



## New Observation of two Sea Cucumber Species from Abu Musa Island (Persian Gulf, Iran)

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### ABSTRACT

This study has been conducted to identify the present species in the Abu Musa Island (Persian Gulf). Two species of sea cucumber (one belonging to the genus *Holothuria* and the other to *Stichopus*) were collected in the intertidal zone of the Abu Musa Island (Persian Gulf) via scuba diving. The literature review on the distribution was determined to be the first report of *Holothuria (Mertensiothuria) leucospilota* (Brandt) 1835 and *Stichopus herrmanni* Semper 1868 from Abu Musa Island (Persian Gulf). The species identification was done through morphological keys and review of their ossicles.

**Keywords:** Holothuridea, Stichopotidea, Abu Musa Island, Persian Gulf, Iran.

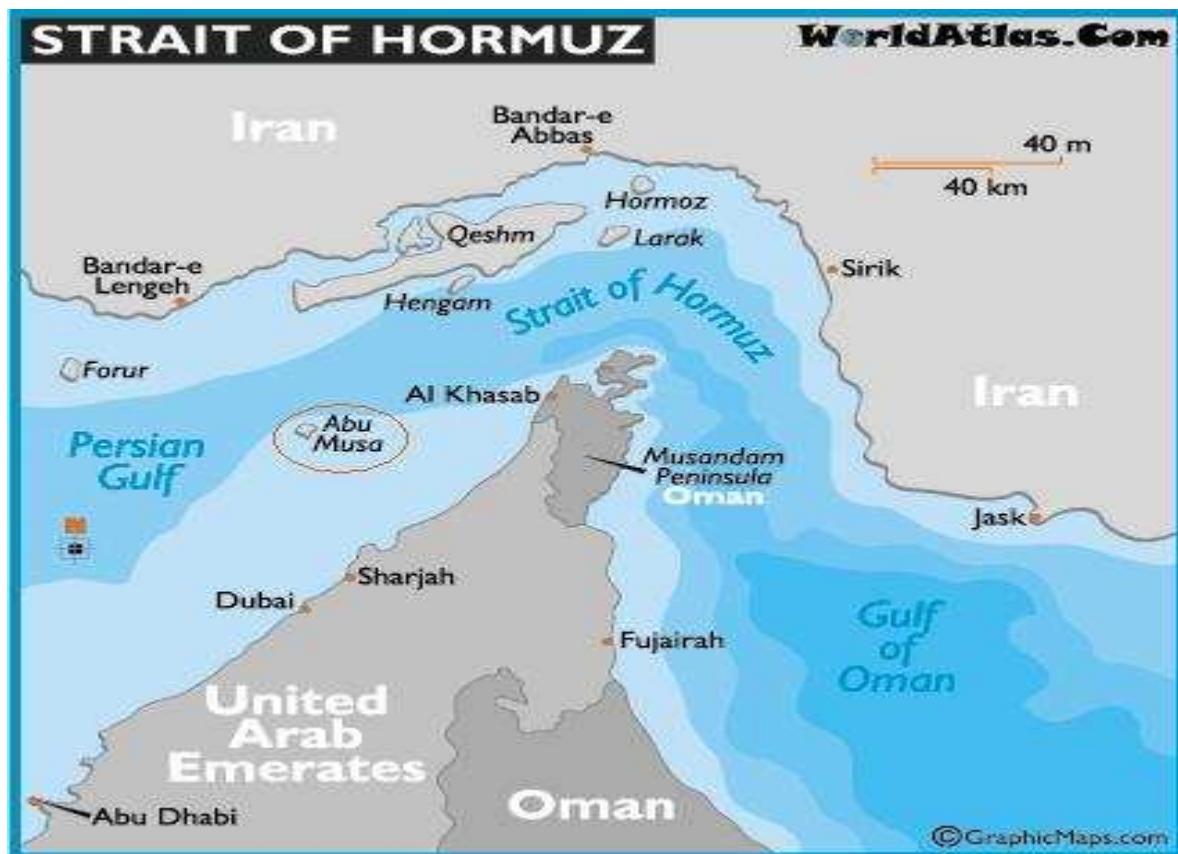
### INTRODUCTION

Sea cucumbers are one of the marine animals which are important as human food source, particularly in some parts of Asia [1]. They are usually soft-bodied echinoderms comprising a diverse group of flexible, elongated, worm-like organisms, with a leathery skin and elatinous body, looking like a cucumber. Habitually, they tend to live on the sea floor in deep seas [2]. Holothuroids or sea cucumbers are an abundant divers group of marine invertebrates. More than 1400 Described and extant species constituting 160 genera [3] Occur in benthic environments. Only one study have been conducted on sea cucumber harvesting and management in Iran Until yet. The primary species harvested in Iran is the sandfish, *Holothuria scabra* (*khar daryaei* in the local language, which means sea cucumber) [4].

