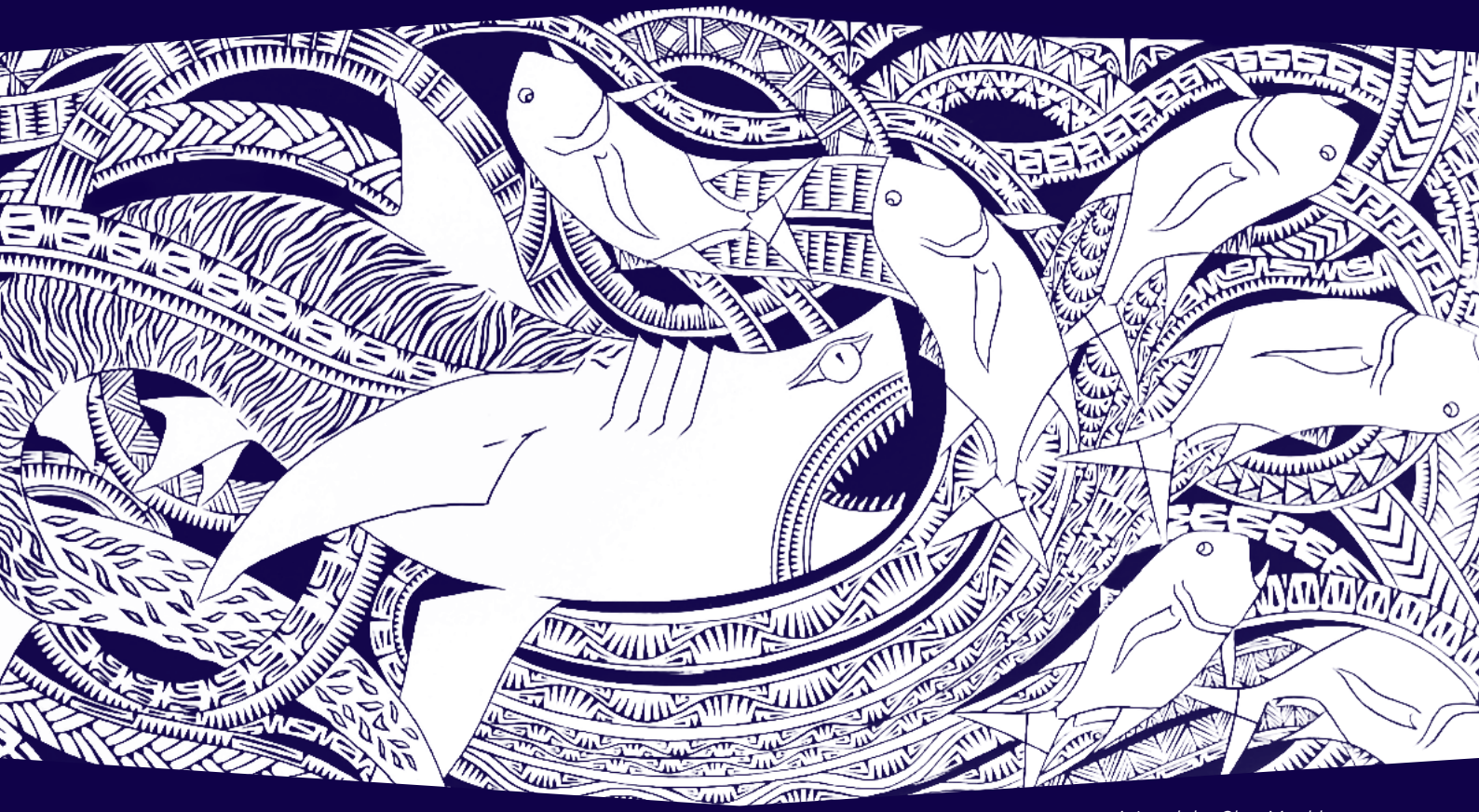# Project Summary Fact Sheet

Measuring non-commercial fishing catches (traditional fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods

(FRDC Project Number 2022-045)

Artwork by Glen Mackie

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What was the project about?

Traditional fishing in the Torres Strait is important for community livelihoods and wellbeing, providing a source of *kai kai* or food, nutrition and other social, cultural and spiritual benefits. The long-term sustainability of all commercial fisheries (e.g. Spanish Mackerel (*Scomberomorus commerson*), coral trout (*Plectropomus* spp.) and Tropical (Ornate) Rock Lobster (*Panulirus ornatus*)), and non-commercial fisheries (traditional and recreational) in the Torres Strait region requires reliable catch data.

