A Preliminary Study on Some Properties for *Chamelea gallina* (L.,) (Bivalvia: Verenidae from Karabiga-Çanakkale

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Abstract

Chamelea gallina has known as "cik cik" in Turkey, is a filter feeder that profits from high primary production. It can reach a maximum size of a 5 cm. and an age of more than 6yrs. At present more than 400,000 tons of venerid clams are harvested yearly in the world.

The first catch of *Chamelea gallina* was done in 1988, along the coasts of the Sea of Marmara using an hydraulic dredge called a "comb". Nowadays, it was harvested with the same gear between 1 September and 1 May with hydraulic dredges.

According to the research findings, the length and width of *Chamelea gallina* (L.) specimens from Karabiga, Çanakkale is between 1.81-3.50 mm and 21.1-36.9 mm respectively. 147 specimens were found of the catch.

Chamelea gallina is processied and exported from Çanakkale and its vicinity. The average meat yield of *Chamelea gallina* is about 23% of the total live weight.

Key Words: *Chamelea gallina,* growth, The Marmara Sea.

Introduction

Verenidae family is represented 37 species and 13 of them have a economic importance in the world seas. One of the most important species is known as a *Chamelea gallina.*

Chamelea gallina is a filter feeder and important commercial species in our seas (Tunçer, 2001). *Chamelea gallina* is a very common bivalve in Mediterranean inshore waters where it inhabits the fine well-sorted sand biocoenosis (SFBC) (Picard, 1965).

According to Froglia (1989), in Italy, along the Western Adriatic shore *Chamelea gallina* is found on shallow sandy bottoms, the total catch was 100,000 tons per year in the 80's (Arneri, 1998). Clams of the family Veneridae in habit particulate sediments, mostly in the infralittoral and circalittoral zones of temperate and tropical regions. *Chamelea gallina*, is presently exploited along the Albanian coast (Southeast Adriatic), in the Sea of Marmara (Turkey), along the Spanish and Moroccan coasts of the Alboran Sea and along the Spanish coasts of Catalonia, mostly south of the Ebro delta. Very recently Albania and Turkey with the aim of developing their national fisheries have imported hydraulic clam dredges (report of the Italian Port Offices) from Italy.

Although no reliable statistics are available, along the Italian Southern Adriatic coast, catches are estimated to be around 500 tonnes per year (Arneri, 1998). According to data obtained from catches the amount of *Chamelea gallina* was dramatically decreased. In Greece, on the northeast coast, catches are estimated to be around 500 tonnes per year and most of the product is exported as alive to Italy (Arneri, 1998). According to data Deval (1998), catches were estimated in 1989; 15,000 tonnes, in 1990; 30,000 tonnes, in 1991; 35,000 tonnes per year.

In Turkey, *Chamelea gallina* (L.) has known as "Cik cik". The first catch of *C. gallina* was done in 1988, along the coasts of the Marmara Sea especially vicinity of Karabiga, which is very closed to Karabiga stream. This catch was done with a hydraulic dredge called a "comb". Nowadays, the catch of this species made between 1 September - 1 May. From Şile and its vicinity approximately 100 tonnes per year are caught (Tunçer, 2001).

Material and Methods

For this investigation, *Chamelea gallina* population has been studied, these specimen were caught by conventional dredge from the coasts of the Sea of Marmara (vicinity of Karabiga, Çanakkale) and examined in May. The size of catch is 18 mm and (18 mm<). The vicinity of Karabiga is showed with map in Figure 1. Samples were carried in isothermic bags and their measurements, taken with callipers with 0.01 mm accuracy and their total weight, shell weight and meat weight were taken with an electronic balance of 0.001 g accuracy in the laboratory.

Each *C. gallina* specimen was measured with a vernier caliper along three axes: length (anterior to

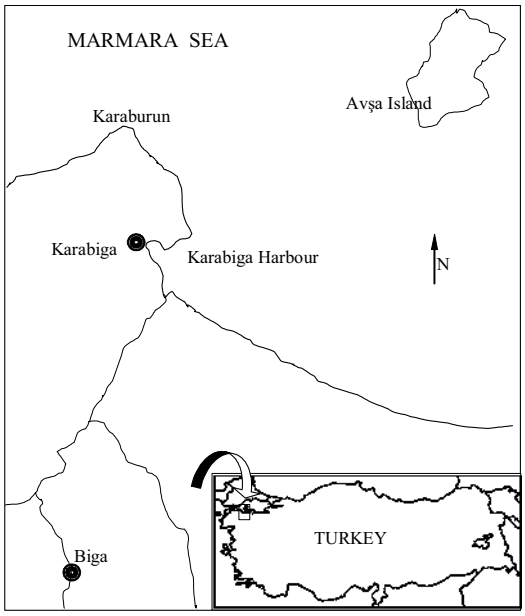

Figure 1. The coast of Karabiga-Çanakkale and Karabiga Harbour

posterior margin), width and height from the umbo to the ventral margin along the axis of maximum growth.

