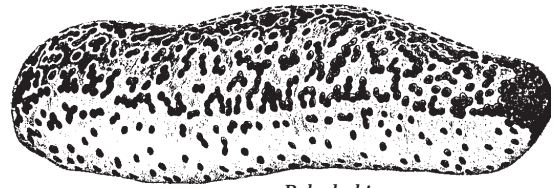


B E C H E - D E - M E R

## I N F O

*Bohadschia argus*

## SEA-CUCUMBER FISHERIES IN THE SOUTH PACIFIC

The next four articles are extracts of papers presented during the SPC-FFA Workshop on the Management of South Pacific Inshore Fisheries, which was held in Noumea in June/July 1995. Two volumes of country and background papers from the workshop will be published by SPC in early 1996.

**Illegal fishing for sea-cucumber (beche-de-mer)  
by Papua New Guinea artisanal fishermen in  
the Torres Strait protected zone**

by Paul Lokani<sup>1</sup>

#### INTRODUCTION

The Torres Strait Islands stretch from Cape York in Australia to Western Province in Papua New Guinea (PNG). The Torres Strait Islands were annexed by Queensland between 1872 and 1879 with the border running within three kilometres of the Papuan coast. This was because the best fishing grounds for pearls, trochus and beche-de-mer lay in the northern portion of the strait (Johannes and MacFarlane, 1991).

Under the treaty signed by Australia and PNG in 1978 and ratified in 1985 (Haines, 1986; Johannes and MacFarlane, 1991) the border was shifted south to the present border (figure 1). A consequence of the international border between Queensland (and later Australia) and PNG was the implication on traditional fishing activities in what is now known as the Torres Strait Protected Zone.

This area was traditionally fished by Torres Strait Islanders and their relatives in the coastal villages of the Western Province, Papua New Guinea. The Torres Strait Treaty, however, acknowledged and recognised and protected the rights of these people to freely carry out traditional activities including traditional fishing in the area, as they have done so for generations.

The largest reef system within the Torres Strait Protected Zone is the Warrior Reef complex stretch-

ing from north to south. These reefs are extensively fished for dugongs, turtles and fish by the coastal villages of the Western Province. In 1990, an artisanal beche-de-mer fishery involving both fishermen addressed in the Torres Strait Treaty as traditional users and those from outside the treaty arrangement, exploited sandfish (*Holothuria scabra*) at the Warrior Reef. The fishery was based in Daru, with fishermen using banana boats and traditional outrigger canoes to fish and transport the catch to Daru for processing and sale. Harvesting involved walking on the reef during low tide and sometimes snorkelling in shallow waters.

In what is attributed to low catch rates of the more valuable, larger sandfish, fishermen started fishing illegally on the Australian waters of the Warrior Reef in 1991. This resulted in Australian authorities stepping up patrols in the area, which resulted in apprehension of fishermen, confiscation of fishing gear and prosecution of fishermen. The incidence and patterns of illegal fishing in Australian waters of the Warrior Reef and its implications are discussed in this paper.

#### INCIDENCE OF ILLEGAL FISHING

Sightings of illegal beche-de-mer fishing were reported two years after the fishery commenced, but fishermen indicated that illegal fishing occurred as early as 1991. This appears to be a case of typical behaviour by fishermen, where their fishing is se-

<sup>1</sup> Department of Marine Biology, James Cook University of North Queensland, Townsville, Australia