Commercial fisheries collect catch data that underpins assessments that are central to sustainable management. However, fish catches from the traditional and recreational fishery sectors are largely unquantified.

Torres Strait Islanders have expressed concern for their traditional fisheries and the need to protect them. Monitoring traditional fishing catches has also been identified as a high priority in numerous Protected Zone Joint Authority (PZJA) commercial fisheries committees over recent years. This project aimed to contribute knowledge to support development of a future monitoring program to address these data gaps.

Project Objectives

This project addressed the next stage of foundational research in developing a traditional fishing monitoring program in the Torres Strait, as recommended and supported by the Protected Zone Joint Authority (PZJA) Torres Strait Scientific Advisory Committee (TSSAC) (See Figure 1).

The aim of the project was to collate and share information about developing a traditional fishing catch recording system from Torres Strait community members, fishing app experts and other stakeholders. The project had three main objectives:

1. Collate and review existing and new information about the potential options for a non-commercial fishery monitoring program as recommended by Bedford *et al*. (2021).

2. Assess the level of community need and support (or otherwise) for a non-commercial fishery monitoring program through a comprehensive and equitable community consultation and participation process throughout Torres Strait and Northern Peninsula Area communities.

3. Develop cost and performance options for a non-commercial fishery monitoring program and its components (e.g. self-reporting web-based tool/APP platform; data management, storage and access; complimented surveys) to allow for an assessment of value (e.g. meeting needs, ease of use, maintenance and data use in stock assessments)
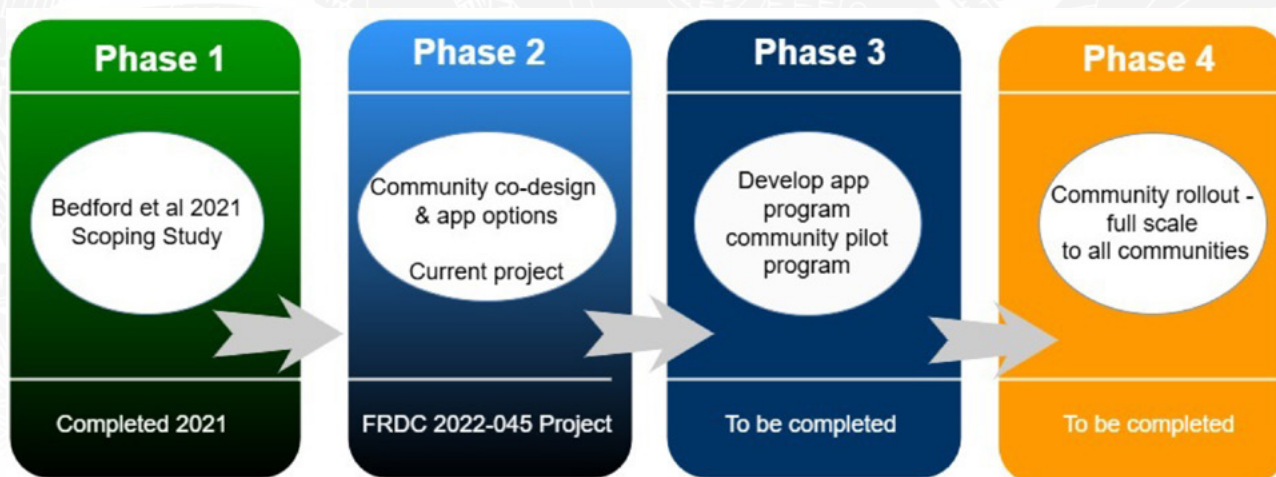
Figure 1: Phased approach to design and implement a traditional fishery monitoring program in the Torres Strait. (Source: AFMA 2021. Torres Strait Scientific Advisory Committee Meeting 79 Meeting Record 9-10 June, 2021. Accessed at https://www.pzja.gov.au/advisory-committees/pzja-committees/torres-strait-scientific-advisory-committee-tssac)

What activities were completed during the project?

During 2022 to 2024, the project team completed a review of fishing apps, conducted community workshops, and collated information for the design and development of a fishing app for Torres Strait communities.

A review of fishing apps included a summary of published and unpublished literature and website information on existing apps, key issues, best practice, app design and development options relevant to Indigenous and recreational fishing contexts. Nine semi-structured interviews with current fishing app custodians and technology and app developers were also completed.

