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FV *Lady Nicola* UL 584

Report of Survey: Drop-down video survey of seabed habitats and Priority Marine Features around Inner Sound and Loch Alsh

11 - 20 March 2019

Loading: Kyle of Lochalsh, 11 March 2019

Boarding: Kyle of Lochalsh, 11 March 2019

Unloading: Kyleakin, 20 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.

Personnel	Organisation	Role
G. Pasco	Seascope Fisheries Research	SIC
G. Course	Seascope Fisheries Research	19 - 20 March 2019
C. Orr	Scottish Natural Heritage	11-15 March 2019
F. Manson	Scottish Natural Heritage	16- 20 March 2019

Project: 10 days

Gear

EMFF camera frame, umbilicals (300m + 100m), camera system (EMFF system 1), lights and control unit. Camera system 2 was shipped from Aberdeen to survey staff on 12 March 2019 to replace camera system 1 due to technical issues encountered on the first survey day.

Background and Objectives

“Engaging Fishermen in Marine Environmental Monitoring” is a joint project between Marine Scotland (MS), Marine Scotland Science (MSS) and Scottish Natural Heritage (SNH), funded through the European Maritime and Fisheries Fund (EMFF). This survey is one of several planned for 2018 and 2019 working in collaboration with fishermen to collect information on seabed habitats within and adjacent to Scottish Marine Protected Areas (MPAs) <https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/MPAmonitoring/EMFFproject>

The objectives for this survey were:

- To engage fishermen in marine monitoring work through chartering of fishing vessels and training crew.
- To undertake a programme of targeted drop down video (DDV) sampling to enhance our understanding of the distribution and extent of Priority Marine Features (such as maerl beds, horse

mussel beds, flame shell beds) and other benthic habitats within the Inner sound and Loch Alsh. Also, to investigate the seabed habitats present in a known herring spawning ground on the coast near Gairloch (planned survey areas shown as polygons in Figure 1).

The focus of the sampling was to carry out targeted surveys of seabed habitats. DDV will be used to confirm habitat presence, extent and current status of such features. The survey builds upon work in previous years to refine the habitat maps for the area. Figure 1 shows the planned sampling areas in Inner Sound. Due to the poor forecast immediately prior to the survey, alternative sampling areas in more sheltered waters in Loch Alsh were added to the plan, these are shown in Figure 2.

Survey procedure

The initial plan was to deploy the DDV system from the fishing vessel at or near to pre-identified coordinates within the survey polygons in Inner Sound shown in Figure 1, or those in Loch Alsh shown in Figure 2 in the event of poor weather. The planned survey positions were manually entered into the vessel navigation system each day as bulk loading of positions was not possible. During operation, the camera frame was lowered over the side of the vessel using the winch/haul and positioned just above the seabed. A live feed of the standard definition video signal was provided to the surface control unit (SCU) located in the wheelhouse, and red-line lasers enabled the field of view to be judged. The live video feed to the wheelhouse was visible to the skipper and winch operator, to help with locating the camera above the seabed and orientating the vessel during tows.

The vessel was allowed to drift in the direction of the prevailing current or wind for approximately 5 minutes. Longer or shorter runs were appropriate in some situations depending on the local conditions and habitats encountered. Vessel speed in general was approximately 0.5kn during tows. At intervals the camera frame was landed on the seabed to take 'Snapshot' still images of the seabed type and flora/fauna. The Surface Control Unit (SCU) displayed live Standard Definition (SD) video with time/date stamp, GPS location (when operating) and camera depth. LED lighting level was controlled from the SCU and was generally kept at maximum. High Definition (HD) video and still photos were stored in the camera for later downloading. SD video with overlay (including time/date stamp and position coordinates from its dedicated GPS) was recorded directly on the SCU.

Sample location (from the vessel's GPS) and other metadata were recorded on paper forms throughout the survey, with forms stored ashore at the end of each survey day and used to assist in quality control. Track and waypoints were recorded from a hand-held GPS, initially as backup in case of problems with the camera or vessel positional data, but post-survey these waypoint positions have been used as principal sample location data, and are shown in Tables 1 and 2. On one occasion where a waypoint was missed for some reason, the start/end point and time from the vessel navigation system, as recorded on paper logsheets, was used instead. Video files were downloaded from the camera at the end of each survey day, and data backed up according to the agreed protocols.

Narrative

Scientists joined the vessel at either Kyle of Lochalsh, Kyleakin, Gairloch or Sconser harbours each day. SNH staff changeover was in Kyleakin on 15 March.

Weather over the survey period was moderate to poor, due to Storm Gareth. With a wide range of sampling points (some in the relatively protected Loch Alsh), sampling was able to proceed with careful thought and planning, predominantly targeting lee shores. Had to seek shelter afternoon of 12th March for a period, and finished sampling early due to strong winds.

Each night video and stills files were downloaded from the camera, the camera memory cleared and sampling details transcribed from paper forms into spreadsheets.

The survey was started with only one set of camera equipment (EMFF system 1). Despite shore testing prior to survey, issues were encountered on first day, with SD camera feed/ SCU controls freezing up when undertaking drops. This led to no successful drops being completed on the first day. Sampling resumed on the 12th March after components (SCU) were swapped.

151 video samples and 2307 accompanying HD still images and 144 SD still images of the seabed were collected. Table 1 provides the sample station locations and Table 2 brief descriptions of the seabed at each sample station. Figure 3 shows an overview of all stations sampled on this Inner Sound/Loch Alsh survey in 2019, and Figures 4-11 show the video tow start waypoint locations and station numbers for more detailed areas.

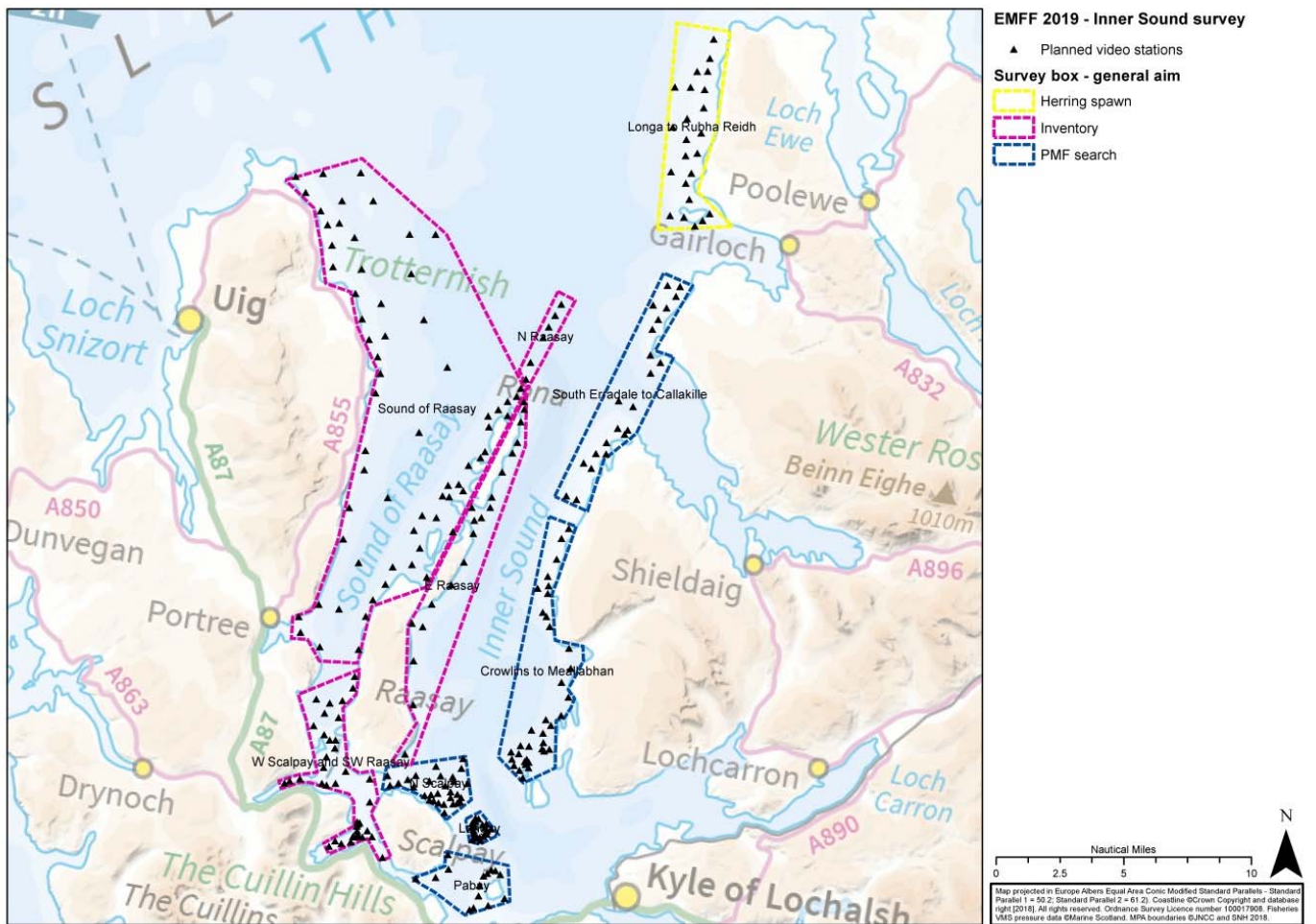


Figure 1. Initially planned 2019 sampling areas in Inner Sound.