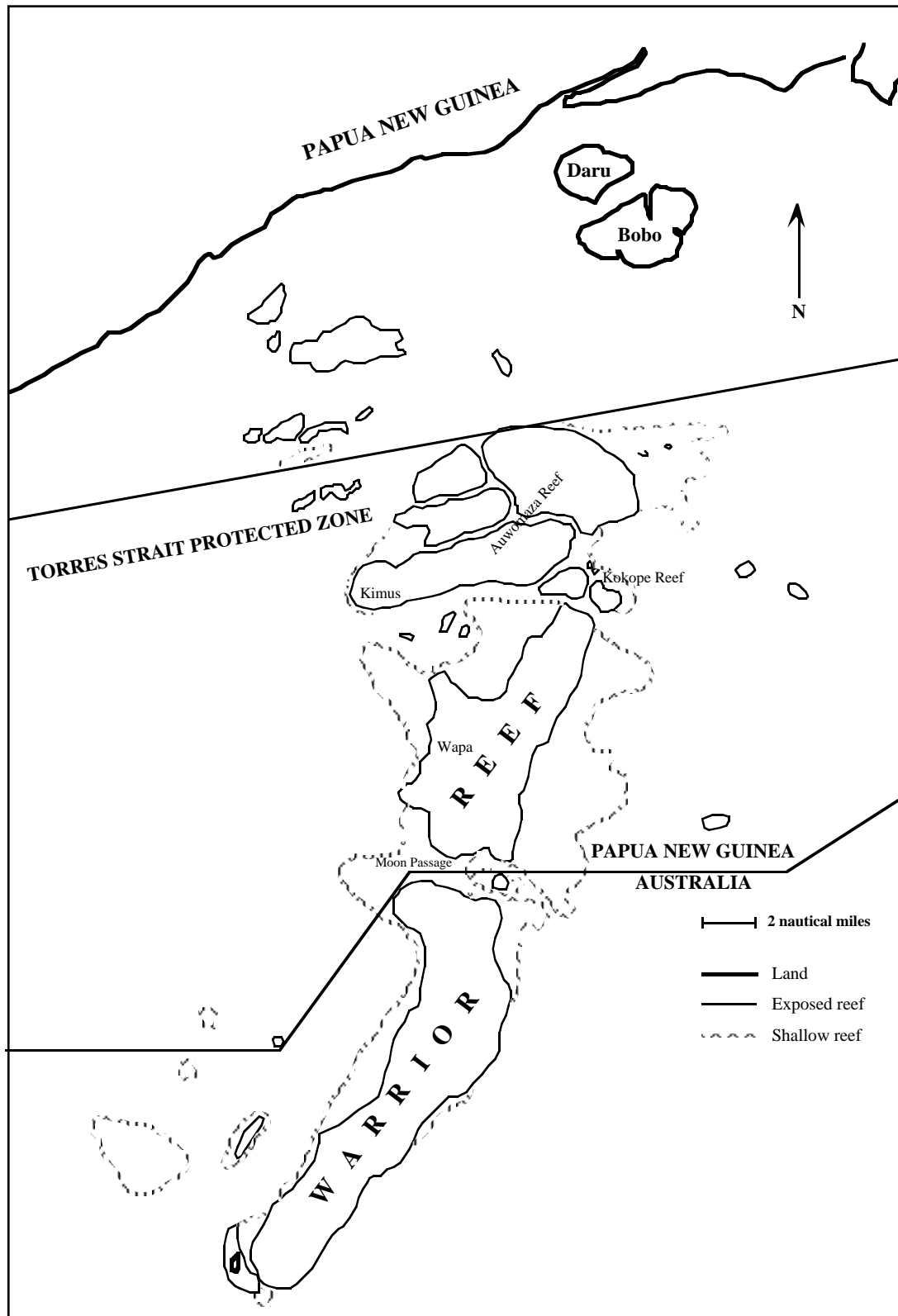


Figure 1: Map showing the Warrior Reef and its two major reefs, Auwomaza and Wapa

lective and they try to maximise catch. At the Warrior Reef there was a spatial shift in effort in a north-south direction, attributed to over-fishing from the north of the Warrior Reef which progressed south. This progression is economically valid because

Daru, which is the main centre of trade for beche-de-mer, lies north from the Warrior Reef (see figure 1).

Illegal fishing continued through to the closure of the fishery in 1993. Illegal fishing activities de-

creased after increased patrols by the Australians, and after the apprehension of large numbers of fishermen, but did not stop.

