P17/15

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

FRV *Scotia*

Cruise 0505S

PROGRAMME

5 April - 20 April 2005

Ports

Loading: Aberdeen, 31 March onwards
Half Landing and gear/personnel changeover: Aberdeen, 12 April
Unloading: Aberdeen, 20 April

*__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.__

In the interest of efficient data management it is now mandatory to return the Cruise Report, to John Morrison and the Cruise Summary Report (old ROSCOP) form to Dougal Lichtman, within four weeks of a cruise ending. In the case of the Cruise Summary Report a nil return is required, if appropriate.

Personnel

*Phil Copland	5-20 April	
Martin Burns	5-20 April	
Kevin Peach	5-12 April	
Rob Kynoch	5-12 April	
Ian Gibb	5-12 April	
Francis Neat	5-12 April	
Sonia Mehault MSc	5-12 April	
Mike Stewart	13-20 April	
Neil Collie	13-20 April	
Jim Hunter	13-20 April	
Eric Armstrong	13-20 April	
John Dunn	13-20 April	
Mike Robertson	13-20 April	**
Helen Fraser	13-20 April	**
Anneli Englund (St Andrews)	13- 20 April	
David Denoon MSc	13- 20 April	

Scientific personnel numbers:

7 persons 5-12 April
11 persons 13-20 April

**Messrs Robertson and Fraser will join the vessel in Aberdeen on the date shown but may leave the vessel by small boat at a convenient location at the end of their work.

Project days:

MF0454 8 Days
MF01TA 8 Days

Fishing Gear

BT 185 monkfish trawl with 2,000 kg Mogere doors
Standard sampling cod-end for above
Modified tagging cod-end for above
Midwater trawl PT160 + multisampler
Methot net insert for multisampler

Equipment

RCTV
1/10 metre square van Veen grabs.
Passive acoustic array (drop keel fitting prior to sailing)
Multisampler transducers (drop keel fitting prior to sailing)

Narrative

This cruise is a multidisciplinary cruise designed to trial, and test, a variety of ship-borne and towed instruments to ensure that they can be used effectively in the laboratory's scientific programme. Additionally, there is a sampling aspect to tag demersal fish. A provisional timetable of activities to carry out the objectives described above is given in Table 1 below.

Installation and testing of all necessary equipment will begin, if possible, on 31 March and at any time available prior to embarkation. Access to the drop keel will be required for installation of multisampler and passive acoustic transducers.

On 5 April the vessel will steam to the western shelf edge to find monkfish to test equipment associated with monkfish trawl selectivity. Monkfish trials in adjacent areas will be undertaken opportunistically. The requirement to use the RCTV for observations will limit the sea conditions in which the work can be carried out. Depending on forecast RCTV deployments may be done in a more sheltered area. However, non-observed tows can be carried out to the limits of the vessel. A tagging liner for the trawl will be fitted for night work to catch live haddock and cod. On conclusion of the work in this area the vessel will move to the Scalloway deeps to continue collecting live haddock and cod for tagging. The vessel will return to Aberdeen on 12 April to transfer appropriate gear and personnel.

In the second half of the cruise the vessel will steam to Scapa Flow on the morning of 13 April to calibrate the new four frequency system. The vessel will then proceed to the Scalloway deeps where tests of the multisampling trawl will be carried out using the RCTV to make observations of the gear. At night, a multibeam sonar bathymetric survey of the area will be carried out. The vessel will return to Aberdeen on 20 April when unloading of all gear and personnel will take place.

Objectives

Due to the large number of objectives these have been subdivided into categories: individuals (named in brackets) are responsible for addressing the objectives in each category.

1. **Monkfish trawl trials (K Peach)**

Establish procedures for Fishing gear BT 185 monkfish trawl with 2,000 kg Mogere doors.

Fishing operations will be divided into daylight and dark periods.

Daylight Fishing

Observations on the net will be made using RCTV.

Fixed cameras and lights will be attached to the wings of the trawl and Scanmar sensors deployed on net and doors. Data from Scanmar sensors will be recorded for all tows.

Daylight observation hauls will be made using standard cod-end rig.

The fishing target during the first half of the cruise is to achieve a minimum of 12-15 hauls. These will all be carried out in daylight hours to allow net mounted cameras and RCTV observations to be made. The RCTV will be deployed in the most optimal light conditions. Tows will be of 1 hour duration.

Fishing will be conducted in an area called 'The Shoal' within the closed cod box to the East of Rona approx. position 59N 5W. Exact positions for a six-mile tow on clear ground at 130 metres depth will be provided prior to sailing.