While the fishes and the corals of the Persian Gulf are well documented, other groups especially invertebrates need further attention in this region. Abu Musa is a 12.8 km<sup>2</sup> Island part of Hormozgan province in Iran Located in the eastern Persian Gulf. The weather in Abu Musa is warm and humid, although, compared to the place in the Persian Gulf, Abu Musa has a better climate and the most diverse ecosystem. Due to the depth of sea, oil tankers and big ships, have to pass across Abu Musa, this makes these Islands one of the most strategic points for Iran in the Persian Gulf. There is no information about sea cucumber communities around this island. We report here two species of sea cucumber (one belonging to the genus *Holothuria* and the other to *Stichopus*) from Abu Musa Island (Persian Gulf).

## MATERIALS AND METHODS

The species were cached in 18 February 2012 in the intertidal shore of Persian Gulf (Abumosa Island; 25°12'46"N, 54°12'53"E) (Fig. 1). A total of 24 individuals were seen. Two specimens from each species were collected and preserved in 75% ethanol. The ossicles of the specimens were examined in order to verify the species' identity. The tissues were left to stand in 2.0 ml of household bleach (NaOCl) until they had completely dissolved, with only the ossicles remaining as white sediment [5]. These were then examined under the microscope and identified using keys [6,7,8,9]. Also, for the correct identification some specimens were sent to Prof. Gustave Paulay at the National Museum of Florida, United States of America.



**FIGURE 1.** Sampling site of *Holothuria (Mertensiothuria) leucospilota* And *Stichopus herrmanni* Semper 1868 around Abu Musa Island (Persian Gulf).

## RESULTS AND DISCUSSION

### Systematics

Phylum Echinodermata

Class Holothuroidea

Order Aspidochirotida Grube, 1840

Family Stichopodidae Haeckel, 1886

Genus *Stichopus*

*Stichopus herrmanni* Semper 1868 (Fig 2)

Family Holothuridae

Genus *Holothuria (Mertensiothuria)*

*Holothuria (Mertensiothuria) leucospilota* (Brandt) 1835 (Fig 3)

