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FRV *Clupea*

Cruise 1403C

## **REPORT**

28 August – 11 September 2003

**Loading:** 25 August, Fraserburgh

**Unloading:** 11 September, Fraserburgh

## **Personnel**

I M Gibb (SIC)

F M Gibb

**Out-turn Days Per Project:** 15 days MF0462

## **Fishing Gear**

BT158 demersal trawl with 10 mm Codend

## **Other Equipment**

Minilogger

Scanmar (depth, height and spread units)

2 fish tanks

## **Objectives**

1. To collect samples of 0-group cod, haddock and whiting for otolith studies and genetic analysis from the Moray Firth, Shetland, North and South Minches.
2. To tag cod for investigations of their movements. Tagging will involve both conventional and data storage tags.

## **Report**

All heavy gear was loaded onto the vessel on Monday 25 August and scientific equipment loaded the following day. Staff joined the boat at 1000 hours on Thursday 28 August and made final adjustments to the set up of the laboratory. Bad weather delayed sailing until Saturday 30 August at 1800 hours, when *Clupea* steamed straight for the west side of Shetland. Trawling for juvenile gadoids commenced in waters around Scalloway on Sunday 31 August and continued over the next day. An additional trawl in the Scalloway Deep was carried out to attempt the recovery of DST tagged cod, released over the last 2 years in the surrounding area. The required number of samples were obtained for both cod and whiting, but haddock were found to be very scarce in all tows. Further tows were conducted in St Magnus Bay on

2 September before the vessel steamed for Orkney. A total of six tows were made in waters around the east side of Orkney over the next two days, in depths ranging from 20-70 m. Sample requirements were met for haddock and whiting, but no juvenile cod were caught in any of the hauls undertaken. The vessel then made passage for the Minches on 4 September at 1500 hours. Continuous trawling was conducted the following day in the Stoer Bay area, and sampling for haddock and whiting was successfully achieved. However, the scarcity of cod in all tows made it unproductive to remain in the area, so the vessel steamed back to the Moray Firth on 6 September. Trawling in the Moray Firth continued over the next two days, in depths ranging from 18-65 m. All cod and haddock samples were obtained, but whiting numbers were very low. The vessel then sailed south in the afternoon of 8 September, anchoring that night off Stonehaven Bay. Trawling continued the next day until all required samples had been collected. At the request of the lab, live plaice were maintained within the onboard fish tanks before being transferred into Stonehaven by the *Stella*. The vessel returned to the Moray Firth on Thursday 10 September to augment the sample numbers for whiting and to capture more live plaice. The vessel completed sampling later that day and returned to Fraserburgh docking at 1600 hours. Unloading took place the following day, and staff returned to Aberdeen.

### **Trawls**

A total of 37 hauls of 15-50 minute duration were deployed throughout the cruise. The distribution of hauls is given in Figure 1. Tow positions were chosen in consultation with the skipper and from cruise records from previous inshore surveys. A minilogger attached to the headline recorded water temperature and depth every 30 seconds throughout each tow. Bottom water temperature ranged from 11.49–14.59°C. Length ranges of sampled 0-group gadoids are shown in Table 1.

### **Sample Collection**

A sample size of 100 juvenile cod, haddock and whiting was targeted from each of the five main areas (see Table 2). Cod sagittae were removed with plastic forceps and preserved dry in plastic microtubes for microchemistry analysis. Cod lapillae were dissected with fine forceps and also stored dry in plastic microtubes for daily age analysis. Haddock and whiting sagittae were collected for ageing back at the laboratory. Genetic samples were taken from cod (gill tissue), haddock and whiting (skin tissue) and stored in individual vials filled with 95% ethanol. The ethanol was replaced after 24 hours to minimise tissue degradation.

### **Tagging**

Due to the time limitation on the cruise caused by the initial bad weather and the low catch rates of suitably sized fish, the tagging part of the cruise programme was curtailed.

I M Gibb  
3 October 2003

Seen in Draft: A Simpson

Table One: Length range of sampled individuals

AREA	COD		HAD		WHI	
	min	max	min	max	min	max
Buchan	8.4	17.7	11.5	17.0	8.0	16.9
Moray Firth	9.2	19.2	10.4	17.0	7.2	17.5
Shetland	5.6	17.9	11.9	14.4	6.0	15.9
Orkney	-	-	10.3	17.4	7.7	15.5
North Minch	9.4	17.6	10.7	15.4	9.4	16.0

Table Two: Total number of genetic and otolith samples collected from each species by area.

AREA	GENETIC SAMPLES			OTOLITH SAMPLES			
	COD	HAD	WHI	COD sagittae	COD lapillae	HAD	WHI
Buchan	120	100	100	120	120	100	100
Moray Firth	200	100	100	200	200	100	100
Shetland	200	10	100	200	200	10	100
Orkney	0	100	100	0	0	100	100
North Minch	10	100	100	10	10	100	100
<b>TOTALS</b>	<b>530</b>	<b>410</b>	<b>500</b>	<b>530</b>	<b>530</b>	<b>410</b>	<b>500</b>

Figure 1: Trawl locations for Cruise 1403c