Mabuiag workshop. Photo credit: Tim Skewes.

Fifteen community workshops, across five subregions or clusters (See Figure 2), were conducted with two communities not visited due to unforeseen reasons. A total of 142 workshop attendees were engaged (106 male and 36 female). The community co-design process applied an ethical process (approved by CDU Human Ethics Committee number H23056) with Free, Prior and Informed consent obtained from all participants followed by the sharing of workshop summaries with participants immediately after the workshops.

Each workshop went for 2–3 hours with sessions on:

- Community support for fishery monitoring;
- Local community's fishery monitoring needs and priorities;
- Community views about implementing a monitoring app; and
- Co-design of the app (e.g. outputs, features, barriers and incentives to use and governance arrangements).
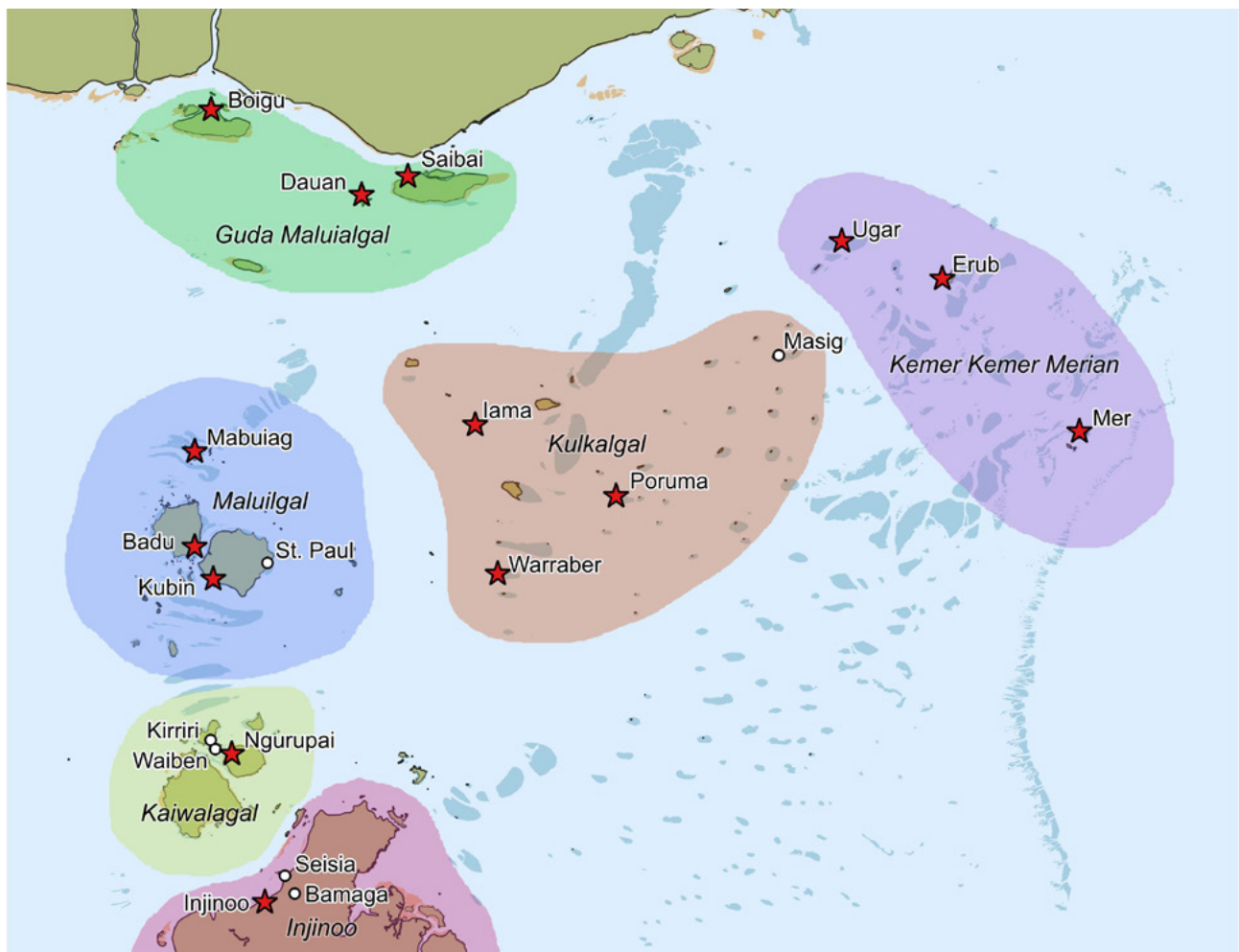

Figure 2: Communities visited for consultation workshops. Also shown are the island nation groups.

