

International Council for the Exploration of the Sea

REPORT OF ACTIVITIES
BIOLOGICAL OCEANOGRAPHY COMMITTEE

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Zooplankton Research (Daro, H. H.)

This research is a part of a general research program on the functioning of marine ecosystems. Comparisons are made among different ecosystems of the Channel and the North Sea (English and Belgian coast, southern Bight, Northern North Sea). Special attention is given to the role of grazing in these systems. Shipboard experiments were carried out and we found that the deeper and more stratified the water column is, the more important the role of zooplankton by its grazing activity is. The vertical distribution and day/night vertical migration of zooplankton seems to also play a role in the grazing pressure on the phytoplankton. Practical applications of this research are found in our study on the transfer of heavy metals and PCB's through the first levels of the food chain: in shallow water contaminants are more frequently attached to the particulate matter (organic or net) where phytoplankton is the most important carrier. In deep ecosystems phytoplankton pass through zooplankton and contaminants will reach the bottom in the form of fecal material.

Studies of the geographical distribution of coastal and pelagic fish larvae and eggs as well as their feeding behaviour and diet (by stomach analyses) are also a part of the zooplankton section.

Copepod Population Dynamics (Bergmans, M.)

Monitoring of the population dynamics of a guild of epibenthic copepods (Tisbe) has been carried out in the field and is being related to laboratory studies of the life cycle. Special attention is given to the following aspects: (i) knowledge of the reproduction performance in an

"ecological vacuum" (yielding null hypotheses on growth rates and age distribution in the field by excluding competition and predation effects); (ii) the possibility of adaptive fine-tuning of the life cycle (including effects on "r" and the "net reproductive rate") as a function of demographic conditions, i.e. in expanding, stable and declining populations.

Non-Living Particular Organic Matter (Pissierssens, P.)

Little is known about the role of Non-Living Particular Organic Matter (also called detritus) in the Food Mass of marine copepods. Therefore, our research is concentrated on three aspects:

- 1) Study of the NLPOM distribution in the Belgian Coastal Zone (Time, Space).
- 2) Estimation of the contribution of the NLPOM to the total Food Mass of marine copepods.
- 3) Study of the origin and composition of the NLPOM.

Primary Production (Joiris, C. and A. Bertels)

- 1) Incubation under fluctuating light conditions, in order to obtain a better evaluation of the real in situ net production.
- 2) Determination of phytoplanktonic respiration; in order to determine its relative role in total planktonic respiration.

Ecotoxicological Marine Research (Joiris, C., K. Delbeke and W. Overloop)

- 1) Estimation of transfer and biomagnification mechanisms of organochlorine residues and mercury in marine ecosystems (TPM, zooplankton, fish, birds, sediments) and integrating the results on contamination to biological activities (C. cyclus).
- 2) Comparison of the contamination level of coastal ecosystem with the Atlantic ecosystem.
- 3) Estimation of the evolution of the mercury contamination by analyses of seabird feathers.

Studies are also underway by M. Bossicart on The influence of temperature on the biological compartments in the sea, and by C. Joiris on The quantitative distribution of seabirds in relation to oceanological and ecological parameters.