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MRV Scotia

Survey 1021S

## **PROGRAMME**

28 July – 17 August 2021

### **Ports**

**Loading:** Aberdeen, 26 July 2021

**Departure:** Aberdeen, 28 July 2021

**Water/Stores Port Call:** TBD

**Unloading:** Aberdeen, 17 August 2021

In setting the survey 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 Marine Scotland's Working Time Policy (Lab Notice 34/03).

In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Survey Report to Iain Gibb and the Survey Summary Report (old ROSCOP form) to Matt Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

**Estimated Days Per Project:** 21 days – RV2110/20665

**Fishing Gear:** GOV Trawl (BT 137) with Ground Gear A & B  
MIK Net (Round frame with IK depressor)

### **Objectives**

1. To complete an internationally coordinated demersal trawling survey in the North Sea in ICES area IV.
2. To obtain temperature, salinity and dissolved oxygen concentration data from the water column at each trawling station using a RBR CTD.
3. To undertake MIK sampling for pre-metamorphosed clupeoid larvae during the hours of darkness within the trawl survey area.
4. To collect additional biological data in connection with the Data Collection Framework (DCF).
5. To identify and quantify all gelatinous zooplankton caught during trawling.
6. To collect and quantify all marine litter encountered on the survey for MSFD.
7. To identify and quantify the presence of non-indigenous species observed.
8. To collect surface water phytoplankton samples in selected STSQs.

9. To collect low nutrient sea water from 43F0 for the MSS chemistry department.
10. To collect a variety of additional samples.

## **Procedures**

### **General**

Loading of all trawl, scientific and MIK net gear will take place on 26 July with rigging of ground gear A and testing being completed on the same day. *Scotia* will sail on the morning of 28 July. Once safety drills have been completed, *Scotia* will proceed to the first station southwest of Aberdeen (Montrose Bank), where a shakedown haul/first trawl station will be completed in order to check the net configuration and the SCANMAR units. An operational daily survey plan will be formulated by the SIC subsequent to meetings with both the Fishing Master and Captain.

### **Trawling**

There are 74 programmed stat-squares to be surveyed, 16 stat-squares to be sampled twice as presented on the attached charts (Figure 1 and 2). Trawling will be undertaken during the hours of daylight which will vary depending on the vessels latitude at any given time. Standard towing time at each station is 30 minutes. *Scotia* will intend to complete the southern part of the survey first with the intention of completing the programmed stat-squares northwest of Shetland last. This will allow, if time permits, to conduct the double sampling of stat-squares that might not otherwise be possible due to processing time constraints with modified Covid SOPs and the coverage of stat-squares for Germany - mechanical issues with the German vessel preventing participation this year. If additional time is available, experimental tows will be undertaken in the 200-300 metre depth range to increase species distribution resolution.

The GOV survey trawl will be used solely with the 47 m (short) sweeps throughout the survey. Two ground gear types will be used during the survey, the lighter "A" rig being used on all stations south of 57° 30' N and the heavier "B" rig being used north of 57° 30' N. This will require a ground gear swap during the survey following the completion of all stations south of 57° 30' N.

The SCANMAR system will be used to monitor the headline height, depth, wing spread and door spread for each haul. Bottom contact data from each haul will also be collected using the NOAA bottom contact sensor which will be mounted in the centre of the ground gear.

In addition to the routine sampling utilising the EDC system, biological data will be collected for target species in line with the UK work plan. All fish will be processed in accordance with IBTS manuals and MSS SOPs.

### **Hydrography**

CTD casts will be taken at every trawl station. These provide temperature and salinity profiles of the water column. Water samples from 5 m above the sea floor and 5 m below the surface will be collected at each CTD station for calibration. The water samples will also be used at ~50 stations to examine the dissolved oxygen concentration.

A number of 20 litre carboys will be filled with sea water, according to the Water Collection SOP (0805 – Section 8.3.1) for the Chemistry department at the lab to use for nutrient analysis.

### **MIK Sampling**

Pre-metamorphosed clupeoid larvae will be sampled during the hours of darkness with the MIK mid-water trawl (round frame). The vertical profile of the tow will be monitored using the Scanmar system. Catches will be processed as per the most recent version of the MIK sampling manual.

### **Phytoplankton**

Phytoplankton samples will be collected during CTD deployment using a hand held net at a selected number of stations.

