

R1/12

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FRV *Scotia*

Cruise 0997S

REPORT

8-28 July 1997

Personnel

E J Simmonds	Aberdeen University Research Fellow
M C Bailey	Aberdeen University Research Fellow
P J Fernandes	HSO
A P Robb	SO
F Armstrong	SO
G I Henderson	Student (pt)
F Torres	Student
A More	JNCC
S Taylor	JNCC
R White	
PSO (in charge)	

Objectives

1. To participate in an ICES - coordinated acoustic and mid-water trawling survey in the north western North Sea and north of Scotland between 58° to 62°N and 4°W to 2°E excluding Faeroes waters. Including intercalibration with *GO Sars*.
2. To obtain samples of herring for biological analysis, including age, length, maturity and ichthyophonus infection rates.
3. To obtain thermosalinograph recordings throughout the survey, CTD profiles (and XBT profiles) and sea surface T&S for analysis of herring distribution, seabird distribution and the environment.
4. To obtain Methot net samples of plankton and micro nekton at night.
5. To obtain estimates of seabird density.

Outturn days per project: 21 days EAA1

Narrative

Scotia sailed from Aberdeen at 1200 hours on 8 July and made a passage to Scapa Flow for calibration of the acoustic survey system. The measurements were carried out and confirmed that the echosounder was performing to specification. *Scotia* left Scapa Flow and commenced the survey at 0730 hours on 9 July at 58°4'N 002°50'W. The survey was conducted between 0300 hours to 2300 hours BST using east-west transects spaced at 15 Nm (Fig. 1) progressing in a northerly direction to the east of Orkney and Shetland. Fishing was carried out

opportunistically on observed fish traces (Table 1). CTD stations were carried out at each haul location and XBT station were carried out every 30 miles between hauls (Fig. 1). During the night Methot net tows were conducted to obtain samples of nekton. Seabird and cetacean surveys were carried out using Seabirds at Sea Team methods. Over 15,000 records were collected covering 1,800 N miles of survey.

The survey was interrupted at 60°40'N 000°30'W at 2300 hours on 18 July and a calibration was carried out in Gulberwick Bay during the night. *Scotia* called at Lerwick for a half landing at 0900 hours on 19 July.

Scotia sailed from Lerwick at 0900 hours on 20 July and resumed the survey where it had been interrupted at 1200 hours on 20 July. The survey was continued to 61°40'N to the north and east of Shetland using 15 Nm and 7.5 Nm spaced transects. The survey was then continued southwards using east west transects to the west of Shetland and Orkney. The survey was completed at 1430 hours on 27 July at 58°42'N 003°25'W. *Scotia* sailed for Aberdeen and docked at 0600 hours on 28 July.

Data/Results

During the survey a total of 1,028 15-minute echo integrator runs were completed, along with 43 trawl hauls, 59 CDT stations and 39 XBT stations. From the trawl hauls 27 gave good samples of herring for biological analysis and 3,695 fish were examined in detail for biological parameters: length, otolith, sex, maturity, weight, weight without gonad, ichthyophonous infection and stomach contents. A weight length relationship was derived:

$$W = 0.00148 L^{3.541} \quad W \text{ in g, } L \text{ in cm}$$

Sea surface salinity and temperature and RoxAnn seabed classification data were logged during the whole cruise. All the echosounder output rolls were analysed for herring traces and all the data collected (with the exception of age derived from otolith readings) were entered into computer onboard.

The analysis to provide population estimates and numbers at age for the survey area remain to be completed. However, the biological data showed that only seven of the fish examined showed signs of ichthyophonous infection, confirming that this disease no longer appears to be a problem for North Sea herring. The Seabird observation data will be analysed as part of the European Union Funded MIFOS project and will be added to the European Seabirds at Sea database.

