FRDC
FISHERIES RESEARCH & DEVELOPMENT CORPORATION

Improved data on Aboriginal and Torres Strait Islander fisheries resource use to inform decision-making

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Abbreviations

AFMF	Australian Fisheries Management Forum
FRDC	Fisheries Research and Development Corporation
IRG	Indigenous Reference Group
IP	Intellectual Property
KISSP	Kimberley Indigenous Saltwater Science Project
MoU	Memorandum of Understanding
M&E	Monitoring and Evaluation
NSW	New South Wales
NT	Northern Territory
PBCs	Prescribed Body Corporates
PIRSA	Primary Industries and Regions South Australia
PZJA	Protected Zone Joint Authority
SA	South Australia
TEK	Traditional Ecological Knowledge
IK	Indigenous Knowledge
TO	Traditional Owner
TSRA	Torres Strait Regional Authority
WA	Western Australia
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ILSC	Indigenous Land and Sea Corporation

Definitions

Indigenous: For the purpose of this report encompasses Australian Aboriginal and Torres Strait Islander peoples.

Indigenous Knowledge: For the purpose of this report encompasses Traditional Ecological Knowledge (TEK) and Traditional Knowledge.

Indigenous community representatives: Refers to the persons attending the workshop in the role of representing their Indigenous communities.

Agency representatives: Refers to the persons attending the workshop in the role of representing their Fisheries Management Agency.

Metadata: is a set of data that describes and gives information about other data. For example, the metadata for a fishing survey may include fields such as observer name, date, name of the fishery, data collection method, sample size, unit of effort.

Executive Summary

This report summarises outcomes of the Fisheries Research and Development Corporation (FRDC)-funded project '*Improving data on Aboriginal and Torres Strait Islander fisheries resource use to inform decision-making* (2018-016)'.

Through two national workshops, Indigenous community and agency representatives and researchers discussed issues around collecting, sharing and ownership of Indigenous fishing data. Challenges and opportunities were shared from all perspectives and expertise, knowledge and information came together to enable a framework for improved data on Aboriginal and Torres Strait Islander fisheries resource use to be developed. The framework presents an approach to recognise the genuine shared goal to do things differently for better fisheries management and outcomes for communities.

This framework and the ongoing development of data collection methodologies aims to facilitate the sharing of Indigenous fishing data that ensures a more holistic and collaborative approach to fisheries resource management. The sharing of these data, incorporating catch related information and Indigenous knowledge should allow an improved understanding of the needs (culturally, socially, economically) of Indigenous communities and resource managers. Together we can then move toward ensuring culturally appropriate fisheries and resource management, protecting Indigenous fishing rights, and the sustainable, fair and equitable determination of resource allocation and management, that includes the needs of Indigenous communities.

This report acknowledges the challenges and limitations with the framework and provides a clear path forward to progress the outcomes.

Background, Aims and Objectives

Contemporary management of fisheries resources relies on robust estimates of removal of aquatic species by fishing across all extractive users. The FRDC Indigenous Reference Group (IRG) recognised a significant knowledge gap regarding Australian Aboriginal and Torres Strait Islander fishing participation and catch dynamics across Australia, including information on customary and other uses. They identified that developing ways to improve the availability of this information represents a key national priority for the sustainable, fair and equitable determination of resource use/allocation and management methodologies.

The objectives of the project were to:

1. Conduct national workshops to identify appropriate methodologies for collecting spatially and temporally resolved catch and effort information for a range of Indigenous fisheries.

2. Investigate and evaluate approaches for assessing the relative importance of key species to customary fishing to inform multi-sectoral decision-making processes.

The project aimed to develop a framework that identifies a pathway to collecting appropriate and agreed (from both an Indigenous community and management agency perspective) Indigenous catch and effort data and information on species identified as important to Traditional and cultural use.

Workshop 1, convened in Adelaide was the first opportunity for the project team to truly recognise and witness the different opinions held by key stakeholders, defined here simply as 'community[1]' and 'agency[2].' In some discussions it became apparent that the opposing views on the value of data, why and

[1] Community – Aboriginal and Torres Strait Islander representatives
[2] Agency – Fisheries Management Agencies

how they could be shared, and the next steps were so contrasting that the potential to achieve meaningful outcomes for this project seemed unlikely.

However, Workshop 1 also presented the opportunity to discuss a way forward for the project. It was apparent that the project needed to revise scope and approach going into Workshop 2. The project needed to take a few steps back from identifying 'data collection methodologies' and 'approaches for assessing the relative importance of key species to Traditional fishing', to explore and develop a guide for relationship building and appropriate engagement, as well as establishing a shared understanding amongst project participants of the importance of data and how they can be used as a tool for mutual benefits. It is only then that conversations can commence about data, collection methods and approaches.

The change in scope and approach ensured commitment from the project participants, the continued progression of the project and the achievement of some excellent outcomes (as outlined below). However, it did impact achievement of the objectives of the project, with additional steps required to fully develop the framework to meet the objectives.

Methodology

To ensure the project garnered the required support and input at a national level from Indigenous community, fisheries management agency representatives and researchers, the first component of the project involved governance (including formation of a Steering Committee), planning activities and extensive engagement.

Two national workshops for the project brought together Indigenous community, agency and research institution representatives from across Australia. The structure of the workshops encouraged networking and relationship building, as well as providing the knowledge, expertise, views and information (from all perspectives) required to develop the framework.

Key outcomes

The project achieved six key outcomes. These were:

1. The commencement of a process to establish and / or strengthen relationships between Indigenous community representatives and agency representatives across Australia, generating genuine support for the intent of the project and an ongoing commitment to implementing and further progressing the project outcomes. It is important that both community and agency representatives embarking on a process as described here recognise the need to adapt an approach using the variety of lessons and tools from this project, to meet an agreed need. There is not a 'one size fits all' formula to building and maintaining relationships.

2. The recognition from all participants of the value of data, how they can be used for mutual benefit and how this clarity needs to be established at the outset. If there is an inability to define one or all of these benefits, then perhaps seeking data is not the answer.

3. A series of overarching principles and key success factors which underpin successful framework implementation.

4. A high-level process that guides engagement and relationship building between Indigenous community representatives / communities and fisheries management agencies (or researchers). This was identified as the crucial first step in co-developing a data collection and sharing methodology, and cannot be definitive for all situations, instead providing an important guide to suggested process.

5. The identification of steps to consider when co-developing a data collection and sharing methodology as well as a possible approach. This includes the determination of what types of data (metadata) and resolution are required by agencies and Indigenous communities.

6. A potential pathway for upscaling the process from a local to a jurisdictional and national scale.

From these outcomes, a framework was developed that focuses on a guide to engagement and relationship building (Supplement 2) as well as a selection of supporting resources that provide additional information relevant to certain components of the process (referred to as supplements).

While the framework supports improved data collection and sharing of Aboriginal and Torres Strait Islander fisheries resource use, it requires further development to progress the data collection methodology and to provide a pathway(s) to use the data to inform decision making that best recognises the needs of Indigenous communities and management agencies/researchers.

It is recognised that whilst the outcomes may provide guidance and tools to build the base for improved relationships and future data sharing opportunities, there are significant challenges to be considered in implementing this type of process, particularly:

1. That established community governance structures need to be in place to ensure appropriate community representation and input when first discussing and agreeing any data collection and sharing project. Without the right governance/representation it may be that endorsement is deemed to have been received, whereas the community view will be that it has not. While appropriate governance structures are well established in some communities, in other communities they are not.

2. That all components of the process need to be adequately resourced and supported.

3. For implementation to succeed, the process needs to be a priority for community and Government.

Although every effort was made to ensure there was Indigenous community representation from right across Australia at the Workshops, it was limited and the results presented may not fully reflect the broader Indigenous community position.

Implications for relevant stakeholders

The guide to engagement and relationship building process outlined in the framework should influence the way in which relationships are developed between communities and agency. If followed, the process should result in the development of trusting relationships and partnerships that will enable co-development of case or region-specific data collection approaches.

The use of the lessons and approaches derived through this framework should better support Indigenous communities to be clear on outcomes being sought through data sharing and participating in co-management, and the opportunity more generally for Aboriginal and Torres Strait Islander communities to identify their needs and how they want to champion and organise nationally to progress Traditional fishing opportunities.

There is a real opportunity to a) start implementing the engagement and relationship building process and b) continue to progress the outcomes of this project and the framework. Ongoing progression will require leadership from Indigenous community representatives, agencies and organisations / groups including the FRDC to take ownership and drive the process together. This includes seeking priority and advocacy at a national level.

The potential implications for community through collecting and having access to data relevant to their community (should appropriate data collection methods be developed and implemented) are numerous such as improved self-management of Sea or River Country or the availability of evidence based information to underpin consultation with fisheries management agencies (see Supplement 1).

Recommendations

A number of recommendations and priority next steps have been formed underneath five main themes being:

- Attain advocacy for the framework at a national level,
- Develop the project outcomes into a series of useable tools,
- Implement / test the framework,
- Progress the outcomes of this project and the framework, and
- Explore tools to support and improve the capture of Aboriginal fisheries data

A full list of recommendations including actions and proposed responsibility is included in the Recommendations section of this report.

Keywords

Indigenous catch and effort, fishing participation, data, community, fisheries management, relationship building, engagement, co-development, data sharing framework.

Introduction and Objectives

Contemporary management of fisheries resources relies on robust estimates of removal of fish by fishing across all extractive users. The Fisheries Research and Development Corporation (FRDC) Indigenous Reference Group (IRG) recognised a significant knowledge gap in Australian Aboriginal and Torres Strait Islander fishing participation and catch dynamics across Australia, including information on customary uses. They identified that developing ways to improve the availability of this information represents a key national priority for the sustainable, fair and equitable determination of resource allocation and to ensure appropriate management that protects Indigenous fishing rights. Currently, Indigenous fisheries resource use is rarely recognised across the spectrum of policy and management due to the lack of coordinated sector-specific fisheries data collection systems at the national level.

This project aimed to address the gap by developing a framework that identifies a potential pathway to collecting appropriate and agreed (from both an Indigenous community and management agency perspective) Indigenous catch and effort and participation data and information on species important to Traditional and cultural use.

Aboriginal and Torres Strait Islander peoples have, and continue to maintain, a strong connection to fresh and salt water Country and have a deep understanding (Indigenous Knowledge) of their Country. Song lines, language, spirituality, cultural landscapes and a cultural obligation (to respect, care for and protect Country) underpin Indigenous fishing histories and ongoing practices today.

Indigenous fishing continues to be a socio-culturally important practice and connects many different aspects of cultural living, economic growth and intergenerational knowledge transfer. While catch and effort information can be used to measure fishing activity and may be an indicator to support the understanding of the broader social and cultural role fishing holds within Indigenous communities, it is a type of data collection that stems from western metrics for assessing fish stock health and declines. It will not tell a complete story of how fishing connects culture to Country. It may provide a platform for improving social, cultural and economic fishing priorities, management (including allocation) and policy-level decisions and building relationships between Indigenous communities and fisheries agencies.

The objectives of the project were to:

1. Conduct two national workshops to identify appropriate methodologies for collecting spatially and temporally resolved catch and effort information for a range of Indigenous fisheries.

2. Investigate and evaluate approaches for assessing the relative importance of key species to traditional fishing to inform multi-sectoral decision-making processes.

Workshop 1, convened in Adelaide was the first opportunity for the project team to truly recognise and witness the different opinions held by key stakeholders, defined here simply as 'community[3]' and 'agency[4].' In some discussions it became apparent that the opposing views on the value of data, why and how they could be shared, and the next steps were so contrasting that the potential to achieve meaningful outcomes for this project seemed unlikely.

[3] Community – Aboriginal and Torres Strait Islander representatives
[4] Agency – Fisheries Management Agencies

From an agency perspective, there was generally a lack of knowledge of Indigenous 'take' of aquatic species, therefore little or no consideration of this in resource assessments, and often fractured relationships that were hampering an ability to collaborate into the future. The simplistic answer was that if agencies had better data, they could take better account of Indigenous participation and this would result in greater security and access for community. Data was seen as the answer.

Community perspectives were very different. Data means different things, and the harvest numbers are only a small part of the picture. To understand the data, there was a need to better understand the cultural significance of species, single species are often not considered – instead there being a greater focus on the whole environment, there was a need to appreciate what access means, to know why some species should not be taken etc. Aboriginal and Torres Strait Islander representatives emphasised a sense of mistrust around the use of data, but more broadly around the lack of engagement in fisheries management generally (noting that this was different across jurisdictions). They stressed that there needed to be stronger relationships, clarity of purpose, and agreement on how data would be used for mutual benefit. Only then, would the conversation on data be able to progress.

These early conversations set the tone for the project, and how it could be delivered, with Workshop 1 also serving as a platform to discuss a way forward for the project. The project team, supported by the Steering Committee and the FRDC IRG, reviewed the project scope and revised approach for Workshop 2 in line with the outcomes and messaging from Workshop 1. This included the addition of an Aboriginal co-facilitator for Workshop 2 and a move away from a focus on identifying 'what data', 'appropriate collection methodologies' and 'approaches for assessing the relative importance of key species'. The revised focus was on ensuring mutual understanding and recognition (amongst participants) of the importance of data and how they can be a tool for communities and agency for mutual benefit, as well as developing the foundational process of building relationships and trust.

The result was a shift in perspective of many participants between Workshop 1 and 2, and in the general tone of the workshops. For the Aboriginal and Torres Strait Islander participants, Workshop 1 presented a forum for the expression of frustrations, concerns and issues that went more broadly than the scope of the project but needed to be acknowledged and considered for the project to progress. While there was willingness to engage there was also an underlying tone of mistrust and angst at Workshop 1 and at this stage the intent and value of the project was not clear.

Workshop 2 in contrast had a strong sense of shared commitment to the project, positive input and energy and a feeling of being in it together, 'we' rather than 'them and us'. This was an important and impressive journey for the project team and participants to have undertaken.

While the revised approach continued to move the project towards achievement of the objectives, additional steps are required to fully develop the framework to meet them.

This report outlines:

- The methodology undertaken to obtain the required support for and participation in the project that enabled the accumulation of knowledge and a level of agreement on an acceptable approach to data collection that would enable the successful development of a framework.
- The developed framework.
- Information and resources that support the framework (supplements).

- A proposed method for upscaling the process from a local level to a jurisdictional and national level.
- Limitations, gaps and challenges for the project and framework (in discussion).
- Recommended next steps.

Several documents were produced during this project that support this final report. These include:

- Engagement and Communication Plan
- Workshop 1 Outcomes Report
- Workshop 1 Summary report
- Workshop 2 Outcomes Support

A Project Summary is also being developed in partnership with the FRDC IRG.

Method

The project was delivered by team members from across The Department of Primary Industries and Regions (PIRSA) in partnership with our two workshop facilitators and workshop partners from the University of Adelaide (see Appendix 2 for a project team list). The project consisted of four stages:

1. Pre-workshop engagement.
2. Workshop 1 in Adelaide (June 2019).
3. Workshop 2 in Adelaide (February 2020).
4. Final reporting (2020).

In addition to these distinct stages, the project team attended two IRG meetings during the course of the project – the first in March 2019, the second in November 2019. At these meetings the project team presented on the project progress, discussed some of the issues and barriers that the project team had encountered and discussed and sought advice on the approach for Workshop 1 and 2.

The scope of the project did not include trialling of the approach(es) included within the framework being developed. This was further agreed at each of the IRG meetings.

The method employed for each of the four stages is outlined below.

1. Pre-workshop engagement

The main steps within this stage of the project were:

a) To develop an Engagement and Communication Plan.

b) To secure support for the project and contribution to the project from Commonwealth and jurisdictional fisheries management agencies.

c) To establish a project Steering Committee.

d) To undertake (pre-workshop) engagement to identify and connect with stakeholders around Australia, to establish project understanding and support with these stakeholders, as well as securing interest in participating in the project, in particular Workshop 1.

a) Engagement and Communication Plan

Purpose: To have a Plan that guides stakeholder identification and analysis (their potential role in the project) as well as engagement for the project, which ensures:

- Engagement with Stakeholders occurs using the most appropriate approaches.
- There is a clear and consistent stakeholder understanding of the importance and intention of the project.
- All members of the project team are appropriately informed and prepared to engage with stakeholders. Consistent communication messages and protocols are used.
- Stakeholder engagement fulfils its purpose.

