

17th MEETING OF THE PZJA TORRES STRAIT HAND COLLECTABLES WORKING GROUP

12 October 2020: 10 am – 12 pm

Teleconference

DRAFT AGENDA

AGENDA ITEM 1 PRELIMINARIES

- 1.1 Acknowledgement of Traditional Owners, welcome and apologies**
- 1.2 Adoption of agenda**
- 1.3 Declarations of interest**
- 1.4 Out of session correspondence**

AGENDA ITEM 2 WORKING GROUP UPDATES

- 2.1 Industry members**
- 2.2 Scientific members**
- 2.3 Government Agencies**
 - 2.3.1 Australian Fisheries Management Authority (AFMA) – Management**
 - 2.3.2 Torres Strait Regional Authority (TSRA)**
 - 2.3.3 Queensland Department of Agriculture and Fisheries (QDAF)**
- 2.4 Native Title**
- 2.5 Papua New Guinea National Fisheries Authority**

AGENDA ITEM 3 RESEARCH PRIORITIES

Expected Outcome: The Working Group will discuss and provide advice on management priorities for Torres Strait Hand Collectable Fisheries.

AGENDA ITEM 4 OTHER BUSINESS

- 4.1 Other Business**
- 4.2 Date and venue for next meeting – week of 5 April 2021 (proposed)**

CLOSE OF MEETING

TORRES STRAIT HAND COLLECTABLES WORKING GROUP	Meeting 17 12 October 2020
PRELIMINARIES Welcome and apologies	Agenda Item 1.1 For NOTING

RECOMMENDATIONS

1. That the Working Group **NOTE**:
 - a. an acknowledgement of Traditional Owners;
 - b. the Chair's welcome address;
 - c. apologies received from members unable to attend.

TORRES STRAIT HAND COLLECTABLES WORKING GROUP	Meeting 17 12 October 2020
PRELIMINARIES Declarations of interest	Agenda Item 1.3 For DECISION

RECOMMENDATIONS

1. That the Working Group members:
 - a. **DECLARE** all real or potential conflicts of interest in Torres Strait hand collectable fisheries at the commencement of the meeting (**Table 1**).
 - b. **DETERMINE** whether the member may or may not be present during discussion of or decisions made on the matter which is the subject of the conflict;
 - c. **ABIDE** by decisions of the Working Group regarding the management of conflicts of interest.
 - d. **NOTE** that the record of the meeting must record the fact of any disclosure, and the determination of the Working Group as to whether the member may or may not be present during discussion of or decisions made on the matter which is the subject of the conflict.

BACKGROUND

2. Consistent with the *Protected Zone Joint Authority (PZJA) Fisheries Management Paper No. 1 (FMP1)*, which guides the operation and administration of PZJA consultative forums, members are asked to declare any real or potential conflicts of interest.
3. Working Group members are asked to confirm the standing list of declared interests (**Table 1**) is accurate and provide an update to be tabled if it is not.
4. FMP1 recognises that members are appointed to provide input based on their knowledge and expertise and as a consequence, may face potential or direct conflicts of interest. Where a member has a material personal interest in a matter being considered, including a direct or indirect financial or economic interest; the interest could conflict with the proper performance of the member's duties. Of greater concern is the specific conflict created where a member is in a position to derive direct benefit from a recommendation if it is implemented.
5. When a member recognises that a real or potential conflict of interest exists, the conflict must be disclosed as soon as possible. Where this relates to an issue on the agenda of a meeting this can normally wait until that meeting, but where the conflict relates to decisions already made, members must be informed immediately. Conflicts of interest should be dealt with at the start of each meeting. If members become aware of a potential conflict of interest during the meeting, they must immediately disclose the conflict of interest.
6. Where it is determined that a direct conflict of interest exists, the forum may allow the member to continue to participate in the discussions relating to the matter but not in any decision making process. They may also determine that, having made their contribution to the discussions, the member should retire from the meeting for the remainder of discussions on that issue. Declarations of interest, and subsequent decisions by the forum, must be recorded accurately in the meeting minutes.

Table 1. HCWG member and observer Declarations of Interest from most recent meetings.

Note: only declarations of members present are shown.

Name	Position	Declaration of interest
Members		
Anne Clarke	Chair	Previously contracted with Regional Development Australia Far North Queensland and Torres Strait No pecuniary interests or otherwise.
Tim Skewes	Scientific Member	CSIRO/Independent Consultant. Current co-investigator on TSSAC project 'measuring non-commercial fishing in the Torres Strait'. Current co-investigator on TSRA funded project 'Stock survey of Torres Strait Beche-de-mer species'. Previous principal scientist for Torres Strait Scientific Advisory Committee (TSSAC) project to develop a harvest strategy for the TSBDMF. Previous CSIRO researcher for TSSAC project investigating traditional take of finfish in Torres Strait.
Steve Purcell	Scientific Member	Has interest in invertebrate fishery research has previously worked in the assessment of sea cucumber fisheries in the Pacific and New Caledonia, and on restocking/sea ranching research; no pecuniary interests or otherwise.
Michael Passi	Traditional Inhabitant Member Kemer Kemer Meriam	TIB licence holder
Tony Salam	Traditional Inhabitant Member Kaiwalagal	TIB licence holder
Maluwap Nona	Traditional Inhabitant Member, Gudumalulgal	TIB licence holder; Chairperson of Malu Lamar; Director of MDW Fisheries Association on Mer; Traditional Inhabitant Member on TSSAC.
Selina Stoute	AFMA Member	Employed by AFMA, no pecuniary interests or otherwise
Mark Anderson	Torres Strait Regional Authority (TSRA) Member	Employed by TSRA, no pecuniary interests as an individual, TSRA holds fishing licences on behalf of traditional inhabitants.
Samantha Miller	QDAF Member	To be declared
Danait Ghebrezgabhier	Executive Officer, AFMA	Employed by AFMA, no pecuniary interests or otherwise

Permanent Observers		
Yen Loban	TSRA Fisheries Portfolio Member	TIB licence holder; TSRA Board Member for Ngurupai
Ian Liviko	PNG National Fisheries Authority	To be declared.
Casual Observers		
Quinten Hirakawa	TSRA Officer	To be declared.
Keith Brightman	TSRA Officer	Employed by TSRA, no pecuniary interests or otherwise

TORRES STRAIT HAND COLLECTABLES WORKING GROUP (HCWG)	Meeting 17 12 October 2020
PRELIMINARIES Out of session correspondence	Agenda Item 1.5 For NOTING

RECOMMENDATIONS

1. That the Working Group **NOTE** the correspondence circulated out of session since the last meeting held on 7 August 2020.

