Torres Strait Scientific Advisory Committee

Research Proposal for funding beginning 2016/2017

Project Title: **Development and opportunities for the Torres Strait lobster TIB sector**
Principal Investigator: **Eva Plaganyi**
Organisation: **CSIRO**
Start Date: 1 July 2016 **End Date: 15 June 2017**

BUDGET[1] TOTAL PROJECT COSTS						CONTRIBUTIONS			
Year	**Salary**	**Travel**	**Operating**	**Capital**	**TOTAL**	**AFMA Contribution**	**Applicant Contribution**	**Applicant In kind**	**Other In kind**
2016/2017	63,914	6,000	58,247	0	$128,161	**$76,897**	$51,264		
2017/2018									
2018/2019									
Totals	63,914	6,000	58,247	0	$128,161	**$76,897**	$51,264		

Research Priorities

Identify research priorities from the 2014 Operational Plan for Torres Strait Fisheries that this Application addresses.

(B) Rock Lobster 3) Understanding fishing behaviour 3a) Understanding the drivers and incentives in determining fishing behaviour in all sectors 3b) Understanding fishing behaviour under output controls

(F) Torres Strait Islander development 2) Improved profitability for Torres Strait Islanders from fisheries 2a) Marketing opportunities within existing fisheries 2b) Identification of alternate sustainable fishing opportunities.

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Need

Describe why and how this application was developed. What is the priority need for this research?

Important considerations for the management of the traditional owner share of the Torres Strait rock lobster fishery include increased participation, employment creation and economic performance. Currently the TiB sector does not take its nominal share of the RBC and the reasons for this are not well understood. This project seeks to draw on previous studies as well as conduct research and workshops to fill gaps in order to inform and enhance the development of the TIB sector of the fishery, as well as highlight potential scope for improvement

Objectives

What are the objectives to be achieved?

The objectives are as follows:

1. Overcome barriers and improve capacity of Traditional Owner TIB fishers and processors;
2. Collaboratively explore a business case for grow-out opportunities;
3. Identify opportunities and challenges to increase the overall value of the resource and build resilience along the supply chain

Planned Outcomes and Benefits

What are the Planned Outcome(s) that this project will achieve and how will this be measured? How will these outcomes benefit Torres Strait fisheries and Torres Strait Islanders? Is there relevance to fisheries management and is there a planned path for uptake.

The planned outcomes and benefits associated with the objectives are as follows:

1. Improve participation and capacity of Traditional Owner TIB fishers and processors;
2. Provide results from data analyses and modeling to inform on fishing opportunities;
3. Collaborative business case for grow-out opportunities based on feedback form stakeholders;
4. Brief report summarising opportunities and challenges to increase the overall value of the

[1] Please list budget exclusive of GST

resource and build resilience along the supply chain

Consultation

Specify any planned or completed consultation with Torres Strait Islanders, industry, fisheries management and other parties. **Particular emphasis should be included on consultation with Traditional Owners and support from them for the project. Researchers should consider information in the document *'A Guide for Fisheries Researchers Working In the Torres Strait'*[2]. Researchers should note that The TSSAC may require formal support from relevant communities for individual research projects if appropriate.**

This research project builds on a long history of consultation with all managers and stakeholders involved with the TRL fishery. A wealth of social and economic information has been collected as part of several field trips to Torres Strait conducted during the TRLMSE research project and this can be further expanded in consultation with Traditional Owners. Much of the motivation for the focus of this study stems from previous discussions with Torres Strait Traditional Owners, fisheries managers and industry during workshops, TRL Working Group meetings as well as TRL RAG meetings. The need to support fisheries development, capacity building and enhance value adding have all been raised as important issues at the recent TRLRAG meetings.

Extension and Communication Activities

Describe the extension and communication activities planned for the project. End-users are often in the best position to decide the most appropriate outputs, so consider having them describe their output needs. **Particular emphasis should be included on communication and extension strategies that are suitable for Traditional Owners and consider *'A Guide for Fisheries Researchers Working In the Torres Strait'*[2].**

Communication would include presentations at Torres Strait communities, at TRL RAG and WG meetings, via printed material, and also planning a short DVD for broader dissemination of research results at all Torres Strait island communities.

Engagement of Torres Strait Islanders

Describe how the project plans to engage Torres Strait Islanders/Prescribed Body Corporates in meaningful and appropriate ways. Include details on the level of engagement and, in particular if employment is included.

Extensive consultation and engagement of Traditional Owners is essential for the success of this project. Engagement will largely be via workshops held in Torres Strait with different days focusing on topics that may not all be of interest to the same group of individuals, e.g. exploring potential fishing opportunities in eastern Torres Strait; value adding opportunities and grow-out opportunities. Workshops will be used to collaboratively develop the business case for grow-outs.This component was initiated in November 2015 through a tour of the Bribie Island aquaculture facility by six Torres Strait islander workshop participants.

Methods

Describe how the research will be carried out. Will the research be conducted in culturally appropriate ways (refer to 'A Guide for Fisheries Researchers Working in Torres Strait'). Include plans for data management during and after the project.

