THE RAFFLES BULLETIN OF ZOOLOGY 1995 **43**(1): 217-220

A NEW RECORD OF *HOLOTHURIA (THYMIOSYCIA) ARENICOLA* SEMPER, 1868 (ECHINODERMATA: HOLOTHURIOIDEA) FROM PAKISTAN

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ABSTRACT. - To date only two species of the genus *Holothuria*, viz. *Holothuria (Mertensiothuria) leucospilota* (Brandt, 1835) and *H. (Lessonothuria) pardalis* Selenka, 1868, have been recorded from the west coast of India and Pakistan. Recent collections along the rocky shores of Pakistan have revealed the presence of *Holothuria (Thymiosycia) arenicola* Semper, 1868, hitherto unknown from Pakistan (northern Arabian Sea). This holothurian is described together with notes on its potential economic importance.

INTRODUCTION

A search in the coastal waters of Pakistan has revealed the presence of two sea-cucumber families, Holothuriidae and Cucumariidae. The former is represented by four species: *Actinopyga mauritiana* Quoy & Gaimard, 1833; *Holothuria (Thymiosycia) arenicola* Semper, 1868; *H. (Lessonothuria) pardalis*, Selenka, 1867, *H. (Mertensiothuria) leucospilota* (Brandt, 1835), and the latter by three species: *Staurothyone rosacea* (Semper, 1886), *Stolus buccalis* (Stimpson, 1855), and *Aslia forbesi* (Bell, 1886). *Holothuria (Thymiosycia) arenicola* is recorded for the first time from the northern Arabian Sea.

The following is a brief description of the *H. arenicola* material from Pakistan.

METHODS

Specimens were dug up from the sand, using a bar of forceps. The holothurians were relaxed in sea water and chilled gradually for about half an hour so that the tentacles, papillae and tube feet remained in an extended position. They were then narcotized in 10% $MgSO_4$ for about twelve hours. Later, 70% alcohol was injected in the body cavity, the animals were then preserved and stored in 70% alcohol.

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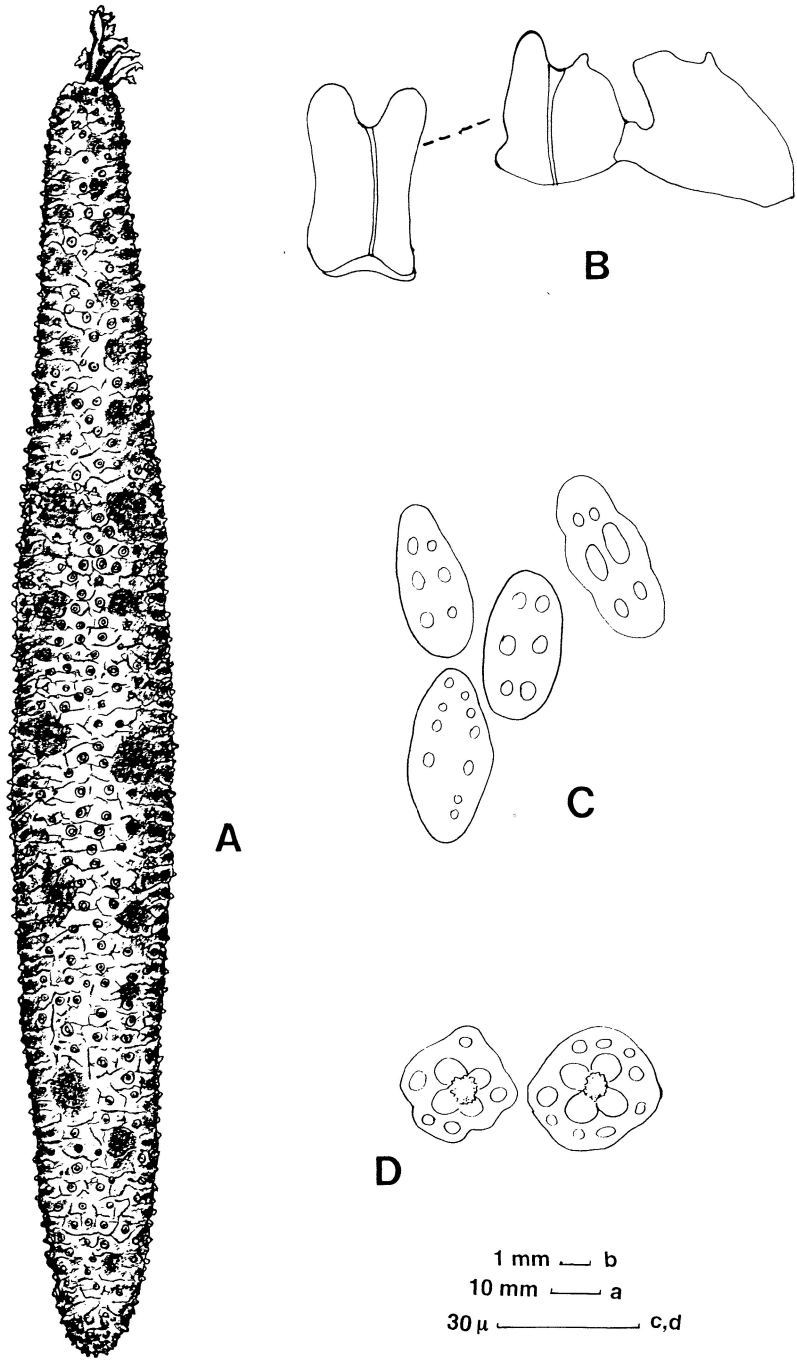

Fig. 1. *Holothuria (Thymiosycia) arenicola* Semper, 1868. A, animal in dorsal view; B, calcareous ring; C-D, types of spicules; C, button; D, table, top view.

