PLANKTONIC PROTOZOAN ASSEMBLAGES INHABITING THE EGYPTIAN MEDITERRANEAN WATERS

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Abstract
Abundance and species composition of planktonic protozoan assemblages were investigated in the western part of the Egyptian Mediterranean waters during 2008-2010. Planktonic protozoans constituted about 5.4% of the total zooplankton count. 123 protozoan species were identified during the present study, out of them 91 tintinnid species, 17 radiolarians and 15 Foraminifera. Planktonic protozoans were more abundant during winter. Fifty seven protozoan species recorded in the Egyptian Mediterranean waters for the first time.

Keywords: Zooplankton , South-Eastern Mediterranean, Alien species

Planktonic protozoans play a major role in carrying organic matter and energy between the microbial and the metazoan communities and constitute an important link in marine planktonic food webs. Few comprehensive studies have been made on planktonic protozoan assemblages in the Egyptian Mediterranean waters despite their ecological importance in the marine food webs as the major consumers of phytoplankton. Previous works on zooplankton in the area were mostly devoted to the study of copepods, the major zooplankton component. Planktonic protozoan assemblages are considered of secondary importance in terms of numerical abundance and hence were not treated in details. Information on planktonic protozoans is restricted to the coastal waters This research reveals data on the distribution, abundance and community composition of planktonic protozoan assemblages inhabiting the western part of the Egyptian Mediterranean Coast. The geographical distributions of the recorded species and their ecological affinities are also included to follow up the origin of the new record species in the study area. The study area lies between longitudes 25°30'E and 28°30'E and extends northward to latitude 32°30'N. Quantitative and qualitative studies on the planktonic protozoan assemblages in the study area were perform ed during four seasons namely; spring (April, 2008), summer (August, 2008) and winter (February, 2009 and 2010) using the Egyptian R/V Salsabeel. The samples were collected by vertical hauls (from bottom to the surface) using standard plankton net of 55µm mesh size. Samples were collected from six longitudinal sections perpendicular to the coast. Each section comprised 3 stations covering the coastal zone (depth ≤50m), the shelf zone (50-100m) and offshore zone (depth ≥ 200m). A total of 123 protozoan species belong to 53 genera, 29 Families and 5 orders were identified. Tintinnida was the highest abundant (67.1% of the total protozoan counts, average 30.4 ind.m^{-3}) and diversified (91 species) protozoan group (Fig. 1). Tintinnidae, Undellidae and Dictyocystidae were the highest abundant tintinnid families in the study area (constituted about 25.4%, 21.4% and 13.6% of the total tintinnid counts respectively). *Undella hyalina*, *Rhabdonella spiralis* and *Eutintinnus fraknoi* were the most common tintinnid species. Foraminifera ranked as the second abundant protozoan group forming 26% (average 11.8 ind.m^{-3}) of the total protozoan counts. They represented by 15 species belong to 11 genera and 10 families dominated by family Globigerinidae (54.85% of the total Foraminifera counts). *Globigerina bulloides* was the highest abundant Foraminifera species (52.6% of the total Foraminifera counts).*Globorotalia truncatyloides* and *Globigerinoides conglobatus* were rather frequent. Radiolarians constituted about 6.9% (average 3.1 ind.m^{-3}) of the total protozoan counts. Seventeen radiolarian species belong to 14 genera and 8 families were recorded. *Spongotrochus brevispinus* was the most common radiolarian species (44.6% of the total radiolarian counts). The magnitude of the Protozoa community composition gave raise a total of 123 species. Among them, 91 tintinnied species dominated by *Undella hyaline*, *Rhabdonella spiralis* and *Eutintinnus fraknoi*, 15 species of Foraminifera dominated by *Globigrina bulloides*, *Globigrina truncatyloides* and *Globorotaliaconglobata* and 17 radiolarians dominated by *Spongotrochus brevispinus*. Dowidar and El-Maghraby (1970) recorded 99 tintinnids species, 15 radiolarians and only one Foraminifera species (*Globigrina bulloides*) at Alexandria shores. Abdel-Aziz and Aboul-Ezz (2003) were recorded 37 tintinnids species and 18 radiolarians along the Egyptian Mediterranean Coast. Zakaria (2006) recorded 53 protozoan species in the Alexandria waters. Fifty seven new recorded species of planktonic protozoan were found in the Egyptian Mediterranean waters. Of them 10 species recorded in the Mediterranean Sea for the first time. Among the new recorded species about 39 tintinnid species, 6 Foraminifera, 12 radiolarians. The percentage of origin of the recorded species revealed that, 60.7% of them were previously recorded in the Atlantic Ocean, 46.2% in Indian Ocean, 75.2% in Pacific Ocean and 44.4% were recorded in the Red Sea.

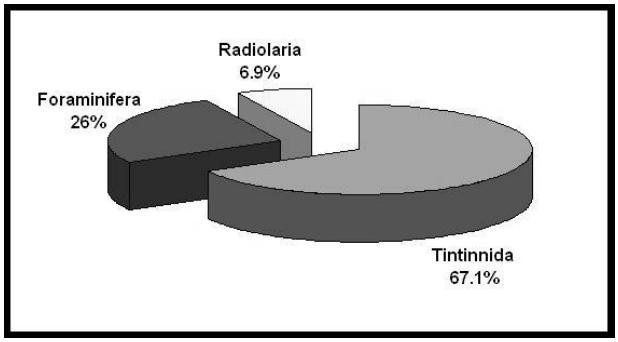

Fig. 1. The percentage frequencies (%) of the protozoan groups recorded in the Egyptian Mediterranean waters.

References
1 - Abdel-Aziz N. E., Aboul-Ezz S. M. (2003) Zooplankton community of the Egyptian Mediterranean coast. Egy. J. Aquat. Biol. & Fish., 7(4): 91-10.
2 - Dowidar N. M., El-Maghraby A. M. (1970) The neritic zooplankton of the southeastern Mediterranean at Alexandria. II. Consideration of the total zooplankton species community. Bull. Nat. Inst. Oceano. and Fish., Egy., 1: 275-303.
3 - Zakaria H. Y. (2006) The zooplankton community in the Egyptian Mediterranean waters: A Review. Acta Adriat., 47(2): 195-206.