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FRV *Scotia*

Cruise 0995S Part II

REPORT

16 June - 3 July 1995

Personnel

N Bailey	SSO	(in charge)
J A M Kinnear	HSO	
C W Shand	HSO	
D J Bova	SO	
A R Weetman	ASO	
J Drewery	ASO	(casual)
C Brown	HSO	(MAFF visitor, 15-23 June)
A Lawler	SO	(MAFF visitor, 23 June - 3 July)
S MacGill	UMBSM Visitor	(26-28 June)

Objectives

- a) To obtain estimates of distribution and abundance of *Nephrops* on the Fladen Ground, Noup, North Minch, South Minch and Firth of Clyde using underwater television and trawling.
- b) To use the trawl caught samples to examine biological features of *Nephrops* at different sites throughout the survey area.
- c) To collect sediment samples at each TV station.
- d) To obtain samples of adult (and if possible larval/juvenile) squid for Aberdeen University; EC funded project.

Out-time days per project: 18 days FAA1

Narrative

Scotia was due to sail on 15 June but winch and engine problems delayed departure. Staff joined the ship on Friday 16 June and *Scotia* sailed from Aberdeen at 0900 hours on 17 June - proceeding to the Fladen Ground (57.924°N, 0.355°E) after the collection of a water sample in Aberdeen Bay. Survey work with the underwater television commenced at 1800 hours and five stations were completed before poor weather halted operations. Work recommenced on 18 June at 1700 hours and over the next four days a further 53 TV stations (four with trawling) were completed before *Scotia* sailed to Stornoway for the half landing. On route a water sample was taken at Fair Isle. Docking

in Stornoway was at 0930 hours on 23 June and there was a change over of MAFF scientists.

Scotia sailed at 0900 hours on 24 June and made for the South Minch *Nephrops* grounds where TV work commenced at 1500 hours (57.232°N, 7.002°W). A total of 21 television runs and two trawls were carried out before a breakdown of the starboard winch curtailed trawling activities on 25 June at 2100 hours. *Scotia* then steamed for the Clyde arriving at Millport at 1530 hours on 26 June where Ms MacGill joined the ship. Television operations continued in the Clyde and Sound of Jura for two days during which 37 stations were worked. Trawling was not possible owing to continued failure of the winch. Following the departure of Ms MacGill, *Scotia* steamed for the southern South Minch and Stanton Bank areas and completed 13 further stations during period 29-30 June before proceeding to Cape Wrath where another water sample was collected. Passage was then made to the western fringes of the Fladen Ground (58.758°N, 1.245°W) where three stations were completed on 1 July. *Scotia* then moved to the north east corner of the Moray Firth ground where a further two stations were worked prior to returning to Aberdeen where *Scotia* docked at 1900 hours on Sunday 2 July.

Data Collection

In each of the areas surveyed, stations were located on muddy superficial sediments (as identified by BGS sediment data) within the statistical squares defining *Nephrops* stocks (as defined by the ICES WG). Owing to time lost, the North Minch and Noup grounds were not surveyed. A total of 134 television sledge runs of 10 minutes duration were made; all seabed operations performed well. Calculation of the area surveyed in each run was facilitated by using a rangefinder to monitor height of camera off the bottom and an odometer to measure distance travelled. Severe difficulties were, however, experienced with the electronic counting of the odometer signal so that automatic logging of this was not possible. Preliminary counts of burrow numbers were made during TV camera observations and the material was recorded on video for more detailed analysis - this is now underway at the laboratory.

Sediment samples for size particle analysis were taken at each station using a Day Grab. These will be analysed in the laboratory using a laser particle size analyser.

A Scotnet 50 mm Prawn Trawl (headline 176'), was used to make six trawl hauls of 30 minutes duration at various stations in the Fladen Ground and South Minch. A winch failure precluded trawl sampling in other areas. Data on *Nephrops* sex ratio, size composition and ovary condition of *Nephrops* were collected from each haul. Information on mean weights will be used to calculate stock biomass.

Water samples for routine caesium analysis were collected at stations off Aberdeen, Cape Wrath and Fair Isle. There was no plankton sampling owing to time constraints.

Summary of Preliminary Analysis of TV Survey Data

Preliminary estimates of *Nephrops* burrow density from on-board counts are given, for each area, in Table 1. The targeting of stations on soft sediment was generally successful with the exception of the South Minch. Here the reduced proportion of stations with burrows probably reflects the heterogeneous distribution of sediment which is not represented quite so well in BGS charts.

The highest maximum density was recorded in the South Minch although this area also had a number of low density sites and the lowest average density. The lowest maximum density was found in the Fladen ground (similar to previous years) and this area also showed low average density. The widest range of density was found in the Clyde with high values occurring at stations to the south of Arran and low values occurring to the north and east of Arran. Highest average density was observed in the Sound of Jura.

