

R1/12

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

FRV *Scotia*

Cruise 0708S

## **REPORT**

5-25 June 2008

### **Personnel**

A Weetman (In Charge)  
C Shand  
A Tait  
G Jones  
A Mill 5 – 13 Sept 2008  
A McLay 5 – 15 Sept 2008  
N Campbell 5 – 15 Sept 2008  
J Hunter 5 – 15 Sept 2008  
H Dobby 15 – 25 Sept 2008  
J Clarke 15 – 25 Sept 2008

### **Out-turn days per project:**

9 Days RV0804 10557 (Fladen)  
12 Days RV0805 10580 (West Coast)

### **Gear**

*Scotia* BT175 60mm prawn trawls  
Day grab  
Towed UWTV sledge and UWTV drop frame  
600m Umbilical towing cables and cameras (including back up)  
Associated TV and electrical equipment  
Tanks for holding live fish

### **Objectives**

1. To obtain estimates of the abundance and distribution of *Nephrops* burrows in the Fladen Ground, the North Minch, the South Minch, Sound of Jura and the Firth of Clyde. If time permits stations in the Noup will also be surveyed.
2. To use the TV footage to record occurrence of other benthic fauna and evidence of commercial trawling activity.
3. To collect sediment samples at each station.
4. To carry out *Nephrops* trawling, one haul in each sediment stratum in each of the main survey areas, and to obtain samples for size composition analysis.
5. To collect samples of *Nephrops* for comparison of reproductive condition and morphometrics in different survey areas (Functional Units).

6. To collect hagfish on behalf of the University of Leicester.
7. To collect samples of various species of fish for SMRU.

## **Narrative**

All the scientific staff were on board RFV. *Scotia* by 1100 on 5 June, however, correcting a fault with the survey camera system delayed sailing until 1400, when the vessel headed to the Southern Trench, north of Fraserburgh. In the deep water found there, a training session in deploying and recovering the sledge was carried out, which also allowed the cable to be wound on to the winch under tension. After completing this operation successfully *Scotia* steamed 95 miles east to the first TV station, arriving at 0800 on Friday 6 June. Despite problems with a hydraulic pipe bursting on the Gamma frame and fuses blowing in the ship's container area when the sledge lights were activated, 45 TV stations and 3 fishing tows were completed over 4 days. The vessel then had to leave the area at 1700 on Monday 9 June due to an imminent storm and the desire to utilise the tide at the Pentland Firth to the ship's advantage. This course of action meant that 19 TV stations from the originally planned 64 still remained to be surveyed at Fladen, to be completed on the return leg of the cruise.

Arriving at the north west side of the North Minch at 1230 on Tuesday 10 June, the westerly wind was too strong to safely carry out the survey at that point, but by heading south, the lee of the land provided enough shelter to begin TV operations. Working south along the west side of the North Minch, 1 trawl and 15 TV stations were completed before moving in to the South Minch. Continuing south on the west side of the South Minch 2 further trawls and 22 TV stations were carried out before heading for the Clyde on Thursday 12 June.

In bright and calm sea conditions, *Scotia* began working in the south of the Clyde at 0900 on Friday 13 June. However, by 1900 it was necessary to head to Ayr, to allow one of the scientific complement to be put ashore for personal reasons. This was achieved by 2100, and following a trawl off Ayr, TV work recommenced. Due to issues with the half landing (which was planned for the morning of Saturday 14), the survey had to be redesigned to take into account the new arrangements. With this in mind and the volume of pleasure craft encountered on the east side of Arran on the morning of the 14, *Scotia* headed south and began working up the west side of Arran. Due to intensive creel activity in the area to the north and north west of Arran it was decided to suspend TV work at 2300 until daylight and by 0800 on the morning of Sunday 15 June all 35 TV stations out with the Clyde Port Authority (C.P.A.) area were completed. With only 5 stations within the C.P.A. area to be surveyed and the pilot booked for 1700 that afternoon, the vessel remained at the mouth of the River Clyde until 1400. However, due to a shortage of time only four stations were completed before *Scotia* was piloted to Greenock for the half landing and a staff change, arriving alongside at 1800.

