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## **MRV Scotia**

Survey 1015S

## **REPORT**

30 July – 20 August 2015

Half-landing: Aberdeen, 11<sup>th</sup> August

### **Personnel**

F. Burns	(Part 1) (SIC – Part 1)
R. G-Mules	(SIC – Part 2)
J. Dooley	(Deck)
I. B-Cerezo	
H. Holah	
N. Ensor	(Part 1)
G. Packer	(Part 1)
R. Kilburn	(Part 1)
M. Kinghorn	(Part 2)
J. Mills	(Part 2)
J. Rasmussen	(Part 2)
M. Bao	(Visitor – Aberdeen Uni - Part 1)
J. Monhart	(Visitor – Aberdeen Uni - Part 2)
A. Kent	(Visitor – Napier Uni - Part 2)

Out-turn days: 23 days – RV1409

Fishing Gear: GOV Trawl (BT 137) fitted with groundgears A + B.

### **Objectives**

1. To complete an internationally coordinated demersal trawling survey in the North Sea in ICES area IV.
2. To participate in the IBTSWG tow duration experiment where for every rectangle that is sampled twice, one tow shall be 30 minutes and the secondary tow will be 15 minutes.
3. To obtain temperature and salinity data from the surface and seabed at each trawling station using a SEABIRD 19+ CTD.
4. EDC (electronic data capture) and FSS database utilised for recording all biological survey data
5. To collect additional biological data in connection with the EU Data Collection Framework (DCF).

### **Narrative**

Scotia sailed from Aberdeen at 09:00hrs on the 30<sup>th</sup> July in moderate sea conditions. Pre-sailing, it was agreed at the IBTSWG that Scotland would participate in a tow duration experiment where the secondary country to survey a rectangle would undertake a tow half the length of standard (15 instead of 30 minutes). Therefore a number of planned tows were reduced in duration from the standard 30 minutes to 15 minutes. The first haul northeast of Aberdeen in rectangle 44E8 doubled as a familiarisation haul and was completed successfully with the fishing gear and bottom contact sensors performing well. A further 2 stations were successfully completed during daylight. At the end of day two, stations in the inner and outer Moray Firth were completed however the failure of the internal battery on the Seabird 19+ CTD together with the failure of both headline sensors the following day meant that the situation was suboptimal. Scotia proceeded West and then North towards Shetland, successfully completing a further haul with one foul due to net damage. On the 4<sup>th</sup> and 5<sup>th</sup> of August Scotia completed transects to the East of Shetland before heading into Lerwick to collect a replacement CTD and also SCANMAR headline sensors. During the next 3 days Scotia completed all but one of the remaining stations with the B rig groundgear before switching to the A rig for the remainder of the survey. The one remaining B rig station (44F2) was completed on the 9<sup>th</sup> August. On the 10<sup>th</sup> August Scotia completed 4 hauls prior to docking in Aberdeen for the half-landing and staff changeover.

Scotia left harbour at 09:00 hrs on the 12<sup>th</sup> of August steaming south for the first station off Montrose. The survey headed East over the next two days successfully completing 8 stations. Scotia then proceeded West and then South completing 20 hauls, one of which was invalid on account of a burst hydraulic pipe that prevented the gear being hauled. During the final two days (18-19<sup>th</sup> August) Scotia surveyed the statistical rectangles off the coast of England before heading North into the Firth of Forth. Four new tows were sourced in this area and after making good time an additional trawl in 41E8 was also completed. In addition, Denmark completed two of Scotland's allocated sampling rectangles in Danish waters and this enabled Scotia to conduct an additional haul in 39E8. Scotia steamed for Aberdeen on the 19<sup>th</sup> August and was alongside for 16:30hrs. Staff and equipment departed the vessel on the morning of the 20<sup>th</sup> August.

## Results

### Trawl Survey:

The GOV was deployed on 94 occasions. A total of 91 valid hauls were achieved and all target statistical rectangle were sampled successfully. Of those rectangles where Scotland was the sole surveying nation 15 of them were sampled twice with 30 minute and 15 minute hauls (see figure 1). There were 3 foul hauls during the survey with all but one being repeated successfully. One tow was of a non-standard duration of 21 minutes. Groundgear A was deployed on all stations south of 57'30 N with groundgear B being used on all stations north of that latitude. In all 42 stations were completed successfully using groundgear A (30 15min tows and 12 30min tows) and 49 stations with groundgear B (26 15min tows, 22 30min tows and one 21min tow). All stations also used the west coast GOV design with strengthening strips to limit the customary damage that has tended to occur on stations trawled in the northwest of the survey area. The locations used for the trawl positions were a combination of established trawl locations as well as completely new locations. The SCANMAR system was used to monitor headline height, wing spread, door spread and distance covered during each tow. Due to headline sensors failing during the first half no headline data was recorded on 17 tows.. A bottom contact sensor was attached to the groundgear for each tow to monitor ground contact as well as to validate touchdown and lift-off of the groundgear. Data was downloaded following every successful haul, however a number of technical issues resulted in no data being collected on 18 tows. All trawls were undertaken during the daylight period.

