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FRV *Clupea*

Cruise 0195C

**REPORT**

9-23 January 1995

**Personnel**

D N MacLennan	DCSO	In charge, 9-16 January
R D Galbraith	SSO	In charge, 16-23 January
P Copland	HSO	9-16 January
P R Boyle	Aberdeen University (AU)	11-16 January
M Collins	AU	9-23 January
S Hughes	AU	11-23 January
G Pierce	AU	16-23 January
J Murphy	AU	19 January only
C Lordan	University College, Cork	10-23 January

**Objectives**

1. To calibrate the Roxann bottom echo analyser.
2. To conduct echo-integrator and trawl surveys of the Moray Firth to determine the biomass and distribution of squid and pelagic fish species.
3. In the event of spawning squid concentrations being found, to collect plankton samples using a small Methot net.
4. To evaluate jig fishing for squid at selected locations.

**Narrative**

On departure from Fraserburgh at 1600 hours on 9 January, some preliminary tests on Roxann were done, however *Clupea* had to remain in port for most of the next 2 days due to severe weather conditions. The acoustic survey began on 11 January with passage across the Moray Firth to Clyde Ness and down the coast to Invergordon. Tests on a new towed transducer body and calibration of acoustic instruments were conducted in the Cromarty Firth during daylight hours on 12-13 January while surveying of the inner Moray Firth continued at night. The south coast of the Moray Firth was surveyed over the next two days. *Clupea* returned to Fraserburgh at 2100 hours on 15 January for change of gear and personnel.

Having rigged bottom trawl gear and installed squid jiggers on 16 January *Clupea* left Fraserburgh on the early tide of 17 January. One haul was made in deep water off Rosehearty before deteriorating weather conditions necessitated a return to harbour. Severe weather prevented any work on 18 January and *Clupea* carried out 5 hauls on 19 January 1995 before SE gales again interrupted work. One long tow was made in the Hole of the Broch on the afternoon of 20 January before *Clupea* steamed west to anchor overnight in Spey Bay. 2 further hauls were

made on 21 January but no work was possible on 22 January when bad weather prevented sailing. Trawl gear and squid jiggers were dismantled and returned to Aberdeen on 23 January .

## Results

Severe weather greatly restricted where and when the ship could work. The acoustic survey was limited to relatively sheltered areas within 10 miles of the coast, whilst in the second week the weather prevented any trawling for as much as half the time. Nevertheless, 3 pelagic hauls and 9 bottom hauls were made (Table 1). Samples of all species caught were measured. Length frequency distributions for the most abundant demersal fish species are shown in Figure 1.

The acoustic survey revealed few echo traces of any size. The pelagic trawl samples contained a few sprat but little else. There was no evidence of substantial sprat concentrations even in the inner Firth where such have been observed in previous years.

The Roxann system was calibrated and worked satisfactorily throughout the cruise.

Because no suitable concentrations of squid were found, the jigging equipment was not used.

## Discussion

In terms of its primary objectives (to assess the abundance of cephalopods and particularly *Loligo forbesi* in the Moray Firth and to obtain samples of the cephalopods for biological work) the outcome of this cruise was disappointing, with few cephalopods, and only a single *Loligo forbesi* caught. Landings data identifies the Moray Firth as one of the main areas of the Scottish squid catch, though the majority of the catch comes in the autumn. Although last season (1994/95) has been a poor one for squid catches in the area, the present scarcity of *L. forbesi* is still surprising. If a dedicated cephalopod cruise is to be repeated in the Moray Firth, it is clear that it should be conducted in the later summer/autumn period when *L. forbesi* is at its most abundant.

Of the squid that were caught 3/5 were found well ahead of the codend, perhaps indicating that squid are able to swim ahead of the net or that they were caught during hauling. The behavioural responses of squid to fishing gear remain largely unknown and a study of squid behaviour may be of value in the future.