If time is available, after tagging operations, then a number of non- observation tows will be undertaken to build up a data set of the gears operating parameters.

Night-time Fishing

These tows are structured to supply live haddock and cod for tagging operations. This work will take place for three nights in a suitable area in or close to the Rona box.

After completion of the 4th days observation work the vessel will steam to the Scalloway Deeps area to tag haddock and cod for the remainder of the first half of the cruise.

A sufficient number of tows will be required to ensure that up to 30 fish are tagged in the shelf region and another 30 in the Scalloway deeps. Short hauls of 15 mins duration will be undertaken. These will be at shallow depths, 60 m. A tagging cod-end will be fitted for these hauls.

Fishing positions to be decided after discussion with the fishing mates.

2. Fish tagging methodology (I Gibb)

The monkfish trawl will be used with a modified cod-end for live fish capture. On recovery a dog rope and the cod-end crane will be used to recover the cod-end vertically avoiding damage coming up the ramp. The cod-end will contain approx 1 tonne of water.

Tanks will be placed under the cod-end and the catch decanted. Suitable fish will be transferred into a holding tank on deck and thence to a tank with an anesthetic agent. Fish will be carried to a work container where the tag will be inserted into the body cavity.

Fish will be allowed to recover in a holding tank on the side deck before being released back into the water with the vessel stationary. A seawater supply will be required for the holding tank and the reviving tank. Pipework and junctions for this exist and have been used in this fashion on *Scotia* previously.

Chemicals to be used in this process are:

MS222 (1 kg) of powdered anaesthetic
Hibitane (100 ml) sterilizing fluid

Neither of these are considered either toxic or corrosive. COSHH sheets will be available for these substances.

3. Instrumentation (J Hunter)

To evaluate performance of the multisampling pelagic trawl.

Communication hydrophones will be fitted to the drop keel prior to the cruise. Instrumentation trials will include a number of tows in daylight to observe the operation of the multisampler net using the RCTV. These will be carried out initially using a single tow wire and bridle to multsampler frame. All frame and net trials will take place in an area of good water clarity probably around Orkney or Shetland. Scanmar instrumentation and self recording camera systems will be deployed on the gear as required.

When the system has been tested a number of deeper, fishing tows on fish aggregations seen on the vessels echosounder systems will be carried out. A more detailed description of the engineering trials to be undertaken during this cruise is given in Annex 1.

4. Acoustic instrumentation: (P Copland)

To calibrate the new 4 frequency system on FRV *Scotia*.

This work will be carried out with the vessel anchored in a convenient, sheltered location, probably Scapa Flow. Calibration would be expected to take up to 10 Hours after anchoring, if weather conditions are suitable.

a) The Simrad EM950 multibeam will be used to produce a large-scale bathymetric map of the Scalloway deeps. An area bounded by 60°03'N-60°10'N, 001°20.5'W-001°28'W will be surveyed in blocks during the cruise. A detailed transect grid will be provided before

work commences. During this work two 3 km square areas will be assessed, in detail, for sediment type. Grabbing work will be carried out to simulate the requirements of the HABMAP project due to take place on *Scotia* in August. A minimum of two 8 hour periods will be required for this work.

b) Test passive systems for the detection of spawning cod.

This exercise is being conducted in collaboration with St Andrew University. A passive acoustic transducer will be fitted to the drop keel plate prior to sailing. Data will be collected for analysis on board the vessel with a view to identifying possible areas of spawning cod. Collection equipment will located either be in Transducer Connection Room or in a container depending on available cable runs. This exercise will be run in tandem with other objectives. A towed hydrophone system will be deployed during survey transects to establish sensitivity of drop keel transducer. Deployment will either be by hand or from the top net drum if available. Disposable radio sonar buoys may also be used when transecting within the Scalloway deeps area. A receiving radio antenna will be installed on the boat deck for the sonar buoys.

c) Collect multifrequency acoustic data on cod aggregations, in order to test the EK60, four frequency system. This exercise will be carried out as opportunities arise but may also take place during Monkfish fishing and other operations. Fishing on possible cod traces, seen at night off the bottom, will take place opportunistically using the PT160 to obtain biological samples.

Normal contacts will be maintained with the Laboratory.