Both day- and night-time poaching of sea cucumbers occurred. As soon as the apprehension of PNG fishermen commenced, most of the day-time poaching occurred at sunset after the Australian Customs plane flew its random weekly patrols on both sides of the Torres Strait Protected Zone. Night-time poaching occurred when the tide was not favourable for day-time poaching, and especially after the Australians increased patrols, poaching was timed with low tide as this allowed for fast collection.

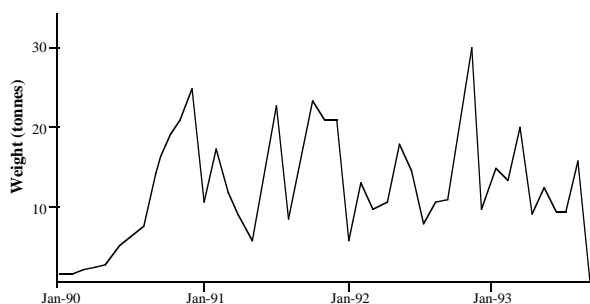
Illegal fishing co-incident with the first rapid decline in production in 1991 (Lokani, unpublished data) [see figure 2].

#### APPREHENSIONS

Increased patrols in the area by Australian authorities resulted in the apprehension of offending Papua New Guinean beche-de-mer fishermen. The first successful apprehension was on 2 September 1992. From a total of 35 fishermen apprehended by Australian authorities, only the seven skippers of the boats were prosecuted. The rest of the fishermen were cautioned and released. The first apprehensions did not deter illegal fishing, which continued to occur. This resulted in more apprehensions from 1992 until 1993 (table 1 & 2).

#### IMPLICATIONS TO THE TORRES STRAIT TREATY

Implementation of the Torres Strait Treaty is carried out by PNG, the Queensland Department of Primary Industries [QDPI] and the Commonwealth of Australia. In PNG, the Fisheries Resources are regulated through the Torres Strait Fisheries Act of PNG, the Fisheries Act and the Continental Shelf Act.



**Figure 2: Monthly production (dry-weight tonnes) landed at Daru from 1990 to September 1993 (the fishery was closed in September 1993)**

**Table 1: Number of fishermen apprehended by Australian authorities**

Month	Number of Fishermen apprehended
2 September 1992	35 (7 prosecuted in Australia, rest released)
18 November 1992	8 (prosecuted in Australia)
November 1992	23 (prosecuted in PNG)
16 December 1992	39 (prosecuted in Australia)
December 1992	58 (prosecuted in PNG)

**Table 2: Boat types confiscated by Australian authorities on 12 December 1992**

Boat type	Engine (HP)	Length (metres)	No. of fishermen
<i>Banana</i>	40	6	6
<i>Banana</i>	25	6	5
<i>Banana</i>	40	6	5
<i>Banana</i>	25	6	5
<i>Banana</i>	30	6	4
<i>Outrigger</i>	30	8	10
<i>Outrigger</i>	30	9	9
<i>Outrigger</i>	15	9	8

PNG prosecuted offending PNG fishermen, as stipulated in Article 28, paragraph 6 of the Torres Strait Treaty: 'Corrective action in respect to offences or suspected offences against the fisheries laws or regulations of the Parties shall be taken by the authorities of the Party whose nationality is borne by the vessel or person concerned (called in this article 'the First Party') and not by the Party in whose jurisdiction the offence or suspected offence occurs (called in this Article 'the Second Party'). Australian officers overlooked this clause, and prosecuted some fishermen in Australia. The balance of the offending fishermen were prosecuted in PNG by PNG authorities.

Legal and prosecuting costs are effectively transferred back to the country of the offending fishermen. It was, therefore, in the interest of PNG that all measures were taken to introduce a moratorium in September 1993 for three months. This was later extended to March 1995.

Illegal fishing activities hindered discussions on the cross-border endorsement by Australian authorities during the Joint Technical/Management

Meeting on the Torres Strait Protected Zone. Australia emphasised strongly that it was not going to enter any discussions on cross-border endorsement of beche-de-mer fishing given the illegal fishing by PNG fishermen.