- Potential project extension activities are identified.

The Plan follows the International Association of Public Participation Australia (IAP2) engagement planning framework, and applies research ethics and engagement principles in Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Guidelines for Ethical Research in Australian Indigenous Studies[5], to ensure project engagement objectives are achieved in a culturally respectful and inclusive manner.

The project Steering Committee reviewed the Plan and provided input into the stakeholder list, proposed engagement methods and actions.

b) Agency Support and Contribution Confirmed

Purpose: to ensure national fisheries management agency support for the project and identify key contact persons within agencies and organisations. To define the agency contributions to the project (in-kind and financial).

Official letters introducing the project, requesting support for the project and the nomination of a key contact person within the agency were sent to the Heads of Fisheries in Commonwealth and jurisdictional fisheries management agencies around Australia. Where necessary, these were followed up by a phone call by a project team member to discuss the project further. Support was confirmed, and a contact person nominated (referred to as agency representative) from the following organisations:

- Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
- Australian Fisheries Management Authority (AFMA)
- Department of Agriculture and Water Resources (DAWR)
- Department of Primary Industries NSW (DPI, NSW)
- Department of Primary Industry and Resources NT (DPIR, NT)
- Department of Agriculture and Fisheries, QLD (DAF, Qld)
- Department of Primary Industries, Parks, Water and Environment TAS (DPIPWE, TAS)
- Victorian Fisheries Authority (VFA)
- Department of Primary Industries and Regional Development WA (DPIRD, WA)

Once the agency representatives were identified, engagement continued with each agency (through their representative) to define the contribution each agency would commit to the project. This included:

- In- kind, such as time spent by their representative attending project workshops, reviewing project documents and undertaking tasks as a member on the project Steering Committee,

[5] Australian Institute of Aboriginal and Torres Strait Islander Studies, 2011, Guidelines for Ethical Research in Australian Indigenous Studies, Second Edition, Canberra ACT

- Financial – funding their representatives and (in some cases) Indigenous community representatives from their jurisdiction to attend each workshop.

c) Steering Committee Established

Purpose: To have an expert group to provide strategic overview, assist in identifying and providing connection to key stakeholders, assist identification of solutions to any barriers faced during project delivery and make comment on key documents produced as part of the project.

Our project Steering Committee consisted of the agency representatives, a Chair and a selection of invited guests / observers (Table 1).

Table 1. Steering Committee members and observers.

Person	Organisation	Role
Sean Sloan	PIRSA	Chair (until December 2019). Daniel Casement (PI) was then Acting Chair.
Clare Moyle	PIRSA	Executive Officer
Shane Holland	PIRSA	Member, until May 2019
Michelle Winning	DAF Qld	Member
Beth Gibson, then Steve Bolton	AFMA	Member
Kane Dysart	DPIR NT	Member
Brent Wise	DPIRD WA	Member
Rod Pearn	DPIPWE Tas	Member
Mika Malkki	DPI NSW	Member
Dallas D'Silva[6]	VFA	Member
James Woodhams	ABARES	Member
Nancy Pederson	DAWR	
Emily Ogier, Sarah Jennings	FRDC, HDR	Invited guest / Observer (shared role)
Josh Fielding	FRDC	Invited guest / Observer
Chris Calogeras	IRG	Invited guest / Observer

Four Steering Committee meetings were held during delivery of the project on 6 February 2019, 16 April 2019, 15 October 2019, and June 2020. The Committee also reviewed documents and provided input into decisions and some approvals out of session (via email).

d) Pre-workshop engagement

Purpose:

- *To identify potential Indigenous community representatives to participate in the project, and the best approaches for engaging with them. To ensure representation by Indigenous*

[6] However, was unable to attend the Steering Committee meetings held

communities from across Australia at the workshops and their input into the project more broadly, and support for the project by these representatives.

- *To identify any additional stakeholders and their potential role(s) in the project.*
- *To promote understanding of the project, introduce the project team, and learn more about the project stakeholders / participants. To encourage support for, and participation in, the project. Collate relevant resources (e.g. documents).*
- *To ensure the required (to achieve workshop outcomes and project objectives) fisheries management agency and Indigenous community representation was achieved, for participation in the project workshops as well as the project more generally.*

To assist with undertaking the pre-workshop engagement a project fact sheet was developed.

The majority of pre-workshop engagement was undertaken through on-line meetings, emails and phone calls.

Identification of stakeholders and implementation of engagement activities were undertaken as outlined in the Engagement and Communication Plan.

The pre-workshop engagement to identify potential Indigenous community representatives to be a part of the project and the most appropriate approach(es) to engage with them was undertaken collaboratively by the project team and the agency representatives.

Each agency representative commenced initial engagement with relevant Indigenous community groups / corporations / representative bodies within their jurisdiction to introduce the project, determine whether there was support for the project and a desire to participate in the project through attendance at workshops. If the Indigenous community representative indicated that they would like to participate in the project, the agency representative discussed with them how they would like engagement to continue and whether they required any further information. This approach was considered the most effective, as it was an opportunity for them to begin connecting or re-connect with Indigenous groups within their jurisdiction, as a means of starting or strengthening relationships.

From this initial engagement, recommendations were made by the Indigenous community representatives (through the agency representative), to the project team on who would attend Workshop 1 and an approach for on-going engagement. Each jurisdiction identified that all engagement with the Indigenous community representatives leading up to Workshop 1 would continue through the agency representative, with two exceptions:

- The project team, upon request by the Torres Strait Regional Authority (TSRA), presented at the Protected Zone Joint Authority (PZJA) Traditional Inhabitant Members Professional Development Workshop on 24 May on Thursday Island. It was an opportunity to meet with fisheries stakeholders from across the Torres Strait Islands and secure support for the project.

- The project team joined a skype meeting (via invitation from Mike Travers, WA) with the Indigenous Saltwater Group (ISWAG) on 10 May 2019, to discuss the project and workshop with multiple Indigenous groups and identify representatives to attend Workshop 1.

Post Workshop 1, the project team engaged directly with all workshop participants including the Indigenous community representatives. Communications between the Indigenous community representatives and agency representatives also continued.

2. Workshop 1

Purpose: To bring together agency, Indigenous community and research institution representatives from around Australia to introduce themselves and connect, to discuss and collate information from all perspectives around four main themes:

- *Information and data needs and uses.*
- *Information collection and sharing opportunities.*
- *Issues relevant to collecting and using the information, and the importance of Traditional Ecological Knowledge.*
- *Extension materials that would work best for Indigenous communities.*

Development and delivery of Workshop 1 had four main components, being:

1. Development of a Workshop agenda and approach
2. Finalising of Workshop logistics
3. Delivery of the Workshop
4. Collation of key findings in a report

The workshop Agenda (included in Appendix 3) and approach were developed in consultation with the project Steering Committee, the FRDC IRG and the workshop facilitator.

Workshop 1, held at the Glenelg Surf Life Saving Club in South Australia on 5-6 June 2019, was attended by 39 people including 34 participants, four project team members and the facilitator (Ian Knuckey of Fishwell Consulting). See Appendix 4 for a participant list.

The workshop included a Welcome to Country and smoking ceremony performed by Uncle Moogy Sumner with dances and didgeridoo playing performed by other Kaurna community representatives. This was followed by an introductory session, four workshop sessions, a breakout session, and a wrap-up session.

Figure 1. Kaurna Welcome to Country and smoking ceremony
(Photos approved for project use by Uncle Moogy Sumner).

The introductory session provided the opportunity for workshop participants to introduce themselves and highlight some of their key thoughts, concerns and/or aspirations and included three presentations:

1. An overview of the FRDC IRG presented by Shane Holland, SA (IRG member and previous co-investigator on the project).

2. An overview of the project presented by Daniel Casement, PIRSA (Principal Investigator).

3. 'What is Cultural Property (CP), Intellectual Property (IP), data and TEK? In addition, how they link with fisheries', presented by Melissa Nursey-Bray.

The four workshop sessions run as small group discussions with a group facilitator (project team member) followed by whole of workshop discussion, were designed to capture information to meet the expected outcomes of the workshop around four distinct themes (highlighted above).

For the breakout session, agency representatives and Indigenous community representatives separated into two groups and had independent discussions around how the project direction (project objectives and next steps) looks from their perspectives. Each group then provided a summary and discussion was opened up to the whole workshop.

The main function of the wrap-up session was to ensure that key findings from the workshop were captured accurately and appropriately and were agreed upon by the workshop participants.

Following the workshop, all participants had an opportunity to provide the project team with key points they felt were priorities and should be considered for inclusion within this report.

Key findings of the workshop were collated in the Workshop 1 Outcomes Report. All workshop participants had the opportunity to review the Outcomes Report, as did the FRDC, FRDC IRG and Steering Committee. This report should be referred to for further information.

3. Workshop 2

Purpose: To bring together Indigenous community, Agency, and research institution representatives from around Australia to further investigate key messaging and outcomes from Workshop 1, while working towards the objectives of the project. The expected outcomes for Workshop 2 were:

- *A collective improved understanding and recognition of the need for Indigenous fishing data, and the potential beneficial outcomes to communities in collecting, using and sharing these data.*

- *Identification of the key steps of the process for co-developing a data collection methodology, how to achieve the steps and the information, tools and resources required.*

- *Exploration of possible approaches to collecting Indigenous catch and effort data, and assessing species of cultural significance through discussion of presented case studies and facilitated workshop discussions.*

- *To identify the priority next steps.*

The workshop Agenda (included in Appendix 5) and approach were developed in consultation with the project Steering Committee (SC), the FRDC IRG and the workshop facilitators.

The invite list for Workshop 2 included participants from Workshop 1 as well as additional recommendations from the FRDC IRG and project SC.

Workshop 2 was initially planned to be delivered in August / September 2019 in either Darwin or Cairns. However, it was held on 18-19 February 2020 to allow sufficient pre-workshop engagement to

occur to ensure the desired representation was achieved at the workshop and that participants were appropriately briefed on the workshop focus. Workshop 2 was held in Glenelg, SA (at The Function).

Ian Knuckey (Fishwell Consulting, facilitated Workshop 1) and Garry Goldsmith (Business manager, Narungga Nation Aboriginal Corporation) co-facilitated the workshop. In addition to the facilitators 32 people attended, including 23 participants representing Indigenous communities and fisheries management agencies across Australia, the FRDC, researchers, five project team members, and four observers from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Indigenous Land and Sea Corporation ILSC (a participant list is included in Appendix 6).

Figure 2. Workshop 2 participants at the end of day 2
(Apologies to those attendees who were not available when the photo was taken).

The workshop commenced with a Welcome to Country by Uncle Lewis Yerloburka O'Brien (Kaurna Elder), followed by an introductory session and five workshop sessions (see Agenda in Appendix 5).

A Workshop 2 Outcomes Report was developed and includes detailed information on the methodology and key findings and should be referred to for further information. All workshop participants had the opportunity to review the Outcomes Report, as did the FRDC, FRDC IRG and Steering Committee.

Results

Each workshop had multiple State and Commonwealth agency and Indigenous community representation, as well as researcher participation, providing a national spectrum of insights into Indigenous fishing and the challenges of managing fisheries resources across a range of sectors with differing objectives and priorities. The results included in this report are primarily from input and discussions at these workshops and therefore represent the views of the participants at the workshops. It needs to be acknowledged that while there was broad Indigenous community representation from across Australia, it is stills limited and the results presented may not reflect the broader Indigenous community position.

A comprehensive outline of the findings of each workshop is included within each of the Workshop Outcome Reports.

The project achieved six key outcomes. These were:

1. The commencement of a process to establish and / or strengthen relationships between Indigenous community representatives and agency representatives across Australia, generating genuine support for the intent of the project and an ongoing commitment to implementing and further progressing the project outcomes. It is important that both community and agency representatives embarking on a process as described here recognise the need to adapt an approach using the variety of lessons and tools from this project, to meet an agreed need. There is not a 'one size fits all' formula to building and maintaining relationships.

2. The recognition from all participants of the value of data, how they can be used for mutual benefit and how this clarity needs to be established at the outset. If there is an inability to define one or all of these benefits, then perhaps seeking data is not the answer.

3. A series of overarching principles and key success factors which underpin successful framework implementation.

4. A high-level process that guides engagement and relationship building between Indigenous community representatives / communities and fisheries management agencies (or researchers). This was identified as the crucial first step in co-developing a data collection and sharing methodology, and cannot be definitive for all situations, instead providing an important guide to suggested process.

5. The identification of steps to consider when co-developing a data collection and sharing methodology as well as well as a possible approach for the collection and sharing of data between communities and agencies. This includes the determination of what types of data (metadata) and resolution are required by agencies and Indigenous communities.

6. A potential pathway for upscaling the process from a local to a jurisdictional and national scale.

The project also collated useful resources to support the framework (included in Appendix 7).

In addition to the success factors included in Figure 3, assessment of case studies (included in Appendix 8) presented at Workshop 2 highlighted some common success factors when designing a data collection methodology. The most successful case studies presented, highlighted the following:

- The need for the project / data was community focused and outcomes benefited all parties.
- Early on-ground engagement and a partnership approach was implemented.
- Project was driven and led by community, creating interest and ownership within the community.
- Project included skill development, training, capacity building and / or economic opportunity for the community.

The case studies also identified some common lessons:

- Tools for data collection (such as survey or participatory collection) take a long time to design, and projects need to ensure that sufficient time is provided for engagement and development.
- Survey design and collection tools should be as simple as possible while still meeting the purpose of the project.
- Strong governance / organisational systems within community assist in the development and implementation of projects.

Potential barriers to the successful implementation of the framework were determined and are included in Appendix 9.

These success factors, lessons learned and identified barriers were considered when developing the framework. The framework (incorporating project outcomes 3-6), outlines a pathway for collecting and sharing improved data on Aboriginal and Torres Strait Islander fisheries resource use.

The framework

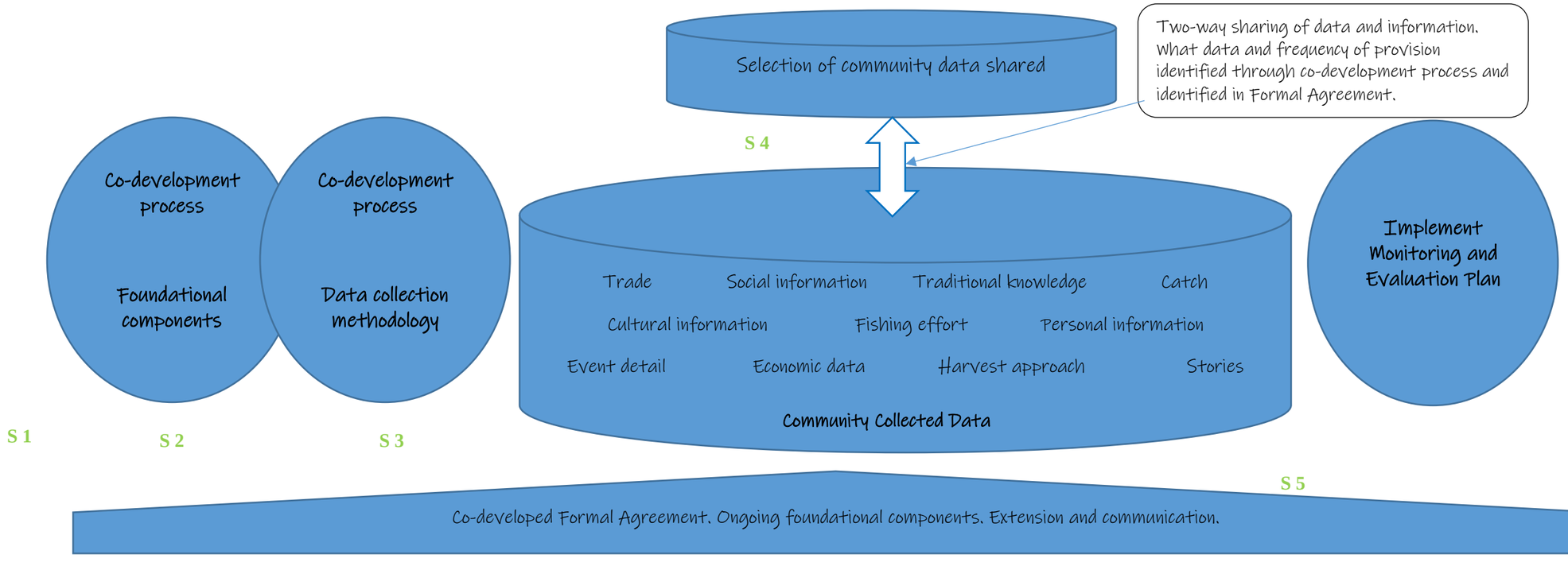
Figure 3 provides an overview of the framework proposed for improving data collection and availability on Aboriginal and Torres Strait Islander fisheries resource use. The framework includes:

- Overarching principles and success factors.
- The process for the co-development and implementation of a data collection and sharing methodology. The process includes four sequential steps:
    1. Foundational components of the co-development process,
    2. Data collection methodology components of the co-development process,
    3. Implementation of the data collection methodology, including an approach for two-way sharing of the data and management information, as well as the data types (metadata) and resolution required, and
    4. Monitoring and evaluation of the process (leading to revision of the methodology if required).

