# FOOD HABITS OF SEASTAR Asteropecten polycanthus polycanthus MULLER AND TROSCHEL FROM NORTH – WEST ARABIAN GULF

K.D. Saoud

Marine Science Center, University of Basrah Basrah – Iraq ISSN -1817 -2695 ((Received 15/9/2008, Accepted 15/6/2009))

## ABSTRACT

A total of 158 specimen of seastar collected during the period from Feb. 1999 to Apr. 2000 from Khor Al- Umia (North-West Arabian Gulf). The stomachs of all collected seastar were dissected and the food composition were analyzed. Mollusca occurred in 87% of all stomachs containing food and contributed 94% of food volume. The most important food items were *Monodonata vermiculata*, *Mitrella blanda*, *Solen vagina*, *Paphia texilla*. There was no distinct seasonal difference in the composition of the diet, but tendency to minimize feeding activity in February-April, probably related to the spawning period.

Keywords: Seastar, Food habits, Seasonal changes, Khor Al-Umia

## **INTRODUCTION**

The Starfish Asteropecten polycanthus is widely distributed in the Northern Arabian Gulf (1). There was no previous study on the feeding biology of this species in Iraq. Meanwhile, there were many investigations on the feeding habits of several species throughout the world. The feeding behavior of the seastar *Meyenaster gelatinosus* was studied in the Chilean coast and reported that this species feeds on different types of Gastropoda (2). The competitive interaction between the seastar *Leptasterias polaris* and *Asterias vuligaris* was studied (3).

The aim of the present study is to investigate the following (1) the main food items of *Asteropecten polyconthus*, (2) the Seasonal changes in the diet composition of this species.

#### MATERIALS AND METHODS

Specimens were collected from Khor Al-Umia (North-West Arabian Gulf)(fig.1) during the period from February 1999 to April 2000 by using the trawl ( 2 meter wide ) drown about 3000 meters along the bottom . The stomach of 158 *Asteropecten polycanthus* polycanthus were examined as soon as possible after fixation by using formalin 8%.

The composition of diet was recorded by the point method (4). Each stomach was investigated separately. The fullness was first assessed, and (irrespective of size of the seastar) a fully distended stomach received 32 points, while 1,2,4,8,16, 24. points were given according to the relative proportion of the stomach content in relation to full stomach, after the fullness of the stomach was assessed the total number of points were subdivided between the various food items present using the same point values, The sum of point given to each type of food was given as percentage of the total, given of quantitative expression of composition of the diet.



Fig. 1. The of sampling area

# **RESULTS** Composition of the food

The food composition is given both by the points and occurrence methods (Table 1). There were little differences in the percentage between the two methods mollusca was the dominating group occurring in 87 % of all stomach containing food and contributing 94 % of the total number of all

points. The most important species, *Monodonta* vermiculata, *Mitrella blanda* and two species of lamellbranchi *Solen vagina*, *Paphia texile* and the other species are listed in table (2).

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Table (	L)	Percentage con	iposition o	1 100a m.	Asteropecten	polycaninus	polycanthus.

Food group	Point method		Occurrence method		
	No. of point	%	No. of Occur.	%	
Crustacea (Decapoda)	71	3.93	18	7.4	
Prosobranchia	1003	55.59	124	51.04	
(Mollusca)					
Lamellibrachia	717	39.74	87	35.80	
(mollusca)					
Fish remain	13	0.72	14	5.78	
Total	1804		243		

Species	No. of point	%
Mondonta vermiculata (Proso.)	403	23.43
Mitrella blanda (Proso.)	363	21.1
Clypemorus Caeruleum (Proso.)	83	4.8
Dentalium octangulatum (Proso.)	53	3.0
Nassarium arcularius plicatus (Proso.)	34	1.97
Ntatica vilellus (Proso.)	41	2.38
Solen vagnia (lamell.)	343	1994
Paphia gallus (lamell.)	332	19.30
Paphea gallus (lamell.)	27	1.56
Mitra sp. (Proso.)	26	1.51
Apolymetis angulata (lamell.)	15	0.87
Total	1720	

 Table (2) Number of point and percentage of mollusca (prosobranchi and lamellibranchia) in stomach of

 Asteropecten polycanthus polycanthus .

## **Seasonal variations**

There were no distinct seasonal variation in the composition of diet of the seastar (Table 3). The proportion of mollusca, the dominant food group varied between 94 % and 97 %. This variation here is believed to be caused by variation in sampling site rather than seasonal variation. Table (4) shows that the percentage of feeding is high in summer (June 1999) and autumn (October 1999) with the lake of sampling during Spring 1999 while the decline occurred in winter (64 %) (February 1999) and to 84 % (February 2000). It was also low in spring 76 % (April 2000).

