Not to be cited without prior reference to Marine Scotland, Marine Laboratory, Aberdeen.

MRV *Scotia*

Survey 1820S

PROGRAMME

16 November – 8 December 2020

Loading: Aberdeen, 13 November 2020
Half landing: Campbeltown, *dates flexible*
Unloading: Aberdeen, 08 December 2020

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 I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

Out-turn days: 21 – RV2014/20588, 2 – C80040/20397

Fishing Gear: GOV Trawl (BT 137) fitted with ground gear D.
Hydrographic Gear: Seabird 19+ CTD
Moorings: COMPASS C-pod moorings

Objectives

1. Demersal trawling survey (SCOWCGFS-Q1) of the grounds off the north and west of Scotland in ICES Subarea 6a.

2. To obtain temperature and salinity data from the surface and seabed at each trawling station.

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

4. Retrieval and re-deployment of COMPASS moorings located at discrete sites within the survey area.

Procedures

General

Loading of the remaining trawl gear and scientific equipment will take place on Friday 13 November with rigging of the gear also commencing on the same day. *Scotia* will sail early on Monday 16 November. After all drills, and in consultation with the captain and fishing master, a training haul will be undertaken during the passage north to ensure all fishing gear/sensors are working effectively. *Scotia* will then commence fishing operations the next morning on predefined stations off the north Scottish coast and west of 4'W with weather conditions thereafter determining the route taken on the survey.

Trawling

This is a random-stratified survey design with trawl stations being distributed within 12 predefined strata that cover ICES subarea 6A and 7B (see Figure 1). A total of 60 primary and 38 secondary stations have been generated (Tables 2 and 3 respectively). The intention is for the 60 trawls to be undertaken on suitable ground as near to the specified primary station positions as is practicable, and within a radius of five nautical miles of the station location. In the event that trawling is not possible within 5 nm of any primary station then the nearest appropriate secondary station located within the same stratum will be used. Hauls will be of 30 minutes duration unless circumstances dictate otherwise. Where possible, fishing operations will be restricted to daylight hours. Exact start and finish times will, however, vary slightly according to geographical location. The Scanmar system will be used to monitor the headline height, wing spread and door spread for each haul. The EK60 scientific echo-sounder will be recording continuously throughout the entire survey with the echograms being scrutinised back in the institute for evidence of pelagic species. Bottom contact data from each trawl will also be collected using the NOAA bottom contact sensor which will be mounted on a bar in the centre of the ground-gear. In addition to the routine sampling, biological data and samples will be collected for target species in line with the EU data regulation and other external projects.

Fish Sampling

All fish will be processed in accordance with the protocols as described in the Manual of the IBTS North Eastern Atlantic Surveys. *Series of ICES Survey Protocols SISP 15. 92 pp. http://doi.org/10.17895/ices.pub.3519.*

Hydrography

A CTD cast will be taken at each trawl station, weather permitting. Top and bottom temperatures will be reported and in addition a calibration sample will be retained from the surface.

Compass Moorings

Six acoustic moorings were deployed at separate sites within the survey area, and during the first half of 2020. Two days have been allocated from this survey in order to retrieve and redeploy these moorings. Completion of this objective will be at a time and period within the survey that is conducive to both the vessel captain as well as the SIC. An acoustic release system will be deployed from the vessels side deck which, once within range will trigger the hydrostatic release mechanism for each mooring. It will then surface where it can then be retrieved from the side deck. Re-deployment of moorings will similarly be undertaken from the side deck. A table and map providing the confirmed mooring locations can be found below in table 1 and are also plotted in figure 1.

Normal contact will be maintained with the Marine Laboratory.

Submitted:
F Burns
3 November 2020

Approved:
I Gibb
10 November 2020

Table 1: Positions of COMPASS moorings located within the 1820S survey area.