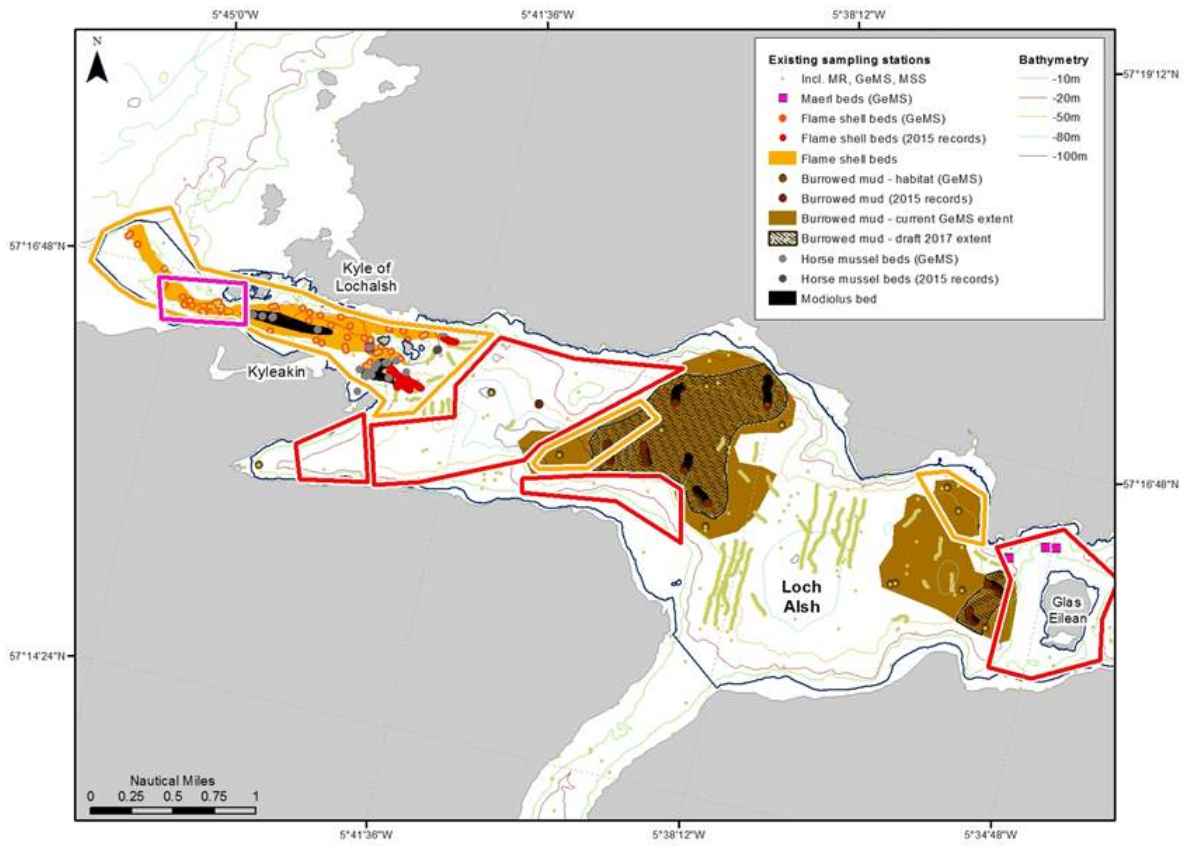


Figure 2. 2019 sampling areas in Loch Alsh added to plan due to poor forecast for survey period.

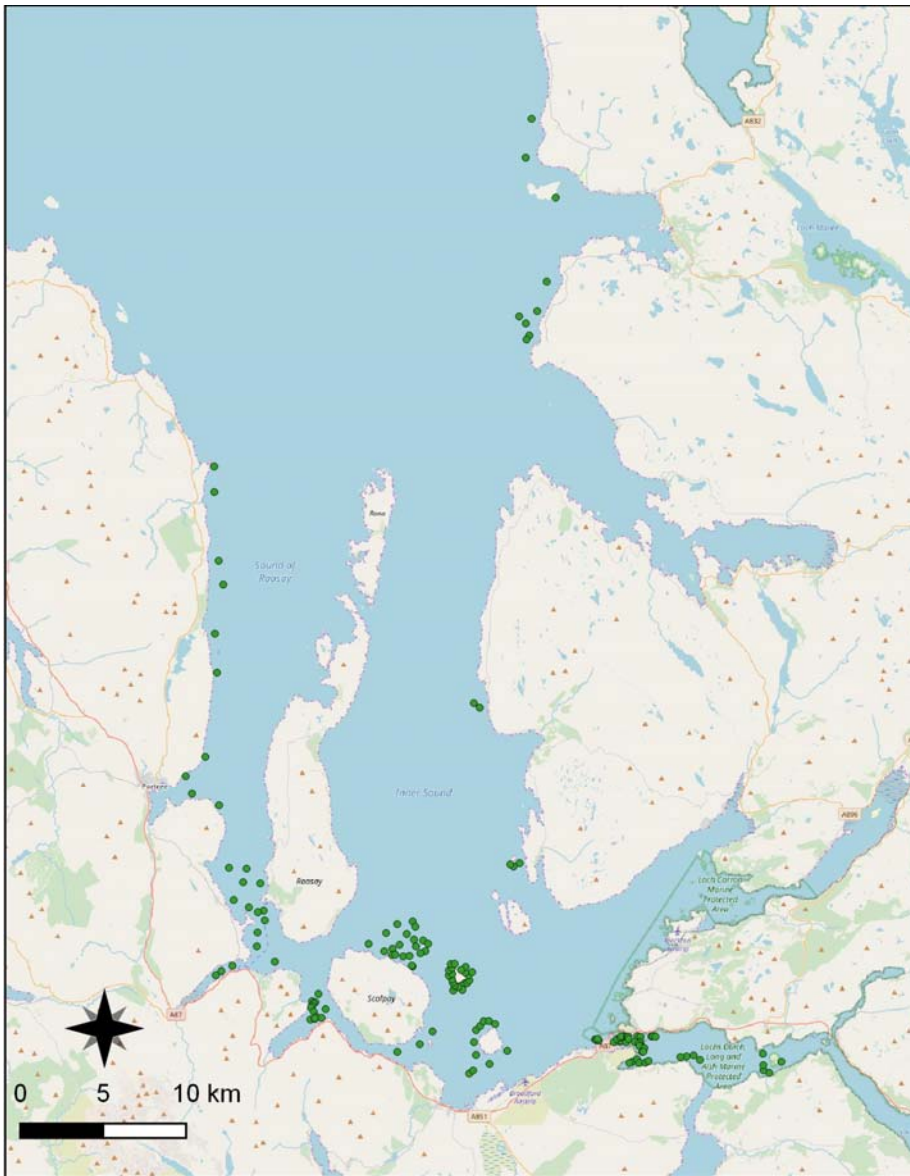


Figure 3. Drop down video stations surveyed in 2019 in Inner Sound and Loch Alsh (start waypoints).



Figure 4. 2019 Drop down video stations (with station numbers) in outer Gairloch.