BACKGROUND

2. The following correspondence was circulated out of session since the meeting of HCWG members held on 7 August 2020. Copies of this correspondence can be requested at any time from the HCWG Executive Officer.

Date	Item
12 August 2020	Circulated the draft record for the meeting of HCWG members held on 7 August 2020.
28 August 2020	Circulated the final record for the meeting of HCWG members held on 7 August 2020.
4 September 2020	Circulated the letter sent to Torres Strait Beche-de-mer Fishery (BDM Fishery) licence holders advising them of: <ul style="list-style-type: none"> • The PZJA's decision on the proposed trial re-opening for black teatfish following the PZJA meeting on 27 August 2020. • The new conditions that apply to the Wildlife Trade Operation accreditation of the BDM Fishery following the listing of black and white teatfish under the Convention on the International Trade of Endangered Species (CITES) Appendix II on 28 August 2020. • The new AFMA National Compliance and Enforcement Program 2020-21.
11 September 2020	AFMA emailed HCWG members seeking availability for a meeting proposed to be held during the week starting 5 October, including a proposed Agenda for the meeting.
25 September 2020	AFMA sent a calendar invite to HCWG members for a meeting on 12 October 2020, from 10am-12pm, to consider research priorities.
28 September 2020	AFMA circulated the meeting papers for HCWG meeting on 12 October and also advised members of the resignation of Mr Patrick Bonner as the HCWG Member for Kulkalgai Nation.
28 September 2020	AFMA circulated the scientific paper <i>Development of a data-poor harvest strategy for a sea cucumber fishery</i> published in <i>Fisheries Research</i> on behalf of Dr Éva E. Plagányi et al. The paper describes the tiered harvest strategy implemented for the BDM Fishery.

TORRES STRAIT HAND COLLECTABLES WORKING GROUP	Meeting 17 12 October 2020
RESEARCH Fishery Research Priorities and Updates	Agenda Item 3 FOR DISCUSSION & ADVICE

RECOMMENDATIONS

1. That the Working Group:

- a. **NOTE** the outcomes of the recent Torres Strait Scientific Advisory Committee's (TSSAC) annual research cycle, including updates on individual funded research projects in the Torres Strait Beche-de-mer Fishery;
- b. **NOTE** that a rolling five-year research plan for the Hand Collection Fisheries is used to inform the TSSAC annual call for research funding proposals;
- c. **NOTE** that while research funding available in the 2021/22 financial year is limited (\$120 000) the HCWG should discuss research priorities and consider future research needs; and
- d. **DISCUSS and PROVIDE ADVICE** on research priorities for research funding available in the next 2021/22 financial year funding round, including the suggested analysis of data collected during the proposed trial re-opening of black teatfish in 2021; and
- e. **DISCUSS and PROVIDE ADVICE** on research priorities for a rolling five-year research plan 2021/22 - 2025/26 for Hand Collectable Fisheries (Attachment A) including advice on the feasibility, timing and indicative costing of essential, unfunded research projects.

KEY ISSUES

Research priorities for Hand Collectable Fisheries in 2021-22

2. As per the re-opening decision rule in the BDM Harvest Strategy, if reliable data is collected during the trial reopening of black teatfish in 2021, it will need to be analysed to review the total allowable catch and potential for the fishery to stay open in future, or be re-opened periodically after a pre specified interval. The HCWG may therefore wish to flag the analysis of the data as an essential research priority for the 2021-22 funding round.
3. A research pre-proposal was submitted for the 2020-21 funding round to address an essential research priority for the Beche-de-mer (BDM) fishery to develop species specific weight conversion ratios for curryfish to update the conservative default conversion ratios currently used (Attachment B).
4. However, due to COVID-19 impacts earlier this year the project team for the curryfish conversion ratio project withdrew their application from the 2020-21 funding round and CSIRO's work plan and priorities were re-directed to other projects. The team has further advised that they are currently not in a position to resume the project in 2021-22 as they are facing a number of obstacles due to COVID-19 and staff caps within CSIRO that have limited its ability to acquire additional resources to undertake the project.

5. AFMA has advised the TSSAC that the project remains a priority. Having regard to HCWG advice, the project can be supported again in future calls for research. In the meantime, AFMA will follow up with the fishers that were provided with sea cucumber length measuring packs in 2018 to encourage industry to undertake some weight conversion sampling.
6. Other projects currently underway that are relevant to the HCWG include the Torres Strait Sea Cucumber Stock Status Survey (which is funded by the TSRA and due to conclude in December 2020) and the ecological risk assessment for the beche-de-mer fishery which is being funded as a compulsory piece of work through ongoing contracts with the CSIRO, and not specifically assessed by the TSSAC.
7. A summary of the research and data needs discussed at HCWG meetings to date is provided in Table 1. The three research themes within the SRP, under which the HCWG could identify research priorities for the BDM, trochus and pearl shell fisheries are outlined in Table 2.

TSSAC research funding and process

1. Under the new [TSSAC Strategic Research Plan \(SRP\)](#), each PZJA Working Group and Resource Assessment Group (RAG) is tasked with identifying research priorities for their respective fisheries and updating their five year rolling fishery research plans by September/October each year.
2. The AFMA research budget was set at \$411,000 for the 2020-21 financial year, however \$365,268 was already committed to multi-year projects ([Table 3](#)), which were supported for funding by the TSSAC previously. This left **\$45,732** for spending on priority research in 2020-21.
3. The TSSAC called for research applications for three projects, for funding in the 2020-21 financial year on 09 December 2019, with applications due on 3 February 2020:
 - a. Determining weight conversion ratios for curryfish species *Stichopus herrmani* and *S. vastus*.
 - b. Torres Strait Finfish Fishery Coral Trout Catch Per Unit Effort Standardisation.
 - c. Torres Strait Finfish Fishery Spanish Mackerel Biological Sampling.
4. One pre-proposal application was received for each project and reviewed by the TSSAC at its teleconference on 11 March 2020. The TSSAC decided not to support the coral trout catch per unit effort standardization project as the budget was much higher than anticipated and considered it a lower priority relative to other, higher priority research needs in the finfish fishery.
5. The TSSAC invited full proposals for the other two projects to *Determining weight conversion ratios for Curryfish species Stichopus herrmani and S. vastus* and *Torres Strait Finfish Fishery Spanish Mackerel Biological Sampling*.
6. There are two other projects currently underway that are broadly applicable to Torres Strait Fisheries including *Climate variability and change relevant to key fisheries resources in the Torres Strait – a scoping study*, and *Measuring non-commercial fishing (indigenous subsistence fishing and recreational fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods*.

