

R1/6

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FRV *CLUPEA*

Cruise 0295C

REPORT

30 January to 13 February 1995

Personnel

- C S Wardle SPSO
- C W Glass SSO
- C D Hall SSO
- Y-Y Kim Visitor
- K Lange Hamburg IFF

Objectives

1. To measure light distribution in and around the trawl for modelling the visual stimulus (Mr Kim).
2. To observe behaviour of fish in experimental extensions in order to quantify escape behaviour and encounter rate.
3. To observe the behaviour of fish in the same extension arrangements in dark conditions using the TUV fitted with the Simrad scanning sonar and a new low light level flash TV system.
4. To assess small fish escape routes at night using small mesh pocket covers.
5. To assess the potential of flow guidance devices in aiding the passage of fish attempting to swim through meshes.

Out-turn days per project: 15 days ICL1

Narrative

Clupea sailed on 30 January at 11 pm for an anchorage off Black Hill, Spey Bay. Trawling commenced on the afternoon of 31 January with one daylight and two dark hauls where pockets were used to find dark escape routes. On 1 February due to worsening weather after one haul, *Clupea* sheltered in Cromarty. On 2 February two daylight hauls allowed observations of the pockets and these were adjusted ready for three short night hauls which were completed before *Clupea* ran for shelter in Buckie which was reached by midnight. Westerly gales on 4 February delayed sailing and *Clupea* moved to the Dornoch Firth. Weather had eased by the evening and allowed the use of a flash TV system during the evening tows. The weather was bad again on 6 February and *Clupea* sheltered in Cromarty. The escape panel was changed from a black square mesh panel to an identical white square

mesh panel. An afternoon haul showed very few fish in the area and at the start of the evening tow the rotor motor failed and *Clupea* anchored to allow it to be changed. In the afternoon tow of 9 February attempts to make directional light measurements in parallel with camera images of different parts of the trawl (see objective 1) were curtailed when the light meter was flooded. In addition, the rotor motor still did not operate successfully. Escape pockets were fitted to the windows and two short dark hauls were made while repairing the vehicle. *Clupea* drifted in calm weather until a 10 am start on 10 February. Parallel light meter camera observations were started but visibility was poor and the rotor motor failed again. While repairing the motor oiling system *Clupea* sailed towards Fraserburgh and made a short test tow before sheltering in Fraserburgh overnight. *Clupea* sailed on the 9 am tide and towed off Buckie with SE gale to obtain the objective 1 data set. The evening tow was curtailed by the build-up of a westerly gale and *Clupea* returned to Fraserburgh by 11 pm on 11 February. A continuing gale prevented further work.

Results

Twenty-eight hauls were completed in very difficult conditions. Objective 1 gave valuable results linking TV images of the net to the light level readings and are incorporated in the prediction model of the visibility of fishing gear components. Insufficient TV observations were made in daylight to advance objective 2. The Flash TV system needed development of a more dynamic adjustment of the light level for varying range of the cod-end but it was shown that use of the Simrad sonar did allow precise positioning of the camera alongside the cod-end in the dark. The results from the pocket experiments (objective 4) have added to our knowledge of the difference between night and day escape distributions and the different reaction behaviours. There was no time to advance objective 5.

C S Wardle
28 May 1996