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New Observation of Three Species of Sea Cucumbers from Chabahar Bay (Southeast Coasts of Iran)

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Abstract: Three species of sea cucumber (2 species belong to genus *Holothuria* and one species of *Stichopus*) were collected on subtidal zone of Chabahar Bay in the late of 2007. The literature review on the distribution was revealed that this is the first report of *H. leucospilota*, *H. arenicula* and *S. variegatus* from Chabahar Bay (Sea of Oman). The species identification was done through morphological keys and review of their ossicles. This study is revealed the special characteristics of the presented species in order to just identification of them.

Key words: Holothuridea, stichopotidea, species identification, Chabahar Bay, Oman Sea

INTRODUCTION

Sea cucumbers are the most attractive group of marine animals. They live among corals, rocks and in muddy and sandy flats. Most of them are living in intertidal zones, but some of them exist in deeper (Smirnov *et al.*, 2000). Some of them live in moderate or polar waters (Hamel and Mercier, 1995). Their lengths range from a few millimeters to more than 2 m. They have all color combination: white, black, red, blue, green, yellow, violet etc. Most of them move independently. Because of Sea cucumbers activities on bottom of the sea, Oxygen can influence and mix with sediments which it vital for benthic life. Otherwise, their seeds and larvae are an important feed source for other sea creatures (Bruckner *et al.*, 2003).

Conand *et al.* (2005) have taken color photographs of sea cucumber from Mayotte, southwest Indian Ocean. James and James (1994) brought out a handbook on Indian sea cucumber with color photographs of the commercially important species.

Although more than 1400 species of sea cucumber are known from all the seas in the world, only 15 species are used for processing at present (James, 2001). China is one of the first countries where consumed sea cucumber as a food. The Japanese and Koreans consume fresh *Apostichopus japonicus*, but most of people consume them after processing. Some species are fed to ducks in China (James, 2001).

Sea cucumbers are well known for their high protein content and absence of cholesterol. They are also considered as a tonic food (Jiixin, 2003). According to

laboratory analysis, fresh *Stichopus japonicus* contains 76% water, 21.5% protein, 0.3% fat, 1% carbohydrate, 1.1% ash and 118 mg of calcium, 22 mg of phosphorus and 1.4 mg of iron per 100 gram body weight. Dried *S. japonicus* contains 6 mg of iodine per kg body weight. Its intestine contains 74.49% water, 8.836% protein, 2.687% fat and 15.987% ash.

In China, sea cucumbers have been used as beneficial drugs (James, 2001).

The Chinese consider sea cucumber as a tonic rather than a seafood item. It is called Ginseng of the sea. The toxins of sea cucumber have antiviral, antitumoral, anticancer and antifertility properties and use in the pharmaceutical industry (James, 2001).

This study is driven from a comprehensive project carried out in the area of Chabahar Bay entitled: An Ecological survey on Sea cucumber populations from June 2007 up to May 2008 and this study is only a part of above-mentioned project in a short period with the main objective of to identify different species of sea cucumbers (Holothurids) in the Bay of Chabahar, North of Oman Sea.

MATERIALS AND METHODS

Sea cucumbers caught in Beheshti jetty, Chabahar Bay, at depth of 5 m, via scuba diving on December 2007. All three species were found in this area (Fig. 1). The samples transferred to laboratory in order to taking photograph and extract of their ossicles. For these means, relaxation of the samples is important. Several methods exist to relax of sea cucumbers, but the most commonly used one today is anaesthetization with magnesium

