

R1/12

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FRV *Scotia*

Cruise 6/90

REPORT

6-25 June 1990

Personnel

R S Bailey	PSO
P Copland	HSO
R Payne	HSO (18-25 June)
G Slessor	HSO (6-18 June)
M A Bell (Ms)	SO
I Gibb	SO
M Bailey	Contract staff (6-18 June)
L Bate (Miss)	MSc student (Bangor University)
M Tasker	NCC (6-10 June)
P Wright	Contract staff (6-18 June)

Objectives

1. To investigate the vertical and horizontal structure of the fish community in an area of the northwestern North Sea around Orkney and Shetland by echointegration and trawling.
2. To investigate the predator-prey relationships within the fish community as part of an investigation of the factors controlling recruitment to the sandeel and gadoid populations in the area.
3. To carry out a hydrographic survey of the area.
4. To train the contract staff in sea-going procedures.
5. To carry out seabird observations.
6. To investigate the parasites of 0-group sandeels.
7. To collect samples for radio-caesium monitoring.

Narrative

Scotia sailed from Aberdeen at 1200 on 6 June and made for Inganess Bay, Orkney to carry out an echointegrator calibration, which was completed by 0600 on 7 June. Because of a gale and heavy swell, *Scotia* proceeded to North Sound, Orkney where three hauls were made with the International Young Gadoid Pelagic Trawl (IYGPT). The acoustic survey south of Shetland started at 1000 on 8 June and continued until 2300 on 9 June. The first line of hydrographic stations began east of Shetland at 0600 on 10 June and continued until 0430 on 11 June with a break to allow M Tasker to disembark by pilot boat to Lerwick.

The acoustic survey and pelagic trawling continued until 14 June, when the second line of hydrographic stations was carried out. The period up to the half landing was spent using the GOV trawl to sample demersal fish. *Scotia* berthed in Lerwick at 0900 on 18 June, when exchange of personnel took place.

Scotia sailed at 0900 on 19 June and proceeded to Hopewick Bay, Shetland to carry out an echointegrator calibration. With the heavy swell and presence of fish traces the attempt was abandoned, however. A line of Methot net and hydrographic stations was worked from Sumburgh Head to Orkney and a series of lines of Methot net stations, with occasional trawl hauls, was worked across the path of the Fair Isle current until 0400 on 23 June. An intensive echointegrator survey was then carried out immediately to the west of Fair Isle where dense concentrations of sandeels had been recorded in midwater earlier in the cruise. Echointegration and midwater trawl hauls continued until 2200 on 24 June when a course was set for Smith Bank in the Moray Firth to catch sandeels for use in the aquarium. This attempt was unsuccessful and the ship made directly for Aberdeen, docking at 1915 on 25 June.

On 26 June a meeting was held on board to discuss the cause of gear damage and shooting and hauling delays that had been experienced during the cruise. Possible causes were identified as the use of the divided net drum, the working procedures on *Scotia* and, in the case of the GOV trawl, the requirement to trawl in areas of hard ground.

Results

1. Echointegration and fish sampling

The 38 and 120 kHz echosounders with the echointegrator were run continuously when the ship was underway throughout the cruise. The area covered is that within the box in Figure 1.

The following trawl hauls were carried out:

IYGPT (PT154) - 24 hauls (see Fig. 2). The most abundant species in the catches (number of hauls present and largest catch in brackets) were 0-group sandeels (9:2,200),

whiting (14:380), Norway pout (6:550), haddock (12:80), crystal gobies (6:31) and gurnards (6:22), with smaller numbers of a further 11 species. In hauls near Fair Isle, large numbers of adult sandeels were also caught.

Large pelagic trawl (PT160) - 10 hauls (see Fig. 3). The most abundant species in the catches were whiting (9:3,750) and herring (5:510), with very small catches of 10 other species.

GOV trawl (BT137) - 11 hauls (four with severely damaged net) (see Fig. 3). The most abundant species were whiting (7:5,100), Norway pout (6:3,600), haddock (7:340), common dab (5:770), lemon sole (7:370), herring (6:1,370) and poor cod (3:470) with smaller numbers of 24 other species.

