

BIOLOGICAL OCEANOGRAPHY COMMITTEE

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by

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BELGIUM

(C. Heip & R. De Clerck)

Several biological oceanography cruises were organised with the R.V. Belgica in 1986 in the North Sea and the Channel. The primary aim of this, the only Belgian vessel, is public service (monitoring and fisheries research) but some time is allocated to fundamental research in which primarily research teams from the universities are involved.

Studies of macro- and meiobenthos by the State University of Gent were continued. These studies aim at an understanding of the structure and the trophic role (mainly production) of the benthos in the area, the study of long-term fluctuations and the impact of pollution on these structures and processes. These studies were extended to include gobies and juvenile fish and their interactions with the infauna and the hyperbenthos. R.V. Belgica also participated in the North Sea Benthos Survey, covering about twenty stations in the Southern Bight.

The University of Leuven participated in several programmes. Studies were done on hormonal regulation of metabolism, reproduction and migration of fish. Preliminary work in collaboration with the Biologische Anstalt Helgoland was done on the German vessel 'Friedrich Heincke' in October-November 1986 on the recruitment of leptocephali of Anquilla anquilla. Samples were taken on the European continental slope (Bay of Biscayne) in order to evaluate the decrease of migrating leptocephali.

The Flemish Free University of Brussels organized a large cruise covering the entire North Sea in June 1986 in which the influence of vertical and horizontal structuration of the water masses on planktonic production was studied. Scientists of other universities also participated in this cruise. Other programmes include the transport and accumulation of stable pollutants (together with the University of Liege) and studies of fluxes between sediments and the water column and the relationship with biochemical processes in the sediments.

The French Free University of Brussels continued its studies on the effects of eutrophication on phytoplankton dynamics (Phaeocystis-blooms) and bacterial activity in the benthos after sedimentation of phytoplanktonic material.

At the University of Liege a programme was continued on elaboration of an ecotoxicological model of chitin and the production (as well from a biochemical as from an ecological point of view) and degradation and early diagenesis (by microbiological activity) of chitonoproteic complexes in the marine environment. In another programme the impact of microorganisms on the alteration of the physical properties of sediments was studied. Processes such as the microbial precipitation and neogenesis of carbonates, the concentration of traces in skeletal tests in connection with sulphate reduction etc. were studied.

CANADA

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The following is a summary of some of the relevant activities in Canada; for further details, please consult the individuals named in each section.

DEPARTMENT OF FISHERIES AND OCEANS

Marine Ecology Laboratory (MEL), Bedford Institute of Oceanography,
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(K.H. Mann, Director)

Operations were carried out on the Scotian Shelf (three cruises), in the Gulf of St. Lawrence, on the Newfoundland Grand Banks, in Hudson's Bay and Hudson's Strait, the eastern Arctic (from ice camps), and in the Gulf Stream. These cruises have continued to add to the Laboratory's archives of comparative data on primary and secondary production processes. Strong emphasis was placed on the interaction between biological and physical processes.

An analysis of water-column data from Georges Bank revealed a strong temperature-NO₃-correlation. This correlation has been used to calculate a nitrate flux onto Georges Bank using the temperature and velocity signals from current meters moored at the front between the well-mixed and stratified waters at the edge of the Bank in summer. This computed flux was shown to be consistent with levels of primary productivity found in the frontal region. In addition, vertical profiles of turbulent eddy dissipation were taken at various locations on Georges Bank, and these are being analysed so that vertical fluxes of nutrients can be calculated.

During spring studies in Resolute (NWT), further experiments on the relationship between tidal intensity and organism distribution were carried out. Six diel studies, each about 32-h long, were timed so as to compare the effects of springs and neaps on the pelagic ecosystem just beneath the ice. While tidal energy probably was important, the most striking result was the strong migratory signal shown by *Pseudocalanus* on each sampling date regardless of the environmental conditions. On several dates phytoplankton was abundant, apparently advected into the area from open water a few nautical miles away in Barrow Strait; but on other occasions it was as low as in earlier years. Physical measurements of near-ice boundary conditions suggested that exudation by ice algae could affect drag. Epontic algae were also found to have high nitrate-reductase capabilities