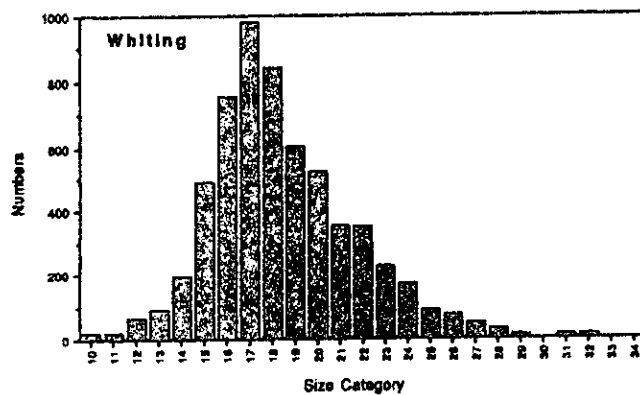
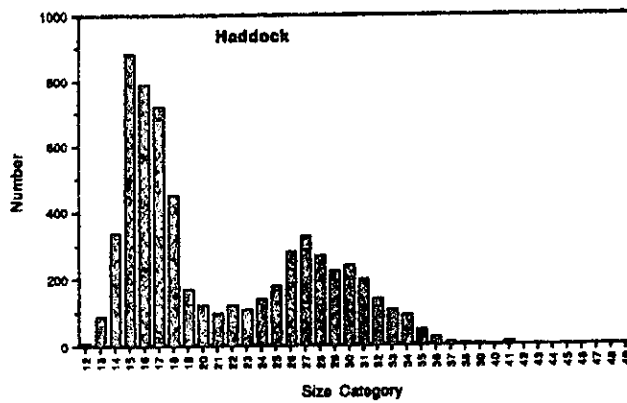
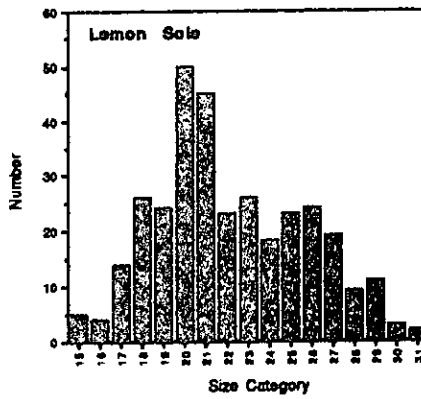
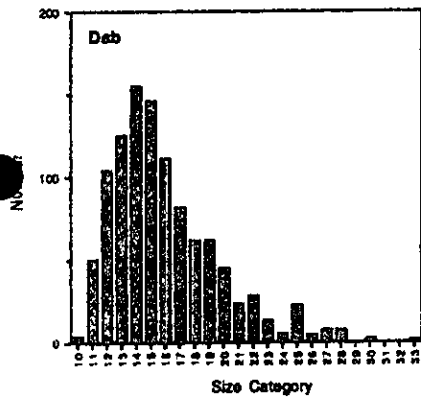
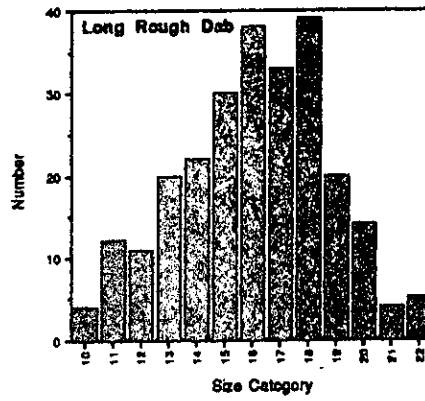
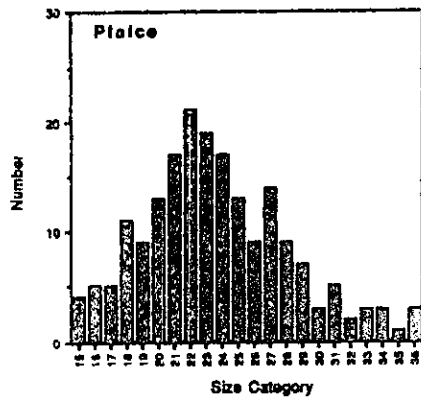
D N MacLennan  
D Galbraith  
M Collins, AU

9 February 1995

Seen in draft: A Simpson (Master)

Table 1. Details of trawl times, positions and depths.

Trawl No	Date	Gear	Start time	Duration (mins)	Shoot Latitude	Shoot Longitude	Haul Latitude	Haul Longitude	Wind	Depth (m)
C95/1	13/01/95	PT	1840	32	57 46. N	3 44. W	57 45.N	3 48 W		30
C95/2	14/01/95	PT	2045	30	57 49.30 N	3 34.55 W	57 49.87 N	3 35.43 W		35
C95/3	15/01/95	PT	1415	60	57 50.89 N	2 48.41 W	57 49.72 N	2 47.05 W		100
C95/4	17/01/95	BT 157	1010	60	57 44.58 N	2 12.50 W	57 44.69 N	2 16.07 W	SSE 3	200
C95/5	19/01/95	BT 157	1050	60	57 48.73 N	1 54.83 W	57 47.89 N	2 01.60 W	SE 5	220
C95/6	19/01/95	BT 157	1300	60	57 46.90 N	2 07.32 W	57 47.41 N	2 13.45 W	SE 4	190
C95/7	19/01/95	BT 157	1448	60	57 46.57 N	2 15.54 W	57 47.68 N	2 21.10 W	SE 4	110
C95/8	19/01/95	BT 157	1622	60	57 47.22 N	2 22.60 W	57 45.38 N	2 57.67 W	SE 4	125
C95/9	19/01/95	BT 157	1833	50	57 45.59 N	2 17.56 W	57 44.76 N	2 13.06 W	SE 6	175
C95/10	20/01/95	BT 157	1540	120	57 50.05 N	1 37.46 W	57 48.75 N	1 55.44 W	S 2	230
C95/11	21/01/95	BT 157	0922	60	57 48.81 N	3 14.07 W	57 46.63 N	3 20.91 W	SW 2	65
C95/12	21/01/95	BT 157	1148	60	57 49.28 N	3 06.84 W	57 50.37 N	3 00.24 W	SE 3	100



Cruise 0195C. Length frequencies of bottom trawl catches