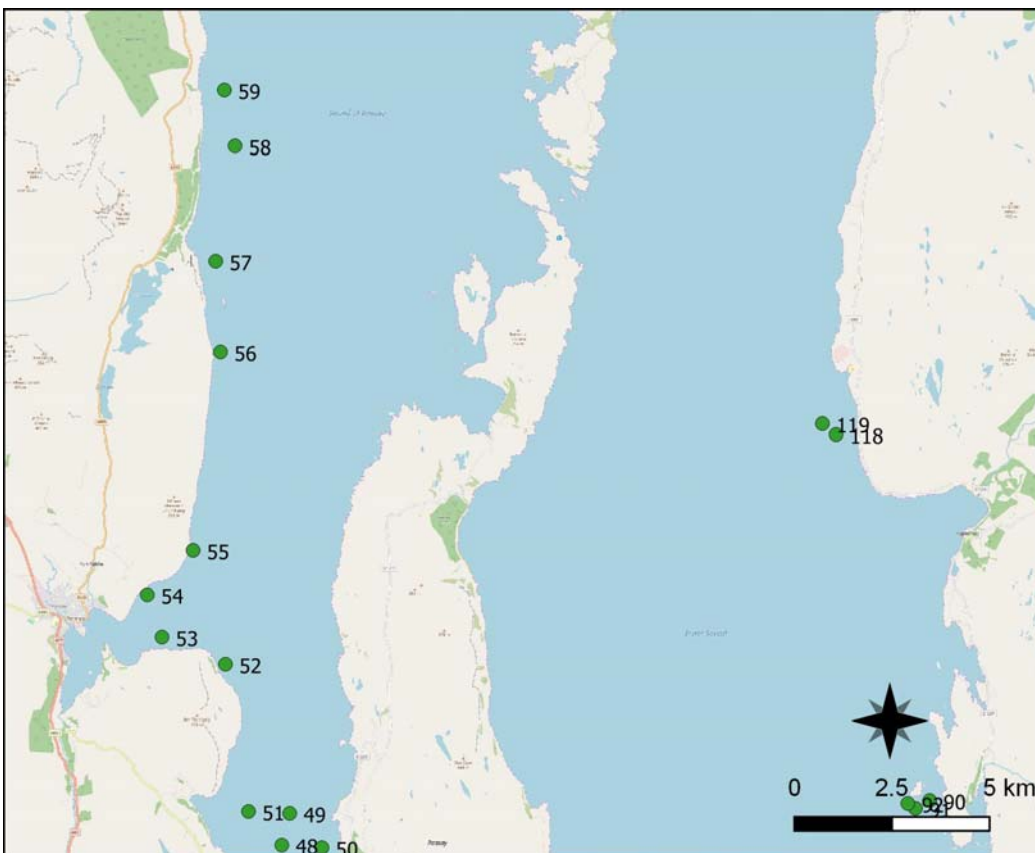


Figure 5. 2019 Drop down video stations (with station numbers) in northern Sound of Raasay and Applecross.

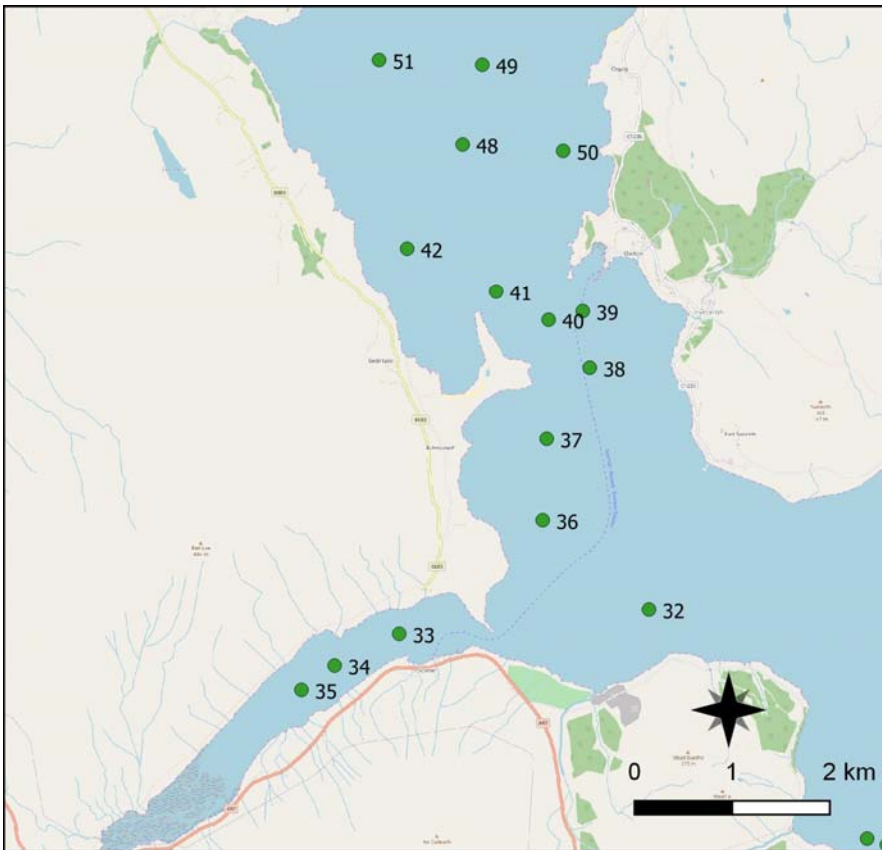


Figure 6. 2019 Drop down video stations (with station numbers) SW of Raasay and in Loch Sligachan (Skye).

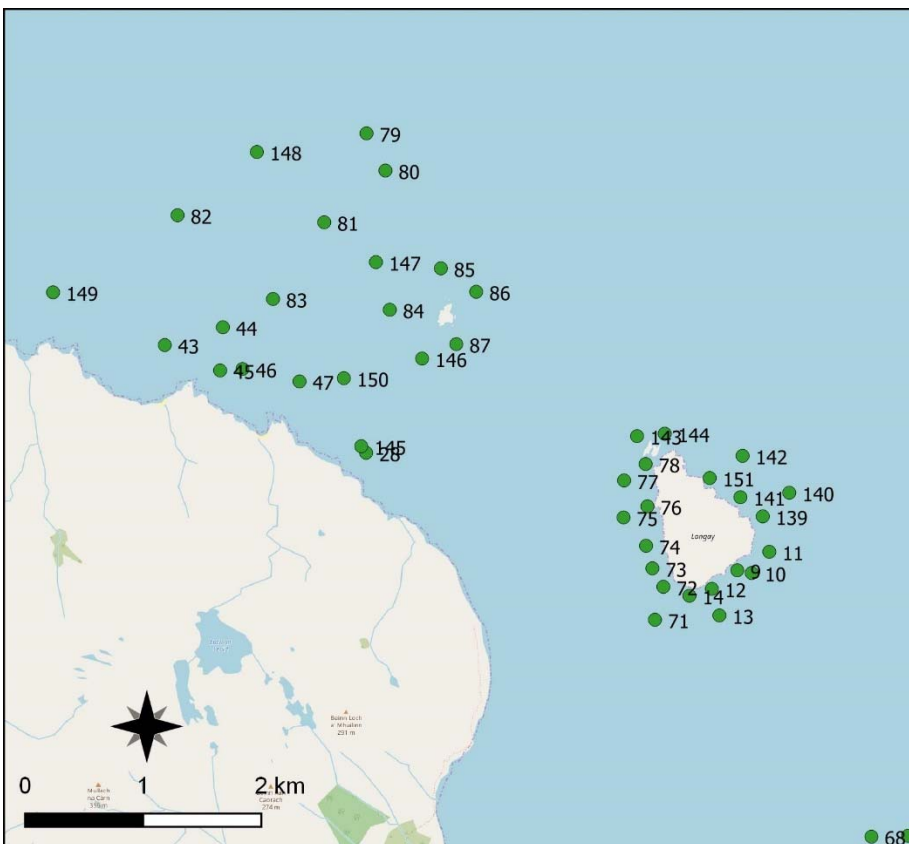


Figure 7. 2019 Drop down video stations (with station numbers) NW of Scalpay.

