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

Cruise 12/94

REPORT

1-14 December 1994

Personnel

M St John	DIFMR	(in charge)
S Jonsdottir	DIFMR	
A Christoffersen	DIFMR	
M Carlsen	DIFMR	
M Heath	SOAFD	
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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 0100 hours on 3 December. Equipment were loaded that morning and the vessel sailed the same day. After flowmeter calibrations southeast of Orkney, the vessel commenced sampling along a northeasterly track as shown in Figure 1. At all stations, CTD, *in situ* particle counts and zooplankton samples from 50 m depth intervals 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. Operations were halted throughout 7 December due to severe weather conditions. The vessel returned to Aberdeen to unload SOAFD equipment at 0800 hours on 12 December.

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 11°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. Few animals were found in the surface waters (<400 m). However, some adult females were caught in the shelf waters around Fair Isle, although no egg production was detected. 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 especially *Acartia* sp. were predominant.

The redesigned ARIES frames performed well in use. However, the extreme sea conditions experienced during the cruise exposed some structural design features which require alteration before the next part of the survey in January 1995 (*Dana* cruise 1/95). Hence, the ARIES systems were offloaded in Aberdeen at the end of the cruise rather than being retained aboard as planned. One of the features to be altered is the mounting for the particle counter system. During deployment 36 of the cruise, which took place in a large following sea, the ARIES was forced under the stern of the vessel and the particle counter was sheared off the frame. Following this, it was decided not to bring the spare particle counter into service until alternative mounting arrangements could be made.

M Heath
14 February 1995

Dana 12/94 sampling stations