Location name	Latitude (deg dec min)	Longitude (deg dec min)	Latitude (dec deg)	Longitude (dec deg)
Hyskier	57° 2.12 N	6° 45.17 W	57.03533	-6.75283
Shiant Isles	57° 52.17 N	6° 16.17 W	57.8695	-6.2695
Tolsta Hd	58° 23.52 N	6° 0.52 W	58.39200	-6.00870
Stoer Hd	58° 15.44 N	5° 32.21 W	58.25733	-5.5368
Stanton Bank	56° 4.14 N	8° 3.84 W	56.070	-8.064
Garvellach Isles	56° 14.06 N	5° 45.44 W	56.2343	-5.7573

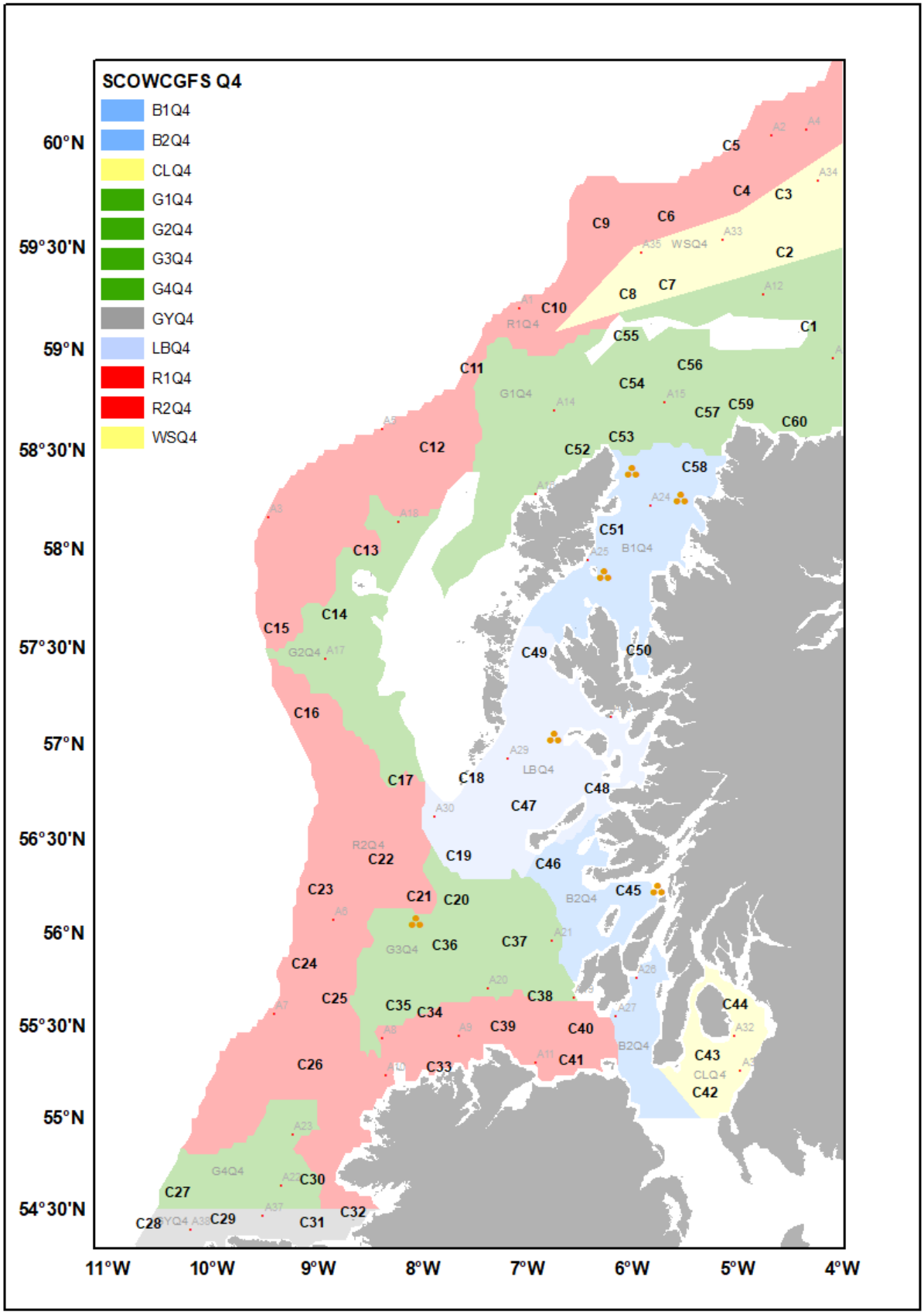

Figure 1: 1820S (SCOWCGFS-Q4) – 2020 ICES Subarea 6A/7B Survey Strata showing primary (bold face) and secondary trawling stations (red dot - plain face).Orange clustered floats denote locations of COMPASS moorings.

Table 2: 1820S – Positions of primary sampling stations.

Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum	Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum
C1	59.10266	-4.309225	5906.16N	0418.55W	green1	C31	54.4193	-9.050069	5425.16N	0903.00W	grey
C2	59.4433	-4.544484	5926.60N	0432.67W	windsock	C32	54.4792	-8.662532	5428.75N	0839.75W	grey
C3	59.74858	-4.551823	5944.91N	0433.11W	windsock	C33	55.27331	-7.842939	5516.40N	0750.58W	red2
C4	59.76631	-4.958592	5945.98N	0457.52W	red1	C34	55.57227	-7.930711	5534.34N	0755.84W	red2
C5	59.98256	-5.056597	5958.95N	0503.40W	red1	C35	55.60769	-8.234761	5536.46N	0814.09W	green3
C6	59.64055	-5.67023	5938.43N	0540.21W	red1	C36	55.93453	-7.794298	5556.07N	0747.66W	green3
C7	59.30718	-5.667171	5918.43N	0540.03W	windsock	C37	55.95315	-7.120992	5557.19N	0707.26W	green3
C8	59.26377	-6.039623	5915.83N	0602.38W	windsock	C38	55.66076	-6.878856	5539.65N	0652.73W	green3
C9	59.60676	-6.290224	5936.41N	0617.41W	red1	C39	55.49447	-7.240636	5529.67N	0714.44W	red2
C10	59.19449	-6.740509	5911.67N	0644.43W	red1	C40	55.48424	-6.491586	5529.05N	0629.50W	red2
C11	58.898	-7.526656	5853.88N	0731.60W	red1	C41	55.30828	-6.581162	5518.50N	0634.87W	red2