Table (3)	Seasonal variation in the composition of diet of seastar
	Asteropecten polycanthus.

Seasons	Percentage of food items				
	Mollusca	Crustacea	Fish remains		
Winter 25/2/1999	95.31	2.34	2.08		
Summer 13/6/1999	94.58	5.42	0		
Autumns 17/10/1999	94.33	4.71	0.95		
Winter 22/2/2000	97.26	2.74	0		
Spring 20/4/2000	97.27	2.04	0.68		

Table (4) Seasonal	variation in the am	ount of food taken	by Asteropecten	polycanthus in Kh	or Al-Umia.
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Parameters	Winter	Summer	Autumn	Winter	Spring	Total
	25.2.1999	13.6.1999	17.10.99	22.2.2000	20.4.2000	
No. of seastar examined	33	51	44	17	13	138
Total no. of point allotted	369	554	530	204	147	1804
Mean no. of point per seastar feeding	13.17	11.54	13.25	18.24	14.7	
No. of seastar feeding	28	48	40	11	10	132
Percent feeding	84 %	94 %	90 %	64 %	76 %	

#### DISCUSSION

The analysis of stomach contents of Asteropecten polycanthus polycathus indicated that this species is a carnivorus, and the Gastropods and bivalve are the main food items, as they contributed 94 % of food. There are large differences in the feeding habits of different species of seastars and there was a wide range of food in different species. (2) in their study on the feeding behaviour of the seastar Meyenaster gelatinosus reported that this species feed on different types of gastropods that includes Nuelua Pisum (Sowerby, 1835), Nassarius gayi( Kiener, 1835), Mitrella unifaseiata (sowerby, 1832) and they found that this seastar can change its behaviour from a generalist to a specialist according to the abundance of prey. Moreover the seastar Leptasterias polaris and Asterias vuligaris showed competitive interaction in the north Gulf of St. Lawrence, while the deeper water provided an unusual situation for competitive intraction (3).

#### REFERENCES

- D. A. Jones, A field guide to the sea shores Kuwait and Arabian Gulf. University of Kuwait. 192 pp. (1986).
- 2 M.Ortize, Jesse, S., Stotz, W. and Wolff M., Feeding behaviour of the asteroid *Meyenaster gelatinosus* in response to changes in abundance of the scallop *Argopecten purpuratus* in northern Chile. Arch. Hydrobiol. 157 (2) 213 – 225. (2003).
- 3 C. F., Gaymer, and Himmelman, J. H., Mussel beds in deeper water provide an unusual situation for competitive interactions between the seastars *Leptasterias polaris* and *Asterias vulgaris* J. exp. Mar. Biol. Ecol. 277, 13 – 24. (2002).
- 4 H.B. Hynes, The food of freshwater striklebecks (*Gastrosteas aculeatus* and

The food of *huida sersi* had strikingly different diet, consisting mainly of foraminifera and gastropoda with the addition of some crustaceans and lamellibranchia (5). It is suggested by (6) that the considerable variations in types and amount of food consumed by a species at a given location, demonstrate that diet composition is often determined mostly by food availability.

It is found that the seastar *Asteropecten polycanthus* which is carnivorous exhibited diurnal rhythmic in feeding activity that is the seastar remain burred in the day time (7). Furthermore predominately the authors were able to show that the light was the main factor controlling the activity of seastar.

It can be concluded that the seastar *Asteropecten polycanthus* resembles most other seastar in being carnivorous and feeding on gastropods.

*Pygosteus pungitus*) with a review of method used in studies of food of fish. J. Anim. Eco. 19. 36-58. (1950).

- G.G.Hulings, and Hemlay, D.W, An investigation of the feeding habits of two species of seastar, Bull. Mar. Sci, Gulf caribb, 13; 354-359. (1963).
- 6 W.John, Day. J.R., Charles. A.S. Hall., W. Micheal Kemn, Alejandro Yanez. Arancibia, Esturaine ecology. Sohn. Wiely and Sons 558 pp. (1989).
- 7 S., Mori, and K. Matutani. Studies on the daily and rthytmic activity of the seastar *Asteropecton polycanthus* and the accompaning physiological rythms. Publ. Scto. Mar. biol. Lab. 2-213-225. (1952).

# طبيعة الغذاء لنجم البحر Asteropecten polycanthus polycanthus mullur and Troschel في شمال غرب الخليج العربي

## الخلاصة

مفاتيح داله : نجم البحر , طبيعة الغذاء , تغيرات فصليه , خور العميه .