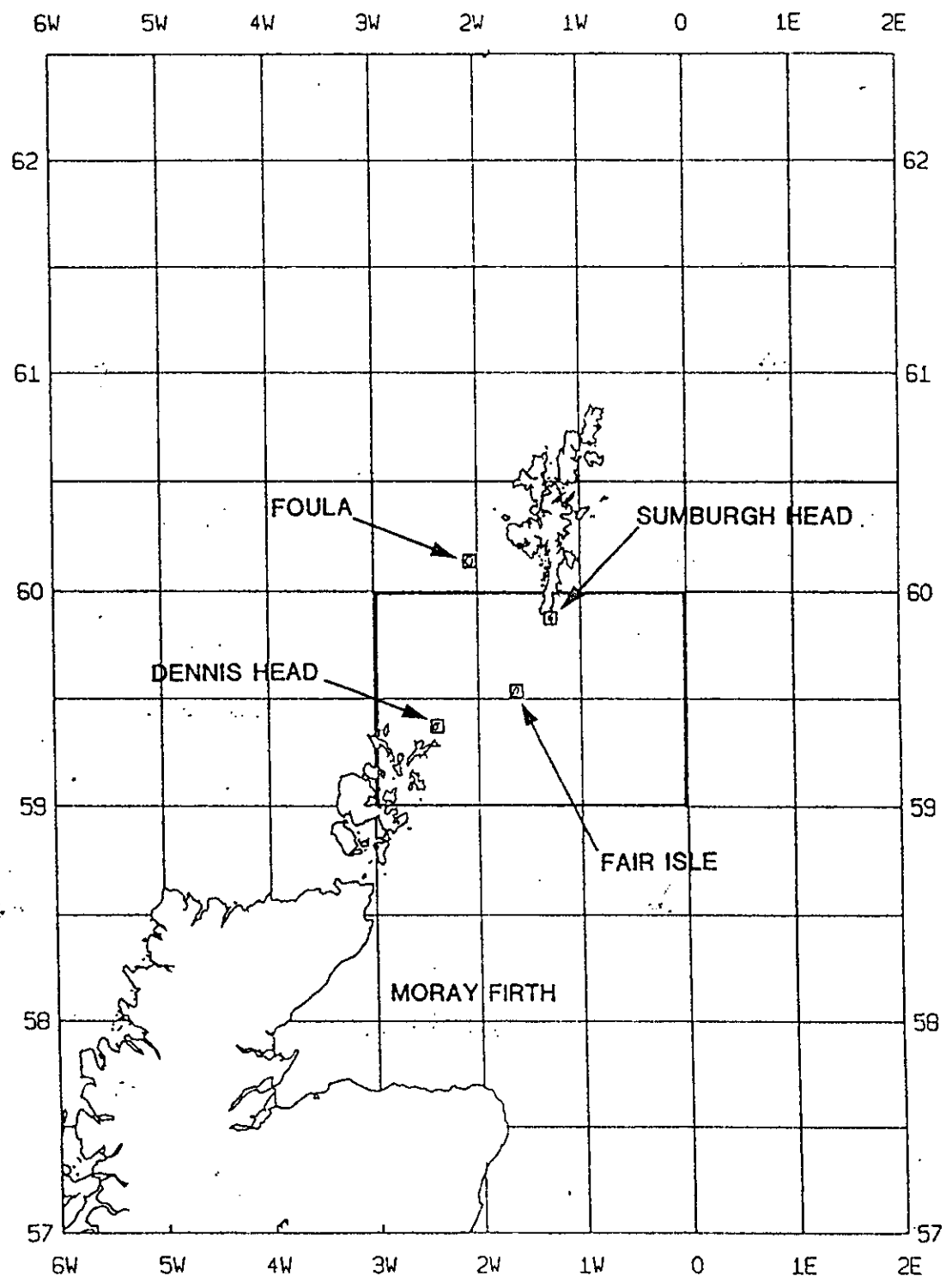
Methot sampler - 30 hauls (see Fig. 4). Catches, mainly of large larvae, were sorted on board into the main species or species groupings. The main species caught were whiting (30:890), flatfish (30:960), haddock (18:17), Norway pout (27:48), ling (25:36), sandeels (30:54) and "other species" (30:660).

In addition to fish, squid (mainly *Loligo forbesi*) were caught in a number of trawl hauls.

