Role of the Trepang Traders in the Depleting Resource Management : A Philippine Case

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1. INTRODUCTION

The trade in trepang (also referred to as bêche-de-mer, *hai-shen*, dried holothurians or sea cucumber) is related to two global issues: the expansion of producers and consumers worldwide, and global concerns relating to depletion of the resource. Since trepang is an important marine resource among the islands and coastal communities, some countries such as Fiji encourage its production; other countries such as the United States oppose its harvesting and instead stress protection of these resources [CITES n.d. Cop12 Doc 45]. These two different values are obviously at odds. This paper will provide information on the trepang industries and food culture in China and neighboring regions in an attempt to provide a better understanding of the underlying issues.

The Secretariat of the Pacific Community (SPC) has been developing trepang resources as a monetary resource in maritime economy since the early 1970s[1]. As a result, the export of trepang from the South Pacific region expanded in the late 1970s, which coincided with China's recently established open market policy. (In 1978 China changed its policy to liberalize its economy and open its markets to the international community.) Following this policy change, trepang demand in China expanded, which in turn stimulated trepang production in the South Pacific [VAN EYS and PHILIPSON 1989: 208]. The opening of the Chinese market not only increased the commercial value of the previously distributed trepang species, but also resulted in a demand for previous non-commercial species [MCELROY 1990: 4; HOLLAND 1994: 3].

In addition to these "pull" factors affecting Chinese markets, the development of the trepang industry in the South Pacific has to be analyzed from regional socio-economical and socio-cultural demands. For example, Papua New Guinea was suffering from depressed prices of copra (dried coconut meat), the traditional cash-generating product, when it encouraged trepang

production [LOKANI 1990: 8]. New Caledonia entered into the trepang industry in 1983 when its mining industry declined [CONAND 1990: 26]. The Solomon Islands substantially increased its trepang production between 1990 and 1991; this increase can be attributed to three factors: 1) a dramatic decrease in the catch of trochus shell, 2) a decline in copra prices, and 3) the establishment of new marine export companies [HOLLAND 1994: 6].

Currently, the trepang market is no longer limited to China proper. The expansion of Chinese communities abroad, notably in Canada, United States, and Australia, has led to the growth of non-traditional markets for trepang [PRESTON 1993: 371; MALAVAL 1994: 14]. Regular shipments of trepang from Hong Kong to the USA and Canadian markets were initiated in 1992, and the value of this trade is increasing [FERDOUSE 1999: 6]. Overseas Chinese in Southeast Asian countries consume considerable amounts, and Korea, for example, imports several expensive species of trepang from tropical countries.

Not only has the trepang market expanded during the last thirty years, but it has also become increasingly competitive as more countries enter this potentially profitable industry [VAN EYS and PHILIPSON 1989: 207]. For example, in the early 1990s, the price of *Holothuria fuscogilva* (white teatfish 猪婆参) decreased dramatically, from US $25 per kilogram to US $11, as the Hong Kong market was flooded with large quantities of Vietnamese *H. fuscogilva* selling in Hong Kong at US $10 per kilogram [SOMMERVILLE 1993: 2]. *H. fuscogilva* is the second most expensive among the over twenty tropical commercial trepang species. It is harvested not only in Vietnam waters but also in many other tropical waters. Filipino fisherman, for example, dive deep for it in the South China Sea [AKAMINE 2001].

In the age of globalization, the expansion of the trepang fishery and its worldwide distribution can be expected. However, the trepang market is unique in two ways. First, it is consumed exclusively by Chinese, and virtually no trepang is consumed by the producers themselves. The fishermen harvest it for commercial purposes only, and thus it is, and has always been, an export-oriented commodity. Second, this kind of trading system has a long history. In order to understand the development of the trepang industry in China and neighboring countries in East Asia, Southeast Asia and the South Pacific, it is necessary to examine the history of interactions between Chinese traders and local populations. As discussed below, there are considerable differences between the traditional trepang industry and the current one.

There are several questions to be considered. Given the unique characteristics of the trepang industry, how can trepang resources be sustained if the local populations do not consume them but there is a strong external demand? How did foreign fishermen become involved in trepang production for China? Who introduced trepang harvesting techniques to remote islands? Are there any differences in trepang resource management between so-called traditional trepang producing countries and countries new to this industry? In this paper, I will examine the role of trepang buyers and dealers in the industry. This is because consumption and economic systems would appear to be the key to understanding the present overexploitation of these resources[2)].

2. THE HISTORY OF TREPANG EXPLOITATION

The consumption of trepang (called *hai shen* or *hai san* 海參 in Chinese) is essentially exclusive to Chinese culture. It must be dried for at least a month, after which it is soaked in

water overnight and simmered repeatedly for about a week until re-hydration occurs. Thus, from production to consumption, complicated time-consuming procedures are required. This is one of the reasons that trepang is considered a delicacy.

When trepang became popular in China is subject to debate. Conand, a French echinoderm specialist, suggested that for a thousand years or more, the Chinese sought trepang in India, Indonesia and the Philippines [CONAND 1990: 14], but she did not provide sources for this suggestion. Conand's view seems to be accepted uncritically among echinoderm and holothurian specialists, possibly because Conand is a leading scholar in the field. However, from socio-economic, historical, and cultural perspectives, we should be cautious about statements regarding the beginning of the trepang industry and trepang culture in China.

It is difficult to determine precisely when trepang culture first developed and how it incorporated neighboring regions. The popularity of trepang appears to have increased substantially in China beginning in the 16th to 17th century. Two lines of evidence support this suggestion. First, the earliest record concerning trepang in Chinese literature is in the *Five Item Miscellany* (*Wuzazu* 五雜組) written in 1602 during the reign of Emperor Wanli (万曆) in the late Ming Dynasty. In this book, trepang is described as mildly invigorating to the human body, equal to ginseng (*ren shen*人蔘), which is why it is called *hai shen* or sea ginseng [DAI 2002: 21–23].

Second, there is evidence of trepang trade during the late 17th century between China and neighboring regions. For example, the Shogunate government at Edo (in Tokugawa Japan, 1601–1867) officially began exporting trepang, called *iriko* (熬海鼠 or 煎海鼠) in Japanese, to Qing dynasty China in 1698 in exchange for Chinese silk[3]. In addition, during the same period, trepang was harvested in tropical waters, and was an important trade item brought into China by Europeans in exchange for tea, silk, and porcelains. In 1727, during the reign of the Yongzheng (雍正) Emperor, the Qing government officially ended its ban on shipping to Southeast Asia, and named Xiamen (Amoi 厦門) the only port open for trade between China and Southeast Asia [DAI 2002: 30–33] [4].

Two questions that immediately arise from the above are 1) which ports in China imported trepang from the southern islands, and 2) which species were commercially exploited during this earlier period?

