R1/6

11CR80

IN CONFIDENCE - NOT TO BE QUOTED WITHOUT REFERENCE TO THE LABORATORY

CRUISE 11/80 (Part 1)

REPORT
4-20 November 1980

OBJECTIVES:

1. To investigate the distribution and abundance of herring larvae in the outer reaches of the Firth of Clyde.

2. To survey the distribution and abundance of young herring and sprats in the Clyde with an echo-sounder and mid-water trawl.

3. To investigate the biological composition of young herring and sprats in the Clyde.

4. To investigate the residue burden of organic pollutants in herring samples, water samples and bottom sediments in the Clyde.

NARRATIVE:

Crew and scientists joined 'Clupea' in Troon on the afternoon of 4 November and sailed the same evening, to carry out a larval survey of the outer Clyde. The echo integrator and associated acoustic equipment were tested briefly en route to the first plankton station All 46 plankton stations shown in Figure 1 were completed by the morning of 6 November when 'Clupea' docked in Campbeltown. 'Clupea' sailed again the same evening to test the fishing gear and netsonde equipment before returning to Campbeltown for the night. On 7 November five trawl stations and one echo integration run were completed before docking in Troon at 2000 for the weekend.

During the weekend a visiting scientist from Pitlochry joined 'Clupea'. In the following week 15 trawl stations were completed and 8 stations were worked for grab and water samples before docking in Troon on the evening of 13 November. The scientist from Pitlochry left the ship early the following morning. Two further trawl stations and two echo integrator runs were made the same day before 'Clupea' docked in Campbeltown at 1730 for the weekend.

During the last week the remaining seven trawl stations were completed and one foul haul from a previous week was repeated. Trawl station positions are shown in Fig. 2. One days work was lost due to gale force winds on 18 November. 'Clupea' docked in Troon at 1800 on 19 November and the scientists departed for Aberdeen the following day.

RESULTS:

A cursory examination of the plankton samples indicated a widespread presence of late herring larvae but at low abundance. No newly hatched larvae were observed.

In the trawling survey herring were taken in every valid haul with an average catch rate of 222 per one hour tow. This represents a slight decrease compared to 1979 but a much higher catch rate than in the surveys of 1970-1974. A preliminary investigation of the length compositions indicates that 0-group herring made up about 56% of the catch, I-group 28% and older fish 16%. The mean catch rate for I-group herring was much lower than in 1979 while those for 0-group and older fish were higher.

With regard to geographical distribution, 0-group herring were found, as in 1979, to be more abundant in the upper Clyde N. of 55°40'N, than south of this line, though relatively high numbers were also taken in Irvine Bay and Kilbrannan Sound. Catches of I-group and older herring were largely confined to Kilbrennan Sound and the Inch Marnoch area.

From the evidence of the echo survey, traces which could be definitvely attributed to herring were rather less abundant than in 1979.

In addition to herring the most abundant species taken in the catches were sprats, whiting and euphausids (Meganyctiphores norvegica).

Samples of herring and euphausids for pesticide analysis were taken from several hauls and three samples of juvenile herring from different localities were preserved for parasitology investigations. Water samples were obtained from 8 stations and sediment cores from 7 out of 8 stations (for pesticide analysis), a malfunction of the grab combined with poor weather conditions preventing sampling at one station.