Identification is largely based on microscopic examination of the spicules by placing a small piece of skin on a slide and adding a few drops of 3.5% common household bleach (NaOCl). The slide was then dried, rinsed, using tap water, and mounted in canada balsam. The abbreviation L refer to the total length of relaxed specimens. The entire material is housed in the Marine Reference Collection and Resource Centre, University of Karachi, Karachi.

TAXONOMY

Holothuria (Thymiosycia) arenicola Semper, 1868

(Fig. 1)

Holothuria (Thymiosycia) arenicola Rowe, 1969: 147; A. M. Clark & Rowe, 1971: 178 (distribution), pl. 28, fig.3; Rowe & Doty, 1977: 225, fig. 4a; Price, 1983: 94, fig. 50; Cherbonnier, 1988: 82-84, fig. 32; Chao & Chang, 1989: 118, fig. 19.

Material examined. - 1 ex. , L 19.7 cm, Cape Monze, Pakistan, 24°21'N 66°42'E, 20 Dec.1980. — 1 ex. , L 33.3 cm, Sunari, Pakistan, 25°54'N 61°44'E, 19 Mar.1988. — 1 ex. , L 23.8 cm, Sunari, Pakistan, 25°54'N 61°44'E, Jun.1984. — 2 ex. , L 24.0 cm, 24.6 cm, Sunari, Pakistan, 25°54'N 61°44'E, 14 Oct.1989. — 3 ex. , L 25.0-28.0 cm, Sunari, Pakistan, 25°54'N 61°44'E, 8 Oct.1989.

Description. - The body (Fig. 1 A) is bilaterally symmetrical, elongate and approximately cylindrical with tapering anterior and posterior ends. The body wall is thick and not sticky to touch. The mouth and anus are both terminal. There are 20 oral tentacles which are short and with peltate tips.

The calcareous ring (Fig.1 B) is stout and compact. The radial plates are as long as broad. They are twice the length of the interradial plates. The interradial plates are usually half as long as broad but never curved.

The podia are irregularly arranged and scattered all over the body. The smaller papillae are arranged on the ventral and dorsal ambulacra in the form of distinct bands.

The spicules are in the form of 'buttons' and 'tables'. The buttons (Fig. 1 C) are smooth, regular, oval and perforated with three or more pairs of holes, arranged in two rows. The tables (Fig. 1 D) have a smooth, square perforated disc with four large central holes, perforating the narrow disc rim. From the disc arise four vertical pillars which are linked by a transverse beam and ended by a cluster of small spines.

The gonad is branched. It is in a single tuft to the left of the dorsal mesentery. The branches of the respiratory trees terminate in small rounded thin walled ampullae. In *H. (Thymiosycia) arenicola* there are numerous Cuvierian tubules arising in clusters from the base of the left respiratory tree. The Cuvierian tubules are simple, whitish unbranched, slender, and viscous. When the animal is irritated or disturbed, they are thrust out from the anus.

Colour. - Live animals grayish cream or sometimes orange brown with 8 to 10 pairs of dark brown blotches clearly visible dorsally.

Habitat. - Found buried in subtidal sand underneath the rocks.

Distribution. - Indo-Pacific: Islands of the western Indian ocean, including Nazareth Bank, Saye da Malha, Seychelles, Amirantes, Mauritius, Reunion, Rodrigues, East Africa, Madagascar, Gulf of Suez, Gulf of Akaba, Arabian Gulf, Red Sea, Maldives, Lakshadweep,

Gulf of Manaar, Palk Bay, Tuticorin, Rameswaram, Mandapam, Bay of Bengal, Burma, Andaman, Nicobar Islands. Mergui Archipelago, East Indies, Australia, Philippines, China, Japan, South Pacific Islands to Hawaii and now from Pakistan (northern Arabian Sea).

Economic importance. - Certain species of holothurians are used for food and are known as bêche-de-mer or trepang. They are used in soup in China and other south east Asian countries. The Philippines also have a flourishing bêche-de-mer industry; they collect and dry the sea cucumbers for shipment to China and other countries. The boiled and sundried holothurians are sold in the market as bêche-de-mer or trepang. Canned, minced holothurians have been used for soup in American market for several years. They make excellent chowders (Kotpal, 1988). Natives of the Pacific Islands use juices from the body wall of certain species to poison fish in tidal pools; all commercial species are toxic unless correctly prepared.

India exported 79 lakhs (US$359,090) worth of bêche-de-mer in 1987 (James, 1989) but no industry has been developed in Pakistan. Of the species so far recorded from Pakistan, *Actinopyga mauritiana* is fished commercially in many parts of the Indo-west Pacific and *H. (Thymiosycia) arenicola* was formerly regarded as a commercial species in Lakshadweep (James, 1989). These two Indian species also occur in significant numbers in Pakistani waters and can be exploited commercially.

ACKNOWLEDGEMENTS

We wish to express our sincere thanks to Mrs. L. M. Marsh, Western Australian Museum, Western Australia, for reading the manuscript critically and giving valuable suggestions. Thanks are also due to Q. B. Kazmi, Senior Taxonomist, Marine Reference Collection and Resource Centre, University of Karachi for her help and necessary information. Financial assistance through Pakistan Science Foundation Project grant No.SK-U/BIO(183) is gratefully acknowledged.

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Received 1991
Accepted 5 Nov 1992