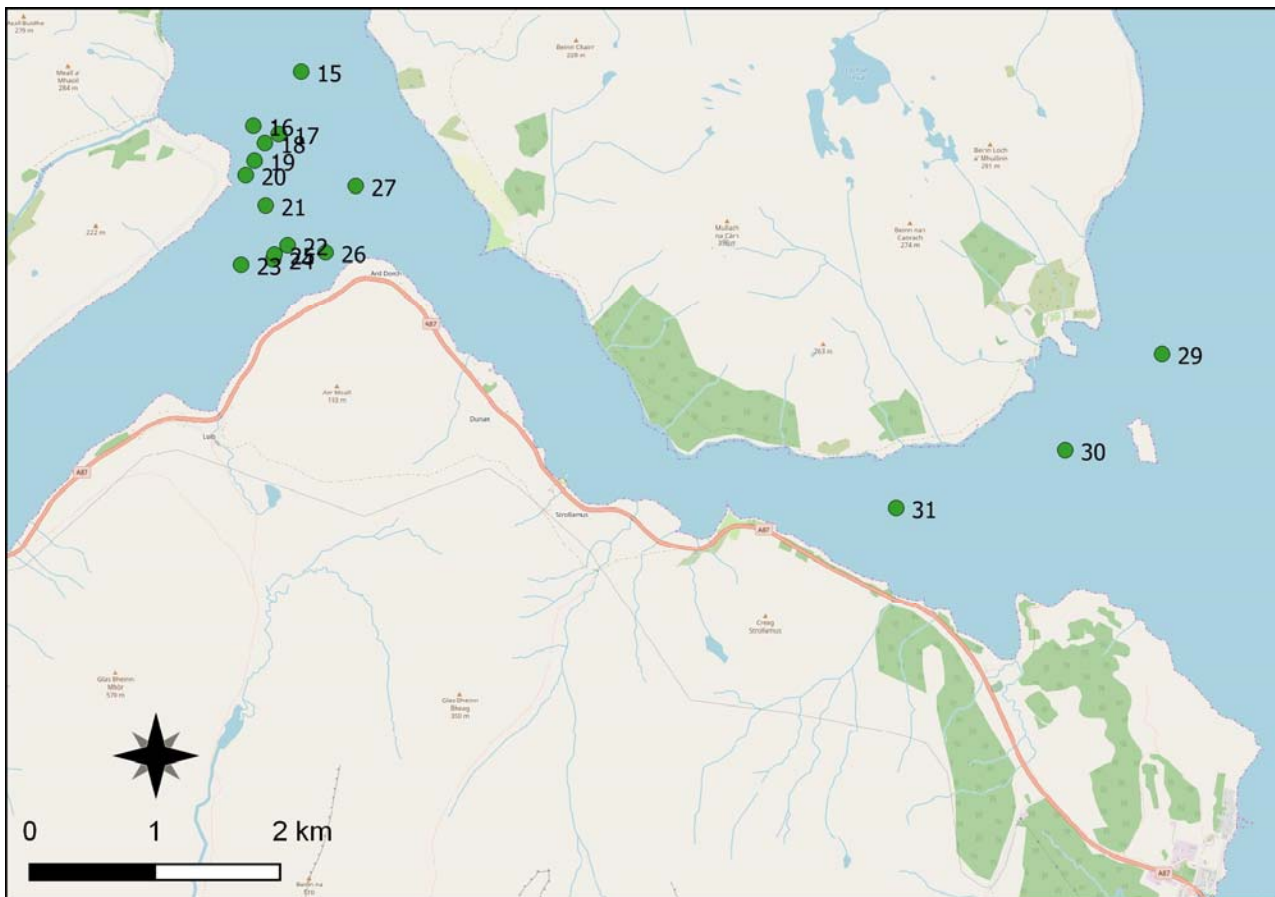


Figure 8. 2019 Drop down video stations (with station numbers) south of Scalpay and outer Loch Airtort (Skye)

