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FRV *Clupea*

Cruise 0906C

REPORT

3–20 July 2006

Loading: Fraserburgh
Unloading: Fraserburgh

Personnel

*E Hatfield	(In charge) 3-12 July
R Campbell	
O Goudie	
*S Hay	(In charge) 13-20 July
N Serpetti	

Out-turn days: 18 days - MF01ta

Fishing Gear

Jackson Rockhopper Trawl BT158 with 10 mm Codend
International (modified) Young Gadoid Trawl PT154 with 6 mm Codend
1 m ring net (obliquely towed)
Loch Ewe plankton net (vertically towed)

Equipment

Scanmar (height, depth and spread units)
Minilogger
Simrad EK500
Seabird CTD

Objectives

1. To investigate the distribution of juvenile herring and sprat through the North and South Minch through bottom, or near-bottom trawling. Species composition and length-frequency distributions of all the fish caught will be determined. Sub-samples will be weighed and otolithed to establish age-length and length-weight relationships. Herring samples will be analysed for sex, maturity, *Ichthyophonus* and *Cryptocotyle lingua* infection. Sprat samples will be analysed for *Lernaeenicus sprattae, L. encrasicoli* and *Cryptocotyle lingua* infection.

2. To collect stomach samples from both herring and sprat to compare summer feeding patterns to the winter patterns to be established from previously collected samples.

3. To collect viscera samples from herring for possible stock ID.

Narrative

Staff joined the *Clupea* in Fraserburgh on Monday 3 July 2006, from where she sailed at 1130. *Clupea* proceeded to sail round to the west coast, anchoring overnight in Loch Eriboll. *Clupea* commenced fishing on the morning of 4 July off Cape Wrath. Trawling positions for each day's fishing were determined, on a daily basis, in consultation with the skipper and from previously documented demersal tows in the area. At each station in Part 1 a bottom trawl of 30 minute duration using the BT158 was carried out, along with an oblique plankton tow, CTD and vertical plankton net dip. The suitability of the ground for towing with the PT154 net was established at each station. The EK500 unit ran throughout each day to enable comparison of marks at station fished and fish caught. *Clupea* continued to work across and down through the North Minch and find a suitable anchorage each night until the evening of 6 July when she docked in Gairloch to take on fresh water supplies. *Clupea* then proceeded to work down through Raasay Sound and into the Sound of Sleat on 7 July and then headed for work around the eastern side of the South Minch. Work was restricted to the eastern portion of the South Minch until the half landing due to weather restrictions, working around Coll and Tiree, Mull, Colonsay, Rhum, Eigg, Skye, off Mallaig and into Loch Nevis.

Throughout Part 1 the CTD data could not be uploaded to a PC due to a problem with communication with the SEARAM unit that was unable to be rectified. Unfortunately, some of the data from the final CTD deployments were lost. Deployments on Part 2 at repeated trawl stations meant that only 3 trawls ended up with no associated CTD data.

During Part 1 then, a total of 26 demersal tows, 24 double oblique and 24 vertical plankton tows and 26 CTD deployments were performed. The time and position data for these tows and CTDs are in Tables 1 to 4.

On the evening of 12 July, after completing Part 1 of the survey, *Clupea* steamed to Mallaig where Emma Hatfield handed over to Steve Hay as SIC. Emma Hatfield then left the ship and used the laboratory car to return to Aberdeen.

On 13 July, the half-landing, the BT158 was replaced with the modified PT154 net, brought to Mallaig for that purpose.

Clupea left Mallaig at 0800 on 14 July to begin Part 2 of the survey, fishing with the PT154 net close to the ground at the stations established in Part 1 as suitable for this method of fishing with that gear. A CTD and vertical plankton dip were also carried out at each station. Fishing was therefore carried out at stations in both the North and South Minches, finishing around 1600 on 18 July where *Clupea* made passage to anchorage at Dunnet Bay to await the tide for the Pentland Firth.

During Part 2, a total of 18 pelagic (close to the seabed) tows, 18 vertical plankton tows and 18 CTD deployments were performed. The time and position data for these tows and CTDs are in Tables 4 to 6. A minilogger attached to the trawl nets was used to collect data on bottom temperature for all hauls, using both the demersal and pelagic nets.

Again, in Part 2, with a new SeaRAM unit, the software problems continued and data were unable to be uploaded to the PC. All CTDs were successful and all data were retained. There were also problems with the NetSonde cable which was damaged on the second haul of Part 2. No splicing kit to repair the cable was available. However, the ship's engineer was able to effect a suitable repair.

The catches were very different in Part 2, with a completely different catch composition to the tows using the demersal trawl. The most obvious difference was the lack of juvenile whiting, Norway pout and poor cod with many more jellyfish retained by the pelagic net. Fewer herring were caught generally (51 kg compared to 109 kg in Part 1); juvenile herring in particular were

less apparent. Mackerel were also much less abundant (4 kg compared to 81 kg in Part 1) Sprat catches seemed fairly consistent between the two gears.

In total, four samples of 50 herring (all from the South Minch) and one of 15 herring (from the North Minch) were collected for herring viscera and stomach analyses. Four samples of sprat were taken for stomach sample analysis (n=197), all from the South Minch. No sprats were caught in the North Minch.

Clupea return to Fraserburgh on the afternoon of 19 July, where some of the scientific equipment and samples were offloaded and the scientists left the vessel. Large gear was offloaded on Thursday 20 July.

E Hatfield/S Hay
2 August 2006

Seen in draft: A Nicoll, OIC *Clupea*

COPIES OF TABLES AVAILABLE FROM FILE R1/3