The process includes three elements (extension, co-development of a formal Agreement and relationship building / engagement) that are ongoing and / or relate to the entire process.

Supplements to Figure 3 provide additional information relevant to certain components of the process (referred to as supplements). There are five supplements in total and they are marked on Figure 3 at the locations within the process that they are most relevant. They are:

1. Key messaging around the importance of data (S1 in Figure 3).
2. A process to guide engagement and relationship building between Indigenous communities and fisheries management agencies (the foundational components of the process) (S2).
3. Suggested steps in the co-development of a data collection and sharing methodology (S3).
4. Types of data (metadata) and resolution requirements when co-designing a data collection method, as well as an approach for the collection and two-way sharing of these data (S4).
5. Basic information on appropriate extension materials and approaches (S5).



Critical Success Factors

- That step 1 (foundational components) is implemented appropriately first, so that a partnership and collaborative approach is possible.
- That well-established community governance structures, such as Registered Native Title Bodies or Prescribed Body Corporates are in place. This will provide clear processes and structures, good leadership and assist / encourage community to be involved.
- Availability of appropriate resourcing and support.
- Who the appropriate people are to contact are identifiable including those with the authority to speak for community and those with the authority to speak for Government.
- The purpose for engagement and data collection / sharing is clear.
- Agency and community representatives have the capacity and capability to implement the framework.

Overarching Principles

- Development of relationships and a partnership through appropriate and on-going engagement is paramount. This needs to be genuine and two-way, with real recognition and acknowledgement, a shared vision and of benefit to all parties.
- The co-development and implementation of the data collection process should be driven by, and where practical, be led by community (facilitated by Government) to create ownership within the community. It should include capacity building and / or economic opportunity for the community including enhancing employment of Aboriginal and Torres Strait Islanders within Government organisations.
- Communities must be involved in co-development and implementation of the data collection methodology, as well as management of the data collected and shared. Community representatives need to be involved in the decision making.
- A formal agreement covering all aspects must be prepared and signed.
- Community are to decide what data to share, particularly in terms of TEK and cultural information. A focus of the use of the data by agencies is to be able to better understand the needs (culturally, economically etc.) of Indigenous communities so as to ensure culturally appropriate management that protects Indigenous fishing rights.
- Governments need to have trust in the Traditional Owners (TOs) and their communities regarding sensitivities of accessing cultural information and ability to manage their resources.
- Data collection and survey methods should be kept as simple as possible, while continuing to be designed to meet the objectives of the project.

Figure 3. The framework for improving data on Indigenous fisheries resource use (S indicates relating supplements, which are outlined on the proceeding pages).

Supplement 1: The Importance of Data

For a Framework aimed at collecting data on Indigenous fishing participation and catch and effort dynamics to be successful, Indigenous communities need to be willing and supported to collect the data and share it with agencies (or other stakeholders). As such, communities need to foresee and realise real benefit(s) in collecting, applying and / or sharing data.

When engaging with communities (agencies, TOs or other), clear messaging around the importance and possible application of Indigenous fishing data and the subsequent potential benefits to community, including benefits relating to community cultural, social and economic needs, will be required to commence meaningful dialogue and sharing.

Equally important is promoting the understanding of community needs within agency, and how data and information can be used to ensure culturally appropriate management that protects or improves Indigenous fishing rights.

The information provided below is not presented in a format (language or visually) of use for engaging with a particular community. It provides a summary of useful information that can be adapted to develop key messaging to suit an audience. The case studies and project examples included in Appendix 8 provide examples of how data have been (or can be) collected and applied to benefit communities.

For Indigenous communities, data represents an asset that can assist communities to support their interests. For example, data can be used:

- As a tool for self-managing Sea or River Country, in devising community developed management plans and activities and sustainable fisheries / resource use strategies.
- As leverage with other stakeholders to gain a return for the community, such as resources or capacity building, or to receive data in return that is of use to the community.
- To underpin consultation with fisheries management agencies on issues, such as access and allocation of catch. For example:
    - As evidence for showing local scale impacts on Sea or River Country.
    - For determining how much of the resource is required to sustain community, and to use this information to leverage negotiations on continued and shared access, or even increased access. Can data provision be used by community as leverage for a greater share of a resource, or increased access?
    - To dispute incorrect assumptions placed on communities by other sectors regarding Indigenous take. For example, data are needed to show that, for cultural fishing practices, take is minimal so communities can continue to practice with negligible impact on stocks.

For agencies, data are essential for their role in the management and sustainability of fisheries, being used to deliver stock assessments, set quotas and to inform policy decisions (such as allocation). Currently due to a lack of data, Indigenous resource use is not properly considered in assessments and therefore is often not being recognised in management decisions. In some cases the needs (cultural, social, economic) of Indigenous communities are not well understood by agency. Availability of Indigenous fishing data would provide agencies with a better representation of take across all sectors, as well as an understanding of the needs of communities, allowing them to make

more informed and culturally appropriate management decisions. It would enable better representation and recognition of Indigenous fishing in contemporary fisheries management, for example:

- Harvest strategies could account for all fisheries users and generate a higher resolution of fishing-ecosystem interaction. This could facilitate Indigenous community needs being better recognised and supported.

- Agencies could respond to Indigenous community concerns within current policy frameworks. For example, if a community has concerns about a declining species of cultural significance, robust catch and effort data is needed for agencies to be able to respond within the current policy frameworks.

For researchers, the data would allow them to feed robust Indigenous fishing data into their ecosystem models to investigate the 'whole of system' effects of fishing or other extractive uses. Currently the data on Indigenous take is scant and not typically recognised within the modelling.

It was clear throughout the workshops that Indigenous Knowledge has immense value in recognising and understanding trends, seasonal cycles and whole of ecosystem changes, all essential ingredients in successful resource management. Future progression of the framework should investigate ways in which Indigenous Knowledge can be appropriately incorporated or considered in management decisions.

Looking longer term and bigger picture, collection and sharing of data (qualitative and quantitative) through a partnership and two-way approach opens up opportunities for the improved management of fisheries resources and ecosystems at local, regional and national levels through a co-management model.

Supplement 2: The foundational steps in the Framework

The message was clear from participants that the critical first step(s) to co-developing a data collection and sharing methodology is the development of long-term relationships built on trust and appropriate engagement and the formation of a partnership (foundational components of the process). Therefore, a key component of the framework is this process to guide engagement and building of relationships between Indigenous communities and Management agencies. Implementation of this process will enable progress to the next stage of co-developing a data collection methodology.

Some resources that can provide examples and / or assist in the process are included in Appendix 7.

The process for engagement and relationship building[7]

Pre-engagement Steps and Actions

Step 1 - Define Purpose

Community

Define the purpose for the engagement and data collection.

Agency

Define the purpose for the engagement and data collection.

Step 2 - Capability and Capacity Assessment, Gap Analysis

Community

Examine / assess Governance structures:

- Strengths, weaknesses, gaps
- Protocols in place (IP, cultural induction, research etc.) and gaps

Resource Requirements

- What is needed (funds, time, people, tools, Government support and commitment, etc.)
- Existing, gaps

Assess roles and responsibilities

- Who will have roles and responsibilities and what are they?
- Skills, knowledge awareness required
- Identify gaps

Establish (if not already):

- community values, goals and objectives, aspirations, priorities, issues and needs
- acceptable / desired incentives and benefits for community.

Undertake background research on agency.

- Desktop study
- Existing contacts
- Identify gaps in desired information.

Agency

Obtain agency support:

- Identify where (and from whom)
- outline parameters

This will be an on-going task, with potentially additional support and commitment needing to be sought once engagement begins.

Resource Requirements

- What is needed (funds, time, people, tools, Government support and commitment, etc.)
- Existing, gaps

Assess roles and responsibilities

- Who will have roles and responsibilities and what are they?
- Skills, knowledge, awareness (including cultural) required
- Identify gaps

Establish (if not already):

- the objectives, issues and priorities of agency in terms of co-developing an Indigenous fishing data collection methodology.

Identify existing agency data that may be shared with communities.

Undertake background research on communities in your jurisdiction:

- Desktop study
- Existing contacts
- Identify gaps in desired information.
- Review AIATSIS principles (Appendix 7) to ensure an ethical approach to engagement.

Step 3 - Develop documents

Community

A Community Engagement Capability and Capacity Building Strategy:

- Include outcomes of steps 1 and 2

A community directory (accessible to agency):

- relevant contacts, their role and responsibility and contact details
- appropriate process for agencies to follow[8].

E**xtension materials**.

Agency

An Agency Engagement Capability and Capacity Building Strategy:

- Include outcomes of steps 1 and 2

An agency directory (accessible to TOs and communities):

- relevant contacts, their role and responsibility and contact details

E**xtension materials**.

Step 4 – Implement Strategy

Community

Implement Community Engagement Capability and Capacity Building Strategy

Agency

Implement Agency Engagement Capability and Capacity Building Strategy

Outcomes

Ability to confidently and strategically undertake engagement so that engagement and relationship building will be meaningful, efficient and effective and undertaken respectfully and with an understanding of the concerns that may be present.

Leadership and support in communities and agency.

Greater cultural awareness in agency enabling engagement to occur in a culturally sensitive manner (and that approaching from a western compliance base way may not lead to the best outcomes).

[7] Formal engagement procedures may be in place already (for e.g. in cases involving Native Title Determinations and or ILUA's). This should be considered in any engagement activities.

[8] With the longer-term goal to develop a jurisdiction-wide document to be available to agency and research institutions.

Engagement

Step 5 – Make contact

Initiated by either agency or TOs

Identify stakeholders and contact the appropriate person(s) with authority.

Directories, identified existing protocols.

Step 6 - Relevant Indigenous community and agency representatives meet

Multiple engagement activities in various forms. To be ongoing.

Agency undergo cultural induction (if relevant).

Communicate and discuss outcomes from the pre-engagement steps and actions (1-4). To co-determine:

- shared goal(s) and purpose for the engagement along with a set of priorities, and desired outcomes.
- A set of engagement protocols - either existing or co-develop – outlining how engagement will continue.

Continue education (two-way) and building of knowledge and awareness.

Identify additional extension and educational materials to be developed.

Further develop support from agency - together

Step 7 – Co-develop Documents

Co-develop Engagement Plan

- Goals, purpose, priorities, outcomes for the engagement and how these will be achieved.
- Engagement Protocols.

Co-develop education and extension materials.

Step 8 – Form a Partnership

Establish Terms of Reference, whether formal or informal may depend on the nature of the relationship and the data outcomes being sought. Many agencies (community and management) will have guides for relationships, or there will be a variety of resources available within the jurisdiction. Thus, an important element of this step will be to investigate guides for building relationships and developing partnerships with Indigenous communities.

Outcomes

Trust and lasting relationships are built

A shared goal(s) is identified for engagement associated with shared responsibility and accountability.

Further increase in knowledge and awareness of each other's systems, issues, needs, objectives etc.

Strong relationships are formed which opens up the possibility of innumerable outcomes.

Appropriate engagement, relationship building, and creation of a partnership enables the process to progress to co-developing the Indigenous fishing data collection process (Supplement 3).

Supplement 3: Co-development of a data collection and sharing methodology

While the focus of workshop discussions was on establishing a process for the critical foundational components of relationship building, partnership and engagement, the steps involved in progressing (once the process in supplement 2 is implemented) to co-developing the data collection methodology were identified. This supplement is a guide to these.

Melissa Nursey-Bray (University of Adelaide) presented at Workshop 1 on data, Traditional Ecological Knowledge (TEK), and Cultural and Intellectual Property (CP and IP). This presentation is included in the Workshop 1 Outcomes Report. Through Melissa's presentation and the subsequent discussion, it was emphasised that TEK is not the same as data. While data are quantitative and tend to be collected through western science approaches, TEK is qualitative. TEK is a fundamental component of Indigenous culture, has been gathered and transferred from generation to generation for thousands of years.

There is recognition of the valuable role that TEK can play in the contemporary management of natural resources and in fisheries management. It can provide long-term baselines for stock assessments, local knowledge of species' ecology and behaviour, habitat conditions and trends, plus customary management systems (Butler et al. 2012 -https://www.ecologyandsociety.org/vol17/iss4/art34/). Some examples where both western science and TEK have been used leading to enhanced outcomes include projects led by the U.S. Fish and Wildlife Service to get the polar bear (*Ursus maritimus*) listed as a threatened species under the Endangered Species Act (1973) and for research and monitoring fish populations under the Federal Subsistence Management Program. In these examples, the use of TEK contributes to local capacity building by utilising a framework of community involvement in research (https://www.fws.gov/nativeamerican/pdf/tek-fact-sheet.pdf). The Strategic Integrated Marine Science for the Kimberley Region project provides an example of the complementary use of Traditional Owner knowledge and western science and a partnership approach for better joint management (https://www.wamsi.org.au/sites/wamsi.org.au/files/files/WAM0337-WAMSI-KMRPS-Layout-V6b%20Digital_150.pdf).

Melissa Nursey- Bray established that, when bridging western science and TEK, it is important to identify and ensure buffers / insurances are in place against inappropriate use and exploitation. She identified that there are laws and regimes that pertain to Intellectual Property (IP) but these don't adequately cater for TEK. However, there are existing avenues for collaboration on data collection that have potential to protect Indigenous Cultural Property (CP) and TEK such as Indigenous Land Use Agreements (ILUAs), Indigenous Protected Areas (IPA), Sea and Saltwater Caring for Country Planning (working on Country) and co-management (see Appendix 7 for more information). The co-development of a formal Agreement that includes CP and IP arrangements is included in the steps for co-developing a data collection methodology (Table 2) as well as in the overarching diagram for the framework (Figure 3).

During this project, and highlighted in supplement 4, it was identified that some communities (including those represented at Workshop 2) would not, at this stage, be willing to share cultural values and TEK with agencies. However, it is hoped that through the implementation of the engagement process (supplement 2) trust will be built and the data collection methodologies co-developed will include bridging of TEK and data (in an ethical manner) for enhanced contemporary co-management of fisheries and outcomes of benefit to community. As such, Table 2 includes elements of the collection and sharing of TEK. However, this is on the proviso that community choose to collect and share their knowledge and that the appropriate arrangements are put in place to protect their rights.

Table 2. Components of the process for co-developing an Indigenous fishing data methodology.