What did the project team find out?

Review of fishing apps, costs and options (Objective 1 and 3)

A review of current fishing apps demonstrated they are fast becoming the main monitoring tool in Australia and globally for recreational fishing. All Australian States and the Northern Territory government have developed recreational fishing apps. While all recreational fishing apps provide useful information for fishers, not all collect fishing data. However, there are no fishing apps specifically designed for monitoring traditional Indigenous fisheries.

Interviews with Australian app custodians, app technology developers and a review of the literature and websites provided information to guide the design a traditional fishing app tool, including features and information for motivating fishers to use the app. Key app features and design principles identified included:

- Data privacy including a secure but simple private login and data privacy agreements;

- Ease of use such as a simple page display, few button clicks, simple or automated data entry;

- Providing useful information such as weather reports, safety alerts, regulations and management advice and cultural information;

- Providing fishing history such as fishing place geolocation and individual catch records and analytics; and

- Providing an engaging experience such as links to social media, user rewards and incentives and feature updates.

The information collated was shared during the community co-design workshops and helped guide the discussions on development of a bespoke fishing app for monitoring traditional fishing.

Obtaining information on the costs of developing and managing a fishing app was a challenge without being able to commit to a development partnership. Although some costing information was collated from a range of sources, it varied considerably. This step will be progressed in future Phases 3 and 4 of this process (see Figure 2 above). Technological advancement in this domain is dynamic and is likely to impact future app development and management costs.

Community co-design and support workshops (Objective 2)

The community workshop activities provided a comprehensive view of Torres Strait Islander people's needs and attitudes to the implementation of a non-commercial fishery monitoring app. Overall, there was strong support among workshop attendees for the implementation of a monitoring app, underpinned by a range of individual and community needs.

There are concerns about potential negative consequences associated with using an app, particularly about data security. Any fishing information provided by the user must be protected and sensitively handled. This will include engaging a trusted app custodian partner for Torres Strait and NPA communities, and a well-resourced and targeted communication and behavioural approach program to accompany any app rollout.

The workshops collated more than 94 species or species groups caught traditionally with significant regional differences in species importance and monitoring priority. The commercial species – Spanish Mackerel, coral trout and Tropical Rock Lobster – were often listed among the highest priorities for monitoring by community members along with a range of high priority non-commercial species.
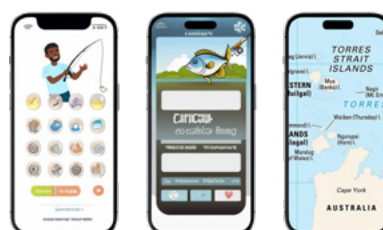
A wide range of data outputs and app features were recommended by community members, the most common being information about catches (e.g. personal, community and regional) and local and regional management rules (See Figure 3 below). A broad range of barriers and incentives to using a fishing app were also identified.

Figure 3: Community workshop activities (L-R, Iama, Ugar and Mabuiag). Photo credit: Kenny Bedford.

App design features

The results of the co-design community workshops, fishing apps research and expert interviews were compiled to provide a list of potential traditional fishing app features (See Figure 4).

About this app information	Secure Log in page	Provision of informed consent to share data summaries	Fishing episode: Name, date, time, location	Fishing method
Was the catch a shared catch?	Number, gender and age categories of other fishers (if shared)	Number (and sizes) of fish caught	Ability to submit catch photos	Species identification
Local Indigenous fish names	Information on species biology and ecology	Ability to share catch summaries with others	Data analytics - Personal catch summaries - Community catch summaries	Weather, tides, warnings
Local and regional management information and rules	Community notifications	Cultural and seasonal information	Ability to report issues of concern (e.g. illegal fishing, invasive species)	General comments

Figure 4: Traditional fishing app features collated and distilled from (i) co-design community workshops in Torres Strait, (ii) recreational fishing app features research (expert interviews) and (iii) app design features research (expert interviews).

Principles and best practice approaches for app development

Given the lack of Indigenous fishing apps in Australia, the diversity and area of community stakeholders covered by this project (compared with for example a single community) and the ever-changing digital landscape, principles and best practice approaches arising from the project results for a traditional fishing monitoring program are summarised in Figure 5.

