

# WEIGHT-CARAPACE WIDTH RELATIONSHIP OF THE MEDITERRANEAN GREEN CRAB (*CARCINUS AESTUARII*, NARDO 1847) IN ÇAKALBURNU LAGOON, IZMIR BAY

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## Abstract

The weight-carapace width relationship of *Carcinus aestuarii* Nardo,1847 (Crustacea, Decapoda, Brachyura, Portunidae) of Çakalburnu Lagoon is given for a sample of 795 specimens. Crabs were collected during 2001-2002. Carapace width, weight and sex of specimens were determined.

**Keywords :** Crustacea, Decapoda, Lagoons, Aegean Sea.

## Introduction

Growth is defined as the increase in length, the weight or volume [1]. The Mediterranean green crab, *Carcinus aestuarii* Nardo inhabits in the Mediterranean estuarine and lagoon waters [2], the Black Sea and the Sea of Asov [3]. The aim of this study is to give some information on the seasonal weight- carapace width relationship of the crab population in Çakalburnu Lagoon, Izmir Bay, the Aegean Sea.

## Material and Methods

The study area, Çakalburnu Lagoon, is a shallow, coastal lagoon, which spreads over 150 h area [4] and is located on the southern coast of the Izmir Bay (Fig.1). The water depth in the lagoon ranges between 0.5-1 m. A total of 795 *C. aestuarii* specimens were sampled between 2001 and 2002, using a beam trawl. All sampled crabs were sexed, weighed (wet weight) and measured carapace width (CW, nearest mm). The common allometric equation  $Y = aX^b$  has been used to estimate the weight-carapace width relationship, where Y is the wet weight (g), X is the carapace width (mm), respectively. Allometric growth equations that can be linearized by logarithmic transformation, such as  $\log Y = \log a + b \log X$  [5]. A Student's t-test ( $\alpha=0.05$ ) was used to check whether  $b=3$  for the weight-carapace width relationship.

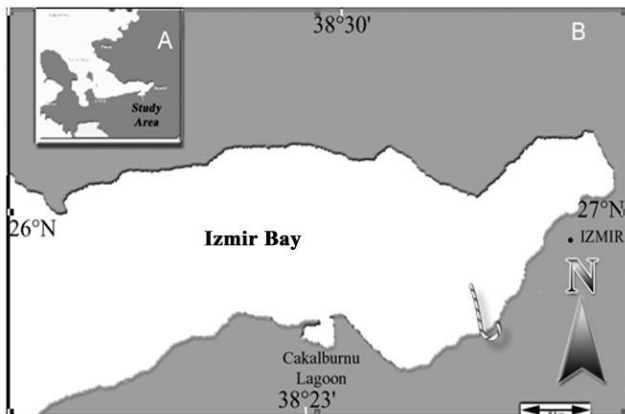


Fig. 1. (A)-(B) Geographical location of Izmir Bay and Çakalburnu Lagoon.

## Results and Discussion

Data on 384 (48.3%) males and 411 (51.7 %) females were analyzed for the relationship between weight-carapace width. The carapace width of the female crabs ranged from 9.06-38.74 mm with a mean value of  $26.54 \pm 5.37$  mm and males from 5.06-48.41 mm with a mean of  $31.39 \pm 10.45$  mm. The weight-carapace width relationships are presented seasonally in Table 1.

The males and females of *C. aestuarii* showed negative allometric growth in all seasons, except for the females in spring; their growth was isometric. When the growth of the crabs show positive allometry, this indicates that the weight of the animal increases as it matures [5]. Here, the results denoting negative allometry indicated that the weight of *C.aestuarii* in Çakalburnu lagoon decreased as it matured. The coefficients of determination were high except in summer period. The reason of this difference may be explained by the increased range in the carapace widths of the specimens in this season. Generally, the values of b range between 2.5-3.5 in the weight-length relationship. In this study, the values of b ranged

2.66-2.81 in females and 2.30-2.92 in males. In a study on another portunid crab *Callinectes sapidus*, the estimated b values varied in a similar range (2.19-2.93) just as in this study [6].

Tab. 1. Regression analyses of weight-carapace width seasonal data for *C. aestuarii*.M:males, F:females, N: number of individuals WW: wet weight, CW: carapace width;log: logarithms of base 10. <sup>(1)</sup>Two tailed t-test for  $H_0: \beta=3$  in WW/CW relationship, \*  $P<0.05$ .

Season	Sex	N	logWW=loga+blogCW	r <sup>2</sup>	t <sup>(1)</sup> level
Spring	F	94	logWW=-3.207+2.814logCW	0.849	1.51
	M	99	logWW=-3.342+2.927logCW	0.975	1.09
Summer	F	168	logWW=-3.223+2.849logCW	0.718	7.62*
	M	150	logWW=-2.440+2.302logCW	0.768	3.24*
Fall	F	142	logWW=-2.975+2.668logCW	0.964	1.52
	M	85	logWW=-3.177+2.824logCW	0.974	6.72*
Winter	F	7	logWW=-3.015+2.664logCW	0.996	3.47*
	M	50	logWW=-3.357+2.919logCW	0.990	1.94

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