

FISH FAUNA COMPOSITION AND ABUNDANCE IN TWO DIFFERENT ESTUARINE HABITATS IN THE IONIAN SEA

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Abstract

Monthly changes of the estuarine fish fauna composition and abundance were investigated in two different habitats in the Ionian Sea. For each month, species richness was measured by the total number of species caught in each station, and the Shannon–Wiener diversity index was calculated. An ordination method (CA) was applied in order to examine the temporal presence of fishes in the studied ecosystems. Eutrophic conditions and type of vegetation influence the settlement and retention of fish in both stations.

Keywords: *Ionian Sea, Biodiversity, Coastal Systems, Population Dynamics*

Estuaries show high levels of habitat heterogeneity and support a large fish production due to the high nutrient levels in the bottom sediments and water column [1]. Estuarine ichthyofaunal assemblages have been extensively studied in many parts of the world [1,2], but the temporal distribution, abundance, seasonal diversity and the diversity indices of fish in Mediterranean estuarine systems is poorly known [3,4]. The aim of this study is to explore the monthly changes of the fish fauna composition and abundance in two different estuarine habitats in the Ionian Sea (Station I: Drepano in the Port of Igoumenitsa, Station II: Neohori in the Amvrakikos Gulf). Drepano is near the port of Igoumenitsa and has an open fetch in the sea. It is a part of Kalamas River estuarine ecosystem. The sea grass habitat of Drepano habitats comprises predominantly of *Zostera sp* providing a landscape of patchy seagrass amongst areas of bare sand. Amvrakikos Gulf is a shallow semi-enclosed embayment in the Ionian Sea. It is connected with the Ionian Sea through a narrow channel (width 800 m, depth 12 m). The seagrass habitat of Amvrakikos gulf comprises predominantly of dense *Posidonia oceanica* vegetation. Amvrakikos is one of the most eutrophic gulfs in Greece in contrast to Drepano which has very high water inflow. Fish species were collected in each habitat (station) on a monthly basis from July of 2008 to June of 2009 using a beach seine. Fish samples were preserved in 4% neutralized formalin solution and later identified to species level. For each month, species richness was measured by the total number of species caught in each station, and the Shannon–Wiener diversity index was calculated. In each station, the pattern of temporal changes in the structure of the overall fish community was explored by Correspondence Analysis (SPSS, Ver 17). In station I a total of 23.430 individuals were sampled, representing 39 species from 17 families. In Station II a total of 15.278 individuals were sampled, representing 26 species from 15 families. Species richness and diversity index varied significantly amongst habitats. Correspondence Analysis revealed a certain interaction between fish assemblage and seasonal changes in each station (Fig 1). In Station I in winter and spring the most dominant species belong to the families of Mugilidae, Sparidae and Labridae, in Summer the species of the Mulidae, Clupeidae, Atherinidae and Blenniidae family dominate the ecosystem while in Autumn the species of the families Gobidae and Engraulidae are highly present. In Station II in Winter and Autumn the dominant species belong to the families of Gobidae and Atherinidae, in Spring in the families of Mugilidae and Atherinidae while in summer the species of the families of Syngnathidae, Blenniidae, Sparidae and Cyprinodontidae are highly present. The highly eutrophic conditions and the dense foliage of the Amvrakikos Gulf are a limiting factor for the settlement and retention of fish in contrast to the oligotrophic conditions of Drepano.

References

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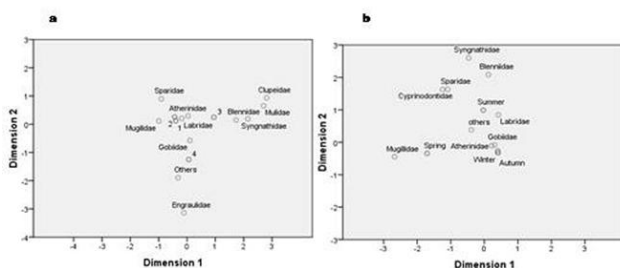


Fig. 1. Fish assemblage and seasonal changes ((1) Winter, (2) Spring, (3) Summer and (4) Autumn) in (a) Station I and (b) Station II