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LENGTH-WEIGHT RELATIONSHIPS OF LARGE-SCALED GURNARD (*LEPIDOTRIGLA CAVILLONE* (LACEPÈDE, 1801)) OBTAINED FROM NORTHEASTERN MEDITERRANEAN

ABSTRACT

This study was carried out to determine the length-weight relationship of large-scale gurnard *Lepidotrigla cavillone* obtained from the Northeastern Mediterranean. In this study, LWRs of large-scaled gurnard were examined for the first time in a population of the Northeastern Mediterranean Sea. The length-weight relationship was estimated for combined sexes was: Length-weight relationships of *Lepidotrigla cavillone* were found as $W=0.0027*L^{3.64}$, $r^2=0.932$, $SEb=0.058$, $W=0.0024*L^{3.69}$, $r^2=0.941$, $SEb=0.085$ for females and $W=0.0033*L^{3.56}$, $r^2=0.947$, $SEb=0.085$ for males. According to b values, all individuals, females and males, showed a positive allometric growth (t-test: $p < 0.05$).

Keywords: Length-weight Relationship, *Lepidotrigla cavillone*, Large Scaled Gurnard, Iskenderun Bay, Northeastern Mediterranean

1. INTRODUCTION

Large-scaled gurnard, *Lepidotrigla cavillone* (Lacepède, 1801) is one of the triglid inhabiting Northeastern Mediterranean. It is a Atlanto-Mediterranean species, distributed along the Mediterranean Sea and the eastern Atlantic from Portugal to Mauritania. This species is caught in large numbers by trawl but due to its small size has almost no commercial value [1]. Although there are LWR and studies otolith biometry on other species of the triglid members (*Lepidotrigla dieuzeidei*, *Trigloporus lastoviza*, *Peristedion cataphractum*, *Chelidonichthys lucerna*) there is no information on the length-weight relationships (LWR) of this species in the Northeastern Mediterranean Sea coasts of Turkey [1, 2, 3, 4, 5, 6, 7 and 8]. However, LWRs of large-scaled gurnard were studied by some researchers in the other areas of the Mediterranean during recent years. This study was carried out to determine the length-weight relationship of *L. cavillone* obtained from northeastern Mediterranean.

2. RESEARCH SIGNIFICANCE

In this study, LWRs of large-scaled gurnard were examined for the first time in a population of the Northeastern Mediterranean Sea.

Highlights:

- The study examined the total length-weight relationships of large-scaled gurnard from Northeastern Mediterranean.

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- It provides the male/female ratio of *Lepidotrigla cavillone* species.
- It also shows the growth type of *Lepidotrigla cavillone* species for male, female and combined sexes.

3. MATERIALS AND METHODS

Lepidotrigla cavillone specimens were collected from commercial bottom trawler at a depth of 200m to 380m off the Iskenderun Bay (36°07'148 N-035°17'978 E, 36°13'720 N-035°22'998 E). The trawler was equipped with 44mm stretched mesh size nets at the cod-end. Trawling lasted 3 hours and the trawling speed was 2.5 knots. A total of 266 specimens (121 females and 145 males) were collected. All samples transported to the Fisheries Laboratory on ice. Each fish was measured for total length to the nearest 0.1cm, weight (W) was measured to the nearest 0.1g and the sex was determined by macroscopic observation of the gonads. Total lengths and weights were fitted to the length-weight equation: $W=aL^b$, by using least squares methods with Statistica software. In the length-weight equation, "a" and "b" are the intercept and the slope (=exponent) of the length-weight curve, respectively.

The b value for this species was tested by a t-test at the 0.01 significance level to verify if it was significantly different from 3.

4. RESULTS AND DISCUSSION

Minimum-maximum length and weight of captured fishes were determined as 8.0-11.5cm and 4.93-19.21g for females and 7.0-11.5cm and 4.55-20.4g for males respectively. All analyses for this species were made for female, male and combined sexes. Length-weight relationships of *L. cavillone* were found as $W=0.0027*L^{3.64}$, $r^2=0.932$, $SEb=0.058$ for all individuals, $W=0.0024*L^{3.69}$, $r^2=0.941$, $SEb=0.085$ for females and $W=0.0033*L^{3.56}$, $r^2=0.947$, $SEb=0.085$ for males. According to b values, all individuals, females and males showed a positive allometric growth ($b>3$) (t-test: $p<0.05$). In this study, the data did not represent a total year, thus, these calculated parameters should be considered to represent only for 2015 summer season.

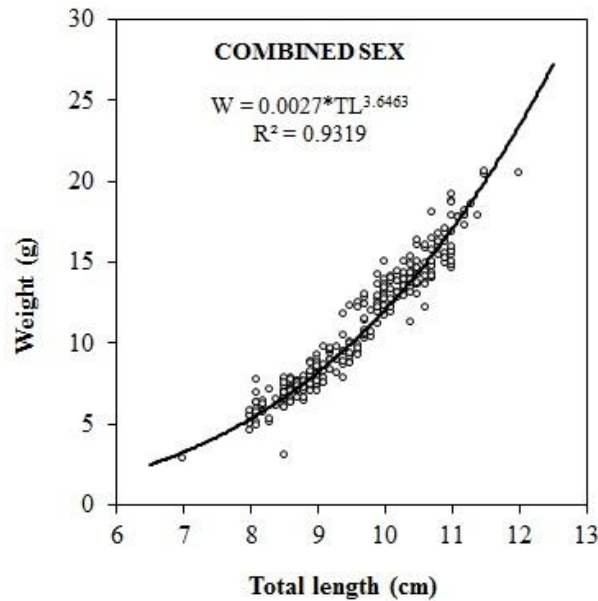


Figure 1. Total length-weight relationship of *Lepidotrigla cavillone*, for combined sexes