C12	58.50797	-7.911306	5830.48N	0754.68W	red1	C42	55.13338	-5.310257	5508.00N	0518.62W	clyde
C13	57.98972	-8.546163	5759.38N	0832.77W	red1	C43	55.33479	-5.284927	5520.09N	0517.10W	clyde
C14	57.69363	-8.835281	5741.62N	0850.12W	green2	C44	55.61138	-5.022935	5536.68N	0501.38W	clyde
C15	57.59291	-9.396296	5735.57N	0923.78W	red1	C45	56.25566	-6.03754	5615.34N	0602.25W	blue2
C16	57.15739	-9.111946	5709.44N	0906.72W	red2	C46	56.3666	-6.878953	5622.00N	0652.74W	blue2
C17	56.80539	-8.205351	5648.32N	0812.32W	green2	C47	56.66852	-7.03211	5640.11N	0701.93W	lightblue
C18	56.81997	-7.539145	5649.20N	0732.35W	lightblue	C48	56.76372	-6.341425	5645.82N	0620.49W	lightblue
C19	56.41027	-7.661147	5624.62N	0739.67W	lightblue	C49	57.46914	-6.842786	5728.15N	0650.57W	lightblue
C20	56.17314	-7.674957	5610.39N	0740.50W	green3	C50	57.47997	-5.9383	5728.80N	0556.30W	blue1
C21	56.19321	-8.029733	5611.59N	0801.78W	red2	C51	58.09292	-6.192428	5805.58N	0611.55W	blue1
C22	56.38704	-8.399326	5623.22N	0823.96W	red2	C52	58.4864	-6.531516	5829.18N	0631.89W	green1
C23	56.2278	-8.974957	5613.67N	0858.50W	red2	C53	58.55967	-6.108144	5833.58N	0606.49W	green1
C24	55.83374	-9.128374	5550.02N	0907.70W	red2	C54	58.82752	-6.010082	5849.65N	0600.60W	green1
C25	55.64417	-8.835301	5538.65N	0850.12W	red2	C55	59.05921	-6.056683	5903.55N	0603.40W	green1
C26	55.28911	-9.077889	5517.35N	0904.67W	red2	C56	58.91574	-5.452246	5854.94N	0527.13W	green1
C27	54.58727	-10.335072	5435.24N	1020.10W	green4	C57	58.68347	-5.291814	5841.01N	0517.51W	green1
C28	54.40985	-10.60993	5424.59N	1036.60W	grey	C58	58.40668	-5.40468	5824.40N	0524.28W	blue1
C29	54.43492	-9.927724	5426.10N	0955.66W	grey	C59	58.7238	-4.970377	5843.43N	0458.22W	green1
C30	54.65685	-9.048074	5439.41N	0902.88W	green4	C60	58.62322	-4.457096	5837.39N	0427.43W	green1

