

R1/12

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FRV *Scotia*

Cruise 1207S

## **REPORT**

10 August – 1 September 2007

### **Personnel**

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I Penny  
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### **Objectives**

1. To undertake an internationally co-ordinated demersal trawling survey of the North Sea.
2. Obtain temperature and salinity profiles at each trawling station.
3. Obtain low nutrient water seawater samples from statistical rectangle 45F1 (or an adjacent rectangle).
4. To collect photographs and biological material for use at Maturity Worksop in cod, haddock, whiting and saithe.
5. To collect samples of 0-group cod and haddock for analysis of genetics and otolith chemistry.
6. To collect and return live 0-group cod and haddock to FRS.

**Out-turn days per project:** 23 days – RV0711/MF0764

### **Narrative**

*Scotia* sailed from Aberdeen at 1000 on 10 August and commenced trawling on the stations east of Aberdeen. Three survey stations were completed during the day and the vessel then carried out a further 3 hauls in relation to objective 5 (collecting samples of 0-group cod and haddock). A further 10 survey hauls were completed off the east coast of Scotland using ground gear “A” before the vessel worked towards the Moray Firth region where trawling continued with ground gear “B”. *Scotia* worked in a northerly direction, covering stations in the Moray Firth and Orkney areas before calling into Scalloway during the morning of 15 August to allow a member of the scientific staff to return to Aberdeen. Two further stations were sampled off the west of Shetland before poor weather conditions intervened on the morning of 16 August. With continuing westerly gales forecast, *Scotia* moved to the more sheltered waters off the east of Shetland where work resumed. With a gradual

improvement in weather conditions *Scotia* worked towards the Norwegian Sector and proceeded to cover the stations in the north eastern part of the survey area before moving into Danish waters on 21 August. *Scotia* called into Esjberg for a mid cruise break on the morning of 22 August, sailing again the following morning. With confirmation being received from Denmark and Germany about the coverage on the southern part of the survey area, a decision was taken to drop 5 of the original stations in order to create time for additional sampling in the Shetland region.

*Scotia* completed the stations in the southern part of the survey area then worked northwards, completing the rest of the original survey area on 29 August. The vessel then moved from the Fair Isle region to the north of Shetland where work on additional stations commenced on the morning of 30 August. Damage to the trawl gear on grounds west of Shetland restricted sampling to 4 valid hauls for the day. Work continued the next morning in the Papa Bank area but further severe damage to the trawl gear resulted in the cancellation of the remaining two planned stations. *Scotia* then proceeded towards Aberdeen, docking in the late evening with unloading taking place on 1 September as scheduled.

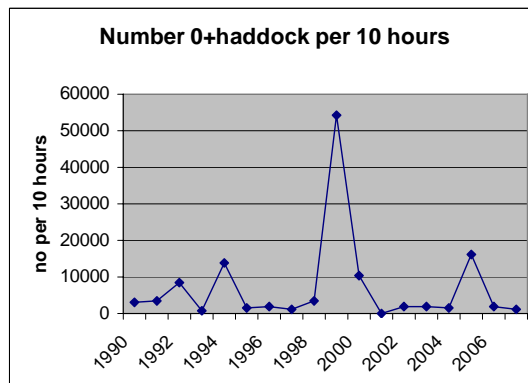
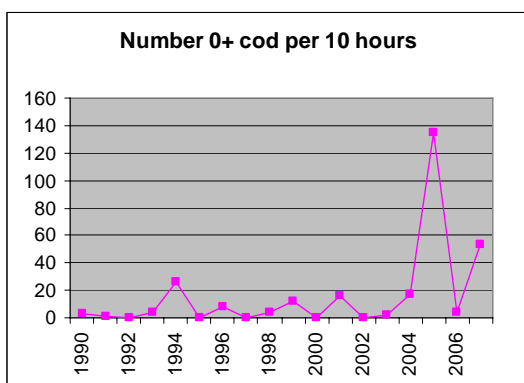
### Provisional summary of results