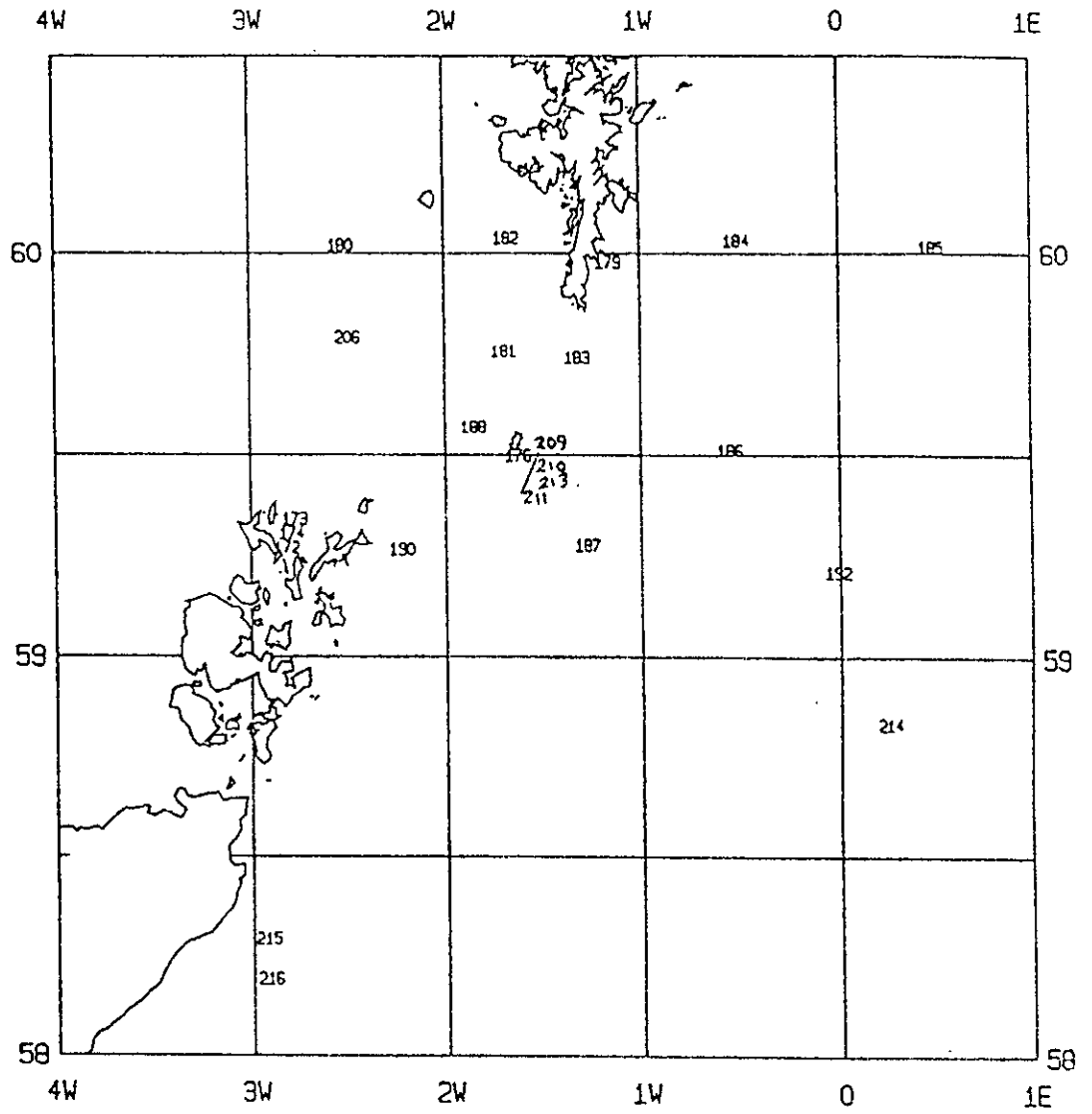
2. Samples of stomach contents were collected from the main predator species (whiting, herring, common dab) for analysis in the laboratory.
3. CTD measurements were made at numerous stations.
4. The contract staff were trained in all relevant techniques.
5. Observations of seabird abundance were made during the period 6-10 June. Large numbers of feeding seabirds were seen to the east of Orkney, in North Sound and close to the south of Fair Isle. In areas further north many of the seabirds seen were apparently on passage to and from feeding areas elsewhere.
6. Insufficient quantities of 0-group sandeels were caught to sample for parasites.
7. Three samples of water were collected for radio-caesium monitoring.