E J Simmonds
22 August 1997

Seen in draft: J B Nichols (Captain)

Haul Summary			Position			Estimated Raised numbers															
Haul no	Date	Time	Latitude	Longitude	Depth	Herring	Mackerel	Sprat	poat	BI whiting	A silus	A spryana	Haddock	Whiting	Saithe	Lump-ucker	Gurnard	N addock	H Scad	Hake	
S97259	9/7/97	8:0	58 39.9N	002 30.99W	67																
S97260	9/7/97	10:33	58 40.04N	002 21.27W	73				356				3								
S97261	9/7/97	16:40	58 42.13N	001 4.06W	119	6			37				9		6						
S97262	10/7/97	15:50	58 54.87N	000 22.96E	140	82	1		7				2								
S97263	10/7/97	19:0	58 55.13N	000 4.03W	110	49	2		473				1								
S97264	11/7/97	5:0	58 55.03N	001 23.5W	115	8660															
S97265	12/7/97	10:37	59 13.4N	000 45.34E	130	814			657				10	18	3	2					
S97266	12/7/97	15:40	59 23N	000 28.53E	70		2						5	11							
S97267	13/7/97	5:5	59 25.03N	001 44.5W	90																
S97268	13/7/97	11:40	59 40.1N	001 36.62W	90	9															
S97269	13/7/97	15:5	59 40.01N	001 5.51W	120	3078			686		2		101	242				20			
S97270	14/7/97	10:0	59 54.9N	000 10.18E	146	3200	42		118				6								
S97271	14/7/97	15:20	59 55N	000 44.56W	120	18	1		249				1	9				1			
S97272	14/7/97	18:50	59 54.12N	001 01.4W	100	149															
S97273	15/7/97	5:30	60 3.13N	000 6.18W	135	7			32				4	2							
S97274	15/7/97	11:18	60 18.04N	000 13.44E	114	1497			###				2	76							
S97275	15/7/97	14:20	60 17.86N	000 39.27W	100				1143												
S97276	15/7/97	19:0	60 9.9N	000 31.19W	120	58200															
S97277	16/7/97	21:20	60 33N	000 22.0E	140	1670															
S97278	17/7/97	10:33	60 47.96N	000 0.16E	138	4710															
S97279	17/7/97	14:5	60 47.81N	000 36.22W	100	29	1		253					15							
S97280	18/7/97	8:55	60 56.57N	001 19.5E	153																
S97281	18/7/97	14:25	60 54.94N	000 3.20W	150	46000															
S97282	18/7/97	18:0	60 55.54N	000 20.63W	125	2948															
S97283	20/7/97	14:40	60 28.64N	000 35.26W	140	169	1		132				1								
S97284	20/7/97	21:15	61 9.92N	000 31.97W	150	1703															
S97285	21/7/97	13:0	61 26.78N	000 44.96E	170	6			6	47			1		4						9
S97286	21/7/97	18:20	61 39.82N	000 8.87E	200																
S97287	22/7/97	8:55	61 8.32N	001 5.31W	138																
S97288	22/7/97	19:10	60 39.99N	002 22.72W	140	753															
S97289	23/7/97	6:0	60 47.87N	001 08.94W	90	994	7														
S97290	23/7/97	12:15	60 32.77N	002 10.59W	130	116			33												
S97291	23/7/97	15:20	60 32.8N	001 45.42W	90	14960															
S97292	23/7/97	19:5	60 25.16N	001 54.96W	110	6420	15		75												
S97293	24/7/97	7:0	60 10.94N	003 40.17W	129	669	18		3	450											
S97294	24/7/97	19:30	60 18.66N	002 38.45W	170	2395	10		15				5	5							
S97295	25/7/97	8:0	59 55.5N	001 39.22W	104	544	16							3142							
S97296	25/7/97	11:13	59 55.01N	002 16.61W	105	56	4		###												
S97297	25/7/97	17:15	59 55.02N	003 42.21W	140	5393												40			
S97298	25/7/97	21:50	59 48.09N	004 1.74W	110	155	164											8			
S97299	26/7/97	5:15	59 47.99N	003 23.15W	70																
S97300	26/7/97	9:15	59 32.9N	003 35.91W	153	1945	20														
S97301	26/7/97	11:45	59 33N	003 51.09W	159	4910															
S97302	27/7/97	4:30	59 25.71N	003 27.47W	100	46000												30			