### **Additional Sampling**

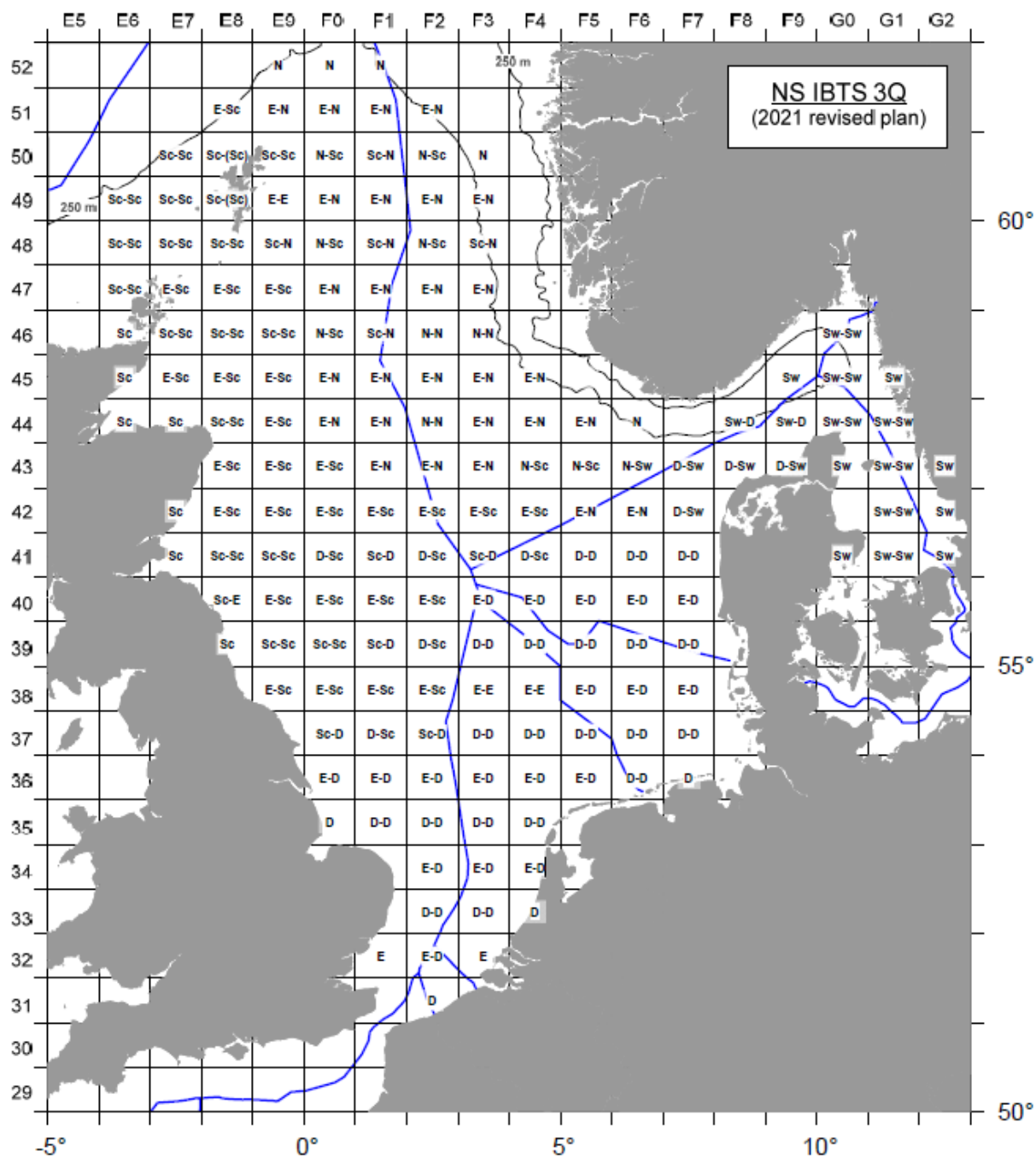
- All Cod (*Gadus morhua*) routinely sampled will be examined for the presence and number of Cod liver worms.
- Tissue samples from juvenile Cod (*G. morhua*) (<25cm) will be collected for stock identification.
- Tissue samples from Anglerfish (*Lophius piscatorius*) will be collected from NW Shetland for genetic analysis at IMR – Norway.
- Tissue samples from Hake (*Merluccius merluccius*) and Anchovy (*Engraulis encrasicolus*) will be collected for genetic analysis at IMR – Norway.
- All shelled molluscs will be retained for identification and species distribution mapping.
- All Loliginid squid >39cm will be retained for a population study.
- A variety of species will be retained for the Aberdeen University MSC Species Diversity Practical. Haddock will also be retained for the ABU MSC Haddock Dissection Practical.