A total of 87 species were caught for an overall catch weight of ~34.25 tonnes. Major components (tonnes) included: Norway Pout (~6.41), Herring (~4.76), Haddock (~3.84), Whiting (~2.87), Mackerel (~2.47), Common Dab (~1.84) and Blue Whiting (~1.76). CPUE for major species is illustrated in Table 1.

The full dataset from this as well as from the other surveys undertaken during the quarter 3 North Sea survey programme are uploaded to the ICES DATRAS trawl survey database. From this a set of abundance indices will then be calculated for the target commercial species. This international combined survey index is provided to ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) where it is used as a tuning tool in the stock assessment models for several commercial species.

The 2015 survey has been coordinated in such a way that 2 complete sets of abundance indices will be produced from the combined international survey. One using the 15 minute haul data and another using the 30 minute haul data. The results of which will be presented to the WGNSSK in September 2015 and also to the IBTSWG in 2016.

### Hydrography:

The CTD (seabird19+) was deployed at 65 valid trawling stations in order to obtain a temperature and salinity profile. The CTD was broken for a number of hauls until a replacement unit was sourced. The thermosalinograph ran throughout the most of the survey to record surface temperature and salinity data after initial issues that prevented recording of data.

### Biological Sampling:

Additional biological data were collected from species in support of EU Data Collection Framework (DCF). A summary of numbers collected by all species is displayed in Table 2.

### Electronic Data Capture:

All hardware and software connected with EDC and FSS performed very well. All haul summary data, catch composition, and length frequency data were entered into the system at sea.

### Miscellaneous

Chlorophyll:

- Chlorophyll samples were collected from all statistical rectangles visited.

Marine litter:

- All litter picked up in the trawl was classified, quantified and recorded then retained for appropriate disposal ashore.

Tissue samples

- Tissue and otolith samples of 8 Striped Red Mullet (*Mullus surmulatus*) were collected for genetic studies.

Seawater samples

- Low nutrient seawater samples were collected in rectangle 43E9 for routine monitoring.

