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MRV *Scotia*

Survey 0214S

## REPORT

24<sup>th</sup> January – 14<sup>th</sup> February 2014

### Personnel

F Burns	SIC
R Kynoch(Deck)	
L Ritchie(MIK)	
Cairns	
Barreto	
Edridge	
Lines	
Gault	(Part 2)
C Cronin	JNCC (Part 1)
R Combes	JNCC (Part 1)
C Pollack	JNCC (Part 2)
P French	JNCC (Part 2)

### Objectives

1. To complete an internationally coordinated demersal trawling survey in the North Sea in ICES area IV.
2. To obtain temperature and salinity data from the surface and seabed at each trawling station using a SEABIRD 19+ CTD.
3. Collect additional biological data in connection with the EU Data Collection Framework (DCF).

**Out-turn days per project:** 22 days, RV1401

### Narrative

*Scotia* sailed from Aberdeen at 0900 hours on 24th January. After safety drills and familiarisation protocols, the vessel headed to the first station at Girdleness to test the trawl, and the operation of the scanmar sensors on the net and trawl doors. An issue with both trawl winches delayed deployment of the net and it was 1500 before the haul was completed successfully. With severe gales forecast for the evening *Scotia* dodged up to Buchan Deep for first light and a chance to reassess conditions for trawling. No methots were completed overnight. With the wind still strong (30 – 35SW) *Scotia* successfully completed 3 trawls on the 25<sup>th</sup> in the area east of Peterhead but with SE gales forecast again for the 26<sup>th</sup> the decision was made to head into the Moray Firth. Enroute *Scotia* was able to deploy the methot net on 8 occasions. By mid-morning on the 26<sup>th</sup> January the wind was gusting up to 70 knots from the SE yet our sheltered position in the Moray Firth enabled steady progress to be made completing 3 trawls and 6 methots. The remaining Moray Firth station was completed on the morning of the 27<sup>th</sup> with the wind still strong (35 – 40SE) before heading north towards a station at Copinsay, east of Orkney. Due to rapidly deteriorating weather

conditions which saw the wind gusting up to 60 knots we were forced to abandon this option and the decision was made to head west through the Pentland Firth therefore enabling another station just off Dounereay on the North coast to be completed during daylight. With conditions remaining poor and the wind direction stuck in the SE the decision was made to complete the stations to the west of Orkney before heading North to complete the stations around Shetland. The conditions remained challenging and with almost continuous SE gales progress was slow as Scotia surveyed North heading up towards the western side of Shetland. The 1<sup>st</sup> and 2<sup>nd</sup> February were marred by 4 foul hauls in rectangles 50E8 and 51E9. This area is notoriously unforgiving on fishing gear and when combined with poor weather this was always going to be an uphill struggle. The next couple of days were spent dodging our way south from Flugga down the east side of Shetland. Progress was severely hampered yet again by SE gales with the result that only 4 trawl stations and 1 methot were completed during the period 3<sup>rd</sup> - 4<sup>th</sup> February. Scotia headed into Lerwick on the evening of the 4<sup>th</sup> February pushed on by yet more SE gales and with storm force winds forecast on the 5<sup>th</sup> February.

Scotia departed Lerwick on the 6<sup>th</sup> February and steamed 70nm south into a heavy SE swell and although the wind had fallen away earlier that morning it still took Scotia a full day to cover the distance and no trawling was completed although with conditions easing 8 methots were completed overnight. The brief lull in the weather continued through into Friday 7<sup>th</sup> February and this allowed Scotia to complete the remaining stations East of Orkney. Saturday 8<sup>th</sup> saw a return to SE gales once again, however despite the strong winds, 3 trawl stations and 8 methot deployments were successfully completed and over the next 3 days good progress continued with Scotia starting to make up some of the time that had been lost during the first half of the survey. This was due in part to the increase in day length as Scotia proceeded, first southeast and then west coupled with a gradual moderating of the sea conditions that enabled four trawl stations to be completed during daylight hours. The methot net was also deployed 20 times during this period. The weather started to deteriorate once more on the night of the 11<sup>th</sup> February, strengthening throughout the next day until -amid 65 knot winds – after completing 3 trawl stations the decision was made to cease trawling operations. Scotia dodged SW overnight however the storm persisted throughout the daylight period on the 13<sup>th</sup> February with the result that no further trawls were completed and the remaining 4 trawl stations were dropped. Conditions improved sufficiently during the evening of the 13<sup>th</sup> to allow 4 methot stations to be completed just off Aberdeen prior to Scotia heading into Harbour. Scotia was alongside in Aberdeen harbour by 2300 on the 13<sup>th</sup> February. Unloading of all trawl and scientific gear was completed on the Friday 14<sup>th</sup> February

