SPATIAL DISTRIBUTION OF ZOOPLANKTON DURING SUMMER IN THE NORTH COAST OF SFAX (EASTERN MEDITERRANEAN SEA, TUNISIA)

A. Rekik [1], Z. Drira [1]*, W. Guermazi [1], J. Elloumi [1], S. Maalej [1] and H. Ayadi [1]

[1] Université de Sfax, Faculté des sciences de Sfax. Département des sciences de la vie. Unité de recherche UR/05ES05. Biodiversité et Ecosystèmes Aquatiques. - zaherdrira@yahoo.fr

Abstract

Copepods were the most abundant zooplankton on the North coast of Sfax, contributing to 61.29% of the total zooplankton. A total of 12 copepods families were identified in all stations, with an overwhelming abundance of Oithonidae (76.70% of copepod abundance), which were characterized by neritic r-strategy-type species dominated by *Oithona nana* (55.85% of the total copepod abundance).

Keywords: Zooplankton , Coastal Management, Copepoda

Introduction

The North Coast of Sfax is one of the main ports in the Gulf of Gabes. The coast has rich aquatic resources contributing about 65% of the national fish production in Tunisia [1]. Several findings have provided evidence that zooplankton such as copepods make a major contribution to optimal growth and fish survival. The distribution of copepod assemblages in Tunisian coastal waters has been studied in the Bay of Tunis [2], in the Tunis North Lagoon [3] and in the Gulf of Gabes [4].

Materials and methods

2.1. Sampling

Sampling was carried out in July 2007. Samples were collected from forty five stations located between 0.5 and 4.5 m along the North Coast of Sfax.

2.2. Biological parameters

Zooplankton was sampled by a cylindro-conical net. Zooplankton samples were preserved in 4% borax buffered formaldehyde solution. They were stored with pink Bengal to improve their identification and also to facilitate dissection of copepods. The enumeration was performed under a vertically mounted deep-focus dissecting microscope (Olympus TL 2).

2.3. Statistical analysis

The potential relationships between variables were tested by Pearson's correlation coefficient.

Results and discussion

Zooplankton assemblages in the North Coast of Sfax were dominated by copepods with a total of 21 species, accounting for 61.29% of the total zooplankton abundance (Fig. 1A). The spatial distribution of total zooplankton illustrates a high copepod density (61.39×10^4 individuals m^{-3}) in station 13 associated with Oithonidae aggregations. We observed great numbers of nauplii ranged between 0 and 38.86 x 10^4 individuals. m^{-3}. Copepodid stage ranged from 0 to 15.89×10^4 individuals m^{-3} and adult stage varied between 0 and 10^5 individuals m^{-3}. Cyclopoids contributed the largest fraction (76.70%) followed by harpacticoids (11.91%) calanoids (11.10%) and Poecilostomatoids (0.29%) (Fig. 1C).

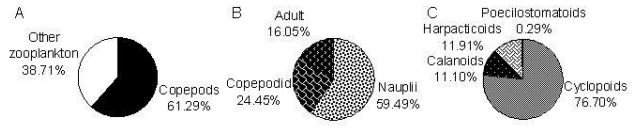

Fig. 1. Relative contribution of zooplankton abundance (A), copepods demographic class abundance (B) and copepods groups' abundance (C) in sampled stations.

A total of 12 copepod families were found in all stations, Oithonidae dominating the total abundance of copepods (76.70%), among which *Oithona nana* was the most abundant species representing 55.85% of the total copepod abundance. Species translated into a highly significant correlation between copepod and *Oithona nana* abundances ($r = 0.712$, $n = 45$, $p < 0.05$) and between total zooplankton and *Oithona nana* abundances ($r = 0.604$, $n = 45$, $p < 0.05$). The other zooplankton contributed only a small proportion of the total zooplankton (38.71%).

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