Table 1. Advice from the Hand Collectables Working Group (HCWG) on research and data needs

Meeting	Description	HCWG Discussion
HCWG9 (June 2016)	Harvest Strategy	The HCWG agreed that future research priorities would be guided by the Harvest Strategy to be developed over the coming 18 months.(Harvest Strategy now developed and implemented)
HCWG11 (June 2017)	Stock status of sandfish and the feasibility of a re-seeding program	<ul style="list-style-type: none"> Concern from industry that the status of the sandfish stock on Warrior Reef was not currently known with the last survey being carried out in 2010.(Planned for 2019-20 survey but did not proceed) Members and observers noted advice from the AFMA member that as part of the harvest strategy project, agreed minimum information requirements together with supporting management measures could be developed to guide any resumption of fishing. Fishery independent surveys may be one way to obtain an understanding of stock status. (Survey undertaken for eastern Torres Strait in 2019-20) Advice was sought on the potential benefit and feasibility of a re-seeding program to facilitate stock rebuilding. The Research Member advised that while there may be some benefit, any re-seeding program would need to be well designed to ensure that moving stock around the strait did not disrupt the natural spawning potential of this recovering species. (In progress)
	Harvesting larvae for ranching	<p>Some industry members and observers queried whether juvenile beche-de-mer that washes up on the shoreline from time-to-time in large numbers, could be harvested and be grown-out for ranching and potentially used to restore depleted stocks. The research member advised that:</p> <ul style="list-style-type: none"> this would be a challenging project. samples and juveniles should ideally be collected for research and identification; and the only grow-out in hatcheries at the moment is for sandfish and that small beche-de mer could potentially be used to seed reefs.
HCWG12 (October 2017)	General	<p>The HCWG noted a presentation by the research member and acknowledged the following future research needs identified:</p> <ul style="list-style-type: none"> Stock status (density, size, catch, areas fished, collaboration with PNG on shared stocks). Conversion ratios (Curryfish boiled and salted). Biology (growth, mortality, size and seasonality of breeding). Value adding, best practice processing and drying (particularly for lower value species). Requirements for harvest strategy implementation. <p>(Research needs included in the Five Year Research Plan and partially addressed)</p>
HCWG13 (July 2018)	Harvest Strategy	<p>The HCWG agreed that progressing work on the Harvest Strategy would help to identify additional research priorities including:</p> <p>a) Standardising conversion ratios</p>

		<p>b) Understanding biological parameters (growth, mortality, breeding)</p> <p>c) (Harvest Strategy completed and implemented)</p>
HCWG14	General	<p>The HCWG recommended that the key research priority for Torres Strait hand collectable fisheries was to undertake an experimental fishing survey to understand the stock status of sandfish on Warrior Reef.</p> <p>Further, the HCWG noted a suite of current and potential research priorities that have been previously identified for the beche-de-mer fishery as outlined below:</p> <ul style="list-style-type: none"> a) Harvest Strategy Development b) Stock assessments <ul style="list-style-type: none"> i. Surveys ii. Analysis of fishery data (all fishery species) c) Conversion ratios <ul style="list-style-type: none"> i. Curryfish boiled and salted to gutted weight d) Biology and ecology <ul style="list-style-type: none"> i. Habitat, reproduction, growth, recruitment to inform size limits; spatial and temporal management ii. Taxonomy iii. Ecological Risk Assessments e) Value adding <ul style="list-style-type: none"> i. Product handling, processing with training and reference material ii. Alternative products (konowata and marine adhesives) f) Climate change impacts/opportunities g) Enhancement/reseeding depleted populations h) CITES (non-detriment findings), Marine Stewardship Council Certification i) Economic analysis, marketing, value chain analysis, fishery capitalisation (Research needs included in the Five Year Research Plan and partially addressed)
HCWG15	General	<p>The HCWG identified a number of key research areas that are also reflected in the Hand Collectable Fisheries Five Year Research Plan, including:</p> <ul style="list-style-type: none"> • management strategy evaluation (MSE) testing of the BDM HS. • assessing the longer term socio-economic value of beche-de-mer, trochus and pearl shell fishery • assessment of the risks and impacts of discarded and wasted product on the integrity of TAC limits. Understanding and improving industry processing methods to achieve higher market prices (particularly for lower value species). • understand more about market chains and trends in supply and demand for beche-de-mer. • develop conversion ratios for boiled and salted weight to gutted weight.

