3. THE INDUSTRY PAST AND PRESENT IN THE SOUTH PACIFIC

3.1 Introduction

To gauge available resources and decide how stocks can be rationally managed, it is necessary to appraise the present state of the industry. The fisheries take many forms and often represent a very small-scale activity; little information is therefore available. It would seem relevant to discuss the history of the trade in some detail. The trepang or bêche-de-mer industry developed as a result of the combined impact of historical and socio-economic factors on the biological resource. Analysis of the distinct fluctuations in these circumstances may cast light on the present position and point the way towards rationally-conceived management.

The history of fishing and trade may be divided into a number of phases. From the distant past to the 19th century, what we know is drawn from navigators' logs. During the first half of the 20th century, the earliest statistics were examined and revealed China's importance as an importer (Sella and Sella, 1940). Once the Chinese market was closed, Singapore and Hong Kong took its place as the main trading centres.

3.2 From the origins to the nineteenth century

Dried sea cucumber is a traditional Chinese delicacy, referred to in that country's early folk tales. It also appears in Japanese legends, such as the story of Princess Anna at Irako who explains the origins of sea cucumbers and the story of the race between the holothurian and the whale (Choe, 1963). For a thousand years or more, the Chinese sought this commodity in India, Indonesia and the Philippines. In conducting their fishing and trading activities, which gradually covered a wider and wider area, the Chinese taught native populations processing techniques, but kept a firm grip on the trade.

During the 18th century, traders from Makassar in the Celebes gathered and prepared bêche-de-mer on the northern coast of Australia. Each year with the November monsoon they set course for Arnhem Land aboard their proas, 10 to 25 tonne sailing boats; there they stayed several months collecting and curing holothurians before sailing home with the tradewinds. Here it was that, in 1803, Captain Flinders, on board the 'Investigator', encountered them, estimating that 60 sailing ships were carrying a cargo of six million cured holothurians. Mulvaney (1975) gave an account of early contacts with the Aborigines and their amicable relationship with the Malays. The east-African trade also commenced about the same time or possibly earlier.

At the end of the 18th century European, Australian and American traders, the latter from New England, began prospecting the South Sea islands for bêche-de-mer to trade in Manilla or Canton for tea, silk and spices to sell at home. The term 'bêche-de-mer', adopted by the English language, is a French translation of the Portuguese 'bicho-do-mar' meaning sea worm. These traders also dealt in sandalwood, pearls, pearl-shell and turtle-shell. The expansion of this trade had a significant impact on the island peoples with whom, for the first time, lasting contact was made (Ward, 1972).

3.3 Nineteenth century

The heyday of the trade probably came in the 19th century, but virtually no hard information exists. China was the main importer and Simmonds (1879) estimated that between 1868 and 1872 trade in this commodity amounted to 1,000 tonnes per year, whereas Seale (1911) put it as high as 3,000 tonnes.

Ward (1972) investigated this trade in the Pacific islands thoroughly. Its scale has varied both in space, from Australia to Guam and Fiji, and in time, influenced by prices on the Chinese market, the availability of sandalwood, and over-fishing of the reefs. From 1820, for some ten years, Spanish, Australian and New England vessels combed the reefs and loaded bêche-de-mer cargoes. After a decline in interest between 1830 and 1840, during which time Spanish ships carried cargoes from Yap and Palau, the trade flourished for a further decade. The navigators were operating in the Carolines, the Solomons and Fiji. The organisation of the trade then changed with permanent trading posts being set up to buy direct from island populations, storing their purchases until a ship arrived. Its importance then diminished with the diversification of export products. Cooktown was at that time the main centre for trade in this area. Elsewhere, merchants from Hawaii, Guam, Tahiti and Manilla bought bêche-de-mer from all the islands with abundant holothurian populations.

The strongest influence over this activity was exercised by Fiji, according to Ward (1972), whose study was based on ships' logs. Between 1830 and 1835 three to four cargoes each weighing 35 to 70 tonnes were shipped each year. In the second period, 1842 to 1850, the trade wavered, with ships taking longer to load a full cargo, apparently because the reefs had been overfished during the previous 'rush'. A decline set in after 1850; around 1865 bêche-de-mer still accounted for 6 per cent of the value of exports, as against a mere 0.13 per cent in 1869.