Regarding the ports of entry, according to Dai Yifeng 戴一峰 who wrote an excellent history of maritime trade in the Pan-South China Sea, Xiamen was the most active port for trepang imports after 1727 and up to 1869, at which time the amount of trepang it imported was suppressed by Shanghai [DAI 2002: 33–34]. Although Dai does not mention the role of the port of Canton in the Sino-European trade, a considerable amount of trepang appears to have been imported there from the mid-18th to the mid-19th century through European and American traders, who harvested as well as bought trepang in southern waters [WARD 1972; WARREN 1985].

After the Opium Wars, Hong Kong surpassed Canton as the leading port for trepang imports. Presently, most trepang harvested worldwide is imported by Hong Kong, which is the redistribution center to other places such as Singapore, Taiwan, the USA, and Canada, all of which have considerable Chinese populations [CONAND 1990, 1993; CONAND and BYRNE 1993; SPC 1994, 1997; FERDOUSE 1999; JAQUEMET and CONAND 1999].

Regarding the question of commercially exploited species, the first mention of a particular

trepang species exploited in the southern waters is from the early 19th century. A British captain named Flinders witnessed the trepang fishery in the Bay of Carpentaria, northern Australia, in 1803 and recorded two vernacular names for trepang: *koro* and *baatoo* [FLINDERS 1814: 231], which most likely are *H. fuscogilva* and *H. nobilis,* respectively. Around 1810, a senior officer of the British East India Company named Crawfurd recorded 15 kinds of vernaculars for trepang traded at Makassar in Sulawesi [CRAWFURD 1820: 442–443]. However, he referred to the same species by different terms, according to the length of the trepang and place of harvest. Comparing these with current vernacular names, it is possible to identify at least eight species: *Bohadschia graeffei, Holothuria fuscogilva, H. fuscopunctata, H. nobilis, H. scabra, Stichopus chloronotus, S. hermanni,* and *S. horrens*. What he refers to as *itam* in his record is probably *Actinopyga* spp. (mainly *A. miliaris* and *A. lecanora*) and *kawasa* is probably *Bohadschia* spp. [AKAMINE 2001][5].

3. TREPANG EXPORTS FROM THE PHILIPPINES

Two kinds of trepang fisheries presently exist in the world: low-volume/high-value, and high-volume/low-value. According to the 1992 *FAO Yearbook*, the Philippines controlled 15.6 percent of the world trepang trade by volume in that year. On the other hand, the commercial value was only 8.2 percent of the total world commercial value. On the contrary, in that same year, 1992, Sri Lanka exported only 0.4 percent of the total world trepang production by volume, but these exports had a commercial value of 1.7 percent. The mean trade value per kilogram for the Philippines in 1992 was US $2.05, while that of Sri Lanka's was US $18.90—a nine-fold difference. This suggests that the Philippines exported lower value trepang compared to other major trepang exporting countries, a situation typical of Philippine trepang production.

Trepang appeared in Philippine trade statistics in 1970, the first time since World War II[6]. Export statistics from 1970 to 2001 are outlined in Figure 1. From the statistics, we can see the following trends. First, the Philippines has maintained an average of more than 1,000 tons of trepang exports since 1983. Second, since 1984, at least 80% of these exports went to Hong Kong (Figure 2). Third, in 1985, the Philippines reached a peak production of 3,499 metric tons, worth almost 3 million US dollars. Following that year, export volumes decreased and 1989 marked the lowest total since 1983 with only 1,022 metric tons. However, export volumes appear to be recovering, with 1,692 metric tons exported in 2000. Finally, the average price per kilogram since 1984, with the exception of a sharp drop in 1998, has increased.

According to a Philippine trepang exporter, the sharp price drop in 1998 was due to one of the heaviest floods in China's history. That flood in southern China was so severe that despite a 30% depreciation in the Philippine peso against the US dollar, imports to China still decreased. One of the trepang exporters in Manila stated that in September 1998 he had a large trepang stock, including over 40 metric tons of dried *Thelenota anax*, which he had to control by discontinuing purchases and down-pricing for a period of time. Thus, it can be seen that there is a strong economic relationship between the Chinese market and Philippine production.

There is no general pattern in the frequency and volume of trepang exports from the Philippines. It may be that trepang imports at Hong Kong increase during December and January in preparation for the Chinese New Year, which takes place around February [VAN EYS and