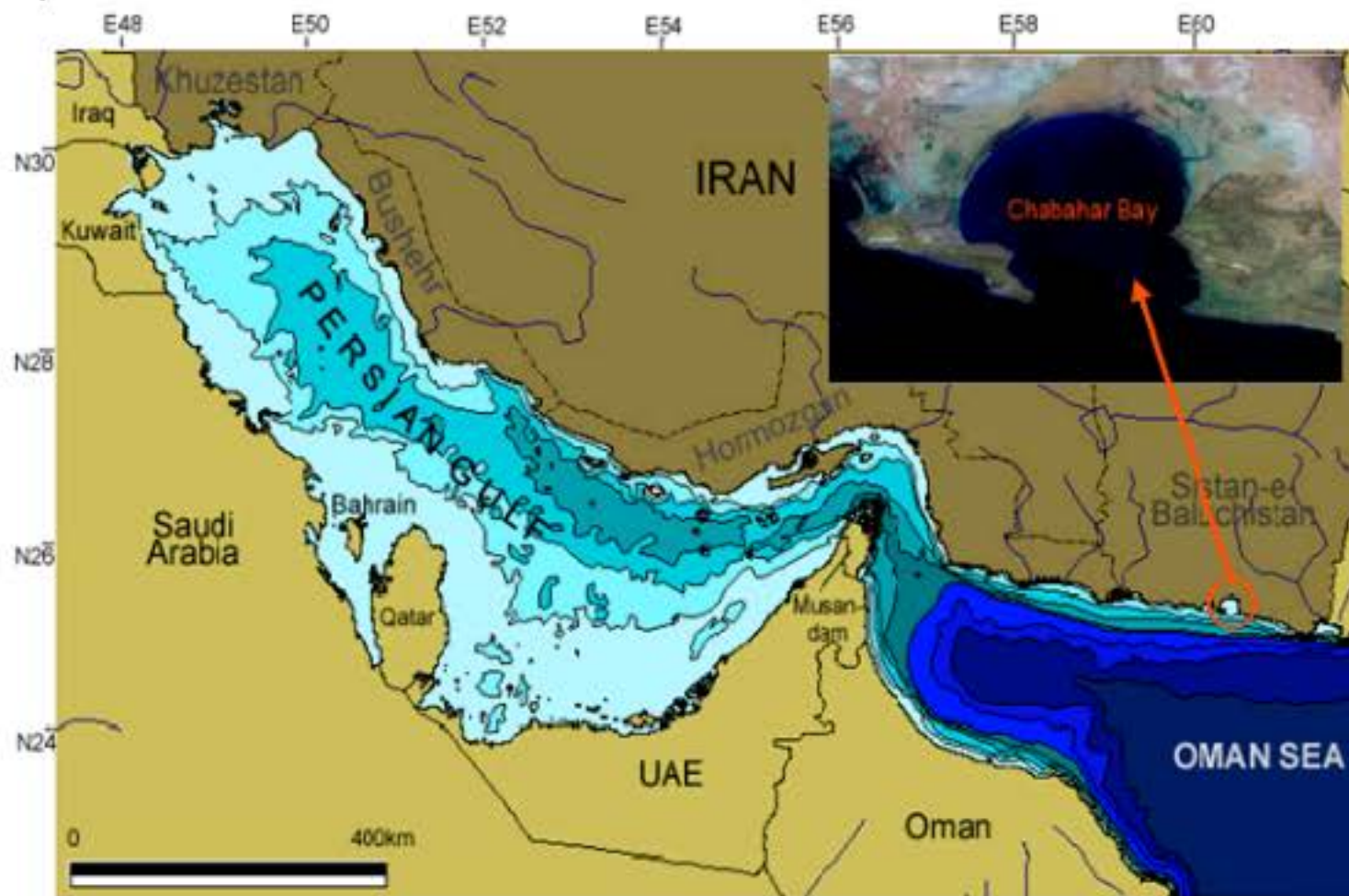


Fig. 1: The map showing the position of the Persian Gulf, Oman Sea and sampling area in Chabahar Bay

chloride ($MgCl_2$) which is available in every drug stores (Jiabin, 2003).

The sea cucumbers preserved in a container of seawater added 5% $MgCl_2$. After a few minutes, their tentacles and tube feet became completely extended. This time is the best stage for taking picture or ossicles extractions from different parts of their body for identification. In order to extract the ossicles a small piece of the skin placed into the commercial bleaching liquid for almost 30 min or less (Hickman, 1998). White sediments will accumulate at the end of test tube. One drop of white sediment was spread on the glass slide for further microscopic studies.

RESULTS AND DISCUSSION

Systematic

Phylum : Echinodermata
Class : Holothuroidea
Order : Aspidochirota
Family : Holothuridae
Genus : *Holothuria*
Species : *leucospilota* (Fig. 2)
Species : *arenicola* (Fig. 3)
Family : Stichopodidae
Genus : *Stichopus*
Species : *S.variegatus* (Fig. 4)

Description

Holothuria (Mertensiothuria) leucospilota: This species has a long body. It can release a lot of white sticky

threads when being threatened. It's uniformly black in color. It has low commercial value. In the Bays around Chabahar it is found in the Gulf of Gowather, Pasabandar, Bris, Ramin, Chabahar, Konarak, Gordim, Tang and Maidani between sandy and rocky zones. The maximum length and weight is recorded 45 cm and 750 g, respectively.