Development and opportunities for the TiB sector of the TRL fishery will be explored using a range of biological, social and economic approaches as listed below. Specifically, this will be achieved as follows:

1) Spatial analysis to reveal current locally depleted regions and under-fished regions highlighting fishing opportunities – using survey, CPUE and historical information, combined with the existing spatial population model, a spatial analysis will be used to highlight the spatial distribution of fishing effort and opportunities. This will draw on existing data that CSIRO have been analysing as part of the TRL survey and assessment project. Additional information on aspects such as the number and location of freezers and other facilities will also be important to inform the development of a business case as below. ;
2) Drivers for increased participation in the fishery – drawing on previous research as to the drivers for participation, this aspect will delve deeper and suggest possible solutions to increasing TIB participation in the fishery. There are several aspects to trying to increase participation: i) increasing scope (i.e. exploring expansion to the fishery in eastern Torres Strait) and exploring grow-out, and ii) greater involvement in managing the fishery (monitoring and surveying. In order to ensure solutions are workable, they will need to be generated from within and supported by the local community. The impediments or barriers

[2] Available at www.pzja.gov.au

would also need to be identified. This component will also include consideration of boosting involvement of fishers in data collection and research, for example, by arranging for a small number of TIB fishers to assist in vetting the catch and effort data (started already), as well as encouraging participation in diving surveys (e.g. local surveys on selected reefs);

3) Value adding and the supply chain – building on previous work on these components, a review will be provided as to additional opportunities and challenges to increase the overall value of the resource and build resilience along the supply chain. For example, Figure 1 shows an example of an application of a Supply Chain Index to objectively compare key features of the TRL supply chain and for identifying critical elements that may be key to maintaining or developing the resilience of supply chains to external shocks. This framework can be used to test alternative scenarios, develop targeted strategies to build resilience in key nodes, explore opportunities to value add, and gain further insights and understanding by cross-comparing with models of other lobster species.

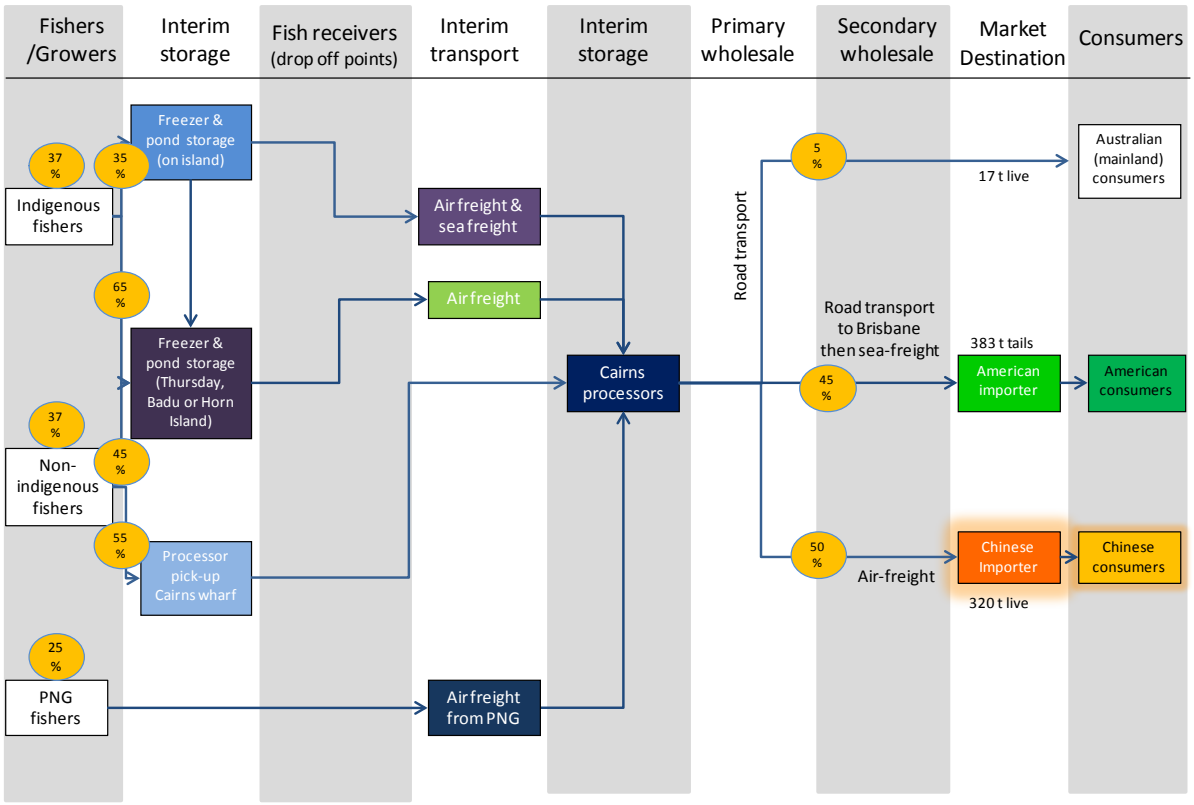

Fig. 1. Schematic of TRL supply chain, with colour coding highlighting key elements in the supply chain identified using the Supply Chain Index (SCI) (Plaganyi et al. 2014).

