

Population status, fisheries and trade of sea cucumbers in Africa and the Indian Ocean

Chantal Conand

Seychelles: a hotspot of sea cucumber fisheries in Africa and the Indian Ocean region

Riaz Aumeeruddy and Chantal Conand

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Chantal Conand

Université de la Réunion

Saint Denis, France

E-mail: conand@univ-reunion.fr

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SUMMARY

The region covered in this review is very diverse, including four FAO Fishing Areas and 30 countries. Sea cucumber fisheries presently exist in the Western Indian Ocean (WIO), where 16 countries have been documented, and in the Eastern Indian Ocean (EIO), with two countries covered in this review. The fisheries are for the dried product (“trepang” or “bêche-de-mer”) which is consumed by Chinese populations and have a long history dating back to the nineteenth century.

Nearly thirty species are presently exploited (23 Holothuriidae; 6 Stichopodidae), with commercial value varying among species. Several differences in species composition between the Indian and tropical Pacific region have been shown recently, such as the teatfish *H. whitbmei* found only in the Pacific, and *H. notabilis* and *H. spinifera* in the Indian Ocean.

The main information on the population status, reproductive biology and ecology of the commercially important species is synthesized in the present document. In 12 out of the 30 countries in the region the resource appears to be overexploited or fully exploited. Sea cucumbers are harvested and processed in different ways throughout the region, varying from small-scale, artisanal to semi-industrial activities. Globally, and according to FAO statistics, the region produces at least 1/3 of the world dried sea cucumber products.

There are several national management measures, including total bans; however, these seem to be insufficient for a sustainable use of the resources. The trade is characterised by exports from the producer countries, imports in “intermediate” (e.g. Yemen, Dubai) and final markets, where the key role of China Hong Kong SAR is most apparent. Illegal trade remains a problem in many countries.

The socio-economic aspects essential in small-scale fisheries are presented for several countries. Finally, several current projects in fisheries, or aquaculture as an alternative measure, are detailed.

In conclusion, the need for co-management, the improvement of the export statistics and the implementation of sustainable use are discussed.

1. REGION UNDER STUDY

The region covered for the present regional review (Figure 1) is very diverse and had to be separated into several sub-areas, following FAO Fishing Areas (FAO, 2005a). Table 1 lists the countries in each sub-area and points out the countries for which information on sea cucumber fisheries is available and countries that, although information is lacking, there may be commercial exploitation of sea cucumber species.

As in the tropical Pacific (Conand, 1986, 1990) the fishery for sea cucumbers in the Indian Ocean, for exports to the Asian markets, has a long history. For example, in India it is reported by Hornell (1917), in Madagascar by Petit (1930), in eastern Africa by Sella and Sella (1940) and in the Seychelles, Marguerite (2005) dates exports back to 1894. Following the FAO review in Lovatelli *et al.* (2004), an important recent source of information is the status report on sea cucumber fisheries from the Western Indian Ocean (WIO) prepared for the Western Indian Ocean Marine Science Association (WIOMSA) by Conand and Muthiga (2007a).

In the Africa and Indian Ocean region, the species commercially fished are benthic. Some species live on hard substrate (rocks and coral reefs), but most inhabit soft bottoms, either on the surface, or buried (temporarily or permanently) in the sediment. The common characteristics of the commercial species are: (i) abundance in rather shallow waters; (ii) large mean size of the specimens; (iii) diurnal habits; (iv) thickness and stiffness of the tegument that ensures a good processed trepang (bêche-de-mer). The first three characteristics make the commercial species very vulnerable to overexploitation.

An introduction is given on the four areas and the sub-areas of each main area, with general characteristics. Given the characteristics of the commercial species, they are found in the different shallow benthic environments, generally distant from estuaries as

