

R1/12

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FRV "Scotia"

Cruise 11/89

11SR89

REPORT

14-27 October 1989

Personnel

J Dunn	HSO (in charge)
R B Mitchell	SSO
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M R Robertson	HSO
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Mrs A Matthews	SO
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Objectives

1. To complete a plankton survey off the Scottish north and west coasts (Area VIa) as part of the ICES International Herring Larval Surveys.
2. To collect surface temperature and salinity data during the survey.
3. To collect sea water samples for radio-caesium monitoring at selected positions.
4. To carry out trials of an acoustic telemetry system.
5. To carry out comparative trials on sampler avoidance.

Narrative

"Scotia" left Aberdeen at 1140 on Saturday 14 October and proceeded to an area north of Helmsdale, where tests were carried out on a new towed CTD system. Preliminary results indicate that the system remains stable over a range of speeds up to 12 knots. As the weather and tide were now suitable, "Scotia" proceeded west through the Pentland Firth on the 15th to the first ICES sampling stations. Sampling continued with a single Gulf III until 1700, when trials of a method of simultaneous shooting and hauling of 2 Gulf IIIs were successfully completed. The survey continued using a single Gulf III until 0920 on the 16th, when bad weather forced the ship to seek shelter on the north coast. A series of 3 double Gulf III horizontal tows were carried out, along with further tests on the towed CTD and acoustic telemetry system.

"Scotia" proceeded to Stornoway to pick up equipment due at 0900 on 17 October, and to allow a member of the scientific staff to seek medical attention. "Scotia" left Stornoway at 1130 and resumed the survey at 1315. Double Gulf III tows were performed at all stations until 2000, after which the survey continued using a single Gulf III. For the following 2 days, stations west of Lewis and Harris were sampled, with double Gulf III tows being performed only between 0800 and 2000. By the 20th, the weather had deteriorated to the point where double Gulf III deployments were abandoned. The survey continued south in a heavy swell until "Scotia" rounded Barra Head at 2350.

A series of deployments using the acoustic telemetry system were performed until 0530 on 21 October. The survey worked south towards Tiree but 4 stations at the south end of the survey area were abandoned because of heavy seas and high winds. "Scotia" sampled stations northwards in the Minch and at 0900 on the 22nd arrived at the mouth of Loch Ewe where a container of formalin was picked up from the DAFS field station. The vessel sampled 3 stations to the north of Loch Ewe but was forced to seek shelter in Broad Bay. A series of horizontal double Gulf III tows and underwater light measurements were carried out in this area until 2000. Test tows of acoustic telemetry systems and associated equipment continued in the same area until 0700 on the 23rd when the weather had calmed sufficiently to allow the survey to continue northwards using double Gulf IIIs at each station until 1930. Single Gulf III tows continued until 0930 on the 24th when force 9 gales forced the vessel to seek shelter on the north coast. In sheltered waters 11 double Gulf III horizontal tows were completed by 2000 when further test tows of acoustic telemetry systems continued in the same area until 0700 on the 25th. "Scotia" took shelter at an area off Lybster and horizontal double Gulf III tows were carried out until 2000. The vessel then moved to an area off Fraserburgh to allow tests of the acoustic telemetry system to continue in deep, sheltered water. At 0700 on the 26th, the vessel proceeded to the radio-caesium position off Buckie and then worked east, deploying double Gulf IIIs until 1700. Two test tows of the acoustic telemetry system were performed until 2030. The vessel docked at Aberdeen at 0800 on Friday 27 October.

### Results

1. The VIA area was sampled completely except for 4 stations at Tiree.
2. Surface temperature and salinity were recorded every 10 minutes during the cruise.
3. Samples for radio-caesium were collected at Cape Wrath (58°40'N 05°00'W), Pentland Firth (58°40'N 02°59'W) and Buckie (57°49'N 02°58'W).
4.
  - a. Heel/pitch measurements performed on a new towed CTD shark indicated that it provided a stable platform at a range of towing speeds up to 12 knots.
  - b. A total of 20 test tows were performed using the acoustic telemetry system. A new encoder system to indicate net positions on both OCEAN and LOCHNESS samplers performed well, but the poor torque characteristics of the motors proved to be a problem.

Problems were also encountered with the sea water switch on both transmitter units. Both methods of towing the acoustic receivers seemed to work, although the towing characteristics of the OCEAN sampler often resulted in acoustic misalignment at depth.

- c. A total of 64 hauls using 2 Gulf III samplers deployed simultaneously were carried out during the cruise. A marking device was used alternately on the nose cones of the 2 samplers. Surface light measurements were recorded throughout each haul and underwater light profiles were carried out daily. Larvae were picked out on board but a more detailed examination will be carried out in the Laboratory.
6. Samples of fresh herring larvae were taken and stored in liquid nitrogen for lipid analysis at Aberdeen University.

John Dunn

13 November 1989

Seen in draft: I G MacKenzie