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Not to be cited without reference to the Marine Laboratory, Aberdeen

FRV *Clupea*

Cruise 0202C

REPORT

24 January – 7 February 2002

Loading: 19 January 2002, Fraserburgh
Unloading: 7 February 2003, Fraserburgh

Personnel

Part 1

E Hatfield	SIC 25–3 January
R Coggan	
P Copland	
J Drewery	
J Martin	
S Wear	(University of Glasgow)

Part 2

D Bova	SIC 31 January – 7 February
R Coggan	
J Drewery	
J Martin	
N Spencer	(Aberdeen University)
S Wear	(University of Glasgow)

Sampling Gear and Equipment

Modified PT154 with 6 mm cod-end
BT158 demersal trawl with 10 mm cod-end
Two 2.8 m beam trawls
Scanmar (Height and spread units)
2 Day grabs
Simrad EK500/RoxAnn
Seabird CTD

Objectives

1. To carry out detailed acoustic surveys in selected lochs, and the Sound of Sleat using the Simrad EK500 and Seabat 602 to determine the distribution of herring and sprat. Concentrations of pelagic fish will be sampled using the PT154. Species composition and length frequency distributions of the fish caught will be determined. Sub-samples will be measured and weighed to establish length-weight relationships; otoliths will be taken to determine age structure of the fish catch. Herring samples will be taken for DNA analysis.

2. To carry out demersal trawls in each of the sealochs to determine the abundance, distribution and variation of fish species and any epibenthic mega-fauna using the BT158 trawls and the 2.8 m beam trawl where appropriate. At each trawl station the length-frequency of all species will be taken and sub-samples of the major commercial species will be weighed and otoliths taken. Stomach contents will be removed from selected species for trophic studies, the carcasses will be bagged and frozen for parasitic analysis. In addition samples will be taken for DNA analysis from selected species at each location.

3. If time permits conduct a RoxAnn survey of the Sound of Sleat. Ground-truthing RoxAnn will be carried out using the day grab.

4. The CTD will be used at selected stations to monitor variations in temperature and salinity within and between the sealochs.

Out-turn Days Per Project: 14days - MFO1T

Survey Areas

Main survey areas - Loch Alsh, Loch Duich, Loch Hourn, Loch Kishorn, Loch Nevis.
Secondary survey areas - Sound of Sleat and around the Small Isles.

Part 1

Clupea sailed from Fraserburgh on 25 January, arriving in Kyle on 26 January where the scientific staff joined the ship. *Clupea* sailed to Loch Nevis and moored overnight in Inverie Bay where the acoustics system was calibrated prior to the start of the survey. Acoustic transecting and pelagic trawling began the next day in Loch Nevis; one tow was carried out. A bad weather forecast meant that the ship moved round to Mallaig harbour to berth there. Severe weather on 28 January precluded leaving the harbour to work. On 29 January *Clupea* steamed to Loch Hourn for first light and carried out acoustic transecting and pelagic trawling there; two tows were carried out. On the morning of 30 January *Clupea* steamed round to Loch Duich for first light. The loch was surveyed acoustically and two tows were performed, one unsuccessfully. *Clupea* moved into Loch Alsh and began acoustic transecting until dusk. This transecting continued on the morning of 31 January until 1130 hours whereupon the acoustic and pelagic trawl gear was dismantled and the ship returned to Kyle of Loch Alsh for the gear and staff changeover.

Part 2

On completion of the gear and staff changeover *Clupea* then sailed to Mallaig to commence part 2 of the cruise. However a severe and prolonged low-pressure system prevented any scientific work from being accomplished until the poor weather abated. On 3 February *Clupea* sailed at 0730 hours to Loch Nevis and surveyed two locations *en route* carrying out objectives 2 and 4. On completion of the objectives *Clupea* proceeded into Loch Nevis where a series of grab samples were taken as part of the survey work in that area for the next day. *En route* back to Mallaig a demersal trawl was carried out in the Sound of Sleat to give an indication of occurrence of species outside the sea lochs being surveyed. *Clupea* berthed in Mallaig at 2000 hours where the day's catches were worked up in accordance with AQCESS protocol and standing instructions.

On 4 February *Clupea* worked in Loch Hourn completing the tasks to be done in the loch by 1300 hours.

Clupea then proceeded to Loch Duich and commenced an appraisal of the location of creel fleets in relation to the potential demersal trawl tracks. In conclusion it was agreed that it would be unsafe to attempt to use the demersal trawl given the constraints of space available for working. The beam trawl was deployed and resulting catch worked up. Two sets of five grabs were taken and two CTDs recorded in Loch Duich. *Clupea* departed from Loch Duich and berthed at Kyle of Loch Alsh in order to start work in Loch Kishorn at the earliest opportunity. On the morning of 5 February *Clupea* commenced work at 0715 hours near to the outer end of Loch Kishorn and continued to work throughout the loch in accordance with objectives 2 and 4. On completion of the objectives for Loch Kishorn *Clupea* steamed to Kyle of Loch Alsh and docked at 1415 hours in order to disembark scientific staff and allow sufficient time for *Clupea* to return to Fraserburgh.