## Results

### Trawling

The GOV was used throughout the survey with groundgear “A” (152 mm rubber disks) being used in the southern part of the survey area (south of 57°30N) and groundgear “B” (305 mm bobbins) being used in the northern part. The Scanmar system was used throughout to monitor headline height, wing spread, door spread and distance covered during each tow. A NOAA bottom contact sensor was attached to the groundgear for each tow and the data downloaded for further analysis in the laboratory.

The very strong winds and poor sea conditions experienced throughout the survey resulted in 4 of the rectangles being dropped from the survey. In addition, trawling coverage in rectangles 51E8, 51E9 and 50E8 was restricted to one successful haul instead of the programmed two. A combination of very poor weather and also very hard ground resulted in 4 foul hauls and significant damage being sustained to 2 of the nets in this area and with over half of the survey still to complete the decision was made to move on. Despite the issues encountered 49 valid hauls were completed and all but 4 of the programmed rectangles being sampled. 4 foul hauls were recorded, all of which were located North and Northwest of Shetland. Chart 1 displays cruisetrack and trawl locations and chart 2 displays trawl sample coverage by rectangle.

Table 1 shows the preliminary indices for all vessels participating in this international survey. The indices are based on the numbers of fish caught per hour below a pre-defined length selected as a probable delimiter of 1+ fish.

**Table 1**

Preliminary indices for Quarter 1 International Bottom Trawl Survey (All countries).

	<b>Final 2013</b>	<b>Preliminary 2014</b>	<b>Mean (average 1980–2013)</b>
<b>Cod</b>	2.3	<b>2</b>	7.8
<b>Haddock</b>	58.3	<b>15</b>	576
<b>Whiting</b>	53.1	<b>316</b>	465
<b>Norway pout</b>	4464	<b>1200</b>	2858
<b>Herring</b>	1665	<b>3167</b>	1963
<b>Sprat</b>	709	<b>4242</b>	1107
<b>Mackerel</b>	6.3	<b>15</b>	103

## **Methot Net Sampling**

A total of 86 Methot Net (MIK) hauls were carried out in order to obtain an estimate of the numbers of pre-metamorphosing herring larvae. The circular frame was used to complete at least two hauls in each statistical rectangle of the survey area and the deployment and recovery speeds were adapted in accordance with advice from the Herring Assessment WG.

MIK stations was dropped in several rectangles due to the extremely poor weather conditions encountered at the time. Additionally, 4 other rectangles received only one MIK sampling event also as a result of weather disruption. Charts 3 and 4 display location of MIK samples and MIK area coverage by rectangle for survey 0214S.

## **Biological Sampling**

Additional biological data including otoliths were collected from hake, tub gurnard and plaice in support of EU Data Collection Framework.

In addition to above, the following biological sampling was also undertaken :

- \* Dissection material/ other frozen samples for Aberdeen University
- \* Shelled Mollusc sampling for the McKay reference collection.
- \* Frozen whole haddock and anglerfish for MSS Descriptor 9 project.

## **Age determination**

Otoliths from cod, haddock, whiting, saithe, Norway pout, herring, mackerel and sprat were collected and were aged back at the institute.

## **Hydrographic Sampling**

The ship's thermosalinograph was run continuously throughout the survey. The CTD was deployed at each station (with a reverser bottle attached) in order to obtain temperature data as well as water samples for analysis for salinity, nitrate, silicate and phosphate.

This was an extremely challenging survey with severe weather conditions being experienced throughout the majority of the 3 week survey and as such a great debt of gratitude must be paid to the officers and crew of the Scotia and indeed to all the MSS staff participating on the this survey for their sterling efforts in ensuring the success of the survey under what can only be described as very difficult conditions.