Normal contacts will be maintained with the Laboratory.

All staff and equipment will be unloaded on the morning of the 17<sup>th</sup> August 2021.

Submitted:  
R Gillespie-Mules  
14 July 2021

Approved:  
I Gibb  
21 July 2021



**Figure 1:** 2021 IBTS Quarter 3 revised survey grid - All Participants (D: Denmark, E: England, N: Norway, Sc: Scotland, Sw: Sweden).

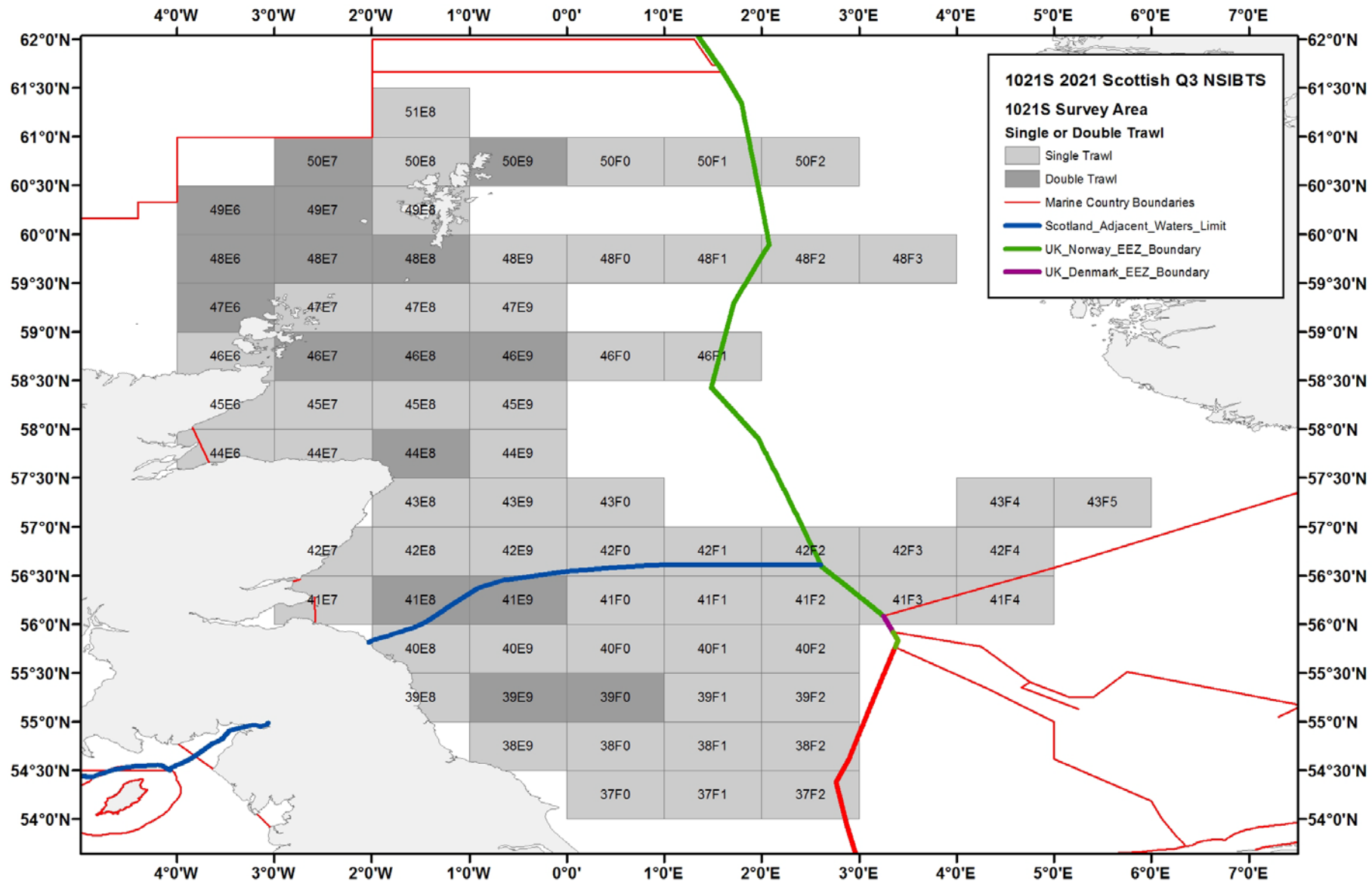


Figure 2: 2021 IBTS Quarter 3 Proposed Survey Grid – Scotland.