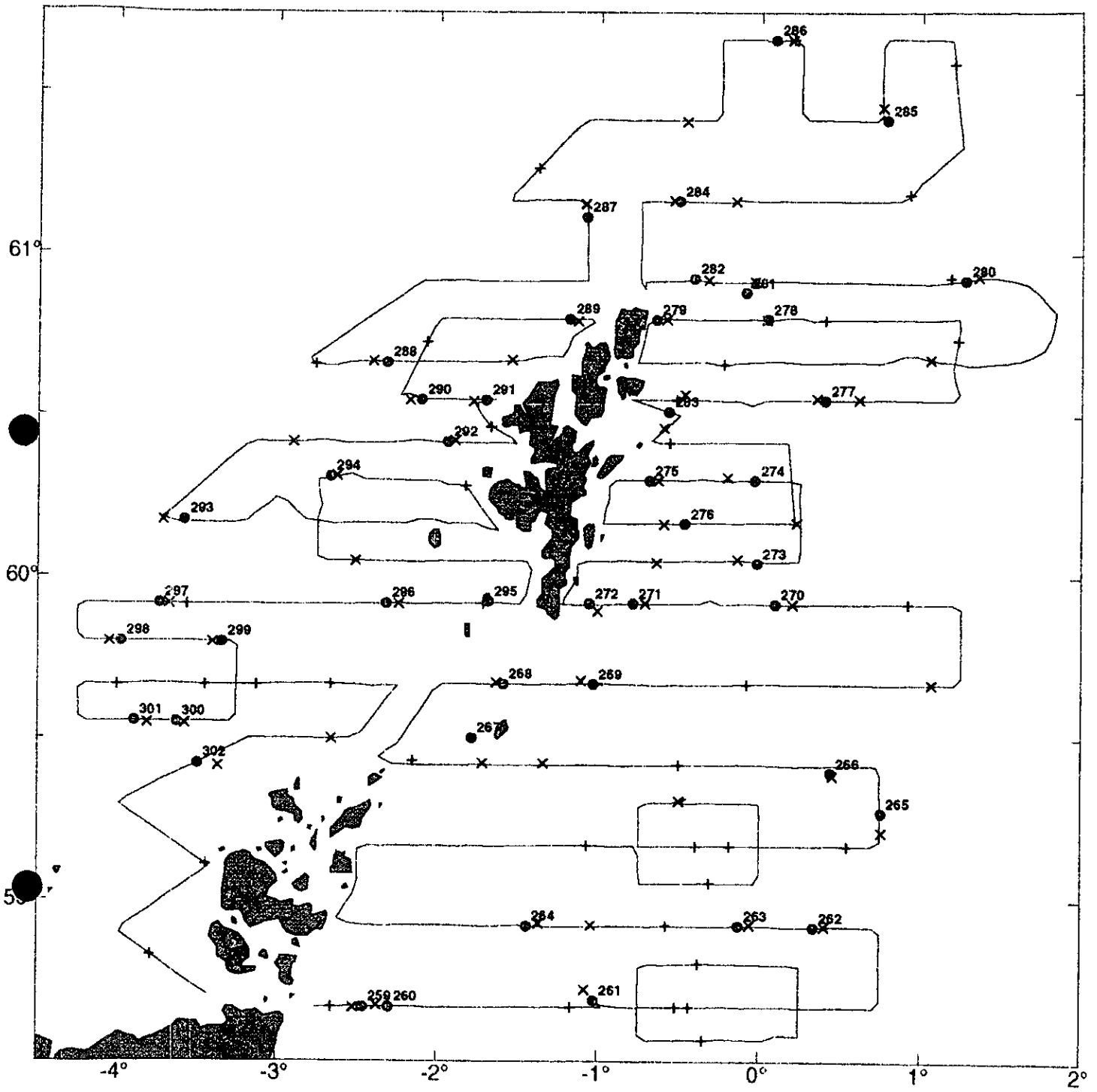


Figure 1. Scotia 8 to 28 July Cruise Track, Trawl, ● CTD × and XBT + Positions.