

R1/12

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FRV *Scotia*

Cruise 0404S

REPORT

5-24 March 2004

Personnel

K J Peach

C Davis

J Mills

R Goudie

D O'Driscoll

M Gault (Part 1)

M Mathewson (Part 2)

M Stewart

A Edridge (Aberdeen University)

Out-turn days: 20 MF01Tc

Fishing Gear: GOV Trawl (BT 137) fitted with ground gear C

Objectives

1. Demersal trawling survey of the grounds off the north and west coasts of Scotland and Irish Sea.
2. To obtain temperature and salinity data from the surface and seabed at each trawling station.
3. Trial and evaluate the NOAA Bottom Contact Sensor.
4. Collect additional biological data in connection with the EU Data Directive 1639/2001.
5. Recording of EM950 Multibeam Swathe Bathymetry data and recording of multiple frequency acoustic Echosounder integration data during all trawl tows.
6. To collect squid tissue for genetic analysis.
7. Collection of various ad hoc frozen fish and preserved tissue samples.
8. Identify, quantify and record all Benthic species caught.

Narrative

Scotia sailed from Aberdeen at 1100 hours on Friday 5 March and proceeded to make passage to the first trawling station at position 58.42°N 04.26°W. *Scotia* arrived on station at 0600 hours on 6 March and fishing commenced at 0700 hours. Trawling continued for the next 4 days with 22 hauls being completed prior to a 24 hour interruption for a severe south

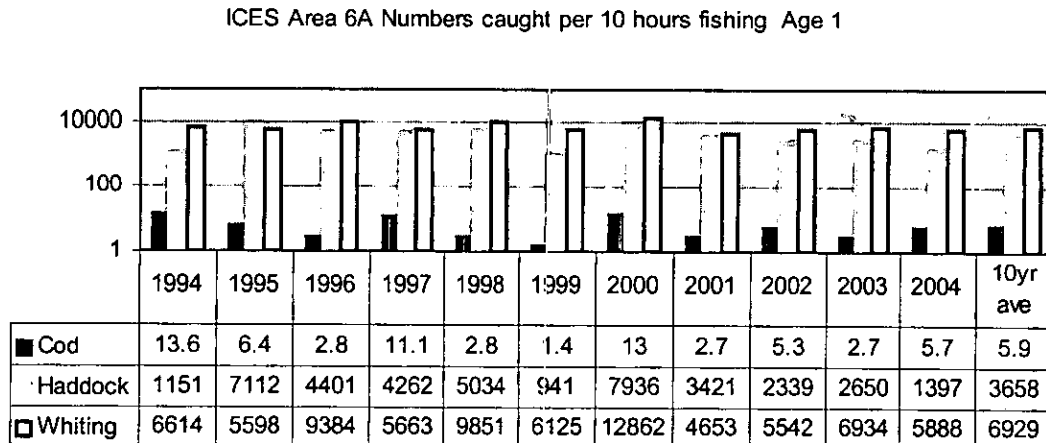
easterly gale. Fishing resumed in the Clyde at 0630 on 12 March and continued south into the Irish Sea until 2000 hours on 14 March. *Scotia* docked in Dublin at 0600 hours 15 March for the half landing and to facilitate personnel changes. On sailing from Dublin at 0900 hours on 16 March, *Scotia* completed the three remaining Irish Sea stations. With all stations in the southern part of the survey area completed, the opportunity was taken to move overnight to the north west of Ireland where five additional stations were completed in an area identified as a mackerel recruitment area. With this work completed, the vessel then carried out work in the Tiree, Skerryvore, Stanton Banks, Summer Isles and West Orkney regions. With the survey completed and a spell of more settled weather, the opportunity was taken to calibrate the bottom contact sensor at different trawl speeds in waters to the West of Orkney. *Scotia* made way for Aberdeen and docked at 0530 on the morning of 24 March.

Results

1. All survey stations were completed with 3 stations repeated in the North Minch, an additional station on the northern edge of the survey area, and a further five off the north west of Ireland, totalling 66 hauls see Map 1. Fishing commenced at 0630 each day with all but three hauls being carried out in daylight. All cod, haddock, whiting, saithe, Norway pout, herring, mackerel and sprat otoliths collected were aged at sea. All haul summary data, length frequency and age data were punched at sea and stored on computer disk.

