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

FRV *Clupea*

Cruise 1304C

PROGRAMME

3–22 September 2004

Ports

Loading: 30 August, Fraserburgh
Personnel change-over: Flexible (approximately 13/14 September)
Unloading: 22 September 2004, Fraserburgh

***In setting the cruise programme and specific objectives, etc the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in FRS' Working Time Policy (which is published on the Intranet). In addition, the Scientist-in-Charge must formally review the risk assessments for the cruise with staff on-board before work is commenced.**

Personnel

F C Neat	(In charge)
M O'Sullivan	14-22 September
S Ware	
D Demain	3-14 September
C Pert	14-22 September

Project: 20 days MF0756

Fishing Gear

Jackson Rockhopper Trawl BT158 with live fish liner
3 m Light Beam trawl

Other Equipment

CTD
Minilogger
Scanmar
3 x Fish Tanks

Objectives

1. To externally tag recently settled juvenile cod (*Gadus morhua*) for investigations of their movements.

2. To internally tag adult cod with Data Storage Tags for investigations of movement and temperature experience.

3. To collect samples of 0-group cod, haddock and whiting for otolith studies and genetic analysis.

4. To take samples of gill, fins, kidney, heart, spleen from cod and haddock for subsequent disease screening.

Procedures

The scientific equipment will be loaded onto the vessel and the laboratory set up on 30 August. Scientific staff will join *Clupea* at Fraserburgh on the morning of 3 September; final loading and installation of equipment will be completed as soon as possible to allow sailing by mid-morning.

Trawling

Trawling positions will be determined in consultation with the skipper and from previously documented live fish tows. Trawling effort will be concentrated in discrete areas around Shetland and off the East Coast of Scotland (as far south as the Wee Bankie). Tows of 15-30 minute duration will be carried out with the BT158 net. Stations with a high abundance of 0-group cod will be sampled more than once, in order to obtain significant numbers of tag releases. A minilogger attached to the trawl will used to collect data on bottom temperature. Exploratory tows may be sampled with the Beam Trawl.

Fish tagging

All juvenile fish from the trawl will be transferred straight from the cod end to a tank. Fish < 25 cm will be tagged externally with T-bar anchor tags. Cod > 25 cm in good condition will be transferred to a second tank and subsequently tagged internally with data storage tags (DSTs). Tagged fish will be released in the same area as caught. Additional cod for tagging may also be obtained by hand lining, dependent on the condition of trawl caught fish. CTD stations will be conducted at each release site.

Biological sampling

Sub-samples of 0-group cod, haddock and whiting (N=100/area) will either be preserved in 95% ethanol or frozen for later otolith analysis. Gill tissue (N=100/area) will be fixed in 100% ethanol for later DNA analysis.

Disease sampling

All fish to be weighed and measured. Gill and pectoral fin clips to be taken for parasitology, kidney loop for bacteriology and the carcass frozen for later examination. Samples of kidney, heart and spleen will be taken and snap frozen in liquid nitrogen.

Normal contacts will be maintained with the Laboratory.

J A Morrison
5 July 2004