

# B E C H E - D E - M E R I N F O



*Bohadschia argus*

## Beche-de-mer production in Tuvalu

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### Introduction

Tuvalu is an island chain composed of nine atolls and coral islands, with a total land area of approximately 26 square kilometres, geographically located between 5°30' and 11° South and 176° and 180° East. On declaring its 200 nautical mile Exclusive Economic Zone in 1983, Tuvalu laid claim to marine resources in an area encompassing approximately 757,000 square kilometres. The population of Tuvalu is approximately 9,000 (1991), with 40 per cent of the total population living on the capital Funafuti. The nine islands that form Tuvalu are: Funafuti, Nukufetau, Nui, Niutao, Nanumea, Vaitupu, Nukulaelae, Niulakita and Nanumaga. All of the following islands have lagoons: Nukulaelae, Funafuti, Nukufetau, Nui and Nanumea.

Sea cucumbers are locally known as **funafuna**. There is no name distinction between species, except for the lolly fish *Holothuria (Halodeima) atra*, known locally as **loli**. This absence of differentiation can probably be attributed to the fact that sea cucumbers and their products are not part of the traditional diet of Tuvaluans, and were therefore of little practical interest.

At present, no regulations have been enacted to manage the beche-de-mer industry in Tuvalu, though the *Fisheries Act 1978* gives the Minister for Natural Resources full authority to promote the development of fishing and fisheries in Tuvalu to ensure that fisheries resources are exploited to the full for the benefit of Tuvalu. The Fisheries Department is currently advocating a ban on the use of SCUBA and hookah gear to harvest all sessile organisms, especially beche-de-mer.

### Past production

The Fisheries Department received funding from the United Nations Development Program in 1978 to assist the development of the beche-de-mer industry in Tuvalu. In that year, resource surveys for sea cucumbers were conducted in all the islands of Tuvalu with lagoons, but only Funafuti and

Nukufetau were identified as having stocks of commercially-valuable sea cucumbers.

The Tuvalu Fisheries Department, through its extension section, began training fishers in Funafuti and in the outer islands. The Fisheries Department also produced a leaflet in Tuvaluan entitled '**A tupe e mafai o maua mai funafuna**' 'The amount of money you can get from selling beche-de-mer', to encourage and promote the beche-de-mer fishery.

In 1979, the Fisheries Department purchased beche-de-mer from fishers in Nukufetau and sold the product to overseas markets (Anon. 1979). A total of 1.8 metric tonnes of grade 1 (AU\$ 2.00/lb) and grade 2 (AU\$ 3.00/lb) beche-de-mer was sold in Fiji, with a total value of AU\$ 7,100. The Funafuti fishers were not interested in the beche-de-mer industry, despite receiving much encouragement from the Fisheries Department.

In 1980, a total of 805 kg of graded beche-de-mer, worth AU\$ 4,000 was exported to markets in Fiji (Anon. 1980). Production fell sharply in 1981 (90 kg) and in 1982 (198.5 kg) because the fishers in Nukufetau were too busy with other community projects (Anon., 1981; Anon., 1982). In subsequent years, there was no production and export of beche-de-mer in Tuvalu despite efforts to revive interest in the fishery.

### Current production

Harvest and export of beche-de-mer to overseas markets resumed again in 1993. A local fisher harvested sea cucumbers in Funafuti and Nukufetau lagoons, and exported processed, graded beche-de-mer to markets in Singapore and Hong Kong. In 1994 and 1995, another local fisher, in a joint venture with a Fiji businessperson, began exporting beche-de-mer to Fiji. Both producers however stopped harvesting in 1995 and have not resumed. The joint venture dissolved due to friction between the two partners. Total export figures and species breakdown are summarised in Table 1.

The main species targeted for export are the white teatfish, *Holothuria (Microthele) fuscogilva*; and the black teatfish, *Holothuria (Microthele) nobilis*, because they are highly valued in the Asian markets (Anon., 1994). The other species that make up a large proportion of the exports are the prickly redfish, *Thelenota ananas*; and elephant trunkfish, *Holothuria (Microthele) fuscopunctata*. Four other species make up around 3 to 13 per cent by weight of the exports and these are the blackfish, *Actinopyga miliaris*, surf redfish, *Actinopyga mauritiana*, brown sandfish, *Bohadschia marmorata/vitiensis*, and leopard (tiger) fish, *Bohadschia argus* (Table 1).

After processing, the product is stored in synthetic fibre bags (onion bags), until a sufficient volume is accumulated, and then shipped to Fiji on the next available cargo ship, usually once or twice a year. Prior to export, the shipments are inspected by the Principal Fisheries Officer, who verifies the grading, quality and quantity of each shipment, and issues the exporter with a certificate. This service is performed voluntarily by each party, and is done to ensure that seafood products from Tuvalu are of the highest quality possible, and therefore command and receive the

highest possible price in overseas markets. Despite a drop in production of 450 kg from 1994 to 1995, the monetary value of the exports rose by approximately US\$ 5,700. This is attributed to the higher prices received for the products in 1995.

## References

- ANON. (1979; 1980; 1981; 1982). Fisheries Annual Report. Tuvalu Fisheries Department, Ministry of Natural Resources, Funafuti, Tuvalu.
- ANON. (1994). Sea cucumbers and beche-de-mer of the tropical Pacific: a handbook for fishers. Handbook no. 18 (Rev. ed.). South Pacific Commission, Noumea, New Caledonia.
- BELHADJALI, K. (1995). Tuvalu country statement: Tuvalu fisheries legislation and management. Country report 5. SPC/FFA Workshop on the Management of South Pacific Inshore Fisheries. Noumea, New Caledonia, 26 June – 7 July 1995. SPC, Noumea, New Caledonia.

Table 1: Tuvalu beche-de-mer production and species composition

Year	Total (kg)	Value (US\$)	Species composition (%) by weight				
			White teatfish	Black teatfish	Prickly redfish	Elephant trunkfish	Other
1993	871	12,461	52.1	10.6	19.0	13.6	4.6
1994	3,678	40,004	67.4	0.6	14.1	5.1	12.8
1995	3,228	45,737	71.7	0.0	19.5	5.9	2.8

## Successful production of juvenile sandfish *Holothuria scabra* by ICLARM in the Solomon Islands

The International Centre for Living Aquatic Resource Management (ICLARM) Coastal Aquaculture Centre (CAC) in the Solomon Islands has a five-year project funded by the Australian Centre for International Agricultural Research (ACIAR) to develop methods for mass rearing of tropical sea cucumbers for the purpose of enhancing wild stocks (see *SPC Beche-de-mer Information Bulletin* no. 8, p. 45).

The project started spawning trials in August this year. A total of 107 *Holothuria scabra* and 69 *Actinopyga mauritiana* broodstock have been collected from the wild and transported to the CAC. We have successfully spawned both species by elevating sea water temperature by 3 to 5°C. Spawning was induced in 16

per cent of *H. scabra* and 33 per cent of *A. mauritiana*. We have reared two batches of *H. scabra* larvae and one of *A. mauritiana*.

We initially fed the larvae a mixture of three types of microalgae—*Chaetoceros muelleri (gracilis)*, *Chaetoceros calcitrans* and *Tetraselmis chunii*— up until settlement, and then a combination of fresh microalgae and a new commercially dried microalgal product, 'Algamac 2000'. In our first trial *H. scabra* larvae were reared in 750-litre fibreglass tanks at around 2 larvae/ml, with about 25 per cent of the larvae surviving to settlement. Water was exchanged by sieving out the larvae every second day until the appearance of doliolaria on Day 10. Then we started 200 per