The indices for age-1 cod, haddock and whiting for ICES Area 6A and for the Irish Sea are shown in Figures 1 and 2 respectively.

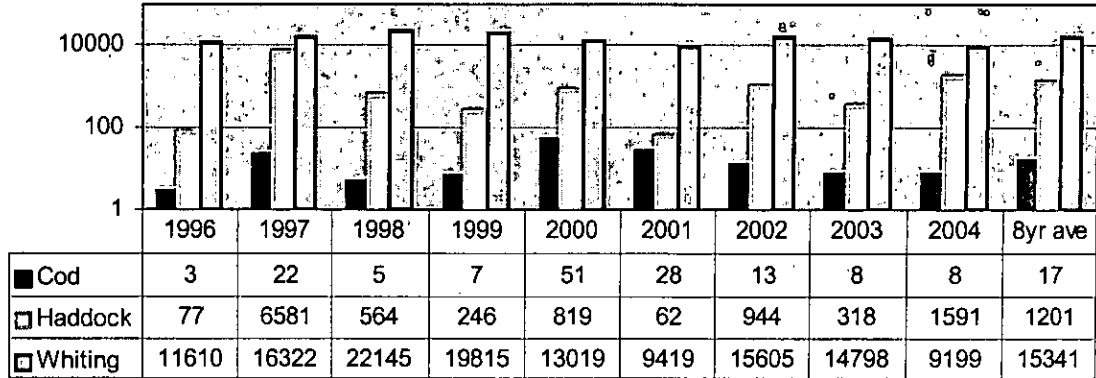
Figure 1



Cod shows an improvement on last year and is close to the 10 year average. Haddock is well down on last year and still well short of the 10 year average. Whiting is also down on last year and less than the 10 year average.

Figure 2.

Irish Sea Numbers caught per 10 hours fishing Age 1

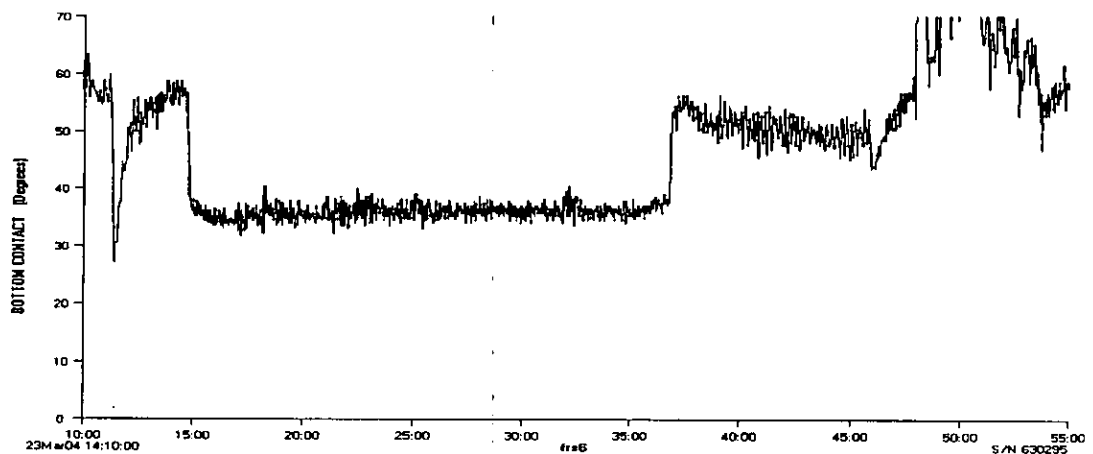


Cod catches were the same as last year but are still less than half the 8 year average. Haddock catches showed a marked increase on recent years and an increase on the 8 year average. Whiting numbers were well down on both last year and the 8 year average.

2. The Thermosalinograph was run continuously throughout the survey, a CTD was deployed at every trawling station with surface and seabed water samples collected. Individual CTD casts for each trawling station were stored electronically, software problems prevented the data from being processed at sea.