4) Grow-out opportunities and development of a current business case – in collaboration with stakeholders, the potential will be explored of establishing cage culture lobster grow-out facilities similar to established ventures in Vietnam and Indonesia to further enhance resource productivity and returns, and to discuss potential opportunities and difficulties that might be encountered. The culture of spiny lobsters (*Panulirus ornatus*) in sea cages is a high value industry throughout tropical coastal regions of Asia. It is also an emerging aquaculture industry in Australia, with recent research focused on the potential for developing see cage aquaculture of this fast growing species in the Torres Straits (e.g. Kenway et al.). Considerable earlier research work has also provided the foundations to inform planning of optimal grow out design strategies (e.g. Skewes et al. 1997, Jones et al 2001). One of the highest research priorities for the industry is to develop cost-effective formulated feeds. This project component will be led by Simon Irvin who is the CSIRO project leader responsible for diet development in an international ACIAR project on the sustainable production of farmed lobsters. In this role, he is responsible for strategic planning, risk analysis, experimental design, project delivery and reporting. Simon is also

responsible for training Indonesian scientists and setting up demonstration lobster farms in Indonesia. Over the last 4 years Simon has provided training for 50 plus scientists and students on feed manufacture, experimental design, protocol development and data collection. In this role, he has significantly enhanced CSIRO's reputation as a trusted advisor within both the scientific community and the spiny lobster aquaculture industry. Simon's farm visits and presentations at farmer focused workshop forums have increased the use of sustainable pellets in place of wild-harvested fish.

Simon will conduct a site visit/s to inform development of a business case, and will work closely with the rest of the project team to draw on extensive information collated on lobster growth, mortality and seasonal demand. This will enable providing advice as to the optimal size of lobsters to capture for grow-out as well as optimal strategies with respect to planning to supply markets based on demand and price (see Fig. 2). ;

5) Capacity building and training – several workshops will be planned to share knowledge of known lobster spatial distribution and current levels of depletion and build capacity in the under-fished regions. This component would build on the science workshops undertaken in July and November 2015. Lessons will also be shared from other indigenous fisheries to learn about pitfalls, unintended consequences and opportunities.

The different project components are inter-linked and will complement each other to achieve the overall aim of boosting development of the TIB sector. For example, immediate gains are achievable by increasing the proportion of live lobsters and taking into account updated information on price fluctuations. This is in turn important to inform planning for any grow-out ventures. Moreover, to develop an investment plan/model for the region, it is important to first document an inventory of the current state of play and available infrastructure– for example, the number and location of freezers on islands.

All research will be conducted in culturally appropriate ways. The project team includes individuals with expertise in the biological, social sciences and economics, as well as familiarity with the survey and fishery-dependent data, and aquaculture expertise.

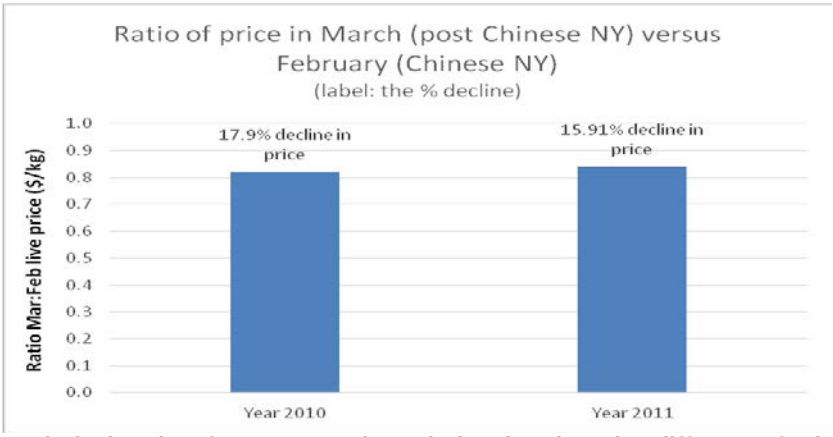

Fig. 2. Illustrative example (using data from 2010 and 2011) showing the price difference for lobsters sold over peak demand periods such as the Chinese New Year.

Related Projects and Research Capability

Describe links to past or present research and how this proposal will add value.

This proposal builds on work done over the past 28 years as part of the TRL survey and assessment project, as well as the more recent TRL MSE project, and adds value to the stock assessment process as well as more generally in supporting decision making related to the Torres rock lobster fishery.

Flow Of Benefits (%)

Fishery	Commercial Sector	Recreational Sector	Traditional Fishing Sector
100%	20%		80%

References

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Plagányi, É.E., van Putten, I., Thebaud, O., Hobday, A., Innes, J., Lim-Camacho, L., Norman-López, A., Bustamante, R., Farmery, A., Fleming, A., Frusher, S., Green, B., Hoshino, E., Jennings, S., Pecl, G., Pascoe, S., Schrobback, P. Thomas, L. 2014. A quantitative metric to identify critical elements within seafood supply networks. PLoS ONE 9(3): e91833

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