Submitted:  
F Burns  
17 March 2014



**Chart Number 2:** 0214S Trawl coverage by rectangle. Green denotes full coverage, orange denotes partial coverage (one trawl completed from 2) and no colour denotes rectangles that were dropped.

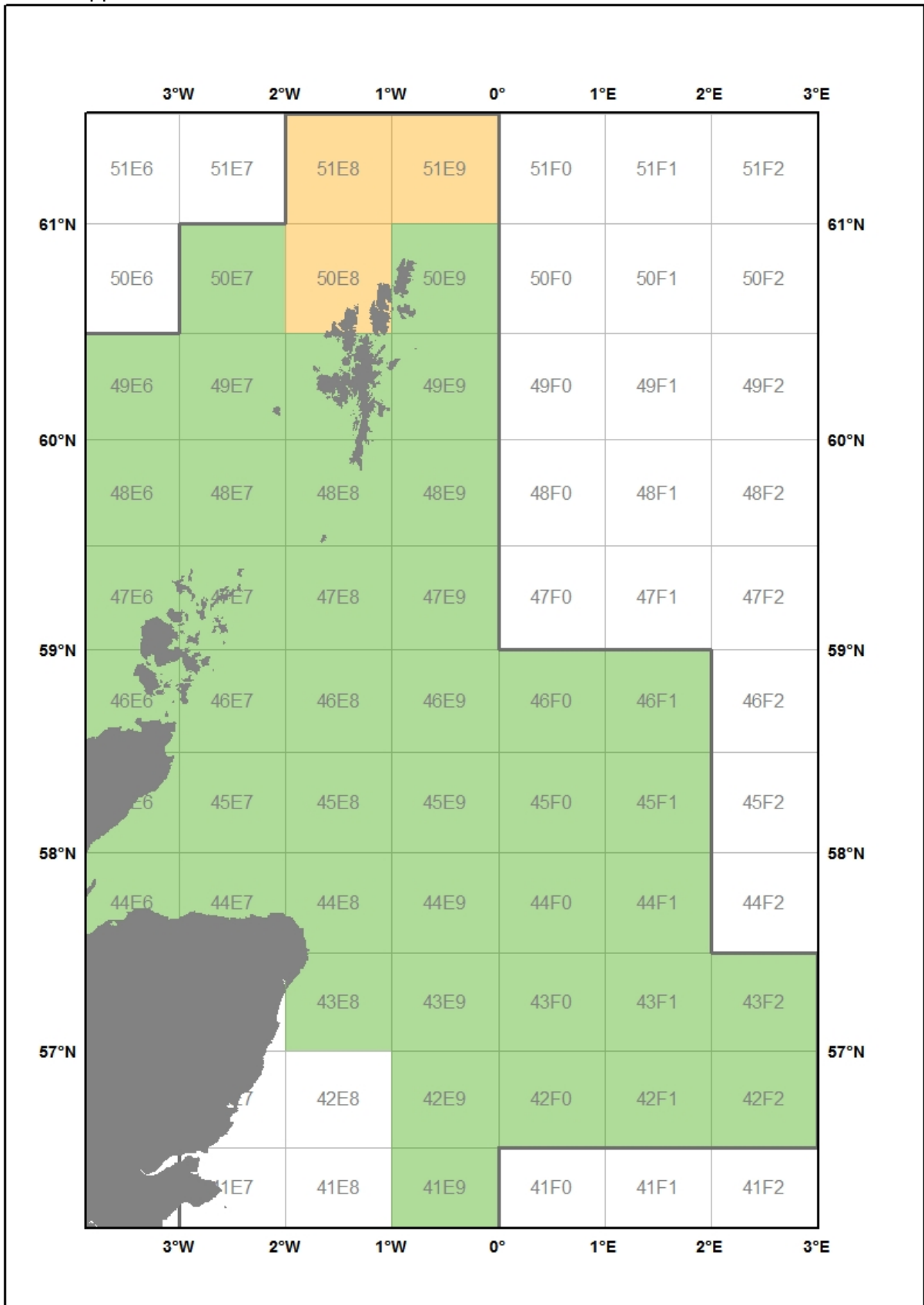