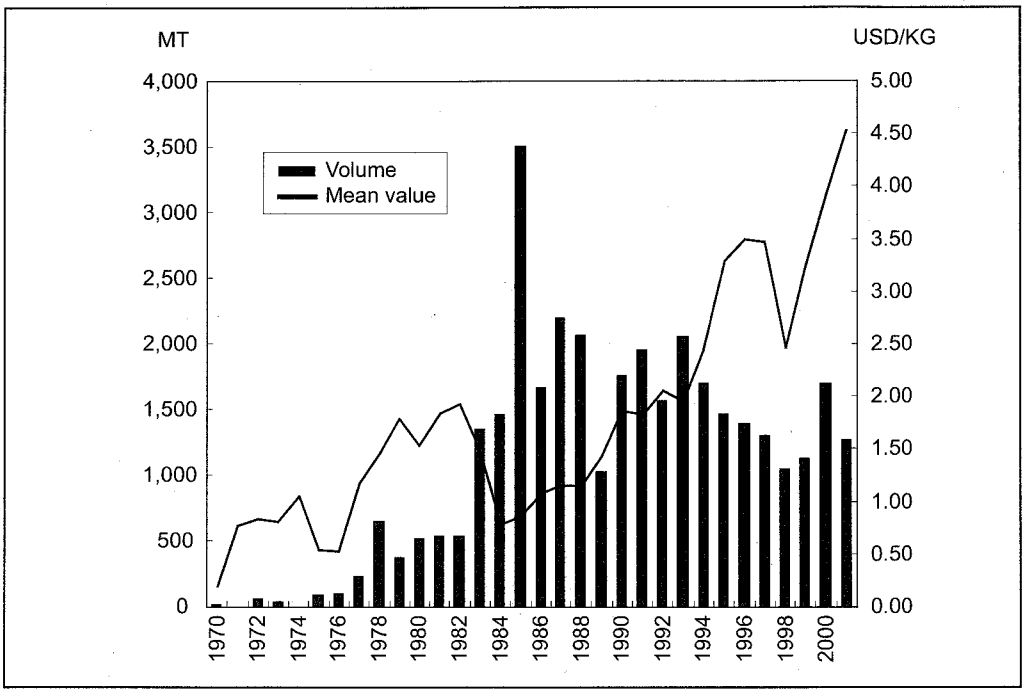


Figure 1 Volume and Mean Value of Trepang Exports from the Philippines 1970–2001

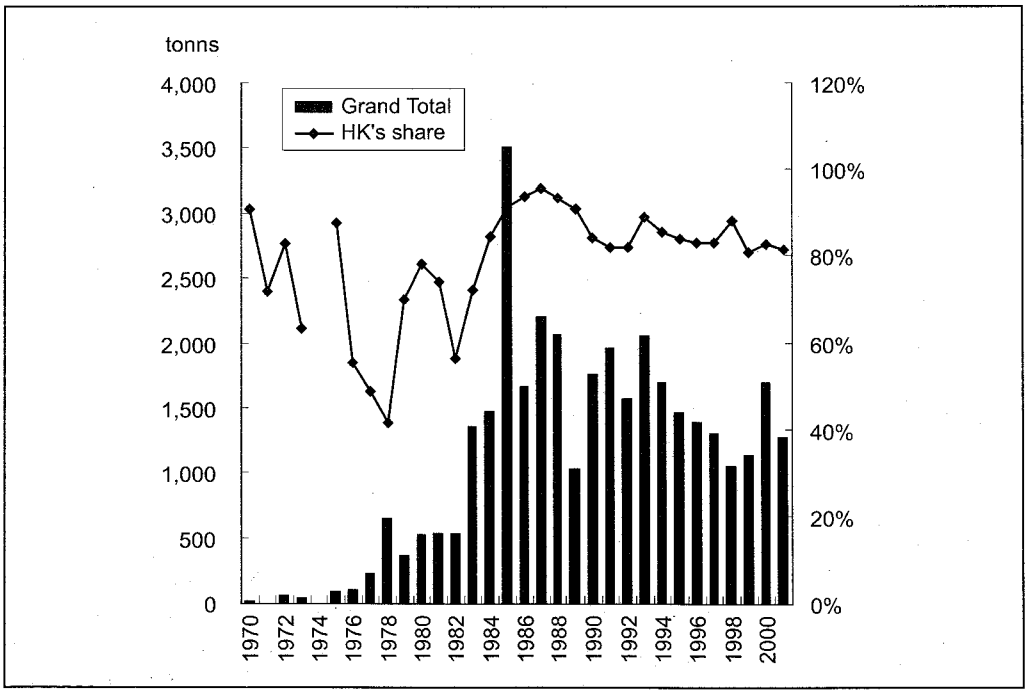


Figure 2 Hong Kong's Share in Total Trepang Export from the Philippines 1970–2001

PHILIPSON 1989: 213]. However, exports from the Philippines to Hong Kong would instead seem to be determined primarily by production and weather conditions in the Philippine Archipelago. Table 1 indicates that monthly trepang export from the Philippines is irregular. Furthermore, data indicate that Hong Kong imports Philippine trepang year round, which suggests that Hong Kong always maintains a large stock of trepang for local consumption and redistribution to other markets.

Table 1 Trepang Monthly Export Volume from the Philippines 1997–2001 (tonns)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997*	99.39	41.55	73.92	74.78	89.09	115.42	103.02	104.42	121.72	141.92	147.74	156.54
1998*	52.49	70.17	63.18	74.12	84.44	92.46	52.33	103.26	119.20	85.78	83.08	159.77
1999*	72.99	73.26	65.72	132.71	146.77	82.77	113.42	81.03	70.14	85.42	100.35	100.40
2000*	114.34	58.14	98.61	103.98	168.12	268.11	141.52	171.45	150.47	131.83	180.01	105.26
2001**	36.09	117.68	109.94	92.22	139.07	124.49	123.43	80.15	80.84	159.73	104.36	101.96

Source: Export Statistics, National Statistics Office.

* The author copied figures from the printed materials in the archive at the National Statistic Office.

** Figures are taken from the digital archive of the Statistics Ofiice.

4. TREPANG SPECIES CURRENTLY TRADED IN THE PHILIPPINES

Of the 1,200 holothurian species known today [CONAND 1990], there are at least 24 commercially exploited species and sub-species in the Philippines (see Table 2) [7]. Major dealers usually provide price lists for their customers, on which Table 1 is based. The prices listed are for well-dried, top-quality specimens. Prices of trepang vary from species to species, with the most expensive costing 210 times that of the least expensive[8]. Further, within any given species, the larger the size, the higher the selling price. In addition to the species and size, the appearance, odor, color, moisture content, and spoilage also determine price [MCELROY 1990: 2].

Since 1998, I have recorded trepang prices every September or October in Puerto Princesa [AKAMINE 2001, 2002]. Table 3 shows changes in the price of trepang and species sold for the last five years. From Table 3, it can be seen that almost every year, several new species increase in price. For example, two species *hudhud payat* (10) and *lawayang Hong Kong* (12) increased in price after September 2000. Between October 1999 and September 2000, *patola red* (14) and *patola white* (24) were formally differentiated, which were previously classified under the general term *patola* (19).

The observed trends should also be examined in a broader perspective because Trinidad-Roa, a Filipino marine biologist, reported in 1986 that only sixteen trepang species were traded in the Philippines [TRINIDAD-ROA 1987]. In her list, there is no mention of *white beauty* (15), *red beauty* (16), *bulaklak* (22) or *labuyuq* (23), possibly because they had no commercial value at that time. These four species are of relatively lower grade. However, not all newly introduced commercial species are low grade. For example, newly introduced species in September 2001, *hudhud payat* (10) and *lawayang Hong Kong* (12) are relatively valuable. *Hudhud payat* were derived as a less valuable sub-species from *hudhud*; *lawayang Hong Kong*, on the other hand,

Table 2 Trepang Names and Prices in Puerto Princesa City in September 2002 (per kilogram).

NO.	Vernacular Name	Scientific Name [1]	Size Assesment Weight [2]	Size Assesment Length [3]	Size	PHP	USD [4]
1	putian	*H. scabra*	15		XL	2,100	40.4
			20		L	1,900	36.5
			40		M	1,200	23.1
			60		S	800	15.4
			80		XS	700	13.5
2	susuan	*H. fuscogilva*	3–4		XL	1,850	35.6
			5–6		L	1,800	34.6
			7–8		M	1,250	24.0
			8–10		S	850	16.3
			11–15		XS	550	10.6
3	hanginan	*S. horrens*		3.1" up	L	1,500	28.8
		S. hermanni		2.5"–3"	M	1,050	20.2
				2"–2.5"	S	750	14.4
				(<2")	XS	350	6.7
4	buliq-buliq	*Actinopyga* spp.		3" up	L	1,320	25.4
				2.5"	M	1,020	19.6
				1"–2.5"	S	650	12.5
				(<1")	XS	500	9.6
5	bakungan	*H. nobilis*	5–6		L	1,200	23.1
			7–8		M	1,000	19.2
			8–10		S	800	15.4
			11–15		XS	500	9.6
6	katro kantos	*S. chloronotus*		na		1,000	19.2
7	tinikan	*T. ananas*		na		800	15.4
8	khaki	*A. mauritiana*		3" up	L	700	13.5
				2.5"	M	450	8.7
				1.5"–2.5"	S	280	5.4
				1"–1.5"	XS	120	2.3
9	hudhud	*A. echinites*		na		700	13.5
10	hudhud payat *	?				450	8.7
11	leopard	*B. argus*		na		430	8.3
12	lawayan hongkong *	*Bohadschia* sp.		na		340	6.5
13	lawayan	*Bohadschia* spp.		4" up	L	310	6.0
				2.5"	M	280	5.4
				(<2.5")	S	170	3.3
14	patola red **	?		na		290	5.6
15	white beauty	?		na		270	5.2
16	red beauty	*H. edulis*		na	L	240	4.6
					S	215	4.1
17	brown beauty	?		na		220	4.2
18	black beauty	*H. atra*		5" up	L	220	4.2
				4"–5"	M	140	2.7
				2"–4"	S	80	1.5
19	patola	*H. leucospilota*		na		210	4.0
20	legs	*T. anax*		na		210	4.0
21	sapatos	*H. fuscopunctata*		na		150	2.9
22	bulaklak	*B. graeffei*		na		110	2.1
23	labuyuq	?		na		70	1.3
24	patola white **	?		na		10	0.2

