

Final Task Report

Task Number: T1.5

Title: Towards Ecologically Sustainable Management of the Torres Strait Prawn Fishery

Start Date: 01-Jul-03

End Date: 31-Dec-06

Task Contacts

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Objectives

1. Develop cost-effective protocols to monitor and quantify the by-catch and environmental impacts of commercial prawn trawling.
2. Monitor the status of target species using both fishery dependent and fishery independent data.
3. Develop biological reference points for target species and undertake Management Strategy Evaluation, in particular a risk assessment of fishing at various levels of fishing mortality.

Need (from proposal)

A strong need for research towards ecological sustainable management of the Torres Strait Prawn Fishery was identified by the May 2001 Torres Strait Fisheries Assessment Group (TSFAG) Prawn Workshop and subsequent meetings of the Torres Strait Prawn Working Group (PWG). These meetings identified the following research needs to address stock sustainability and environmental issues:

1. An observer program to;
 - a. Monitor the level of bycatch of lobster in the trawl fishery and the condition of the trawled lobsters (assess damage resulting from capture in trawls).
 - b. Validation and enhancement of the fishing effort and catch data of target and byproduct species recorded in fisher logbooks.
 - c. Monitor bycatch and quantify the impact of management measures aimed at reducing bycatch levels and the capture of protected species.
2. Assessment of the broader ecological effects of the TSPF, particularly the impacts on benthic communities.
3. Mapping of the benthic communities in the area of the TSPF.
4. Risk assessment of the impact of increased fishing effort on target species and strategies for reduction of latent effort in the fishery.

Research aimed at addressing these research needs is urgently required to assist with the accreditation of the fishery under the Environment Australia (EA) Guidelines for Ecologically Sustainable Management of Fisheries and to address the concerns of Islander Fishers that the trawl fishery may be impacting on catches in the Torres Strait Tropical Rock Lobster Fishery.

Another issue driving the need for the observer program is the interaction of fishing with endangered and protected species. To quantify this interaction, management introduced a "Wildlife and Protected Species Sheet" recently into logbooks for the Torres Strait Prawn Fishery. On the sheet, Fishers are now required to record catches of endangered and protected species, such as turtles, dugong, sea snakes and syngnathids (seahorses, sea dragons and pipefish). Due to the sensitivity of this catch information for EA requirements, there is a strong need to collect this catch data through independent observers in order to effectively validate the logbook recordings of these endangered and protected species. An observer program will also enhance the collection of this data by fishers by raising

awareness of wildlife and protected species issues, and to foster the collection of more detailed species information by training commercial fishers to identify various bycatch species.

The prawn stocks in the Torres Straits are part of larger, shared stocks that cross management borders into PNG. There is an ongoing need to monitor prawn stocks in the Torres Straits using all available fishery data (logbooks, unloading data, VMS and LTMP prawn surveys). The March 2003 bilateral meeting with PNG highlighted a need for inclusion of catch and effort data from PNG endorsed vessels into the monitoring and assessment of QFS-managed prawn stocks in the Torres Straits. In addition it was suggested that cross-border catch sharing arrangements should be based on an assessment of the sustainable catch from both sides of the Fisheries Jurisdiction Line.

Although Torres Strait tiger prawn stocks have been assessed as a component of FRDC project 1999/120, which is now completed, there is already an identified need for further assessment work. An international stock assessment expert, Dr David Die, will review the current assessment in May 2003. The review may suggest changes to the assessment process. This review was arranged at the request of industry as the Australian operators in the fishery are currently faced with a 40 to 50 % reduction in allocated fishing days in order to reduce latent effort in the fishery. In addition the current assessment does not include data from PNG endorsed vessels that have started operating in the fishery and there will be an ongoing requirement to re-assess the fishery as new management arrangements are implemented. Each additional year of data needs to be added to the stock models to ensure that fishing remains at sustainable harvest levels. The change in fishing power of vessels due to changing management arrangements (introduction of BRDs, reduction of net sizes etc), and vessel transfers / upgrades also needs to be monitored and incorporated into regular fishery assessments.

Significance (from proposal)

The results of the research are required to monitor the status of Torres Strait prawn stocks and for the development of management strategies that will ensure that stocks are harvested in an environmentally sustainable manner. The research will also assist with the accreditation of the fishery under Environment Australia's Guidelines for the Ecologically Sustainable Management of Fisheries. Sustainable management of the fishery is a priority for Torres Strait, Australia and Papua New Guinea under the Torres Strait Treaty.