		<ul style="list-style-type: none"> identifying gaps in knowledge of biological parameters of BDM species including growth, mortality, size and breeding seasonality.
HCWG16	Curryfish conversion ratios	<p>The HCWG discussed the pre-proposal <i>Determining weight conversion ratios for curryfish species Stichopus herrmanni and S. vastus</i> submitted by Nicole Murphy, CSIRO, and supported its progression to a full application noting that it:</p> <ul style="list-style-type: none"> addresses an identified research priority. Having species specific weight conversion ratios will improve the accuracy of total catch data for the fishery. Species specific weight conversion ratios would replace the conservative default conversion ratios currently used. is value for money and seeks to engage two Traditional Owners to assist with data collection to provide an understanding of local conditions and processes. Broader consultation with traditional owners on the full application will be undertaken through the TSSAC application process.
HCWG16	General	<p>The Working Group discussed strategic research planning for the Fishery prompted by the concern expressed at the meeting that there is insufficient ongoing research in the BDM Fishery to:</p> <ul style="list-style-type: none"> support the expansion of the fishery in light of the TSRA's significant investment in fisheries infrastructure and training. get better certainty on stocks such as sandfish. understand the potential for reseeding and how best to maximise value through optimum utilisation of the resource and value adding. develop a strategic research plan that focuses on maximising the return of benefits to Traditional Inhabitants across Torres Strait Fisheries overall (this is different to trying to maximise the benefits from each fishery) in light of funding constraints. <p>The TSRA member highlighted the commitment from the Minister for Indigenous Australian's to increase economic and employment opportunities in the region and that this may be an avenue through which some of the research gaps can be addressed. (Partially progressed)</p>
HCWG members meeting 7 August 2020	Black teatfish	<p>Following her presentation of the outcomes of the modelling analyses, Dr Plaganyi outlined further research opportunities in exploring the potential uses of a revised and updated MSE (incorporating multispecies spatial operating model):</p> <ul style="list-style-type: none"> could model all key species, with age structure and spatial component and bound the range of uncertainties. a tool to more comprehensively evaluate the risks of different TAC alternatives. a tool to validate the new Harvest Strategy (HS) and help implement rules such as how best to use indicators to adjust TACs e.g. size measurements used to inform on age structure and hence available biomass. can explore how adding data reduces uncertainty and hence consequences for management recommendations. more broadly can contribute to aspirational development of an integrated ecosystem model that incorporates climate change.

Table 2. Torres Strait fisheries strategic research themes, strategies and research activities

Theme 1: Protecting the Torres Strait marine environment for the benefit of Traditional Inhabitants	
Aim: Effective management of fishery stocks based on understanding species and their biology and ecological dependencies so it can support Traditional Inhabitant social and economic needs.	
Strategy 1a - Fishery stocks, biology and marine environment	<p>Possible research activities under this theme may include:</p> <ol style="list-style-type: none"> Stock assessment and fishery harvest strategies for key commercial species. Ecological risk assessments and management strategies for fisheries. Minimising marine debris in the Torres Strait. Addressing the effects of climate change on Torres Strait fisheries through adaptation pathways for management, the fishing industry and communities. Incorporating Traditional Ecological Knowledge into fisheries management. Methods for estimating traditional and recreational catch to improve fisheries sustainability.
Strategy 1b – Catch sharing with Papua New Guinea	<p>Possible research activities under this theme may include:</p> <ol style="list-style-type: none"> Status of commercial stocks and catches by all sectors within PNG jurisdiction of the TSPZ. Good cross-jurisdictional fisheries management through better monitoring and use of technology.
Theme 2: Social and Economic Benefits	
Aim: Increase social and economic benefits to Traditional Inhabitants from Torres Strait Fisheries.	
Strategy 2a - Promoting social benefits and economic development in the Torres Strait, including employment opportunities for Traditional Inhabitants	<p>Possible research activities under this theme may include:</p> <ol style="list-style-type: none"> Models for managing/administering Traditional Inhabitant quota Understanding what influences participation in commercial fishing by Traditional Inhabitants. Understanding the role and contribution of women in fisheries. Capacity building for the governance of industry representative bodies Methods for valuing social outcomes for participation in Torres Strait fisheries. Identifying opportunities and take-up strategies to increase economic benefits from Torres Strait fisheries.
Theme 3: Technology and Innovation	
Aim: To have policies and technology that promote economic, environmental and social benefits from the fishing sector.	
Strategy 3a – Develop technology to support the management of Torres Strait fisheries.	<p>Possible research activities under this theme may include:</p> <ol style="list-style-type: none"> Electronic reporting and monitoring in the Torres Strait, including for small craft. Technologies or systems that support more efficient and effective fisheries management and fishing industry operations.

Table 3. Committed TSSAC funds for multi-year projects to 2021-22

Research priority from ARS	Project Title	Total project budget (all years) \$	Cost 19/20 \$	Cost 20/21 (current year) \$	Cost 21/22 \$	Cost 22/23 \$	
1a - Fishery stocks, biology and marine environment.	Fishery independent survey, stock assessment, Harvest Strategy and Recommended Biological Catch calculation for the Torres Strait Tropical Rock Lobster Fishery.	868,142	227,983	319,335	290,824		
1a - Fishery stocks, biology and marine environment.	Spanish mackerel stock assessment.	92,375	46,442	45,933	0		
1a - Fishery stocks, biology and marine environment.	Enhancing biological data inputs to Torres Strait Spanish mackerel stock assessment.	79,400	79,400				
1a - Fishery stocks, biology and marine environment.	Climate variability and change relevant to key fisheries resources in the Torres Strait — a scoping study.	45,000	45,000				
1a - Fishery stocks, biology and marine environment.	MSE for the TSPF harvest strategy (direct source)*.	2,500	2,500				
1a - Fishery stocks, biology and marine environment.	Beche de mer ERA	15,000	15,000				

	Sub-total – Ongoing project commitments for AFMA funding	1,097,417	416,325	365,268	290,824		
1a - Fishery stocks, biology and marine environment.	Torres Strait Sea Cucumber Stock Status Survey (note this project is funded by TSRA and will be managed by the TSSAC, but a grant provided by TSRA again).	289,239	207,641	81,598			
2a - Promoting social benefits and economic development in the Torres Strait, including employment opportunities for Traditional Inhabitants.	Measuring non-commercial fishing (indigenous subsistence fishing and recreational fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods.	40,000	40,000				
	Sub-total grant funding from TSRA	329,239	247,641	81,598			
AFMA funding remaining in 2020-21 and 2021-22 financial year				46,057	120,176		

Five-year Research Plan 2021/22 – 2025/26 (DRAFT)

Torres Strait Hand Collectable Fisheries

Beche-de-mer
Pearl shell
Crab
Trochus



COMPILED BY THE HAND COLLECTABLES WORKING GROUP

October 2020

ABOUT THIS PLAN

The Torres Strait Scientific Advisory Committee (TSSAC) seeks input from each fishery advisory body (Resource Assessment Group (RAG), Management Advisory Committee (MAC) or Working Group (WG)) to identify research priorities over five year periods from 2021/22 to 2025/26. This template is to be used by the relevant advisory body to complete their five-year plan. The plans are to be developed in conjunction with the TSSAC Five-year Strategic Research Plan (SRP) with a focus on the three research themes and associated strategies within the SRP.