Steps / Stages	Elements
Co-develop and clearly define objectives and outcomes.	- Align with Indigenous community aspirations, goals and values as well as Commonwealth and state priorities. - Must incorporate benefits to community and agency.
Co-develop the data collection method.	- What data / information (qualitative and quantitative) are needed to meet the defined objectives and outcomes? - What TEK is each community willing to collect, and what TEK are they willing to share? - What TEK (if relevant) and who are the knowledge holders? - What species to include? - Recognition of differing community and gender needs and activities when considering data to be collected. - How will the data be collected (survey form, electronic method, participatory etc.)? - How do you collect and measure TEK? - How will TEK and western science data be bridged? - How often will data and information be collected? See the data types and resolution in supplement 4.
Co-develop how the data collection method will be implemented and how the data will be managed.	- What does implementation and data management involve? - What skills are required and subsequently what capacity building is required? - What tools and resources are needed? - Timeframes. - Determine roles and responsibilities. Rangers are an excellent resource for data collection. A map of ranger coverage around Australia (would need to be developed) would be an excellent resource. Data collection implementation and management should include two-way learning, with tools and skills left in the community.
Co-develop a process for data management and sharing.	- Identify how the data and information will be managed. - Identify what data will be shared. - If being shared, what TEK will be shared and how can the knowledge be used (parameters)? - How will CP and ownership of the TEK be managed and protected? - Developing protocols and a strategy for sharing of the data. - Develop a mode for sharing of the data, e.g. a portal. Data sharing must be two-way, with agency also providing community with data of use to them.

Steps / Stages	Elements
Co-develop a process for data and information use.	- Identify how the data and information will be used, ensuring a co-management approach. - Identify roles and responsibilities ensuring that both TOs and agencies are involved in the discussions and decision-making.
Co-develop an extension and communication strategy for communicating: - Project intent (objectives and outcomes) - Data collection, management and sharing - Results / use of data - Monitoring and evaluation of the data collection process For communication between agency and community, as well as for feeding information back to the broader community and agency.	- Identify what information for what purpose. - Identify suitable extension materials and format. - Identify the resources required and how to get them. - Determine roles and Responsibilities. - Develop communication aids / extension materials. Translate extension materials for language groups. Consideration to be given to communication and presentation of information so that it is comprehensible.
Co-develop a Management and Evaluation Plan for the data collection approach and outcomes.	- Identify indicators, to enable review of the process and make changes / improvements as needed
Co-development of a formal Agreement that incorporates all of the above steps. If there is an existing research agreement template that is suitable, use that. If not, co-develop a template. Examples of existing research Agreements are included in Appendix 7.	While Agreements are likely to be community and situation specific, some common inclusions in a formal Agreement are: - A set of agreed outcomes - Clear and agreed mutual expectations - Roles and responsibilities of each partner - Engagement principles and protocols for engagement - Operational arrangements - Indicators of Success - Monitoring and Evaluation (M&E) process for assessing the methodology and process - Survey methodology - Cultural and Intellectual property IP arrangements It is important that community have control over what happens to their data. Ensure that any data collected cannot be used incorrectly and disadvantage Indigenous communities and Country. The formal Agreement is to be signed prior to conducting data collection.

Supplement 4: Defining the type of data (and resolution) to be collected and an approach to collecting and sharing the data.

The proposed approach is aimed at addressing the needs of both Indigenous communities and fisheries management agencies (as expressed by Workshop 2 participants). For communities, it enables multi-purpose data collection, a choice in what data and information they share and representation in management discussions and decisions. For agencies, it enables access to the data and management information determined by them as 'critical' for performing their roles.

The approach acknowledges and recognises the broader context in which fishing forms part of Indigenous connection to Country and spans social objectives, cultural values and aspirations. It also recognises that fishery data are distinct from Indigenous Knowledge. It enables flexibility in the data collected and shared by community, but acknowledging the critical data determined by agencies.

Data

The approach includes two Tiers. Tier 1 data - includes the collection of all community data. These data while including the fishing data required by agency and communities, are much broader and are collected to meet multiple objectives around environmental, social and economic outcomes for the community. In terms of fishing it can also include a wealth of information (broader than catch and effort for example) such as the diverse ways people fish (and gendered fishing), use of fish (contribution), and cultural and social benefits associated with fishing.

Tier 2 data - includes the community data agency has access to. The parameters are to be established during the co-development process (step 2 of the process in Figure 3) and included within the formal Agreement and should at a minimum include the critical participation and catch and effort data defined by agency (see Table 4). Any data and information shared with agency in addition to the critical data (such as cultural information / Indigenous Knowledge) are to be discussed during the co-development of the methodology and ultimately decided by (and be the choice of) each community. Data management by communities for culturally sensitive information will be different to situations for data that are not culturally sensitive, and some communities may choose not to share cultural information with agencies. This should be accepted and honoured by agencies.

In instances where communities choose to inform agency of species of cultural significance (and share associated data with agency), the local names as well as the scientific names of the species should be used on any data collection mediums, reports and/or extension materials developed.

Sharing approach

Data sharing is to be two-way, with agencies also providing data and / or information to communities. What data or information is to be provided is to be discussed and determined during the co-development of the methodology.

Additional information, particularly around management issues (for example on species of cultural significance), will be provided to agencies in a report to be presented by a TO (or TOs) in person. The TOs are to be included in any subsequent management discussions and decisions.

The frequency of data collection and sharing will be specific to the approach co-developed by community and agency and will be via established terms in the formal Agreement.

Types (metadata) and resolution of Indigenous fishing data

Recognising that the data collected by communities and the data communities choose to share with agencies are community and situation specific, the project identified, in terms of Indigenous fishing data, the types (metadata) and resolution (scale) of the 'critical' Indigenous fishing data needed by agencies, as well as the fishing data (metadata and resolution) of particular use to community. These data are proposed as a starting point to be further developed post this project.

Fishing data (metadata and resolution) of particular use to community

Indigenous community representatives identified:

- What data are collected would be determined by identifying the needs of particular communities. This includes knowing external issues such as social issues so these can be built into strategic plans.
- Their primary purpose for collecting Indigenous fishing data would be to enable them to self-manage their resources.

In terms of fishing data, Table 3 summarises, from an Indigenous community perspective, what fishing data and information would be useful for community to collect.

Table 3. Fishing data and information identified as useful for community to collect and use.

Data / information	Resolutions	Purpose
Purpose for fishing	Community to define 'why fishing'	To assess whether the purpose for fishing was achieved.
Catch	Species (limit, intended number, actual). Size doesn't matter Release (bycatch), including how and why it is released	Knowing what is in your water (and when – linked to TEK below)
Effort	Method, including gear (rod, net etc.) and mode (vessel or shore etc.) How many people (individual, family, community etc.) Offshore / On-shore / estuarine (all environments) Number of times	
Time	Time / Date / Season / Tides	
Location	Locations / Areas	
Participation	Who is involved / how many people (family, individual) Age of fishers, and where that feed is going (document age of consumer) Regularity of fishing	
Weather		
Seasonal Knowledge and TEK sharing	Why were you fishing / why do you want to fish? Where did that feed go? E.g. community feed, trade Triggers from seasonal species, as well as other triggers – social etc. Story lines (TEK)	To identify benefits For TOs to protect resources, their management purposes To be able to share TEK in the community

Critical data needs of agency

Having access to Indigenous fishing data is to enable fisheries managers to implement a more holistic approach that considers Indigenous resource use and needs when making management decisions. Through the engagement and relationship building process (supplement 2) agency will have a better understanding of community needs (cultural, social and economic).

The types of data agencies need is largely driven by existing legislative requirements and decision-making processes (for example, in SA the *Fisheries Management Act 2007* objectives drive policies and management within government). Table 4 includes the types of data (and resolution) defined as 'critical' to fulfil fisheries management roles. The Indigenous community representatives indicated that they thought communities would be willing to collect and provide these data.

Table 4. Indigenous fishing data requirements identified as critical by agency representatives.

Data	Resolution (Scale)
Catch	For key species with competing pressures: - Species - Number
	For species without competing pressures: - Species could be grouped, however this depends on the species (for example if they are species of conservation significance) - Number
Effort and participation	- Hours spent fishing - Number of people fishing - Gear – what used and how many – per hour
Location	Management area - area of water (Freshwater or Sea Country) relevant to that community. Recognising that some areas are culturally sensitive/important areas (and this information may not be included in the days catch and effort).
Date / Time	Date
For cultural events	- Broad purpose – for example 'ceremony' - Number of people fed
Management information / triggers	Are there any issues with access to a resource? Are you getting what you need to feed your family or community? Where you able to get enough for your event (what were you targeting and what did you get)? Are any other management issues being triggered?

Data collection methods and tools

There are numerous methods (e.g. survey, participatory fisheries monitoring) and tools (e.g. hard copy forms, electronic collection through a software application (App)) that are suitable for collecting data and information. A number of methods were discussed at Workshop 2, but there was a particular focus on collecting data electronically via smart devices (phones, tablets etc.), with emphasis on young people within the community upskilling the Elders and senior members with the use of technology. Examples are included in Appendices 7, 8 and 10. There are many more examples than what is presented, and the examples included are intended to highlight the diversity of approaches.

The method of data collection and the tools used to capture the data are likely to differ between communities. The method and tool(s) should not be too time consuming or unnecessarily complicated, whilst ensuring it meets the purpose of the project.

Supplement 5: Extension materials

Extension can be defined as "working with people in a community to facilitate change in an environment that has social, economic and technical complexity. This is achieved by helping people gain knowledge and confidence so they want to change, and providing support to ensure it is implemented effectively".[9]

Extension of information is a key element throughout the process identified in the framework, such as communicating the opportunities (and reasons) for communities to be involved in data collection and the communication of outcomes from the data (back to the communities, within agencies, between communities etc.).

This supplement provides some basic information on appropriate forms of extension materials and approaches for extension with Indigenous communities, as well as some other considerations.

The use of multiple forms for extension materials is the best approach. This includes:

- Face to face engagement such as community meetings and one-on-one or group conversations. Meetings should take place on Country (very important). This visual communication assists in building relationships and trust.
- Visually engaging materials should be used, such as:
    - Short videos
    - Presentations – not graphs (or less graphs)
    - Social media
    - Photos and stories – add cultural content and themes to current extension materials
    - Website
    - Photos
    - Documents: one page profiles, posters, GIS mapping or other forms of spatial representation are best. Where possible, local language should be used.
- On-line or telephone conversation can be an effective approach if undertaken by a person known to the community.

Considerations when developing extension materials and activities include:

- Different processes are required for different scales of information. Similarly, the same approach won't be appropriate for all communities, for example, what works well in small communities may not in bigger communities.
- Need to allow sufficient time for communities to digest the information being presented, to discuss it and make decisions.
- Information will be better received if it is developed and delivered in a collaborative approach. For example, involve the community by getting the community children to develop posters.

[9] Australasia-Pacific Extension Network (APEN) 2017.

- Talk, present, explain things and communicate in a way that Indigenous communities can understand. For example, break information down into culturally relevant examples. These relatable examples can then be used to explain less relatable examples.

- The use of distinctive design or branding (for example an Aboriginal design / appropriate species) can make extension materials more culturally inclusive, demonstrating recognition, and generate increased interest in the materials.

- Remote areas are often forgotten, and the information doesn't reach them. Ensure they are included within your extension plan.

Available resourcing does not always allow for the best and most appropriate approach for engagement and extension. In these cases, the prior development of relationships and trust (as per the proposed process within the framework), will ensure that engagement and extension protocols and activities can be developed in partnership.

Indigenous facilitators could be of benefit in the extension of information between agencies and Indigenous communities. Facilitators can guide conversations and assist in combating consultation fatigue in Indigenous representatives. Examples include:

- NINTI One[10] based in Alice Springs has developed good protocols with Indigenous facilitators, and

- Aboriginal Research Practitioner Network.

[10] https://www.nintione.com.au/ provides a connection to existing Aboriginal and Torres Strait networks

Scale of the framework

The process and approach presented in the framework is largely at the local scale. A potential avenue for upscaling this approach to the jurisdictional and national level was discussed at Workshop 2. There was emphasis on the process being two-way, not just feeding from the community level up, with the key discussion points being:

- Jurisdictional Aboriginal Fishing Advisory Committees could provide the conduit between local, jurisdictional and national progression and implementation of the framework. The WA Aboriginal Fishing Advisory Committee (currently being formed) has representation from 10 TOs across WA. It ensures TOs have early input into matters and acts as a conduit back down to the community level. It provides a cohesive united group to be a contact point, share knowledge, and bring together collected data. If a similar committee was formed within each jurisdiction, then a jurisdictional scale approach could be achieved in each State and Territory. Some potential avenues for this were highlighted for other jurisdictions including:
    - NSW has an Aboriginal Fishing Advisory Ministerial Council, aimed at providing strategic level advice to the Minister for Primary Industries on issues affecting Aboriginal fishing in NSW.
    - Tasmania's Indigenous Fishing Policy proposes that an Indigenous Fisheries Advisory Committee be formed.
- To enable a process incorporating local, jurisdictional and national scale, there would need to be a national body (e.g. a National Aboriginal Fisheries Advisory Committee) that these jurisdictional committees could feed into (for example the chair of each jurisdictional committee working at the national level) as well as feed information back down to communities.
- The Australian Fisheries Management Forum (AFMF) is potentially a good starting point for approaching this national scale concept. The FRDC IRG also suggested the formation of a national steering committee to guide progression of the project outcomes and data collection into the future (included in the recommendations section).

Discussion and Conclusion

Input from all participants at both national workshops was respectful, constructive and of great use to the project. Input reflected the passion and enthusiasm for increased Aboriginal and Torres Strait Islander participation and meaningful engagement in the fishing sector (industry, fisheries management). It was acknowledged by all workshop participants that there is a significant knowledge and information gap that exists across the Nation with regards to Aboriginal and Torres Strait Islander aquatic resource use and recognition of better ways of doing things. There was a genuine desire to make something happen that benefits both communities and agency and improves fisheries resource management through a co-management approach.

This constructive and respectful manner in which the participants approached the workshops enabled the project team and workshop participants to go on a journey of exploration of needs (data and other), aspirations, issues and barriers, concerns and opportunities from all perspectives. Of particular importance was working together, identifying and re-adjusting (from original scope) where this project needed to start from and what it needed to investigate in order to achieve meaningful outcomes that provide opportunities for co-development and implementation of data collection and sharing methodologies into the future. Through this journey, participant perspective ensured the project evolved from a commencement point of contrasting views on data collection and sharing, a level of mistrust in sharing data and uncertainty around the intent and value of the project, through to a 'we' mind-set, a genuine belief in the value of the project and commitment to the project (during delivery and into the future). This enabled the achievement of the outcomes and the establishment of a path forward.

The framework and overarching principles should enable communities and agencies to engage appropriately and effectively[11], have greater understanding of each other's needs and build trust. The project provides useful tools and information for co-developing a data collection and sharing methodology and approach. The recognition of the importance of data as a tool to provide benefits for both communities and agencies, achieved by this project, underpins all of this.

The outcomes of the project provide impetus and the framework provides guidance for Indigenous community representatives to garner support from their communities. Similarly, for agency representatives to discuss the framework internally to garner broader agency support to implement the process.

The project has generated a network of Indigenous community and agency representatives as well as researchers across Australia who have a shared understanding of the intent of the project and are vested in achieving the objectives of the project. The engagement and relationship building has begun, and participants have expressed the desire to keep the momentum of the project moving and for the outcomes to be progressed.

While the framework and supplements currently focus at a local level, a potential approach for generating a two-way process between local, jurisdictional and national levels was determined along with recommendations on garnering advocacy at a national level to enable this to happen.

While the project objectives remained foremost in the project delivery, the project path was influenced by the journey and the outcomes of the workshops, as to be expected. As a result,

[11] Noting that formal engagement procedures may be in place already (for example in cases involving Native Title Determinations and or ILUA's) and should be a consideration in any engagement activities.

additional steps are required to fully develop the framework to meet the objectives. For example, the framework requires further development to progress the data collection methodology (identify appropriate methodologies based on best practice) and to provide a pathway(s) to use the data to inform decision-making to meet the needs of Indigenous communities to ensure culturally appropriate management that protects Indigenous fishing rights. Opportunities for progression are outlined in the recommendations section of this report.