3. The NOAA Bottom Contact Sensor was deployed at every trawling station with mixed results. The Sensor is a dual-axis inclinometer, which records the angle between itself and the seabed as it is towed along. The sensor is attached to a 200 mm steel bar positioned in the centre of the bosom bobbin section, whilst on the deck the sensor gives a reading of 33~38°. As the trawl gear is lowered to the seabed the sensor can become tangled with the fishing line and in these cases useful data is collected. Further thought and trials will be carried out to improve the deployment of the sensor. The recording increment of the sensor was varied from 1, 2 and 4-second intervals, 40 useful data sets were collected with the remaining 26 becoming fouled up on the gear. An example of a trace is shown in Figure 3, the x-axis shows elapsed time and the y-axis the sensor angle. The 30 minute tow started at 15 minutes on the trace, and was completed at 45 minutes. The gear was shot in the conventional manner and towed for 10 minutes (15:00–25:00) at 3knots, 10 minutes (25:00–35:00) at 4 knots and 10 minutes (35:00–45:00) at 4.5–5knots. The trace shows the groundgear on the seabed at both 3 and 4 knots at an angle of 32~38°. In the last 10 minutes with speed increased to 4.5~5.0knots an angle of 45~52° was recorded as the groundgear lost contact with the seabed.

Figure 3.



3. Additional biological information on length, total weight, gutted weight, sex and maturity collected in connection with the EU Data Directive 1639/2001 extended programme see table 1.

Table 1.

Species	Number Collected	Species	Numbers Collected
Cod	103	Ling	5
Haddock	1106	Turbot	1
Whiting	981	Brill	4
Saithe	46	Cuckoo Ray	29
Megrim	92	Starry Ray	22
Angler	97	Blonde Ray	5
Black Angler	9	Thornback Ray	40
Hake	424	Skate	7
Horse Mackerel	153		

4. Summary of acoustic collected during the survey
- 4.1 Simrad EM950 Swathe Bathymetry data during each haul.
- 4.2 Simrad EA500 Echosounder data (18 Khz) throughout the entire survey.
- 4.3 Simrad EK500 Echosounder data (38 Khz, 120 Khz and 200 Khz) throughout the entire survey.
- 4.4 Roxann data throughout the entire survey.

A total of 80Gb of data recorded on PC and backed up to DVD

5. Squid

As part of the UOA's Zoology Department's participation in the Eurosquid Research Programme, all squid species caught were dissected, total weight, dorsal mantle length, sex and maturity were recorded for 214 *Ioligo spp.*, 408 *Alloteuthis subulata* and 36 *Todaropsis edlanae*. From the *Loligo spp* 100 whole specimens were frozen at -20°C and from a further

17 specimens the gills, digestive glands, gonads and ventral muscle tissue have been cryogenically preserved.. The stomachs of all the cryogenic specimens were frozen.

6. Summary of samples both dry, frozen and preserved.

6.1 Whiting: 200 otoliths for international otolith exchange.

6.2 Whiting: 140 fish frozen for genetic analysis.

6.3 Skate: 28 samples preserved from 4 species for genetic analysis.

6.4 Bluemouth: 50 specimens frozen for practical experiments.

6.5 Mixed Species: 13 x 10 kg boxes for St Andrews University seal diet project.

6.6 Mixed Species: 6 x 10 kg boxes for Macduff aquarium fish food.

6.7 Mixed Species: 245 specimens frozen for UOA practical experiments.

6.8 Dogfish: 40 specimens kept live for UOA research purposes.

7. As part of an initiative from ICES SGSTG and WGIBTS, the trawl hauls were also sorted for benthic invertebrates. All such species were identified and counted for each haul. 54 different species were identified amounting to 19614 individuals. No length or weight data were taken and no biological material retained. The results will be appraised in consultation with the Multispecies Interactions group of ME, and the future scope and detail of such sampling decided.

Kevin Peach
6 April 2004

Scotia Quarter 1 West Coast Ground Fish Survey 2004 Haul Positions

