

ABUNDANCE OF ZOOBENTHIC EXOTIC SPECIES ON ROCKY REEFS IN THE SOUTHERN AEGEAN SEA

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Abstract

In order to provide information on the abundance of the zoobenthic exotic species on the rocky reefs in the southern Aegean Sea, samplings were carried out between August 2003 and May 2004. The examination of the 2294 macrozoobenthic specimens collected revealed the presence of ten exotic species among 211 species. The abundance and distributional details of these species are discussed.

Keywords : Aegean Sea, Eastern Mediterranean, Zoobenthos.

Introduction

The Aegean Sea, as part of the Mediterranean Sea, is characterized by numerous islands and islets. Its complicated geomorphology, including caves, reefs etc., creates a high habitat diversity, which leads to high species diversity [1]. The present research aimed to determine the abundance and distribution of the established exotic species on rocky reefs which are partially the most untouched and remote habitats in the southern Aegean Sea.

Materials and Methods

This research was carried out between August 2003 and May 2004, in the southern Aegean Sea by SCUBA diving. A total of 80 samples were taken, seasonally, from four depth levels and six stations (Figure 1). 400 cm² quadrates were sampled, including both sessile and motile species. All samples were sieved through 0.5 mm screens, labeled and preserved in 4% formalin. After the sorting process, the macrofauna was counted and identified at species level.

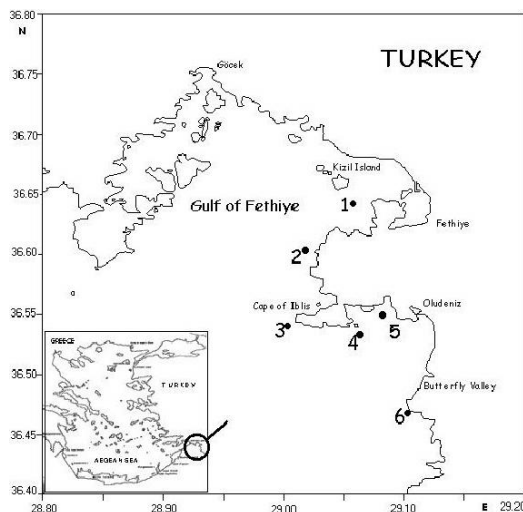


Fig. 1. Study area indicating sampling sites.

Results

The examination of the 2294 macrozoobenthic specimens collected revealed the presence of ten exotic species among 211 species (127 molluscs, 9 sponges, 59 crustaceans, 16 echinoderms) [2]. The most abundant (44.2%) and dominant taxon in terms of species richness (46.9%) was Gastropoda on the reefs. Among the total of 99 Gastropod species with an average abundance of 317 individuals/m², there were 5 exotic species with the average abundance of 34,25 ind./m², that comprised mainly by *Strombus persicus* (Table 1). The highest amphipod abundance (843,75 ind./m²) was found at the depth of 10 m, where there were dense *Cystoseira* canopies, and the abundance decreased with depth. Among 30 amphipod species, the exotic species, *Stenothoe gallensis* constituted 7,1 % of the amphipod abundance at 10m.

Discussion

The present study reports ten exotic species. These species are recognizing as established Lessepsien invaders that entered the Mediterranean Sea through the Suez Canal [3,4,5,6,7]. Among them, *Strombus persicus* was a keystone species that was common and dominant in all stations, seasons and depths. This species occurs in very dense numbers in the Eastern Mediterranean, where it is a major competitor for herbivorous species [8].

Tab. 1. The abundance of the exotic species at four depth levels on the rocky reefs.

TAXA	10 m	20 m	30 m	40 m
AMPHIPODA	843,75 ind/m ²	65 ind/m ²	18,75 ind/m ²	23,75 ind/m ²
<i>Stenothoe gallensis</i> Walker, 1904	60 ind/m ²	1 ind/m ²	-	-
DECAPODA	63,75 ind/m ²	38,75 ind/m ²	32,5 ind/m ²	22,5 ind/m ²
<i>Thalamita poissionii</i> (Audouin, 1826)	-	-	-	1 ind/m ²
GASTROPODA	267,5 ind/m ²	286,25 ind/m ²	517,5 ind/m ²	196,25 ind/m ²
<i>Cerithiopsis pulvis</i> (Issel, 1869)	-	3 ind/m ²	4 ind/m ²	4 ind/m ²
<i>Cerithium scabridum</i> Philippi, 1848	4 ind/m ²	-	-	-
<i>Ergalatax obscura</i> (Houart, 1996)	1 ind/m ²	-	1 ind/m ²	-
<i>Furcunculus fourrierii</i> (Audouin, 1826)	-	-	1 ind/m ²	-
<i>Strombus persicus</i> Swainson, 1821	71 ind/m ²	31 ind/m ²	13 ind/m ²	4 ind/m ²
BIVALVIA	35 ind/m ²	61,25 ind/m ²	47,5 ind/m ²	32,5 ind/m ²
<i>Malvifundus regala</i> (Forskål, 1775)	-	3 ind/m ²	1 ind/m ²	-
<i>Pincta radiata</i> (Leach, 1814)	6 ind/m ²	6 ind/m ²	3 ind/m ²	4 ind/m ²
ECHINODERMATA	87,5 ind/m ²	23,75 ind/m ²	8,75 ind/m ²	65 ind/m ²
<i>Synaptula reciprocans</i> (Forskål, 1775)	4 ind/m ²	4 ind/m ²	1 ind/m ²	-

Rocky reefs play an important role for migrant species by extending their distribution in the high sea by facilitating the larval dispersal and settlement. This is also relevant for exotic species. Thus, long-term approaches are required to monitor of the exotic species in proportion to local and endemic species and to document the displacement and replacement events. Acknowledgements - The present work was supported by the Research Fund of Istanbul University, Project No. T-321/03112003. The authors thank to Prof.Dr. Tuncer Kayağan, Prof.Dr. Henk K. Mienis, Assoc.Prof.Dr. Bilal Öztürk, Assist.Prof.Dr. Bülent Topaloğlu, Assist.Prof.Dr. Fevzi Kirkim, Assist.Prof.Dr. Murat Sezgin, Dr. Ayaka Amaha Öztürk and Mr. Doğan Çevikler.

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