R S Bailey
20 December 1991

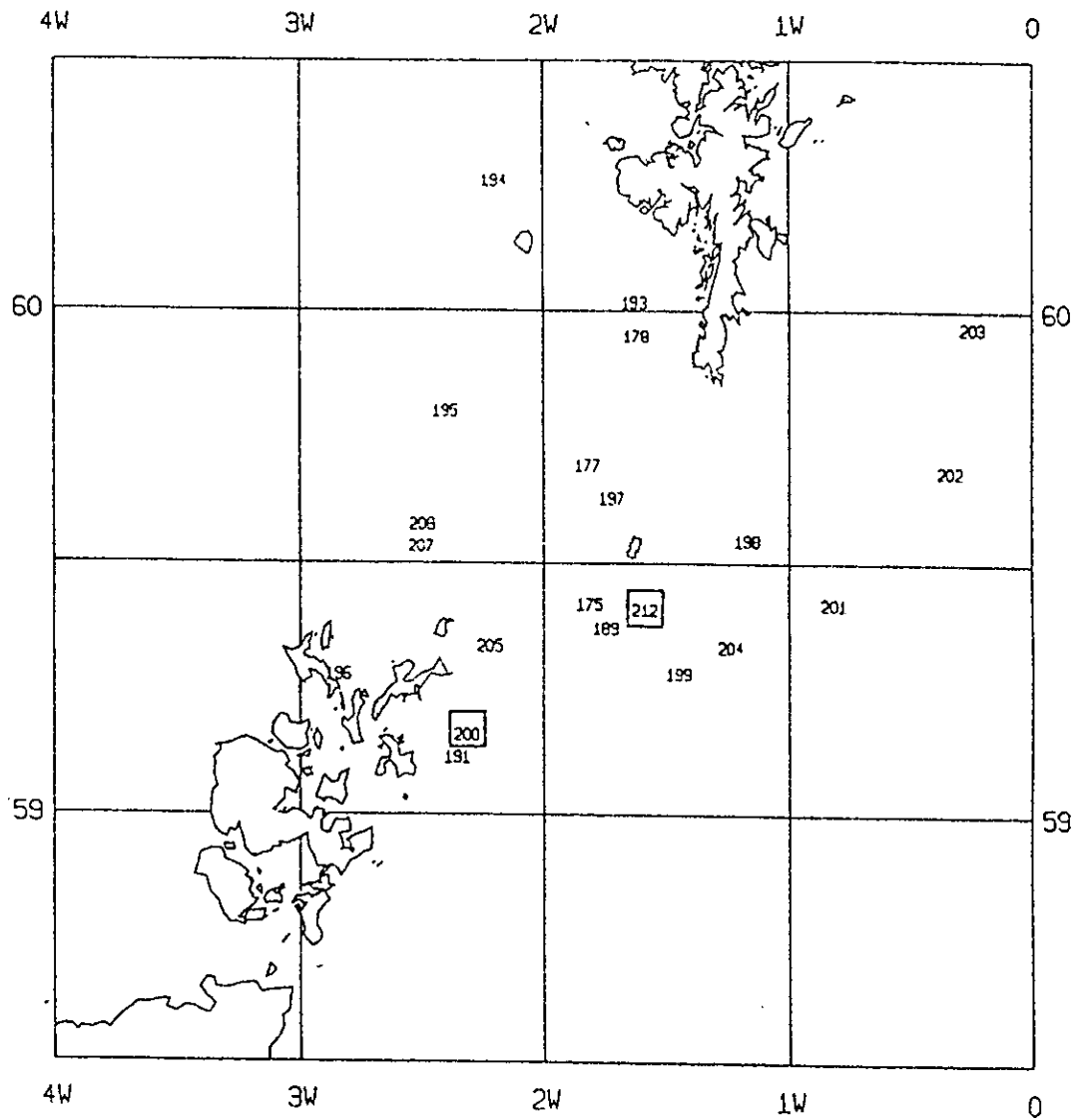
Area of study.



