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

Cruise 4/95

## REPORT

21-31 March 1995

### Personnel

K Richardson	DIFMR (in charge)
S Jonsdottir	DIFMR
A Christoffersen	DIFMR
P Finn	DIFMR
M Busse	DIFMR
M Heath	SOAFD
R Mitchell	SOAFD
J Dunn	SOAFD
S Hay	SOAFD
J Hunter	SOAFD
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A Ingvarsdottir	University of Aberdeen
D Beare	University of 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 during the early hours of 23 March, and sailed later the same day with SOAFD equipment and personnel. 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 1000 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. Progress was hampered by continual gale force northerly winds through the survey, leading

to a reduction in the planned scope of the cruise, and a rescheduling of the unloading port and date to enable extended sampling whilst still allowing the vessel to return to Hirtshals for 31 March. SOAFD personnel and equipment were unloaded on the evening of 29 March in Lerwick, rather than at midday in Aberdeen.

## Result

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 6 and 8°C, whilst shelf temperatures were somewhat higher at 9-10°C. The Norwegian Sea Deep Water Mass (NSDW) below 500 m in the Channel had a characteristic temperature of -0.4°C.

Overwintering Stage 5 specimens of *Calanus finmarchicus* were caught throughout the NSDW below 500 m in the Faroe Shetland Channel. However, in contrast to the earlier cruises in December 1994 and January 1995, there was a marked depth stratification of sizes and stages. Larger, later stage animals were found at shallower depths. On the shelf west of Shetland and in the upper layers of the Faroe-Shetland Channel, adult males and some female *Calanus finmarchicus* were found, but little egg production was occurring. In contrast, significant egg production was detected in shelf waters on the Faroe Plateau and in the northern North Sea, northeast of Shetland. In general, *Calanus finmarchicus* was found at progressively shallower depth with distance along the continental slope from west of Shetland into the northern end of the Norwegian Trench, suggesting an onshelf migration with downstream distance in the shelf edge current.

A total of 30 ARIES deployments were carried out during the cruise, including deployments for flowmeter calibration. CTD, *in-situ* particle counts and size spectra, plankton samples and water samples were collected on each deployment.

M Heath  
24 April 1995

# Station plan - Dana 04/95

