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## CRUISE REPORT

F.R.V. "Mara" and "Clupea"

November 8th - 20th, 1965

The following took part for all or part of the time:-

C.J. Chapman  
A.D. Hawkins  
J.R.G. Hislop  
J. Main  
C. Robb  
A. Johnstone

"Mara" and "Clupea" sailed from Buckie for Loch Ainort, Skye on Monday 8th November. "Mara" arrived early on the 11th, "Clupea" being delayed at Inverness with engine trouble. She eventually arrived on 16th November.

Bottom cages were put down by "Mara" on 11th, 12th in 80 feet of water. Haddock were caught on handlines fished from "Mara" and/or small boat between 13th and 19th November. These were held at the surface for periods of between 1 and 4 hours before they were taken down in polythene bags by diver and put into a bottom cage. In all, 40 haddock were put into the cage between November 13th - 19th (8 on 13th, 16 on 15th and 16 on the 19th).

Attempts were made to listen to these fish from the anchored ship. In order to avoid the need to use the ships generator, the noise from which tends to mask haddock sounds, at first a power cable was run from a generator on shore to run recording equipment on board. Owing to difficulties encountered when trying to anchor near the cages, however, it was decided to abandon this method. An alternative system was then set up in which the hydrophone was run from batteries lashed to dahns on the surface, and signals were fed through a co-axial cable to the shore. This proved more successful after initial earthing troubles were overcome, so that towards the end of the cruise a further weeks work, based ashore, enabled the haddock to be monitored for a complete 24 hour cycle. The tapes are now being analysed.

The survival of hand-line caught haddock during the experiment appears to have been surprisingly poor. At the conclusion of the experiment only 11 out of the original 40 haddock were still alive in the cage. Only two were found dead, however, and the cage was examined for gaps through which fish could have escaped, but none were found. There is a strong possibility that the apparent mortality of these fish, which appeared very healthy on the surface, was a result of rapid descent to the bottom.

An attempt was made to obtain live fish that had not undergone the double pressure change to which the hand-line caught fish were subjected. A small line with 40 hooks was shot in the vicinity of the cages at 120 ft. depth and divers descended and swam along the line. 12 haddock were removed from the hooks and transferred to a polythene bag but, by the time this was accomplished, the divers were running into decompression time and had to surface. However, while bringing these fish to the surface it was

possible to observe the effects of rapid pressure reduction. At 50 feet all fish were seen to lose equilibrium control while at 30 feet all fish appeared to have ruptured swimbladders and gas was seen escaping from vent and fin rays. It therefore seems likely that the hand-line caught fish originally put into the cage would have ruptured swimbladders so that on returning to the bottom they would have experienced difficulty in adjusting buoyancy to cage depth; mortalities may have been caused because of this. The 11 fish remaining at the conclusion of the experiment from which sounds were recorded appeared to be perfectly healthy.

C.J. CHAPMAN

17/12/65