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FRV *Clupea*.

Cruise 0991C

## REPORT

7-25 June 1991

### Personnel

J R G Hialop	PSO (in charge)
I M Gibb	SO
P J Bromley	(Visitor)

### Objectives

1. To map the distribution of pelagic 0-group gadoids in the northwestern North Sea and to collect samples to determine the extent to which these fish prey upon each other.
2. To sample other fish species that are potential predators of pelagic 0-group gadoids.
3. To survey the distribution and abundance of pelagic species in the inner Moray Firth.
4. To collect live 0-group gadoids and juvenile sandeels for aquarium studies.

### Narrative

*Clupea* left Buckie on the evening tide of 7 June and proceeded west. The first 24 hours of the cruise were given over to an echosounding and midwater trawl survey of the inner Moray Firth and the inner Firths (this work being done in conjunction with the SOAFD funded programme of research on common seals being undertaken by Aberdeen University). Trawling for 0-group gadoids began on 9 June. A strong SE wind made it necessary to start work west of the Orkney Islands but after 24 hours the weather moderated and *Clupea* moved into the North Sea. The next five days were spent trawling east of the Shetland Islands. After the half landing (Lerwick, 15 June) *Clupea* completed a series of 18 trawl hauls at a position some 60 miles SE of Lerwick to obtain data on circadian variations in the depth distribution and feeding patterns of pelagic 0-group gadoids. During the remainder of the cruise a further 17 hauls were made south of 59°30'N. Live fish were landed for transport to the Marine Laboratory at Buckie on 21 June (sandeels) and at Inverness on 24 June (juvenile herring). Having successfully completed the programme, *Clupea* docked at Buckie at 2000 on 24 June.

## Results

1. Pelagic 0-group cod, haddock and whiting were widely distributed south of latitude 60°30'N. Juvenile cod appear to be unusually abundant in 1991 and the catch rates of this species in the 19 "standard" rectangles east and south east of the Shetlands were higher than those of haddock and whiting. An area of concentration of cod, haddock, whiting and Norway pout was located approximately 60 miles south east of Lerwick and this was intensively fished to provide samples from three depth strata (10 m, 35 m, near bottom) at four-hourly intervals. The catch rates during this exercise suggested that few, if any, young gadoids were living demersally but they were making diel vertical migrations between the middle and upper strata. Large numbers of fish were preserved in formaldehyde solution. These will be sent to the Lowestoft Laboratory for stomach contents analysis.
2. Very few potential predators of 0-group gadoids were caught during the cruise. Adult whiting (20-35 cm) were the most frequent by-catch and their stomach contents were preserved for analysis. No shoals of mackerel were detected.
3. A systematic echosurvey of the inner Moray Firth and the inner firths was made during the first 24 hours of the cruise. Midwater echotraces were few and far between. However, marks were detected in the Inverness Firth off Munlochy and a 15 minutes tow caught nine baskets of 1-group sandeels and small (5-8 cm) herring. At the end of the cruise dense echotraces were seen in the Cromarty Firth. It was not possible to fish in this area, but a haul in the deeper waters between the Sutors of Cromarty, where dense marks were also seen, caught 0-group and 1-group sandeels and small herring.
4. No live 0-group gadoids were collected but live juvenile sandeels were successfully transported to the Laboratory on 21 and 23 June.

J R G Hislop  
7 August 1991

# CRUISE TRACK CLUPEA 0991C