M WALSH
9.12.80

Seen in draft: G Geddes

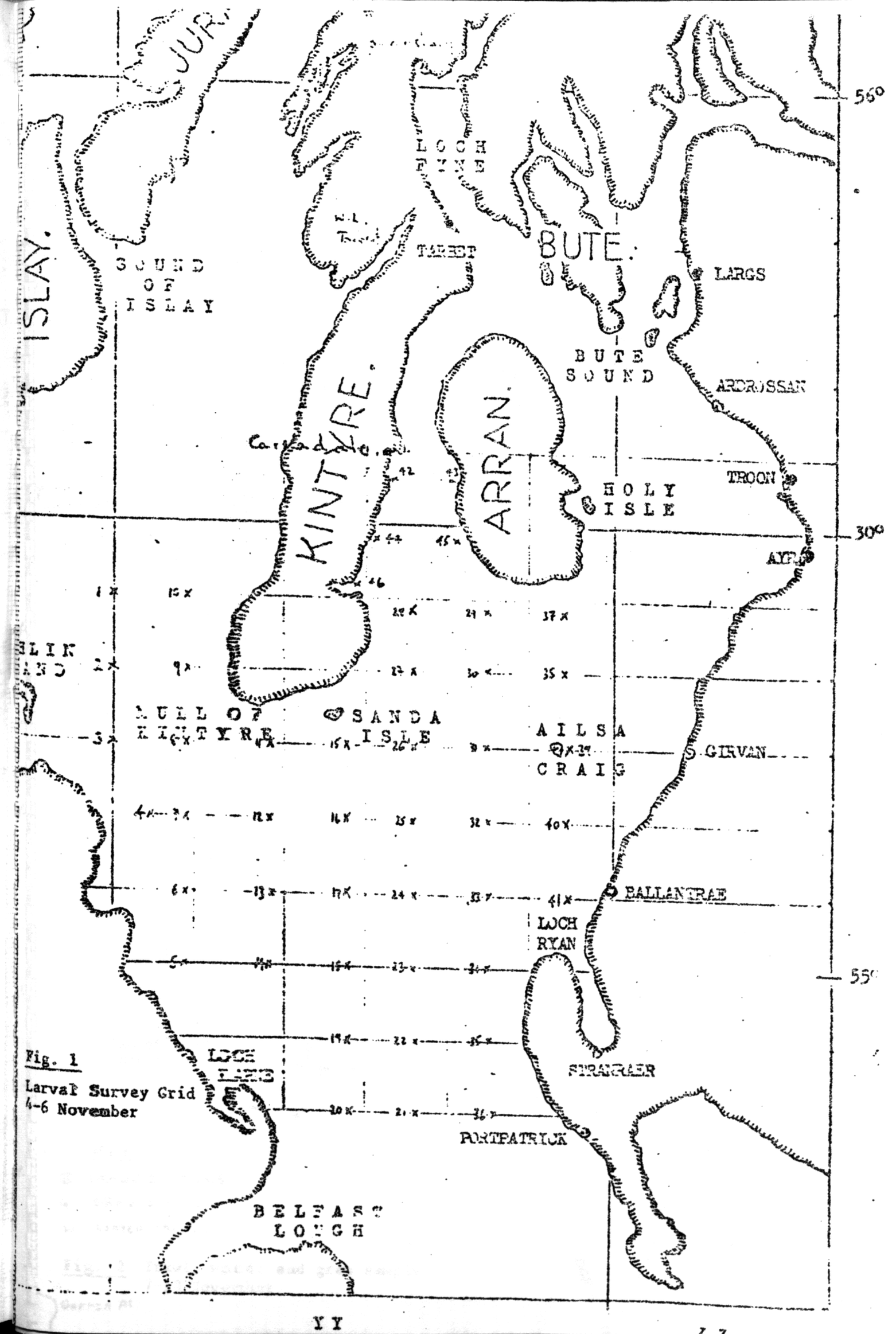

Fig. 1

Larval Survey Grid
4-6 November

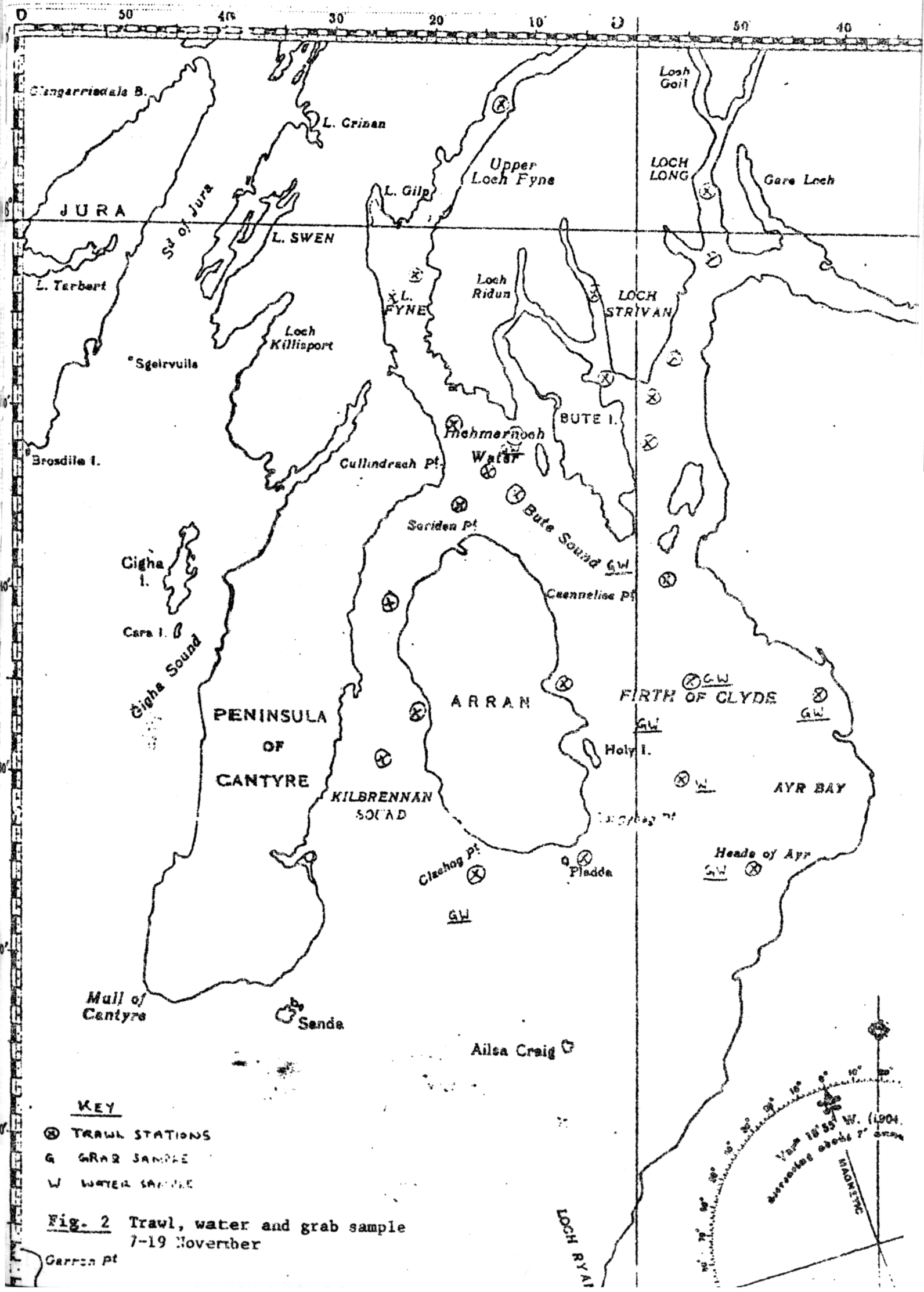

Fig. 2 Trawl, water and grab sample 7-19 November