The one remaining station in the C.P.A. was surveyed after the vessel left port at 1800 on Monday 16 June, and then proceeded south to complete a trawl. Once accomplished, *Scotia* set for Jura, where the weather proved too difficult to operate the TV sledge and, considering the time remaining, it was agreed to abandon the survey in this area. Heading for Ardnamurchan, the weather, creels and commercial trawl activity hampered TV operations, forcing the vessel out of the area and on towards Coll. Arriving in darkness and aware of heavy creel effort in the area, it was decided to postpone TV work until daylight on Wednesday 18 June. The abundance of creels required some TV stations to be relocated in the area and, once the vessel moved north and arrived off Raasay, again creels remained a problem in some areas, but a trawl was possible in the creel free zone later in the evening. The TV survey continued through Thursday 19 and Friday 20 June in the North Minch, although work was suspended through the hours of darkness due to the density of creels in the area. In addition to the original cruise objectives, two additional stations were surveyed

which were outwith suitable sediment type for *Nephrops* habitation according to B.G.S., and where several sediment samples were taken on the 2007 TV survey.

In the evening of 20 June, *Scotia* headed back to the west side of Fladen, and recommenced work there at 0630 on Saturday 21 June. Technical difficulties with the video camera hampered progress, but working in a north easterly direction all 19 of the originally scheduled stations were completed by 1000 on Sunday 22 June, ending up in the northern sector of Fladen. With additional stations in Fladen produced using an adaptive approach, *Scotia* began heading south, with only one station completed before a storm with 50 knot winds and 5m swell halted operations. Poor conditions remained until the evening of Monday 23 June, although over the following 24 hours the remaining eleven adaptive stations and 2 trawls were successfully surveyed, at which point *Scotia* headed for Aberdeen, arriving in the early hours of the morning of Wednesday 25 June.

## Results

The following table summarises the number of TV stations that were completed successfully and the number of fishing trawls carried out in each of the areas surveyed.

Area	Number of TV Stations	Number of Fishing Trawls
Fladen	75	5
North Minch	43	2
South Minch	34	2
Clyde	40	2

At the time, due to a lack of suitably trained staff taking part in this cruise, approximately two thirds of the video recorded was verified at sea by two members of staff. The remaining footage from 68 stations will be verified on return to Aberdeen.

A total of 47 still images were taken using the 35mm Benthos camera. These images recorded various species of fish, crustaceans, *Nephrops* burrows and benthic habitats.

Throughout the survey 183 sediment samples were taken, all using the mini Van Veen grab sampler mounted on the sledge. These samples were frozen at sea and will be analysed on return to Aberdeen.

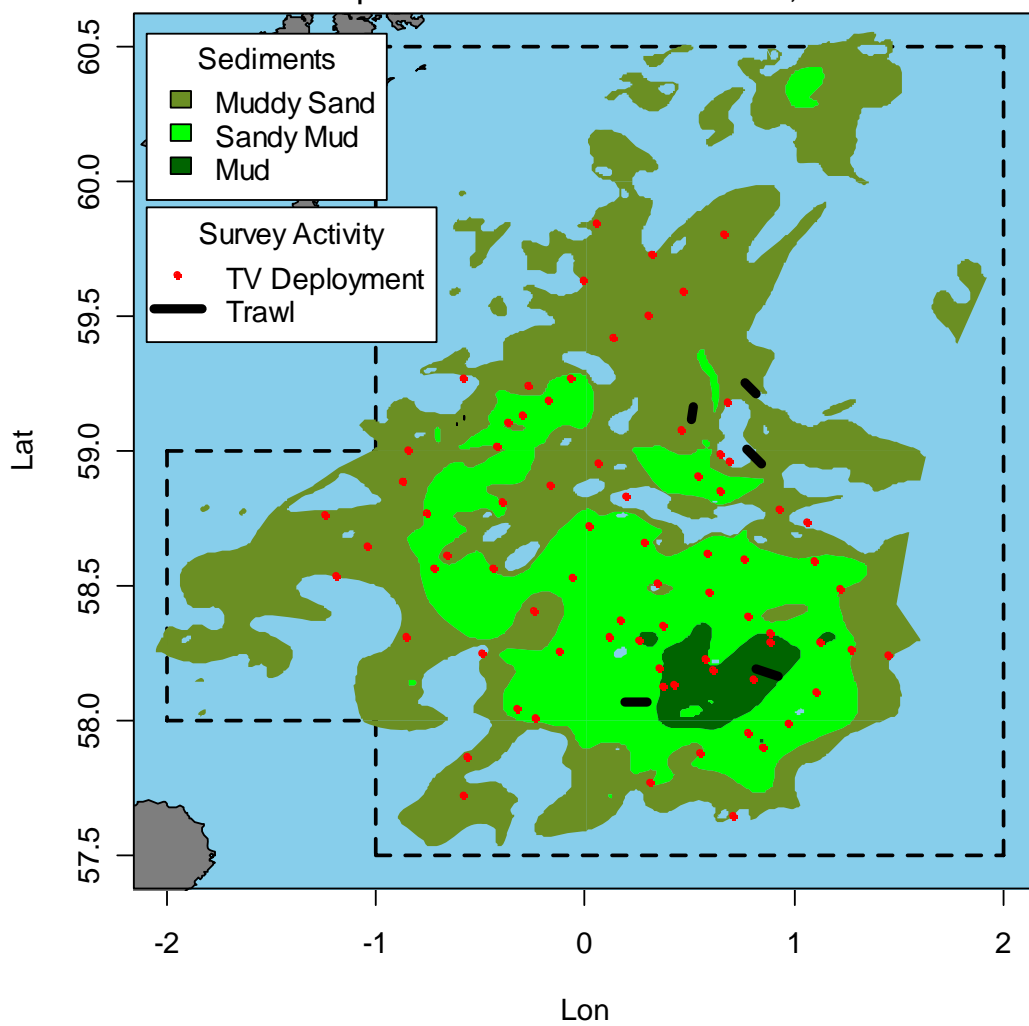
One hagfish was captured alive and kept in a tank, as requested by a representative from the University of Leicester. However, after 5 days the specimen died and was no longer of any use as originally intended.