Results

The results of this investigation are shown in Table 1, 2 and Figures 2, 3, 4, 5.

As shown in the table 1, specimens caught from Karabiga have an average length of 25.20±1.09 mm, width 28±1.63 mm and their average total weight is 6.84±1.09 g. Also, the average edible weight of the *C. gallina* specimens was 1.56±0.24 g.

The edible percentage by weight of the *C. gallina* specimens was 23% and there were 147 specimens per kg. The Table 2 is represented with graphs in Figures 2, 3 and 4. In Figures 2, 3, 4; weight-length logarithmic relations, in Figures 5; length-width linear relations are shown.

Table 1. Some biometric results belong to *Chamelea gallina* taken from Karabiga.

	Length (mm)	Width (mm)	Total Weight (g)	Shell Weight (g)	Meat Weight (g)
Min.	18.1	21.1	2.47	2.02	0.44
Max.	35	36.9	15.41	12.06	3.35
Mean	25.20±1.09	28±1.63	6.84±1.09	5.27±0.92	1.56±0.24

Table 2. Logarithmic and Linear equations belonging to *Chamelea gallina* specimens the sea of Marmara

Length-Total Weight	Length-Shell Weight	Length-Meat Weight	Length-Width
$y= 0.0004x^{2.9669}$	$y= 0.0004x^{2.9083}$	$y= 5E\text{-}05x^{3.1814}$	y=0.8942x+5.4158
$r^2= 0.90$	$r^2= 0.89$	$r^2= 0.89$	$r^2= 0.81$
Std. deviation= 9.80	Std. deviation= 10.44	Std. deviation= 12.11	Std. deviation=3.90

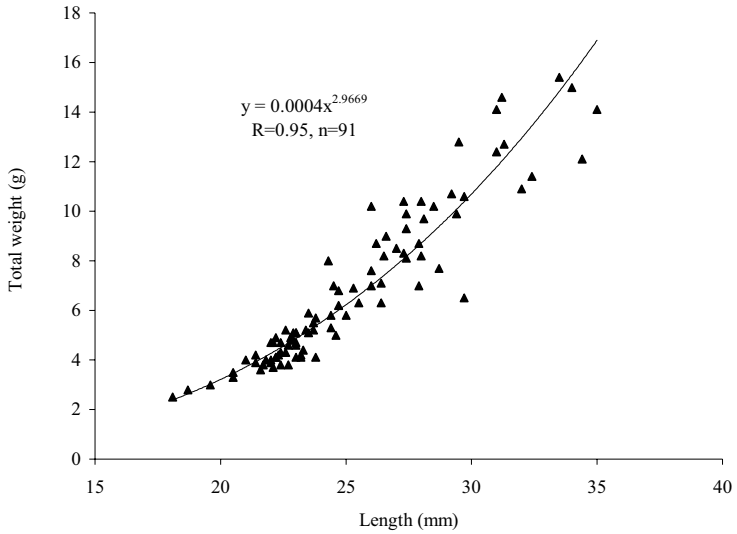

Figure 2. Length/total weight relationship in shell of *Chamelea gallina* of Karabiga-Çanakkale

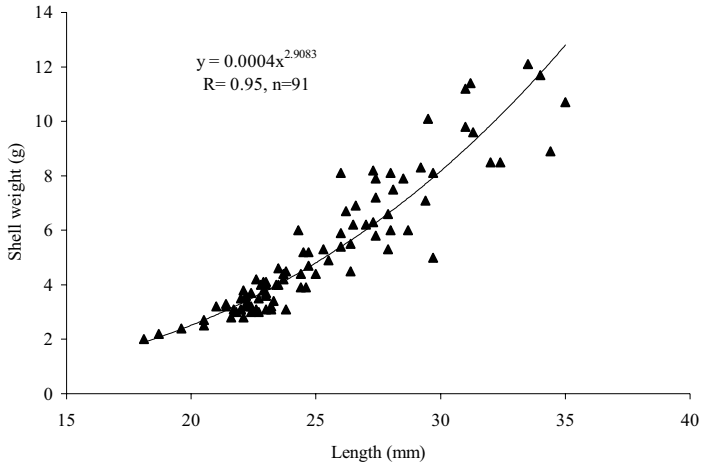

Figure 3. Length/shell weight relationship in shells of *Chamelea gallina* of Karabiga-Çanakkale