The research outputs will directly address objectives 1, 2 and 4 of the CRC TS Program for Harvested Marine Resources. Analysis of commercial catch and effort data will provide information on the status and trends of the prawn resource, exploitation rates, and form the basis of stock assessment and the development of reference points for management. The stock models can also be used to evaluate alternative management strategies. The bycatch / observer component of the project will address objective 3 of the CRC TS Program by providing data on the impact of trawling on bycatch, especially protected and endangered species. The CRC TS objectives addressed by the research are in line with the agendas for other Australian trawl fisheries that are seeking accreditation under the EA Guidelines for Ecologically Sustainable Management of Fisheries. The research results are of relevance to Torres Strait Islanders as they are concerned about potential impacts of trawling on the sea surrounding their islands and there are three trawl licences reserved for use by Torres Strait Islanders. The research results are of relevance to Papua New Guinea (PNG) due to their involvement in management of the prawn fishery under the Torres Strait Treaty. In addition PNG vessels have started fishing in PNG waters of the Torres Strait Protected Zone (TSPZ) and five vessels have applied to fish south of the Fisheries Jurisdiction Line under cross-border fishing arrangements.

Research Summary

The main achievements of the Task during the 2005-06 financial year, which are based on the monitoring and research conducted during the 2003-05 financial years, were:

1. A key role in the Alternative Management Workshop (July 2005). The intent of the workshop was to allow fishers, scientists and managers to collaborate on the development of management arrangements that would result in sustainable harvesting of tiger prawns stock while allowing some additional effort directed towards the endeavour prawn stock.
2. Completion, peer review and publication of the report that details the 2004 update of the tiger prawn stock assessment and Alternative Management Workshop. This report addresses most of the recommendations of the 2003 Dr David Die review of the 2003 tiger prawn assessment. The assessment report includes analysis of both the fisher records (logbook data) and the LTMP research

survey data (Fishery independent data). This research achieves objectives 2 and 3 of the original Task Proposal.

3. Completion of the 2006 February research (LTMP) survey and collection of additional bycatch catch samples from each survey site. The 2006 samples have been processed and the data entered and checked. A preliminary analysis based on the data collected by the 2004 and 2005 surveys indicates no significant difference in the numbers of species and abundance of the bycatch from sites within the fishery and closed areas. The dominant fish species and fish families were very similar to that found in studies of the Torres Strait trawl bycatch conducted in 1985-6 (Stobutski 2001, Harris and Poiner 1990). Cassandra Rose presented the results of this research at the July 2006 AMSA conference. The species list from the bycatch samples was used in June 2006 to assist with a level 1 Ecological Risk Assessment report produced by CSIRO in collaboration with the project lead for this Task. This research addresses the second part of Task objective 1. The Task has also input into the design and monitoring protocols for the AFMA observer program. This linkage with the industry funded AFMA observer program addresses the first part of Task objective 1.

Note that this Task has been granted an extension to 31st December 2006 to facilitate an update, during late 2006, of the tiger prawn assessment to include the 2005 and available 2006 harvest data. The need for this updated assessment was flagged at the July 2005 Alternative Management Workshop by industry representatives and managers. The assessment is central to addressing the DEH requirements for sustainable management of the fishery while minimising the impact on the fishing industry and account for the changes in the fleet that occurred as a result of the February 2006 buy-back of fishing effort. The final report for the Task, due on the 31st December 2006, will include the updated tiger prawn assessment and the final results of the analysis of bycatch samples from closed and open areas within the fishery. These results will assist with the process of ensuring that the fishery continues to meet the DEH requirements for Strategic Assessment.

Task Associate Comment

PRESCOTT, Jim (Mr J)

The project did, as the author indicated, provide key inputs to the alternative management arrangements workshop in 2005. Though the workshop did not lead immediately to a more spatially refined management system for the fishery it has broken that ground and will assist future discussions.

The long-term monitoring work is of interest from target, by-product and by-catch species perspectives. It has provided data valuable for comparison of species' abundance that combined with historical studies spans much of the history of the fishery. This is a valuable asset for all stakeholders in the fishery. Copies of reports and presentations on this aspect of the project would be very welcome and should probably be made to the TSPMAC.

The stock assessment published during the term of the project remains the most up to date assessment of the tiger prawn component of the fishery and is a valuable reference for management purposes and a good basis for the next formal stock assessment of the fishery. The results of the assessment modelling were the basis for the new management arrangements introduced in the fishery by the PZJA in 2006 and the project team deserves recognition for the important role that they played and the way they conducted themselves during a very difficult period for everyone involved

Outcomes/Achievements against each Specific Objective

1: Develop cost-effective protocols to monitor and quantify the by-catch and environmental impacts of commercial prawn trawling.

The first part of this objective has been achieved by liaising with AFMA on the development of the industry funded observer program that commenced in the TSPF during 2005. The Task has had input into sampling protocols and the type of data collected. The second component of this object has been achieved in terms of bycatch, through analysis of bycatch samples collected from within the fishery and adjacent fully closed and semi-closed (East of Warrior Closure) areas. The data collected has also been compared with base-line data on bycatch collected by CSIRO during 1985-6.