Eleven trawls were carried out, with varying success. Where *Nephrops* were caught, a representative sample was taken for a simple length frequency distribution, where the females were ovary staged as well. A further 25 males and 25 females covering the full range of sizes, were also sampled for growth rate parameters and sexual maturity. Fourteen observations were made on each individual and analysis on these data will be carried out at F.R.S.

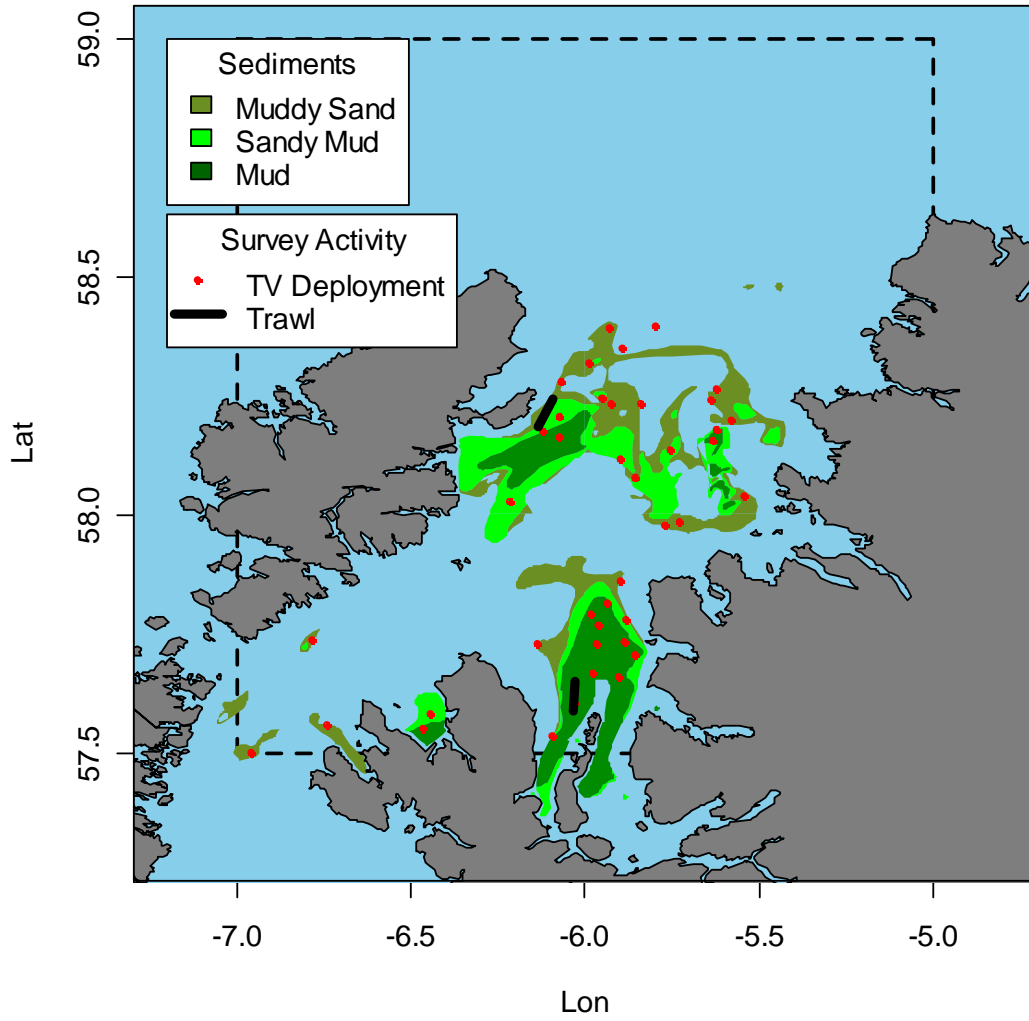
The target of 300 specimens of whiting, dab, poor cod and Norway pout were met for the seal digestion experiment to be carried out by S.M.R.U. 207 plaice and 24 dragonets were also collected, but no flounders were collected on this occasion. The shortfall in target numbers is hoped to be met by subsequent cruises.

