

REPRODUCTIVE PERIODICITY OF SEA CUCUMBER *BOHADSCHIA VITIENSIS* (ECHINODERMATA: HOLOTHUROIDEA) IN HURGHADA AREA, RED SEA, EGYPT

Fatma Abdel Razek ^{1*}, H. A. Omar ¹, S. H. Abdel Rahman ¹ and N. A. El Shimy ²

¹ National Institute of Oceanography and Fisheries Qayet Bay - fatma_abdelrazek@hotmail.com

² Zoology Department, Faculty of Science, Assiut University

Abstract

A small scale sea cucumber fishery began in Egypt in 1998 on the northern part of Red Sea coast fig. (1). By the year 2000, its fishery had expanded dramatically, leading to over exploitation. Evidence from previous study [1] indicates that four years after banning sea cucumber fishery in Egyptian Red Sea, some commercial species are returning to some of the sites, but there is no evidence of stock recovery. *B. vitiensis* was studied during 2003-2004 and a population analysis of 417 individuals showed significant abundance of males. Reproductive studies showed also that during June and July an intensive period of spawning occurred with size at 1st maturity of 24.5 and 26.1 cm for males and females respectively. The oocyte diameter of ripe females ranged from 87.5 to 162.5 µm during active spawning period.

Keywords: *Reproduction, Red Sea, Echinodermata, Spawning*

Introduction

Holothuroid fauna of the Red Sea attracted attention of many investigators for many years ago. In the various habitats of the Red Sea 98 holothuroid species were recorded, including *Bohadschia vitiensis* the subject of this study. Still, little is known about maturation and spawning periodicity of most commercial sea cucumber species in Egyptian Red Sea fisheries.

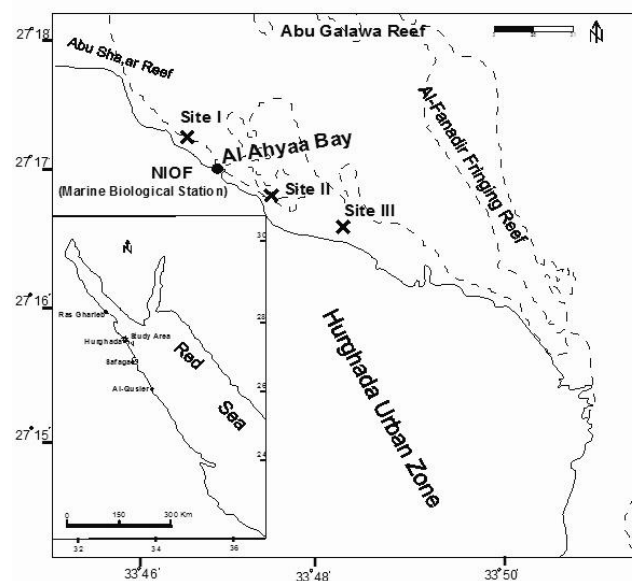


Fig. 1. Locations of sampling sites of *Bohadschia vitiensis*

Materials and method

Monthly samples of *B. vitiensis* of about 10-15 individuals were randomly collected by SCUBA divers from selected sites Fig. (1). Measured were done after relaxation in 2.5% MgCl₂ (w/v) to overcome the error resulting from contraction and relaxation. Gonads were removed and preserved. T.L & T. body wt. were recorded. G.S.I were calculated as Gonad weight/body weight X 100 . Four maturity stages were determined according to colour length & diameter of gonad tubules [2]. Oocyte diameters were measured.

Results & Discussion:

Population analysis were done, T.L range of *B. vitiensis* was from 16.0 to 42.0 cm. Which is consider one of the large species found in comparison with *H. atra* of T.L range from 9.5 to 28.5 cm [3]. There is a shift in sex ratio from unity towards significantly more males and this is not due to impact of fishing pressure as in case of *H. hawaiiensis* and *H. atra* [4]. The maximum reproductive activity was observed in summer and the minimum (resting) in late

autumn and winter using G.S.I as well as tubule length and diameter as in tab. (1). There is a synchrony between males and females as in case of *H. scabra* [5]. More studies focusing on fecundity per size distribution and estimating the ideal size to capture to avoid over exploitation.

Tab. 1. Macroscopic characteristics of *B. vitiensis* gonads at each of the stages of sexual maturity

Stage of Maturity	Sex	Tubule Characteristics		GSI range
		T.L. (mm) range	Diameter range (mm)	
I Immature	♂	2.5 - 21.0	0.2 - 1.0	1.00 - 3.5
	♀	2.0 - 22.0	0.2 - 0.9	0.40 - 3.1
II Maturing	♂	15.0 - 50.0	0.4 - 1.3	7.50 - 16.7
	♀	18.0 - 66.0	0.4 - 1.2	0.80 - 0.9
III Ripe	♂	67.0 - 130	1.9 - 2.5	28.2 - 9.7
	♀	90.0 - 125	1.5 - 2.0	16.2 - 7.2
IV Spent	♂	19.0 - 350	0.5 - 0.7	0.50 - 1.5
	♀	12.0 - 46.0	0.3 - 0.9	0.40 - 10.8

As mentioned before there are 4 stages of maturity in *B. vitiensis*. In immature and spent stages both female and male gonads appear alike in shape and color. While during mature and ripe stages differentiation appear between in shape and color. During maturing stage the tubules of female are Long, thick, branched and the ovary is pale red, while in male tubules are Long, thin, branched and creamy-white. During the ripe stage, the female tubules are Long, thick swollen, branched and red in color, while in male tubules are long, swelling with white beaded filaments. The female tubules have spherical oocytes mostly ripe of 75 - 150 micron in diameter and with clearly visible nucleus while the male tubules have numerous swimming spermatozoa.

References

- 1 - Ahmed M.I. and A.J. Lawrence 2007. The status of commercial sea cucumber from Egypt's northern Red Sea coast. SPC-Beche de Mer Information Bull. # 26.
- 2 - Keshavarz M., Mohammadikia D., Dobbagh A.R. and Kamrani E. 2012. Reproductive biology of sea cucumber for successful breeding: a Review. J. Anim. Prod. Adv., 2(2): 208-213.
- 3 - Abdel Razek F.A.; Abdel Rahman S.H.; El-Shimy N.A. 2005. Reproductive biology of the tropical sea cucumber *Holothuria atra* in the Red Sea coast of Egypt. Egypt. J. Aquat. Res. 31 (2): 383-402.
- 4 - Hassan M.H. 2005. Destruction of a *Holothuria scabra* population by over fishing at Abu Ramada Island in Red Sea. Mar. Envir. Res. 60: 489-511.
- 5 - Ramofafia C., Byrne M. & Battaglene S.C. 2003. Reproduction of the commercial sea cucumber *Holothuria scabra* (Echinodermata: Holothuroidea) in the Solomon Islands. Mar. Biol. 142: 281-288.