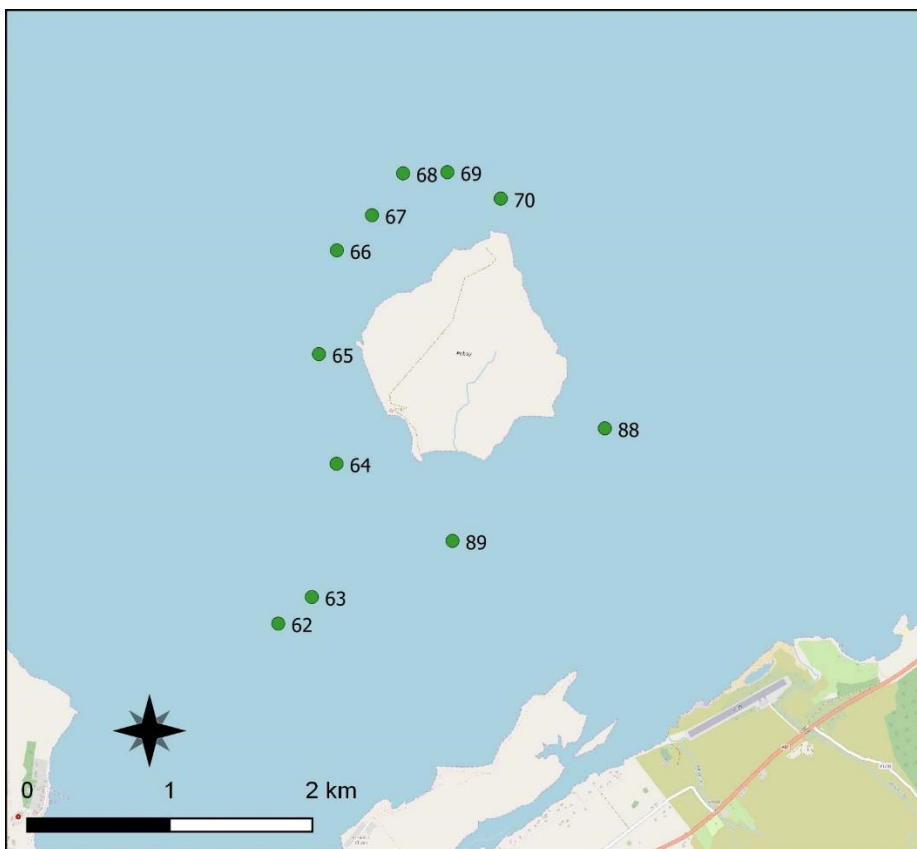


Figure 9. 2019 Drop down video stations (with station numbers) around Pabay

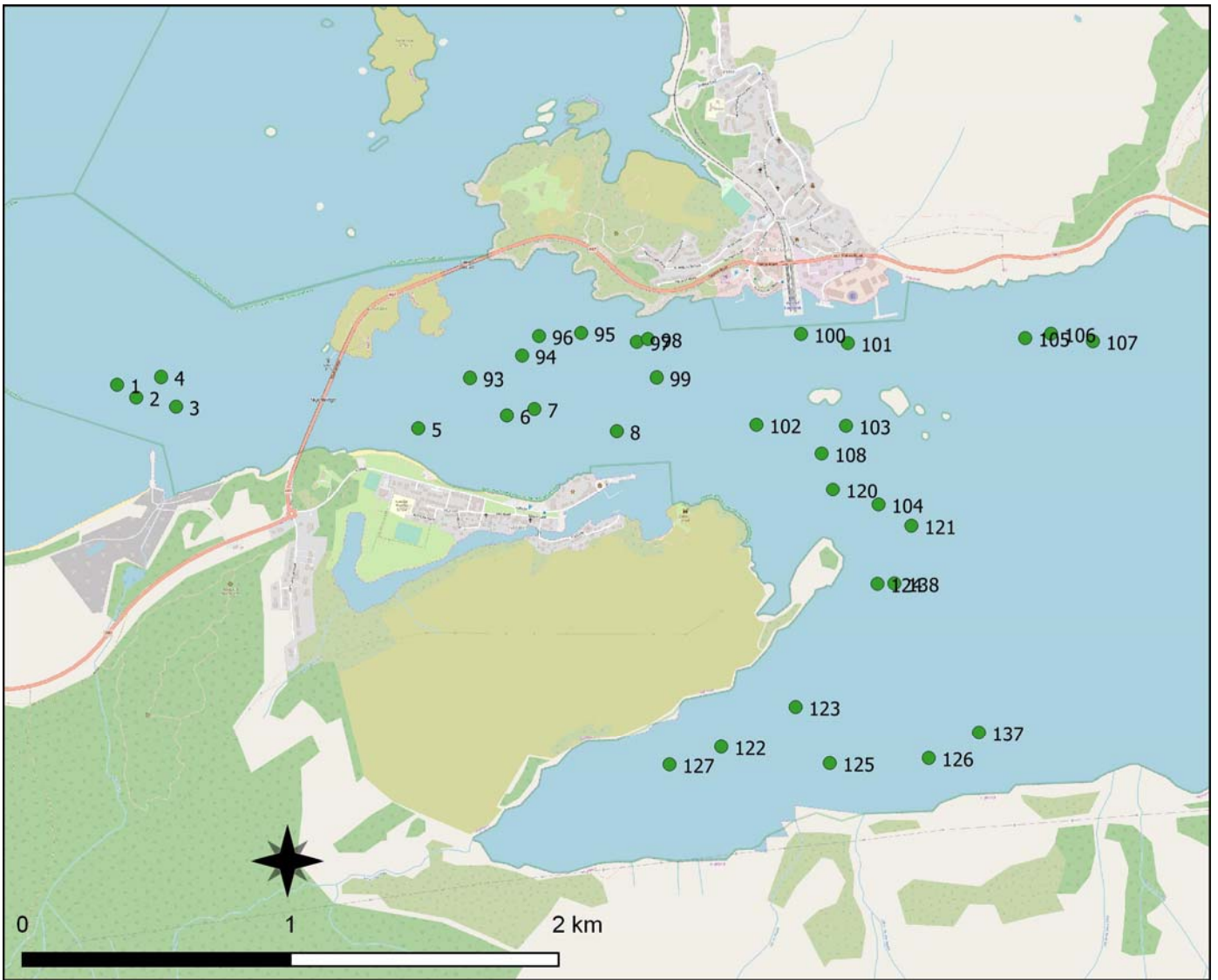


Figure 10. 2019 Drop down video stations (with station numbers) in Kyle of Lochalsh and Loch na Beiste (Skye).

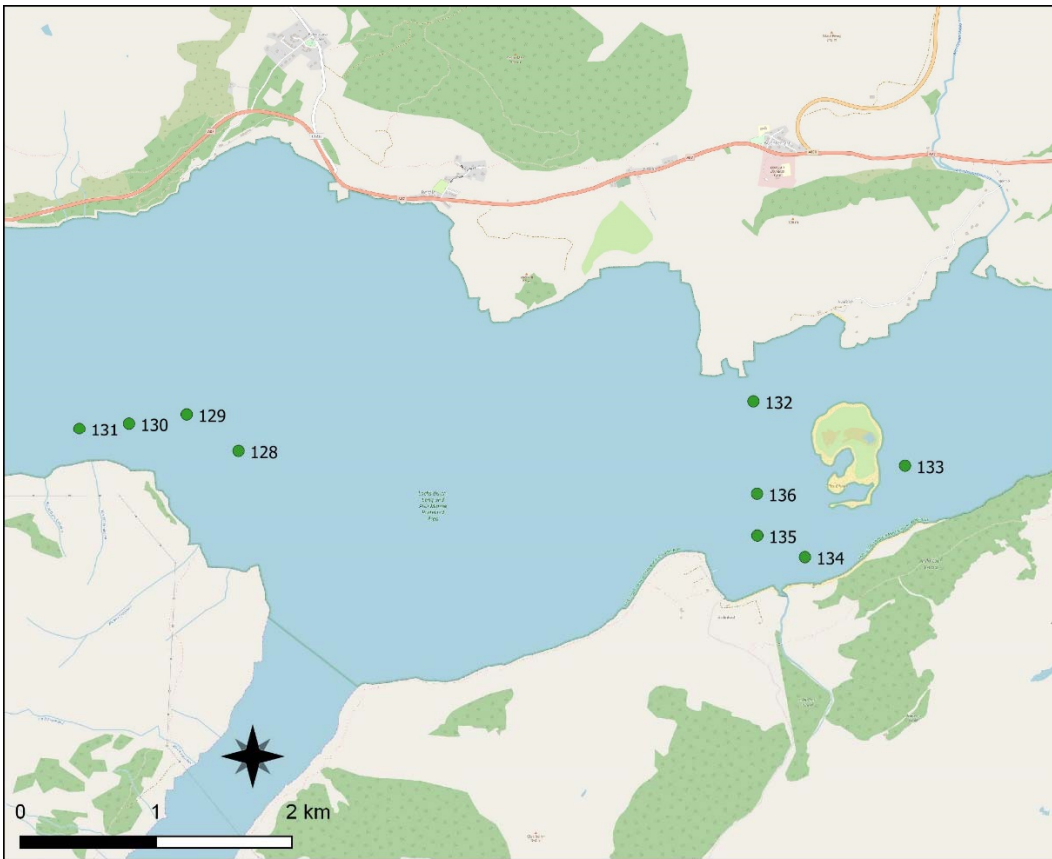


Figure 11. 2019 Drop down video stations (with station numbers) in central Loch Alsh and around Glas Eilean.

Table 1 Inner Sound and Loch Alsh sampling station locations (from hand held GPS waypoints), March 2019

Project code	Survey Area Name	Station ref.	Site name	Gear code	Date sampled	Start Time (UTC)	Start Lat.	Start Long.	End Time (UTC)	End Lat.	End Long.
MS EMFF	Inner Sound	1	Kyleakin channel	MS C-Tecnic 1	12/03/2019	11:41:28	57.276886	-5.755521	11:45:03	57.277800	-5.754842
MS EMFF	Inner Sound	2	Kyleakin channel	MS C-Tecnic 1	12/03/2019	11:52:28	57.276460	-5.754339	11:58:02	57.277528	-5.753414
MS EMFF	Inner Sound	3	Kyleakin channel	MS C-Tecnic 1	12/03/2019	12:04:02	57.276152	-5.751875	12:09:25	57.277107	-5.750159
MS EMFF	Inner Sound	4	Kyleakin channel	MS C-Tecnic 1	12/03/2019	12:15:13	57.277137	-5.752800	12:26:10	57.277141	-5.749953
MS EMFF	Inner Sound	5	Kyleakin channel	MS C-Tecnic 1	12/03/2019	12:42:02	57.275430	-5.736906	12:53:59	57.276005	-5.733150
MS EMFF	Inner Sound	6	Kyleakin channel	MS C-Tecnic 1	12/03/2019	12:59:32	57.275859	-5.731428	13:09:39	57.276907	-5.724633
MS EMFF	Inner Sound	7	Kyleakin channel	MS C-Tecnic 1	12/03/2019	13:18:35	57.276075	-5.729728	13:26:21	57.277279	-5.725432
MS EMFF	Inner Sound	8	Kyleakin channel	MS C-Tecnic 1	12/03/2019	13:34:06	57.275332	-5.724629	13:42:47	57.276665	-5.723411
MS EMFF	Inner Sound	9	Longay	MS C-Tecnic 1	13/03/2019	09:55:48	57.306935	-5.885453	10:01:51	57.306444	-5.885689
MS EMFF	Inner Sound	10	Longay	MS C-Tecnic 1	13/03/2019	10:06:07	57.306732	-5.883429	10:12:03	57.306379	-5.883246
MS EMFF	Inner Sound	11	Longay	MS C-Tecnic 1	13/03/2019	10:19:11	57.308341	-5.880957	10:24:24	57.307532	-5.879738
MS EMFF	Inner Sound	12	Longay	MS C-Tecnic 1	13/03/2019	10:42:37	57.305526	-5.889025	10:49:02	57.305529	-5.888444
MS EMFF	Inner Sound	13	Longay	MS C-Tecnic 1	13/03/2019	10:56:58	57.303510	-5.887965	11:03:18	57.302776	-5.887041
MS EMFF	Inner Sound	14	Longay	MS C-Tecnic 1	13/03/2019	11:09:45	57.305001	-5.892170	11:16:10	57.304450	-5.891313
MS EMFF	Inner Sound	15	W Scalpay	MS C-Tecnic 1	13/03/2019	12:33:38	57.301373	-6.031604	12:43:08	57.301062	-6.028836
MS EMFF	Inner Sound	16	W Scalpay	MS C-Tecnic 1	13/03/2019	12:49:28	57.297504	-6.037939	12:54:54	57.297968	-6.036449
MS EMFF	Inner Sound	17	W Scalpay	MS C-Tecnic 1	13/03/2019	13:00:43	57.296934	-6.034585	13:06:42	57.296889	-6.032524
MS EMFF	Inner Sound	18	W Scalpay	MS C-Tecnic 1	13/03/2019	13:15:53	57.296269	-6.036409	13:21:44	57.295847	-6.034322
MS EMFF	Inner Sound	19	W Scalpay	MS C-Tecnic 1	13/03/2019	13:29:19	57.295012	-6.037778	13:35:25	57.295380	-6.035747
MS EMFF	Inner Sound	20	W Scalpay	MS C-Tecnic 1	13/03/2019	13:43:21	57.293984	-6.038944	13:53:02	57.294386	-6.035971
MS EMFF	Inner Sound	21	W Scalpay	MS C-Tecnic 1	13/03/2019	14:01:07	57.291818	-6.036305	14:05:43	57.292094	-6.035029
MS EMFF	Inner Sound	22	W Scalpay	MS C-Tecnic 1	13/03/2019	14:13:18	57.288970	-6.033400	14:21:45	57.289800	-6.030446
MS EMFF	Inner Sound	23	W Scalpay	MS C-Tecnic 1	13/03/2019	14:28:37	57.287573	-6.039561	14:35:01	57.287551	-6.037355
MS EMFF	Inner Sound	24	W Scalpay	MS C-Tecnic 1	13/03/2019	14:39:07	57.287972	-6.035293	14:40:55	57.287946	-6.034489
MS EMFF	Inner Sound	25	W Scalpay	MS C-Tecnic 1	13/03/2019	14:44:40	57.288335	-6.035142	14:46:27	57.288274	-6.034314
MS EMFF	Inner Sound	26	W Scalpay	MS C-Tecnic 1	13/03/2019	14:51:02	57.288459	-6.028373	14:58:57	57.288592	-6.025416
MS EMFF	Inner Sound	27	W Scalpay	MS C-Tecnic 1	13/03/2019	15:05:15	57.293221	-6.024390	15:14:58	57.293372	-6.021567
MS EMFF	Inner Sound	28	N Scalpay	MS C-Tecnic 1	13/03/2019	16:05:28	57.315852	-5.937566	16:14:37	57.315817	-5.934448
MS EMFF	Inner Sound	29	Paabay	MS C-Tecnic 1	13/03/2019	16:42:43	57.281119	-5.917687	16:49:05	57.281105	-5.916612
MS EMFF	Inner Sound	30	Paabay	MS C-Tecnic 1	13/03/2019	16:58:45	57.274264	-5.930497	17:08:30	57.274488	-5.929367