2: Monitor the status of target species using both fishery dependent and fishery independent data.

The status of the target species has been monitored using the commercial harvest data collected

through the AFMA logbook program. The trends in the data have been regularly reported back to stakeholders at PWG and TSHEHA meetings and via the annual editions of the Torres Prawn Handbook and the tiger prawn stock assessment reports. The Torres Strait component of the DPI&F Long Term Monitoring Program for prawns provided fishery independent data that has been compared with the fishery data and used to support the stock assessment results.

3: Develop biological reference points for target species and undertake Management Strategy Evaluation, in particular a risk assessment of fishing at various levels of fishing mortality.

To be Completed

Utilisation and Application of the Research, Commercialisation

Key outputs of the tiger prawn assessment models are biological reference points such as MSY, Emsy and Bmsy. The estimate of Emsy in particular has been central to the process of developing new management arrangements for the fishery that will limit effort to a level considered sustainable while minimising the impact on the industry. The risk associated with fishing at various levels of fishing mortality has also been simulated and detailed in the stock assessment reports.

The results of the research, in particular the stock assessment, have been central to the process of developing new management arrangements for the fishery.

At the Alternative Management Workshop industry and managers utilised the research results to discuss and propose new management arrangements for the fishery. The results of the stock assessment models for tigers prawns were used by the PZJA, in November 2005, to reduce the allowable effort in the fishery to a level that is considered to be sustainable for tiger prawns. The bycatch species list generated from the bycatch sampling was utilised in the Ecological Risk Assessment developed for the TSPF in June 2006.

The strategy used to maximise uptake of research findings was regular reporting at Prawn Working Group and Entitlement Holder meetings and the provision of "Research" and "Logbook Statistics" chapters for the annual editions of the Torres Prawn Handbook. This ensured that all stakeholders were informed of the most recent research results.

Publications

(1st July 2005 - 30th June 2006)

Technical Reports:

O'Neill, M.F. and Turnbull, C. T. (2006) Stock Assessment of the Torres Strait Tiger Prawn Fishery (*Peneaus esculentus*). Department of Primary Industries and Fisheries, Queensland, 83pp.

(Previous Yearly Reports)

Technical Reports:

O'Neill, M and Turnbull, C. T. (draft) Stock Assessment of the Torres Strait Tiger Prawn Fishery (*Peneaus esculentus*). Department of Primary Industries and Fisheries

Other Outputs

'Research' and 'Logbook Statistics' section were written for the 2004, 2005 and 2006 editions of the Torres Prawn Handbook. This annual publication is one of the main methods by which the results of the stock assessment and monitoring of trends in the status of the stocks has been distributed to stakeholders.

(1st July 2005 - 30th June 2006)

Media Activities (Television, radio exposure, newspaper or magazine):

Interview on ABC Radio, Thursday Island, February 2006.

Number of Other Public Presentations, eg Seminars and Conference Presentations:
Presentation at the AMSA conference, Cairns, July 2006

Workshops, Industry Information Sessions for Communications of Research findings:
Alternative Management Strategy Workshop 26-28 July 2005

Presentation to the Torres Strait Prawn Entitlement Holders Annual General Meeting, January 2006.

1st July 2004 - 30th June 2005

Media Activities (Television, radio exposure, newspaper or magazine):

Media releases were made by DPI&F and the CRC Torres Strait for the February-March 2005 Prawn Surveys conducted in the Torres Strait and northern Queensland east coast. A Win Television interview regarding the surveys was aired on 31st January 2005.

Workshops, Industry Information Sessions for Communications of Research findings:

Torres Strait Prawn Trawl Fishery industry workshop was held on 28 June 2004 at which a presentation was given on the update and refinement of the Torres Strait tiger prawn stock assessment. This information was also presented to the Torres Strait Prawn Working Group meeting on 7 July 2004. At the TSPEHA AGM on 1 Dec 2004 the trends in Torres Strait prawn trawl catch and effort for 2004 were presented.

1st July 2003 - 30th June 2004

Workshops, Industry Information Sessions for Communications of Research findings:

"Refinement and Update of the Stock Assessment for Torres Strait Tiger Prawns" - presentation to Industry Workshop, 28th June 2004, Cairns Cruising Yacht Squadron.

Workshops, Industry Information Sessions for Communications of Research findings:

Presentation on the updated tiger prawn stock assessment to the Torres Strait PWG, 7th July 2004.

Workshops, Industry Information Sessions for Communications of Research findings:

Review of the Torres Strait tiger prawn stock assessment by Dr David Die, October 2003.

Postgraduate Students

None reported.

Grants & Awards

None reported.