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FRV *Scotia*

Cruise 1117S

Report

Dates

10th August – 30th August 2017

Half-landing: Aberdeen, 18th August 2017

Personnel

R. Gillespie-Mules	(SIC – Part 1)
M. Kinghorn	(Deck – Part 1) (SIC – Part 2)
J. Dooley	
G. McAllister	(Deck – Part 2)
H. Holah	
N. Ensor	
I. Busturia-Cerezo	
E. Balestri	(Visitor – SFF)
J. Smith	(Visitor – SFF Part 1)

Out-turn days: 21 days – RV1711

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 obtain temperature and salinity data from the surface and seabed at each trawling station using a SEABIRD 19+ CTD.

3. To collect additional biological data in connection with the EU Data Collection Framework (DCF).

4. To conduct 'zero hour tows' and collect additional deployment and retrieval parameters to better understand inter-vessel variability.

Narrative

Scotia sailed from Aberdeen at 07:30hrs on the 10th August in good sea conditions. The first station 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 two stations were successfully completed during daylight.

On the first station of day two, the SCANMAR readings indicated the net didn't settle correctly so it was retrieved after 3 minutes. Net was all clear and the tow was attempted again. SCANMAR readings again were erratic so the net was retrieved after 3 minutes and checked over.

Again all clear. Fish caught in both tows indicated the net was settled and fishing correctly so repeated the tow. SCANMAR readings were again erratic however the tow was continued and catch worked up, the catch indicating no issues with the trawl but an issue with the SCANMAR system. Attempts to restart and repair the SCANMAR ScanBas failed so Scotia made for Fraserburgh whilst a replacement (the ScanMate 6) was brought up from the MSS. This was installed and worked for the remainder of the survey. A final station was attempted as daylight permitted however the otter doors locked upon deployment, ending fishing operations.

The third day passed relatively smoothly with five valid stations completed in the Moray Firth, the sixth station invalid due to net damage. On the fourth day, six valid stations were completed West/Northwest of Orkney. After the second station on the 14th, it was discovered that a hydraulic ram had snapped in the wavegate. This brought an end to fishing operations and Scotia made for Lerwick for repairs.

Scotia sailed again on the 15th at 01:00, heading East of Shetland and completed five successful stations. A broken hydraulic servo motor resulted in time being lost during the day, preventing a sixth station. The next day, three stations were completed to the west of Shetland however net damage resulted in two invalid stations and two shortened tows to avoid further damage on hard substrate.

On the 17th, an issue with the Scantrol system was noted that resulted in slower winch speeds during net deployment and retrieval. The on-board engineers attempted to fix the issue after the second station however once completed, no winch parameters were being fed to the GUI, ending fishing operations. After attempts to restore the feed failed, Scotia made for Fraserburgh to pick up a replacement interface. Scotia arrived on the morning of the 18th however the replacement interface failed to resolve the issue so Scotia made for Aberdeen for an impromptu half landing. The Scantrol system was fixed by Rapp Marine and Scotia was set to sail at 14:00 the following day.

Sailing was delayed due to a steering failure, however this was repaired and she sailed at 20:30 on the 19th August. Once in open sea a successful trial of the Scantrol system was undertaken. The following two days proceeded without incident, with eleven stations completed. On the 22nd the final three stations using groundgear B were completed leaving the stations south of 57’30 N left to complete with groundgear A.

Whilst underway to the first groundgear A station, a hydraulic leak was discovered in the wavegate. Due to risk of pollution, Scotia once again made for Aberdeen and arrived at 05:00 on the 23rd. The seal was replaced in port and Scotia sailed again at 17:00 the same day, picking up one station whilst daylight permitted. Two days passed with eleven stations being completed off the Southern Scottish and Northern English East coasts. One station was invalid due to net damage. On the 26th, poor ground was again encountered whilst towing on three occasions resulting in shorter tows but no net damage. Incident free days on the 27th and 28th resulted in eleven stations being completed.

One set of three ‘Zero Hour Tows’ were conducted after the third station on the 29th for the IBTS inter-vessel calibration exercise with a final standard tow being conducted after, bringing an end to the time allocated for the survey. Staff and equipment departed the vessel on the morning of the 30th in Aberdeen.

