

# Commercial prawn catches in Torres Strait

by Peter Channells, Reg Watson and Peter Blyth

COMMERCIAL prawning is a major industry in Torres Strait attracting the attention of more than 100 vessels in a combined total annual catch of about 1000 tonnes.

However, the present fishery is based on a highly mobile fleet and any change in this feature of the industry could have a dramatic effect. For this reason the Torres Strait prawn fishery needs to be looked at in conjunction with the northern prawn fishery and east coast fisheries as management practices in any one of the three areas is likely to have some effect in the other fisheries.

This article presents an overall view of the Torres Strait fishery based on large-scale data collected on the fishery over the past nine years.

The data shows the fishery as a whole is not being overfished but, the absence of detailed fishing information on specific areas and changes in the species composition of the catch suggest that, much more investigation remains to be carried out.

## Background

Commercial prawn trawling began in Torres Strait in 1968 with the opening of a processing plant on Thursday Island by Norshrimp Pty Ltd.

For the first few years most of the prawns processed at this plant were caught on fishing grounds off Weipa in the Gulf of Carpentaria and on the Irian

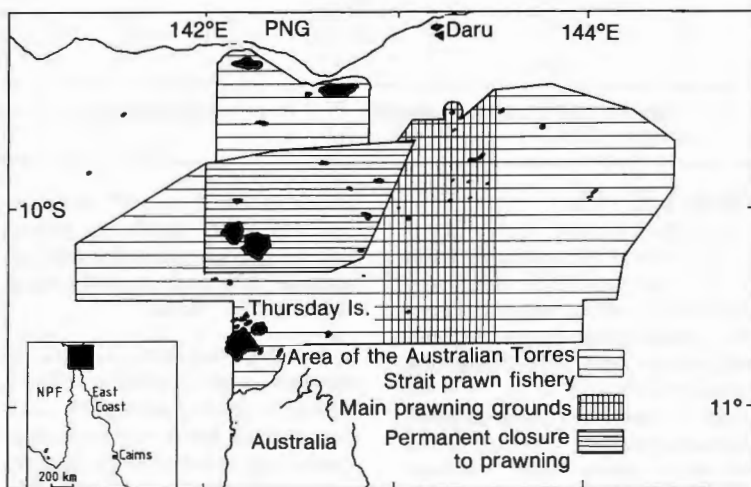


Figure 1. Location of prawning grounds in the Torres Strait.

Jayan grounds. This situation continued until about 1974–75 when, among other things, the removal of the fuel freight subsidy for prawn trawlers saw most of them elect to by-pass Thursday Island.

Records of prawn catches in the Strait are, at best, vague during these developmental years. Information collected by officers of the Northern Fisheries Unit in Cairns show that in 1973–74 about 10 prawn trawlers regularly fished the Strait, producing an annual catch of between 100 and 120 tonnes for an average of \$1.20 per kg for tiger prawns and \$1.00 per kg for endeavour prawns.

These vessels fished mainly from June to December, after the

end of the banana prawn season in the Gulf of Carpentaria.

Management of the Torres Strait prawn fishery as a separate and distinct fishery is only a recent development and followed ratification of the Torres Strait Treaty between Australia and Papua New Guinea in 1985.

This treaty established a defined management area (see Figure 1) under the jurisdiction of the Protected Zone Joint Authority. Although legally distinct from the two adjacent prawn fisheries, the northern prawn fishery and the Queensland east coast fishery, management of the Torres Strait fishery has been run in parallel with the east coast fishery.

Peter Channells is an officer of the Australian Fisheries Service based at Thursday Island and Reg Watson and Peter Blyth are research officers with the Queensland Department of Primary Industries.