Other limitations of the project and framework include:

- The limited representation by Indigenous representatives from around Australia at the workshops meaning the results in this report may not represent the view of Indigenous communities more broadly.
- The framework does not incorporate a process for data management and centralisation.
- There remains a lack of clarity around how the framework can incorporate Indigenous Traditional, recreational and commercial fishing and whether all are relevant.
- There is a lack of clarity on how Indigenous Knowledge can be incorporated or considered in management decisions where it remains restricted IP.

There are significant challenges if implementation of the process within the framework is to be feasible. Of particular note are two of the identified success factors of the framework:

- That established community governance structures are in place. While these are well established in some communities (for example Registered Native Title Bodies or Prescribed Body Corporates), in other communities they are not.
- Resourcing - all components of the process need to be adequately resourced. This will require considerable resources and support.

In conclusion, there was the consensus that a partnership approach to research and management and the sharing of data and information can result in better fisheries and ecological management through a co-management model. It is important to recognise the process as an 'organic' approach to building long-term respectful and trusting relationships, partnerships and bridges between knowledge systems.

Project outcomes represent a positive starting point and platform that along with the recommendations in the next section provides a clear path forward.

Given the dedication to the process extending past the lifetime of the project, including the commitment by participants to lead change and work together to expand the reach of the project outcomes, there is a great opportunity to begin to implement / pilot the engagement and relationship building process in the framework and continue to progress the framework.

The objectives of the project aligned with all five IRG RD&E priorities (included in Appendix 1) where primacy of past occupation of the land and sea is recognised, self-determination is further supported and acknowledged, traditional cultural practices are protected and taught and capacity building and economic opportunities are further developed.

By collecting information and data on customary fishing and participation levels, it ensures that not only are the decisions made within fisheries management evidence-based, but fosters co-managed decision making. This in turn provides opportunities for capacity building, transferability of skills and knowledge and ultimately provides a platform for community to assist the Government to manage

their Country. This provides recognition, protection of rights and strengthens cultural identity which may empower community.

The project outcomes align with and reinforce the eleven IRG Principles (Appendix 1). On a broader level, they strongly reflect the longstanding issues of lack of recognition, participation and understanding of customary rights and practices at a Nation Level. These outcomes are in line with the National Agreement on Closing the Gap report (July 2020), where information and data sharing and access has been highlighted as a key area for reform.

Lessons Learned

There have been many lessons learned by the project team in implementing this project. Some of the key ones are:

- Community consultation and engagement requires and deserves appropriate investment, which takes a long time. In delivering this project the pre-workshop engagement was not sufficient and did not meet the community or project needs. For successful relationships to be built, extended time is needed for community to get together, consult and discuss. Workshop 1 largely provided this opportunity, which was invaluable and greatly benefited the project, but also highlighted that the objectives of the project would be unlikely to be fully realised.

- Through the open sharing of experiences, stories and views at the workshops by the Aboriginal, Torres Strait and community representatives, the project team and participants were educated in the importance of trust between parties, building lasting relationships and the need to consider Traditional and Ecological Knowledge alongside fisheries science.

- The uniqueness of communities – one approach / process / methodology will not fit all. Co-development of a data collection process / methodology is crucial.

- A risk to any project is when agency/researchers are not adequately equipped or do not have the skills/knowledge to interact appropriately with communities.

- Expectations need to be achievable. Unachievable expectations are detrimental to all parties especially the community and destroy trust.

- The project would have benefited from a more detailed literature review / desktop study as a first step.

- The following worked well:

    - Regular progress bulletins for providing project participants with an update on project progress.

    - At the workshops - small group discussions followed by whole of workshop discussions.

- Feedback on Workshop Outcomes Reports and other project documents was limited. It would be worth investigating why this was and how it might be improved in future projects.

Implications

The guide to engagement and relationship building process outlined in the framework should influence the way in which relationships are developed between communities and agency. If followed, the process should result in the development of trusting relationships and partnerships that will enable co-development of case or region-specific data collection approaches.

The use of the lessons and approaches derived through this framework should better support Indigenous communities to be clear on outcomes being sought through data sharing and participating in co-management, and the opportunity more generally for Aboriginal and Torres Strait Islander communities to identify their needs and how they want to champion and organise nationally to progress Traditional fishing opportunities.

There is a real opportunity to a) start implementing the engagement and relationship building process and b) continue to progress the outcomes of this project and the framework. Ongoing progression will require leadership from Indigenous community representatives, agencies and organisations / groups including the FRDC to take ownership and drive the process together. This includes seeking priority and advocacy at a national level.

The potential implications for community through collecting and having access to data relevant to their community (should appropriate data collection methods be developed and implemented) are numerous such as improved self-management of Sea or River Country or the availability of evidence based information to underpin consultation with fisheries management agencies (see Supplement 1).

Recommendations

The recommendations to ensure the progression of the outcomes of this project are summarised in Table 5. It is proposed that for most recommendations, agency will take a lead responsibility role, with support from community, with the intent to build capacity within communities.

Table 5. Recommendations / next steps for the project.

Recommendation	Purpose or Considerations	Actions	Responsibility
Advocacy at a National Level and the ability to create a local-jurisdictional-national two-way approach			
Australian Fisheries Management Forum (AFMF) takes ownership.	To ensure priority at a national level and that a national scale can be achieved. Acknowledgement of project outcomes and endorsement of principles and recommendations within this report. Advocacy for a two-way (not just from community up) process.	Determine the outline of and develop a proposal to go to AFMF Present proposal to AFMF	FRDC with input from the project team and agencies FRDC
Establish a national steering committee incorporating agencies and Indigenous community representatives from all jurisdictions	To guide progression of project outcomes. To guide data collection and its associated management into the future. Identify best approach for a local-jurisdictional-national approach (see Scale of framework section).	Include in proposal to AFMF Establish committee Workshop participants continue to connect with each other and within their respective agencies and communities.	FRDC AFMF Agencies lead with support of communities. IRG to facilitate where possible.
Develop the project outcomes into a series of useable tools			
Make available a suite of tools from the project outcomes. Appropriate for different audiences including agency and community	Develop framework and selection of the supplements into products that are easily extended to Indigenous communities, or utilised within agency.	Identify and prioritise tools to be developed Assess and monitor the standard research protocols being developed in WA for suitability as a standard for the framework. As well as other existing protocols[12]. Invest in the development of prioritised tools.	Agencies with support from Communities

[12] For example related to the LMP project (NSW) https://www.dpi.nsw.gov.au/data/assets/pdf_file/0004/820336/engagement-protocol-development-of-aboriginal-cultural-fishing-trial-lmp.pdf

Recommendation	Purpose or Considerations	Actions	Responsibility
Implement / test and refine the framework			
Obtain input from a broader national range of Indigenous communities	To ensure the framework and project outcomes are broadly accepted from a community perspective.		Agencies with support from Communities
Indigenous community and agency representatives who participated in the workshops test the engagement and relationship building process (supplement 2) in the framework.	Determine what works and doesn't for their particular situation. Suggest refinements to the framework. Begin or continue strengthening relationships.		Agencies with support from Communities
Identify a (or a number of) community/region/fishery within which this framework could be implemented as a pilot and evaluated.	To test and refine the framework.	Identify opportunities (including funding sources) for Pilot Studies. Develop and implement a Pilot study, underpinned by a strong evaluation framework to continue to refine the approach/ framework.	AFMF to lead. Agencies with support of communities and organisations.
Progress the outcomes of this project and the framework			
Identification and support of progression of this project as a priority area for investment.	To ensure there is the opportunity to progress the outcomes through next stage research and development. Also identified at the national level above in Table.	Incorporate the recommendations /next steps into future priorities program. Identify and support opportunities.	FRDC Agencies, RACs
Present project findings and opportunities at international conferences and other forums.	Consider opportunities where there is a high level of Indigenous participation (e.g. AIATSIS or AMSA conferences).	Identify opportunities and work collaboratively to build two way capacity.	Agency and communities.
Recommendations to support and improve the capture of Aboriginal fisheries data – possible tools for the framework			
Develop a research/report library or on-line portal.	To facilitate the sharing and accessibility of information across Australia. Ensure no duplication of existing systems.		

Recommendation	Purpose or Considerations	Actions	Responsibility
Develop a live map of current research	Ensure no duplication of existing systems.	Look at current model being used by Traditional Owners in Esperance, WA	
Update EOI template to include prompts that ensure the right engagement process is followed (e.g. a field re engagement of TO's)	Consider NESP approach.		FRDC
Align any future projects with other work going on around the Country		Build relationships and identify opportunities to work with researchers outside fisheries portfolios	Agencies with support from Communities

Further development

As per recommendations above.

Extension and Adoption

A project fact sheet was developed to use in pre-workshop engagement, to promote the project and garner support for and participation in the project.

A series of progress bulletins were developed to inform project participants (primarily the steering committee and FRDC) of the progress of the project.

A project summary report is being developed with the FRDC IRG. Once available, this can be used by project participants (and others) to promote the outcomes of the project.

Project outcomes were summarised and submitted for inclusion in the 2019/10 annual reporting for the PIRSA Reconciliation Action Plan.

Project outcomes will be communicated to the Australian Fisheries Management Forum (AFMF) in 2020 to ensure communication occurs with other agencies and sectors at the national level.

Linkages need to be made to support priority case studies by leveraging collaborations and funds through the National Environmental Science Program Marine 2 Hub in the third quarter of 2020.

A key recommendation (as stated previously) is to develop the outcomes of the project including the framework into a series of useable tools with branding. A variety of tools appropriate for different audiences including agency and community.

Project coverage

Not Applicable.

Project materials developed

In additional to this final report, the project developed the following documents:

- Project fact sheet – outlining the project stages, team and purpose.
- Workshop 1 Outcomes Report
- Workshop 1 Summary Report
- Workshop 2 Outcomes Report
- Project Summary being developed with the FRDC IRG

Copies of each document have been submitted to the FRDC with this final report.

Appendices

Appendix 1 IRG overarching RD&E priorities and principles

The five IRG Overarching RD&E priorities are:

1. Primacy for Indigenous People;
2. Acknowledgement of Indigenous Cultural Practices;
3. Self-determination of Indigenous rights to use and manage cultural assets and resources;
4. Economic development opportunities arising from Indigenous Peoples cultural assets and associated rights; and
5. Capacity building opportunities for Indigenous people are enhanced.

The IRG key research development and extension (RD&E) Principles identify that RD&E **should seek to:**

Principle 1: Enhance Aboriginal and Torres Strait Islander Recognition

Principle 2: Resolves Issues around Access

Principle 3: Improves Governance and Provide Pathways to Better Representation and Management Models

Principle 4: Provide Resourcing Options in a User Friendly & Culturally Appropriate Manner to Encourage Greater Aboriginal and Torres Strait Islander Involvement

Principle 5: Leads to Improved Capacity That Empowers Aboriginal and Torres Strait Islanders

Principle 6: Leads to Agencies Developing Capacity to Recognise and Utilise Aboriginal and Torres Strait Islander Expertise, Processes and Knowledge

Principle 7: Leads to Recognition of Customary Rights and Knowledge, Including Processes to Incorporate Aboriginal and Torres Strait Islander Traditional Fishing Knowledge (TFK) and Traditional Fisheries Management (TFM)

Principle 8: Improves Knowledge and Awareness of Impacts on the Environment and Traditional Harvest

Principle 9: Provide management arrangements that lead to improved access, protection and incorporation of Traditional Fishing Knowledge (TFK) and Traditional Fisheries Management (TFM) input to processes

Principle 10: Leads to an Increased Value for Aboriginal and Torres Strait Islanders (Economic, Social, Cultural, Trade, Health, Environmental)

Principle 11: Leads To Benefit Sharing

Appendix 2 Project team

PIRSA team members		
Project Team Member	**Role and division within PIRSA**	**Role in Project**
Daniel Casement	Executive Director, Rural Solutions	Principal Investigator
Clare Moyle	Environmental Consultant, Rural Solutions	Project Manager, Co-investigator
Shane Holland	Manager Aboriginal Traditional Fishing, Fisheries and Aquaculture	Co-investigator, until May 2019
Delahay Miller	Manager Aboriginal Traditional Fishing, Fisheries and Aquaculture	Co-investigator, from August 2019
Paul Rogers	Research Scientist (Migratory and Iconic Species), South Australian Research and Development Institute (SARDI) Aquatic Sciences	Co-investigator
Annabel Jones	Program Leader, Commercial Fishing, Fisheries and Aquaculture	Co-investigator and Agency Representative
Jordan Tonkin	Grants Officer, Administrative Support, Rural Solutions	Administrative support, professional development (capacity building)
Other Team Members		
Project Team Member	**Organisation**	**Role in Project**
Garry Goldsmith	Narungga Nation Aboriginal Corporation	Workshop facilitator
Ian Knuckey	Fishwell Consulting	Workshop facilitator
Sarah-Lena Reinhold	University of Adelaide	Workshop partner – group facilitator, input into workshop outcomes report.
Melissa Nursey-Bray	University of Adelaide	Workshop partner. Presented at Workshop 1.

Appendix 3 Workshop 1 agenda

Improving data on Aboriginal and Torres Strait Islanders fisheries resource use to inform decision-making (FRDC project 2018-016)

Workshop 1

5 - 6 June 2019, Glenelg Surf Life Saving Club, Glenelg, SA
Facilitator: Ian Knuckey

Desired Outcomes:

By the end of the two-day workshop, participants and the project team will have:

- Collective and shared understanding of the intent and anticipated outcomes of both the project and workshop.
- Collective and shared understanding of the priority data/information needs and uses, for both agencies and Indigenous communities. Both within their jurisdiction and more broadly (nationally).
- Understanding on the importance of Traditional Ecological Knowledge (TEK) and Cultural Intellectual Property (IP) ownership and how they are best managed.
- Understanding of the concerns and opportunities for data sharing and how any conflicts or issues may be addressed.
- Understanding around who is responsible for data management and what data management may involve.
- Understanding of what data collection is currently occurring, any barriers that may impact future data collection and possible solutions.
- Understanding of preferred approaches and materials for extension activities.

