

## THE PHYTOPLANKTON-ZOOPLANKTON RELATIONSHIP IN THE CENTRAL ADRIATIC

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*Les résultats de recherches préliminaires ont montré que l'alimentation de quelques espèces dominantes parmi les Copépodes dépend entièrement de la structure de la communauté phytoplanctonique du milieu.*

In this study it was tried to examine the relation between phytoplankton and copepods, the most dominant group of zooplankton. Investigations were carried out in order to establish the influence of seasonal changes of qualitative composition and density of phytoplankton on the nutrition of dominant species of copepods. The material was collected in the channel region and the open sea of the Central Adriatic in December 1974. These investigations had to complete studies of the same problem which were carried out in closed area of the Kaštela bay, in 1974, also. Preliminary results showed that dominant copepods nutrition was mainly determined by seasonal oscillations of the phytoplankton composition in the bay.

Our investigations carried out in the channel area - Pelegrin station, and the open sea - Stončica station, confirm this results. Analyses of the guts contents of dominant copepods showed that their nutrition completely depends on phytoplankton composition in the sea. Even the quantitative relation between different phytoplankton groups in guts content was almost the same as in the sea water. For example, in December 1974 more than 95 % of the total phytoplankton population was diatom species *Nitzschia seriata*, what is not common otherwise for these two areas. Long term investigations of qualitative and quantitative composition of phytoplankton on the Pelegrin and Stončica stations, show that the participation of diatom species *Nitzschia seriata* is between 10 and 20 % of the total phytoplankton community, and very often even less than that. Exceptionally, in November and December 1974, and in January 1975, these values were extremely high, probably due to strong influence of coastal waters. That caused changes of the usual structure of phytoplankton community (Tereza Pucher-Petković unpublished data).

Such unexpected situation in this area was extraordinarily favourable for our investigations, because it completely confirmed our earlier results. Unusual relations in the environment, strongly influenced the copepods nutrition. Diatom species *Nitzschia seriata* was the biggest part of the guts contents, mainly in the chains of 2, 3, 4, and 6 cells, with maximal length of 278 microns. The same as in the environment, coccolithophorids took part in the nutrition in smaller percentage. The other phytoplankton species were found in much smaller quantities.

The guts contents of the dominant copepods *Temora stylifera*, *Clausocalanus jobei*, *Centropages typicus*, *Clausocalanus furcatus*, *Ctenocalanus vanus*, *Acartia clausi* and *Mecynocera clausi* were analysed.

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The composition of phytoplankton  
in the sea

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\**Coscinodiscus* sp.  
*Dactyliosolen mediterraneus*  
*Leptocylindrus danicus*  
 \**Guinardia blavyana*  
*Rhizosolenia delicatula*  
*Rhizosolenia stolterfothii*  
*Rhizosolenia styliiformis*  
 \**Rhizosolenia alata* f. *gracillima*  
 \**Chaetoceros lorenzianus*  
*Chaetoceros* sp.  
 \**Thalassiothrix frauenfeldii*  
 \**Nitzschia seriata*  
*Nitzschia closterium*  
*Prorocentrum micans*  
*Amphidinium acutissimum*  
*Amphidinium acutum*  
*Amphidinium conus*  
*Gymnodinium agiliforme*  
 \**Gymnodinium grammaticum*  
 \**Gymnodinium paulseni*  
 \**Gymnodinium* sp.  
*Gyrodinium crassum*  
*Gyrodinium pingue*  
*Ceratium fusus* var. *seta*  
*Syracosphaera pulchra*  
 \**Coccolithophoridae* spp.  
*Microflagellatae*

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The composition of phytoplankton  
in copepods gut contents

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P E L E G R I N

\**Coscinodiscus* sp.  
 \**Guinardia blavyana*  
 \**Rhizosolenia lata* f. *gracillima*  
 \**Chaetoceros lorenzianus*  
 \**Thalassiothrix frauenfeldii*  
*Fragillaria* sp.  
 \**Nitzschia seriata*  
*Amphidinium curvatum*  
 \**Gymnodinium grammaticum*  
 \**Gymnodinium paulseni*  
*Gymnodinium* sp.  
 \**Coccolithophoridae* spp.

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\**Coscinodiscus* sp.  
*Dactyliosolen mediterraneus*  
*Rhizosolenia delicatula*  
*Rhizosolenia stolterfothii*  
*Rhizosolenia alata*  
*Rhizosolenia alata* f. *gracillima*  
*Chaetoceros atlanticus* var. *neapolitana*  
*Chaetoceros affinis*  
*Chaetoceros diversus*  
*Chaetoceros* sp.  
*Hemiaulus hauckii*  
 \**Thalassiothrix mediterranea*  
 \**Thalassiothrix frauenfeldii*  
*Asterionella japonica*  
 \**Nitzschia seriata*  
*Nitzschia tenuirostris*  
*Pennatae* spp.  
*Amphidinium lanceolatum*  
*Gymnodinium biconicum*  
*Ceratium fusus* var. *seta*  
*Syracosphaera pulchra*  
*Calciosolenia grantii*  
*Rhabdosphaera tignifer*  
 \**Coccolithophoridae* spp.  
*Microflagellatae*

S T O N Ć I C A

\**Coscinodiscus* sp.  
*Chaetoceros lorenzianus*  
 \**Thalassiothrix mediterranea*  
 \**Thalassiothrix frauenfeldii*  
 \**Nitzschia seriata*  
*Prorocentrum micans*  
*Gymnodinium grammaticum*  
*Gymnodinium* sp.  
 \**Coccolithophoridae* sp.

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