

SEASONAL VARIABILITY OF THE COPEPODS *ACARTIA CLAUSI*, *OITHONA NANA*, *CENTROPAGES TYPICUS* AND *TEMORA STYLIFERA*, IN THE SARONIC GULF

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Abstract

This study presents the seasonal variability of the copepods *A. clausi*, *O. nana*, *C. typicus* and *T. stylifera* in the Saronic Gulf (South Aegean Sea), from November 2002 to June 2004, in relation to salinity, temperature, day duration (minutes) and chlorophyll-a concentration

Keywords: *Copepoda*, *Plankton*, *Aegean Sea*

Introduction

Copepods such as *A. clausi*, *O. nana*, *C. typicus* and *T. stylifera* are among the most important animals of Saronic Gulf mesozooplankton (important fishing area) and play a substantial role in the transfer of energy and organic materials between primary producers and animals of higher trophic levels (planktivorous fish, carnivorous invertebrates). Spatial-temporal studies of copepod abundance are fundamental for assessing their contribution to production and energy flow.

Materials and methods

Samples were collected with a WP-2 net (200 µm mesh size), during 17 monthly cruises, from November 2002 to June 2004, at a station of the Saronic Gulf (N.37.79, E.23.70), by vertical hauls in the 0-50 m layer. The relationship between copepod variability and environmental factors was tested by linear regression analysis (Statgraphics) and the seasonal distribution of copepods was determined in relation to environmental parameters (Primer).

Results and Discussion

Acartia clausi and *Oithona nana* present the same seasonal distribution pattern, as both of them have maximum abundances during the intermediate season and are directly related to chlorophyll-a concentration and inversely to temperature. *Centropages typicus* also presents maximum abundances during the intermediate season, but is associated with increased salinity and increased day duration (minutes), rather than temperature and chlorophyll-a. *Temora stylifera*, compared to the other three species, follows a different seasonal distribution pattern. It reaches maximum abundances during the warm period and temperature is the only factor that is statistically significant for its abundance (Figure 1 and Table 1). The distribution patterns, are in accordance with previous studies conducted in the same area [1],[2],[3],[4]. In conclusion, *A. clausi*, *O. nana* and *C. typicus* are abundant during the spring season, followed by *T. stylifera*, during the warm period (summer). This balanced and continuous seasonal succession of these important species during the study period suggests that the planktonic ecosystem in this neritic zone is "constant".

Tab. 1. Linear relations between species abundance and environmental factors

Species (y)	Factor (x)	p-value	Regression equation	R ²	r
<i>A. clausi</i>	Temp.	0.068	y=220.32 - 10.12x	20.54	-0.45
	Chl-a	0.069	y=-13.58 + 118.99x	18.04	0.43
<i>O. nana</i>	Temp.	0.041	y=94.76 - 4.29x	24.94	-0.50
	Chl-a	0.004	y=-13.47 + 71.09x	43.41	0.66
<i>C. typicus</i>	Sal	0.011	y=-1923.76 + 50.19x	35.81	0.60
	Day dur. (min.)	0.001	y=-92.09 + 0.15x	53.13	0.73
<i>T. stylifera</i>	Temp.	0.002	y=-228.55 + 15.73x	49.07	0.70

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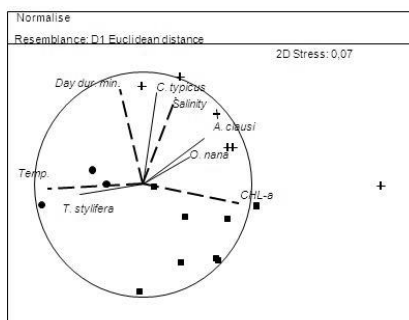


Fig. 1. Seasonal distribution of species (Seasons: ♦ Cold, + Intermediate, • Warm). Monthly samples were grouped into three seasons, according to all the environmental factors studied.