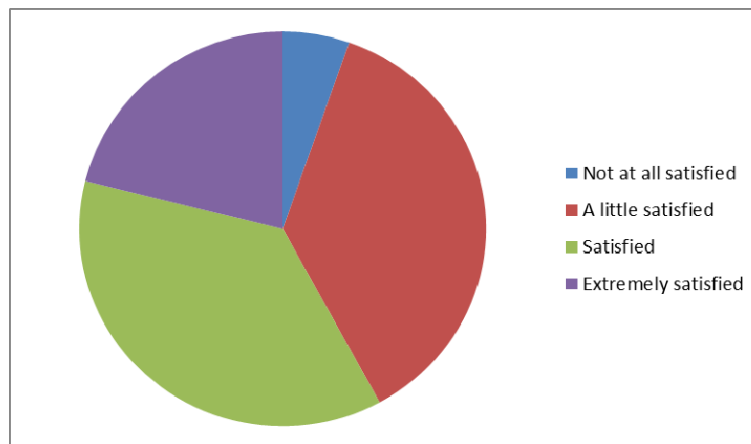


Figure 4: Respondents' satisfaction with previous environmental research (as a percentage of total respondents).

The majority of respondents (73.6%) were either 'satisfied' or, to a lesser extent, 'a little satisfied' with previous environmental research in the Torres Strait region and/or island communities. Only 5.3% of respondents were 'not at all satisfied'. To better understand this finding, Table 4 considers these levels of satisfaction according to respondents' gender, age and location.

Table 4: Comparison of respondents' levels of satisfaction with previous environmental research and respondents' gender, age and location (ranked in order of level of satisfaction).

| Gender / Age / Location | Mean value |
|-------------------------------|------------|
| Female | 3.00 |
| LSMU (TSRA) – Thursday Island | 2.87 |
| Boigu Island | 2.83 |
| 30-39 years | 2.80 |
| 40-49 years | 2.75 |
| >50 years | 2.67 |
| Mabuiag Island | 2.67 |
| Male | 2.64 |
| <30 years | 2.50 |
| Warraber Island | 2.00 |

Survey participants were also probed about past environmental research activities in the region and/or specific island communities. The survey explored three key functions of successful research activities:

- a. Appropriateness: How well the study/project met the needs of community;
- b. Effectiveness: How well the study/project met its objectives; and
- c. Efficiency: How well inputs such as funds and time were converted into outputs.

For the entire survey sample, 62.5% of respondents considered the research to be appropriate, 66.7% found it to be effective and 56.3% denoted past research activities as efficient. The results of these overall percentages are provided in Table 5. Also outlined in Table 5 is a comparison of participants' responses and their gender, age and location.

Table 5: Comparison of respondents' views regarding research appropriateness, effectiveness and efficiency against gender, age and location (ranked in order).

| Gender / Age / Location | Percent 'Yes' response | | |
|------------------------------|------------------------|-----------|-----------|
| | Appropriate | Effective | Efficient |
| Overall | 62.5 | 66.7 | 56.3 |
| Male | 54.5 | 63.6 | 54.5 |
| Female | 100.0 | 100.0 | 75.0 |
| LSMU (TSRA), Thursday Island | 83.3 | 100.0 | 83.3 |
| Boigu Island | 33.3 | 33.3 | 33.3 |
| Mabuiag Island | 50.0 | - | 50.0 |
| Warraber Island | 100.0 | 100.0 | 50.0 |
| <30 years | 100.0 | 100.0 | 50.0 |
| 30-39 years | 50.0 | 60.0 | 50.0 |
| 40-49 years | 100.0 | 100.0 | 100.0 |
| >50 years | - | - | - |

Respondents were also asked to provide examples of environmental research that had been carried out in the region and/or island community which they did not agree with. If activities were nominated, respondents were also asked to consider *why* they did not agree with it. Of the 24 survey responses, eight provided examples. Three of these came from LSMU staff and five from island participants:

- 'Rats on Mer Island' (Respondent 5, LSMU);
- 'Not sure – any [research] that has been done without genuine close consultation with community members, using rangers to approach' (Respondent 7, LSMU);
- 'Pacific rats study on Mer Island and dugong tracking on Mabuiag' (Respondent 11, LSMU);
- 'An enormous study was done on swamps by some group of university students. Not very purposeful. Our people need to know exactly if there is viability and need to be satisfied in the above activities that are circled extremely important' (Respondent 14, Boigu Island);
- 'There [is] dugong waste still hanging on mangrove roots and some on the seawall, and trying our best to tell hunters to take the waste out' (Respondent 15, Boigu Island);

- ‘Coastal erosion [is] one of the major impacts to our island, in front of waterfront, infrastructure of seawalls are not completely properly. I understand of course we need money to upgrade further. And over the adjacent southern side of the island, coastal erosion occurs dramatically’ (Respondent 19, Boigu Island);
- ‘More research, too much talk and no action’ (Respondent 20, Warraber Island); and
- ‘Research has been taking place, but no feedback has been taken place to the community by researchers’ (Respondent 21, Warraber Island).

5.2 How can environmental research activities be improved?

Staff members of the TSRA LSMU were asked to reflect on how environmental research activities across the region could be improved. The first open-ended question asked respondents to think about the region and describe how Torres Strait Islanders might become more involved in research in their communities. From the eleven completed surveys received, each contained feedback for this question. The responses and suggestions included:

- ‘Involvement of Torres Strait representatives in the decision making of any research program’ (Respondent 1, LSMU);
- ‘Training and workshops’ (Respondent 2, LSMU);
- ‘TSRA taking a leadership role in ensuring traditional knowledge is captured and incorporated as a legitimate and essential component of any research’ (Respondent 3, LSMU);
- ‘Joint community economic/health use – practical applications to community benefit’ (Respondent 4, LSMU);
- ‘Assist with traditional scientific knowledge – marine, astrology, weather’ (Respondent 5, LSMU);
- ‘Be involved in deciding what research is needed and to be done here in the region’ (Respondent 6, LSMU);
- ‘Consultation/education/inclusion process led by land and sea rangers’ (Respondent 7, LSMU);
- ‘Community members could be more involved if they are aware of project in depth and it is something that will benefit their community’ (Respondent 8, LSMU);
- ‘More education’ (Respondent 9, LSMU);
- ‘Through the ranger program’ (Respondent 10, LSMU); and
- ‘Improved capacity building systems for [Prescribed Body Corporate], traditional environmental knowledge input including data input by communities’ (Respondent 11, LSMU).

The key themes to emerge from the above mentioned suggestions include the involvement of representatives in the decision-making of research programs, training, workshops, education and inclusion, the practical applications of research, and importantly the role of traditional knowledge as an essential research component.

The second question posed to LSMU staff dealt with how Torres Strait Islanders might best understand and use research in their communities. Again, all eleven LSMU staff responded to this open-ended question, providing the following diverse ideas:

- 'To broaden their knowledge of their land and sea country' (Respondent 1, LSMU);
- 'Training and workshops' (Respondent 2, LSMU);
- 'By taking research to the next stage and developing and implementing research findings including incorporating traditional environmental knowledge' (Respondent 3, LSMU);
- 'Common sense, practical research – steer away from high academic end' (Respondent 4, LSMU);
- 'Bring it back to basics to sustain and prolong customs and community' (Respondent 5, LSMU);
- 'The data needs to be used to make informed decisions about the conservation and sustainable use of their lands, coasts and marine environment' (Respondent 6, LSMU);
- 'Through the rangers – working with school children and community members/ liaising with researchers' (Respondent 7, LSMU);
- 'The research would have to be simplified, easy to understand – more posters and DVDs about the project. If projects benefit community priorities there will be more people interested' (Respondent 8, LSMU);
- 'Better manage the environment' (Respondent 9, LSMU);
- 'More simplified – posters and DVDs' (Respondent 10, LSMU); and
- 'Education and awareness of western science and its relevance at a local level' (Respondent 11, LSMU).

The key themes and suggestions that emerged from LSMU staff to assist island communities to better understand and use research included training and workshops, the incorporation of traditional environmental knowledge, practical and easy to understand applications ('back to basics'), and the use of posters or DVDs.