Project code	Survey Area Name	Station ref.	Site name	Gear code	Date sampled	Start Time (UTC)	Start Lat.	Start Long.	End Time (UTC)	End Lat.	End Long.
MS EMFF	Inner Sound	31	Paabay	MS C-Tecncis 1	13/03/2019	17:20:08	57.270116	-5.952864	17:27:54	57.270129	-5.952054
MS EMFF	Inner Sound	32	W Scalpay	MS C-Tecncis 1	14/03/2019	10:08:59	57.318457	-6.074998	10:14:35	57.318716	-6.073288
MS EMFF	Inner Sound	33	W Scalpay	MS C-Tecncis 1	14/03/2019	10:30:40	57.316232	-6.117418	10:47:10	57.316961	-6.113532
MS EMFF	Inner Sound	34	W Scalpay	MS C-Tecncis 1	14/03/2019	10:57:29	57.313329	-6.128388	11:05:03	57.314336	-6.127383
MS EMFF	Inner Sound	35	W Scalpay	MS C-Tecncis 1	14/03/2019	11:12:57	57.311105	-6.134024	11:26:00	57.313088	-6.129793
MS EMFF	Inner Sound	36	W Scalpay	MS C-Tecncis 1	14/03/2019	11:57:04	57.326691	-6.093042	12:02:25	57.327180	-6.091948
MS EMFF	Inner Sound	37	W Scalpay	MS C-Tecncis 1	14/03/2019	12:08:39	57.334168	-6.092359	12:14:38	57.334269	-6.090358
MS EMFF	Inner Sound	38	W Scalpay	MS C-Tecncis 1	14/03/2019	12:24:09	57.340683	-6.085056	12:29:44	57.340758	-6.082969
MS EMFF	Inner Sound	39	W Scalpay	MS C-Tecncis 1	14/03/2019	12:37:13	57.345884	-6.086238	12:42:31	57.346102	-6.084752
MS EMFF	Inner Sound	40	W Scalpay	MS C-Tecncis 1	14/03/2019	12:51:51	57.345091	-6.092046	12:58:26	57.344540	-6.089899
MS EMFF	Inner Sound	41	W Scalpay	MS C-Tecncis 1	14/03/2019	13:23:08	57.347690	-6.100946	13:29:16	57.348220	-6.099153
MS EMFF	Inner Sound	42	W Scalpay	MS C-Tecncis 1	14/03/2019	13:39:42	57.351644	-6.116077	13:45:43	57.351586	-6.114108
MS EMFF	Inner Sound	43	N Scalpay	MS C-Tecncis 1	14/03/2019	14:38:10	57.324027	-5.965833	14:44:55	57.324150	-5.963657
MS EMFF	Inner Sound	44	N Scalpay	MS C-Tecncis 1	14/03/2019	14:50:47	57.325376	-5.957682	14:53:58	57.325557	-5.956377
MS EMFF	Inner Sound	45	N Scalpay	MS C-Tecncis 1	14/03/2019	15:11:56	57.322100	-5.958064	15:19:39	57.322144	-5.955738
MS EMFF	Inner Sound	46	N Scalpay	MS C-Tecncis 1	14/03/2019	15:21:15	57.322208	-5.954925	16:15:51	57.322411	-5.951192
MS EMFF	Inner Sound	47	N Scalpay	MS C-Tecncis 2	14/03/2019	16:40:45	57.321266	-5.946921	16:46:09	57.321629	-5.945331
MS EMFF	Inner Sound	48	W Scalpay	MS C-Tecncis 2	15/03/2019	09:11:01	57.361206	-6.106647	09:19:34	57.361258	-6.103693
MS EMFF	Inner Sound	49	W Scalpay	MS C-Tecncis 2	15/03/2019	09:31:30	57.368511	-6.103304	09:39:45	57.368541	-6.100512
MS EMFF	Inner Sound	50	W Scalpay	MS C-Tecncis 2	15/03/2019	09:51:00	57.360621	-6.089574	09:57:58	57.360601	-6.087048
MS EMFF	Inner Sound	51	W Scalpay	MS C-Tecncis 2	15/03/2019	10:33:52	57.368951	-6.120838	10:40:52	57.369263	-6.118291
MS EMFF	Inner Sound	52	W Scalpay	MS C-Tecncis 2	15/03/2019	11:23:58	57.402644	-6.130654	11:30:07	57.401465	-6.128732
MS EMFF	Inner Sound	53	W Scalpay	MS C-Tecncis 2	15/03/2019	11:44:06	57.408884	-6.157669	11:50:03	57.409552	-6.155381
MS EMFF	Inner Sound	54	W Scalpay	MS C-Tecncis 2	15/03/2019	12:01:41	57.418582	-6.163941	12:07:00	57.419254	-6.163964
MS EMFF	Inner Sound	55	W Scalpay	MS C-Tecncis 2	15/03/2019	12:20:19	57.428956	-6.144429	12:24:15	57.429958	-6.144121
MS EMFF	Inner Sound	56	W Scalpay	MS C-Tecncis 2	15/03/2019	13:16:40	57.474161	-6.132768	13:22:42	57.474131	-6.131011
MS EMFF	Inner Sound	57	W Scalpay	MS C-Tecncis 2	15/03/2019	13:39:43	57.495087	-6.134813	13:49:16	57.494417	-6.132530
MS EMFF	Inner Sound	58	W Scalpay	MS C-Tecncis 2	15/03/2019	14:09:19	57.521405	-6.126582	14:15:06	57.520658	-6.124251
MS EMFF	Inner Sound	59	W Scalpay	MS C-Tecncis 2	15/03/2019	14:32:43	57.534158	-6.131136	14:37:54	57.534304	-6.129408
MS EMFF	Inner Sound	60	W Scalpay	MS C-Tecncis 2	15/03/2019	15:05:17	57.570960	-6.135483	15:10:03	57.570744	-6.134166
MS EMFF	Inner Sound	61	W Scalpay	MS C-Tecncis 2	15/03/2019	15:21:39	57.584605	-6.135541	15:27:56	57.584051	-6.134066
MS EMFF	Inner Sound	62	Pabay	MS C-Tecncis 2	16/03/2019	08:19:54	57.258429	-5.881119	08:29:02	57.259339	-5.881386