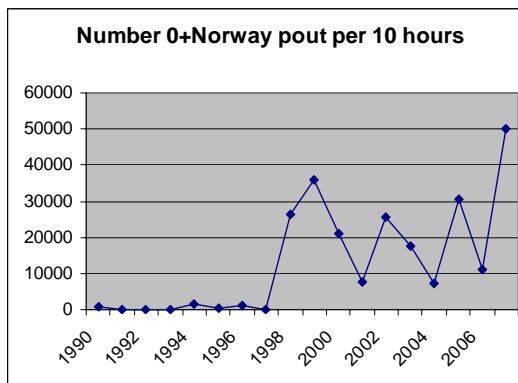
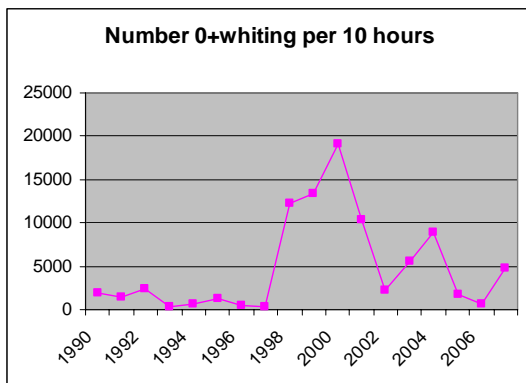
The quarter 3 groundfish survey was successfully completed on 1 September 2007 with a total of 85 valid hauls being completed.

Confirmation from Germany and Denmark that they had provided suitable coverage in the south eastern part of the area (37F3, 37F4, 37F5, 37F6 & 37F7) allowed FRS to reallocate scheduled time for sampling in an area north and west of Shetland, with cod being the species of interest. On completing the survey stations, *Scotia* carried out fishing in statistical rectangles 51E9, 51E8, 50E7, 49E6 and 48E6 but unfortunately gear damage at two of these rectangles result in invalid hauls. From the three hauls additional hauls completed there were very few cod caught in the catch.

All catch data was processed at sea, with the demersal otoliths also being read and processed. Pelagic otoliths were read immediately on return to port and the cruise data was then processed within the Fisheries Management Database with the survey indices then being distributed to relevant parties.

The charts shown below give an indication of the survey indices for cod, haddock, whiting and Norway pout for the period 1990 – 2007.





Although the indices show an increase for juvenile cod, it can be seen from the cod distribution map (Figure 1) that this is heavily influenced by one haul off the Danish Coast. It should be noted the distribution maps relate to numbers caught per hours fishing while the survey indices, traditionally relates to numbers caught per 10 hours. The survey indices indicate that juvenile haddock are rather low this year but it should be noted that the distribution map (Figure 2) shows a scattered distribution and it may be the case that the International indices may be more enlightening. An encouraging increase in the number of juvenile whiting encountered is reflected in the survey indices and their distribution is highlighted in Figure 3. Large numbers of juvenile Norway pout were encountered in the northern half of the survey area (Figure 4) and this is reflected in the survey indices above.

Length, weight sex and maturity data were collected from species listed in the EU Data Collection Regulations (EC) No 1639/2001. Additional biological data and samples were collected for the forthcoming workshop (WKMSCWHS) on maturity of cod, haddock, whiting and saithe.

The ships thermosalinigraph was run continuously throughout the cruise and a CTD and reverser bottle were deployed at each station to obtain temperature and salinity profiles. Samples of low nutrient sea water were collected in the region of statistical rectangle 45F1.

The Scanmar system was used at each station to monitor headline height, door spread, wing spread and distance covered by the fishing gear.

Otoliths from cod, haddock, whiting, saithe and Norway pout were aged at sea with the otoliths from herring, mackerel and sprat being aged within two days of the vessel returning to port.