Results

Trawl Survey

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. The SCANMAR Trawleye would usually be used to monitor bottom type and fish density entering the net however the replacement for the ScanBas (the ScanMate 6), does not have this capability. 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 from the on-board EDC system following every successful haul. All trawls were undertaken during the daylight period.

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, 33 stations were completed successfully using groundgear A and 43 stations with groundgear B. All stations also used the west coast GOV design with strengthening strips to limit the damage that occurred on stations throughout the survey area.

The GOV was deployed on 85 occasions. A total of 76 valid hauls were achieved resulting in the coverage of 61 rectangles and 1 partially covered (one out of two planned tows conducted (41E8)). Due to the mechanical and electrical failures, 9 stations were not covered by Scotland (see Figure 1.) No permission was granted for the Danish sector resulting in 2 dropped stations (41F4 and 41F5), an issue repeated from 2016. Correspondence with the coordinator and the Norwegian Vessel resulted in Norway successfully completing 6 Scottish stations, mitigating some of the issues detailed above. Of those rectangles where Scotland was the sole surveying nation (23), 14 were sampled twice (see figure 1). There were 6 invalid hauls during the survey and all were repeated successfully. 13 tows were of a non-standard duration of ≥ 16 minutes due to dense fish marks or to prevent gear damage.

A total of 82 species were caught for an overall catch weight of 33,904kg. Major components (tonnes) included: Herring (~10.44), Haddock (~6.49), Whiting (~3.93), Norway Pout (~2.45), Mackerel (~1.79) Common Dab (~1.39) and Cod (~1.09). 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 international abundance indices is 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.

Hydrography
The CTD (Seabird19+) was deployed at 75 valid trawling stations in order to obtain a temperature and salinity profile.

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 haul summary data, catch composition, and length frequency data were entered into the FSS system at sea.

Miscellaneous
Marine litter

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

Seawater samples

- Low nutrient seawater samples were collected in square 43F0 for routine monitoring.

Non-indigenous Species

- All catch was screened for the presence of 'Non-Indigenous Species'.

Icthyophonus sampling

- All sampled Herring were checked for the presence of Icthyophonus and coded accordingly.

Inter-vessel variability

- Additional deployment and retrieval parameters were recorded to better understand inter-vessel variability.