Project code	Survey Area Name	Station ref.	Site name	Gear code	Date sampled	Start Time (UTC)	Start Lat.	Start Long.	End Time (UTC)	End Lat.	End Long.
MS EMFF	Inner Sound	63	Pabay	MS C-Tecnic 2	16/03/2019	08:35:11	57.260097	-5.877216	08:51:04	57.260509	-5.878462
MS EMFF	Inner Sound	64	Pabay	MS C-Tecnic 2	16/03/2019	08:57:56	57.268472	-5.874344	09:07:36	57.269210	-5.875185
MS EMFF	Inner Sound	65	Pabay	MS C-Tecnic 2	16/03/2019	09:13:00	57.275359	-5.876389	09:23:38	57.275278	-5.877488
MS EMFF	Inner Sound	66	Pabay	MS C-Tecnic 2	16/03/2019	09:31:24	57.281875	-5.874309	09:41:42	57.281497	-5.875976
MS EMFF	Inner Sound	67	Pabay	MS C-Tecnic 2	16/03/2019	09:47:28	57.284083	-5.870230	09:57:59	57.283305	-5.871780
MS EMFF	Inner Sound	68	Pabay	MS C-Tecnic 2	16/03/2019	10:05:18	57.286711	-5.866615	10:20:21	57.286363	-5.869524
MS EMFF	Inner Sound	69	Pabay	MS C-Tecnic 2	16/03/2019	10:33:43	57.286784	-5.861474	10:41:51	57.286464	-5.862936
MS EMFF	Inner Sound	70	Pabay	MS C-Tecnic 2	16/03/2019	10:48:55	57.285125	-5.855274	10:55:09	57.285304	-5.855762
MS EMFF	Inner Sound	71	Longay	MS C-Tecnic 2	16/03/2019	11:13:35	57.303182	-5.897009	11:21:00	57.302885	-5.898303
MS EMFF	Inner Sound	72	Longay	MS C-Tecnic 2	16/03/2019	11:27:14	57.305683	-5.895832	11:33:24	57.305284	-5.897634
MS EMFF	Inner Sound	73	Longay	MS C-Tecnic 2	16/03/2019	11:40:13	57.307086	-5.897372	11:46:45	57.306637	-5.897699
MS EMFF	Inner Sound	74	Longay	MS C-Tecnic 2	16/03/2019	11:52:15	57.308794	-5.898264	11:58:38	57.308604	-5.898727
MS EMFF	Inner Sound	75	Longay	MS C-Tecnic 2	16/03/2019	12:04:09	57.310946	-5.901423	12:10:26	57.310620	-5.902083
MS EMFF	Inner Sound	76	Longay	MS C-Tecnic 2	16/03/2019	12:14:54	57.311792	-5.898070	12:21:25	57.311536	-5.897915
MS EMFF	Inner Sound	77	Longay	MS C-Tecnic 2	16/03/2019	12:26:30	57.313752	-5.901344	12:34:31	57.313498	-5.901625
MS EMFF	Inner Sound	78	Longay	MS C-Tecnic 2	16/03/2019	12:39:11	57.315001	-5.898319	12:45:34	57.314370	-5.898092
MS EMFF	Inner Sound	79	N Scalpay	MS C-Tecnic 2	16/03/2019	13:17:43	57.340082	-5.937512	13:29:05	57.338915	-5.936335
MS EMFF	Inner Sound	80	N Scalpay	MS C-Tecnic 2	16/03/2019	13:33:12	57.337260	-5.934858	13:41:56	57.336007	-5.934601
MS EMFF	Inner Sound	81	N Scalpay	MS C-Tecnic 2	16/03/2019	13:49:34	57.333339	-5.943449	13:54:29	57.332602	-5.943913
MS EMFF	Inner Sound	82	N Scalpay	MS C-Tecnic 2	16/03/2019	14:04:27	57.333872	-5.964039	14:10:37	57.333109	-5.964378
MS EMFF	Inner Sound	83	N Scalpay	MS C-Tecnic 2	16/03/2019	14:20:19	57.327521	-5.950644	14:26:24	57.326803	-5.950852
MS EMFF	Inner Sound	84	N Scalpay	MS C-Tecnic 2	16/03/2019	14:35:03	57.326704	-5.934242	14:40:25	57.326179	-5.934137
MS EMFF	Inner Sound	85	N Scalpay	MS C-Tecnic 2	16/03/2019	14:48:16	57.329845	-5.927069	14:53:44	57.329096	-5.926897
MS EMFF	Inner Sound	86	N Scalpay	MS C-Tecnic 2	16/03/2019	15:00:48	57.328067	-5.922114	15:30:54	57.324178	-5.920785
MS EMFF	Inner Sound	87	N Scalpay	MS C-Tecnic 2	16/03/2019	15:39:58	57.324097	-5.924905	15:46:52	57.323326	-5.924438
MS EMFF	Inner Sound	88	Pabay	MS C-Tecnic 2	16/03/2019	16:25:56	57.270695	-5.843179	16:33:23	57.269573	-5.842149
MS EMFF	Inner Sound	89	Pabay	MS C-Tecnic 2	16/03/2019	16:43:44	57.263624	-5.860875	16:51:28	57.262316	-5.861004
MS EMFF	Inner Sound	90	Crowlins to Meallabhan	MS C-Tecnic 2	17/03/2019	09:02:54	57.371465	-5.830825	09:13:05	57.370350	-5.829191
MS EMFF	Inner Sound	91	Crowlins to Meallabhan	MS C-Tecnic 2	17/03/2019	09:21:40	57.369667	-5.836905	09:31:07	57.368316	-5.834694
MS EMFF	Inner Sound	92	Crowlins to Meallabhan	MS C-Tecnic 2	17/03/2019	09:40:48	57.370782	-5.840152	09:50:31	57.369042	-5.839774
MS EMFF	Inner Sound	93	Kyleakin channel	MS C-Tecnic 2	17/03/2019	11:46:37	57.277108	-5.733707	12:00:49	57.276836	-5.739454
MS EMFF	Inner Sound	94	Kyleakin channel	MS C-Tecnic 2	17/03/2019	12:08:02	57.277846	-5.730485	12:18:14	57.277907	-5.733923