Source: Price list of Exporter A (as of September 2002)

1. A, B, H, S, and T in the third raw are genera *Actinopyga, Bohadschia, Holothuria, Stichopus*, and *Thelenota* respectively.
2. The nominal number of individuals needed for one kg; this is assessed by weighing one by one in the hand.
3. Assesment in relation to length of middle finger. The brackets indicate figures inferred by the auther. Not appicable (na) indicates size not assessed.
4. At the date of research, USD 1 = PHP 52.

* Did not appear in the September 2000 list.

** Did not appear in the October 1999 list.

Table 3 Changes in Trepang Prices in Puerto Princesa City 1998–2002 (USD per kilogram).1

NO.	Vernacular name	Scientific name	Size label[2]	Price (USD/kg) 1998	1999	2000	2001	2002
1	putian	*H. scabra*	XL	29.7	35.0	36.7	37.3	40.4
			L	22.8	27.5	31.1	29.4	36.5
			M	16.0	18.8	24.4	21.6	23.1
			S	9.1	11.3	16.7	13.7	15.4
			XS	6.9	8.8	12.2	12.7	13.5
2	susuan	*H. fuscogilva*	XL	21.7	30.0	35.6	35.3	35.6
			L	20.5	27.5	34.4	33.3	34.6
			M	17.1	22.5	26.7	21.6	24.0
			S	12.6	15.0	17.8	15.7	16.3
			XS	9.1	12.5	12.4	9.8	10.6
3	hanginan	*S. horrens*	L	12.6	20.0	21.1	21.6	28.8
		S. hermanni	M	9.1	12.5	14.4	15.7	20.2
			S	6.9	10.0	11.6	11.8	14.4
			XS	4.1	6.3	6.7	5.9	6.7
4	buliq-buliq	*Actinopyga* spp.	L	14.8	20.0	24.4	21.6	25.4
			M	10.3	13.8	15.6	15.7	19.6
			S	8.0	11.3	11.6	11.8	12.5
			XS	5.7	10.0	10.4	7.8	9.6
5	bakungan	*H. nobilis*	L	14.8	17.5	26.7	19.6	23.1
			M	12.6	15.0	22.2	17.6	19.2
			S	10.3	11.3	17.8	13.7	15.4
			XS	9.1	8.8	11.1	9.8	9.6
6	katro kantos	*S. chloronotus*	na	16.0	18.8	23.3	19.6	19.2
7	tinikan	*T. ananas*	L	10.3	13.3	14.4	13.7	15.4
			S	-	-	10.0	-	-
8	khaki	*A. mauritiana*	L	8.2	11.3	14.4	12.7	13.5
			M	5.0	7.5	11.1	8.8	8.7
			S	3.7	6.3	8.0	5.5	5.4
			XS	2.3	3.0	4.0	2.4	2.3
9	hudhud	*A. echinites*	na	9.6	11.3	15.6	12.7	13.5
10	hudhud payat	?	na	-	-	-	8.8	8.7
11	leopard	*B. argus*	na	5.3	7.0	8.4	8.2	8.3
12	lawayan hongkong		na	-	-	-	6.3	6.5
13	lawayan	*Bohadschia* spp.	L	3.7	5.5	6.9	5.9	6.0
			M	2.7	5.0	6.2	5.3	5.4
			S	1.8	3.0	4.0	3.3	3.3
14	patola red	?	na	-	-	5.6	4.5	5.6
15	white beauty	?	na	2.5	4.0	5.6	4.5	5.2
16	red beauty	*H. edulis*	L	2.3	3.3	5.3	4.7	4.6
			S	-	-	4.9	3.9	4.1
17	brown beauty	?	na	2.3	3.3	5.3	4.3	4.2
18	black beauty	*H. atra*	L	2.5	4.0	5.3	3.9	4.2
			M	1.6	2.1	3.1	2.4	2.7
			S	0.7	1.0	2.2	1.6	1.5
19	patola	*H. leucospilota*	na	1.8	3.3	4.9	3.9	4.0
20	legs	*T. anax*	na	3.4	4.3	4.9	3.7	4.0
21	sapatos	*H. fuscopunctata*	na	1.8	2.8	2.9	2.7	2.9
22	bulaklak	*B. graeffei*	na	1.4	2.1	2.4	1.8	2.1
23	labuyuq	?	na	0.6	1.0	1.7	0.4	1.3
24	patola white	?	na	-	-	0.4	0.4	0.2

Source: Akamine (2001, 2002) and price list of Exporter A.

1. Prices given in PHP by AP in October 1998, October 1999, September 2000, September 2001, and September 2002 and converted to USD by the author. USD 1 equals to PHP 44 in 1998, PHP 40 in 1999, PHP 45 in 2000, PHP 51 in 2001, and PHP52 in 2002 respectively.
2. Not applicable (na) indicates no size given.

is differentiated from the less valuable *lawayang* species. This means that the market keeps subdividing and differentiating.

