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LD

FRV Clupea Cruise 13/86

Report

29 October - 18 November 1986

Personnel

Part 1 - (29 October - 4 November)

D N MacLennan	SPSO (in charge)
S T Forbes	SSO
J A Gauld	HSO
F Armstrong	SO
A Smith visitor (Open University)	

Part 2 - (4-18 November)

S T Forbes	SSO (in charge)
J A Gauld	HSO
F Armstrong	SO
A Smith visitor (Open University)	

Objectives

1. In situ target strength measurements of clupeoids.
2. Study of the behaviour of fish schools using the SX202 sonar, especially to observe avoidance reactions.
3. Repeated acoustic survey of a selected area, to determine the precision of survey data and day/night differences.

Narrative

After loading in Greenock, "Clupea" sailed from James Watt Dock at 1900 on 29 October. Calibration of equipment was performed at anchor in Rothesay Bay that night. Survey work continued in the Clyde area, with brief interruptions through gales, until the first half landing at Troon on 4 November when Mr MacLennan left the ship.

On leaving Troon the next day, the survey work continued in the Clyde area until the next landing at Troon on 11 November. From 12 November "Clupea" proceeded into the Minches and worked up the west coast, then round to the Moray Firth. The cruise ended in Aberdeen on the evening of 17 November.

Throughout the cruise, the ship searched for concentrations of clupeoids. When suitable concentrations were found, samples were collected by midwater trawl and acoustic data were recorded using the dual beam and sonar equipment.

Results

Trawl hauls

Few large concentrations of pelagic species were found, but 10 hauls were made. Catches were mostly mixed with sprat, herring and whiting predominating. On two hauls, the catches were almost entirely herring with a few sprats. The length composition of the herring was different in these two hauls.

<u>Haul No</u>	<u>Area</u>	<u>Modal sizes</u>	<u>Proportion</u>
C86/246	Kilbrannon Sound	16 cm	100%
C86/251	Inchmarnock	23 cm	80%
		14 cm	20%

No useful fish concentrations were encountered except in the Clyde area.

Further details of the trawl hauls are given in the attached Table.

Acoustic measurements

The dual beam equipment was deployed on several occasions, but the most promising data were collected from the concentrations fished in hauls 246 and 251 detailed above. These data are being analysed in the Laboratory. Problems were experienced with the new towing cable for the dual beam towed body; an electrical failure occurred early in the cruise. A new termination was made on board with components sent from Aberdeen. Otherwise the equipment performed well. The handling of the dual beam towed body, when the calibration frame is attached, is difficult. Although a satisfactory calibration was performed, some thought needs to be given to better handling methods.

Sonar observations

The SX202 sonar was used to observe fish schools moving in the vicinity of the vessel. Schools near the surface could be identified easily. Significant avoidance reactions were observed on occasions, but no consistent pattern was noted from a preliminary study. Technical problems were experienced in attempts to record the sonar picture on video tape. However these were solved by 11 November and video recordings were made in the final week of the cruise.

Day/night observations

Useful results were obtained during repeated surveys of an area north of Arran. Significant concentrations of herring and/or sprat were observed during daylight. As dark fell, the shoal marks gradually diffused and rose; the fish were completely scattered by 2 hours after dark. These observations are being correlated with the echo-integrator records.

D N MacLennan
S T Forbes

11 December 1986

Trawl Hauls

<u>No</u>	<u>Area</u>	<u>Notes</u>
245	Garroch Head	Small herring, sprats, whiting
246	Kilbrannon Sound	Mostly herring, 10% sprat
247	Cumbræ	Mostly herring, some whiting; daylight
248	Cumbræ	Herring and whiting (50/50); after dark
249	Kilbrannon Sound	Foul haul
250	Loch Striven	Whiting and herring (50/50)
251	Inchmarnock	Mostly herring, some whiting and saithe
252	Loch Alsh	Small sprat, few herring
253	Loch Carron	Mostly whiting, few herring
254	Inner Moray Firth	Good marks but no catch.