*K A Coull*  
26 October 2007

Seen in Draft: Captain Norman Paddle, OIC, *Scotia*

### Quarter 3 - Groundfish Survey 2007

#### Distribution of Juvenile Cod (0+)

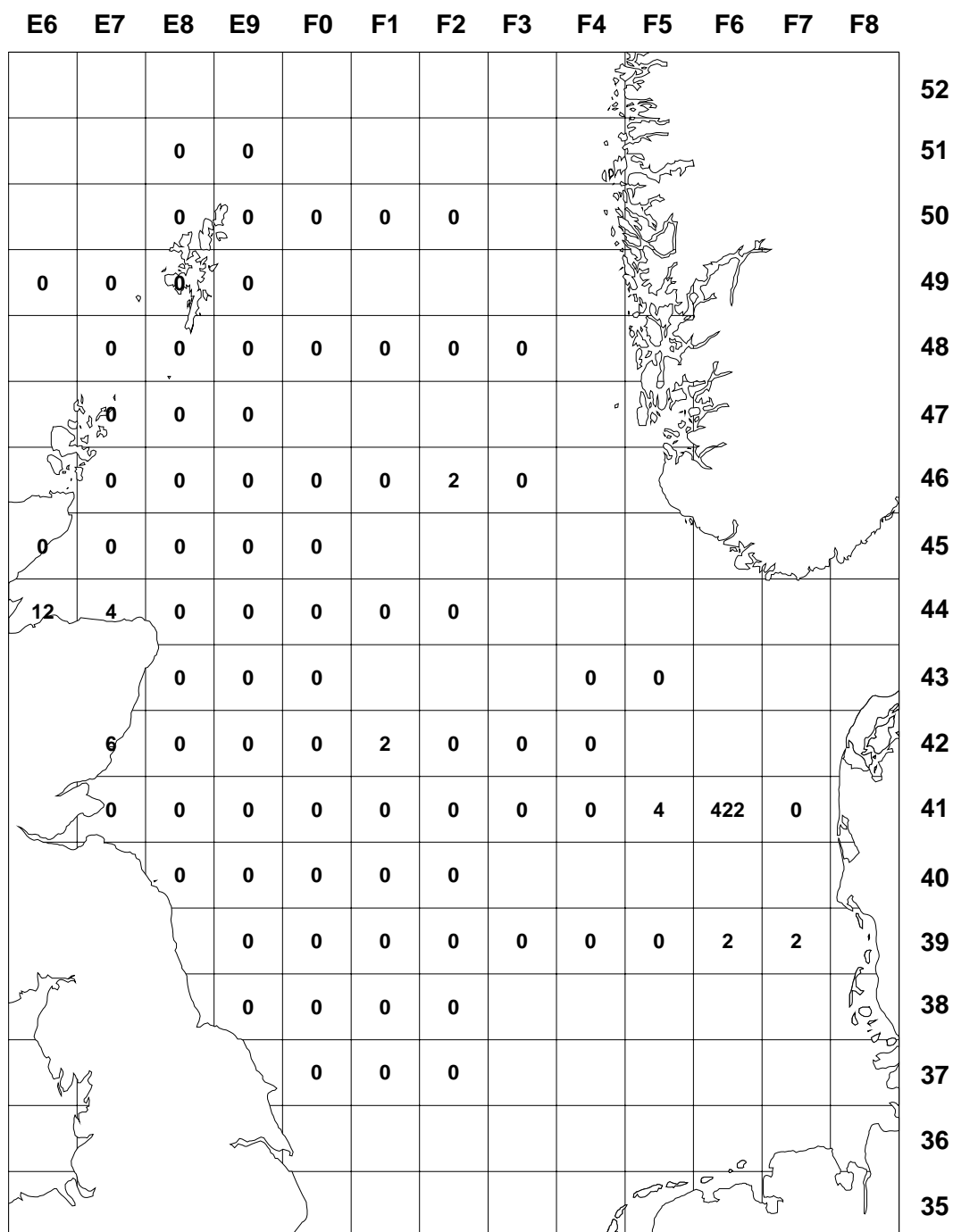
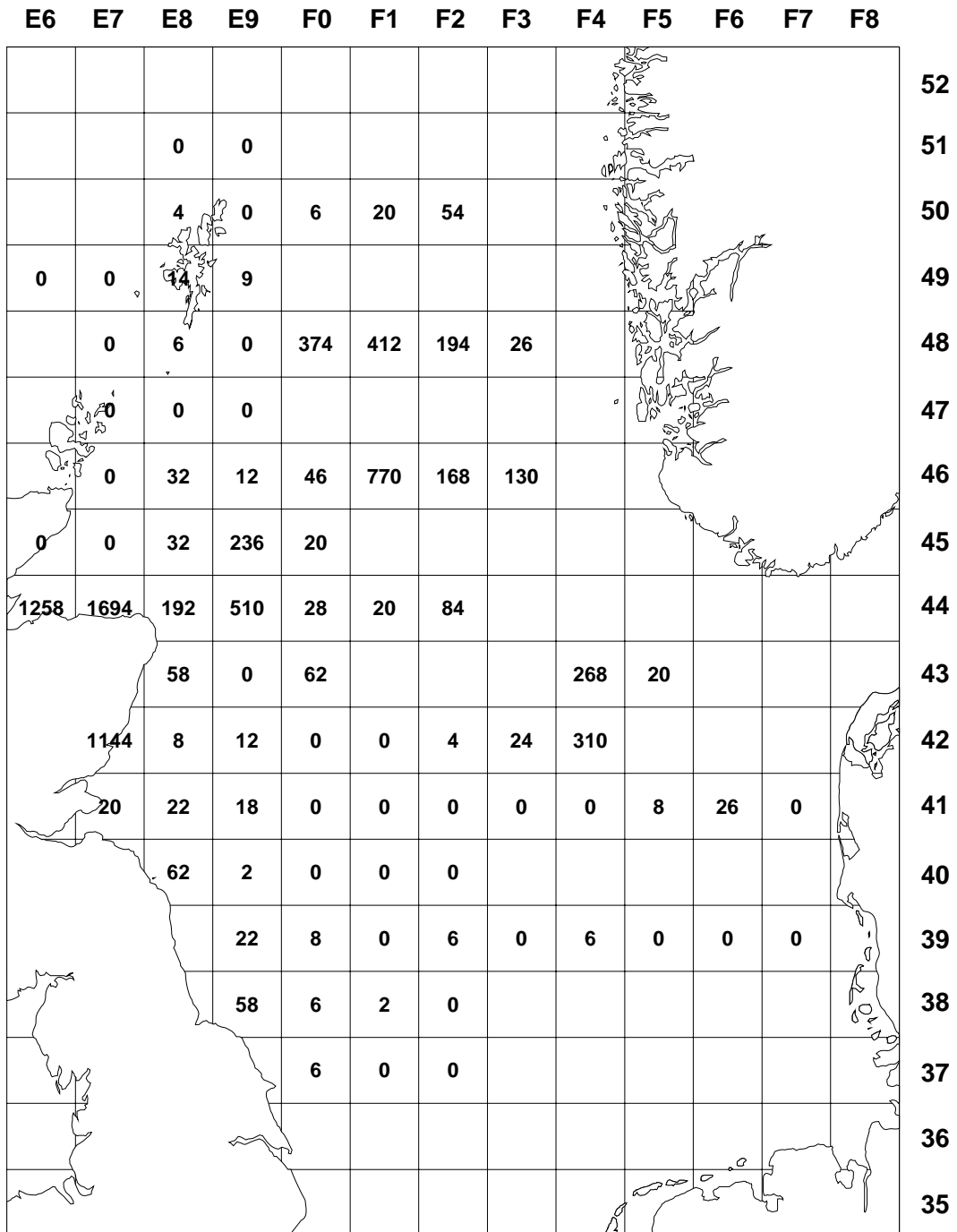