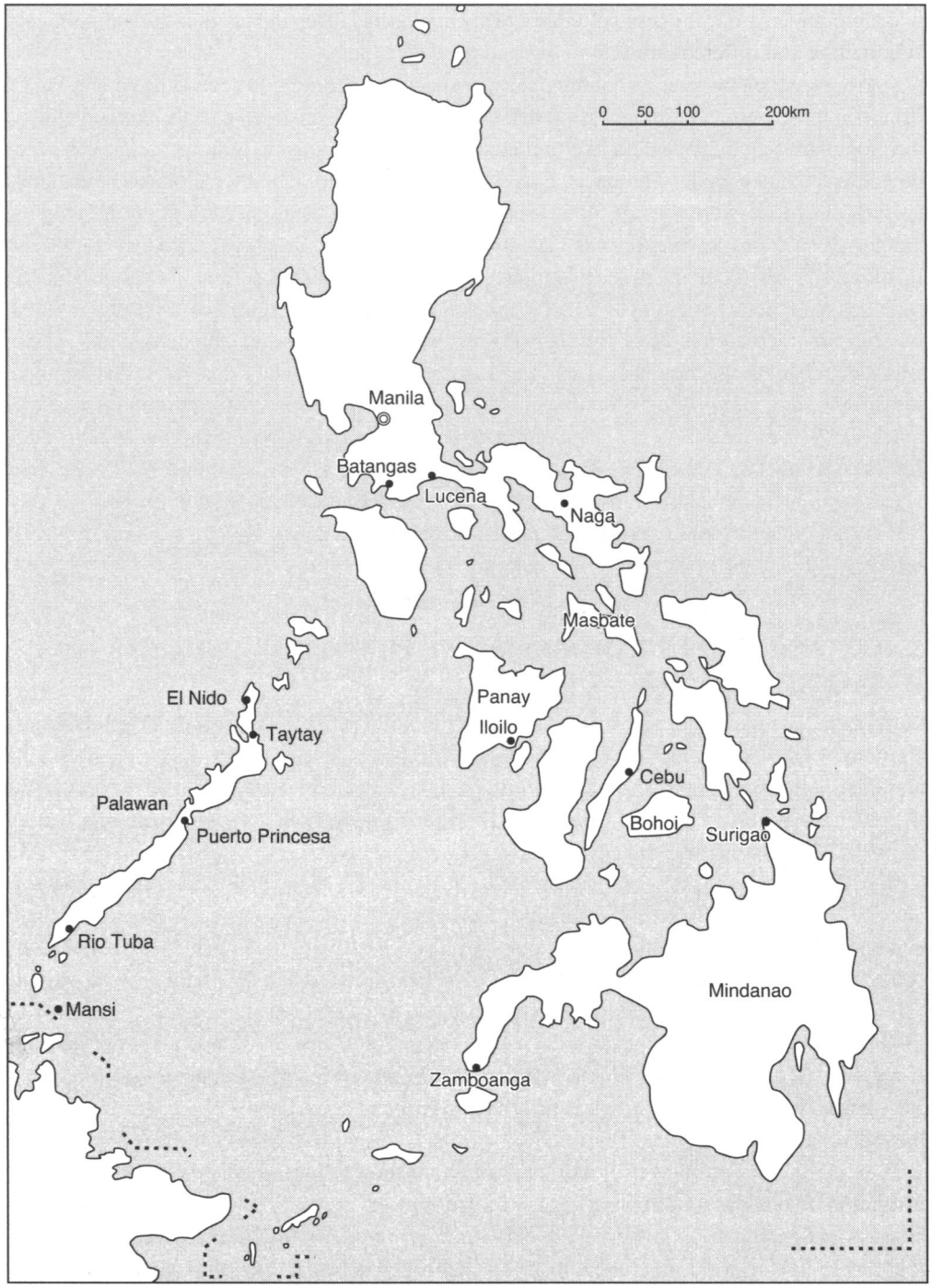
How are the new species commercially evaluated? According to several dealers in Puerto Princesa, the exporters in Manila requested the evaluations. Fishermen can also initiate product development. Since the dealers like to maintain a good relationship with their suppliers, they do not reject their suppliers' products. Even when the fishers bring in dried products of unknown species, they have to buy them for at least 10 pesos (20 US cents) per kilogram. Usually the amount of such unknown species is very small and one or two dried specimens weigh little so that they cost less than one peso. Economically, this means almost nothing for the fishers, but it makes for a better relationship than if the dealer rejects it outright. For example, in 2000, *patola white* increased in value for the first time, by 20 pesos. The development of this species was initiated by the fishers' side. Two years later, it went down to half that value. According to the dealers, the *patola white* is no longer used in human diets but is instead used for fertilizer in China. A similar example has been reported by McElroy, who noted that because of its large size (it is known as giant beche-de-mer) and thick body wall (up to 23mm), *Thelenota anax* was once in great demand, but its current price is considered to be low [1990: 6]. This suggests that even though the producers and distributors are confident in their ability to determine market prices, it is the consumers who in fact determine market prices.

5. TREPANG TRADE NETWORKS IN THE PHILIPPINES AND THEIR RECENT RECONSTRUCTION

There are four major trepang exporters in the Philippines, all of whom are either ethnic Chinese or who have a spouse with Philippine citizenship. These exporters operate in Manila and buy their products throughout the Philippine Archipelago. They have branches or agents in other parts of the Philippines (hereafter referred to as A, B, C and D). All of them have close business ties with the wholesale importers in Hong Kong and, for some, in Singapore as well.

In the following discussion, in order to avoid confusing several different levels of economic activity, I will employ the term "middleman" exclusively for a buyer who buys trepang in islands and coastal villages where the production takes place and "wholesale dealer" for a buyer who resides in the entrepôt such as Puerto Princesa, Zamboanga or Cebu in the Philippines. "Exporter" refers to a businessman who buys trepang from the wholesale dealers. The exporters often establish their own branch or agent in the major entrepôts. For example, Zamboanga in Mindanao Island and Puerto Princesa in Palawan Island are the largest entrepôts in the Philippines [TRINIDAD-ROA 1987], where exporters A and B have their buying stations. On the other hand, exporter C has his branch only in Puerto Princesa[9]. Exporter D has no branches, but has several dealers with whom he has strong business ties throughout the Philippine Islands[10]. Regardless of affiliation, I consider the major dealers in Puerto Princesa as wholesale dealers in this paper.

As of September 2002 there were only three major dealers in Puerto Princesa. However, there were five active dealers there in 1997 when I began research on the trepang industry in the Philippines. The two less active dealers still buy trepang, but their business is decreasing owing to high trepang prices. While wholesale dealers have to pay their suppliers in cash, they do not pay regularly, depending on the shipment. As trepang became more expensive, the



Map 1 The Philippine Islands and Major Trepang Entrepots

individual dealers could not afford to compete with the other three major dealers, since the latter could request working capital from the Manila headquarters.

As discussed above, following the Second World War it was not until the 1970s that the trepang industry was revitalized in the Philippines. To understand fluctuations in the trepang industry in Puerto Princesa, which plays an important role in the Philippine market, a brief historical summary of the trepang industry in Palawan Island is given below. For convenience, the dealers will be referred to as AP, BP, CP, DP, EP (the latter letter using P for Puerto Princesa), and not in chronological order but in trade volume. The first three are the branch managers of Manila-based exporters A, B, and C respectively (see Figure 3 for an illustration of the trade networks in the Philippine Archipelago) [11].

AP was born in Masbate in the central Philippine Islands in 1964. He speaks fluent Cebuano, Tagalog, Ilonggo, English, Hokkian, Cantonese, and Mandarin. His father came from China and his mother is a Masbateño. AP has five siblings, two females and three males, and he is the second eldest among them. His father passed away and his mother still lives in Masbate with his younger brother.

