

IDENTIFICATION AND DISTRIBUTION OF SEA CUCUMBERS IN THE CHABAHAH BAY, IRAN

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IDENTIFIKACIJA I DISTRIBUCIJA MORSKOG KRSTAVCA IZ CHABAHAH ZALIVA, IRAN

Apstrakt

Morski krstavci su najvažniji bodljokošci koji predstavljaju veliki resurs Severne obale Persijskog zaliva i Omanskog mora. Uprkos koristi u nutritivnom i farmaceutskom pogledu rađeno je samo nekoliko studija o njihovoj identifikaciji i distribuciji. Predstavljeno istraživanje je obavljeno radi identifikacije morskih krstavaca u zalivu Chabahar i procene uticaja aktivnosti čoveka na njih. Uzorkovanje je obavljeno podelom ispitivanog terena na 4 regiona sa najvećom verovatnoćom nalaženja morskih krstavaca. Rezultati su pokazali prisustvo 7 vrsta: *Stichopus variegates*, *Holothuria leucospilota*, *H. pervicax*, *H. atra*, *H. arenicola*, *H. hilla* i *H. parva* koje pripadaju familijama Holothuria i Stichopus. *Stichopus variegates* je imao najveću masu i dužinu tela, zatim su po veličini sledili *Holothuria leucospilota* i *Holothuria pervicax*. Istraživanje je pokazalo da je zaliv Chabahar bogat morskim krstavcima visoke ekonomske vrednosti, ali su dalja istraživanja neophodna o nutritivnim i drugim osobinama u cilju njihove reprodukcije i gajenja u Južnom Iranu.

Ključne reči: morski krstavci, identifikacija vrsta, zaliv Chabahar

Keywords: Sea cucumber, identification of species, Chabahar Bay

INTRODUCTION

Sea cucumbers are the main members of the food chain in moderate and coral reef ecosystems and play an important role as saprophage and planktonphage in aquatic ecosystems. In addition, the eggs and larvae of these species are considered to be important sources of food for other marine species (Bruckner *et al.* 2003).

Most of the sea cucumbers have habitats in the intertidal zone while lesser numbers of them live deep in the oceans (Sminrov *et al.*, 2000). Size of Echinodermata can

vary between a few millimeters to more than 2 meters and have various colors. Until now, 1400 species of sea cucumbers have been identified and reported throughout the world.

Sea cucumbers feed on the residues of organic materials and aquatic microorganisms using their tentacles (Castro and Huber, 2005). Saprophagous sea cucumbers play an important role in coral reefs recycling process (Bakus, 1973). Their diet can be diverse, blue-green filamentous algae, red algae, live microorganisms, coral fragments, diatoms, and foraminifers (Des Rocher, 1999).

The first report on the sea cucumbers of the Persian Gulf was recorded in 1940. He studied the Echinodermata in the eastern part of the Persian Gulf that has a more suitable environment and richer fauna than other parts (Semper, 1940). More Echinodermata species were also identified during an extensive research carried out by Farskal (1938) on marine organisms in the southern seashore of the Persian Gulf. However, no research was done on the sea cucumbers of the north Oman Sea. Accordingly, the present study was designed to study sea cucumber population of the Chabahar Bay in the north of the Oman Sea.

MATERIAL AND METHODS

Chabahar Bay, the biggest gulf of Iran, is located on the north of Oman Sea and the furthest end of southeast borders of Iran. This study was done in the eastern side of the Chabahar Bay which is the most influenced ecosystem by human activities of the Chabahar Port. In the first step, 4 regions with the highest probability of having sea cucumbers were chosen. In each station, 4 squares measuring 10×20 m² were searched thoroughly by deep diving and sea cucumbers found were counted and identified. According to the Leske key (Leske, 1778) considering all of the 16 squares in each sampling, an area of 3200 m² was studied. Base on the variability of sea cucumbers length to stress, all samples were measured and the send to the laboratory.

RESULTS

During one year of investigation, 7 species of sea cucumbers were observed which are presented in Table 1. Overall, individuals of species *Stichopus variegatus* had longer length and bigger weight compared to the other species followed by *Holothuria leucospilota* and *H. hilla*.

Table 1. Species of the sea cucumbers in the Chabahar Bay.