A Weetman  
7 November 2008.

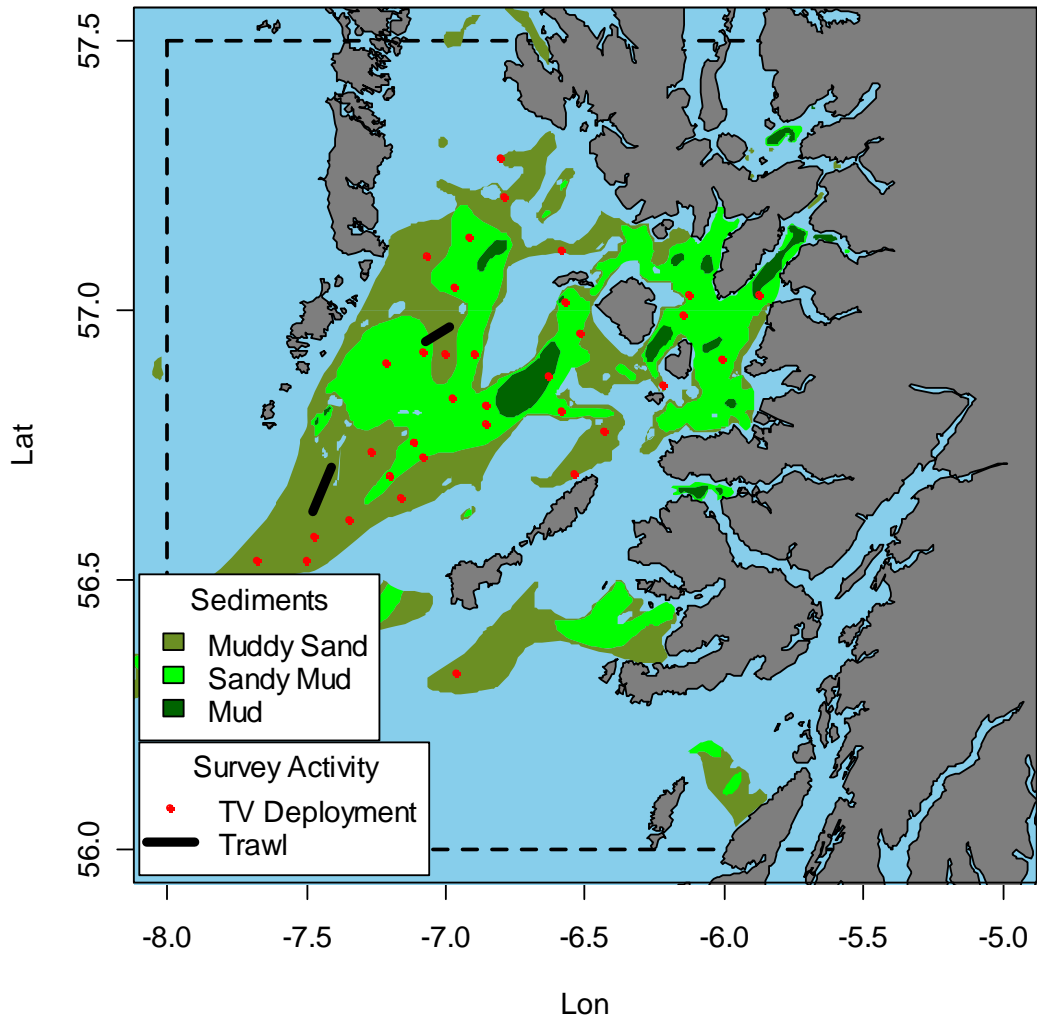
### Fladen Completed TV Stations & Trawls, 2008



### North Minch Completed TV Stations & Trawls, 2008



### South Minch Completed TV Stations & Trawls, 2008



### Firth of Clyde & Sound of Jura Completed TV Stations & Trawls, 2008

