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2. SYSTEMATICS, BIOLOGY, ECOLOGY AND ZOOGEOGRAPHY OF HOLOTHURIANS

ZOOGEOGRAPHY AND SYSTEMATICS OF HOLOTHURIANS USED FOR *BECHE-DE-MER* IN INDIA

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ABSTRACT

Although holothurians have wide range of distribution in general, they are restricted to certain regions and also have localised distribution in some cases. *Holothuria (Metriatyla) scabra* is distributed in the Gulf of Mannar and Palk Bay and also at Andaman and Nicobar Islands, but not represented in the Lakshadweep. *Holothuria (Theelothuria) spinifera* has a localised distribution in the Gulf of Mannar and Palk Bay. *Holothuria (Microthele) nobilis* is abundant in the Lakshadweep, but absent in the Gulf of Mannar and Palk Bay. Species of *Actinopyga* occur in the Lakshadweep and the Andaman and Nicobar Islands, but not on the Indian side of the Gulf of Mannar and Palk Bay. Brief notes on the taxonomy of commercially important holothurians are given.

INTRODUCTION

The zoogeography of sea-cucumbers is interesting due to their relatively sedentary habits, the brevity of the larval life and usually a restricted bathymetrical distribution. Sea-cucumbers remarkably suitable as material for studying changes in shore lines in relation to land masses. Thus a study of zoogeography is very important. Although there are number of contributions on the systematics of sea-cucumbers from different parts of India, informations are very limited on zoogeography of this group.

ZOOGEOGRAPHY

James (1986) studied the zoogeography of the shallow water echinoderms of the Indian Seas. The studies clearly revealed that the faunal composition of Sri Lanka and the Indian shores of the Gulf of Mannar and Palk Bay are different. Despite the close proximity of India to Sri Lanka there is a marked difference in the species composition along the respective coasts. This is rather difficult to explain since most of the holothurians have a wide range of distribution in the Indo-Pacific region. As many as 49 species are known from Sri Lanka whereas only 24 species are known from the Gulf of Mannar and Palk Bay along the Indian Coast. It is interesting to note that the genus *Actinopyga* is not recorded on the Indian side of the Gulf of Mannar and Palk Bay whereas five species are recorded under the genus from Sri Lanka. Only *Bohadschia marmorata* is reported from the Indian side whereas from Sri Lanka four species of *Bohadschia* viz., *B. argus*, *B. marmorata*, *B. tenissima* and *B. vitiensis* are known. This difference in distribution could be due to the role played by currents and it indicates the presence of a barrier which does not favour movements of holothurians from Sri Lanka to the Indian side. Another important factor is the 'area effect' referred to by Price (1982). The Sri Lankan Coast is far more extensive than narrow coast line of the Gulf of Mannar and Palk Bay on the Indian Coast. Therefore a corresponding increase in species diversity is apparent.

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Holothuria nobilis the most valuble species for the *beche-de-mer* preparation, is found in large numbers on some of the islands of the Lakshadweep. It is also found in Andaman and Nicobar Islands. *Holothuria scabra* the most commercially important species from India, is well distributed in the Gulf of mannar and Palk Bay, right from Sethubhavachatiram in the north to Tuticorin in the south. It was also recorded on the west coast from Malvan by Parulekar (1981). Detailed surveys for this species has to be conducted from the other places along the Indian Coast. *Holothuria scabra* is also extensively distributed in Andamans. It is however totally absent from the Lakshadweep and the Maldives. Another commercially important species *Holothuria spinifera* has a somewhat restricted and localised distribution. It is known only from the Gulf of mannar and Palk Bay in Indian region. It is also known from the Red Sea, Persian Gulf, Sri Lanka, North Australia and Philippines. It is totally absent in the Andaman and Nicobar Islands and in Lakshadweep. The distribution of another valuble genus *Actinopyga* is interesting. It is totally absent from the mainland of India. But it is distributed both in Andaman and Nicobar Islands and the Lakshadweep. Species of *Bohadschia* are also distributed in Sri Lanka. The zoogeography of the genus *Bohadschia* is more or less similar like *Actinopyga*. *Bohadschia marmorata* is found in the Gulf of Mannar and Palk Bay, Sri Lanka, the Andaman and Nicobar Islands, and the Lakshadweep. *Bohadschia argus* is found abundantly in some of the islands of Lakshadweep. The massive commercially important genus *Thelenota* is restricted to the lagoons of the Lakshadweep and the Maldives. The record of *Thelenota* sp. as *Stichopus* sp. by Tikader *et al.* (1986) needs to be verified. Now coming to potentially important genus *Stichopus* it is noted that *Stichopus variegatus* is found in the Gulf of mannar and Palk Bay, the Lakshadweep and the Andaman and Nicobar Islands. This species occurring in Andamans is massive and reaches a size of 600 mm in length. The other species *Stichopus chloronotus* is found in large numbers in some of the islands of the Lakshadweep. At present it is not seen in the Gulf of Mannar and Palk Bay though Gravely (1927) reported them to be abundant in inshore areas at Rameswaram. *Holothuria atra* which grows to a size of 600 mm in length is distributed in the Gulf of Mannar and Palk Bay, in the Andaman and Nicobar Islands, and the Lakshadweep. The value of this species for *beche-de-mer* remains to be explored from India though Wainiya (1988) reported as commercially important from Thailand.

SYSTEMATICS

Nearly 200 species of holothurians are known from the seas around India, of which about 75 species are from the shallow waters within 20 m depth. Of these about 10 species are of commercial value. A study of the systematics of holothurians is interesting as not much information is available. As a result of the efforts of the author several species are brought to light from the Indian Coast for the first time. Parulekar (1981) recorded *Holothuria scabra* from Malvan. The holothurians of the Gulf of Mannar and Palk Bay are somewhat better known. Thurston (1984) reported 10 species of holothurians from Rameswaram and neighbouring islands. Of these only *Bohadschia marmorata* has some commercial value. Gravely (1927) recorded 13 species of holothurians from Krusadai Island in the Gulf of Mannar. Of these *Holothuria scabra* is the most important species. James (1986) listed 23 species from the Gulf of Mannar and Palk Bay. Daniel and Halder (1974) reported 32 species of holothurians from Andaman and Nicobar Islands based on earlier reports. Soota *et al.* (1983) reported some holothurians from Andaman and Nicobar Islands. James (1983) recorded *Holothuria spinifera* and *Bohadschia marmorata* from Madras. The holothurians of Andamans are now fairly well known due to the efforts of the author who listed 37 species from the Andaman and Nicobar Islands. The holothurians collected by Gardiner from Maldives and Minicoy Islands have been dealt in a cursory manner by Pearson (1913, 1914). James (1969) listed 14 species of holothurians from the Lakshadweep. Nagabushanam and Rao (1972) recorded 16 species from Minicoy Atoll. Daniel and Haldar (1974) recorded 23 species of holothurians from Lakshadweep. Mukhopadhyay and Samanta (1983) reported 12 species of holothurians from the islands of Androth, Kalpeni and Minicoy. James (1989) reported 25 species of holothurians from the Lakshadweep. *Holothuria nobilis* and *Actinopyga mauritiana* are the most important species commercially.

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