Holothuria (Thymiosycia) arenicola (Semper 1868): *Holothuria arenicola*, the Sand Sea Cucumber, is a circumtropical species, found under rocks, intertidal to 30 m. The body of this species is slender and wormiform. The maximum length and weight is recorded 20 cm and 85 g in Chabahar bay, respectively. It is difficult to collect because of its fast move into the sandy/muddy substrates. Generally the color of the body is dirty white but can be golden to light brown. The upper side has two rows of black spots. At present it is not used for processing and doesn't have any commercial value but it is a good choice for aquariums as it does not eviscerate or produce Cuvierian tubules.

Stichopus variegatus (Semper 1868): This species is very colorful. Color of live specimens is dark brown, Mustard yellowish, dark green and etc. on the upper side and cream on the lower side. Maximum live length and weight are 46 cm and 1300 g. Body-wall thickness is 0.6 cm. Mouth ventral, surrounded by a circle of conical papillae, small interradials. Cuvierian tubules absent. Color variable on bivium, yellow to greenish, with black spots trivium lighter.

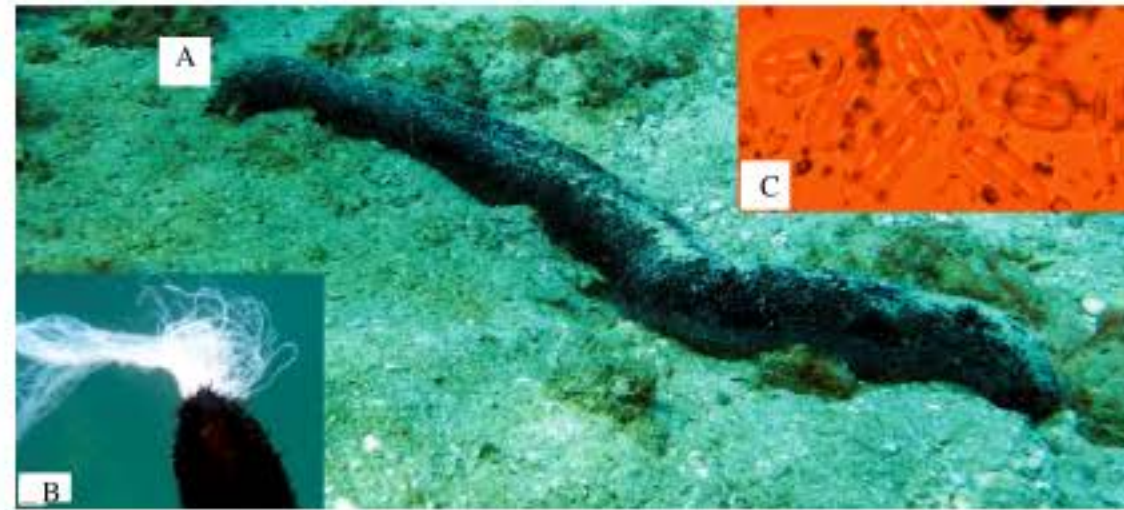


Fig. 2: *Holothuria* (Mertensiothuria) *leucospilota*. (A) Adult *H. leucospilota* (B) White threads (Cuvierian threads) (C) Calcareous Ossicles



Fig. 3: *Holothuria* (Thymiosycia) *arenicola*



Fig. 4: *Stichopus variegatus*; (A) adult *S. variegatus*; (B) body wall, spines and upperside; (C) under side and tube feet

Most common on bedrock substrate in areas with little or no current where detritus accumulates, also live on gravel, sand or mud, planktonic larvae dispersed by currents. Settled larvae and juveniles hide in dense mats of filamentous red algae, algae holdfasts, under rocks or in rock crevices. spawning occurs in shallow water, less than 16 m depth. It is categorized to group of commercial sea cucumbers. In the bays around Chabahar it is found in Sepah Jetty, Kalantari and Beheshti's jetty, at the depth of 4-10 m. The body spicules can be observe very well, after relaxation.

CONCLUSION

Holothuria leucospilota is supposed that is the dominant species in Chabahar coast lines. Its calcareous ossicles distributed in all parts of body, commonly with 6 equal apertures . It is so resistant against unfavorable conditions.

Holothuria arenicola have often seen on the beach during winter season and also seen in subtidal zone in other season.

Holothuria variegatus will be damaged in a short time if is kept out of the water . During harvesting they

will become ulcerous easily. Sometimes, its abdominal side (attached to rock) will be separated during harvesting and its remain on the rock.

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