Positions of stations using the IYGPT.

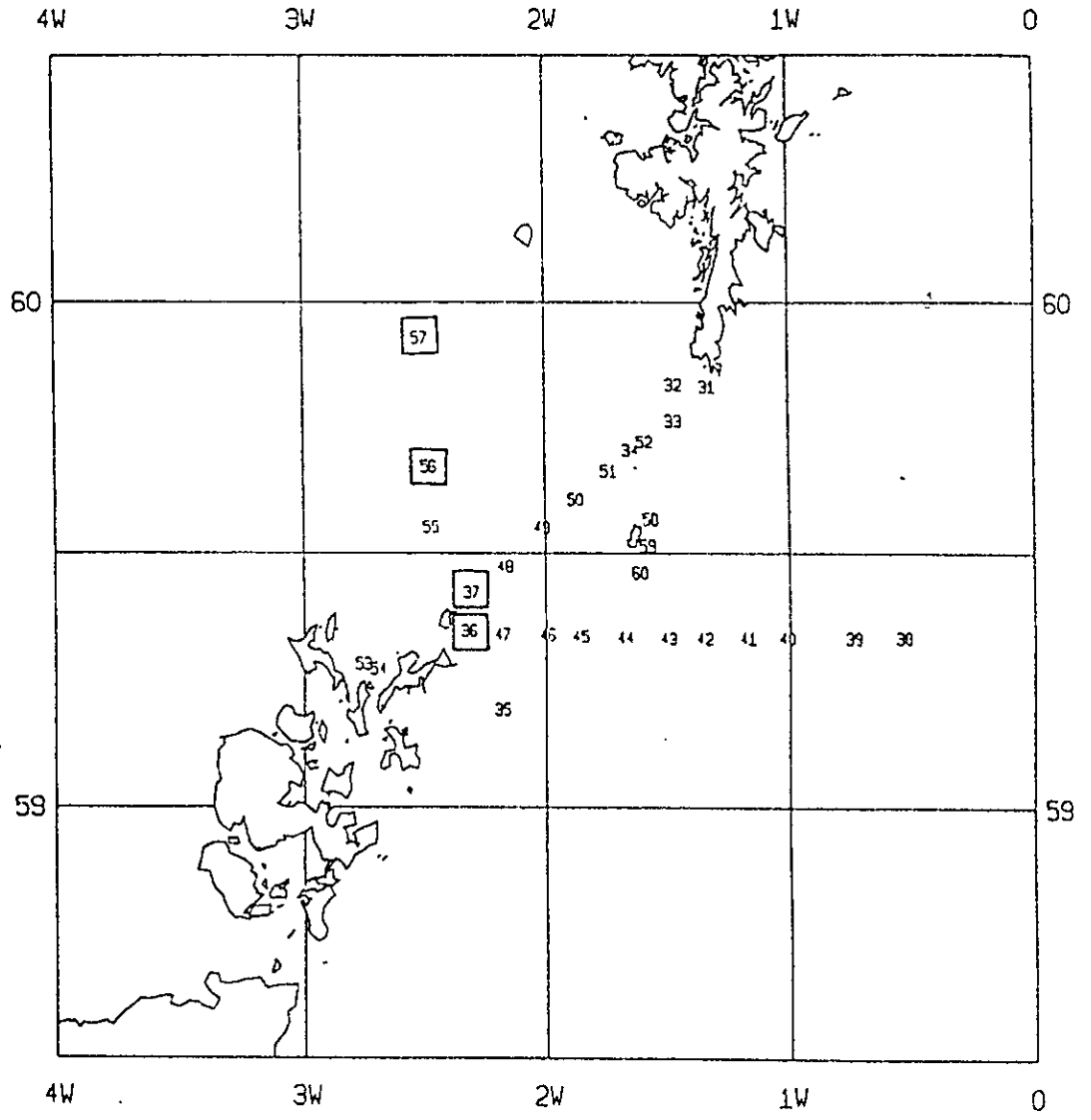


Positions of stations using the Midwater trawl (PT160) and the GOV trawl (BT137).



□ : night hauls

Positions of stations using the Methot sampler.



□ : night hauls