# COMPOSITION OF JUVENILE FISH POPULATIONS IN ERDEK BAY, SEA OF MARMARA

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**Abstract**

In this study, community structure of the juvenile fish was qualitatively and quantitatively investigated at 12 stations in the Erdek Bay, between March and May 2000. Abundance and number of the individuals were determined; diversity, richness, evenness, and dominance indices were calculated. A total of 3661 juvenile individuals representing 41 species were collected. *Atherina hepsetus, Liza aurata* are the most presence species. The community was dominated numerically by a few species: *Atherina hepsetus* (28.3% of total number), *Liza aurata* (27.5%) and *Symphodus (Crenilabrus) ocellatus* (15.6%).

*Key words: juvenile fish, abundance, diversity, Marmara Sea*

## Introduction

Marine coastal habitats have high species richness due to diversities in topography. They are important because of the influence they have on broader aspects of marine ecosystems (1, 2). The nutritional elements of coastal area are richer than open water. Particularly juvenile fishes live in those areas where there are rich nutrimental material and safe surrounding. The southern Marmara Sea has important bays having shallow waters and these areas are utilised as nursery area by juvenile fishes (3). The present study is aimed to provide information about species composition of the juvenile fish in Erdek Bay.

## Material and methods

Erdek Bay is located in South of Marmara Sea (27°20'- 27°52' E Longitude and 40°18'- 40°28' N Latitude), and the length of the coastline is 130 km, and maximum depth is 55 m. The bottom in the sampling stations are characteristically covered by meadows (*Zostera marina*, *Cymodocea nodosa*), macroalgae (*Cystoseria* sp., *Lomentaria* sp., *Ceramium* sp., *Ulva* sp.), and sandy. Samples were collected at 12 stations using a 35 m long beach seine. Net depth at the beginning of wings was 40 cm and 250 cm at the central part together with the sac. The mesh size was 6 mm at the outer wing and 4 mm at the central sac. The hauls were carried out along the shore (50 m), and from offshore to the inner along the 50 m. Sampling stations depth ranged from 1 to 10 m. Both of samplings were pooled estimated for everyone stations. Community structure was specified by Shannon-Weaver diversity (H'), Pielou evenness (J'), Margalef species richness (D), and Simpson dominance (C) indices using formula proposed by (4, 5, 6).

## Results

A total of 3661 individuals belonging to 41 juvenile fish species were collected and identified from the nearshore water in Erdek Bay. These species showed their monthly percentage of abundance in Table 1. The first three species were listed in respect to abundance as *Atherina hepsetus* (28.3%), *Liza aurata* (27.5%) and *Symphodus (Cr.) ocellatus* (15.6%) respectively. The highest collection was in May with 39 species, 1880 individuals. The lowest collection was in March with 22 species, 791 individuals. 30 species, 990 individuals were caught in April. Shannon-Weaver diversity indecies(H') were 1.93 in March, 2.58 in May and 2.98 in April. Pielou evenness index (J') were 0.43 in March, 0.48 in May and 0.60 in April. Margalef species richness (D) were 2.18 in March, 3.02 in April and 3.59 in May. Simpson dominance index (C) were 0.23 in April, 0.34 in May and 0.44 in March.

**Table 1. Abundance of juvenile fish individuals in spring in Erdek Bay.**

| Species | March | April | May | Total | Ind.(%) |
|---|---|---|---|---|---|
| *A. hepsetus* | - | 3 | 1032 | 1035 | 28,3 |
| *L. aurata* | 505 | 407 | 93 | 1005 | 27,5 |
| *S.(Cr) ocellatus* | 58 | 194 | 318 | 570 | 15,6 |
| *A. boyeri* | 128 | 67 | 54 | 249 | 6,8 |
| *S. sprattus* | 7 | 59 | 68 | 134 | 3,66 |
| *S. pilchardus* | 3 | 64 | 49 | 116 | 3,17 |
| *L. saliens* | 12 | 75 | 9 | 96 | 2,62 |
| *S. thphle* | 12 | 16 | 30 | 58 | 1,58 |
| *N. ophidion* | 27 | 7 | 15 | 49 | 1,34 |
| *S. abaster* | 9 | 15 | 23 | 47 | 1,28 |
| *G. bucchichi* | 7 | 7 | 32 | 46 | 1,26 |
| *P. marmoratus* | - | 3 | 42 | 45 | 1,23 |
| *D. Sargus* | 6 | 3 | 17 | 26 | 0,71 |
| *G. curientatuus* | 1 | 4 | 17 | 22 | 0,6 |
| *D. puntazzo* | 4 | 15 | 3 | 22 | 0,6 |
| Others | 12 | 51 | 78 | 141 | 3,85 |
| **Total** | 791 | 990 | 1880 | 3661 | 100 |

## Discussion

In terms of families, the most dominants were *Atherinidae*and *Labridae* followed by *Mugilidae*. Guidetti & Bussotti (7) indicated that the Atherinids were the most dominant group in the western Mediterranean coastal zone. It was indicated by Francour (8) that *S(Cr.) ocellatus* was the abundant species in the seagrass beds of the Mediterranean Sea, and Costello (9) found out that the Labrids were present as abundant species in the algae regions and in 0-5 m depths in the northern European coastal zone. Total of 41 fish species included 8 pelagic and 33 demersal fish species.This result indicated that mostly demersal fish species inhabited in the Erdek Bay. Average H' value was above critical point. Margalef species richness (D) increased from March to May. This situation might be related with new juvenile fish species that appeared in spring associated with temperature, and they lived there until they join the main stock. According to the Shannon-Weaver diversity index, Pielou evenness index (J'), and Simpson dominance index (C), the juvenile fish community is most stable from point of numbers of species and individuals in April.

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