Two stations were worked in the deep water of the Moray Firth just north of Fraserburgh but the sediment type here was rather coarse and patchy resulting in very low *Nephrops* counts.

N Bailey
18 October 1995

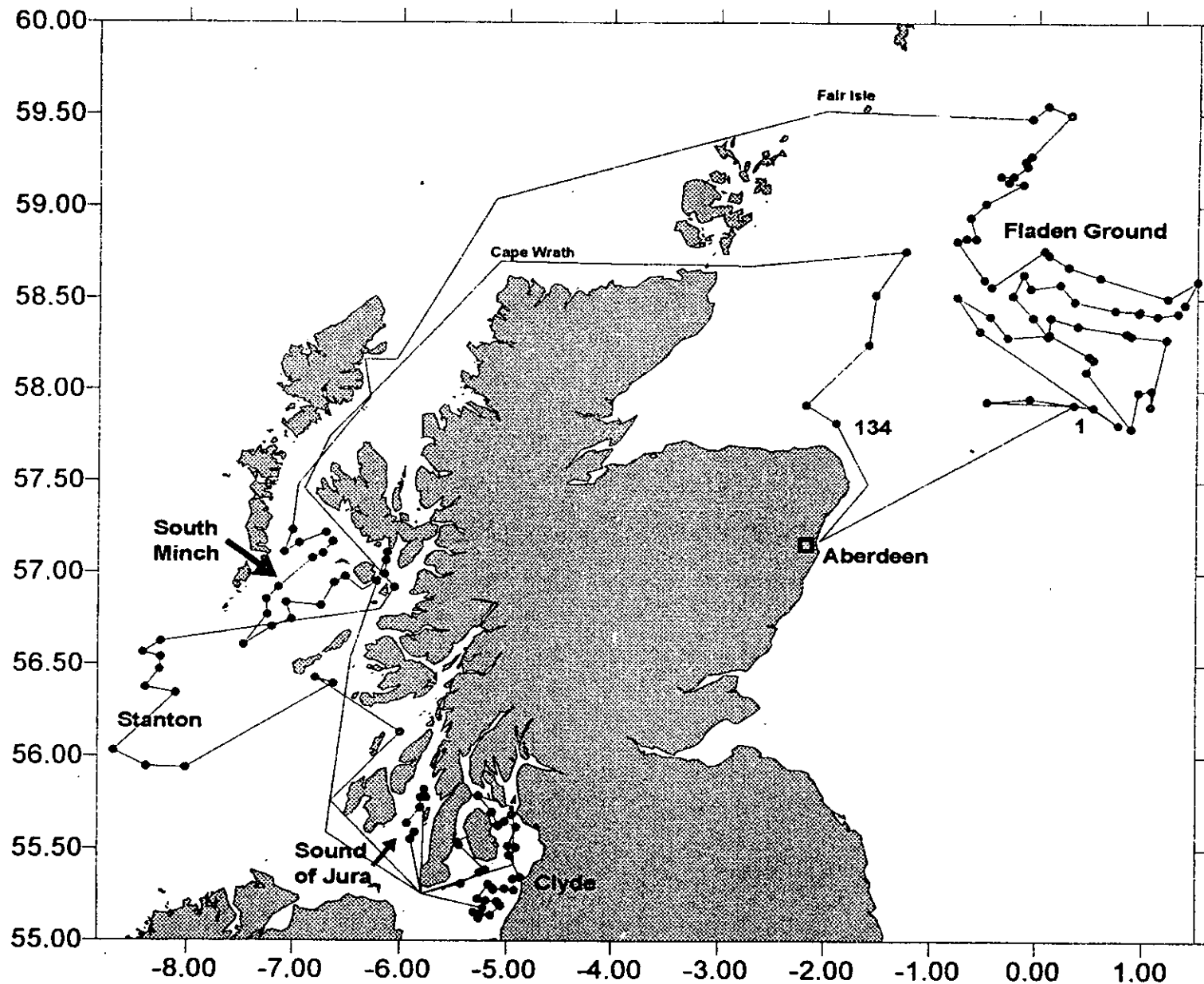
Seen in draft: P Ramsay

Table 1

Preliminary results from 1995 TV surveys of various *Nephrops* grounds (Scotia cruise 0995S)

Area	No of stations	No with burrows	Maximum density	Minimum density	Average density
Fladen Ground	61	60	0.706	0.033	0.339
South Minch	34	31	1.447	0.067	0.319
Firth of Clyde	30	29	1.311	0.01	0.522
Sound of Jura	7	7	1.064	0.114	0.714

Densities are in numbers of *Nephrops* burrows per square metre



Cruise Track - Scotia 0995s- 15th June- 3rd July 1995