

Short Communication

Resettlement of *Atherina boyeri* Risso, 1810 in Büyükçekmece Reservoir (İstanbul, Turkey)

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Abstract

The big-scale sand smelt, *Atherina boyeri* Risso, 1810 was recorded for the first time in Büyükçekmece Reservoir in 1982. However, the following studies on ichthyofauna indicated that *A. boyeri* does not exist in this reservoir. In the present study, reoccurrence of *A. boyeri* population was determined in the northern coast of Büyükçekmece Reservoir at December 10, 2015. Because of a total of 22 individuals belonging to different size groups (3.1-6.1 cm in standard length) were caught, it can be considered that *A. boyeri* has successfully colonized again in this reservoir.

Keywords: Reoccurrence, Temperature, Big-scale sand smelt, Lake.

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Introduction

Büyükçekmece Reservoir was a lagoon until 1985 and the fish fauna of the lagoon was composed mostly marine but rarely freshwater fish species (Ninni 1923; Kosswig and Battalgil 1942; Devedjian 1926; Balık 1985; Meriç 1986). After the construction of Büyükçekmece Dam, the lagoon became a freshwater lake in due time by the effects of streams and rainfalls; freshwater species took over the marine species. *Atherina boyeri* is a euryhaline species was reported from the lagoon by Balık (1985) and Meriç (1986). However Meriç (1992) claimed that the species has disappeared following the construction of the dam depending to harsh winters and falling water temperature in the lake, as the most effective ecological condition on feeding of the species. Recent studies also supported that *A. boyeri* has disappeared in the lake (Özuluğ 1999; Saç 2010). However, we rediscovered the living specimens of *A. boyeri* population in Büyükçekmece Reservoir approximately 30 years later.

Material and Methods

Study Area: Büyükçekmece Reservoir is a lagoon lake located at the mouth of the Karasu Stream, which drains into the Sea of Marmara. The sea connection of the lagoon was blocked by Büyükçekmece Dam to provide drinking and usage water for İstanbul in 1985 and the lagoon became a freshwater lake in due time.

Field survey was performed by using electrofishing at shallow depths (about 60-70 cm) in the northern coast of Büyükçekmece Reservoir at December 10, 2015. Samples were measured to the nearest 0.1 cm standard length and weighed to the nearest 0.01 g total body weight.

Results and Discussion

A total of 22 *A. boyeri* specimens were captured from shallow coast of the lake during 15 minutes. Standard lengths of the specimens ranged 3.1-6.1 cm and weights ranged 0.295-2.360 g. All of the collected specimens were under the 6.1 cm in standard length. It means that most of them are immature specimens (Küçük et al. 2012; Yağcı et al. 2015) and generally juveniles are sensitive to extreme environmental conditions. Therefore, it is claimed that *A. boyeri* spawn in the lake.

Atherina boyeri has a large adaptation talent and usually inhabits at the unstable conditions of seas, lagoons and lakes such as temperature, salinity, turbidity, and currents (Bartulović et al, 2006; Çetinkaya et al. 2011). Nevertheless according to Meriç (1992), water temperature may cause a strong pressure on feeding of the species;

A. boyeri ceases to feed when water temperature is lower than 8°C and, water temperature lower than 4°C is fatal for the species. The results of the recent studies were conducted in Büyükçekmece Reservoir support this thesis; the water temperature has measured under 4°C during winter months and *A. boyeri* has disappeared in the lake (Meriç 1992; Aktan et al. 2006; Şahin 2006; Özuluğ 1999; Saç 2010). However, Saç et al. (2015) has claimed the existence of *A. boyeri* in the lake depending to the result of the study initiated with the aim of determining food habits of perch and, has found two specimens of *A. boyeri* specimens in stomach contents of two different perch specimens captured in 2009. According to their personal communication, *A. boyeri* which lives in the Sea of Marmara entered into the lake by opening the dam shutters after the heavy rains in that year (Saç et al. 2015). In the present study, a total of 22 individuals belonging to different size groups were caught in a short span of 15 minutes showing *A. boyeri* has survived on unfavourable water temperatures.

In conclusion, due to its capabilities to easily adapt to new environments and form large populations in different salinities, it demonstrates that *A. boyeri* has successfully colonized again in Büyükçekmece Reservoir.

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