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

MRV *Scotia*

Survey 0319S

PROGRAMME

17 February – 11 March 2019

Loading: Aberdeen, 13 February 2019
Half landing: TBC, *dates flexible*
Unloading: Aberdeen, 11 March 2019

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 - RV1902/20446, 2 – C80040/20397

Fishing Gear: GOV Trawl (BT 137) fitted with ground gear D.
Plankton Sampling Gear: Gulf 7, icthyoplankton Sampler
Hydrographic Gear: Seabird 19+ CTD

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.

5. Opportunistic use of the Gulf 7 icthyoplankton sampler in support of the triennial mackerel egg survey (MEGS) to determine densities of target species within the survey area.

Procedures

General

Loading of the trawl gear and scientific equipment will take place on 13 February with rigging and testing being completed on the same day. *Scotia* will sail on the morning of 17 February.

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 ten predefined strata covering the sampling area (Figure 1). A total of 62 primary and 45 secondary stations have been generated (Tables 2 and 3, respectively). The intention is for the 62 trawls to be undertaken on suitable ground as near to the specified primary sampling positions as is practicable, and where possible within a radius of five nautical miles of the sampling position. In the event that trawling is not possible within 5 nm of any primary station then the nearest appropriate secondary station 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. 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 will be collected for target species in line with the EU data regulation. 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 sites within the 0318S survey area during 2018. Two days have been allocated from this survey in order to retrieve and redeploy these moorings. An acoustic release system will be deployed from the vessels side deck to trigger each mooring which will then allow it to surface where it will then be retrieved again from the side deck. Re-deployment of moorings will be undertaken from the side deck. A table and map providing the mooring locations can be found below in Table 1 and figure 2 respectively.

Table 1: Positions of moorings located within the 0319S survey area.

Location name	Latitude (deg dec min)	Longitude (deg dec min)	Latitude (dec deg)	Longitude (dec deg)
Stoer Head	58^0 15.4485 N	5^0 32.2160 W	58.257475	-5.536933
Shiant Isles	57^0 52.1777 N	6^0 16.1806 W	57.869628	-6.269677
Hyskier	57^0 02.1177 N	6^0 45.1682 W	57.035295	-6.752803
Stanton Bank	56^0 04.248 N	8^0 03.245 W	56.0708	-8.054083
Garvellachs	56^0 14.044 N	5^0 45.444 W	56.234067	-5.7574
Tolsta	58^0 23.531 N	6^0 00.521 W	58.392183	-6.008683

Gulf 7 sampling

Oblique tows will be carried out opportunistically and during trawl and mooring downtime using the Gulf 7 sampler. The intention will be to collect where possible one sample within each half statistical rectangle bisected vertically (eg 45E1W/45E1E). The daily sampling plan will be discussed and then decided after consultation with the Captain and Fishing Master.

Normal contact will be maintained with the Marine Laboratory.