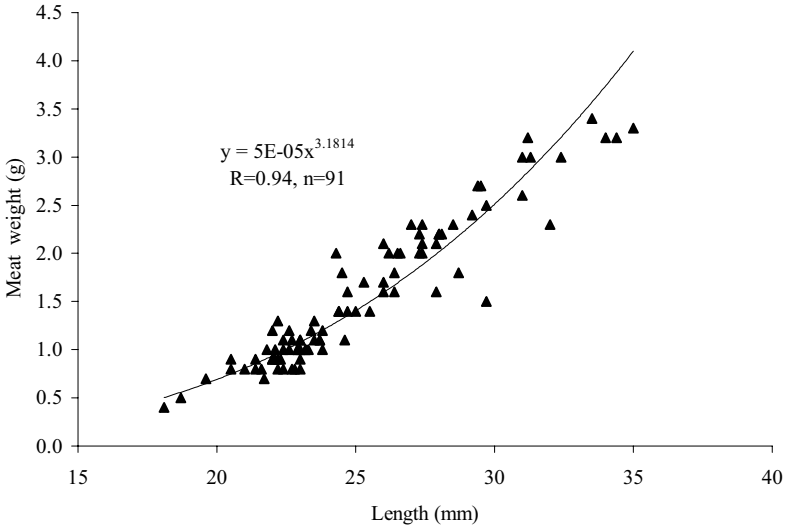

Figure 4. Length/meat weight relationship in shells of *Chamelea gallina* of Karabiga-Çanakkale

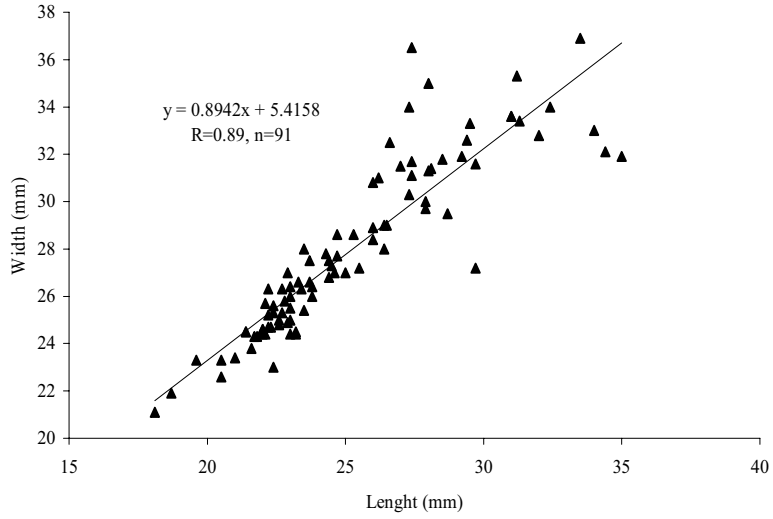

Figure 5. Length/width relationship in shell of *Chamelea gallina* of Karabiga-Çanakkale

Discussion

According to the tables, *C. gallina* population of Karabiga represent the average length is 25.20±1.09 mm, weight is 6.84±1.09g and meat weight is 1.56±0.24g. Although *C. gallina* is not consumed by Turkish people, commercial edible molluscs is very important for export to European countries following fish species.

According to Arneri *et al.* (1995), that a complete record of size at age for each *C. gallina* was obtained by measuring in mental growth as the distance from the ventral margin of each trainseet band to the umbo using and image analyses system linked to a dissecting microscope. According to this research max age found in the sample is 8 years in the population, which belongs to Central Adriatic Sea, ranging from 7 to 46 mm in shell length. According to Arneri *et al.* (1997), length variation collected from Neretva River estuary was ranging from 5 to 46 mm.

Western Adriatic Sea coast of Italy (vicinity of Ancona) has a big importance for clam fishing reached a peak total production of more than hundred tonnes in 1984. A commercial stock was recorded larger than 25 mm and recruits clams in the range 10 to 18 mm have been recorded (Froglia *et al.,* 1998). Comparising with results of Deval (1998), there is no information about population ranges. There isn't any datas which to be formed stocks. Therefore, no other study related to catch of *C. gallina* has been conducted other than Deval (1998) and Tunçer (2001) in Marmara Sea.

The growth rate of *Chamelea gallina*, has a important role for the commercial stock. Our preliminary results showed that Karabiga's population has a good commercial stock (clam larger than 25.20±1.09 mm and baby clams in a range from 18.1 to 21.8 mm). The investigated area is characterized by shallow, sandy bottoms and influenced by Karabiga's Stream. Further investigations are needed to draw definitive conclusions for Karabiga's population and comparising other available stock along the Marmara Sea coastline.

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