While the Australian Government understands that PNG does not have the capacity for effective surveillance of PNG and the Torres Strait Protected Zone, its representatives gave the impression that PNG was not doing enough to contain PNG fishermen within their legal limits. A letter from the Commonwealth Regional Legal Officer based in Townsville to the Solicitor-General of PNG complained that the ruling by a Magistrate was not acting as an effective deterrent.

Differences such as this may develop and jeopardise the cooperation and understanding that Australia and PNG have in jointly managing the Torres Strait Protected Zone. A similar case in the exploitation of dugong led PNG to complain that it was enforcing management, but Australia was not doing the same. This led to the breakdown in cooperation and possibly over-exploitation.

#### IMPLICATIONS FOR THE BECHE-DE-MER FISHERY

Because of the paucity in the spatial distribution of effort, stocks that are depleted cannot be detected using surplus-yield models without detailed monitoring. If the fishery was monitored through catch and effort, fishermen crossing to the Australian side would be more likely to report the catch as made in PNG. Application of fishery models on the data would be erroneous without complementary information on the behaviour of the fishermen. Lokani (unpublished data) was able to apply the surplus-yield model to some component of the catch data only after verifying the distribution of effort.

The catch-per-unit effort (CPUE) in the fishery for *Parastichopus californicus* in the Washington State beche-de-mer fishery appeared stable, but in reality half in the area fished were over-fished (Bradbury, 1994). This was due in part to the spatial distribution of effort, where fishermen increased effort in deeper areas. Monitoring the behaviour of the fishermen together with an accurate recording of the area fished is important. This would ensure that the distribution of effort is accounted for.

There are provisions for joint management (Haines, 1986) and cross-border endorsement that allow a quota of the yield to be fished by PNG-licensed

boats in the Australian jurisdiction of the Protected Zone and vice versa (e.g. lobster-dive fishery and prawn fishery). Negotiations for such arrangements were jeopardised through illegal fishing activities by PNG fishermen.

#### LEGAL IMPLICATIONS

PNG fishermen apprehended in Australian waters for illegally fishing in the Warrior Reef were prosecuted both in Australia and PNG. In Australia, they were prosecuted for breach of the Torres Strait Fisheries Act and Fishing Industry Organisation and Marketing Act. In PNG, they were prosecuted under the Torres Strait Fisheries Act.

Because the fishermen were apprehended in Australian waters by Australian authorities, prosecution of fishermen in PNG would require arresting officers who were Australian Fisheries Officers. Fortunately, the fishermen prosecuted in PNG pleaded guilty, therefore Australian witnesses were not required.

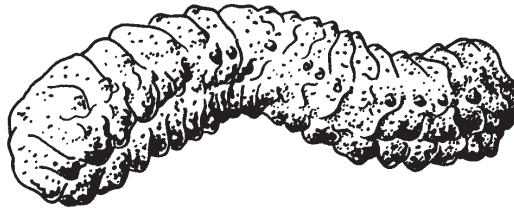
Rulings for cases heard in PNG on fishing gear were not clear. In any case, Queensland authorities were supposed to have sold by tender all the fishing gear held by them, including the gear for fishermen prosecuted in PNG.

#### COSTING IMPLICATIONS FOR AUSTRALIA AND PNG

Increased patrol and legal costs are expensive. Both Australia and PNG incurred expenses associated with surveillance and prosecution. There was concern by the Australian Fisheries Authorities that the cost of investigating, apprehending and prosecuting illegal fishing in the Warrior Reefs was very high. Given that Australia and PNG have an understanding on surveillance of the Torres Strait Protected Zone with provisions for joint surveillance, it is unnecessarily expensive for Australia to direct its resources to a problem that could be solved by sustaining yields in PNG or by legitimising illegal fishing by endorsement or cross-border fishing.