All fishery five-year plans will be assessed by the TSSAC using a set of criteria, and used to produce an Annual Research Statement for all Torres Strait fisheries.

The TSSAC then develop scopes for the highest ranking projects in order to publish its annual call for research proposals. There are likely to be more scopes that funding will provide for so TSSAC can consider a number of proposals before deciding where to commit funding.

The fishery five-year plans are to be reviewed and updated annually by the Torres Strait forums to add an additional year onto the end to ensure the plans maintain a five year projection for priority research. Priorities may also change during the review if needed.

Table 1. Research priorities for Torres Strait Hand Collectable Fisheries for 2021/22 – 2025/26.

Proposed Project	Objectives and component tasks	Year project to be carried out and indicative cost					Other funding bodies		Evaluation		
		2020/21	2021/22	2022/23	2023/24	2024/25	Notes on project timings		Priority essential /desirable	Priority ranking (1-5)	Theme
Stock Status Survey*	To undertake a stock survey of all Torres Strait beche-de-mer species with a focus on deeper water species	\$81,598					Endorsed by TSSAC – survey work expected to commence in late 2019, and early 2020	TSRA (primary) CSIRO (in-kind)	Essential	2	1
Ecological Risk Assessment (ERA)*	Conduct an ERA for the TSBDM Fishery							CSIRO (in-kind)	Desirable	3	1
Climate Change impacts and vulnerability*	Scoping study across all Torres Strait								Desirable	3	1
Understanding critical uncertainties for Torres Strait Beche-de-mer species and processing methods	Undertake field sampling of curryfish species (<i>Stichopus herrmanni</i> and <i>S. vastus</i>) to develop conversion ratios for boiled and salted weight to gutted weight.	\$12,000							Essential	1	1
Management Strategy Evaluation (MSE) of the Beche-de-mer Harvest Strategy	1. Collate all data and biological information; 2. Update and extend the spatial multispecies TS BDM operating model developed earlier (or construct a new model); 3. Use MSE to evaluate how well the HS achieves the pre-specified objectives; 4. In consultation with stakeholders, use the MSE framework to investigate ways to improve the current HS.				\$130k ^		Will require 3-5 years of BDM HS implementation before MSE testing is achievable. However, can be undertaken sooner if external pressure requires (e.g. CITES Appendix II listing)		Essential	2	1

Promoting social benefits and economic development of hand collectable fisheries	Assessing the socio-economic value of beche-de-mer, trochus and pearl shell fisheries & identifying opportunities to increase economic benefits.		Not costed						Essential	3	2
Improving best practice processing methods of beche-de-mer	Understanding and improving industry processing methods to achieve higher market prices (particularly for lower value species)	Not costed - advice pending					Subject to broader collaborative funding		Desirable	4	3
Ecological Risk Assessment (ERA)	Conduct an ERA for the Torres Strait Pearl Shell (TSPF) Fishery			\$20,400			Nil	CSIRO (in-kind)	Desirable	5	1
Understanding biological parameters of BDM species, including growth, mortality, size and breeding seasonality.	Identifying gaps in knowledge of biological parameters of BDM species and investigating options for collaborative research	Not costed – pending further scientific advice							Desirable	5	1

Notes

* Light blue shaded projects are underway, funded in 2019/20 financial year.

^ Advice from CSIRO: Rough costing takes into account time needed to collate all fishery-dependent and fishery-independent data, develop and refine existing operating model and MSE framework, costs of attending at least 2 meetings to consult with stakeholders

Torres Strait Scientific Advisory Committee research application

Please indicate the type of application you are submitting – an EOI in response to a call for research; or a full proposal in response to TSSAC advice that your initial application has been approved for further development:

X

Pre-proposal (Please complete Sections 1-4 inclusive)

Full Research Proposal (Please complete sections 1-8)

SECTION 1 - ADMINISTRATIVE SUMMARY

Project title:	Determining conversion ratios for Curryfish species
-----------------------	---

Applicant (organisation or person):	CSIRO Ocean & Atmospheric Research
--	------------------------------------

Contacts

Administrative

Title/Name:	Bonnie Lau	Phone:	08 6436 8614
Position:	Finance Advisor	Email:	bonnie.lau@csiro.au
Organisation:	CSIRO Oceans & Atmosphere	Postal address	GPO Box 1538 Hobart, TAS 7001

Principal Investigator (person)

Title/Name:	Nicole Murphy	Phone:	07 3833 5948
Position:	Experimental Scientist	Email:	nicole.murphy@csiro.au
Organisation:	CSIRO Oceans & Atmosphere	Postal	Queensland BioSciences Precinct

Co-investigator (s)

Title/Name:		Phone:	
Position:		Email:	
Organisation:		Postal	(QBP)

Co-investigator (s):

Title/Name:		Phone:	
Position:		Email:	
Organisation:		Postal	

Planned Start and End Date

Start Date:	15/07/2020	End Date:	20/06/2021
-------------	------------	-----------	------------

SECTION 2 – PROJECT DESCRIPTION

PROJECT BUDGET: (Excluding GST)

Financial Year	AFMA	Applicant (in kind)	Applicant	Other
2020/21	\$11,969.00	\$5,129.00		\$0.00
	\$0.00	\$0.00		\$0.00
	\$0.00	\$0.00		\$0.00
Totals	\$11,969.00	\$5,129.00		\$0.00

SECTION 3 – PROJECT DESCRIPTION

Background and need (max 250 words) - *detail any important background relating to the project. Why it is important and being proposed (need). Any related projects or other information the TSSAC should know when considering it for funding.*

Survey stock weight estimates and fishery catch data from the Torres Strait sea cucumber fishery can be recorded in a number of processed states from whole live to fully processed (dry). Survey stock size is usually calculated as live weight, and fishery catch weight data may be reported in several processed stages (e.g. Live, Green gutted, Salted, Boiled and salted, Boiled and frozen, Fully processed). The fishery is managed (e.g. TACs, trigger limits) using “landed” (wet gutted) weight, therefore the relationship between the weights of sea cucumbers at these various processing stages is an important tool in sea cucumber fishery management.