Submitted:
F Burns
05 February 2019

Approved:
I Gibb
13 February 2019

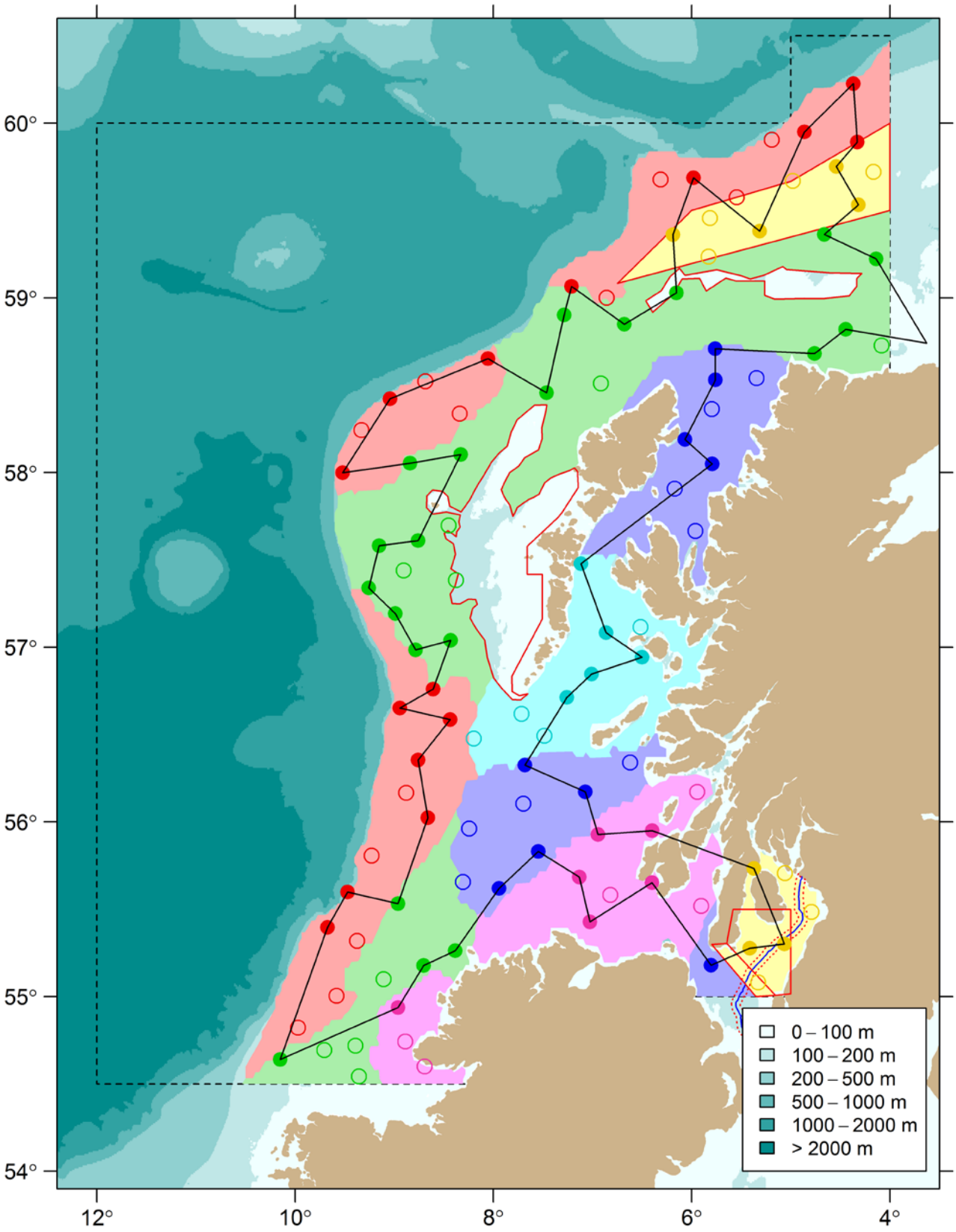

Figure 1: 0319S (SCOWCGFS-Q1) – 2019 ICES Subarea VIa Survey Strata showing primary (filled circles) and secondary trawling stations (open circles). A potential survey route is also provided.

Table 2: 0319S – Positions of primary sampling stations.

Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum	Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum
1	59.22278	-4.138315	5913.37N	0408.30W	green1	32	55.53319	-8.961875	5531.99N	0857.71W	green2
2	59.36319	-4.662395	5921.79N	0439.74W	green1	33	55.59847	-9.470693	5535.91N	0928.24W	red3
3	59.53247	-4.317407	5931.95N	0419.04W	windsock	34	55.39656	-9.672512	5523.79N	0940.35W	red3
4	59.75185	-4.542196	5945.11N	0432.53W	windsock	35	54.64004	-10.151135	5438.40N	1009.07W	green2
5	59.89189	-4.330836	5953.51N	0419.85W	red1	36	54.93765	-8.962682	5456.26N	0857.76W	pink
6	60.22654	-4.369207	6013.59N	0422.15W	red1	37	55.17798	-8.703628	5510.68N	0842.22W	green2
7	59.94952	-4.862293	5956.97N	0451.74W	red1	38	55.26303	-8.384381	5515.78N	0823.06W	green2
8	59.38115	-5.313986	5922.87N	0518.84W	windsock	39	55.61927	-7.942814	5537.16N	0756.57W	blue2
9	59.68644	-5.980957	5941.19N	0558.86W	red1	40	55.83171	-7.547519	5549.90N	0732.85W	blue2
10	59.36143	-6.188842	5921.69N	0611.33W	windsock	41	55.68427	-7.134055	5541.06N	0708.04W	pink
11	59.02915	-6.153041	5901.75N	0609.18W	green1	42	55.42774	-7.025542	5525.66N	0701.53W	pink
12	58.84853	-6.678702	5850.91N	0640.72W	green1	43	55.65289	-6.399718	5539.17N	0623.98W	pink
13	59.06583	-7.211625	5903.95N	0712.70W	red1	44	55.17955	-5.805632	5510.77N	0548.34W	blue2
14	58.9014	-7.287275	5854.08N	0717.24W	green1	45	55.2768	-5.414064	5516.61N	0524.84W	clyde
15	58.45676	-7.463689	5827.41N	0727.82W	green1	46	55.30172	-5.06522	5518.10N	0503.91W	clyde
16	58.65166	-8.054475	5839.10N	0803.27W	red2	47	55.73303	-5.37318	5543.98N	0522.39W	clyde
17	58.42234	-9.04255	5825.34N	0902.55W	red2	48	55.95071	-6.397415	5557.04N	0623.84W	pink
18	57.999	-9.520427	5759.94N	0931.23W	red2	49	55.9274	-6.94555	5555.64N	0656.73W	pink
19	58.05267	-8.841116	5803.16N	0850.47W	green1	50	56.17288	-7.072654	5610.37N	0704.36W	blue2
20	58.10288	-8.328727	5806.17N	0819.72W	green1	51	56.32585	-7.682276	5619.55N	0740.94W	blue2
21	57.61098	-8.758354	5736.66N	0845.50W	green1	52	56.71269	-7.25826	5642.76N	0715.50W	lightblue
22	57.58105	-9.153509	5734.86N	0909.21W	green1	53	56.84597	-7.009385	5650.76N	0700.56W	lightblue
23	57.3389	-9.257971	5720.33N	0915.48W	green1	54	56.94316	-6.500673	5656.59N	0630.04W	lightblue
24	57.19338	-8.990823	5711.60N	0859.45W	green1	55	57.08319	-6.862324	5704.99N	0651.74W	lightblue
25	56.98501	-8.785843	5659.10N	0847.15W	green1	56	57.47833	-7.116375	5728.70N	0706.98W	lightblue
26	57.0393	-8.430526	5702.36N	0825.83W	green1	57	58.04954	-5.793819	5802.97N	0547.63W	blue1
27	56.76031	-8.60918	5645.62N	0836.55W	red3	58	58.18898	-6.068355	5811.34N	0604.10W	blue1
28	56.65187	-8.942279	5639.11N	0856.54W	red3	59	58.53042	-5.76083	5831.82N	0545.65W	blue1
29	56.58585	-8.434856	5635.15N	0826.09W	red3	60	58.70899	-5.762345	5842.54N	0545.74W	blue1
30	56.35473	-8.758515	5621.28N	0845.51W	red3	61	58.68134	-4.75979	5840.88N	0445.59W	green1
31	56.02442	-8.662558	5601.47N	0839.75W	red3	62	58.82053	-4.446835	5849.23N	0426.81W	green1

