

R1/3

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

FRV *Clupea*

Cruise 0402C

## **REPORT**

5-18 March 2002

**Loading:** 25 February, Fraserburgh

**Unloading:** 18 March, Fraserburgh

### **Personnel**

P J Wright	In charge
I M Gibb	
F M Gibb	
P J Barkel	
R J Turner	Visitor (CEFAS, Lowestoft)

### **Fishing Gear**

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

### **Other Equipment**

RCTV and 400 m cable  
Day Grab  
EK 500  
Echoview PC  
Roxann PC  
XBT  
CTD/MILAP PC  
Scanmar  
Three Fish tanks

### **Objectives**

1. To tag cod for investigations of their movements.
2. To collect samples of cod for analysis of reproductive development, genetics and otolith chemistry.
3. To map concentrations of spawning cod in inshore areas from Shetland, Orkney and the Moray Firth.

**Out-turn Days per Project:** 14 days MF0462

## **Narrative**

The acoustic equipment was loaded onto the vessel and the laboratory set up on 25 February by the Survey Development Group. Other scientific equipment was loaded onto the vessel and the laboratory set up on 25 and 26 February.

Scientific staff joined *Clupea* at Fraserburgh at 1000 hours on the morning of 5 March and soon after completed loading and installation of equipment. The ship sailed at 1030 hours to Fraserburgh bay to test the RCTV. However, the ship then returned to Fraserburgh because the weather was too severe to sail to any sampling site. The ship left Fraserburgh the evening of the 7 March at 2200 hours and steamed to two sites in south-east Shetland that had been suggested by a local sea angler. Attempts to hand line at these sites were hampered by high winds and no cod were caught. The ship then steamed to Lerwick for the night. On 9 March the ship sailed to one site near Helliness to try hand-lining again; 24 cod were caught. The ship then steamed to Scalloway. The following three days were spent trawling in the Scalloway Deeps using tow positions supplied by the skipper of *Atlantia*, from the North Atlantic Fisheries College. *Clupea* departed from Shetland on 13 March for a site east of Orkney, where *Scotia* had earlier caught cod. No cod were caught so the ship then anchored nearby. On 14 March the ship steamed to the Moray Firth and conducted two trawls, before returning to Fraserburgh. Due to bad weather no sampling was conducted on 15 March. Further trawls were conducted on 16 and 17 March in the Moray Firth, as well as a deployment of the RCTV. The ship returned to Fraserburgh on the evening of 17 March and unloaded the next day.

Altogether 19 trawl deployments of one hour duration were made (Table 1). The distribution of hauls in this survey and 0302C is given in Figure 1. A minilogger attached to the trawl provided information on bottom temperature. XBT casts were taken on an opportunistic basis between trawl hauls.

### **1. Tagging**

Out of 19 trawls and hand lines 196 cod were caught. A total of 123 DST tagged cod were released. A summary of the tags deployed is given in Table 1. Tagged fish were released within 5 km of the area caught.

### **2. Samples of Cod**

Fin clips were taken from all tagged cod for genetic analysis. Tissue samples were taken from all other cod >25 cm for genetic and reproductive 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 histological examination.

### **3. 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. Grabs were taken to ground truth RoxAnn in areas where high catch rates of cod were taken. Significant numbers of cod were taken in also taken by hand line over hard reef area.

#### 4. TV Observations

Due to bad weather and poor sea conditions when work was possible, there was very little time to deploy the RCTV. All trawls in the Moray Firth were conducted in deep trinks over soft ground. Therefore in order to see whether cod were also present in shallower areas of hard ground, as found in Shetland, the RCTV was deployed along a transect from the top of Rosehearty shoal down into deeper water. No fish were observed suggesting that in this area at least, cod only occurred in the deep water.

P Wright  
23 July 2002

*Seen in draft: A Nicol*

**Table 1** Summary of Cruise

	Number
Hauls	19
Cod caught	196
DST releases	123
Lotek DST releases	43
Star-Oddi DST releases	80
Fly tags released	18
Fish biologically sampled	55
Finclips collected	145
Gills collected	50
Ovaries preserved	22
Otoliths for age estimation	50

Figure 1. Capture locations Cruises 030C and 0402C