A wide range of locally relevant conversion ratios has been provided by CSIRO over the years suitable for converting weights from surveys and fishery data to the required management weight metric for the Torres Strait sea cucumber fishery (e.g. Skewes et al., 2004). A recent compilation and update of sea cucumber weight conversion ratios was also conducted for the recently completed Torres Strait Beche-de-mer Harvest Strategy (Plagányi et al., 2019). This review, and information from fishers and management agencies, indicated that a critical conversion ratio information gap occurs for curryfish, which is a newly targeted species group that require specialised processing upon capture due to their tendency to easily disintegrate. This usually requires an early boil and then salting of the animal before it can be weighed. The new curryfish processing stage will require a new conversion ratio: Wet-boiled-salted so that fishery catch data can be converted to standard (wet gutted) weight for application of management rules.

This project will fill information gaps in conversion ratio data for new priority BDM fishery species of curryfish *Stichopus herrmanni* and *Stichopus vastus* and will also provide information on newly developed processing techniques for these species. Though conceptually straight forward, gathering these data is not easy. Connections to local fishers is critical, and understanding of local conditions and processes is also essential.

Objectives / performance indicators (max 250 words) - *list the major objectives or planned outcomes of the project. These will form your project milestones:*

Accurate conversion ratios are required to determine total catches in a standard unit (e.g. wet gutted or landed weight) from data that records catch weight in several different processing stages, to enforce TACs and for stock assessments and implementation of the new harvest strategy.

Deliverables:

1. Fill information gaps in conversion ratio data for new priority fishery species of curryfish, *Stichopus herrmanni* and *Stichopus vastus*, including for newly developed processing techniques for these species.
2. Inclusion of other BDM species where possible to value add and inform on current conversion ratio information.
3. Review current conversion ratio scientific literature for updating other BDM species values.
4. Provide anecdotal information from fishers on BDM catch to inform management and input into the Beche-de-mer Harvest Strategy.
5. Information from the project will be provided to AFMA and Torres Strait Island stakeholders in the form of formal final reports and a plain English summary document. Special consideration will be taken with Traditional Knowledge (TK).

Consultation and Engagement - *Note consultation is required for both the pre- and full-proposal phases for TSSAC projects. This differs from AFMA Research Committee Proposal requirements.*

Pre-proposal phase consultation

Briefly detail (this will form the skeleton of your community engagement strategy which must be developed as part of full proposal phase):

- *the areas in the Torres Strait region where the proposed research activities may occur*
- *the Torres Strait community groups or individuals that you will engage/involve from these areas in the development of and or during the project if it reaches full proposal phase (refer to Step 2 of Attachment A - Procedural Framework for Researchers in the Torres Strait).*
- *how you plan to engage/involve key stakeholders (e.g. community notices, telephone, email, employment, interviews, meetings, workshops) in the project development. Note, any potential fee for service rates need to be factored into your research project budget.*

*If there has been any initial consultation and engagement outline with whom and key outcomes (note consultation is **not** necessary at the EOI stage but has sometimes occurred through existing relationships).*

CSIRO has carried out research on the Torres Strait Beche-de-mer Fishery since 1995. As part of this work, the principal investigator (Nicole Murphy), has 15 years experience working on the Torres Strait Beche-de-mer fishery and Tropical Rock Lobster fishery, including regular consultation and communication with traditional owners.

Previous BDM fishery research has included a high level of interaction with Torres Strait Islanders. This research has been communicated to Torres Strait islanders through TSHCWG meetings, dedicated Island workshops and supply of appropriate communication material for conveying the outcomes of research projects to islander communities. Our belief is that there is a high level of awareness of the need for this research among traditional owners. Any future research will be conducted at the same level of consultation with respect to community desires.

As part of the development of the Torres Strait BDM Harvest Strategy, sea cucumber conversion ratio processing packs were provided to a number of interested Traditional Owners at the last Beche-de-mer Harvest Strategy workshop and meeting, in October 2018, with the aim of collecting conversion ratio information for curryfish species. Subsequent follow up did not result in data as fishing effort in communities had largely been directed towards other species due to a variety of factors.

The initial plan will be to invite two Traditional Owners who volunteered to provide conversion ration data to be further involved in this work, which may include fishers from the Islands of Ugar, Poruma and Mer. We propose payment for identified fishers to work with the researcher to obtain and update conversion ratio information for commercial BDM species in Torres Strait.

Full proposal consultation and engagement

In accordance with the Procedural Framework for Researchers in the Torres Strait (Nakata 2018; Procedural Framework), the TSSAC full proposal requires two different aspects be completed.

1. Develop a stakeholder engagement strategy, including a plain-English community consultation package which should be used to undertake preliminary consultation with relevant stakeholders as part of your full proposal application. Follow instructions in Appendix 4 of the procedural framework ([Attachment A](#)).

2. Provide documentation and outcomes from the preliminary consultation and engagement conducted, including:

- The level of stakeholder support – particularly from Traditional Inhabitants for the proposed work (include a list of who was contacted and whether they support the project, or if not, why).*
- Any perceived risks or stakeholder considerations with the project.*
- How traditional knowledge might be considered or incorporated to enhance the project, its outcomes and benefits.*
- Any activities suggested by Traditional inhabitants to improve the project, or bring it into alignment with community needs.*
- How the research outcomes will benefit Traditional Inhabitants directly or indirectly, or why it is not relevant/applicable (i.e. projects in the prawn fishery).*

Attach the stakeholder engagement strategy (which should have been updated as required following initial consultation) with your full proposal application.

Methods (max 250 words) – Please detail the basic methods that will be used to undertake this project.

As part of the development of the Torres Strait Beche-de-Mer Harvest Strategy, sea cucumber conversion ratio processing packs were provided to a number of interested Traditional Owners at the last Beche-de-mer Harvest Strategy workshop and meeting, in October 2018, with the aim of collecting conversion ratio information for curryfish species. Subsequent follow up did not result in data as fishing effort in communities had largely been directed towards other species due to a variety of factors.

These conversion ratio processing packs included detailed information, data sheets, stationery and scales. A question and answer session was undertaken with the TO's where it was demonstrated how to measure and weigh sea cucumbers and record data.