Session Agenda – Day 1

9-9.15 am	Arrival and Registration
9.30 am	Kaurna Welcome to Country
10.15 am	***Morning tea***
10.30 am	Introduction, context and purpose. How Day 1 of the workshop will run
11.10 am	Introductions and participants expectation
11.30 am	Session 1: Traditional Ecological Knowledge and Cultural IP Presenter - Associate Professor Melissa Nursey-Bray (University of Adelaide)
1 pm	***Lunch***
1.35 pm	Session 2: Priority data needs and uses (from both an agency and Indigenous community perspective)
3 pm	***Afternoon tea***
3.15 pm	Session 3: Concerns, opportunities and challenges of data provision / sharing
4.45 pm	Day 1 wrap up
5.30 pm	Workshop close
6-6.30 pm	***Optional Dinner (Watermark Hotel, North Glenelg)***

Session Agenda – Day 2

8.15 am	Arrival
8.30 am	Welcome, day 1 recap
	How Day 2 of the workshop will run
8.50 am	Session 4: Data collection and management
10.30 am	***Morning tea***
10.45 am	Session 4: Data collection and management continued
11.50 am	Session 5: Extension materials
12.50pm	***Lunch***
1.30 pm	Day 2 wrap up. Agreeance on key outcomes. Workshop evaluation
3.00pm	Workshop close
	Afternoon tea provided

Appendix 4 Workshop 1 participant list

Participants		
South Australia	Klynton Wanganeen	Narungga Nation
	Timmy Murragilli	Yalata Land Management
	Jeremy Edwards	Yalata Land Management
	Annabel Jones	Department of Primary Industries and Regions, SA
Northern Territory	Kane Dysart	Department of Primary Industry and Resources
	Matthew Osborne	Department of Primary Industry and Resources
Queensland	James Webley	Department of Agriculture and Fisheries
	Michelle Winning	Department of Agriculture and Fisheries
	Tobias Probst	Department of Agriculture and Fisheries
	Jory Stariwat	Carpentaria Land Council AC
	Joyce Wallis	Girringun Aboriginal Corporation
	Whitney Rassip	Girringun Aboriginal Corporation, IPA Coordinator
	Teleya Wallis	Girringun Aboriginal Corporation, TUMRA Support Officer
	Darren Burns	Quandamooka Yoolooburrabee Aboriginal Corporation
New South Wales	Carl Bevilacqua	Department of Primary Industries
	Joe Flick	Aboriginal Fishing Advisory Council, (AFAC) Region 2 Rep North West NSW
Victoria	Mike Gilby	Victorian Fisheries Authority
Tasmania	Rod Pearn	Department of Primary Industries, Parks, Water and Environment
	Emma Lee	University of Tasmania, Swinburne University of Technology
Western Australia	Michael Travers	Department of Primary Industries and Regional Development
	Dean Matthews	Nyamba Buru Yawuru
	Daniel Oades	Kimberley Land Council
	Doc Reynolds	Kepa Kurl Enterprises
	Benjamin Bellottie	Malgana Aboriginal Corporation
	David (Wardong) Collard	Consultant
Commonwealth	Steve Bolton	Australian Fisheries Management Authority
	Nancy Pedersen	Department of Agriculture and Water Resources
	Julian Morison	EconSearch
FRDC	Emily Ogier	Fisheries Research and Development Corporation, HDR
	Shane Holland	Indigenous Reference Group
	Traceylee Forester	Indigenous Reference Group
	Josh Fielding	Fisheries Research and Development Corporation
	Natasha Stacey	Charles Darwin University
Attendees with other roles such as presenter, project team, observer		
	Ian Knuckey	Facilitator
	Melissa Nursey-Bray	Adelaide University
	Sarah-Lena Reinhold	University of Adelaide
	Clare Moyle	Department of Primary Industries and Regions, SA
	Dan Casement	Department of Primary Industries and Regions, SA
	Paul Rogers	Department of Primary Industries and Regions, SA
	Jordan Tonkin	Department of Primary Industries and Regions, SA

Appendix 5 Workshop 2 agenda

Improving data on Aboriginal and Torres Strait Islanders fisheries resource use to inform decision-making (FRDC project 2018-016)

Workshop 2

18 - 19 February 2020, The Function, Level 3 the Beachouse, Colley Terrace, Glenelg SA

Facilitators: Ian Knuckey and Garry Goldsmith

DAY 1 – Tuesday 18 February 2020	
Time	**Item**
8:30	REGISTRATION, TEA and COFFEE
9:00	KAURNA WELCOME TO COUNTRY
9:15	INTRODUCTION, BACKGROUND and EXPECTED OUTCOMES
Session 1	**Importance of Indigenous fishing data**
9:45	Introduction to session
	Presentation - The importance of Indigenous fishing data from three perspectives: community, agency and researcher (Delahay Miller, Garry Goldsmith, Paul Rogers, followed by questions)
10:30	**MORNING TEA**
Session 2	**Presentation of Case Studies**
11:00	Introduction to session Explanation of how the case studies will be used for the workshop activity sessions
11:10	Case Study 1: Recreational fishery survey and research of mulloway (*Argyrosomus japonicas*) in the Yalata Indigenous Protected Area and Far West Coast Marine Park (Paul Rogers and Timmy (15mins) followed by Questions (5 mins))
11:35	Case Study 2: Customary fishing of sharks and stingrays on Groote Eylandt (Matthew Osborne (15mins) followed by Questions (5 mins))
12:00	Case Study 3: Title to still be provided – freshwater example (Michael Gilby (15mins) followed by Questions (5 mins))
12:30	**LUNCH**
Session 3	**The steps of a process for co-developing a data collection methodology (Part 1)**
1:15	Workshop Activity – in small groups, with a group facilitator (Clare Moyle, Daniel Casement, Paul Rogers, Delahay Miller) Reporting back to the workshop by each group and workshop discussion Aim: Using the information gained during presentation of the case studies, as well as the groups' knowledge, expertise and experience, discuss and identify the key steps of a process for co-developing a data collection methodology.
3:00	AFTERNOON TEA
3:30	DAY 1 WRAP UP and CLOSE
6:00	DINNER
DAY 2 – Wednesday 19 February 2020	

Time	Item
8:15	TEA AND COFFEE ON ARRIVAL
8:30	INTRODUCTION TO DAY 2
Session 4	**The steps of a process for co-developing a data collection methodology (Part 2)**
8:45	Workshop Activity – in small groups, with a group facilitator (Clare Moyle, Daniel Casement, Paul Rogers, Delahay Miller) Reporting back to the workshop by each group and workshop discussion Aim: Continuing from yesterdays' activity, discuss and identify the key steps of a process for co-developing a data collection methodology.
10:30	**MORNING TEA**
Session 5	**Open session - To be informed by the outcomes of sessions 3 and 4**
11:00	Workshop Activity – in small groups, with a group facilitator (Clare Moyle, Daniel Casement, Paul Rogers, Delahay Miller) Reporting back to the workshop by each group and workshop discussion
12:30	**LUNCH**
1:15	Next Steps Any discussions points or car-parked ideas that need revisiting
2:15	**DAY 2 WRAP UP and WORKSHOP WRAP UP**
3:00	**WORKSHOP CLOSE**, with afternoon tea served

Appendix 6 Workshop 2 participant list

Jurisdiction Representatives			Email address
South Australia	Annabel Jones	Department of Primary Industries and Regions, SA (PIRSA)	Annabel.Jones@sa.gov.au
	Melleessa Boyle	PIRSA	melleessa.boyle@sa.gov.au
Northern Territory	Dominique Michel	Tiwi Land Council	Dominique.Michel@tiwilandcouncil.com
	Clinton Rioli	Tiwi Land Council	clintonrioli27@gmail.com
	Dominic Wundke	Northern Land Council	Dominic@nlc.org.au
	Matthew Osborne	Department of Primary Industry and Resources	Matthew.Osborne@nt.gov.au
Queensland	Joyce Wallis	Girringun Aboriginal Corporation	tumra@girringun.com.au
	Phil Rist	Girringun Aboriginal Corporation	eo@girringun.com.au
	Teleya Wallis	Girringun Aboriginal Corporation	tumrasupport@girringun.com.au
	Jory Stariwat	Carpentaria Land Council AC	jstariwat@clcac.com.au
	Michelle Winning	Department of Agriculture and Fisheries	Michelle.Winning@daf.qld.gov.au
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Appendix 7 Resource links and references

Supplement 2: Existing Resources / tools that can assist with the guide to engagement and relationship building.

Governance structure, agreements, co-management - http://www.qyac.net.au/

A big picture perspective of potential partners for Sea Country science in WA - overview information of Indigenous saltwater groups and western science agendas. Includes snapshots of 30 WA saltwater Native Title holders and claimant groups; eight government agencies; four marine science collaborations; three professional organisations; and four WA universities. Includes information on capacity, existing research and engagement standards and processes. https://www.nespmarine.edu.au/document/promoting-partnerships-sea-country-research-and-monitoring-western-australia-snapshot

Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) -Guidelines for Ethical Research in Australian Indigenous Studies 2012. https://aiatsis.gov.au/research/ethical-research/guidelines-ethical-research-australian-indigenous-studies

Kimberley Saltwater Country Research Protocol - https://www.wamsi.org.au/research-site/indigenous-knowledge

Department of Primary Industries NSW Engagement Protocol: Development of Aboriginal Cultural Fishing trial Local Management Plans.
https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/820336/engagement-protocol-development-of-aboriginal-cultural-fishing-trial-lmp.pdf

NESP Indigenous Engagement Strategy Guidelines, includes protocols.
https://www.nespmarine.edu.au/document/indigenous-engagement-and-participation-strategy

NSW Government Marine Estate Management Strategy (MEMS) 2018-2028, Management Initiative, Protecting the Aboriginal cultural values of the marine estate.
https://www.marine.nsw.gov.au/__data/assets/pdf_file/0007/815596/Marine-Estate-Management-Strategy-2018-2028.pdf
https://closingthegap.niaa.gov.au/

National Native Title Tribunal Fishing Principles to guide indigenous involvement in marine management (2004) http://www.nntt.gov.au/News-and-Publications/latest-news/Pages/Fishing_principles_to_guide_Indigenous_i.aspx

AFMA has been progressing an ethical approach to their work in the Torres Strait
https://www.pzja.gov.au/resources/research

Current extension material in NSW details rules and regulations (recreational Fishing) used for capacity building for engaged communities.

Aboriginal Fishing Advisory Councils including in WA and NSW.

https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing/afac

Partnerships

AIMS (Australian Institute of Marine Science) fish surveys/monitoring
https://www.aims.gov.au/docs/research/biodiversity-ecology/fish/fish.html

FRDC project 2006/068: Co-management: Managing Australia's fisheries through partnership and delegation. http://www.frdc.com.au/project/2006-068

Great Barrier Reef Marine Park Association - The Reef 2050 Integrated Monitoring and Reporting Program. http://www.gbrmpa.gov.au/our-work/reef-strategies/reef-integrated-monitoring-and-reporting-program

RIMReP http://www.gbrmpa.gov.au/media/pdfs/managing-the-reef/rimrep. The Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan); The Reef 2050 Integrated Monitoring and Reporting Program. http://www.gbrmpa.gov.au/our-work/reef-strategies/reef-integrated-monitoring-and-reporting-program

Supplement 3

Integrating Traditional Knowledge and western science

Butler, J. R. A., A. Tawake, T. Skewes, L. Tawake, and V. McGrath. 2012. Integrating traditional ecological knowledge and fisheries management in the Torres Strait, Australia: the catalytic role of turtles and dugong as cultural keystone species. *Ecology and Society* **17**(4): 34. https://www.ecologyandsociety.org/vol17/iss4/art34/

Ross A., and Pickering K. 2002. The Politics of Reintegrating Australian Aboriginal and American Indian Indigenous Knowledge into Resource Management: The Dynamics of Resource Appropriation and Cultural Revival, Human Ecology, Vol. 30, No. 2.

U.S. Fish and Wildlife Service (2011) Traditional Ecological Knowledge for Application by Service Scientists. TEK Fact Sheet. Fishing at Ninepipe National Wildlife Refuge, Montana / USFWS. https://www.fws.gov/nativeamerican/pdf/tek-fact-sheet.pdf

Waples K., Field S., Kendrick A., Johnston A., Twomey L., 2019. Strategic Integrated Marine Science for the Kimberley Region: Kimberley Marine Research Program Synthesis Report 2012-2018. Prepared for the Western Australian Marine Science Institution, Perth Western Australia. https://www.wamsi.org.au/sites/wamsi.org.au/files/files/WAM0337-WAMSI-KMRPS-Layout-V6b%20Digital_150.pdf

IP and rights

Protection of Indigenous Knowledge in the Intellectual property System. https://www.ipaustralia.gov.au/tools-resources/publications-reports/protection-indigenous-knowledge-intellectual-property-system

Maiko Sentina, Elizabeth Mason, Terri Janke and David Wenitong (2017) Legal Protection of Indigenous Knowledge in Australia, Supplementary Paper 1. Supplementary paper to the discussion paper: Indigenous Knowledge: Issues for Protection and Management, written and researched by Terri Janke and Maiko Sentina, Terri Janke and Company Pty Ltd, Sydney, 2017. Commissioned by: IP Australia and the Department of Industry, Innovation and Science. https://www.ipaustralia.gov.au/sites/default/files/supp_paper_1_legal_protection_in_australia_28mar2018.pdf

Illustrated edition of the Universal Declaration of Human Rights (UDHR) (2015). Created and designed in a partnership between the artist Yacine Ait Kaci (YAK) creator of Elyx, the United Nations Regional information Centre (UNRIC), and the Office of the United Nations High Commissioner for Human Rights - Regional Office for Europe (OHCHR). https://www.un.org/en/udhrbook/index.shtml#1

Resolution adopted by the General Assembly on 13 September 2007. [without reference to a Main Committee (A/61/L.67 and Add.1)] 61/295. United Nations Declaration on the Rights of Indigenous Peoples. https://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

WIPO. World Intellectual Property Organization. What is Intellectual Property? WIPO Publication No. 450/E. https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf

Examples of Agreements

Various avenues for collaboration on data collection that have the potential to protect Indigenous Cultural property (CP) and IP were identified during the Workshops, including:

- Indigenous Land Use Agreements (ILUAs) - a voluntary agreement between a native title group and others about the way lands or waters are to be managed and used. http://www.nntt.gov.au/ILUAs/Pages/default.aspx

- Indigenous Protected Areas (IPA) - Indigenous-owned land or sea where traditional owners have entered into an agreement with the Australian Government to promote biodiversity and cultural resource conservation

- Memoranda of Understanding (MoUs) (e.g. QYAC in supplement 4)

- Marine Resource Agreements – TUMRA. http://www.gbrmpa.gov.au/our-partners/traditional-owners/traditional-use-of-marine-resources-agreements.

- Cultural Resource Use Agreements (NSW) - are intended to set out the Aboriginal cultural fishing activities that may be undertaken in a marine park, including across different zones.

    - The Marine Estate Management Act 2014 provides the legislative framework for the creation of a system of marine protected areas in NSW. Aboriginal cultural fishing is permitted within marine parks if it: complies with the marine park zoning or is in conjunction with a marine parks permit. Along with a marine parks permit, a section 37 cultural fishing authority may also be required to support cultural fishing activities if the activities are contrary to current fishing rules and regulations. http://www.industry.nsw.gov.au/__data/assets/pdf_file/0007/72718/TIO-164-Aboriginal-engagement-and-cultural-use-of-fisheries-resources.pdf

- Natural Resource Agreements between the Victorian Government and Indigenous communities[13] VFA Agreements: https://www.forestsandreserves.vic.gov.au/joint-management/agreements-with-traditional-owners

- Other Agreements such as the Buthera Agreement (2018) between the Narungga Nation Aboriginal Corporation and the South Australian Government.

Supplement 4

Examples of mobile / electronic data collection

Existing examples of electronic community data collection that could be modified to suit the needs of this project and potentially be a template for other communities to use include:

- In Esperance, Western Australia, they have developed a process via tablet for collecting data on cultural sites. The system includes triggers for management. Rangers collect the data and the Elders are in control of their data. This system could be adapted to suit the purpose of this project.

- The Narungga Nation App. (Appendix 8), a multipurpose data collection process used for more than just collecting fishing data. There are a number of notifications embedded in its functions and Narungga Nation are discussing how to incorporate the capture of TEK.

