DIFFERENCES BETWEEN CULTURED AND WILD BLACK SEA TROUT (*SALMO TRUTTA LABRAX*) OTOLITHS: A COMPARATIVE STUDY

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Abstract
The salmonids are very common and most cultured species in the World. Therefore, there are a lot of study about culture, growth, mortality, meat yield and spawning performance of this species but very few studies about age determination. The aim of this study, differences of otoliths characteristics in cultured Black Sea trout and wild ones were investigated from samples obtained in the Black Sea region. This research is the first study about to comparison of irregular increments in the otoliths of cultured and wild Black Sea trout.

Keywords: Aquaculture, Black Sea, Fisheries

Introduction
The Salmonidae family has contains very popular fish species for aquaculture sector [2]. The first cultured salmonid species is *Salmo trutta* in the Europa. The production of Black sea trout (*Salmo trutta labrax* PALLAS, 1811) is being an endemic fish species in Turkey is getting more and more widespread all over the country especially Eastern Black Sea region [1]. Otoliths are important structure for fish and fisheries researchers because of demonstrate whole life cycle via annual growth increments in the otoliths. There are several factors can be effect on growth rate (sex, maturation, feeding, behavior, environmental conditions). Some changes in the growth rates are recorded on the otoliths [4, 5]. The annulus increments increased with the age of fish. This can be a man-made in the cultured fishes (unlimited food availability, optimum water temperature) [6].

Material Methods
Data for *S. t. labrax* were collected from the rivers caught by throw net, electro-shocker and traps from rivers of Rize and Trabzon (Firtina, Caglayan, Kapistre, Iyidere and Solakli) in the northeastern Black Sea region, between 1998 and 2001 for cultured process (Figure 1). A total of 205 specimens were examined for analysis. Sagittal otoliths from each fish were removed, cleaned and stored in elisa plates. Size of the otoliths was measured by digital calipers sensitive to 0.01 mm. Age readings were carried Leica binocular microscope with digital camera and Leica Application Suite software by three different readers. The growth parameters were obtained from the von Bertalanffy growth model.

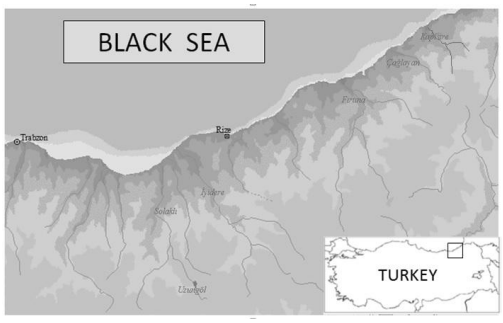

Fig. 1. Sampling Stations.

Results
It was concluded that there were observed differences in the annulus rings of the otoliths. The otolith rings of wild Black Sea trout were showed regular structure while the cultured ones were seen irregular rings starting from the 1st hyaline rings. Besides, false annulus rings were common seen in the cultured specimens. It is thought that the reason of irregular and false rings can be caused cultured Black Sea trout transported from seawater to freshwater in order to the complete the life cycle (to developing the gonads) in the certain period. These periods were identified according to sea water temperature (>20°C) especially between June and December. There are a lot of effects changing the environment on this species. The lengths and width of the cultured Black Sea trout otoliths were found as 7.34 – 4.38 mm and 4.64 – 2.72 mm, respectively. The lengths and width of the wild ones otoliths were found as 8.56 – 2.56 mm and 5.34 – 1.47 mm (Figure 2). It was seen that the cultured Black Sea trout has more opaque annual ring than the hyaline ring in the otoliths.

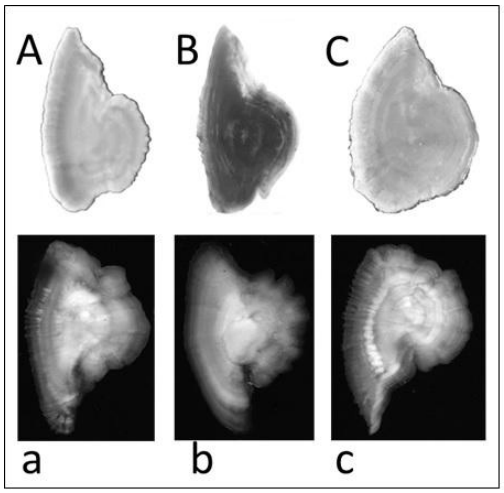

Fig. 2. Wild and cultured Black Sea Trout otoliths (Uppercase is wild trouts; lowercase is cultured ones) A-a:4 ages; B-b: 5 ages; C-c: 6 ages.

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