# AGE ESTIMATION AND CATCH COMPOSITION OF BLUEFIN TUNA IN THE EASTERN MEDITERRANEAN

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## Abstract

Bluefin tuna, Thunnus thynnus, caught by the Greek ?eet in the Eastern Mediterranean was sampled from November 1998 t Age was estimated using anal fin spines. Mean lengths at age were calculated. The specimens ranged from 99 to 264 cm in their ages were between two and eleven years.

Keywords : Eastern Mediterranean, Growth, Pelagic, Teleostei, Thunnus thynnus.

### Introduction

Bluefin tuna, Thunnus thynnus, is a pelagic species with a high commercial value, characterized by intensive migration and wide geographical distribution. There have been few studies estimating age and grow th of the Mediterranean bluefin tuna. The objectives of this work were to estimate the age of bluefin tuna using anal fin spines and to evaluate the size and age structure of the stocks exploited by the Greek ?e et.

#### Materials and Methods

Anal fins and fork length (FL) measurements were collected from 285 bluefin tuna caught in the Aegean and Ionian Sea, from November 1998 to July 1999. Since many sampled fish were eviscerated and without heads, from each individual the pectoral fork length (PF) was measured too. The relationship between fork length and pectoral fork length was evaluated and pectoral fork lengths were converted to fork lengths.

Three sections near the spine base (0,7 to 1 mm thick) were taken from the first four anal spines using a slow speed saw. Growth bands were counted to estimate the age of fish [1].

#### Results

The fork length of 285 specimens ranged from 99 to 264 cm with a mean value of 150,5 cm. The most frequent length classes were between 130 and 160 cm (figure 1). A significant linear relationship was found between fork length and pectoral fork length (FL=1,369PF; P<0,05).



# Figure 1. Length frequency distribution of bluefin tuna caught by hand line in the Eastern Mediterranean in 1998-99.

Based on the counts of the translucent zones we estimated ages between 2+ years and 11+ years. Vascularization of the bony tissue was observed in the centre of the spines. The mean lengths per age group are illustrated in figure 2.



#### 99.

Age group 5 was found to be the most recurrent, w of 30.92%, following by the age groups 4, 6 and 7 wit 13%, 21.26% and 15.46%, respectively. Juveniles we absent.

#### Discussion

A wide variety of aging techniques have been applituna, including examination of hard parts such as scal tebrae and spines [1]. Dorsal spines have been frequer and growth studies of bluefin tuna [2,3,4], whereas an been used mainly for other large pelagic species.

The use of anal fin spines to estimate age had the a sampling and the growth bands stood out clearly. The this method was the vascularization of bony tissue in spine, which could lead to an underestimation of the a the loss of early bands. This problem, which increased the specimens, could be avoided by calculating the po first bands in the spines of juveniles and considering t estimations.

Age estimations of the present study appear to be  $r_1$  and seem consistent with what is known about the grc species [1, 2].

These results, even though preliminary, revealed th catches in the Mediterranean Sea were made up mainl bluefin tuna. In fact, the youngest specimen in our sar in FL and the tentative to collect smaller specimens g because those catches were very rare.

To improve age and growth knowledge on Mediter tuna, further investigation is required, using different wider number of length classes, including juvenile spo

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Figure 2. Mean fork lengths at estimated ages for bluefin tuna caught by hand line in the Eastern Mediterranean Sea in 1998-

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