➡ Local and regional Traditional Owner involvement throughout the app design, development, implementation and management

➡ Ongoing explicit and informed consent

➡ Ongoing communication and behavioural change campaign to increase reporting rates

➡ Include community champions and ambassadors from gender groups

➡ Ensure a gender, age and culturally inclusive approach

➡ Maximise simplicity and minimise the data collection burden to improve usage rates

➡ Automate data collection (and feedback) to improve usage rates

➡ Enhance app value to fishers through links to other relevant information (e.g. via third party links)

➡ Provide customer support tools (FAQs, tutorials, Contact us, etc)

➡ Provide catch trends summaries at a range of scales (e.g. individual, local community, clusters and sex-disaggregated)

➡ Launch app via alpha, beta stages

➡ Evaluate, improve and innovate over time

Figure 5: Principles and best practice approaches for app development.

Project Recommendations

The monitoring and management of traditional Indigenous fisheries are of significant national interest in all Australian State and Territory jurisdictions. This project provides foundational information through a Torres Strait case study to further support this national agenda.

The project report makes two primary recommendations regarding the development and testing of a traditional fishing app and promotion of the Queensland Government recreational fishing monitoring app in the Torres Strait region (See Figure 6).

Photo – Kenny Bedford
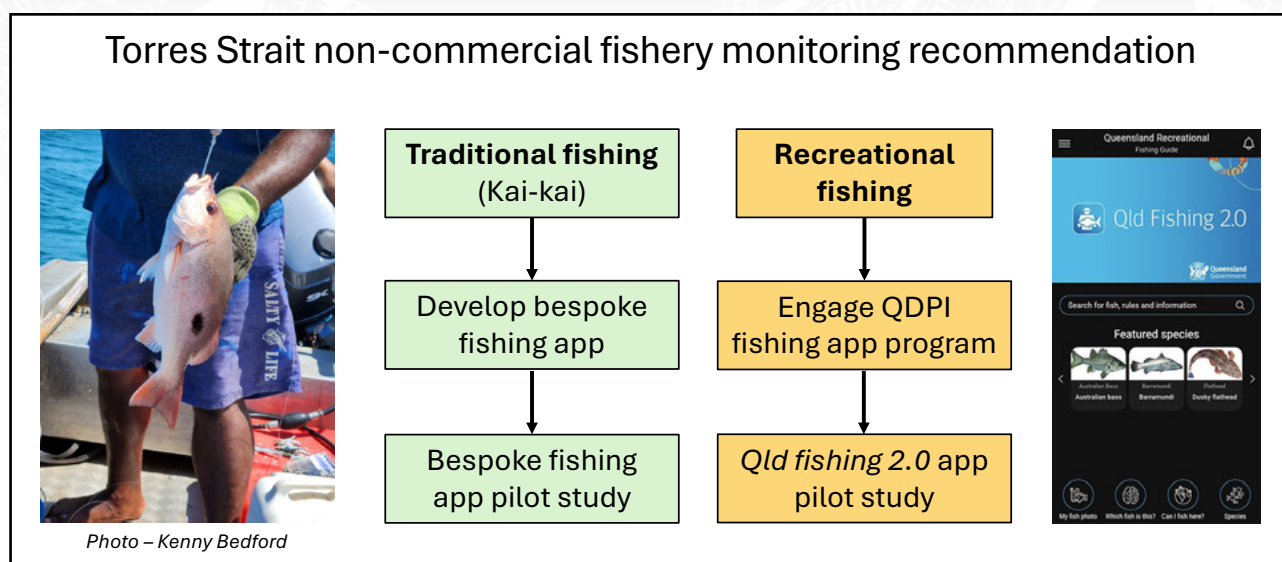
Figure 6: Summary recommendation for non-commercial fishery monitoring in Torres Strait: (i) develop and pilot a bespoke fishing app for traditional fishing; and (ii) partner to pilot the Queensland Government's Department of Primary Industries (QDPI) recreational fishing app (Qld fishing 2.0).

Recommendation 1: Implement a 2-3 year Torres Strait traditional fishing monitoring app pilot program with the following components (See Figure 7):

a. Establish a governance structure and agreements with key regional organisations including a trusted, Indigenous-focused implementing agency/entity and or data custodian, regional agencies and agreements with app designers, communities, fishers and fisheries agencies.

b. Set up app user sign on, protection and ongoing consent provisions.

c. Bespoke app design with priority features.

d. Design and implement a complementary data collection program to accompany the app pilot program.

e. Finalise the app design process with at least two or three diverse communities (as a minimum), who agree to host the pilot program.

f. Implement a communication and behavioural approach program to support and increase pilot app uptake.

g. Design a data analytic and feedback process that delivers individual and grouped (e.g. community or Torres Strait level) catch data summaries back to app users, community organisations and external agencies.

h. Pilot program participatory evaluation which includes assessing outcomes with key governance stakeholders and communities to evaluate outcomes.