**Table 1: Annual Unloadings (tonnes) and Effort (boat months) for the Torres Strait Prawn Fishery.**

Year	Unloadings data Effort			NPF logbooks Effort			Catch reports Effort		
	Catch (kg)	(boat months)	(est. <sup>1</sup> hrs)	Catch (kg)	(boat months)	hours	Catch (kg)	(boat months)	(est. <sup>1</sup> hrs)
1978	337.6	156	nd	nd	nd	nd	nd	nd	nd
1979	729.5	262	"	"	"	"	"	"	"
1980	715.6	400	31 804	90.1	39	4 004	"	"	"
1981	469.1	174	27 757	68.3	34	4 053	"	"	"
1982	797.9	256	41 128	368.2	143	19 027	"	"	"
1983	858.2	273	59 680	401.7	197	27 932	"	"	"
1984	732.6	233	43 685	508.1	198	30 308	"	"	"
1985	1100.3	322	58 402	571.0	181	30 307	1201.1	355	63753
1986	930.2	278	52 852	329.5 <sup>2</sup>	133 <sup>2</sup>	18 748 <sup>2</sup>	699.7	236	39756

<sup>1</sup> Estimated by dividing mean annual CPUE from logbook data into the respective total catches.

<sup>2</sup> Incomplete data.

### Catch and effort

Statistics on the Torres Strait prawn fishery are available from as far back as 1978 and come from three main sources. These are vessel unloadings, compulsory catch reports and logbook returns (Table 1).

Each time a prawn trawler unloads product, whether at sea or at a shore-based facility, details of the quantity of product unloaded are recorded. In Torres Strait these records serve to provide a continuous measure of the total catch, by month and species, as well as a crude measure of effort since 1978 (Fig. 2).

Compulsory catch reporting was established for the prawn, spanish mackerel and rock lobster fisheries in 1985 with the ratification of the Torres Strait Treaty. The system requires the master of any licensed fishing vessel being used to take any of the foregoing products in Torres Strait to furnish total monthly catch figures to the Department of Primary Industries and Energy.

In the prawn fishery these records give a measure of the total catch, by month, since 1985.

Many of the prawn trawlers that fish in Torres Strait also have an endorsement to fish in the northern prawn fishery. In

fact from 1982 to 1985 inclusive trawlers with northern prawn fishery endorsements landed, on average, 53 per cent of the total catch for the Strait.

As the masters of prawn trawlers with northern prawn fishery endorsements are required to keep a fishing logbook, even when fishing in areas outside the northern prawn fishery area, these are also a major source of information on the Torres Strait fishery. The logbooks provide detailed data on

areas fished, effort, species composition and catch per unit effort for the area since 1980.

Analysis of all the available data has shown the following:

- total annual unloadings have increased at an average rate of 65 tonnes a year since 1978 (when 337 tonnes were landed);
- effort, measured both as vessel hours and vessel months, has also increased significantly, at an average rate of 4500 hours a year since

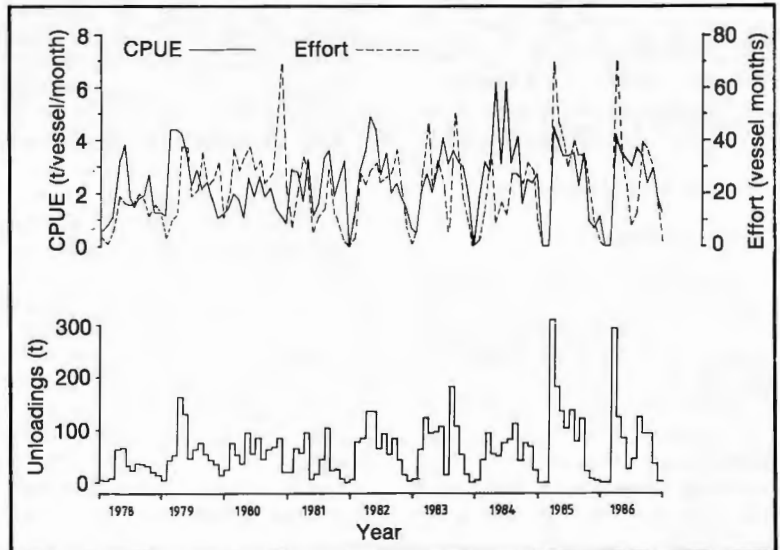


Figure 2. Unloadings, effort and catch per unit of effort of commercial prawn catches in the Torres Strait, 1978-86.