Information, including lengths and weights for beche-de-mer at different processing states will be collected from tracking species individuals through the processing chain. Individuals will be tagged by attaching numbered tags (heat tolerant plastic zip lock) and length and weights recorded (see Appendix A & B). The relationship between processing states will be investigated using regression analyses. Recovery rates will be calculated from average change in weight for individuals of each species during the processing train. Conversion ratios will be determined from linear regression, with individual data points weighted by individual animal weight of the independent parameter in the regression.

This proposed project work will focus on engaging two Traditional Owners who previously volunteered to provide conversion ratio data to be further involved in this work from the Islands of Ugar, Poruma or Mer and will build upon BDM Harvest Strategy project outcomes. We propose payment for identified fishers to work with the researcher to obtain and update conversion ratio information for commercial BDM species in Torres Strait.

The high priority species of Curryfish, *Stichopus herrmanni* and *S. vastus* will be targeted and where possible, information gaps or updating of values will be captured for other commercial Beche-de-mer species. This will be co-ordinated between Islands.

Planned outcomes and benefits (max 150 words) – this should include how the research will be used by management to benefit the fishery and other stakeholders:

Accurate conversion ratios are required to determine total catches in a standard unit (e.g. wet gutted or landed weight) from data that records catch weight in several different processing stages, to enforce TACs and for stock assessments.

This project will fill information gaps in conversion ratio data for new priority Beche-de-Mer fishery species of curryfish - *Stichopus herrmanni* and *Stichopus vastus* and will also provide values for newly developed processing techniques for these curryfish.

Torres Strait Islander representatives have been closely involved in Hand Collectable Working Group meetings for their fisheries and this presents a highly valuable opportunity for Traditional Owners to work with researchers and take their experience and knowledge back to their community.

This research will follow on from previous Beche-de-mer Harvest Strategy project work and will directly inform management decisions and possible future fishery expansion. It will also provide an operating framework for broader application to the fishery.

Project extension (max 100 words) - are there possible future research options that could result from this project?

There is a high probability of future research resulting from current Beche-de-mer research, and as part of the implementation of the newly endorsed Beche-de-mer Harvest Strategy for Torres Strait.

Risk Analysis - be sure to consider risks specific to conducting research in the Torres Strait including community support or lack thereof.

CSIRO have successfully carried out a number of research projects in Torres Strait, as well as in areas across northern Australia and in PNG. The investigator has extensive experience working on the Torres Strait Beche-de-mer fishery, including regular consultation and communication with Traditional Owners.

Related Projects and Research Capacity (max 100 words) - *Are there any past or current projects relevant to this proposal funded through the TSSAC, TSRA, FRDC or other organisation? Outline the Investigators' experience in the proposed research and Torres Strait region.*

This project builds on work undertaken as part of the newly endorsed Beche-de-Mer Harvest Strategy for Torres Strait.

Beche-de-mer research in Torres Strait has included a number of projects undertaken from 1995 to the present day. As part of this work, the principal investigator (Nicole Murphy), has 15 years experience working on the Torres Strait Beche-de-mer fishery and Tropical Rock Lobster fishery, including regular consultation and communication with traditional owners.

SECTION 4 - Schedule of Payments

As a general rule, up to 10% of the total project cost may be provided as an initial payment and a minimum of 30% of the total project cost must be left for the final report.

Milestones	Deliverable date (Please refer to	Schedule of AFMA payment(s) (excluding
Initial payment on signing of contract	On signing	\$1,196.90
Payment of two Traditional Owners	1 February 2021	\$2,132.40
Updated conversion ratio table of results	1 March 2021	\$2,524.50
Draft final report	1 May 2021	\$2,524.50
Final report	20 June 2021	\$3,590.70
TOTAL		\$11,969.00

SECTION 5 - Description of Milestones

Details on each milestone must provide sufficient information to justify the milestone cost and should match the performance indicators. The description field will describe the work to be completed for that milestone with the justification field elaborating further on the categories of cost - for example salary.

Milestone:

Date:

Financial Year	Salaries	Travel	Operating	Capital	Total
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Description:

Justification:

Milestone:

Date:

Financial Year	Salaries	Travel	Operating	Capital	Total
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Description:

Justification:

Milestone:

Date:

Financial Year	Salaries	Travel	Operating	Capital	Total
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Description:

Justification:

Milestone:

Date:

Financial Year	Salaries	Travel	Operating	Capital	Total
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Description:

Justification:

Milestone:

Date:

Financial Year	Salaries	Travel	Operating	Capital	Total
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Description:

Justification:

Milestone:

Date:

Financial Year	Salaries	Travel	Operating	Capital	Total
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Description:

Justification:

Section 6 – Special Conditions

If relevant, this field will be used to assist in contract preparation for any special conditions. Examples of special conditions may relate to marine spatial closures (including access) or any other clauses not specifically contained in the contract.

Section 7 - Data management

Identify the appropriate Intellectual Property category applicable to this application. Choose ONE from below:

Code	Description
1	Published, widely disseminated and promoted, and/or training and extension provided. Relates mainly to outputs that will be available in the public domain.
2	Published, widely disseminated and promoted, and/or training and extension provided. Related products and/or services developed. Relates mainly to outputs that will largely be available in the public domain, but components may be commercialised or intellectual property protected.
3	Published, widely disseminated and promoted, and/or training and extension provided. Related products and/or services developed. Relates mainly to outputs that may have significant components that are commercialised or intellectual property protected.

