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RV *Dana* (Danish Institute for Fisheries and Marine Research)

Cruise 1/95

REPORT

10-27 January 1995

Personnel

K Richardson M	DIFMR	(in charge 10-17 January)
S Jonsdottir	DIFMR	
A Christoffersen	DIFMR	
L Moller	DIFMR	
T Nielsen	DIFMR	
M Heath	SOAFD	(in charge 17-27 January)
R Mitchell	SOAFD	
J Dunn	SOAFD	
J Graham	SOAFD	
H Madden	SOAFD	
A Ingvarsdottir	U Aberdeen	
D Beare	U Strathclyde	
P Bloher	Seabirds at Sea Team	

Objectives

1. To determine the distribution, development and physiological states of *Calanus finmarchicus* in relation to the oceanographic features of the northern North Sea/Faroe Bank, and the southern Norwegian Sea.
2. To collect measurements of primary production and copepod egg production in the northern North Sea.

The cruise formed part of the European Union MAST II project ICOS.

Narrative

Dana arrived in Aberdeen at 0900 hours on 13 January, having been delayed leaving Hirtshals due to bad weather. Equipment were loaded that morning and the vessel sailed the same day. The vessel commenced sampling along a northwesterly track from Fair Isle as shown in Figure 1. At all stations, CTD, *in situ* particle counts and zooplankton samples from 50 m depth intervals to a maximum depth of 1050 m were collected with the ARIES system. Specimens of *Calanus finmarchicus* were sorted from the samples, development stage identified, and preserved in liquid nitrogen for subsequent assessment of lipid composition. At selected stations, live material was collected for copepod egg production and respiration, and primary production measurements. Sampling of the first 10 stations was completed on 16 January despite heavy weather, and the vessel then proceeded to Torshavn, Faroe Islands, where it remained until 19 January on account of extreme weather forecasts. The remainder of the programme was completed between 19 and 26 January in mainly fine weather conditions. The vessel returned to Aberdeen on 26 January.

Results

Data from the CTD systems aboard the vessel showed the expected hydrographic features of the region. Surface water temperatures in the Faroe Shetland Channel were between 8°C and 9°C, whilst shelf temperatures were somewhat higher at 10°C. The Norwegian Sea Deep Water Mass (NSDW) below 500 m in the Channel had a characteristic temperature of -0.4°C. The deep water front across the Wyville-Thomson Ridge was extremely marked, and no overflow of NSDW across the Ridge into the Atlantic was observed.

Overwintering stage 5 specimens of *C. finmarchicus* were caught throughout the NSDW below 500 m in the Faroe Shetland Channel. In contrast to the earlier cruise in December 1994, adult males and some female *C. finmarchicus* were found in the surface waters (<400 m) of the Faroe-Shetland Channel. However, no egg production was detected. Small numbers of stage V and VI *C. finmarchicus* were found on the European shelf, but very few were present in the slope current region. The front across the Wyville-Thomson Ridge was also a marked zoogeographic boundary, with significantly different zooplankton communities on either side. To the north, the community was dominated by *C. finmarchicus*, whilst to the south, small copepod species were predominant.

The modifications carried out to the ARIES frames following the cruise in December 1994 (*Dana* 13/94) proved extremely successful, and the systems performed very well throughout the cruise. A total of 54 ARIES deployments were carried out at 50 stations during the cruise, including 2 deployments for flowmeter calibration. CTD, *in situ* particle counts and size spectra, plankton samples and water samples were collected on each deployment. In all, 1356 plankton samples were saved, together with an equivalent number of water samples for nutrient analysis. Copepod productivity measurements conducted at 19 sites.

M Heath
14 February 1995

Figure 1. Dana 1/95 survey stations