Ruadhán G-Mules / Matt Kinghorn 29/09/2017

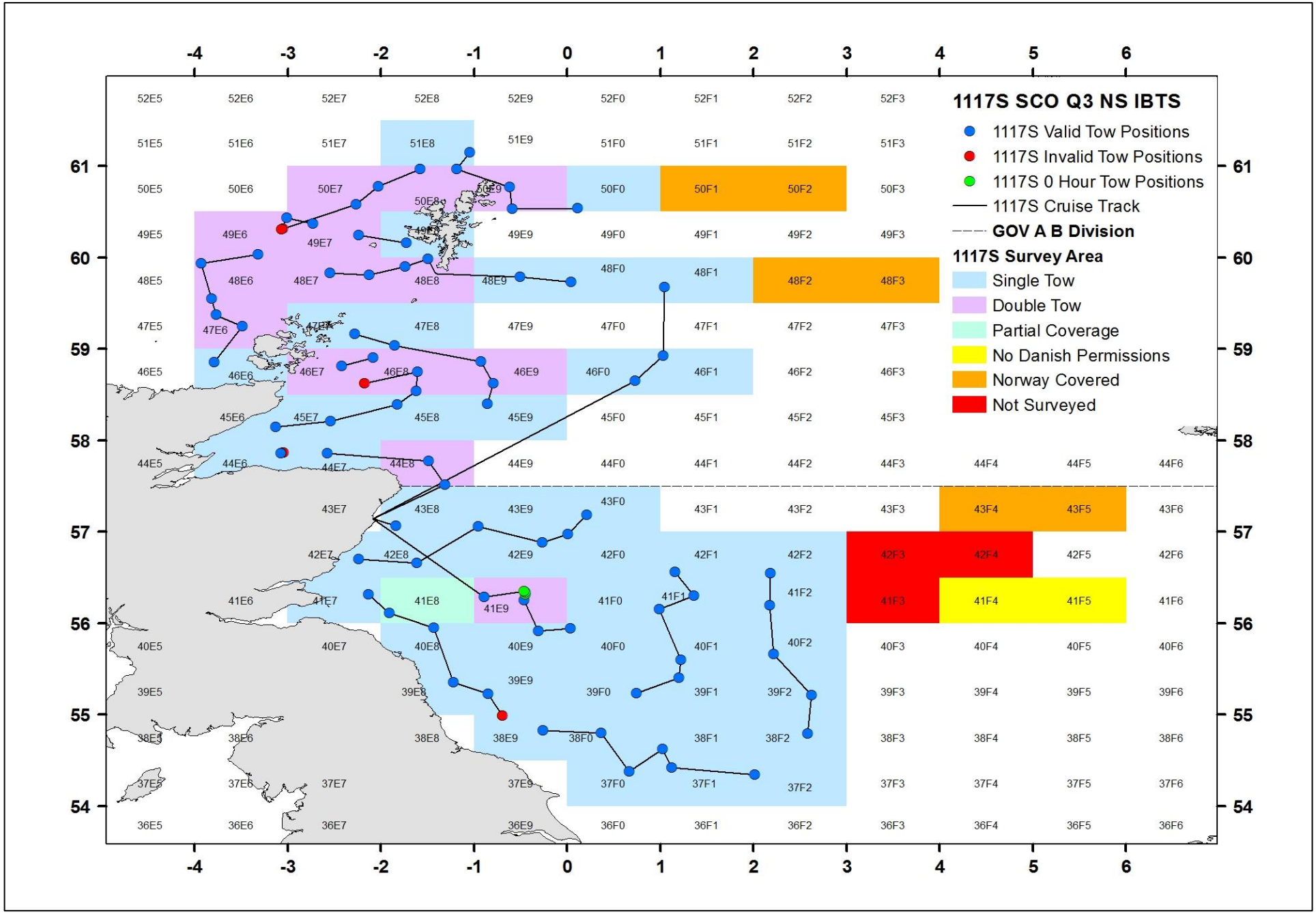

Figure 1: Survey map illustrating complete/incomplete rectangles, valid hauls, invalid hauls and daily cruise track for 1117S.

Table 1: CPUE of major species observed during 1117S.

Species	CPUE kg/h	CPUE Nos/h
Clupea harengus	294.7	1958.2
Melanogrammus aeglefinus	183.3	764.7
Merlangius merlangus	110.8	944.7
Trisopterus esmarkii	69.1	9576.7
Scomber scombrus	50.5	185.1
Limanda limanda	39.2	762.7
Gadus morhua	30.7	18.6
Pollachius virens	25.3	29.4
Eutrigla gurnardus	20.5	206.4
Sprattus sprattus	18.2	1312.5
Pleuronectes platessa	18.1	88.6
Trachurus trachurus	16.6	55.1
Scyliorhinus canicula	13.4	15.7
Hippoglossoides platessoides	10.2	279.7
Microstomus kitt	8.9	76.6
Merluccius merluccius	7.1	7.4
Trisopterus minutus	6	1030.4
Lophius piscatorius	5	2.1
Micromesistius poutassou	5	163.6
Dipturus intermedia	3.9	0.3
Molva molva	3.3	2.1
Loligo forbesii	2	55.1

Table 2: Numbers of biological observations per species collected during 1117S (length, weight, sex and age, * length, weight, sex and maturity, ** length, weight, sex plus otoliths retained but not aged).

Species	No.	Species	No.
Merlangius merlangus	1228	Raja montagui*	46
Melanogrammus aeglefinus	1175	Amblyraja radiata*	40
Clupea harengus	868	Squalus acanthias*	35
Pleuronectes platessa**	629	Glyptocephalus cynoglossus**	30
Gadus morhua	585	Dipturus intermedia*	9
Pollachius virens	484	Hippoglossus hippoglossus**	3
Scomber scombrus	370	Zeus faber**	2
Trisopterus esmarkii	336	Raja brachyura*	2
Merluccius merluccius**	200	Mullus surmuletus**	2
Sprattus sprattus	150	Scophthalmus maximus*	2
Leucoraja naevus*	56	Leucoraja fullonica*	1