Saville-Kent (1903) described the exports from Australia between 1880 and 1889 during which time Queensland exported 2,724 tonnes, 607 of which had originated in New Guinea. The annual quantities varied from 162 to 259 tonnes.

In his thesis, Russell (1970) explained that in New Guinea the trade was organised around small trading posts and was dependent on Queensland. The period of prosperity only lasted from 1873 to 1885, with the decline, in terms of both tonnage and value, growing more marked after the end of the century.

Sandalwood traders began visiting New Caledonia and its dependencies, the Loyalty Islands and the Isle of Pines, in 1841, hoping to set up bêche-de-mer fisheries. The first attempts were sometimes fraught with difficulties, such as the attack on the brigantine 'Bull' reported by Cheyne and that on the 'Mary' (Douglas, 1971). Bêche-de-mer was a recurrent item in the cargoes of sandalwood ships listed by Shineberg (1973) which touched New Caledonia between 1845 and 1855. This trade was based on Sydney until 1865 and was greatly influenced by the businessman, R. Towns. With Paddon and Henry, his fellow merchants, he realised the need to found a permanent trading post on the Isle of Pines and then later others on Nou island off Port-de-France (today's Noumea), Paita and Ouvea.

After France claimed the island in 1853, bêche-de-mer, sandalwood and coconut oil became the main export commodities. Most of the production originated on concessions operated by managers working for Paddon, Henry and Higginson. The missionaries encouraged some Melanesian tribes to gather holothurians as well, which they sold to passing ships, as did some small European producers. This activity is often described in accounts of that period, such as those given by Patouillet (1873) and Garnier (1867), the engineer who discovered nickel, whose book 'Voyage à la Nouvelle-Calédonie' provided Figure 4.

To assess bêche-de-mer production at that time, the shipping movements recorded in 'Le Moniteur Imperial' a newspaper later to become 'Le Moniteur', were analysed. This publication listed sailing dates and destinations for each vessel and gave details of its cargo. Coastal trading records can be similarly informative on quantities and production areas, at least for bêche-de-mer shipped through Noumea (Table 3). The first reference appears in No. 96, July 1861, when the Australian brig 'Gazelle', was reported as carrying thirteen sacks of bêche-de-mer. A ministerial request was made the same year for specimens to be sent to the London Universal Exposition in 1862. Between 1862 and 1875, this column was published regularly and provides an indication of the size of the industry. There was substantial commerce between 1865 and 1868 and the figures for shipments arriving on coasters and departing to Sydney, the port of transshipment for China, match quite closely. After shrinking slightly, the market saw another burst of activity between 1872 and 1874, after which time cargo details ceased appearing regularly.

This journal became the 'Journal officiel' in June 1886, publishing a quarterly summary of imports and exports. Table 4 has been drawn up on the basis of this item. Changes in the Territory's activities can be inferred from the way exports developed: mining activities expanded and copra production increased, replacing coconut oil, while the agricultural and livestock sectors were developed.