[13] Website lists 5 existing Vic Agreements (NB not sure if these are the NR Agreements) - https://www.forestsandreserves.vic.gov.au/joint-management/agreements-with-traditional-owners

- Smart phone technology for remote data collection in Torres Strait Traditional Inhabitant finfish fisheries. https://www.imas.utas.edu.au/research/fisheries-and-aquaculture/projects/projects/smart-phone-technology-for-remote-data-collection-in-torres-strait-traditional-inhabitant-finfish-fisheries

Examples of other modes of data collection

Using maps to display data: http://ecotrust.ca/report/living-proof-use-and-occupancy-mapping/

The use of a questionnaire, logbook and focus group interviews to collect quantitative (such as rate of participation) and qualitative (such as value of cultural fishing).
http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0018/423207/Aboriginal-fisheries-in-NSW-determining.pdf

The Pacific Islands work on gender diference: https://coastfish.spc.int/en/component/content/article/494-gender-equity-and-social-inclusion-handbook

Kronen, M, Stacey, N, Holland, P, Magron, F & Power, M 2007, 'Socioeconomic Fisheries Surveys in Pacific Islands: a manual for the collection of a minimum dataset', Secretariat of the Pacific Community, Noumea, New Caledonia. 200pps. ISBN: 978-982-00-0190-9.
http://www.spc.int/coastfish/Sections/reef/publications.htm

Additional references / resources provided by project participants

Fishing Surveys (Recreational focus)

Georgeson, L, Moore, A, Ward, P, Stenekes, N, Kancans, R, Mazur, K, Carlotta, R Tracey, S, Lyle, J, Hansen, S, Chambers, M, Finn, M & Stobutzki, I 2015, *A framework for regular national recreational fishing surveys*, ABARES, Canberra, November . CC BY 3.0.
http://ecite.utas.edu.au/X/A1987E4F2D2A1B2DE053021911ACFA16

Henry, G & Lyle, J 2003, *The National Recreational and Indigenous Fishing Survey*, Australian Government Department of Agriculture, Fisheries and Forestry, Canberra. (FRDC Project 99/158)
https://eprints.utas.edu.au/2526/1/Henry_Lyle_Nationalsurvey.pdf

Lynch T.P., Smallwood C., Ochwada-Doyle F., Williams J., Ryan K., Devine, C., Gibson B., Burton M., Hegarty A., Lyle J., S. Foster and A. Jordan (2019). Recreational fishing in Commonwealth waters. Report to the National Environmental Science Program, Marine Biodiversity Hub. (CSIRO).
https://www.nespmarine.edu.au/system/files/Lynch%20et%20al%20Recreational%20fishing%20Commonwealth%20waters%20Milestone%206%20Report%20RPv4%202018.pdf

Fisheries Strategic Plans and Management Strategies

Maori Fishery Management Model - https://teohu.maori.nz/wp-content/uploads/2018/12/Maori-Fisheries-Strategy.pdf

NSW Department of Primary Industries (2014) Fisheries NSW Strategic Research Plan 2014-2018.
https://www.dpi.nsw.gov.au/content/research/fishing-aquaculture

NSW Government (2018) NSW Marine Estate Management Strategy (MEMS) 2018-2028.
https://www.marine.nsw.gov.au/__data/assets/pdf_file/0007/815596/Marine-Estate-Management-Strategy-2018-2028.pdf

NT Government: Indigenous fisheries development strategy 2012-2014.
https://dpir.nt.gov.au/__data/assets/pdf_file/0006/258792/indigenous-fisheries-development-strategy.pdf

NT PIR_indigenous-fisheries-development-strategy 2012-2014 https://dpir.nt.gov.au/fisheries/fisheries-strategies,-projects-and-research/indigenous-fishing

PIRSA Fisheries & Aquaculture (2013) MANAGEMENT PLAN FOR THE SOUTH AUSTRALIAN LAKE EYRE BASIN FISHERIES, Part 1 – Commercial and recreational fisheries, Part 2 – Yandruwandha Yawarrawarrka Aboriginal traditional fishery. South Australia. https://www.pir.sa.gov.au/__data/assets/pdf_file/0011/182747/Management_Plan_for_the_Lake_Eyre_Basin_Fisheries_-_March_2013.pdf

Legislation

DPIPWE 2017. Recognition of Aboriginal Fishing Activities and Allotting Unique Identifying Codes under the Living Marine Resources Management Act 1995 https://dpipwe.tas.gov.au/Documents/Policy%20for%20Aboriginal%20tags%20and%20alloting%20an%20UIC.pdf

Examples of how agencies use data

State of the fishery reports (WA, DPIRD website): https://www.fish.wa.gov.au/About-Us/Publications/Pages/State-of-the-Fisheries-report.aspx

Data Management

The Australian Institute of Aboriginal and Torres Strait Islander Studies - a national repository for data / information: https://aiatsis.gov.au/

Other

The Maiam nayri Wingara Aboriginal and Torres Strait Islander Data Sovereignty Collective. https://www.maiamnayriwingara.org/news-and-updates. A collection of resources / documents around Indigenous data collection and governance.

A link to the Community Subsistence Information System in ALaska: https://www.adfg.alaska.gov/sb/CSIS/ There is also an interactive map that can be accessed through the weblink to view harvest information by community.

Appendix 8 Case studies

On-site recreational survey of mulloway *Argyrosomus japonicus*: A case study in the Yalata Indigenous Protected Area combining fisheries research, coastal management and capacity building.

Rogers, P. J., Barnes, T. C., Wolf, Y., Gregory, P., Williams, N., Madonna, A. and Loisier, A., 2014. On-site recreational fishery survey and research of mulloway (*Argyrosomus japonicas*) in the Yalata Indigenous Protected Area and Far West Coast Marine Park between 2009 and 2013. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2014/000074-1. SARDI research Report Series No. 759.
https://www.pir.sa.gov.au/__data/assets/pdf_file/0004/232393/Yalata_Mulloway_Recreational_Fishery_-_FINAL.pdf

Summary:

This case study summarises a collaboration to monitor a shore-based recreational fishery for mulloway *Argyrosomus japonicus* in the Yalata Indigenous Protected Area (IPA) on west coast of South Australia (SA).

The survey and research initiative generated stewardship and training opportunities, and informed resource managers about this culturally important species and iconic recreational fishery.

The Yalata Land Management Group and Elders from the community identified the need for an investigation of the fishery due to concerns about sustainability of the stock, respect for fish on Country and sharing of the resource.

In response to these concerns from the community, the survey team collected a suite of onsite information from visiting fishers including catch compositions, catch, effort and bycatch data. A total of 96 fisher interviews took place in 2009–12 and groups of fishers from local areas comprised 22% of those surveyed. A total of 2,711 hours of effort took place over 327 days for a total nominal catch of 478 fish. Mulloway ranged from 4–22 years of age with retained catches comprising 5–10 (50%) and 12–15 year olds (33%), which are sexually mature. Preliminary data from 19 pop-up satellite archival tags showed tagged fish spent considerable time in the near-shore habitats where the fishery is located. These mature-sized individuals also moved offshore to shelf waters and into depths of up to 57 m.

The program included the installation of large compost bins at the survey sites which served multiple purposes including:

- A process for the appropriate discarding of fish frames, part of the communities concern about respect on Country
- Mitigated ecological interactions with wild dogs and other scavengers and disruption of shorebirds.
- Enabled the harvesting of otoliths from discarded fish frames, which provided ongoing information on the age structure of mulloway for stock assessment purposes.

Outcomes informed resource managers on a range of fishing and coastal land management issues

The success factors included:

- Relationship building and early on-ground engagement with the community, Elders, AWNRM and DEW.
- Integration of coastal management, education, campsite works and fishing related objectives.
- Simple data collection method.

A survey of customary fishing of sharks and stingrays Groote Eylandt.

Saunders, T. and Carne, R. 2010. A survey of customary fishing of sharks and stingrays Groote Eylandt. Fishery report No. 105. Northern Territory Government.

Project logo designed by students at a local Indigenous school

The successful development of a method for collecting information on shark and ray harvest rates by Indigenous communities. The need for the project arose from the recognition that sharks and rays are an important resource for coastal Indigenous communities in the Northern Territory, but there is little information on the species and the number harvested by customary fishers. Thus, management arrangements so far had failed to take into account the impact of, or to recognise the importance of, Indigenous harvest, or the impact of commercial and recreational fisheries on Indigenous harvest. The availability of data would assist fisheries managers to adopt a holistic management approach.

The project included four key phases: consulting and forming a partnership, developing the survey, identifying the method and implementing the survey, followed by an evaluation process at the end.

The survey was designed and implemented through partnership between the Department of Resources (DoR), the Anindilyakwa Sea Rangers and the Anindilyakwa Land Council (ALC), as well as engagement with the local communities. The best approach for the survey was determined to be:

- To collect the data on a survey form designed as a culturally sensitive poster identifying important species, incorporating local Indigenous names and was easy to complete.
- To incorporate the survey into the weekly school curriculum of the two Indigenous schools on Groote Eylandt.

Additional outcomes for the community included:

- The work involved in completing the survey satisfied some components for a Vocational Education and Training (VET) Certificate II, in Land Management, which gave several students the opportunity to gain practical job skills and to work towards achieving the certificate.
- Anindilyakwa Sea Rangers obtained Commonwealth funds for the employment of two junior rangers, providing 'real' employment and training opportunities.

Key success factors:

- The partnership approach provided shared ownership and gained community support for the project. The involvement of sea rangers allowed the community to lead the project and the Department of Resources (DoR) to provide a supporting role.
- Identifying a central point in the community (one of the local Indigenous schools) to incorporate the survey.

Some of the lessons learned:

- Engaging the community in a collective approach created more interest and meant that surveys were more likely to be completed.
- Regular visits by the sea rangers to the schools helped maintain participation by generating enthusiasm among the students.
- Survey design took longer than anticipated. When planning a survey (or other form of data collection / research project) sufficient time for engagement and development needs to be incorporated.
- While keeping the survey sheets as simple as possible was a success factor in adoption by the communities on Groote Eylandt, it would be beneficial to include additional (to catch) information such as effort (area fished and number of fishing days) and fishing gear used.

Re-Connecting people to Country through enhancing local fish communities

Wallpolla (Horseshoe Lagoon) – 120ha High Value Wetland

Knowledge is a fundamental component of Indigenous culture, and must be considered in terms of both its sacred and secular dimensions. To Indigenous peoples, knowledge is not considered independently from its products and expressions, or from actions. These all form part of a closely integrated cultural system. The physical products and expressions of Indigenous cultures are intimately connected to the knowledge from which they derive, or with which they are associated. Products and expressions of Indigenous knowledge systems include ceremonial and ritual objects and performances, artistic designs, works and expressions, song, dance and story, subsistence and land / environment management activities such as hunting, fishing and gathering, and use of fire through:

- collective rights and interests held by Indigenous peoples in their knowledge
- close interdependence between knowledge, land, and other aspects of culture in Indigenous societies
- oral transmission of knowledge in accordance with well understood cultural principles, and
- rules regarding secrecy and sacredness that govern the management of knowledge.

Victorian Fisheries Authority in partnership with Traditional Owners, Mallee CMA, Recreational Fishers are undertaking a pilot stocking trial within the Wallpolla (Horseshoe Lagoon) located in North West Victoria that explores *'utilisation of natural managed ephemeral off-stream water bodies as nursery ponds for native fish'* to determine feasibility. This approach is promoted as being less resource intensive and can be managed by local community groups. This work will include:

- Designing a simple, non-replicated trial.
- Determining golden perch and/or silver perch fry stocking density, based on full surface area of the lagoon and at a level suitable for extended rearing (up to 12 months), as well as pond and dam stocking rates for fingerlings and adjusting as required.
- Designing a simple monitoring plan (sampling parameters and sampling frequency) for water quality, plankton, and fish.

Environmental water is to be delivered each season (200 megalitres; 1000 megalitres total) to Wallpolla (Horseshoe Lagoon). This initiative will undertake operations aligned with Regional Catchment Strategies to deliver environmental water and maximise associated environmental outcomes, to enhance native fish populations within the iconic Lindsay–Wallpolla sites in North West Victoria.

On-Country monitoring will take place every two-three months for the duration of the pilot project and will be coordinated with a series of community engagement events at Wallpolla (Horseshoe Lagoon) to promote the collaborative partnership project. The events will include bus tours and community fishing events that help 're-connect people to Country', through a community-based approach to monitoring and tracking stocked fish.

The pilot project aligns with the 11 key principles of the IRG and incorporates:

- **Culture** – Shared knowledge through story
- **Economic** - Cultural economy, Cultural harvest strategy
- **Management** - Regulation, Engagement, Access, Employment Entitlement, Capacity
- **Relationships** - Government, Industry, Politics, Broader community
- **Wellbeing** - Spiritual connection to Country.

A mobile application (App.) being developed by Narungga Nation
Information provided by Garry Goldsmith (Business manager, Narungga Nation Aboriginal Corporation), as well as sourced at the following link: https://www.dpc.sa.gov.au/responsibilities/aboriginal-affairs-and-reconciliation/aboriginal-land-and-business/buthera-agreement. Includes a link to a PDF version of the Buthera Agreement.
The Buthera Agreement (signed February 2018) between Narungga Nation and the South Australian Government is the first Agreement of its kind in South Australia. It is a two-way Agreement that commits the government to activities in two priority areas – economic development and social services - and commits Narungga Nation to certain agreements relating to Traditional fishing. The Agreement provides capacity-building support for the Narungga Nation Aboriginal Corporation to drive development, economic enterprise and collaborative engagement with government agencies on Guuranda (Yorke Peninsula), with two initiatives achieved so far being the drafting of a Traditional Fishing Strategy and a co-management agreement for Innes National Park (Dhilba Guuranda). Complementary to this Agreement, Narungga Nation are developing a smart-phone application (App.) to collect data on a number of priorities and issues of importance to them and that can be applied for various purposes. This includes data on Traditional fishing that can provide Narungga Nation with the ability to self-manage their resource use and to ensure they are complying with the terms of the Buthera Agreement. The data would also enable them to demonstrate self-governance capability and willingness to manage their own Sea Country in a sustainable manner.

Appendix 9 Barriers to co-developing a data collection process

Barriers and challenges to implementing a process for co-developing a data collection methodology were identified, and then the design of the process considered these.

Barrier / Challenge	Comments
For customary fishing in particular, the process of fishing is embedded in a way of life for Indigenous communities and catch metrics may not be easily separated from the other components of the process. Challenges associated with incorporating more than one knowledge system into a Framework.	The data collection approach allows for communities to collect participation and catch metrics along with the associated Indigenous Knowledge communities require, but only sharing the critical data with agencies. The Framework, at this stage, does not incorporate the sharing of Indigenous Knowledge.
How to centralise data in order to be able to share it and to access it, particularly at a national level. There are some existing tools, but they are often not well known, which raises the questions: • How do we better use these available tools? • How do we know what is available? • How do we create a willingness to feed data into the system(s)?, and • Are any of these existing tools suitable for this framework?	This remains as a gap in the framework and requires further investigation. The Australian Institute of Aboriginal and Torres Strait Islander Studies[14] is an example of a national repositories for data and information. There are avenues for communities to access data or information within the Government infrastructure (e.g. Freedom of Information). These existing tools could open future opportunities connected to data-sharing.
Cultural responsibilities can have impacts at times (e.g. funeral impacting the collection of data	
There are likely to be conflicts in values between the data users. Cultural differences, conflict	The process developed in the framework is built on relationships and trust. The data collection approach enables communities to collect a broader range of data to suit their needs, while collecting a providing a subset of data to the agency, identified and agreed to through a formal Agreement process.
All components of the process need to be adequately resourced. This will require considerable resources and support, including (amongst other things): • Resources for capacity and capability building in both communities and agencies • Where they are not currently well established, the establishment of strong community governance systems, highlighted as a key factor in the process being a success.	While the need for adequate resourcing and support is highlighted in the framework, how the process and data collection will be resourced has not been resolved. Included in next steps.
There needs to be long-term and genuine commitment from agencies and community. • Includes from agency staff with authority to make decisions (higher level than the Officers present at the workshop) • Requires leadership both within agency and communities • Needs a driver, motivation, benefit to community in collecting and sharing data for this to occur.	The need for this commitment and steps to assist in gaining it are included within the process. However, it remains a significant challenge and is included in the discussion part of the report.
Not knowing where to start. Such as not knowing who the right people to approach are, ensuring that the engagement is with those with the authority to speak for community and those with authority to speak for agency.	Included in the process.
Lack of legislative agreements and frameworks	The recommendation for advisory committees.

[14] https://aiatsis.gov.au/

Barrier / Challenge	Comments
Fear of making mistakes.	The developed process should alleviate the fear of making mistakes as it provides a pathway and is based on the formation of trusting relationships. Involvement in the project and workshop discussions has gone some way to alleviating fear.
Existing distrust in collecting and providing data, particularly around a lack of trust by Indigenous communities of what will happen to the information and data being provided. This has been created through previous negative experience. See Workshop 2 Outcomes Report for examples. Or the perception of risk for communities, such as: • Community losing important assets or economic gain (for example tourism) through sharing data. • Uncertainty around who owns the data collected on Country, and therefore the risk that the data and information will go to the wrong places and / or be used in the wrong way. • Uncertainty around Intellectual Property (IP) rights.	The developed process is founded on the building of relationships between agencies and Indigenous communities / representatives. The process includes the co-development of a formal Agreement. The data collection approach ensures community decide what data are shared. No issues in providing the critical data required by agency identified in the approach were perceived by The Indigenous community representatives at the workshop.
Lack of knowledge / awareness / understanding within community, which creates uncertainty. These include: • Not knowing what types of data are available for use by communities and / or how communities collect and use data. • The purpose / intent of the activity including how it is useful and of benefit to the community. • What participation involves for the community. • Government structures, policies and legislative requirements – what they are and how to work within them. • Community Governance systems. • Lack of knowledge of Traditional fishing rights (both within communities and agencies)	Process fosters two-way education
Lack of capacity or capability to undertake relationship building and proper engagement, within community or Government, such as: • Lack of cultural awareness within Government. • Insufficient resourcing: timeframes, support, resources, funds, unrealistic expectations. • Lack of skills within community or agency.	The process includes a capability and capacity assessment component for both agency and community.
Inequality in power: • Traditional Owners do not have a seat at the table. Currently working relationships are often one-way. • All rights sit with Government not communities. • Communities cannot afford commercial licences. • Issues raised aren't acknowledged by Government.	Framework promotes partnership and TOs a role in management discussions and decisions. Requires legislative / policy changes. See representative group below.
Lack of a representative group for Indigenous communities.	The development of a representative group within each jurisdiction that feed into a national group is included within the scale component of the framework – from local, to State and Territory to national scale data collection and management.