Table 3: 1820S – Positions of secondary sampling stations.

Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum	Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum
A1	59.19767	-7.078098	5911.86N	0704.69W	red1	A20	55.70212	-7.384445	5542.13N	0723.07W	green3
A2	60.03413	-4.674238	6002.05N	0440.45W	red1	A21	55.96013	-6.76781	5557.61N	0646.07W	green3
A3	58.15858	-9.473757	5809.52N	0928.43W	red1	A22	54.6275	-9.350706	5437.65N	0921.04W	green4
A4	60.06313	-4.344398	6003.79N	0420.66W	red1	A23	54.90608	-9.244106	5454.36N	0914.65W	green4
A5	58.60126	-8.388894	5836.08N	0823.33W	red1	A24	58.21598	-5.834662	5812.96N	0550.08W	blue1
A6	56.06951	-8.846327	5604.17N	0850.78W	red2	A25	57.94328	-6.425699	5756.60N	0625.54W	blue1
A7	55.56554	-9.415951	5533.93N	0924.96W	red2	A26	55.75906	-5.963165	5545.54N	0557.79W	blue2
A8	55.43218	-8.38244	5525.93N	0822.95W	red2	A27	55.55569	-6.156524	5533.34N	0609.39W	blue2
A9	55.44535	-7.661533	5526.72N	0739.69W	red2	A28	57.14179	-6.202551	5708.51N	0612.15W	lightblue
A10	55.23352	-8.355714	5514.01N	0821.34W	red2	A29	56.92218	-7.189612	5655.33N	0711.38W	lightblue
A11	55.29842	-6.924982	5517.91N	0655.50W	red2	A30	56.61826	-7.89346	5637.10N	0753.61W	lightblue
A12	59.26356	-4.757383	5915.81N	0445.44W	green1	A31	55.25534	-4.974489	5515.32N	0458.47W	clyde
A13	58.95369	-4.085432	5857.22N	0405.13W	green1	A32	55.44314	-5.036802	5526.59N	0502.21W	clyde
A14	58.69263	-6.746081	5841.56N	0644.76W	green1	A33	59.53228	-5.147307	5931.94N	0508.84W	windsock
A15	58.73477	-5.69473	5844.09N	0541.68W	green1	A34	59.81831	-4.235771	5949.10N	0414.15W	windsock
A16	58.27579	-6.927608	5816.55N	0655.66W	green1	A35	59.46675	-5.917164	5928.00N	0555.03W	windsock
A17	57.44023	-8.929304	5726.41N	0855.76W	green2	A36	54.25422	-10.455625	5415.25N	1027.34W	grey
A18	58.13608	-8.235811	5808.16N	0814.15W	green2	A37	54.45714	-9.522087	5427.43N	0931.33W	grey
A19	55.65222	-6.559234	5539.13N	0633.55W	green3	A38	54.37994	-10.218974	5422.80N	1013.14W	grey