1980. Effort has also increased due to improvements in gear and improved knowledge of vessel operators;

- catch per unit of effort (CPUE) measured as kilogram per prawns per vessel per hour has not changed significantly from 1980 to 1986. In fact CPUE decreased over the study period at the rate of 0.5 kg per vessel per hour from a mean CPUE of 22.5 kg per vessel per hour in 1980;
- the number of vessels fishing in Torres Strait in any one month varied considerably from one to 70 vessels with an average over the past nine years of 23.3 vessels a month; and
- unloadings vary considerably between months from less than one tonne to about 300 tonnes, with an average over the past nine years of 66 tonnes.

What does this all mean? It means that because CPUE has not decreased with increases in effort then the Torres Strait prawn fishery, as a whole, is not being overfished.

One characteristic of the fishery that contributes to this is the high mobility of the fleet, as shown by the variability in the number of vessels fishing the Strait at any one time. The mobility between the northern prawn fishery, Torres Strait and the east coast by vessels with multiple licences allows for the dispersion of effort from areas where prawn catches are low.

### Species composition

There are three commercial groups of prawns caught in Torres Strait. These are tiger, endeavour and king prawns. Each group is dominated by a single species as follows: tiger prawns — *Penaeus esculentus* (99.6 per cent); endeavour prawns — *Metapenaeus endeavouri* (100 per cent); and

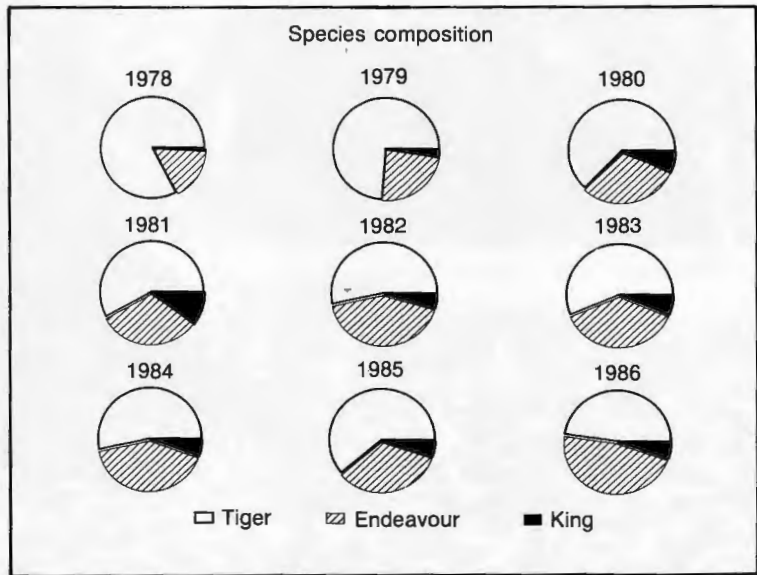


Figure 3. Annual species composition (%) of commercial prawn catches in the Torres Strait, 1978-86.

king prawns — *Penaeus longistylus* (97.5 per cent).

An examination of the species composition data (Fig. 3) shows that from 1978 the catch of tiger prawns, as a percentage of the annual total, has declined and that of endeavour prawns has increased.

