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Commercial holothurians in South Sulawesi, Indonesia: Fisheries and mariculture

by Chantal Conand[1] & Ambo Tuwo[2]

Introduction

Indonesia is probably the first producer-country worldwide for teripang or beche-de-mer (Conand, 1989, 1990; Tuwo and Conand, 1992; Conand and Byrne, 1993). Little is known about its artisanal fisheries, but overexploitation is occuring in South Sulawesi (Erdmann, 1995). Concern for a rational management of these coastal resources is presently increasing (Hanafi and Suryati, 1994), as for other marine organisms.

We present here a few observations on the teripang fishery from Barrang Lompo, a small island of the Spermonde Archipelago, and on growth trials at Kambuno Island, South Sulawesi.

The fishery

As in the other producing countries, there are at least five levels within the holothurian fishery where statistics may be collected (Conand and Byrne, 1993). This study presents preliminary observations on holothurian species and quantities processed from sampling by processor-fishermen and collectors.

In Barrang Lompo, around 300 fishermen on 30 boats go away for long periods and collect sea cucumbers from lagoons and reefs far away in areas such as Maluku, Timor and North Australia (Erdmann, 1995). They are not used to processing their catch on board, and keep it in salt after slitting and eviceration (Tuwo and Conand, 1992). It is, therefore, difficult to identify the species accurately.

In December 1995, a few visits to the processors (there are about 60) have allowed us to establish a list of the species fished (Tuwo and Conand, in press). It has appeared unrealistic to sample before processing, because the different species of sea cucumber are mixed together in salt and kept in the shade of the ground-floor of the traditional house.

Figure 1A: Smoking *Thelenota ananas* [Photo: C. Conand]

During the phases of boiling and smoking, the species are identified more easily (figure 1A), yet during sun-drying is the most appropriate phase for sampling (see figure 1B on page 19).

Table 1 shows the quantities, size intervals and medium size of the sorted species, sampled by processors and a chinese collector. More than ten species of sea cucumbers have been observed, but the taxonomy has yet to be checked. To establish the capture totals in fresh weight, the shrinkage rates during processing and the length-weight rela-

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Table 1: Results from the sampling at Barrang Lompo

Date and sampling site	Species	Quantity	Size interval (cm)	Medium size (cm)
9/12/95				
Collector	*Actinopyga* sp.	1,000	10–14	12
(sun-drying)	*Actinopyga* sp.	100	<10	–
	H. fuscogilva	25	18–20	19
	H. coluber	2	20	20
	H. fuscopunctata	–	–	–
	Stichopus sp.	1,000	3–10	7
	Thelenota ananas	8	20–26	24
	Thelenota ananas	2	<10	–
	T. anax	30	30–35	32
	T. anax	4	<12	–
25/12/95				
Collector	*Actinopyga* sp.	1,150	6–15	12
(sun-drying)				
15/12/95				
Processor	*Bohadschia vitiensis*	–	–	16
(sun-drying)	*H. scabra* var. *versicolor*	210	7–20	13
	T. anax	30	–	30
16/12/95				
Processor	*T. ananas*	1	–	25
(sun-drying)	*T. anax*	96	20–34	24
	T. anax	3	11–13	–
25/12/95				
Processor	*T. ananas*	3	18–22	–
(sun-drying)	*T. anax*	146	22–33	24

tionships established for the different species (Conand, 1989, 1990) have been used. It has been postulated that the shrinkage rate of *Thelenota ananas* could be used for *T. anax*. (a study should be undertaken to check this point).

A few species have not been sampled (see table 1, *H. fuscopunctata* for example, which has frequently been seen in salt before boiling) and sampling might also not have included all processing or drying sites on the island. The results, presented in table 2, are thus probably underestimates.

Some comments can be made about these observations. From the evaluation of the total captures, the drying and dried products are not the same during successive weeks, indicating a rapid turnover; this point will need further investigation at the fisherman, processor and collector levels.

With minimum estimated captures around 1,000 kg, the product dried should be at least 100 kg each week. It also appears that two species are largely predominant: *Actinopyga* sp. and *Thelenota anax*.

The first has only been observed by the collector (who might have made stocks); the second has been seen by all processors, indicating that it is a target species despite its very low commercial value (the fishermen get a price 10 to 15 times less than for the teatfish, *H. fuscogilva*, a valuable but rare species).