Figure 1

**Quarter 3 - Groundfish Survey 2007  
Distribution of Juvenile Haddock (0+)**



**Figure 2**

**Quarter 3 - Groundfish Survey 2007  
Distribution of Juvenile Whiting (0+)**

| E6   | E7    | E8  | E9   | F0   | F1  | F2   | F3 | F4  | F5  | F6   | F7  | F8 |    |
|------|-------|-----|------|------|-----|------|----|-----|-----|------|-----|----|----|
|      |       |     |      |      |     |      |    |     |     |      |     |    | 52 |
|      |       | 0   | 0    |      |     |      |    |     |     |      |     |    | 51 |
|      |       | 0   | 0    | 0    | 22  | 108  |    |     |     |      |     |    | 50 |
| 0    | 0     | 4   | 18   |      |     |      |    |     |     |      |     |    | 49 |
|      | 0     | 2   | 46   | 78   | 286 | 86   | 78 |     |     |      |     |    | 48 |
|      | 0     | 0   | 168  |      |     |      |    |     |     |      |     |    | 47 |
|      | 0     | 190 | 862  | 1304 | 864 | 288  | 62 |     |     |      |     |    | 46 |
| 0    | 4     | 282 | 3660 | 0    |     |      |    |     |     |      |     |    | 45 |
| 2600 | 7146  | 724 | 816  | 3208 | 0   | 20   |    |     |     |      |     |    | 44 |
|      |       | 24  | 0    | 0    |     |      |    | 402 | 32  |      |     |    | 43 |
|      | 12328 | 0   | 4    | 0    | 34  | 0    | 18 | 32  |     |      |     |    | 42 |
|      | 4     | 2   | 0    | 14   | 0   | 0    | 0  | 2   | 240 | 60   | 460 |    | 41 |
|      |       | 2   | 4    | 0    | 2   | 0    |    |     |     |      |     |    | 40 |
|      |       |     | 8    | 14   | 0   | 2    | 4  | 78  | 36  | 1972 | 32  |    | 39 |
|      |       |     | 64   | 150  | 2   | 0    |    |     |     |      |     |    | 38 |
|      |       |     |      | 0    | 4   | 1010 |    |     |     |      |     |    | 37 |
|      |       |     |      |      |     |      |    |     |     |      |     |    | 36 |
|      |       |     |      |      |     |      |    |     |     |      |     |    | 35 |

**Figure 3**

**Quarter 3 - Groundfish Survey 2007**  
**Distribution of Juvenile Norway pout (0+)**

| E6    | E7    | E8     | E9    | F0    | F1    | F2    | F3    | F4 | F5 | F6 | F7 | F8 |    |
|-------|-------|--------|-------|-------|-------|-------|-------|----|----|----|----|----|----|
|       |       |        |       |       |       |       |       |    |    |    |    |    | 52 |
|       |       | 19848  | 8604  |       |       |       |       |    |    |    |    |    | 51 |
|       |       | 978    | 0     | 6224  | 388   | 13246 |       |    |    |    |    |    | 50 |
| 0     | 0     | 142346 | 5979  |       |       |       |       |    |    |    |    |    | 49 |
|       | 0     | 14428  | 790   | 4820  | 12062 | 3602  | 17084 |    |    |    |    |    | 48 |
|       | 0     | 0      | 1192  |       |       |       |       |    |    |    |    |    | 47 |
|       | 0     | 17966  | 2012  | 952   | 7448  | 865   | 912   |    |    |    |    |    | 46 |
| 0     | 0     | 5760   | 3596  | 0     |       |       |       |    |    |    |    |    | 45 |
| 18834 | 41556 | 4142   | 15784 | 16980 | 6     | 0     |       |    |    |    |    |    | 44 |
|       |       | 8868   | 2     | 0     |       |       |       | 22 | 0  |    |    |    | 43 |
|       | 20220 | 0      | 0     | 0     | 1082  | 0     | 0     | 0  |    |    |    |    | 42 |
|       | 0     | 0      | 0     | 264   | 0     | 0     | 0     | 0  | 0  | 0  | 0  |    | 41 |
|       |       | 36     | 2     | 0     | 0     | 0     |       |    |    |    |    |    | 40 |
|       |       |        | 30    | 2     | 0     | 0     | 0     | 0  | 0  | 0  | 0  |    | 39 |
|       |       |        | 6452  | 0     | 0     | 0     |       |    |    |    |    |    | 38 |
|       |       |        |       | 0     | 0     | 0     |       |    |    |    |    |    | 37 |
|       |       |        |       |       |       |       |       |    |    |    |    |    | 36 |
|       |       |        |       |       |       |       |       |    |    |    |    |    | 35 |

**Figure 4**

# Quarter 3 - Groundfish Survey 2007

