

R1/12

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

FRV *Clupea*

Cruise 0203C

REPORT

3-17 February 2003

Loading: 28 January 2003, Fraserburgh

Unloading: 17 February 2003, Fraserburgh

Personel

I M Gibb	(In charge)
F Neat	
F M Gibb	
R J Turner	Visitor (CEFAS, Lowestoft)

Fishing Gear

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

Other Equipment

Scanmar
Minilogger
3 fish tanks

Objectives

1. To identify significant concentrations of spawning cod in inshore areas from the Moray Firth to Shetland.
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, whiting and haddock for analysis of reproductive development, genetics and otolith chemistry.

Out-turn Days Per Project: 15 days MF0462

Report

All scientific equipment was loaded onto the vessel on Tuesday 28 January. Staff joined the boat on Monday 3 February, and made final adjustments to the set up of the laboratory. Bad weather delayed sailing until Wednesday 5 February at 1800 hours, when *Clupea* steamed straight for Shetland. Due to strong SW winds the following three days were spent rod and

lining for cod over hard ground to the East of Shetland. The ship then sailed to the West coast of Shetland, and commenced trawling on Sunday 9 February. Trawling continued in this area over the next three days, before the vessel headed for Orkney on 12 February. Trawling in waters around Orkney provided no significant numbers of cod, so the vessel made passage for the Moray Firth on Thursday 13 February. Trawling continued over the next 4 days until worsening weather conditions stopped work on 16 February, when *Clupea* docked in Fraserburgh. The vessel was unloaded on 17 February.

1. Survey of Cod Spawning Areas

Trawl locations were identified in consultation with the skipper, and from previous surveys. A total of 32 hauls of up to 1 hour duration were deployed throughout the cruise with catch rates ranging from 0-193 cod per tow. A minilogger attached to the headline recorded water temperature throughout each tow. Additional cod were obtained for tagging by rod and line fishing over ground unsuitable for trawling.

2. Tagging

125 cod were of suitable size (>25 cm) and condition for internal tagging with data storage tags (DSTs). 35 smaller fish were released with external tags only. Table 1 shows the release statistics by area and tag type. All tagged fish were released in their recapture area. Only 4 fish could be identified as spawning at the time of tagging. Fin clip samples were taken from all tagged fish.

Total no of ...	Moray Firth	Orkney	Shetland	TOTAL
Star-Oddi centi tag releases	23	0	31	54
Star-Oddi milli tag releases	11	1	9	21
Lotek 2400 tag releases	20	0	30	50
External tag releases	4	1	30	35

3. Samples of Cod, Haddock and Whiting

Morphological measurements were taken on all cod unsuitable for tagging. Samples of gill tissue were fixed in absolute ethanol for genetic studies, otoliths removed with plastic forceps for otolith microchemistry and age reading, and ovary sections fixed in 8% buffered formalin for reproductive studies. Haddock and whiting were sampled in three different areas (Shetland, Orkney and the Moray Firth) for various morphological parameters and genetics (skin tissue in ethanol) for work to be conducted as part of MF 0464. See Table 2.

Table 2: Total number of fish that were sampled for the following observations

No sampled for ...	Cod	Haddock	Whiting
Total Lgth	350	360	326
Total Wt	350	360	326
Liver Wt	350	360	282
Gonad Wt	244	351	292
Gutted Wt	350	360	326
Ovary samples	94	0	0
Gill-samples	350	0	0
Skin samples	0	360	326
Otoliths for ageing	350	360	326
Otoliths for ICPMS	350	0	0

I Gibb
28 March 2003

Seen in draft: A Nicol, OIC FRV *Clupea*