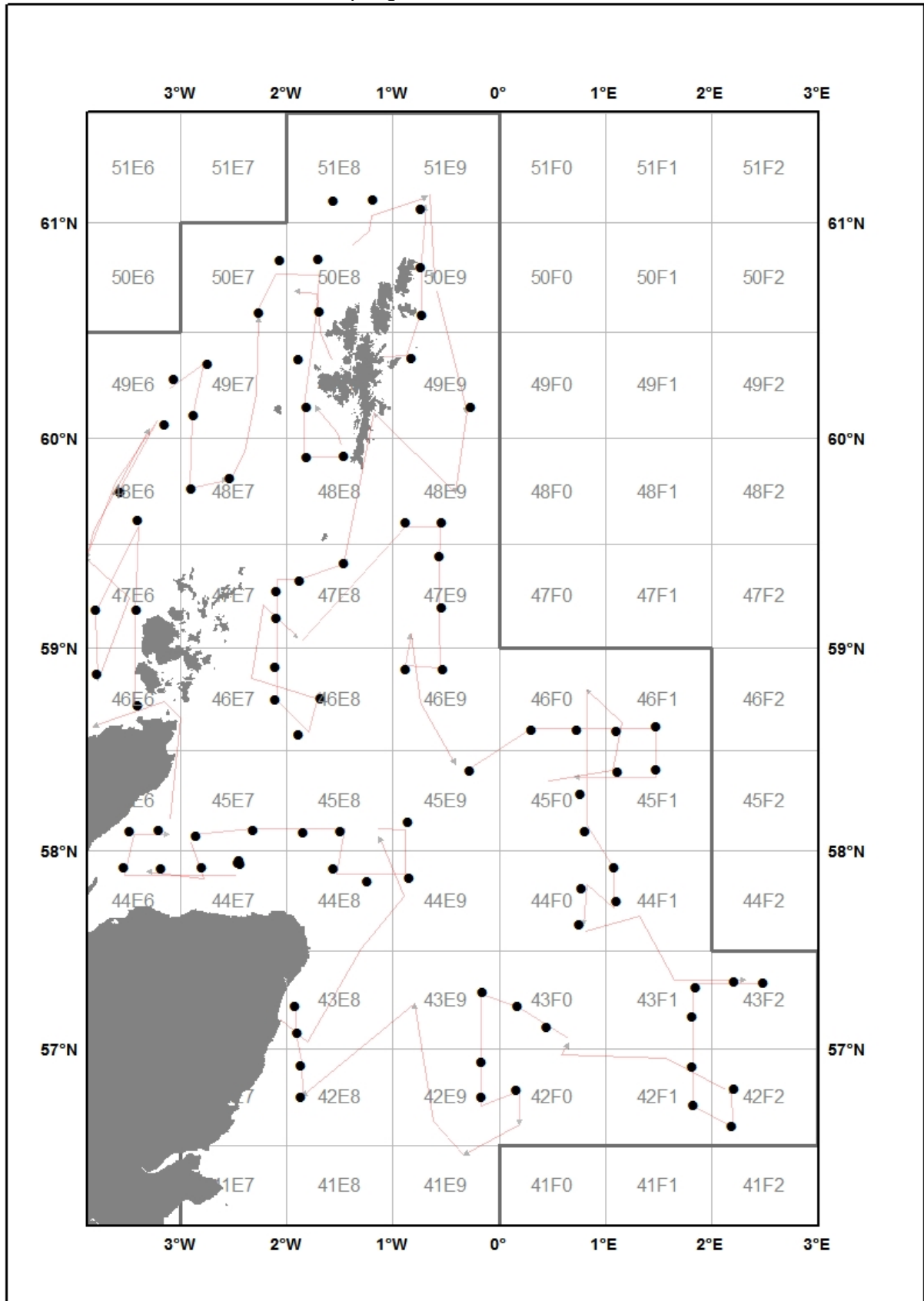


Chart Number 3: 0214S MIK Sampling locations.



**Chart Number 4:** 0214S MIK coverage by rectangle. Green denotes full coverage, orange denotes partial coverage where only one deployment was completed and no colour denotes rectangles that were dropped

