

# AGE AND GROWTH OF THE JINGA SHRIMP, *METAPENAEUS AFFINIS* (H. MILNE EDWARDS, 1837) IN THE BAY OF IZMIR, TURKEY

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## Abstract

Seasonal sampling data – from November 2008 to January 2011 - were analyzed to determine the age and the growth of *Metapenaeus affinis* (jinga shrimp). The males presented 2-year modes, while females one more. The  $CL_{\infty}$  and the  $k$  values were estimated to be 49,75 mm and 0,68 years<sup>-1</sup> for females and 35,42 mm, 1,33 years<sup>-1</sup>, for males. The  $\phi'$  value for the females was 2,84, while for males 3,22.

**Keywords:** Growth, Decapoda, Coastal waters, North-Eastern Mediterranean

## Introduction

*M. affinis* is a dominant and highly valued penaeid shrimp along the Persian Gulf, Arabian Sea, S. China Sea and Hawaii [1]. It was recently noted in the Mediterranean (2008), at the inner part of Izmir Bay (Turkey) [2]. Age and growth of the species has also been described in Iran [3], Kuwait [4] and India [5]. This is the first work describing its age and growth of the species in the Mediterranean waters.

## Material and methods

A total of 3038 jinga shrimp specimens were collected in a seasonal basis, from November 2008 to January 2011, in the Bay of Izmir (Turkey) by trammel nets. The samples were separated by sex and the carapace length (CL) was measured. Bhattacharya's method (FiSAT package) was used to identify and isolate the different, normally distributed, size groups per sex, taking into account the values of separation index (SI) for the different age group, the number of the identified age groups, and the standard deviation (S.D.). The Von Bertalanffy (VBGF) parameters ( $CL_{\infty}$ ,  $k$ ,  $t_0$ ) were estimated using the non-linear regression (Statgraphics). The growth performance index  $\phi'$  in the jinga shrimp was estimated using the equation  $\phi' = \log_{10}k + 2\log_{10}CL_{\infty}$ .

## Results and Discussion

The general pattern showed that the males exhibited 2-year modes, while females showed more (3 year modes in summer). The same number of cohorts has been identified in Iran [3]. The FiSAT estimated modal mean lengths of males ranged from 19,25 (in winter) to 29 mm CL (Autumn) and the SIs appeared to be quite satisfactory. In females, the estimated modal lengths ranged from 24 to 31 mm CL (Table 1). The VBGF parameters for the females and males were:  $CL_{\infty}$ =49,75 mm,  $k$ =0,68  $y^{-1}$ ,  $t_0$ =-0,99 y and 35,42 mm, 1,33  $y^{-1}$ ,

-0,05 y, respectively. Similar growth pattern of the same species has been estimated in Iran [3] and in Kuwait waters [4]. The growth coefficient ( $k$ ) confirms different growth rates between sexes, but, like all penaeids, the species seems to grow faster than other decapods. The  $\phi'$  value for the females and males was 2,84 and 3,22, respectively. Both  $k$  and  $\phi'$  values suggest that males grow faster than females in the Izmir area.

## References

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Tab. 1. Identified age groups of males and females *M. affinis* during the seasonal sampling cruises, using Bhattacharya's method

Season	Females				Males			
	Mean CL <sup>a</sup>	±S.D. <sup>b</sup>	N <sub>c</sub>	S.I. <sup>d</sup>	Mean CL	±S.D.	N	S.I.
Winter	29	4	1547		19,25	1,8	117	
					27,66	0,8	16	2,56
Autumn	28	2	562		21,47	1,79	91	
					29	0,84	110	2,4
Spring	31	3	322		22,54	1,69	400	
Summer	24	2	134		26,18	1,26	306	
					28	2	193	2
	39	1	33	7,3				

a Cephalothorax (mm), b Standard deviation, c Number of individuals, d Separation index