The final question posed to LSMU staff concerned how researchers might engage with communities in designing and conducting research and transferring results. All eleven LSMU staff responded to this open-ended question with many varied suggestions, including:

- 'The involvement of PBC members' (Respondent 1, LSMU);
- 'Having community meetings' (Respondent 2, LSMU);
- 'Researchers, through the TSRA, need to consult communities about the best way to engage communities. This could be facilitated through island ranger groups as a first point of contact' (Respondent 3, LSMU);
- 'Don't design a project with preconceived outcomes. Community should be involved from day one' (Respondent 4, LSMU);
- 'Keep it simple – use interpretation – employ community to participate and gain acknowledgement' (Respondent 5, LSMU);
- 'Involve islanders in research and actually decision making as to what research is needed in the region. There is opportunities for islanders to gain financial support through research' (Respondent 6, LSMU);
- 'Always through the rangers – finding out best approaches for each community' (Respondent 7, LSMU);
- 'Research should address the communities and find out what research they would like done and what their priorities are. Then research is undertaken involve community

members so they are aware. A community meeting to discuss the results' (Respondent 8, LSMU);

- 'Community meeting' (Respondents 9 and 10, LSMU); and
- 'Closer liaison with LSMU staff, more notice of intent to visit communities and time' (Respondent 11, LSMU).

There were a large number of important and useful suggestions offered by LSMU staff on how researchers should engage with communities in designing and conducting research, and transferring results. These included the utilisation of community meetings, community involvement from the inception of projects, involvement of the TSRA, PBC members and island rangers, and the employment of community members on research projects.

6. Discussion and conclusion

The purpose of this research project was to assess the environmental research needs across a number of Torres Strait island communities and with some LSMU staff. Using a structured survey approach, this report has presented a series of useful information on research activities considered most important for the region and/or individual communities, as well as satisfaction with previous research, including suggestions for future improvements. Surveys were distributed to the most relevant LSMU staff as well as community members from Boigu, Mabuiag and Warraber islands. Given the time and financial constraints of this project, a structured survey was employed instead of other more participatory action research techniques, however these should be considered in any future follow-up work of this kind to yield more fruitful results.

The survey provided an opportunity for respondents to reflect on and discuss the types of environmental research they would like to see carried out across the region and/or in their individual communities in the future. The main themes for LSMU staff revolved around marine and island biodiversity, climate change and coastal erosion, soils research, and coral bleaching and coral reef health. Moreover, the responses from island community participants largely centered on climate change impacts and coastal erosion, soil tests, fisheries and sustainable land use.

Respondents were also provided with 16 various and diverse environmental research activities, drawing largely on the research agendas from the former CRC Torres Strait and MTSRF programs. From these 16 research activities, respondents were asked to reflect on the importance of each of these activities for the region and/or individual island communities. The six most important research activities considered by respondents were health of the ecosystems, traditional environmental knowledge, sustainable use of marine species, all-encompassing traditional knowledge systems, sustainable use of fisheries, and the status/trends of marine species. Those activities considered as least important were new aquaculture industries, hand-collectable fisheries, and the ecology and economic value of sponges.

The majority of respondents (73.6%) were either 'satisfied' or, to a lesser extent, 'a little satisfied' with previous environmental research in the region and/or island communities. Only 5.3% of respondents were 'not at all satisfied'. Moreover, 62.5% of respondents considered the research to be appropriate, 66.7% found it to be effective and 56.3% denoted past research activities as efficient. It is obvious that there is much room for improvement. Further questions were aimed at LSMU staff as to how future research activities might be improved. Suggestions on how Torres Strait Islanders might become more involved in research included the involvement of representatives in decision-making, training and workshops, and the incorporation of traditional knowledge in all research projects. In terms of Torres Strait Islanders understanding and using research, LSMU staff suggested that research activities must include community workshops, incorporate traditional environmental knowledge, and provide practical and easy to understand applications through mediums such as posters or DVDs. In terms of engaging with communities, LSMU staff stressed the importance of community meetings, the involvement of island communities (including Prescribed Body Corporate members and rangers) in research from day one, and providing employment opportunities for community members on research projects.