Family	Scientific name	English name	
Holothuria	<i>Holothurialeucospilota</i>	Leucospilota	Brandt, 1835
	<i>H. hilla</i>	Hilla	Lesson, 1830
	<i>H. atra</i>	Atra	Jaeger, 1833
	<i>H. arenicola</i>	Arenicola	Simper, 1868
	<i>H. parva</i>	Parva	Krauss in Lampert
	<i>H. pervicax</i>	Pervicax	Selenka, 1867
Stichopodidae	<i>Stichopus variegaes</i>	Variegates	Simper, 1868

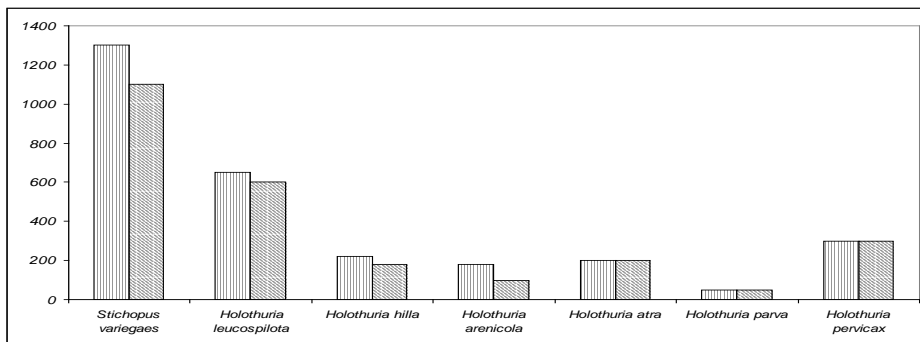


Figure 1. Mean weight of different species of sea cucumbers in the Chabahar Bay.

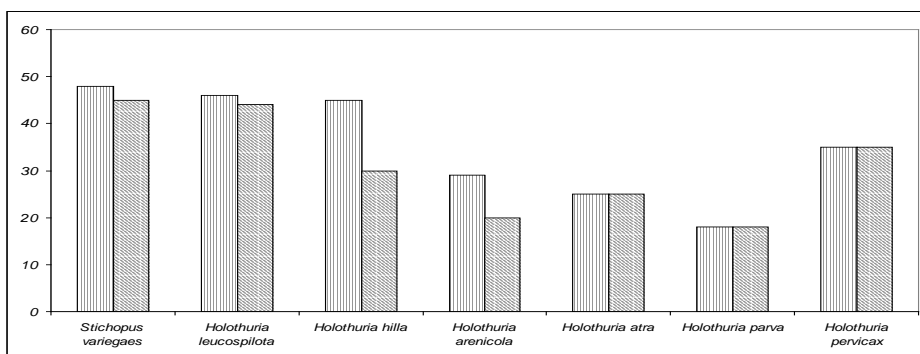


Figure 2. Mean length of different species of sea cucumbers in the Chabahar Bay.

DISCUSSION

All seven species observed in Chabahar Bay were from *Aspidochirotida* order, belonging to *Holothuriidea* (6 species) and *Stichopodidea* (1 species) families. Previous investigations show that members of *Aspidochirotida* order, *Holothuriidea* and *Stichopodidea* families predominate in tropical shallow seas (Zenkowich, 1978). Apodida order diversity generally increases by moving away from the equator and Molpadiida order is found in higher latitudes with higher depth. The highest species richness of the families is seen in coral cliffs reefs, reaching up to 20 species per hectare.

Lack of other families' species may be related to habitat conditions. In this investigation, due to low depth of sampling regions, species of other families of *Aspidochiroidea* order were not seen since they live in deep waters (Mortensen, 1980). The observed species are epibenthic species which live on hard or soft sea beds.

In this research, length and weight of the species were measured only once. However, there was no relation between length and weight of sea cucumbers. *H. leucospilota* with the earthworm body shape may have different length depending on status of sampling time. This feature is seen in other sea cucumbers as well. The flexibility of sea cucumber body is attributed to their tiny and dispersed ossicles (Mitchell, 1988). Therefore sea cucumbers are unique from biological, behavioral and morphologic aspects compared to other aquatic animals. For this reason, biometry methods which are used for other marine species may fail in sea cucumbers (Chen, 2003). Considering high diversity of

species in intertidal zone there is a great potential for sea cucumber harvesting from Chabahar Bay and application in the fields of nutrition, pharmaceuticals, cosmetics, and health products.

Chabahar Bay as a commercial port has all infrastructural and environmental requirements for breeding and reproduction of sea cucumbers. Considering the earlier studies on the region's unique species (Rocher, 1999) we can be confident about the future of breeding and reproduction of sea cucumbers.

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