### DESCRIPTION

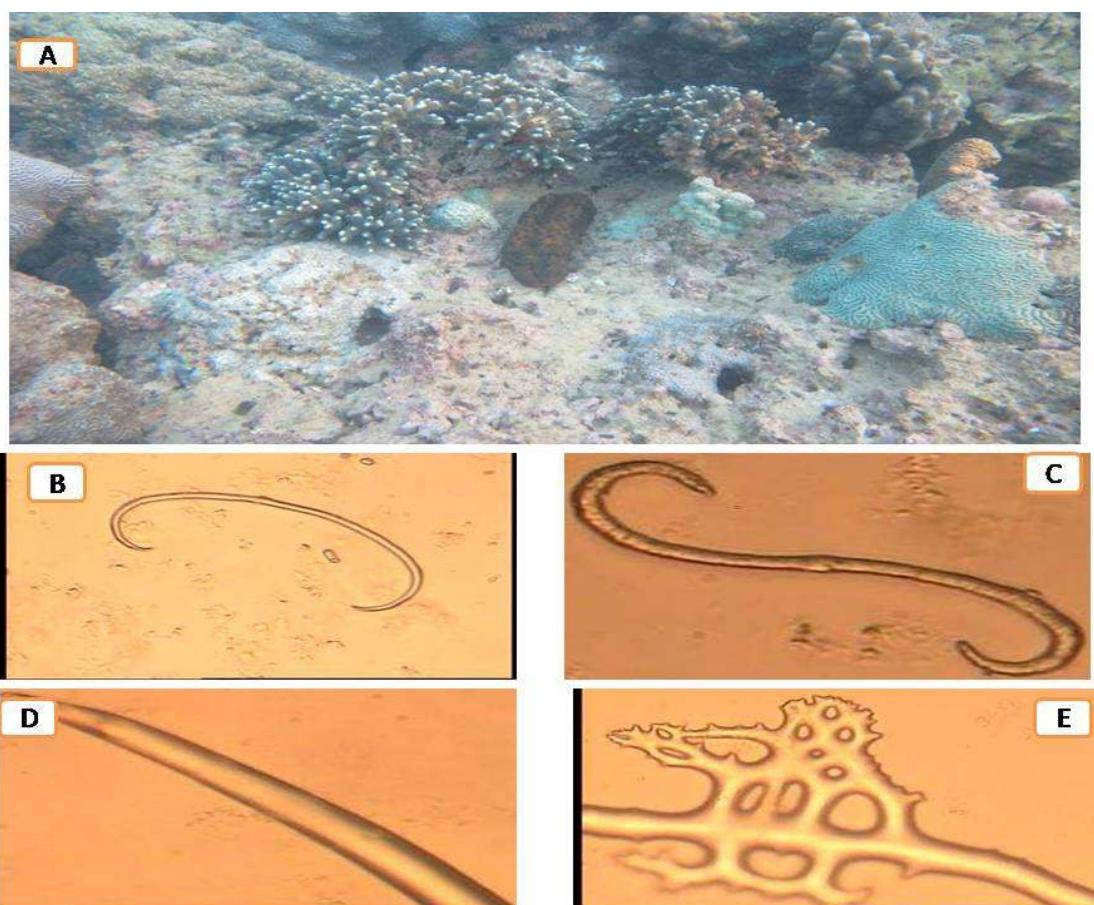
#### *Stichopus herrmanni* Semper 1868

This species has long shaped with a rectangular cross-section and upper side wrinkled or deeply ridged with small black bumps and underside smoother. Entire body has different shades of beige to brown with irregular brown patches and fleshy tubercles projecting along the sides without cuts or small cuts across the mouth. Tentacles usually are twenty in number (non-retractile). Papillae which are smaller and less in number Scattered on dorsal and lateral

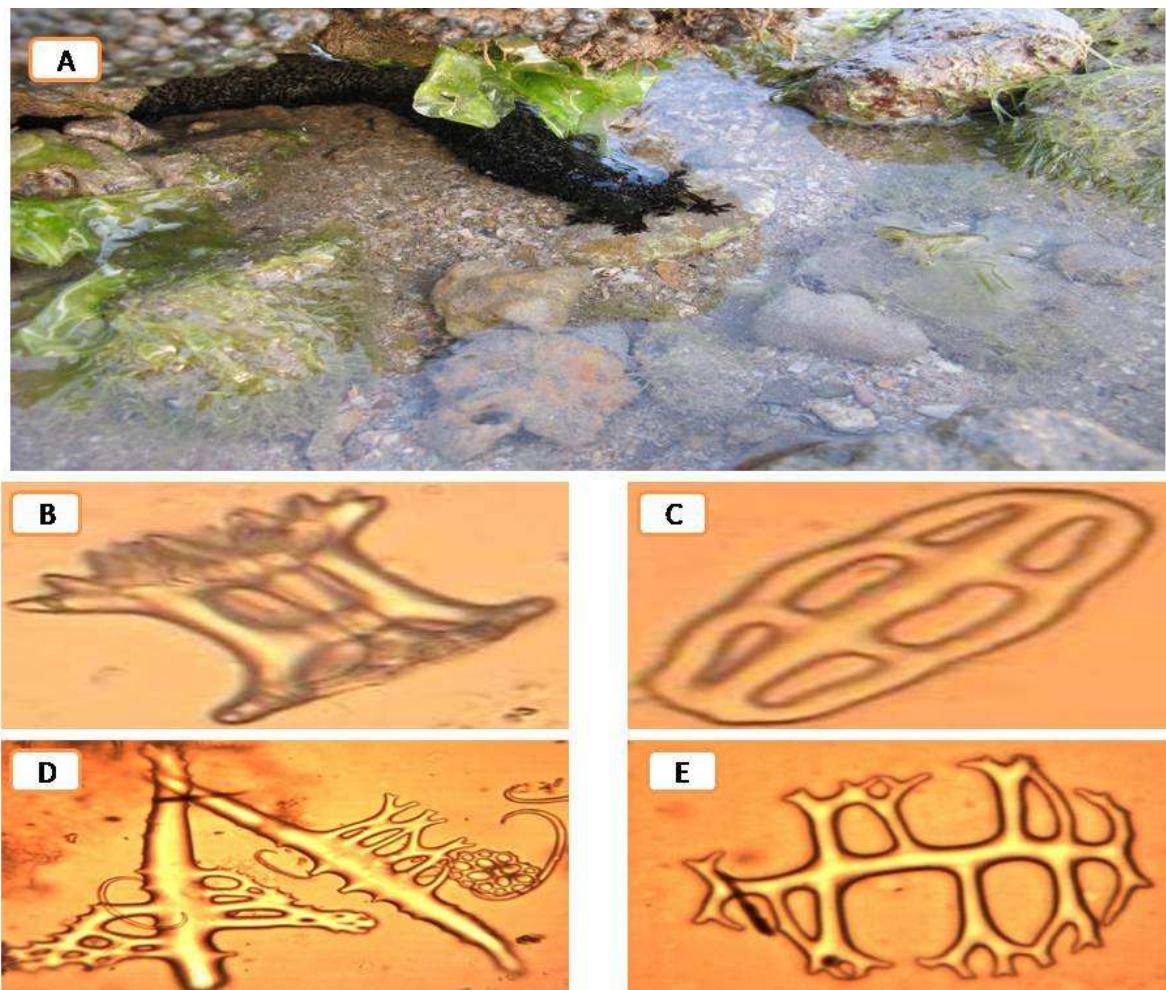
surfaces. The Body is broad, considerably flattened ventrally, and the dorsal side is slightly arched and the lateral sides are almost vertical; the body wall is fairly thick and soft; mouth sub-terminal; anus central; and tentacles usually 20 in number of moderate length and leaf – shaped. Podia consisting of numerous crowded ventral pedicels, approximately cylindrical in shape and often confined to the three ambulacra, and papillae which are smaller and less in number, scattered on the dorsal and lateral surfaces, sometimes in rows, and placed on small warts. Calcareous ring slender but variable in development, which the radial plates approximately is half of the length of the inter radials. Ossicles numerous, consisting of tables with large discs having usually 7 to 15 peripheral holes, but its often irregular or incomplete, and spire of moderate height ending in a groups of spineless (sometimes in the form of a cross) about as wide as the disc, rosettes of variable development, and c – shaped rods (sometimes very few), some of which may be c- shaped or have several branches. Color of live specimens variable, it is usually brownish yellow and often mottled and with darker papillae giving a spotted appearance. Normally lives between 0 and 22 meter deep but she also likes shallow sandy areas.