He was educated at the Chinese school in Iloilo, where he lived in the dormitory. During vacations and holidays, he returned to Masbate and stayed with his family. He dropped out of second year high school and returned to Masbate in 1979. In 1982, he went to Manila to work as a messenger boy at a steel company. In the following year, he married a Cebuana girl and independently started selling plastic bags wholesale to retail shops[12].

The situation changed after AP's eldest sister married a Singaporean who was a dealer of dried marine products in Cebu in the late 1980s. He was the brother of the president of A in Manila. AP's younger brother was by then in charge of A's Zamboanga branch, and his brother in Masbate was also a buyer of marine products. AP then joined A in early 1992 and worked at the Manila head office to learn the basics of the dried marine products business. In August of the same year, he was assigned to Puerto Princesa, replacing his former branch manager. When AP came to Puerto Princesa, BP and DP were strong competitors.

Currently, AP buys seasonally fresh squid, which he freezes and ships to the Manila head office. He also buys fresh globefish, which he also freezes and ships to Manila. A asks him to supply 500 kilograms of globefish a month. The fresh fish industry is quite new to AP, and his participation was initiated by orders from Manila. He initially bought squid in 2000 and globefish in 2001. In addition, in 2000, he began to buy and ship cashew nuts, locally called *kasoy*, to Manila. It is a seasonal nut harvested from March to June so he engages in the *kasoy* business when it is in season.

According to AP, although the competition is intense, getting into this new fresh fish business is partial compensation for the lower profits from the trepang industry. In order to sell more trepang, he established two buying stations in Palawan: one at Taytay and another at Rio Tuba. Both of these towns are far from Puerto Princesa. Taytay is in northern Palawan and the original home of CP where his father is still active in buying trepang. In Rio Tuba, there are many small-scale fishers and middlemen who prefer to sell their stock to AP, but cannot afford to travel to Puerto Princesa. This is why the station at Rio Tuba was established. AP motivated middlemen to bring their stocks to him in 2000 by a lottery system. However, according to AP, this system did not work well, and it was discontinued.

CP was born in Taytay, northern Palawan, in 1966. CP's grandfather was an immigrant from China and settled in El Nido, northern Palawan. He married a Palaweño woman, and the couple made their living by fishing. CP's father was born in El Nido and later moved to Taytay, east of El Nido. He was a middleman in the trepang and agar-agar trade. He shipped the trepang primarily to Manila, mainly to exporter C. He is married to a Kiniraya woman from Antique Province in Panay. CP still has a Chinese family name, but he speaks very little Chinese. Among the top three dealers, only CP was raised in Palawan, and he has more customers, especially from northern Palawan.

CP attempted to work in Taiwan in 1988, but fell victim to a fraudulent recruiter. He lost 100,000 pesos (equivalent to US 4,800 dollars)[13]. He later worked at a shoe company in Malabong, Manila, where he met his Bicolano wife from Sorsogon, and they were married in 1991. In 1995, the owner of C, who had been a good friend of CP's father, asked CP to manage a newly opening branch in Puerto Princesa, to which CP agreed. CP rented a small office along the highway for advertising. All the necessary expenses, including his housing, were paid by C.

Two years later, in 1997, after CP became well-known among the middlemen, he moved a little further inland where he had more space. His family lives in the simple house where he transacts his business. The monthly house rent is paid by C. He used a computer for accounting in 1999 and his wife is now in charge of accounting using the new high-tech machine. CP is the only dealer who utilizes a computer in Puerto Princesa: the others depend on a simple calculator.

CP makes shipments at least once a month, regardless of his stock size, and records his transactions through receipts and other documents. He started buying cashew nuts in 2002. In that year, he bought 90 tons of cashews and sent them to Manila. He receives a monthly salary, and every second month a commission based on product volume and value during that period.

DP is a Cebuana born in Bohol in 1932. She started buying trepang in Manila in 1972, in a series of dried fish and dried marine products purchases. She also bought seashells, but the sale of most types is now banned for the sake of resource conservation. According to DP, she entered the dried marine products business incidentally. DP once worked as a teacher in Manila and lent money to her students living nearby. The students, who were originally from Puerto Princesa, repaid her with dried fish and other dried marine products instead of cash. She resold the dried products and at that point recognized the potential for starting a dried marine products business. In 1975, she ceased teaching and began to work for the Bureau of Internal Revenue (BIR), but continued selling dried marine products as a secondary job. She retired from the BIR in 1983 to concentrate on her marine products business and later that year opened an office in Puerto Princesa. While she was stationed in Manila, she received supplies from EP. EP often asked her for capital but when he was not able to pay back his loan, she was given land in Puerto Princesa. It was this situation that prompted her to set up her office in Puerto Princesa and become more involved in the dried marine products business.

From experience, DP knew that the exporters in Manila benefited greatly from exporting trepang. Therefore, she tried to directly export her stock to Hong Kong and Singapore rather than selling to other exporters in Manila. Accordingly, she joined the Philippine Exporters

Association and her company was listed in the directory of the Association. Fortunately, an importer saw her company listing and immediately approached her. She exported her stock directly five times between 1983 and 1987. After her husband, a Cebuano ex-seaman, died in 1987, she had difficulty maintaining her export business, and decided to quit because it seemed unprofitable given the volume of paperwork. In addition, Philippine banks did not refund letters of credit easily, which is unusual in international business custom and practice, and she had difficulty maintaining an adequate cash flow for several months.

As an independent dealer who owned her own shop, DP has had to establish closer relationships with the exporters in order to compete with other three major dealers. DP thus sells her stock to exporter D in Manila. When she lacks cash, she asks D to raise the buying prices. Before establishing the close relationship with D, DP sold her stock to A, B, or C, depending on their respective offers. Currently she sells only to D, regardless of his offer.

EP, in his early fifties, was one of the first trepang dealers in Puerto Princesa, having started his business in 1975. He is a Cebuano born in Batangas. Before any competitors arrived in Puerto Princesa, he enjoyed his business and was very successful. According to him, in the 1980s he sold five tons of trepang to major exporters in Manila every week. But, since EP did not have enough capital, he lost his suppliers. He would like to purchase more trepang, but his offering price is always lower than the buyers' and thus he typically has low stocks. Because of this, EP currently runs a grocery store with a bakery and a pawnshop. AP, BP, and CP all have bosses in Manila who pay all their expenses, regardless of amount, so they have enough capital to compete with each other.

In the late 1970s, a major exporter, Mae, was established and co-run by several Chinese businessmen in the Philippines. Mae established a buying station in Puerto Princesa at that time, and bought trepang from all over the Philippine Islands. The reason Mae split into the present A and B exporting companies around 1990 is unknown. According to DP, Mae established itself in Puerto Princesa around 1985. Before that, DP shipped her stock to Mae's main office in Manila. Mae's expansion to Puerto Princesa increased the competition. When CP started his business as a trepang dealer for C in 1995, competition increased among the five major dealers and trepang prices increased.

