

Fishing beche-de-mer in Madagascar

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I have been fishing, processing and marketing beche-de-mer for five years, the past two and a half years in Madagascar and previously in Mozambique. I by no means call myself an expert on the subject. I agree with William S. Sommerville of The Asil Group in New Zealand who wrote in his article of the last issue (see *Beche-de-mer Information Bulletin #5*), that one continues to learn daily in this fascinating and often frustrating business.

Madagascar is the fourth largest island in the world and has a coastline about 4,000 km long. While beche-de-mer can be found along the entire coastline, it is only fished on the leeward side of the island. I suspect the windward side is too dangerous for divers.

Species

There are many different species of beche-de-mer found around Madagascar: black teatfish, brown teatfish, white teatfish, sandfish, black sandfish, red sandfish, prickly redfish, curryfish, surf redfish, elephant trunk fish, greenfish, lollyfish.

Quality

We have found that, as the demand for beche-de-mer increases, so the quality supplied by the local fishing villages decreases. There were never such problems when I first started working in Madagascar. We and a few other processing companies still enforce strict quality control measures.

However, over the last 12 months, with an increase in demand, we have seen many illegal collectors enter the industry. They are doing it more harm than good, their only interest being to make a fast buck. They hardly carry any overheads and certainly don't give anything back to the industry.

These illegal collectors offer beche-de-mer fishing villages huge sums of money, almost double what we usually pay them (e.g. teatfish FMG20,000/kg or US\$ 10/kg and sandfish FMG 35,000/kg or US\$18/kg). This practice has caused traditional fishing villages to stop catching fish and start catching and processing beche-de-mer.

The fishermen try to speed up the process so as to make money more quickly, but in doing this they compromise the quality. Instead of doing two or three boilings they are only doing one.

Many are not burying the beche-de-mer in sand overnight. In some cases, instead of adding extra salt to a boiling, they are rubbing salt onto the body of the beche-de-mer, which causes holes to form on the bottom and sides.

Problems facing the industry in Madagascar

Being a third world country, Madagascar does not have the resources of infrastructure to handle the problems facing the beche-de-mer industry. These include:

- No closed fishing season such as those applied to other fishing industries;
- No limits on size, quantity or species;
- No educational workshops for local fishermen;
- Insufficient access to coastal villages.
- Manpower shortage and lack of motivation in Fisheries Departments;
- No visible aid organisations (e.g. UN, FAO).

Problems facing registered processing companies

These include:

- Competition from illegal collectors;
- Lack of help from the Department of Fisheries;
- Lack of active beche-de-mer organisation to help improve the beche-de-mer industry before it is too late.

Our company, for instance, will re-invest US\$2 million in 1994/95 to improve the industry in Madagascar, but we need everybody to pull in the same direction, not just to think of the money that can be made out of these creatures. Let us implement ways of looking after these creatures that put the money into our pockets! Our aim is to improve all facets of the industry through:

- Better equipment;
- Better information on endangered species, on spawning, on life cycle, aquaculture;
- Educational workshops for local fishing villages;

- Creation of about 300 extra jobs;
- Improved social services for personnel: medical aid and pension, schools for children, housing and sports facilities.

We would gladly accept any advice or information on the above as well as encourage research parties to visit Madagascar in the future.

Estimated production in dry weight

The Department of Fisheries estimates production of all beche-de-mer at ± 120 t/yr. My estimate is ± 300 t/yr, with ± 60 t wasted due to bad quality or small size (± 1 -2cm).

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Laamu Atoll Mariculture Project: mariculture of sea cucumbers — project summary

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The primary objective of our project, over an initial two-year period, is to demonstrate the feasibility of sustainable sea cucumber culture at village level in the Maldives, in order to provide a viable alternative to the rapidly declining sea cucumber fishery. Villagers who have been involved in this fishery will be encouraged to participate.

Culturing sea cucumbers will help reverse the present trend towards depletion of the natural stocks of marketable sea cucumber species and will help restore jobs and income provided by the fishery until recently. The project is sponsored by the Oceanographic Society of Maldives and endorsed by the Maldivian Ministry of Fisheries and Agriculture.

In the propagation of sea cucumbers we are considering both the sexual and asexual forms of reproduction. In November 1993, we began a screening experiment to examine which of several commercial species have potential for asexual propagation.

The species we are examining in our replicated field-pen trials include *Actinopyga mauritiana*, *A. miliaris*, *Holothuria fuscogilva*, *H. nobilis*, *Stichopus chloronotus*, *S. variegatus* and *Thelenota ananas*. We have induced animals in our pens to undergo binary fission and are currently measuring survivorship and individual growth/regeneration rates. Following this screening experiment we plan to determine the optimal density and the effect of food supplements on the growth and survivorship of asexually propagated animals.

In our evaluation of the sexual form of reproduction, we initiated, in December 1993, a 12-month study on the sexual cycle of three species of sea cucumber. The gonads of field-collected specimens of *A. mauritiana*, *H. fuscogilva* and *T. ananas* are being examined. The data collected will be used to assess the time and duration of spawning activity, fecundity and the weight at first sexual maturity. Upon determination of the spawning season for each species, trials on animal spawning and larval/juvenile rearing will be conducted in the laboratory.

Based upon the data collected from the experiments noted above we will select the 'best' species. Characteristics which will be considered in the selection of the best species will include biomass per unit area, survivorship and growth/regeneration rates in the asexual propagation trials, duration of spawning season, fecundity, larval and juvenile survivorship, marketability and price per kg.

Once the best species is selected, we will identify three Maldivian families to conduct pilot-scale operations. These operations will be part of the follow-up community-based mariculture development programme.