While there was a limited survey sample for this project (n=24), the findings raise some important and interesting points, as well as some minor concerns about research initiatives in the region. While many of the suggestions by respondents for future environmental research activities have been identified as themes in previous and ongoing CRC Torres Strait and MTSRF research programs, there remains a slight dissatisfaction with previous research. In

particular, there was concern that previous research has not met the needs of communities, whereby set objectives and inputs such as funds and time have not converted into outputs. A series of suggestions have been made by LSMU staff on how future research might involve and be utilised by island communities and these should be incorporated into future agendas. Moreover, as this study reveals, research priorities should consider individual island communities needs as these priorities differ across the region. Overall however, previous environmental research activities have largely matched those identified by participants. The challenge remains to ensure that research conducted becomes more appropriate, efficient and effective, especially to the varying and diverse priorities of individual island communities.

7. References

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Appendix 1: TSRA LSMU Staff Survey Instrument

This study examines the **environmental research needs** of communities across the Torres Strait. A survey is provided below to gather your opinions on the environmental research needs of communities across the region. Please note that your participation is entirely **voluntary** and **anonymous** and you will not be identified in the report. You have the right to withdraw from this study at any time. Upon completing and submitting this survey form, the research team at JCU recognises that you have consented to participate in this study.

1. **Are you:** Male Female

2. **Please indicate the year you were born:**

3. **Please indicate where you were born:**

And where you currently live?

4. **How would you best describe your field of work** (Please choose only one):

- | | | | | |
|---|---|---|---|--|
| <input type="checkbox"/> Education | <input type="checkbox"/> Government | <input type="checkbox"/> Retail | <input type="checkbox"/> Student | <input type="checkbox"/> Environment |
| <input type="checkbox"/> Artist | <input type="checkbox"/> Trades person | <input type="checkbox"/> Fisheries | <input type="checkbox"/> Engineering | <input type="checkbox"/> Retired |
| <input type="checkbox"/> Tourism / hospitality | <input type="checkbox"/> Health / medicine | <input type="checkbox"/> Building / construction | <input type="checkbox"/> Domestic duties | <input type="checkbox"/> Other |

5. **Thinking about the region, what environmental research would you like to see happen? Please describe.**

.....

6. **Please indicate how important the following environmental research activities are to the region:**

| Environmental research activities | Not at all important | A little important | Important | Extremely important |
|--|----------------------|--------------------|-----------|---------------------|
| Health of ecosystems | 1 | 2 | 3 | 4 |
| Traditional environmental knowledge | 1 | 2 | 3 | 4 |
| Traditional knowledge systems (all-encompassing) | 1 | 2 | 3 | 4 |
| Climate change impacts | 1 | 2 | 3 | 4 |
| Climate change adaptation | 1 | 2 | 3 | 4 |
| Coastal erosion | 1 | 2 | 3 | 4 |
| Ecology and economic value of sponges | 1 | 2 | 3 | 4 |
| Hand-collectable fisheries | 1 | 2 | 3 | 4 |
| Status/trends of marine species (turtle, dugong) | 1 | 2 | 3 | 4 |
| Sustainable use of marine species (turtle, dugong) | 1 | 2 | 3 | 4 |
| Status/trends of fisheries | 1 | 2 | 3 | 4 |
| Sustainable use of fisheries | 1 | 2 | 3 | 4 |
| Develop and implement marine strategies | 1 | 2 | 3 | 4 |
| Regional marine planning | 1 | 2 | 3 | 4 |
| Impacts of resource exploitation | 1 | 2 | 3 | 4 |
| New aquaculture industries | 1 | 2 | 3 | 4 |

7. Thinking about the region, how might Torres Strait Islanders become more involved in research in their communities? Please describe.

.....

8. Thinking about the region, how might Torres Strait Islanders understand and use research in their communities? Please describe.

.....

9. Thinking about the region, how might researchers engage with communities in designing and conducting research and transferring results? Please describe.

.....

10. Please indicate how satisfied you have been with previous environmental research in the region?

| Not at all satisfied | A little satisfied | Satisfied | Extremely satisfied |
|----------------------|--------------------|-----------|---------------------|
| 1 | 2 | 3 | 4 |

11. Please provide any examples of environmental research that has been done in the region that you did not agree with? And why not?