Small specimens are also collected by fishermen, showing that they presently harvest all the holothurian species that are still available—even illegally, as 25 boats were confiscated in Australia (Erdmann, 1995).

Figure 1B: Sun-drying *Thelenota ananas* [Photo: C. Conand]

Table 2: Captures evaluated from the sampling (TL = total length)

Species		Size category			Captures (kg)		
		TL dry (cm)	TL fresh (cm)	Weight (g)	9/12/95	16/12/95	25/12/95
Actinopyga sp.	large	12	26	650	650.0	–	750.0
	small	7	15	140	14.0	–	–
H. fuscogilva		19	43	2,100	52.0	–	–
H. scabra versicolor		13	34	1,250	–	262.0	–
Stichopus sp.		7	20	250	250.0	–	–
Thelenota ananas	large	24	60	4,200	34.0	4.0	8.0
	small	8	21	400	–	–	–
T. anax	large	30	80	5,500	165.0	165.0	–
	medium	24	62	2,600	–	250.0	380.0
	small	10	25	200	0.8	0.6	–
Captures					1,165.8	681.6	1,138.0

Growth trials

Growth trials in cages have been undertaken to offer an alternative to sea-cucumber fishermen. These growth trials (figure 1C) are presently in progress at Kambuno Island, near Sinjai, in a site protected from the waves. The sandy muddy substrate (water depth is 50 cm at low tide) is covered by sea grasses.

The cage (25 x 25 m) is made of net, with a mesh size of 0.5 cm, deeply buried in the sediment to avoid holothurian escape. Young specimens of the sandfish *Holothuria scabra* (figure 1D), around 10 cm of total length, are collected at low tide on a nearby estuary flat.

Preliminary data showing a relatively rapid growth after three months will be presented in the next issue of the Beche-de-mer Information Bulletin.

Conclusion

This preliminary study by sampling during the processing on one island of Southwest Sulawesi has shown that the exploitation of sea cucumbers is very intense and raises many problems. Such enquiries should be undertaken on a regular basis, for teripang processors and collectors, at least in Barrang Lompo Island.

They will enable us, through case studies, to follow the trends of the captures of different species. Sampling during fishing, or enquiries by fishermen are also needed to correlate the captures with the fishing effort.

Thereafter, variations in the sizes of the product and the catch-per-unit effort will permit better understanding of these overexploited resources. Mariculture projects also look promising to increase the resource.

Figure 1D: Young *Holothuria scabra* put in enclosures [Photo: A. Tuwo]

Figure 1C: Enclosures for growing sandfish [Photo: A. Tuwo]

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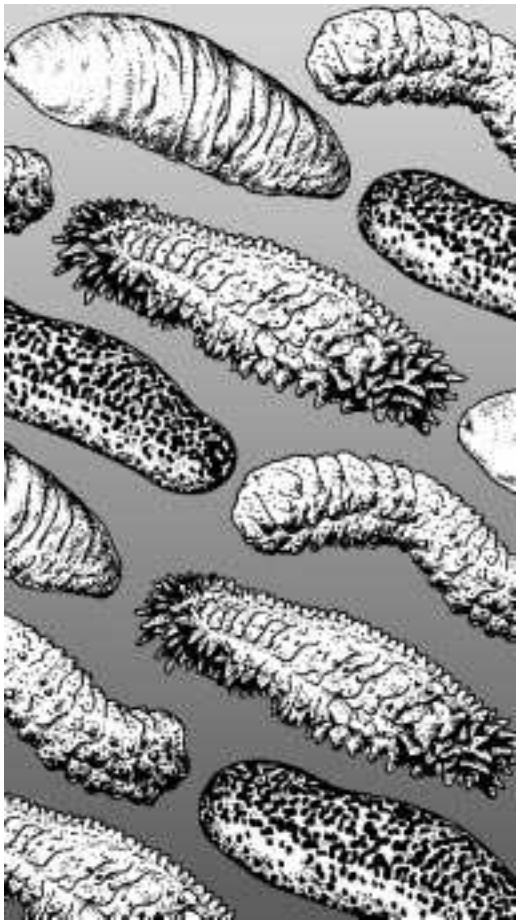
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