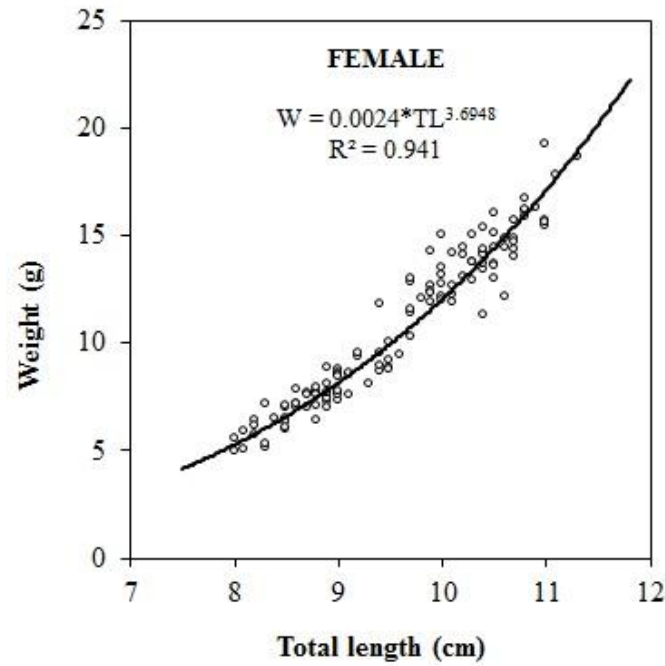


Figure 2. Total length-weight relationship of *Lepidotrigla cavillone*, for female

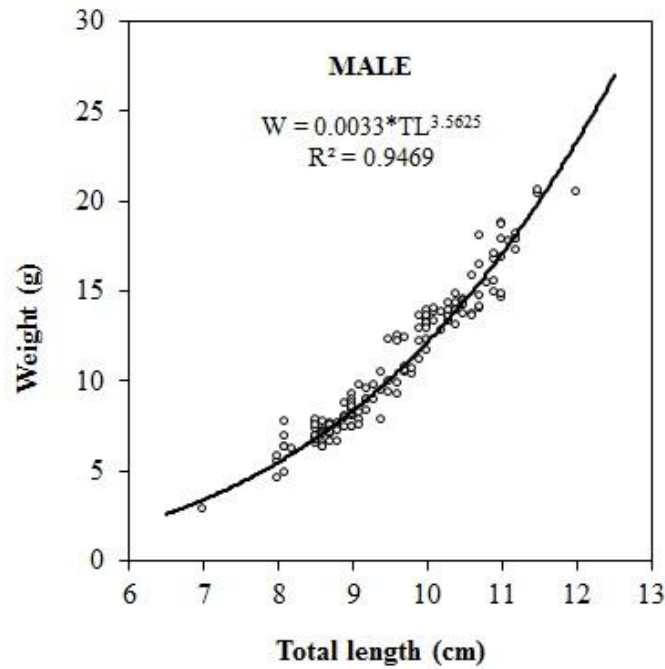


Figure 3. Total length-weight relationship of *Lepidotrigla cavillone*, for male

Regression analysis shows that fish length has significant correlation with weight ($R=0.97$, $R^2=0.93$, Sample Number=293, $F1=4008.244$, $P<0.001$) and it is possible to say that 93% increase in weight was due to length increase for sexes combined. Moreover, when the t-test results were analyzed for the significance of regression coefficients (t-test=63.311, $P<0.01$ for sexes combined), it was found that fish-length data could be used in high accuracy to predict fish

weight. Furthermore, when the t-test results were analyzed for the significance of regression coefficients (t-test=80.502, $P<0.01$), it was found that fish-length data could be used in high accuracy to predict fish weight.

According to regions calculated b values for this species were found 3.41 for Saros Bay (North Aegean Sea) by Ismen et al. [9], 3.15 for Central Aegean Sea by Ilkyaz et al. [10], 3.03 for Southern Aegean Sea by Bilge et al. [11], 3.157 for North Aegean Sea by Lamprakis et al. [12], 3.24 for Adriatic Sea by Vallisneri et al. [13], 3.113 for Gulf of Gadiz by Torres et al. [14] and 3.07 for south coast of Portugal by Olim and Borges [15]. These values are very close in our study. Other b values were reported 2.98 for Edremit Bay (Aegean Sea) by Turker et al. [16], 2.95 for Greek Seas by Papaconstantinou [17], 2.74 for Greek waters by Petrakis and Stergiou [18], 2.63 for Sea of Marmara by Demirel and Dalkara [19]. Reported these values are different from our study. These differences may be caused by the lower sample size, sampling season or used different measurements (total length or standard length).

NOTICE

This study was presented as a summary at the Ecology Symposium (ECOLOGY 2017) held in Kayseri, Türkiye, on 11-13 May 2017.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

FINANCIAL DISCLOSURE

The authors received no financial support for the research.

DECLARATION OF ETHICAL STANDARDS

The authors of the article declare that the materials and methods used in this study do not require ethics committee approval and/or legal special permission.

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