From 1978 to 1986 landings

(in kg) of endeavour prawns have increased by 680 per cent (Fig. 4) while those of tiger prawns have fluctuated with landings in 1986 being only 60 per cent higher than in 1978. Two possible reasons for this are:

- under exploitation endeavour prawns may have a competitive advantage over tiger

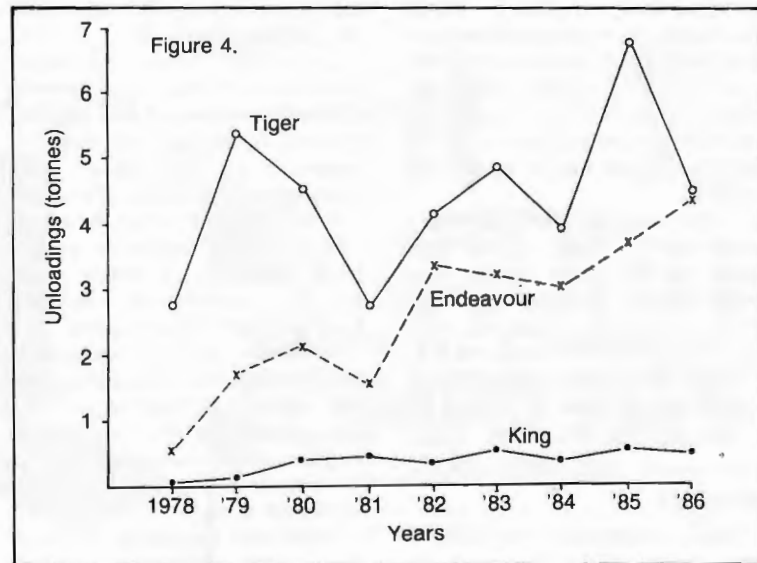


Figure 4. Unloadings (t) of tiger, endeavour and king prawns in the commercial prawn catch of the Torres Strait, 1978-86.



prawns; and

- expanded fishing grounds within the Strait may be predominantly endeavour prawn grounds.

The finding that catches of endeavour prawns have increased by so much is perhaps the most significant result of this study. It is even more significant when it is considered that tiger prawns are preferentially fished because of the higher price they attract.

Other findings from this study were that in eight of the nine years studied, more tiger prawns were caught in the first half of the year than in the latter half, and that king prawn catches, as a percentage of annual landings, have changed very little.

### By-catch

The major by-catch component of the Torres Strait fishery is the Moreton Bay bug (*Thenus orientalis*). Annual

catches of 'bugs' have varied considerably over the period of the study from 14 to 16 tonnes whole weight, with an average of 30 tonnes.

This represents an average annual catch value for bugs from this area of \$200,000.

Tropical rock lobsters (*Panulirus ornatus*) have formed a significant part of the trawler by-catch in the past with trawlers targetting on the annual emigration of lobsters through Torres Strait. Catches between 1980 and 1983 inclusive ranged from eight to 75 tonnes tail weight, valued at between \$120,000 and \$1.1 million.

However, current legislation prevents trawlers targetting on this emigration and so catches are restricted to incidental catches which amount to about 10 tonnes a year, worth about \$250,000 at today's prices.

Other less important by-catch products taken by prawn trawlers include squid, octopus, crabs and coral prawn (mixed species).

### Acknowledgements

The authors are grateful to Mr Greg Burnage for the data from 1978-80; the staff of the Export Inspection Service, Cairns; Ms M. Williams, Ms K. Colgan, Mr G. Williams and Mr A. Caton of the Bureau of Rural Science; and Mr J. Wylie of the Northern Prawn Group, Department of Primary Industries and Energy, Canberra.

### Bibliography

- Somers, I. F., Pointer, I. and Harris A. (1987). A study of the species composition and distribution of commercial Penaeid prawns of Torres Strait. *AJMR* 38(1); pp. 47-61.
- Watson, R. (1986). New prawn research in Torres Strait. *Australian Fisheries* 45(1), January; pp. 5-6.
- Williams, G. C. (1986). The Torres Strait prawn fishery. In *Torres Strait Fisheries Seminar*, Port Moresby, February 11-14, 1985. Editors: A. K. Haines, G. C. Williams and D. Coates. pp. 233-238.