Appendix 10 Examples of data collection approaches and tools

Indigenous Fishing Logbook

000 SCU Contact No.: 0409023197

Fishing Event Information:

Location:			**Date:**
Target species:		**No. fishers:**	**Gear:**
Start time:	**Finish time:**	**Platform:**	

Catch Information:

Species name	Length	Weight	Destination	Notes

Appendix 5. Questionnaire

Page 1.

Indigenous Fishing Survey

1. Name:

2. What is your gender:

☐ Male

☐ Female

3. Age:

☐18 - 25 ☐26 - 35 ☐36 - 45 ☐46 - 55 ☐56+

Contact details

4. Address:

.....

.....

.....

.....

5. Phone number:

6. How often do you go fishing?

☐Everyday ☐2-3 times weekly ☐Once a month

☐6 or more times a year ☐Yearly

7. When you go fishing do you take children also?

☐never ☐rarely ☐occasionally

☐regularly ☐all the time

8. Of your family living in the Tweed area, what percentage would you estimate go fishing?

Percentage

	0	25	50	75	100
Regularly					
Occasionally					
Rarely					

2.

9. Number of indigenous fishers in your household.

Number

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
How many live in your household															
How many living in your household go fishing regularly (once a week)															

10. Number and duration of fishing events

On average how many fishing events, including bait gathering does the day involve?

On average how many hours do you spend on a fishing event?

11. What percentage of your fishing time would you spend in the following general Locations?

Percentage of time

	0	25	50	75	100
Offshore >5km					
Coastal water to 5km					
Estuarine					
Freshwater 'rivers'					
Freshwater 'lakes'					

12. How far do you travel from your home to go fishing?

	0	25	50	75	100
< 10 kilometres					
Between 10 and 50 kilometres					
> 50 kilometres					

NSW Department of Primary Industries has developed a survey to assist in the development of Cultural Fishing Local Management Plans.

Excerpt from the Coastal - Local Management Plan - Community Survey 1

An important step in the development of the LMP is to identify Community aspirations related to Cultural fishing through a combination of Community meetings, surveys and direct lines of communication with project staff. Through this survey community can begin to define content that will sit within the plans framework. The survey is being distributed by project staff, importantly the survey needs to be available to all Community members and the DPI encourages all of the local Aboriginal Community to participate. Direct contact with project staff is available for support throughout the development and trial process.

Survey directions and information

1. Survey participants can choose to remain anonymous

2. Please answer all survey questions

3. Please use the back of the last page to provide any extra information or comments

4. Please return survey (including extra copies) in the reply paid envelope

5. Please forward electronic or scanned copies to: carl.bevilacqua@dpi.nsw.gov.au or hayley@barefeet.net.au

Name ……

Gender ☐ Male ☐ Female

Age ☐ 18 - 25 ☐ 26 - 35 ☐ 36 - 45 ☐ 46 - 55 ☐ 56 +

Contact details *leave blank if you wish to remain anonymous

Residential Address……

Email……

Phone number……

Community Survey

1. Is your catch shared outside of your immediate family. ☐ Yes ☐No

If yes please indicate to whom you share your catch with

……

……

2. Please indicate below the number of each of the gear (saltwater) below you believe should be permitted per person under a Cultural Fishing Local Management Plan. Current recreational fishing limits are also listed below. (Please refer to recreational fishing guide for more detail).

Item Recreational Limit CFLMP limit Rod & Handline (Boat & shore) 4 rods or lines (with up to 3 hooks each) Trap (Crab) 2 Hoop net (Crab) 4 Trap (Lobster) 1 Trap (Spanner crab) 1 Prawn Net (hand hauled) 1 Prawn Net ((Push or Scissor 1 Scoop net (Prawn) 1

Other (please provide detail below)

……

……

The Groote Eylandt case study used a simple poster to collect the data, with species in local language and pictures. During their evaluation of the project they did identify that future project should include additional information such as effort (area fished and number of fishing days) and fishing gear used.

The Yalata case study used a simple hard copy form.

APPENDIX 2. On-site survey interview form.

Alinytjara Wilurara NRM Board

Yalata Lands Recreational Fishing Interview Form

Date..... **Time of interview**..... **Location Camped at**.....

Time of High Tide..... **Swell** (direction and strength).....

Wind (direction and strength)..... **Cloud cover**..... **Temperature**.....

Moon (e.g. Full + 2days).....

No. in Fishing Party..... **Total No. of Fishers**..... **Males**..... **Females**.....

Age group: 5 – 14 ☐ **15 – 29** ☐ **20 – 44** ☐ **45 – 59** ☐ **60 or more** ☐ **Postcode**.....

No. of days fished..... **Total no. of hours fished (approx)**..... **Total no. of fishing lines**.....

Use of ATV: Yes No **Shore Type:** Beach Reef Combo Other

Target Species.....

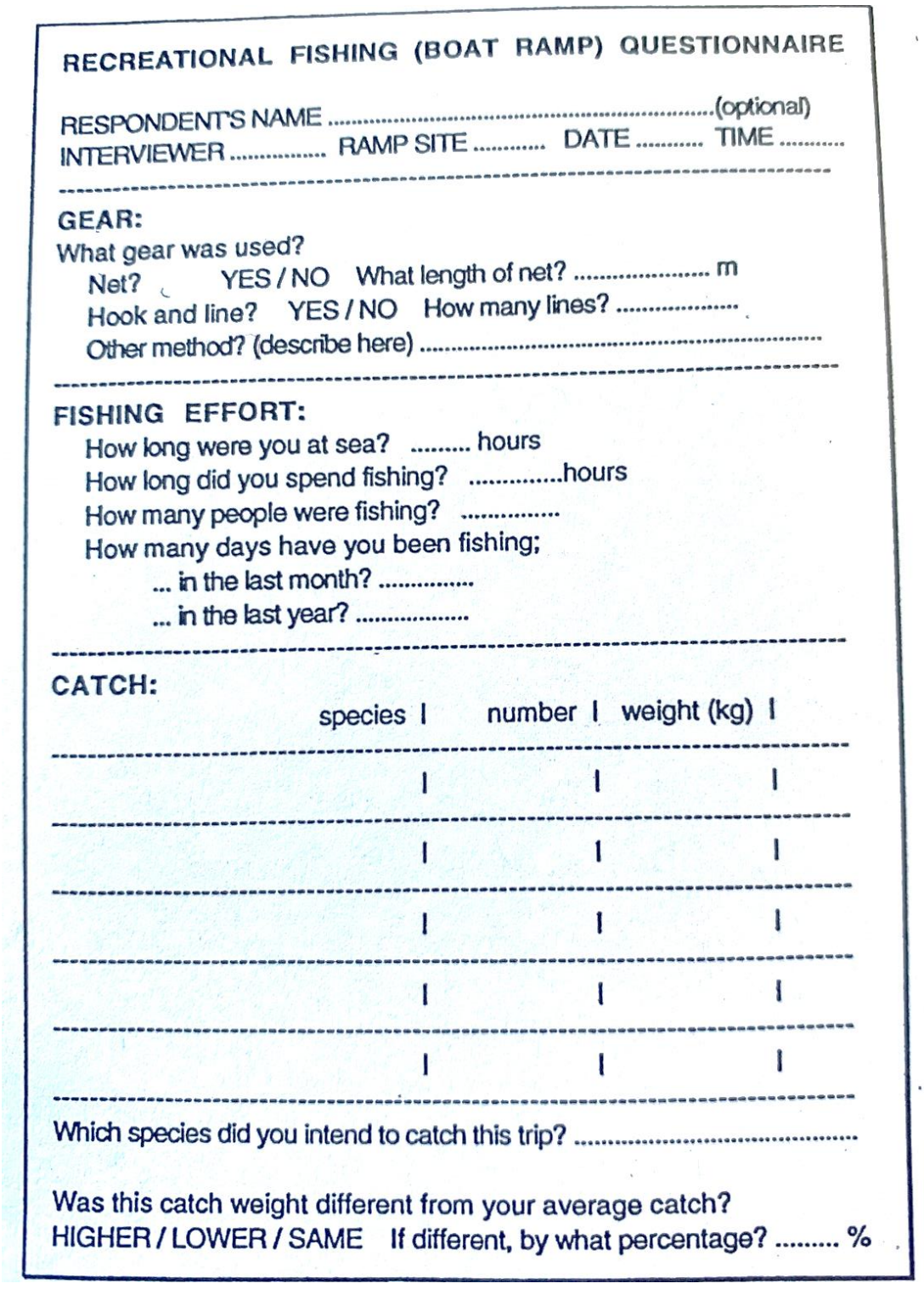
Bait caught at Yalata (CY) or brought in (BI).....

Catch Data

Fish No.	Species	Location	Retained Y/N	Released Y/N *(if yes, give reason*	Size of Retained Fish (mm)	Sex (M/F) Stage of Maturity *Refer to table*	*Please label the sample with fish no., date, size and sex*	
							Ear Bones Collected Y/N	Tissue Sample Collected Y/N

Examples from: King, M. 1995 Fisheries Biology, Assessment and Management. Fishing News Books, Blackwell Science Limited, Carlton Victoria, Australia.

A creel census form for collecting information from recreational fishers at boat ramps.



RECREATIONAL FISHING (BOAT RAMP) QUESTIONNAIRE

RESPONDENT'S NAME .....(optional)
INTERVIEWER ..... RAMP SITE ..... DATE ..... TIME .....

GEAR:
What gear was used?
Net? YES / NO What length of net? ..... m
Hook and line? YES / NO How many lines? .....
Other method? (describe here) .....

FISHING EFFORT:
How long were you at sea? ..... hours
How long did you spend fishing? .....hours
How many people were fishing? .....
How many days have you been fishing;
... in the last month? .....
... in the last year? .....

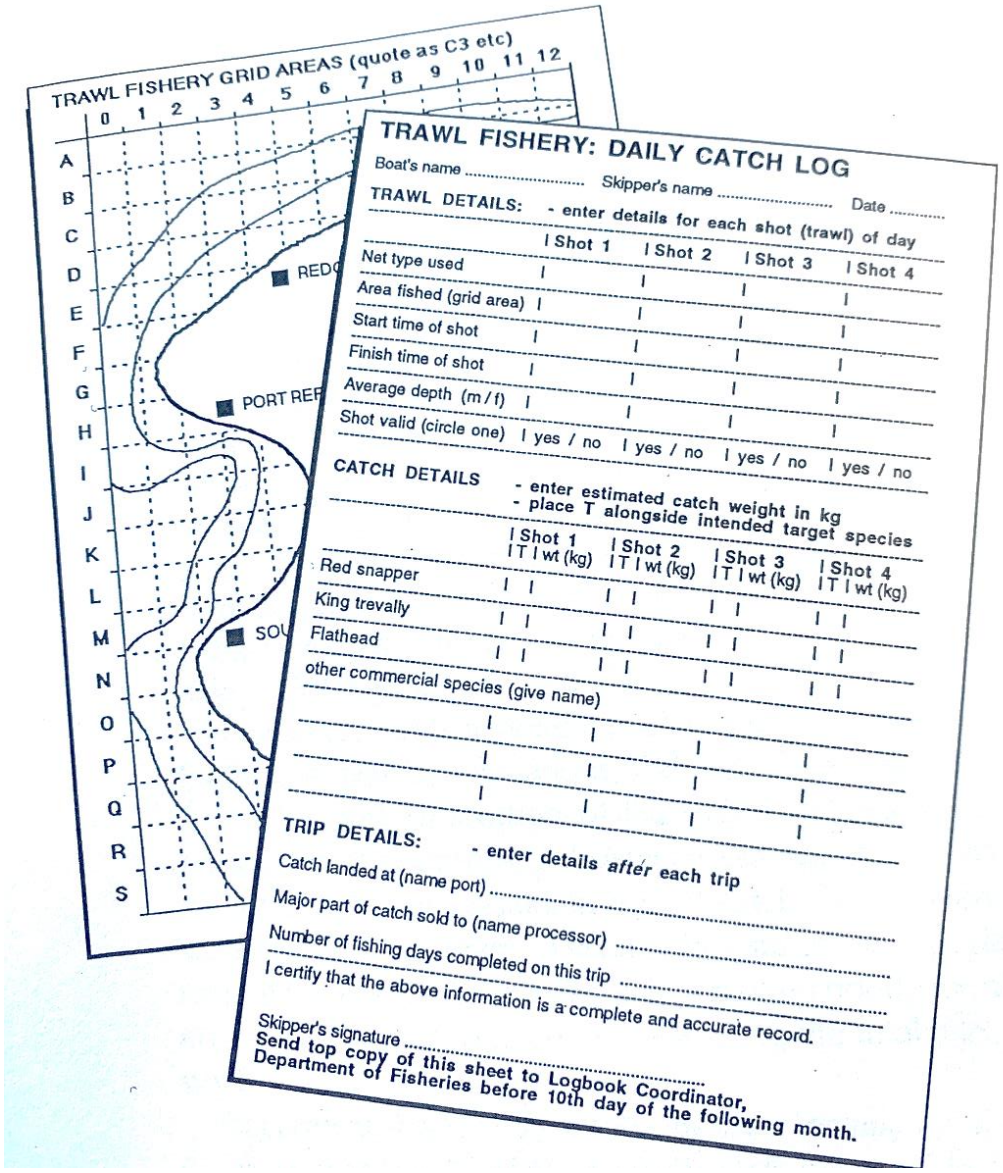
CATCH:

species	number	weight (kg)

Which species did you intend to catch this trip? .....

Was this catch weight different from your average catch?
HIGHER / LOWER / SAME If different, by what percentage? ..... %

A page from a trawl fishing log, and a chart of the fishing area (with grid references).



TRAWL FISHERY GRID AREAS (quote as C3 etc)

0 1 2 3 4 5 6 7 8 9 10 11 12

A B C D E F G H I J K L M N O P Q R S

REDC

PORT REF

SOU

TRAWL FISHERY: DAILY CATCH LOG

Boat's name ..... Skipper's name ..... Date .....

TRAWL DETAILS: - enter details for each shot (trawl) of day

	Shot 1	Shot 2	Shot 3	Shot 4
Net type used				
Area fished (grid area)				
Start time of shot				
Finish time of shot				
Average depth (m / f)				
Shot valid (circle one)	yes / no	yes / no	yes / no	yes / no

CATCH DETAILS - enter estimated catch weight in kg
- place T alongside intended target species

	Shot 1 T	Shot 1 wt (kg)	Shot 2 T	Shot 2 wt (kg)	Shot 3 T	Shot 3 wt (kg)	Shot 4 T	Shot 4 wt (kg)
Red snapper								
King trevally								
Flathead								
other commercial species (give name)								

TRIP DETAILS: - enter details *after* each trip

Catch landed at (name port) .....

Major part of catch sold to (name processor) .....

Number of fishing days completed on this trip .....

I certify that the above information is a complete and accurate record.

Skipper's signature .....

Send top copy of this sheet to Logbook Coordinator, Department of Fisheries before 10th day of the following month.