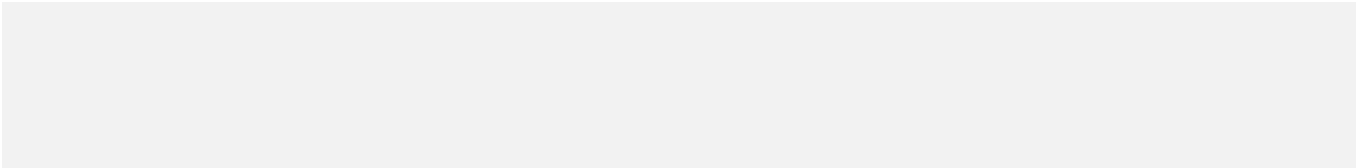
The following IP category applies to this application:

I have searched for existing data (refer to guidelines on how to search the Australian Spatial Data Directory and Oceans Portal):

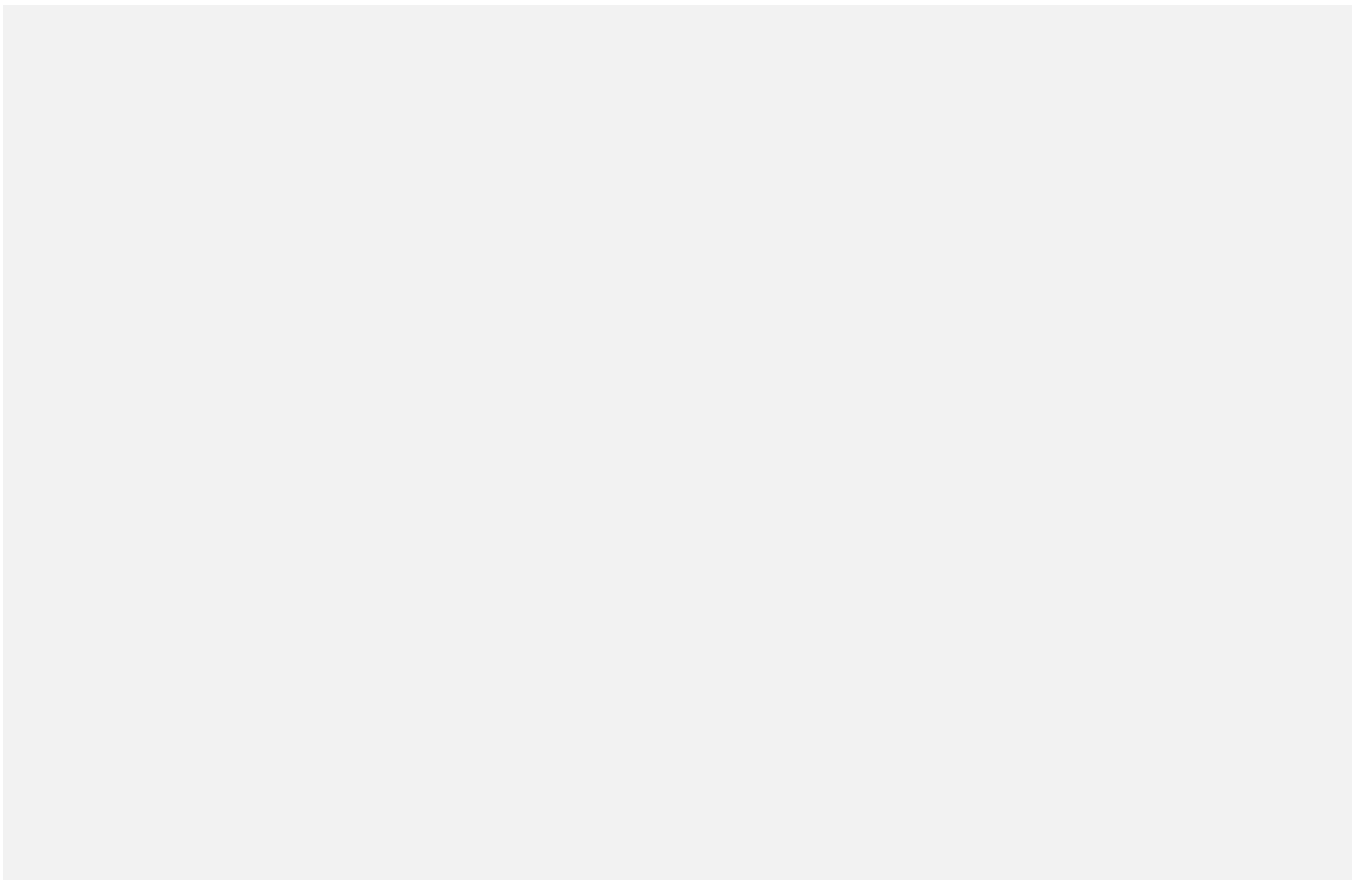
[Yes / No]

Provide a brief description of the data to be generated from the project and how this data will be stored for future protection and access, including:

- information on data security or privacy issues and applying to the data
- Nominated data custodian



- Document how research data, traditional knowledge and intellectual property will be handled during your project, including but not limited to:
- Acknowledging where the data or information used in research comes from, so that any income made from selling a concept in the future will be adequately linked to a community's contribution/ knowledge so they also receive financial or other benefit from "selling" a concept onward.
- How you will negotiate use and publish of traditional knowledge with communities. For example do traditional inhabitants allow public publication of information or only for project activities and reported on in internal reports? This will depend on data sensitivity and privacy (such as fishing grounds etc).
- Are there any other ethical considerations you have identified for this project which need to be managed?
- Are you committed to gaining ethics approval for this project from a suitable body such as a university or AIATSIS?

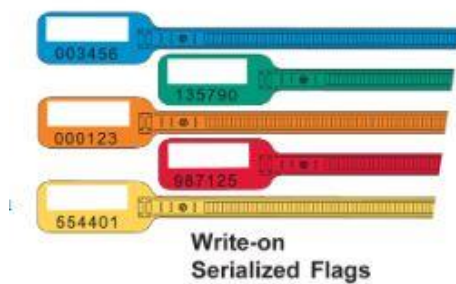


Beche-de-mer Processing Instructions

It is important that the relationship between measurement of sea cucumbers in different stages of processing, from live product to dried and ready for market be determined. This allows data from different processing states to be converted and used for tracking species TAC.

1. Please fill in your name, date and location.
2. Identify sea cucumber to species (ID guide provided).
3. Insert sea cucumber identification tag by making a small incision in the animal eg. near anus, and tighten. Cut off extra tag length if needed to avoid damaging the animal and note down tag number.

*Identification tags will allow individual sea cucumbers to be tracked through processing stages to final product (tags have been heat tested and can be boiled).



4. Measure the length of the individual using ruler and note down.
5. Weigh individual using the digital scales and note down.
6. Begin processing - note down the *weights* or *lengths* for each step in the processing stage for the individual animal eg. Gutted Length, Gutted Weight etc.
7. Extra columns 'Other' have been added at the end of the survey sheet to record any extra processing steps that have not been included eg. Second Boil – Weight and Length.

Name:

Where caught:

Where processed (Island):

[illegible]