Table 3: 0319S – Positions of secondary sampling stations.

Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum	Station	Decimal Lat	Decimal Lon	Lat	Lon	Stratum
1	59.00143	-6.859379	5900.09N	0651.56W	red1	24	58.54064	-5.346796	5832.44N	0520.81W	blue1
2	59.6778	-6.3153	5940.67N	0618.92W	red1	25	57.90812	-6.172228	5754.49N	0610.33W	blue1
3	59.90513	-5.192499	5954.31N	0511.55W	red1	26	55.96223	-8.24509	5557.73N	0814.71W	blue2
4	59.57567	-5.547142	5934.54N	0532.83W	red1	27	55.6567	-8.307619	5539.40N	0818.46W	blue2
5	58.3375	-8.340473	5820.25N	0820.43W	red2	28	56.1054	-7.697391	5606.32N	0741.84W	blue2
6	58.52279	-8.686574	5831.37N	0841.19W	red2	29	56.33995	-6.620943	5620.40N	0637.26W	blue2
7	58.2438	-9.331454	5814.63N	0919.89W	red2	30	56.61939	-7.717786	5637.16N	0743.07W	lightblue
8	55.00535	-9.583414	5500.32N	0935.00W	red3	31	56.47722	-8.199647	5628.63N	0811.98W	lightblue
9	55.32026	-9.375324	5519.22N	0922.52W	red3	32	56.49288	-7.485742	5629.57N	0729.14W	lightblue
10	56.16715	-8.880589	5610.03N	0852.84W	red3	33	57.11661	-6.517526	5707.00N	0631.05W	lightblue
11	54.8225	-9.972196	5449.35N	0958.33W	red3	34	54.74317	-8.889938	5444.59N	0853.40W	pink
12	55.80727	-9.2286	5548.44N	0913.72W	red3	35	55.5827	-6.822079	5534.96N	0649.32W	pink
13	58.51027	-6.917565	5830.62N	0655.05W	green1	36	54.60098	-8.694181	5436.06N	0841.65W	pink
14	58.72789	-4.084523	5843.67N	0405.07W	green1	37	55.51883	-5.905608	5531.13N	0554.34W	pink
15	57.43981	-8.906748	5726.39N	0854.40W	green1	38	56.1717	-5.944483	5610.30N	0556.67W	pink
16	57.69801	-8.453285	5741.88N	0827.20W	green1	39	55.08219	-5.329862	5504.93N	0519.79W	clyde
17	57.38494	-8.378036	5723.10N	0822.68W	green1	40	55.48491	-4.792576	5529.09N	0447.55W	clyde
18	54.69473	-9.705471	5441.68N	0942.33W	green2	41	55.70719	-5.061347	5542.43N	0503.68W	clyde
19	54.72022	-9.391918	5443.21N	0923.52W	green2	42	59.67013	-4.98057	5940.21N	0458.83W	windsock
20	55.10049	-9.107938	5506.03N	0906.48W	green2	43	59.23577	-5.830423	5914.15N	0549.83W	windsock
21	54.54425	-9.356167	5432.66N	0921.37W	green2	44	59.45659	-5.816842	5927.40N	0549.01W	windsock
22	58.36349	-5.797791	5821.81N	0547.87W	blue1	45	59.72092	-4.168047	5943.26N	0410.08W	windsock
23	57.66652	-5.962457	5739.99N	0557.75W	blue1						