#### IMPLICATIONS TO THE FISHERMEN

Direct cost implications as a consequence of being apprehended and prosecuted by Australian Authorities are loss of fishing gear and fishing boats, and court fines (if not imprisoned). Closure of the fishery leads to the loss of income to the fishermen estimated at K 1.0 million, while government revenue is estimated to be K150,000 and export revenue to the companies valued at 3.0 million kina annually.



Coastal villagers covered under the Protected Zone are ecologically and economically disadvantaged, and the loss of fishing gear was a big one. The Warrior Reef is the principal area from which the fishermen satisfy their cash and subsistence needs. The loss of fishing gear (including crafts) was very serious indeed. This was displayed by some fishermen who tried to avoid arrest on the reef. A case in point was the incident in which a fisherman assaulted an arresting and escorting officer on the reef, which left him nearly drowned.

#### MANAGEMENT IMPLICATIONS

It is clear that the socio-political objective of the beche-de-mer fishery is important, and may overshadow the economic and biological objectives. The socio-political objective can be addressed directly or indirectly, and has already been addressed directly both by the Australian and PNG authorities. Australia reacted to increased illegal fishing in Australia by stepping up patrols, which resulted in apprehending and prosecuting fishermen in their waters.

Australia also pressured PNG to keep PNG fishermen in PNG waters. PNG reacted by hastily forming a management committee to address management of the beche-de-mer fishery. This resulted in the closure of the fishery in September 1993. The gazetted notice for the closure of the fishery was made under the Fisheries (Torres Strait Protected Zone) (Chapter 210) and Continental Shelf (Living Natural Resources Act [Chapter 210]). The closure was for the period September 1993 to March 1994, and later extended to March 1995.

Fishermen interviewed indicated that the main reason they fished in Australian waters was due to over-exploitation of stocks on the PNG side of the Warrior Reef, and a desire to harvest large sizes of sandfish. Despite their apprehension as early as June 1992, PNG fishermen, continued to cross over to Australia to fish up until the closure of the fishery. Apprehension and prosecution, therefore, did not deter illegal fishing. Fishermen were driven by high prices and a relatively easy and fast way to earn money on a daily basis.

The socio-political objective of preventing illegal fishing and honouring the Torres Strait Treaty could be achieved indirectly by addressing the biological objective instead, without resorting to closing the fishery. This would therefore require sustainable exploitation, which needs to be achieved by conducting studies on the fishery and biology of beche-de-mer species. This has been initiated by the Department of Fisheries and Marine Resources of PNG.

An alternative strategy to stop illegal fishing in Australia is to license Australian fishermen to fish the Australian side of the Warrior Reef. This would effectively reduce the population densities to a level which would make it uneconomical for PNG fishermen to conduct illegal fishing activities in the Australian jurisdiction of the Warrior Reef. Since the cost of labour is very high in Australia an arrangement could be made by having an Australian company own the licence and hiring PNG fishermen to fish for it.

The need for jointly managing the fisheries has not been realised, partly because Australia does not have a recognised fishery for beche-de-mer in the Torres Strait Protected Zone. If the need for joint management arises, then both countries should have effective enforcement. Enforcement of dugong exploitation in PNG was unsuccessful because Australian authorities failed to control Australian based subsistence fishermen (islanders) (Johannes and MacFarlane, 1991).

#### LITERATURE CITED

- ANON. (1978). Treaty between the independent state of Papua New Guinea and Australia concerning sovereignty and maritime boundaries in the area between the two countries, including the area known as Torres Strait, and related matters. Department of Foreign Affairs and Trade. Port Moresby.
- BRADBURY, A. (1994). Sea-cucumber dive fishery in Washington State. *Beche-de-mer Information Bulletin*. (6): 15-16.
- HAINES, A.K. (1986). Background to Management. In: Haines, A.K., G.C. Williams and D. Coates. (Eds). *Torres Strait Fisheries Seminar*, Port Moresby. 11-14 February 1985.
- JOHANNES, R.E. & J.M. MACFARLANE. (1991). *Traditional fishing in the Torres Strait Islands*. CSIRO, Fisheries Division. 268p.