***Holothuria (Mertensiothuria) leucospilota (Brandt) 1835***

Medium sea cucumber coat smooth and relatively thin. Mouth ventral surrounded by 20 large tentacles, with terminal anus. Trivium with large tube feet arranged in 4-5 rows on the radius but also scattered in areas interradiales, the podia of bivium are fewer and much thinner, especially in areas left ambulacrales. Body Cuvier trained many fine elongated tubular purplish. These tubules are relatively quickly ejected when individuals are disturbed. Integument with many boutons. Les turrets and a perforated base turrets have central holes 4 and 4-12 peripheral holes; oval to square the disc; the arrow is low and ends with a crown bit tricky. The buttons are smooth, perforated usually 2-4 pairs of holes uneven. Ventral podia with buttons, turrets and quedes large plates. The dorsal podia contain sticks, turrets and buttons. Tentacles without spicules. Entirely black, often with a touch of reddish background.



**FIGURE 2.** A. *Stichopus herrmanni* Semper, 1868. B sticks of C-shaped dorsal integument; C. Turrets and sticks ventral integument; D. Rods of tentacles; E. a rod podion. Scale A = 18cm, B & C = 10 microns, D= 100 microns, E = 50 microns. (Photos A-E by Ehsanpour Maryam).



**FIGURE 3.A.** *Holothuria (Mertensiothuria) leucospilota* (Brandt, 1835); B. Turrets of the dorsal integument; C. Knobs and buttons on the pseudo-dorsal integument; D. Rod of the wall of a podion, E. Perforated plates of the wall of a podion. Scale A = 22 cm, BE = 10 microns (Photos A-E by Majid Afkhami).

## CONCLUSION

Curry sea cucumber (*Stichopus hermanni*) is considered to be of low value in the export market because of the tendency of the body wall disintegrate easily, while exposed to air after harvesting and during boiling. It is reported that in the Pacific region, the intestine and gonad from this species are considered to be a delicacy among the locals and are eaten raw on the spot or squeezed into bottles and sold. The taste is slightly metallic, similar to raw oysters. Until 1995 it is almost always mentioned in the literature under the name *S. variegatus*. Since *S. variegatus* was replaced by *S. hermanni* and *S. monotuberculatus* (Quoy & Gaimard, 1833) [9].

*Holothuria leucospilota* usually lives in quiet areas and little deep on the sandy bottom or on coral rubble. It is observed often under the rock from which alone exceeds the front. This species is very common throughout the Indo-Pacific tropical and sub-tropical Africa (Red Sea included) to Americas. It is supposed that *H. leucospilota* is the dominant species in the Persian Gulf.

Heding [10] recorded 17 species of holothurians found in the waters around Iran. Because there is an expansive coastal area in Iran, most coastal cities include some species of holothurians [11]. The first report of successful *H. leucospilota* larval development in Iran was conducted by Dabbagh et al. [12]. This paper reports two species of sea cucumber from Abu Musa Island coast, which is located in the Middle of the Persian Gulf. Although they are local species in this area they have not been previously recorded. From the above description of two sea cucumber species in Abu Musa Island, planning of research projects to identify species, density and distribution of sea cucumber species especially in the Persian Gulf Coast have been suggested by this study. Research projects should approach ecological studies in order to maintain stocks and should include reproductive biology program.

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