J A Morrison
4 April 2005

Table 1 Trials cruise timetable. Subject to weather and other logistical restraints*

Date	Day	Objective	Location
5	1	Passage to Shelf edge Shake down deployments of equipment	
6	2		
7	3		Western shelf edge
8	4		Western shelf edge
9	5	I & II	
10	6		Scalloway deeps
11	7	Passage to Aberdeen	
12	8	Mid cruise break/transfer of kit/ personnel	Aberdeen
13	9	Passage to Orkney 6 & 7 4 overnight	Scapa Flow
14	10	Passage to Shetland	
15	11		
16	12	III & IV	Shetland,
17	13	5 overnight	Scalloway Deeps
18	14		
19	15	Passage to Aberdeen	
20	16	Unload	

*This is very much a provisional time table and is heavily dependent on weather and equipment status. A detailed work programme will be issued on a daily basis as the cruise proceeds.

Annex 1

Engineering Section Objectives

1. **Monkfish trawl trials**

To use RCTV towed on new 700 m fibre-optic cable. Retain 600 m FO cable on-board as spare. Observe net and fish behaviour (12 to 15 tows over 4 days during daylight). Target depth of 130 m may require maximum ballast on RCTV and maximum cable length. Attach net-video cameras to wing ends (using appropriate camera protective mounts). Undertake occasional trials of AV120 (hard-disk video recorder) to determine duration and reliability. Deploy RCTV with two SIT cameras to compare sensitivity at high-contrast levels. Minimum two tows with net, one hour each, though suitable test conditions may occur during the planned monkfish trials. Re-position cameras or select varying ambient light conditions. Acquire digital and video images of net-mounted instrumentation for archive. **MB**

2. **Instrumentation**

To test the acoustic link on the multi-cod-end sampler by towing the frame on a single-wire and bridle. Repeat tows (up to 12-off @ two hours) may be required to allow alterations to sub-sea transmitter and receiver settings. Attach net-mounted camera system to bridle or frame to observe net closure. Attach sampler frame to PT160 and repeat deployments to confirm operation. Use RCTV to observe real-time net closure and attach net-mounted cameras (monochrome and colour) to acquire images for archive. Attach Dual Methot cover to one cod-end. Deploy and observe using RCTV. **JH, MB, NC**

3. **Shipboard instrumentation**

To monitor flow-rates through inlet and outlet ports of fluorometer and thermosalinograph. Confirm settings of isolator valves to maintain consistent sampling and flushing. **JH, NC**

Circulation List: Cruise Programmes and Reports

SCOTIA VESSEL

Programmes - Mr J A Morrison for approval. Reports - Mr J A Morrison for approval.
Issue two copies of Record of Haul and Station Numbers pro-forma with Scientist-in-Charge's copy of *Scotia* and *Clupea* programmes.
Two xerox copies of track chart for reports to be sent to Dr L Rickards.

PROGRAMMES ONLY

Lab staff

Mr J T M Hunter
Mr T Reid
Mr P J Copland
Mr J Dunn
Mr A Beaton
Mr G Howard
Security

Non-lab staff
~~Island Cmdr Faroes (Faroes only)~~
~~Flag Officer, Denmark (Danish part of N Sea only)~~
Coastguard
G Lees

PROGRAMMES AND REPORTS

Lab staff

Mr J A Morrison
Capt R Denholm
Mr R S T Ferro) Fish Man team
Mr C Hall) progs only
Dr R M Stagg
Dr C Moffat
Mr M R Heath
Mr A Macdonald
D Lichtman (+ additional copy of track chart of reports only)
Mrs E Morrison
CO/OIC of Vessel (*Scotia*) (to be faxed)
Library (2)
File

Non-lab staff

Library, Danmarks Fisk (reports only)
~~Mr J Mortensen (Faroes only)~~
Mr A Souplet (Fishing Cruises only)
~~Dr S Ehrich (Entering German Waters) (reports only)~~

W J McCurdy, Belfast
Technical Director, SFIA (J E Tumilty)
Dr L Rickards
Dr I Joint
Director – Havfor Inst, Norway
Dr S Ehrich
Monsieur le Chef du dépt, Nantes
Mr J C Brabant
Mrs van Duyvenvoorde
Dr J G Gordon
G Kane
R de Clerck
Mr B Stewart
Capt J Cannan (*Scotia* and *Clupea* only)
Controller Coastal Ops - A Stewart
Dr P Grieg-Smith
Mr H C Boyar
Dr R J A Atkinson
Mr H i Jákupsstovu
Mr C Bullimore (To be faxed: 01923 846392)

Laboratory Personnel on Vessel

P Copland
M Burns
K Peach
R Kynoch
I Gibb
F Neat
S Mehault c/o P Copland
M Stewart
N Collie
J Hunter
E Armstrong
J Dunn
M Robertson
H Fraser
A Englund c/o P Copland
D Denoon c/o P Copland

Fishery Officers at