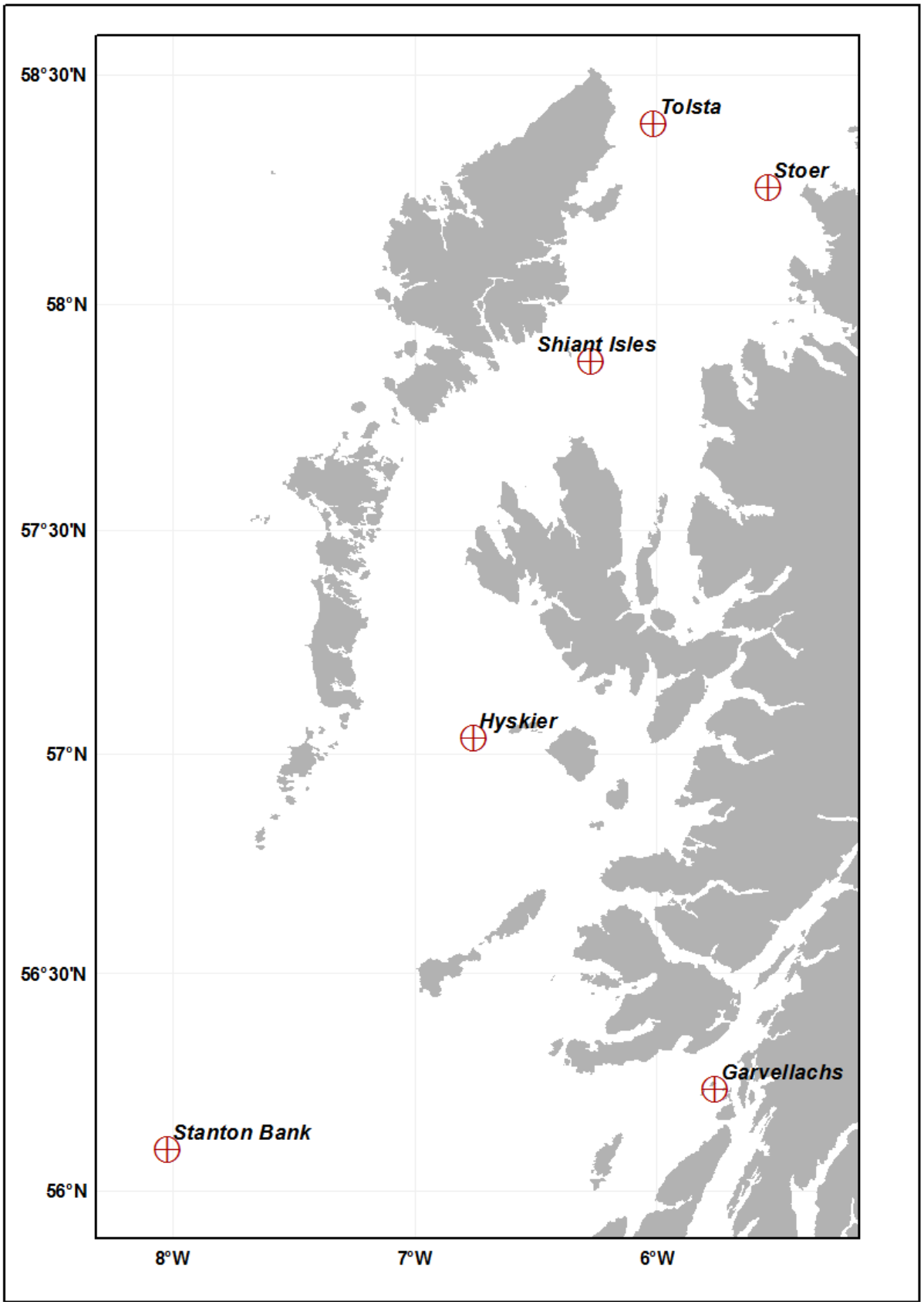

Figure 2: 0319S - Location of Compass moorings.