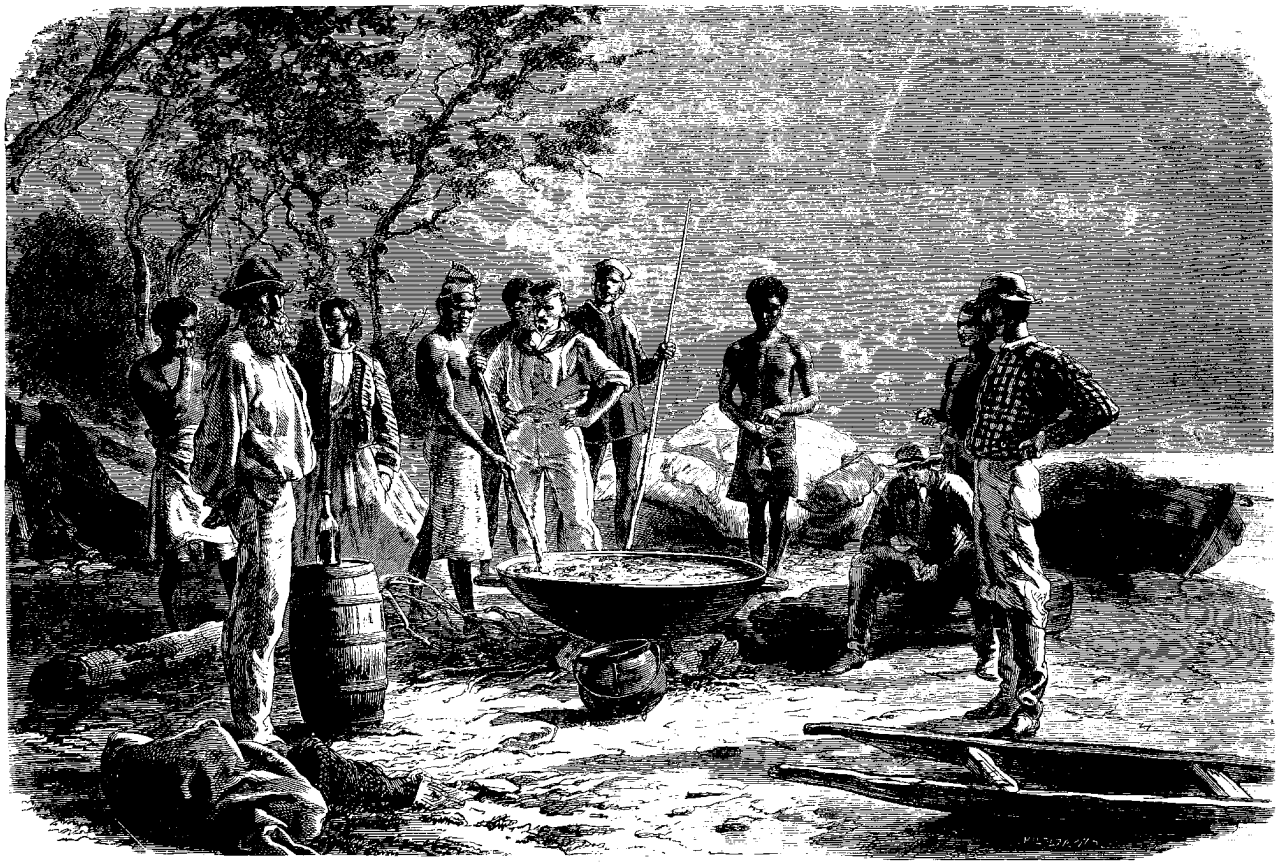
3.4 First half of the twentieth century

The many more detailed studies which emerged from this period usually included trade statistics. General works by Sella and Sella (1940) and Panning (1944) described trepang fisheries around the world, the various preparation techniques and the species utilised. Production in the Pacific islands only accounted for a small proportion of the total.

In Australia, this activity was pursued in the Torres Strait and along the eastern shore of the tropical zone. Data on export tonnages are fairly disparate: 1925, 168 tonnes; 1928, 131 tonnes; 1934, 409 tonnes; 1935, 190 tonnes; 1936, 61 tonnes.

For Papua New Guinea, Shelley (1981) quoted 83 tonnes in 1903, which ranked this product in fifth position on the list of exports. Each year on average, Papua exported 60 tonnes and the Trust Territory of New Guinea 98.

In Fiji, quantities fluctuated in relation to prices, reaching 143 tonnes in 1931.



The preparation of trepang - Drawing by A. de Neuville from a photograph

Figure 4: Boiling trepang in the 19th century (in "Voyages à la Nouvelle-Calédonie" (Journeys to New Caledonia) by Jules Garnier, Hachette, 1967-68)

In New Caledonia, the tonnages exported from 1903 to 1930 were recorded in the Noumea Chamber of Commerce's 'Bulletins'. Details of such exports also appeared in an unpublished report by the Government Secretary-General entitled 'The Economy of New Caledonia in 1954'. The results, assembled in Table 5, which quotes bêche-de-mer tonnages and their value as a proportion of total exports, excluding ore, show distinct fluctuations. The quantities rarely exceeded 50 tonnes. A boom took place between 1922 and 1924. A price rise brought on a rush of activity by European, Melanesian and even a few Japanese fishermen. Even for this period, however, bêche-de-mer only represented a small percentage of exports. Activity subsequently subsided, probably due to a fall in prices, and came to a halt during the Second World War.

The average annual import and export tonnages at Singapore and Penang were calculated by Hornell (1917) for the period from 1907 to 1916. During this decade, Singapore handled 363 tonnes from 18 countries, chiefly the Philippines, the Celebes, the Moluccas and Borneo. Australia provided a little over 8 tonnes, New Guinea (German) 2.7 tonnes and French Pacific territories 1.4 tonnes. To Penang, where imports only averaged 49 tonnes for the same period, Australia provided only around a tonne.