Mae's split into A and B, plus C's expansion to Puerto Princesa in 1995, may be considered a major turning point in Palawan's dealer society. The businesses of the previously established local dealers, EP and DP, declined. It should be noted that the owner of company A, a "newcomer" to the Philippines from Singapore who married a Philippine woman and affiliated his brothers-in-law into his networks, triggered the price wars and the establishment of networks in the Philippine Archipelagoes.

6. ROLES OF THE TREPANG DEALERS IN PUERTO PRINCESA

Trepang dealers and exporters also deal in other dried marine products such as sharks' fin, dried sea horse, sea weed and sea shells, and their primary market for all of these products as well is China[14]. For example, in the case of CP, in 30 days of transactions in September 1999 (the figures for which he allowed me to take from his accounts) the total volume of his maritime products was about 12,200kg and they cost 5,044,251.51 pesos (equivalent to US $100,000)

(Table 4).

We can use the individual transactions of CP as an example. On October 23, 1999, there

Table 4 Dealing of CP September 3 to September 30, 1999

no.	Item	Size	KG	Category	no.	Item	Size	KG	Category
1	bakungan	2nd	7.10	trepang	18	susuan	2nd	15.75	trepang
		L	22.85				L	132.65	
		S	0.85				M	43.95	
2	black beauty	L	22.90				M-2nd	2.55	
		M	100.40				S	30.45	
		S	69.80				S-2nd	0.75	
3	brown beauty		143.15				assorted	278.05	
4	bulaklak		300.30				salted	0.45	
5	buliq-buliq	2nd	32.25		19	tinikan		123.90	
		L	1,266.20				salted	1.10	
		M	105.20		20	white beauty		25.35	
		S	56.05		21	banjo	L	2.75	sharks' fin
		salted	0.55				M	2.15	
		XS	13.00		22	black fin	XL	89.80	
6	hanginan	2nd	51.50				LM	22.25	
		XL	16.80				L	89.50	
		L	1,092.65				M	48.90	
		M	211.65				S	45.70	
		S	116.25				XS	100.10	
		XS	12.15				10"	19.50	
7	hudhud		11.85		23	brown fin		42.15	
8	katro-kantos		224.70		24	lawihan	black	1.70	
9	khaki	L	20.60				white	0.55	
		M	4.30		25	sharkfin (rough)	khaki	0.80	
		S	5.20				M	3.00	
		XS	0.30				S	0.60	
10	labuyoq		31.20		26	sudsud	L	44.70	
11	lawayan	L	459.45				LM	0.70	
		L-salted	1.75				S	8.15	
		M	111.60				XS	4.75	
		S	93.89				12"	3.75	
		salted	15.70				11"	2.35	
		assorted	0.20				10"	2.10	
		Hong Kong	240.95				9"	1.70	
12	legs		1,519.20				8"	5.35	
13	leopard	L	416.20		27	black lip	2nd	36.70	MOP
		Salted	1.20				L	91.70	
		M	11.15		28	brown lip		160.55	
14	patola		73.70		29	gold lip	a	20.05	
		white	5.75				b	19.30	
		red	747.25				c	14.60	
15	putian	XL	4.35				d	20.20	
		L	13.20				S	7.85	
		L-2nd	4.50		30	samong	L	1,675.95	trochus
		M	19.90				S	44.55	
		M-2nd	0.40		31	sea horse		0.75	
		S	34.30		32	sea urchin		458.00	
		XS	145.75						
		XS-2nd	4.45						
16	red beauty	L	67.15						
		S	248.33						
17	sapatos		233.70						
		salted	3.75			total		12,165.67	

Source: Details form CP.

were three groups of suppliers in the morning and twelve in the afternoon who sold sharks' fin and trepang (Table 5). Only one, a married couple, delivered both trepang and sharks' fin while one male buyer sold trepang and seashell. Eight sold only trepang, and five sold only sharks' fin. As for trepang-only suppliers, there were more female than male.

Table 5 Number of middlemen, items, who deliverd to CP on October 23, 1999.

Items	Number	sex
Trepang and sharks' fin	1	1 married couple
Trepang and sea shell	1	1 M
Trepang	8	3 M, 5 F
Sharks 'fin	5	5 M

Source: Observation by the author at the CP's office.

When trepang is delivered, CP and his assistants classify the trepang by species and size in the workroom attached to his office. While engaged in classifying the trepang, CP typically chats and laughs with his suppliers. CP checks the size and condition of each individual trepang. If the trepang is salt-preserved, it is classified as "salted", and if it is not well-shaped, it is classified as "second class". When a customer suggests that he buy all of it for 100,000 pesos, he never agrees. CP keeps joking and classifies the trepang himself. He also takes charge of classifying and he does not ask other assistants to do that task. It usually takes over an hour to check each shipment.

After having been classified, each class is put into a plastic bag and weighed, using a digital scale accurate to a gram. This information is also given to the supplier. CP then deducts a certain amount depending on the moisture content, which normally is estimated. CP explains to his supplier the reason for the deduction and asks for the supplier's consent. Suppliers can then request re-measurement and re-classification. After the final agreement on classification and weight, CP's wife records the information. The following serve as examples of these transactions: on September 5, 2000; deduction rates varied from 5 to 50 percent. For one species, *S. variegates* (now *S. horrens* and *S. hermanni*), deductions ranged from 7 to 50 percent, suggesting an *ad hoc* interpretation in classification adjustments.

It was reported elsewhere that importers in Hong Kong and Singapore not only distribute their trepang stocks, but also classify, upgrade, clean, dry and repack, all of which add value [VAN EYS and PHILIPSON 1989: 212; PRESTON 1993: 400]. Dealers in Puerto Princesa often increase the value of their trepang stocks. According to CP, he ships his stocks to Manila once or twice a month, depending on the stock volume. While waiting for shipments, CP's stocks undergo several types of processing. When he buys trepang, it is classified into five categories:

1) Trepang that can be stored without further treatment
2) Trepang that requires a half day of sun-drying
3) Trepang that requires more than one day of sun-drying
4) Trepang that requires smoking

5) Trepang that requires further treatment.

Trepang that needs "further treatment" is all categorized as second class. "Further treatment" includes the following procedures[15].

a. Washing out salt. This includes soaking the salt preserved trepang in water for two days, after which it is boiled in fresh water in a large metal pot. It is then rinsed in running water. This boiling and rinsing is repeated 5 to 6 times.
b. Removing odor. The odor is removed by rinsing under running water and smoking.
c. Removing spoiled meat. Partially spoiled trepang is washed and the spoiled meat cut out and the remaining part is smoke-dried.
d. Removing scorched parts. The scorched parts are washed away and dried.
e. Reshaping "meaty" trepang. Meaty trepang such as *H. fuscogilva* and *Actinopyga* spp. are difficult to cook equally throughout by boiling. If it is not cooked equally throughout, wrinkles occur. Thus, the trepang is boiled thoroughly and reshaped into an attractive form.
f. Removing the lime layer off *H. scabra* with a knife.
g. Removing sand in the body, if present.