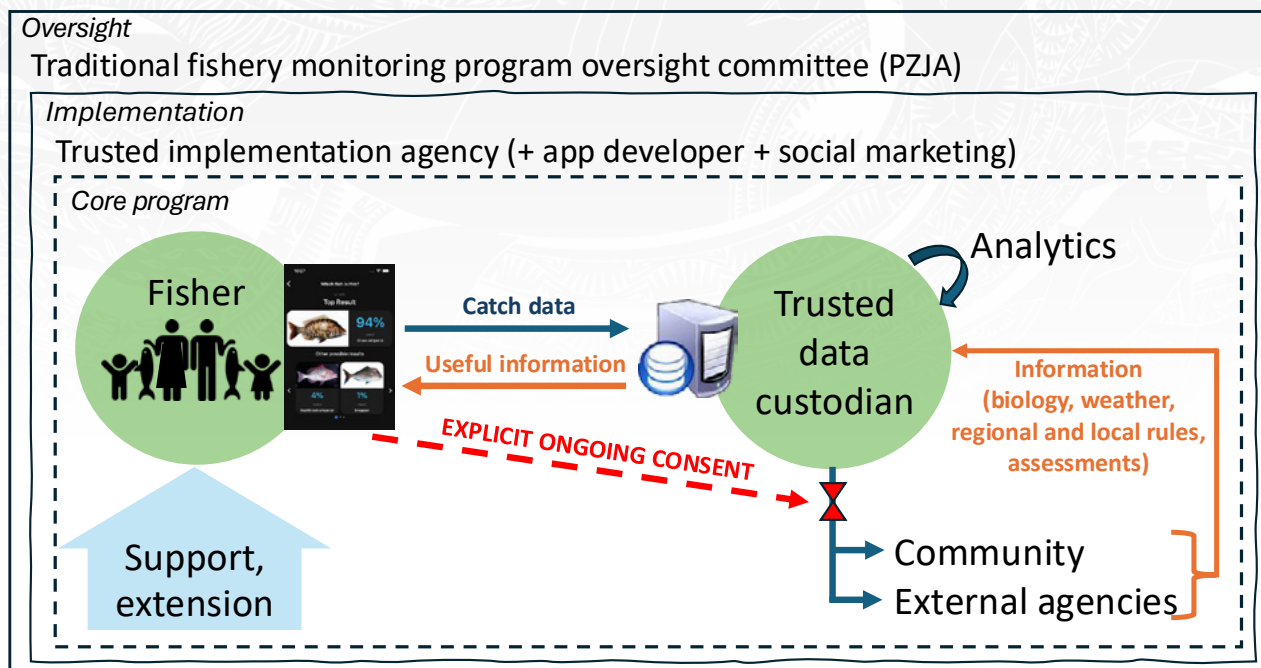i. Establish a Traditional fishery monitoring program advisory forum or group.

Figure 7: Potential governance structure of a Torres Strait Traditional fishery monitoring program (inside dashed line), including information flow (solid arrows) and an information control point that will require explicit fisher consent (in red).

Recommendation 2 – Implement a Torres Strait non-Indigenous recreational fishing monitoring program using the existing Queensland Government's Department of Primary Industries (QDPI) recreational fishery app:

a. PZJA to collaborate with the QDPI recreational fishery monitoring program to coordinate fishery communication activities and data flow/accessibility into the PZJA fisheries assessment processes.

b. Promote and/or specify (e.g. through existing community visitor sign-in arrangements) the use of the QLD fishing 2.0 recreational fishing app (in partnership with QDPI) for recreational fishers in Torres Strait communities through the community visitation agreement.

c. Facilitate provision of annual, species-specific, non-Indigenous recreational fishing catch data from the QLD fishing 2.0 app to the PZJA for fishery assessments.

What happens next?

The full report and recommendations from the Project will be communicated to a wide range of stakeholders and considered at a future PZJA TSSAC meeting in 2025.

Where can I find the full report?

Who can I contact if I want further information?

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Acknowledgments