The statistics presented by Sella and Sella (1940) generally related to the period from 1931 to 1933. On average, over the three years, 367 tonnes per year were imported into Malaysia, mainly from the Philippines and the Dutch East Indies. Australia exported 14 tonnes on average. Statistics for the same years were also given for Hong Kong. The average was 1,315 tonnes from twenty or so different countries. Australia emerged as the main supplier with 354 tonnes. French Pacific possessions exported 1.8 tonnes, but exports from New Caledonia transited through Australia and therefore appeared in that country's statistics. The countries of the British Empire accounted for a major share but the configuration of the colonial empires makes statistical interpretation difficult. Lastly, China's imports came mainly from Hong Kong and Malaysia, revealing the complexity of the import and re-export circuits through clearing houses. Imports, which averaged around the 2,000 tonne mark between 1932 and 1934, fell away sharply in 1936 as the world-wide slump set in.

3.5 Traditional consumption and commercial trade in the South Pacific today

A number of traditional ways of consuming or using holothurians should be mentioned before going on to the subject of bêche-de-mer preparation for export. Some Polynesian peoples (particularly in Samoa and Wallis) and Micronesian populations (Palau) consume the body wall raw, sometimes seasoned with lime juice. In Fiji, *Holothuria scabra* is cooked in coconut milk (Figure 5) while in Papua New Guinea the sea cucumber is sometimes grilled. Plesis (1975) reported that a toxin from the body wall of *Holothuria atra* was sometimes used in Polynesia to stun fish in tidal ponds and in traditional medicine to soothe injuries caused by urchin spines. A small pharmaceutical activity has recently been set up on a Torres strait island, using holothurians in the production of a medicine for the relief of arthritis (Johannes, personal communication).

It is hard to put a figure on the scale of these fisheries. In Fiji, three species of holothurian appear in the market statistics under the marine products (excluding fish) category. *Holothuria scabra* or 'dairo' is the main species concerned, accounting for 7 tonnes out of a total catch of 7.8 tonnes in 1980, 5.6 out of 6.5 in 1981 and 7.8 out of 11 in 1982. Most of this trade takes place outside the commercial circuits but has social importance.

The gathering of sea cucumber to prepare bêche-de-mer was halted during the Second World War. No published data exist for the period between then and the revival of interest in the seventies when the FAO and the SPC, who were implementing a programme designed to breathe new life into this trade in the islands of the South Pacific, engaged a consultant, Mr Sachithananthan. His reports from 1971 to 1972 yielded information about the scale of production. The FAO fisheries statistics yearbooks recorded catches country by country. Lastly, a survey was carried out by ORSTOM in 1978 in countries where this activity had a long history. A form was sent out to the cultural counsellors of French Embassies, to some Chambers of Commerce and to Heads of Fisheries.[3]

These figures may be compared with the import statistics for Hong Kong and Singapore.

Although some statistics are lacking, a fairly close correlation is observed between the data from various sources. On the whole, national production figures are fairly low, usually under 50 tonnes of dry product per year (Table 6).

In Australia, interest has revived on various occasions (Anon., 1969, 1979). Despite the resulting studies on techniques and potential, fisheries did not develop. For essentially socio-economic reasons, Harriot (1985) came to the conclusion that this activity was unlikely to be viable on the Great Barrier Reef. Shelley (in press) believes that if stocks were first assessed then constantly monitored, an artisanal fishery in the Torres Strait islands would again be a proposition.

The harvest in Fiji is showing a gradual upward trend. The Fisheries Division markets a certain tonnage each year and, in cooperation with FAO/UNDP and the SPC, organises training courses and demonstrations of processing techniques, intended both for Fijians and for participants from the various South Pacific countries.

Production in the Solomon Islands is subject to marked fluctuations. James (1977) described the development of the trade: a protected industry based on the processing of fresh holothurians functioned in Honiara from 1966 to 1971, but could not survive because of difficulties associated with the storage and transport of the live animals. When the monopoly was withdrawn, production began to increase. In 1984, exports exceeded 44 tonnes, worth SI$251,000, almost 80 per cent of which went to Hong Kong.

In Papua New Guinea, on the basis of exports from Port Moresby, the harvest is quite small (Shelley, 1981).

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3. It is my pleasant duty to express my gratitude to everybody who obtained and sent me such information.