Although hardwood is preferable for smoking, it is expensive and CP uses charcoal instead. Charcoal easily heats the trepang, and it requires constant attention to prevent overheating. The smoke is produced by applying wood chips and sawdust to the charcoal. CP has a five square meter cemented area for drying. If this area is fully utilized, he spreads tinplate and puts additional trepang on it. The various grades are grouped together for drying and when dried, they are put into plastic bags and stored prior to shipment.

7. CONCLUDING REMARKS

Although trepang studies cannot be country specific in this age of globalization, I would like to point out the significance of studying the Philippine case in relation to resource management. The Philippines is the second largest exporter of trepang after Indonesia, the leading country. However neither of these countries currently have enough information on what is happening in the trepang business. We need more basic information from the Philippines and Indonesia for a better discussion on world trepang production and trade for conservation policy making. This paper suggests that the Philippines has probably experienced depletion of the more expensive species following the expansion of the commercial species. This trend is occurring in Papua New Guinea as Kinch [2002] noted: a shift from low-volume, high-value fishing to high-volume, low-value production is now underway. We can expect the Philippine experience to be repeated in other tropical countries. In addition to the expansion of fisheries, we also need to investigate the types of trade networks involved. To predict future developments in the trepang industry in Indonesia, more research is required into the mechanisms in the industry in the Philippines itself.

Another issue that needs more attention is the "Chinese" connections. Many studies indicate that, from the 1970s to the present, Chinese have visited several South Pacific islands and taught the local populations how to produce trepang. Currently, the term "Chinese" is a general term that covers more than a billion people. In the case of the Philippines, as we have seen in exporter

A's case, Chinese migrants from Singapore established networks for the trepang trade in the Philippines. We need to investigate the contemporary as well as historical flow of the Chinese migrants, capital and information to the islands.

Finally, I would like to critique the move to put holothurian on CITES Appendix II [CITES n.d. CoP12 Doc. 45]. A discussion of the conservation of natural resources cannot be properly understood from the simple perspective of whether or not they should be protected. First of all, situations are different from region to region and country to country. It may be difficult to establish holistic or comprehensive regulations for resource management simply cover the whole globe. Thus it is necessary to examine the cultural history of exploitation of each species in each production site.

Our perspectives on the "wise use" of resources should be informed by both historical and contemporary dimensions. We also have to anticipate that the relationships between producers and consumers must have changed over the years. In essence, we must be aware of the ecological, social, economic, and political contexts of natural resource regulation.

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NOTES

1) The *Beche-de-Mer Information Bulletin* is published by the Secretariat of the Pacific Community, former South Pacific Commission. It was started in 1990 with Conand as chief editor and it is the only publication devoted to world sea cucumber issues: biology, fisheries, and markets. It can be found on the web at <http://www.spc.org.nc/coastfish>. As of writing, the latest issue of the bulletin is number 17 published in October 2002.
2) Part of this work first appeared in Akamine [n.d.] which will be in much greater detail than the present paper. The main portion of the data used in the present paper was collected during fieldwork in the Philippines in July 1997, July to October 1998, August to September 2000, September 2001, and September 2002. At the time of the research, US $1 was equal to 3,600 Indonesian Rupiah in 1997 and US $1 equaled PHP 44 in 1998, PHP 45 in 2000, PHP 51 in 2001, and PHP 52 in 2002.
3) Prior to this date, in 1683, trepang from Japan was exported to China by private Annan (安南) ship [YAMAWAKI 1995: 223]. Korea exported trepang to China by land as early as 1648 [SASAKI 2002: 219].
4) Macknight, who wrote an exhaustive archeological study on Makassan trepang fisheries in northern

Australia, suggested that the trepang industry began in Northern Australia between 1650 and 1750 [MACKNIGHT 1976].

5) Four types of trepang, *tacheritang*, *tundang*, *mosi*, and *pachang goring* are as yet unidentified.
6) The situation in the South Pacific is similar to that of the Philippines. The gathering of holothurians to prepare trepang ceased during the Second World War. No published data exist for the period between then and the industry's revival in the seventies [CONAND 1990: 19].
7) In the early 1900s, only six kinds of trepang were traded in Manila: *Actinopyga* spp., *H. fuscogilva*, *H. nobilis*, *H. scabra*, *Thelenota ananas* and *S. chloronotus* [SEALE 1911: 284–285]. Seale [1917] listed more holothurian species living in the Philippine waters but it is not clear whether all of them were commercially traded at that time.
8) The Manila representative exclusively decides prices. As of March 2000, a Puerto Princesa branch manager of the leading trepang exporter had already changed prices twice in that year: on January 14 and on March 6, following instructions from Manila. During my observation, on September 7, 2000, that manager phoned the Manila representative regarding the price of *T. ananas* since his supplier asked him to raise the price. However, the Manila representative explained to CP that "there is more than one month's stock in Manila" and the price was not adjusted.
9) Exporter A has a branch at Zamboanga, Puerto Princesa, and Surigao. B has branches at Zamboanga, Puerto Princesa, Lucena, and Naga. C has only one branch at Puerto Princesa. As of this writing, there were plans to open another one in Cebu, but it has yet to be realized.
10) Aside from the middlemen who are closely connected with the major wholesale dealer in Puerto Princesa, there are innumerable small-scale trepang buyers, locally called "buy-and-sell", who resell their stock with a small profit margin to the major middlemen or dealers in the city.
11) The interview with BP was insufficient so I have omitted details of his personal history in this paper and provided basic information on his economic activities. BP buys many kinds of marine products; currently, dried seaweed, locally termed *agal-agal*, is an important item. He buys salted donkey abalone, *Haliotis asinina*, which he cooks by himself before drying. He never buys dried donkey abalone directly because it requires special drying techniques to attain high quality. Otherwise it does not sell well in the market. BP started to buy live lobster in 2000.
12) Although he admitted that he was not a good student, he is now a devout Christian and works as a volunteer for the church. His office is closed on Sunday, which is unusual for trepang dealers in Puerto Princesa.
13) CP states that if he had not become a trepang dealer in Puerto Princesa, he would have been an engineer and worked abroad.
14) It is mentioned elsewhere that most traders dealing in trepang generally carry several other dried specialty products such as sharkfin, abalone, and fish maw for dietary or medicinal use [VAN EYS and PHILIPSON 1989: 212] but I have never observed fish maw trade in the Philippines.
15) In July 1998 at B's branch in Zamboanga, I also observed coloring. In this instance, only *B. argus* was put into a stainless cooking pot and boiled with black tea leaves for coloring. According to the branch manager, this results in brownish *B. argus*. I observed no other examples of coloring except that *Stichopus japonics* in Japan is cooked with iron oxide to make it a shiny black.

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