

R1/6

Not to be cited without reference to the Marine Laboratory, Aberdeen

FRV *Clupea*

Cruise 0302C

## REPORT

12–25 February 2002

**Loading:** 7 February, Fraserburgh

**Unloading:** 25 February, Fraserburgh

## Personnel

P J Wright	In charge
I M Gibb	
F M Gibb	
R J Turner	Visitor

## Fishing Gear

Jackson Rockhopper Trawl BT 158 (with liner), Hand lines

## Other Equipment

Day Grab  
Seabird CTD  
Minilogger  
EK 500  
Echoview data collection PC  
Roxann computer with Maxsea software  
Scanmar  
XBT  
Two fish tanks

## Objectives

1. To identify significant concentrations of spawning cod in inshore areas from the Moray Firth to the Clyde.
2. To tag spawning cod for investigations of their movements. Tagging will involve both conventional and data storage tags.
3. To collect samples of cod for analysis of reproductive development, genetics and otolith chemistry
4. To investigate the potential of echosounding and ROXANN for mapping the distribution of cod spawning areas.

**Out-turn days per project:** 14 days MF0462

## **Narrative**

The scientific equipment was loaded onto the vessel and the laboratory set up on 7 February. The survey development group installed an EK 500 echosounder system with an echoview data collection computer and the Roxann computer with Maxsea software.

The scientific staff joined *Clupea* at Fraserburgh at 1000 hours on the morning of 12 February and completed loading and installation of equipment. The ship departed Fraserburgh at 1100 hours and steamed to a fishing site a mile away to conduct a test haul. Two further trawls were conducted in the Moray Firth before steaming to anchor at Sinclair Bay. Over the following days trawls were conducted to the west of Hoy, near the Butt of Lewis, Summer Isles, north and south Skye and off Eigg. The ship then sailed to Orkney on 19 February. Bad weather conditions meant that it was not possible to work on the following dates; 14th (Broad bay), 16th (Stornoway), 20th-23rd (Kirkwall). The ship left Kirkwall on 23 February and steamed to Fraserburgh. Further trawls were conducted close to Fraserburgh on 24 February before returning to port for unloading the next day.

Altogether 22 trawl deployments of 45 minute - two hour duration were made. A minilogger attached to the trawl provided information on bottom temperature. XBT casts were taken on an opportunistic basis between trawl hauls at 15 locations. Attempts to hand line for cod were made at two coastal sites along the Lewis coast.

### **1. Gear performance**

For live fish capture the BT 158 Jackson Rock hopper trawl was modified to include a PVC liner in the cod-end, retaining 1 cubic metre of seawater in a still water environment. The trawl also incorporated a 70 mm square mesh panel to reduce the capture of small fish. Four alcothene hoops on the cod-end supported the liner and maintained the general shape of the trawl.

The modified trawl was deployed successfully on the first trial haul off Fraserburgh on 12 February. On its recovery the forward three hoops collapsed due to the weight and stretch of the trawl whilst being lifted onboard, but the liner retained its shape and water content until opened on deck. Fish were clearly seen swimming within the liner as it was lifted onboard. Due to the frailty of the cod-end material the trawl could not be wound fully onto the netdrum under tension and was therefore pulled in by hand for the final few meters to save excessive damage to the material. The cod-end was then lifted onboard by use of a strop. The fish caught were in excellent condition and both suitable for tagging or retention for further aquarium experiments.

### **2. Tagging**

Out of 22 hauls only 29 cod were caught. Of these only 12 were sufficiently large enough for tagging. In all 10 cod were fitted with data storage tags using either Lotek (CEFAS; n=7), or Star-Oddi (FRS; n=3) types. Two other cod were tagged with conventional tags. All tagged fish were released within 5 km of the area caught.

### **3. Samples of cod**

Fin clips were taken from all tagged cod for genetic analysis. Full biological sampling was carried out on all other cod caught, and gill tissue samples taken for genetic studies. Otoliths were removed with plastic forceps for otolith microchemistry and age reading. Ovaries were weighed and sections of tissue fixed in 8% phosphate buffered formalin for reproductive studies.

### **4. Acoustic data**

The EK500 and RoxANN was run continuously throughout the cruise in order to investigate whether spawning aggregations of cod can be detected acoustically in Scottish waters. However, given the scarcity of cod no useful information was obtained.

P Wright  
19 July 2002

Seen in draft: A Nicol, OIC Clupea