Results

Part 1

One pelagic tow was carried out in Loch Nevis, two in Loch Hourn and two in Loch Duich. The second tow in Loch Duich was a short tow due to lack of space resulting from fixed creels in the loch. The netsonde unit did not work properly and there were problems in hauling the net. One day was lost due to bad weather and this had a knock-on effect for the amount of work that could be carried out on what was a very short survey time anyway. CTDs were performed, one per tow, in each loch.

Part 2

Two and a half days were lost to bad weather at the start of Part 2, leaving only three full days for work to be performed. It should be noted that all personnel involved in the cruise worked extremely hard in order to try and catch up with the down-time attributed to bad weather. Two demersal tows were carried out in Lochs Hourn, Kishorn and Nevis; one was performed in the Sound of Sleat. None could be undertaken in Loch Duich due to fixed-gear restrictions. Two beam trawls were carried out in Lochs Hourn, Kishorn and Nevis; one was carried out in Loch Duich. Ten grabs were collected in each of the four lochs surveyed. Eight CTDs were performed, in each of Lochs Nevis, Hourn and Kishorn, and in the Sound of Sleat.

E Hatfield/D Bova
28 April 2003

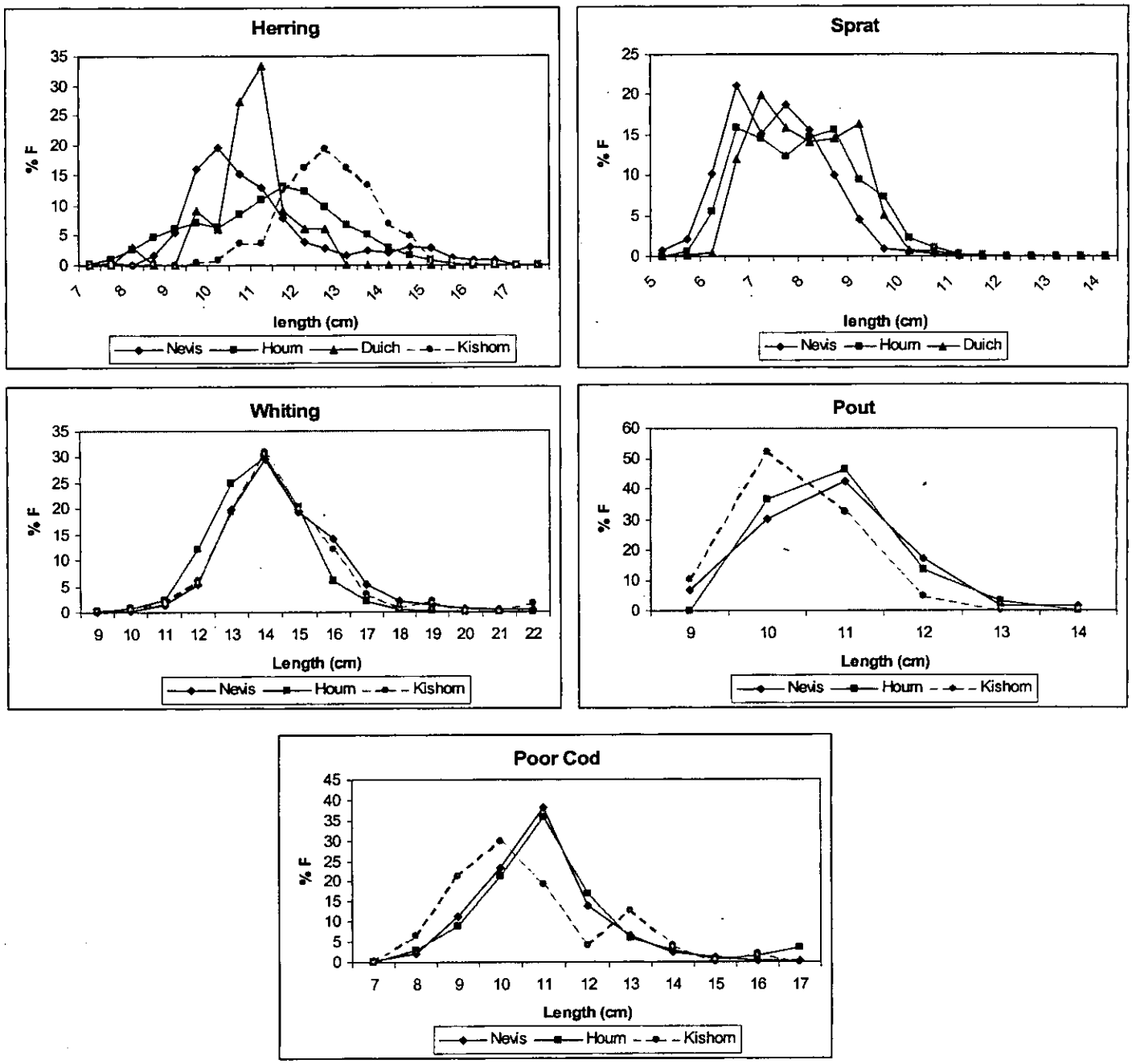

Figure 1. *Clupea* cruise 0202. Length composition of the major fish species by loch

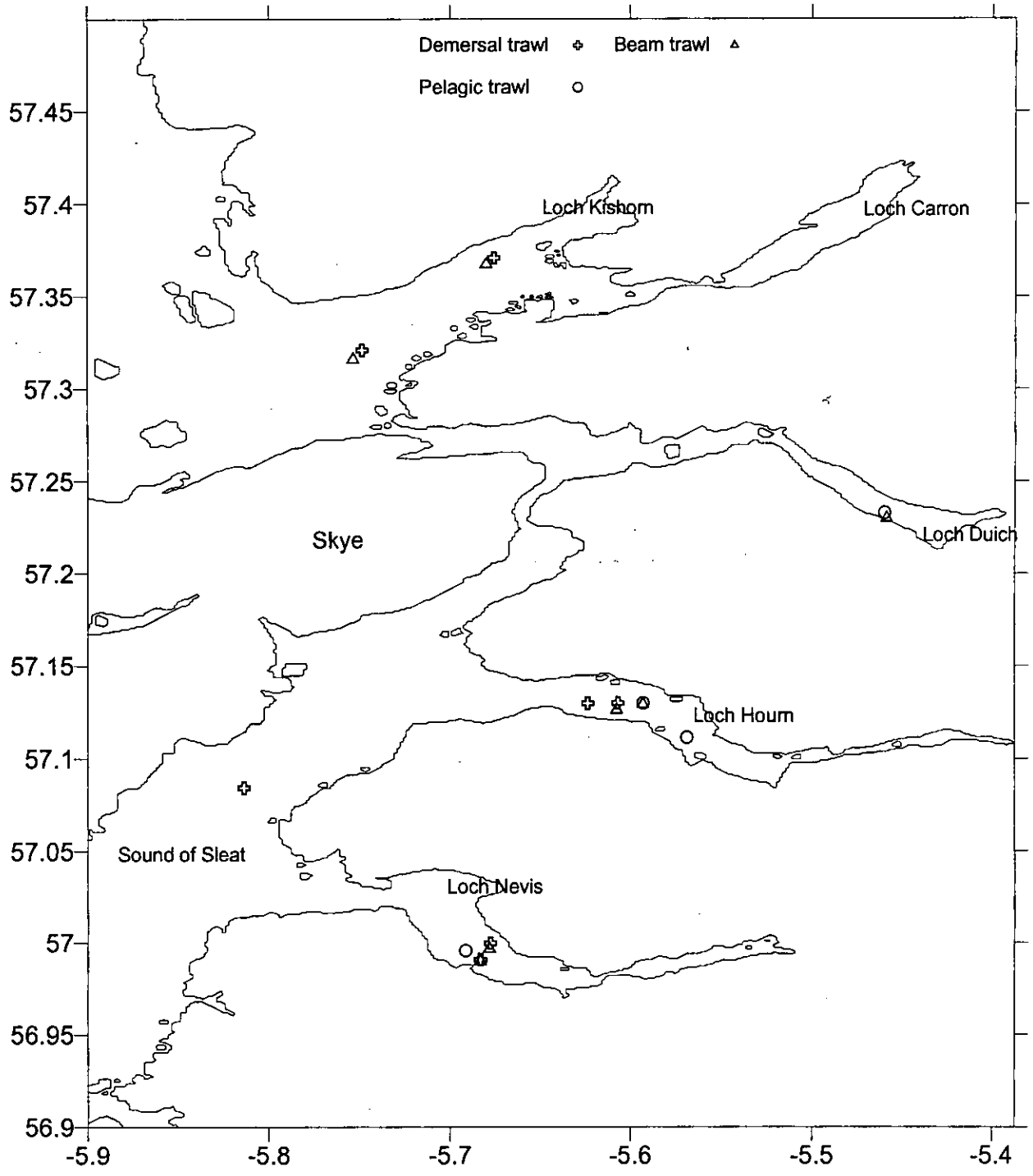

Figure 2. *Clupea* cruise 0202C. Trawl positions.