



**CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE**

ERNAKULAM, COCHIN-682 031, INDIA

R & D SERIES FOR MARINE FISHERY RESOURCES MANAGEMENT

10. THE HOLOTHURIAN RESOURCES

Sea-cucumbers or holothurians are the most important group among the echinoderms since some of the sea cucumbers are processed and the product is known as *beche-de-mer* or Trepang for export market. They are sluggish, unattractive and even repulsive organisms found in the sea particularly in the intertidal region. Toxins found in some of the sea-cucumbers have antitumoural and anticancerous properties.

Importance

The export of *beche-de-mer* during the years 1974-83 from India was 535 tonnes valued at 192 lakhs. The annual average works out to 53 tonnes valued at 19 lakhs. At present a good sized holothurian costs five rupees.

Although there are a number of species of sea cucumbers in the seas around India, only a few of them are commercially important. They are *Holothuria (Microthele) bobilis*, *Thelenota annanas*, *Actinopyga mauritiana*, *A. miliaris*, *A. lacanora*, *A. echintes*, *Holothuria (Metriatyla) scabra* and *Holothuria (Theelothuria) spinifera*.

Distribution

On the mainland of India holothurians are chiefly found along the Gulf of Mannar and Palk Bay. The commercially important

species are *Holothuria (Metriatyla) scabra* and *Holothuria (Theelothuria) spinifera*. The former species forms more than 95% of the catch and the latter is distributed only in the Gulf of Mannar and Palk Bay. In the Gulf of Kutch *Holothuria (Metriatyla) scabra* is distributed, but there does not appear to be any industry in that area to exploit the resource.

The Andaman and Nicobar Islands are by far the richest for the sea cucumber resources in the Indian Seas. There are over 550 islands small and large with a coastline of 1962 km. Being oceanic islands the continental shelf around them is limited to about 16,000 sq.km. The commercially important sea cucumbers are found to be distributed from the intertidal region to a depth of 20 metres. In Andamans *Holothuria (Microthele) nobilis*, *Actinopyga mauritiana*, *A. echinites*, *A. miliaris*, *A. lacanora* and *Holothuria (Metriatyla) scabra* are the commercially most important species. At some places near Port Blair small forms (50-90 mm in length) 2-10 specimens are distributed in an area of twenty five square metres. In some rocky areas in the intertidal region 2-5 specimens of *Actinopyga mauritiana* and *A. echinites* are distributed in an area of 25 sq.m.

Unfortunately no catch statistics are available on the landings of sea-cucumbers which are used in the *beche-de-mer* industry. Based on the annual export figures of *beche-de-mer* it can be estimated that the annual average landings during the last 10 years is 160 tonnes. It is essential to collect the landings of sea cucumbers along the Gulf of Mannar, Palk Bay and Andaman and Nicobar Islands where sea-cucumbers are exploited for stock assessment studies.

Utilization

In India sea-cucumbers are not consumed in any form and the whole *Beche-de-mer* a Chinese delicacy used on important and festive occasions, is exported. It is chiefly consumed in China and South East Asian countries. All the processed sea-cucumbers are exported to Singapore and Hong Kong from where they are re-exported to China and even to some western countries.

It is cut into bits and put in soups to add flavour and the bits are also consumed. Because of the low cholesterol content it is considered as good diet. Processing of the sea-cucumbers is simple. Large sized holothurians are either hand picked from the intertidal region during low tide or obtained by skin diving in shallow water. After collection they are degutted by making a small slit at the posterior end and boiled in sea water for one hour. Later they are buried near the sea shore and kept there overnight. Next day they are removed and thoroughly washed in sea water to remove

chalky deposits. Again the product is put in sea water and boiled and later it is dried on mats. The resultant product is the *beche-de-mer*. The quality of the product depends on the species used, size, shape, appearance, colour, stiffness and odour. Great care should be taken during processing to obtain good product. Some species like *Actinopyga mauritiana* are also consumed in the fresh condition.

In some places extracts from sea-cucumbers particularly from *Holothuria (Halodeima) atra* are put in rock pools to stupefy and catch fish. Experiments in this regard were conducted in the rock pools at Port Blair and tidal pools at Mandapam by using the holothurian *Holothuria (Halodeima) atra*. The holothurian toxin appeared to be effective when used in limited quantity of water to kill fish. It has been suggested that this toxin can be used to eradicate undesirable fish and other organisms before stocking fish ponds.

As stated earlier some of the toxins of holothurians have anti-tumoural and anticancerous properties. Recently a Project on the bioactive substances from marine organisms has been taken up at this Institute to study the toxins. Some species of sea-cucumbers have already been screened for the toxins.

Present status of the industry

From the export figures during the last 20 years it is seen that the industry is in doldrums exporting on an average *beche-de-mer* worth of 20 lakhs annually. This stagnation is mainly due to lack of diversification of the industry and also due to non-expansion of the industry to other areas. In the Gulf of Kutch, it is not processed though *Holothuria (Metriatyla) scabra* is found to occur there. Though five species which are more valuable than *Holothuria (Metriatyla) scabra* occur, only this species is processed in Andaman Islands. Despite the occurrence of quality sea cucumbers they are not processed in the Lakshadweep at all. Other islands in the Andaman and Nicobar Islands have to be tapped and there is an urgent need to extend the processing to the Lakshadweep also.

Prospects

As stated above the Andaman and Nicobar Islands are by far the best areas for sea cucumber in the Indian region. Not only the most commonly used sea-cucumber *Holothuria (Metriatyla) scabra* is found, but other valuable species such as *Holothuria (Microthele) nobilis*, *Actinopyga mauritiana*, *A. echinites*, *A. militis* and *A. lacanora* are found to be distributed. Unfortunately the most valuable species are not at present processed due to ignorance. Although there are over 550 islands big and small, sea-cucumbers

are collected at present only from some inhabited islands. Detailed surveys have to be made to locate good beds of sea-cucumbers. Good concentrations are expected at some places, since they are not tapped at all so far. Also stock assessment studies have to be undertaken at Port Blair where there is a minor industry at present.

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The conclusions/recommendations made in this series are subject to revision with addition of further information on the resource.

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