.....

12. Has previous environmental research conducted in the region been:

- a. Appropriate (how well the project met the needs of community)? Yes No
- b. Effective (how well the project met its objectives)? Yes No
- c. Efficient (how well inputs, e.g. funds and time were converted into outputs)? Yes No

***Thank you for your time in completing this survey.
 It is much appreciated.***

Appendix 2: Island Community Survey Instrument

This study examines the **environmental research needs** of people and communities across a number of communities in the Torres Strait. A survey is provided below to gather your opinions on the environmental research needs of your community.

Please note that your participation is entirely **voluntary** and **anonymous** and you will not be identified in the report. You have the right to withdraw from this study at any time. Upon completing and submitting this survey form, the research team at JCU recognises that you have consented to participate in this study.

1. Are you: Male Female

2. Please indicate the year you were born:

3. Please indicate where you were born:

And where you currently live?

4. How would you best describe your field of work (Please choose only one):

- | | | | | |
|---|---|---|---|--|
| <input type="checkbox"/> Education | <input type="checkbox"/> Government | <input type="checkbox"/> Retail | <input type="checkbox"/> Student | <input type="checkbox"/> Environment |
| <input type="checkbox"/> Artist | <input type="checkbox"/> Trades person | <input type="checkbox"/> Fisheries | <input type="checkbox"/> Engineering | <input type="checkbox"/> Retired |
| <input type="checkbox"/> Tourism / hospitality | <input type="checkbox"/> Health / medicine | <input type="checkbox"/> Building / construction | <input type="checkbox"/> Domestic duties | <input type="checkbox"/> Other |

This project is concerned with the environmental research that **has been undertaken** in your community and what you **would like** for the future.

Environmental research can involve the study of your land and sea country (marine species, erosion, climate) and of your culture and community (traditional knowledge, customs).

5. Thinking about the region, what environmental research would you like to see happen? Please describe.

.....
.....
.....
.....
.....
.....

6. Please indicate how important the following environmental research activities are to the region:

| Environmental research activities | Not at all important | A little important | Important | Extremely important |
|--|----------------------|--------------------|-----------|---------------------|
| Health of ecosystems | 1 | 2 | 3 | 4 |
| Traditional environmental knowledge | 1 | 2 | 3 | 4 |
| Traditional knowledge systems (all-encompassing) | 1 | 2 | 3 | 4 |
| Climate change impacts | 1 | 2 | 3 | 4 |
| Climate change adaptation | 1 | 2 | 3 | 4 |
| Coastal erosion | 1 | 2 | 3 | 4 |
| Ecology and economic value of sponges | 1 | 2 | 3 | 4 |
| Hand-collectable fisheries | 1 | 2 | 3 | 4 |
| Status/trends of marine species (turtle, dugong) | 1 | 2 | 3 | 4 |
| Sustainable use of marine species (turtle, dugong) | 1 | 2 | 3 | 4 |
| Status/trends of fisheries | 1 | 2 | 3 | 4 |
| Sustainable use of fisheries | 1 | 2 | 3 | 4 |
| Develop and implement marine strategies | 1 | 2 | 3 | 4 |
| Regional marine planning | 1 | 2 | 3 | 4 |
| Impacts of resource exploitation | 1 | 2 | 3 | 4 |
| New aquaculture industries | 1 | 2 | 3 | 4 |

7. Please indicate how satisfied you have been with previous environmental research?

| Not at all satisfied | A little satisfied | Satisfied | Extremely satisfied |
|----------------------|--------------------|-----------|---------------------|
| 1 | 2 | 3 | 4 |

11. Please provide any examples of environmental research that has been done in your community that you did not agree with? And why not?

.....

12. Has previous environmental research conducted in your community been:

- a. **Appropriate** (how well the project met the needs of community)? Yes No
- b. **Effective** (how well the project met its objectives)? Yes No
- c. **Efficient** (how well inputs, e.g. funds and time were converted into outputs)? Yes No

***Thank you for your time in completing this survey.
 It is much appreciated.***