*Ruadhán G-Mules / Finlay Burns*

25 September 2015

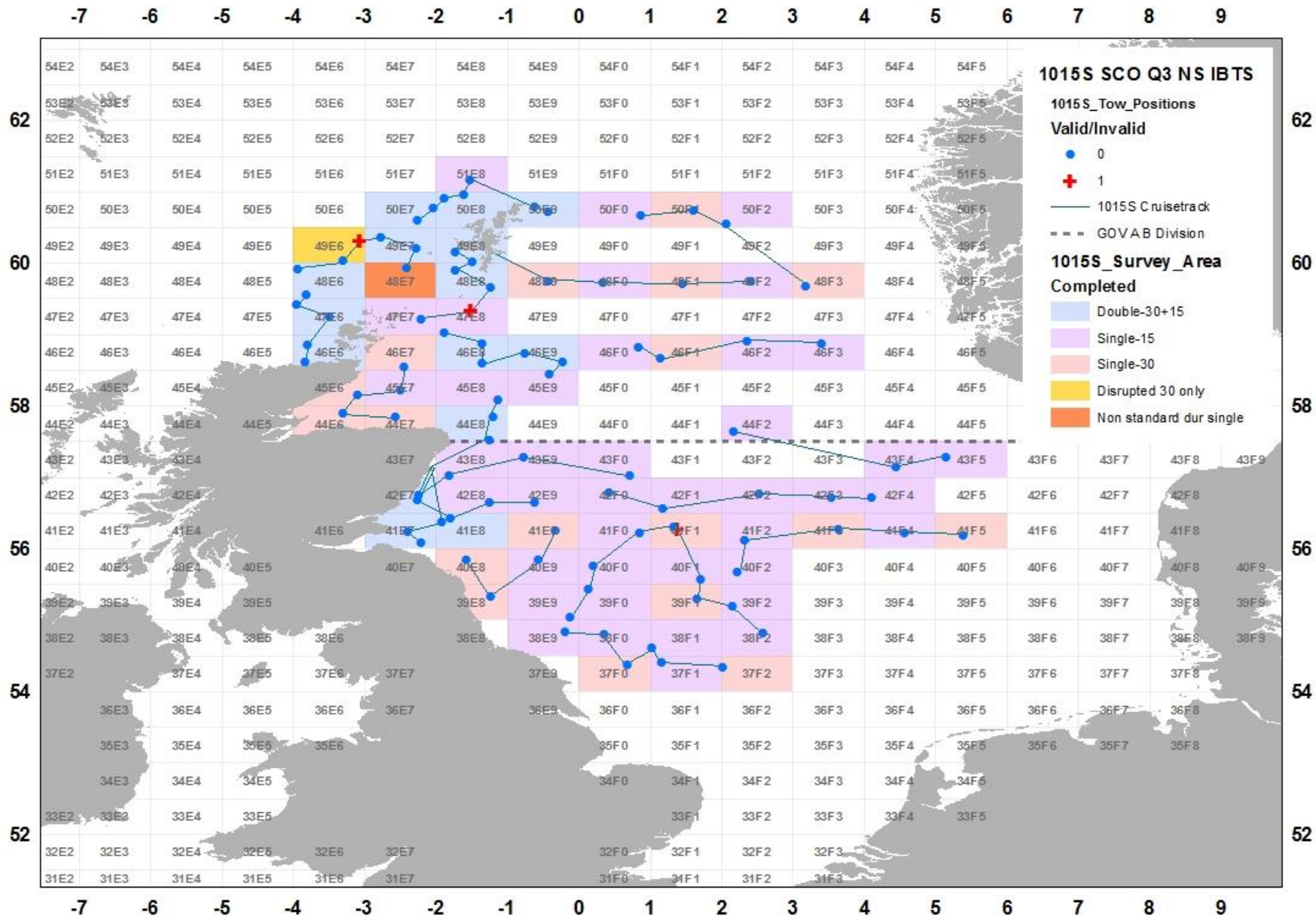


Figure 1: Survey map showing completed rectangles, tow duration, successful hauls, foul hauls and daily track for 1015S.

**Table 1:** CPUE of major species observed during 1015S.

Species	Kg/hr	No./hr
<i>Trisopterus esmarkii</i>	204	17536
<i>Clupea harengus</i>	152	1464
<i>Melanogrammus aeglefinus</i>	123	978
<i>Merlangius merlangus</i>	92	5375
<i>Scomber scombrus</i>	79	344
<i>Limanda limanda</i>	59	1057
<i>Micromesistius poutassou</i>	56	629
<i>Trachurus trachurus</i>	54	137
<i>Pollachius virens</i>	49	43
<i>Gadus morhua</i>	39	19
<i>Sprattus sprattus</i>	38	3190
<i>Merluccius merluccius</i>	37	25
<i>Eutrigla gurnardus</i>	25	245
<i>Pleuronectes platessa</i>	21	108
<i>Scyliorhinus canicula</i>	15	17
<i>Hippoglossoides platessoides</i>	10	330
<i>Microstomus kitt</i>	9	80
<i>Dipturus intermedia</i>	5	0
<i>Molva molva</i>	4	2
<i>Lophius piscatorius</i>	3	2
<i>Loligo forbesii</i>	3	142

**Table 2:** Numbers of biological observations per species collected during 1015S (length, weight, sex and age, \* length, weight, sex and maturity, \*\* length, weight, sex plus otoliths retained but not aged).

Species	No.	Species	No.
<i>Melanogrammus aeglefinus</i>	1425	* <i>Leucoraja naevus</i>	26
<i>Merlangius merlangus</i>	1420	* <i>Raja montagui</i>	31
<i>Gadus morhua</i>	514	* <i>Amblyraja radiata</i>	51
<i>Pollachius virens</i>	479	* <i>Squalus acanthias</i>	41
<i>Trisopterus esmarkii</i>	421	* <i>Raja clavata</i>	5
<i>Clupea harengus</i>	1284	* <i>Hippoglossus hippoglossus</i>	1
<i>Spattus sprattus</i>	374	* <i>Dipturus intermedia</i>	3
<i>Scomber scombrus</i>	578	** <i>Mullus surmuletus</i>	8
** <i>Pleuronectes platessa</i>	280	** <i>Zeus faber</i>	4
** <i>Merluccius merluccius</i>	301		