Project code	Survey Area Name	Station ref.	Site name	Gear code	Date sampled	Start Time (UTC)	Start Lat.	Start Long.	End Time (UTC)	End Lat.	End Long.
MS EMFF	Inner Sound	95	Kyleakin channel	MS C-Tecnic 2	17/03/2019	12:23:48	57.278603	-5.726838	12:33:37	57.277657	-5.730755
MS EMFF	Inner Sound	96	Kyleakin channel	MS C-Tecnic 2	17/03/2019	12:40:23	57.278499	-5.729440	12:50:58	57.277827	-5.732483
MS EMFF	Inner Sound	97	Kyleakin channel	MS C-Tecnic 2	17/03/2019	14:01:33	57.278303	-5.723398	14:07:45	57.277861	-5.724840
MS EMFF	Inner Sound	98	Kyleakin channel	MS C-Tecnic 2	17/03/2019	14:13:57	57.278400	-5.722712	14:23:19	57.277332	-5.723841
MS EMFF	Inner Sound	99	Kyleakin channel	MS C-Tecnic 2	17/03/2019	14:29:07	57.277123	-5.722165	14:39:18	57.276254	-5.722338
MS EMFF	Inner Sound	100	Kyleakin channel	MS C-Tecnic 2	17/03/2019	14:44:25	57.278568	-5.713244	14:54:48	57.277905	-5.713857
MS EMFF	Inner Sound	101	Kyleakin channel	MS C-Tecnic 2	17/03/2019	15:00:32	57.278263	-5.710355	15:03:49	57.277732	-5.710124
MS EMFF	Inner Sound	102	Kyleakin channel	MS C-Tecnic 2	17/03/2019	15:09:33	57.275547	-5.716004	15:19:39	57.275483	-5.713616
MS EMFF	Inner Sound	103	Kyleakin channel	MS C-Tecnic 2	17/03/2019	15:24:31	57.275513	-5.710468	15:30:14	57.274644	-5.709360
MS EMFF	Inner Sound	104	Kyleakin channel	MS C-Tecnic 2	17/03/2019	15:36:11	57.272859	-5.708455	15:46:29	57.270884	-5.707637
MS EMFF	Inner Sound	105	Kyleakin channel	MS C-Tecnic 2	17/03/2019	15:55:27	57.278431	-5.699391	16:05:30	57.277569	-5.698157
MS EMFF	Inner Sound	106	Kyleakin channel	MS C-Tecnic 2	17/03/2019	16:14:29	57.278578	-5.697796	16:20:49	57.277812	-5.696919
MS EMFF	Inner Sound	107	Kyleakin channel	MS C-Tecnic 2	17/03/2019	16:28:29	57.278324	-5.695203	16:36:04	57.277842	-5.693945
MS EMFF	Inner Sound	108	Kyleakin channel	MS C-Tecnic 2	17/03/2019	16:57:53	57.274583	-5.711974	16:59:41	57.274446	-5.711216
MS EMFF	Inner Sound	109	Longa to Rubha Reidh	MS C-Tecnic 2	18/03/2019	09:26:51	57.728498	-5.794820	09:32:29	57.729161	-5.794816
MS EMFF	Inner Sound	110	Longa to Rubha Reidh	MS C-Tecnic 2	18/03/2019	09:57:04	57.749800	-5.824795	10:06:38	57.751657	-5.826102
MS EMFF	Inner Sound	111	Longa to Rubha Reidh	MS C-Tecnic 2	18/03/2019	10:18:25	57.770492	-5.818905	10:28:46	57.771967	-5.819246
MS EMFF	Inner Sound	112	South Erradale to Callakillie	MS C-Tecnic 2	18/03/2019	11:21:11	57.683700	-5.803815	11:31:10	57.685391	-5.802836
MS EMFF	Inner Sound	113	South Erradale to Callakillie	MS C-Tecnic 2	18/03/2019	11:44:40	57.668004	-5.813324	11:54:57	57.669084	-5.813318
MS EMFF	Inner Sound	114	South Erradale to Callakillie	MS C-Tecnic 2	18/03/2019	12:10:34	57.661387	-5.824594	12:29:57	57.663991	-5.825248
MS EMFF	Inner Sound	115	South Erradale to Callakillie	MS C-Tecnic 2	18/03/2019	12:41:05	57.654970	-5.821197	13:23:18	57.660318	-5.819218
MS EMFF	Inner Sound	116	South Erradale to Callakillie	MS C-Tecnic 2	18/03/2019	13:35:04	57.665160	-5.831278	13:40:45	57.666341	-5.830467
MS EMFF	Inner Sound	117	South Erradale to Callakillie	MS C-Tecnic 2	18/03/2019	13:53:16	57.652803	-5.823954	13:59:13	57.653583	-5.823973
MS EMFF	Inner Sound	118	Crowlins to Meallabhan	MS C-Tecnic 2	18/03/2019	15:51:04	57.455365	-5.870686	16:00:19	57.457027	-5.872765
MS EMFF	Inner Sound	119	Crowlins to Meallabhan	MS C-Tecnic 2	18/03/2019	16:06:04	57.457829	-5.876504	16:16:11	57.459642	-5.877005
MS EMFF	Inner Sound	120	Kyleakin channel	MS C-Tecnic 2	19/03/2019	08:31:16	57.273369	-5.711277	08:40:47	57.274869	-5.710238
MS EMFF	Inner Sound	121	Kyleakin channel	MS C-Tecnic 2	19/03/2019	08:47:47	57.272146	-5.706427	08:57:42	57.274757	-5.704308
MS EMFF	Inner Sound	122	Inner Loch na Beiste	MS C-Tecnic 2	19/03/2019	09:12:09	57.264752	-5.718177	09:18:50	57.266058	-5.716069
MS EMFF	Inner Sound	123	Inner Loch na Beiste	MS C-Tecnic 2	19/03/2019	09:26:19	57.266090	-5.713581	09:32:33	57.267594	-5.711003
MS EMFF	Inner Sound	124	Kyleakin channel	MS C-Tecnic 2	19/03/2019	09:40:08	57.270200	-5.708520	09:54:03	57.274778	-5.705396
MS EMFF	Inner Sound	125	Inner Loch na Beiste	MS C-Tecnic 2	19/03/2019	10:14:03	57.264201	-5.711471	10:19:46	57.265946	-5.709940
MS EMFF	Inner Sound	126	Outer Loch na Beiste	MS C-Tecnic 2	19/03/2019	10:31:29	57.264371	-5.705350	10:37:45	57.266144	-5.704632

Project code	Survey Area Name	Station ref.	Site name	Gear code	Date sampled	Start Time (UTC)	Start Lat.	Start Long.	End Time (UTC)	End Lat.	End Long.
MS EMFF	Inner Sound	127	Inner Loch na Beiste	MS C-Tecnic 2	19/03/2019	10:53:41	57.264156	-5.721376	10:58:44	57.265278	-5.719150
MS EMFF	Inner Sound	128	Sgeir na Caillich	MS C-Tecnic 2	19/03/2019	13:11:45	57.265807	-5.650907	13:21:00	57.266552	-5.651636
MS EMFF	Inner Sound	129	Sgeir na Caillich	MS C-Tecnic 2	19/03/2019	13:30:42	57.268272	-5.657231	13:40:01	57.268864	-5.658731
MS EMFF	Inner Sound	130	Sgeir na Caillich	MS C-Tecnic 2	19/03/2019	13:47:48	57.267664	-5.664269	13:54:17	57.268068	-5.665170
MS EMFF	Inner Sound	131	Sgeir na Caillich	MS C-Tecnic 2	19/03/2019	14:02:41	57.267308	-5.670329	14:08:44	57.267463	-5.670559
MS EMFF	Inner Sound	132	Glas Eilean	MS C-Tecnic 2	19/03/2019	14:41:09	57.269137	-5.588089	14:46:43	57.270232	-5.584700
MS EMFF	Inner Sound	133	Glas Eilean	MS C-Tecnic 2	19/03/2019	15:04:11	57.264829	-5.569590	15:13:25	57.266895	-5.568294
MS EMFF	Inner Sound	134	Glas Eilean	MS C-Tecnic 2	19/03/2019	15:25:24	57.258808	-5.581797	15:27:58	57.259162	-5.580177
MS EMFF	Inner Sound	135	Glas Eilean	MS C-Tecnic 2	19/03/2019	15:34:13	57.260229	-5.587602	15:40:42	57.260813	-5.586043
MS EMFF	Inner Sound	136	Glas Eilean	MS C-Tecnic 2	19/03/2019	15:47:38	57.262982	-5.587645	15:53:52	57.263826	-5.586844
MS EMFF	Inner Sound	137	Outer Loch na Beiste	MS C-Tecnic 2	19/03/2019	16:33:07	57.265229	-5.702248	16:38:53	57.265883	-5.700501
MS EMFF	Inner Sound	138	Kyleakin channel	MS C-Tecnic 2	19/03/2019	16:49:12	57.270214	-5.707478	17:14:04	57.272452	-5.698944
MS EMFF	Inner Sound	139	Longay	MS C-Tecnic 2	20/03/2019	08:47:27	57.311027	-5.881874	08:56:34	57.312798	-5.881510
MS EMFF	Inner Sound	140	Longay	MS C-Tecnic 2	20/03/2019	09:02:42	57.312818	-5.878155	09:12:48	57.314348	-5.876866
MS EMFF	Inner Sound	141	Longay	MS C-Tecnic 2	20/03/2019	09:20:25	57.312482	-5.885013	09:30:29	57.314110	-5.887135
MS EMFF	Inner Sound	142	Longay	MS C-Tecnic 2	20/03/2019	09:35:24	57.315622	-5.884710	09:43:24	57.317372	-5.885481
MS EMFF	Inner Sound	143	Longay	MS C-Tecnic 2	20/03/2019	09:52:05	57.317116	-5.899527	10:02:18	57.319493	-5.899863
MS EMFF	Inner Sound	144	Longay	MS C-Tecnic 2	20/03/2019	10:10:05	57.317300	-5.895643	10:20:09	57.318935	-5.897289
MS EMFF	Inner Sound	145	North Scalpay	MS C-Tecnic 2	20/03/2019	10:39:04	57.316348	-5.938257	10:49:06	57.318378	-5.940321
MS EMFF	Inner Sound	146	North Scalpay	MS C-Tecnic 2	20/03/2019	11:04:06	57.323003	-5.929706	11:12:44	57.325320	-5.930748
MS EMFF	Inner Sound	147	North Scalpay	MS C-Tecnic 2	20/03/2019	11:19:48	57.330317	-5.936190	11:28:59	57.332473	-5.937382
MS EMFF	Inner Sound	148	North Scalpay	MS C-Tecnic 2	20/03/2019	11:41:40	57.338670	-5.952908	11:48:53	57.340351	-5.952574
MS EMFF	Inner Sound	149	North Scalpay	MS C-Tecnic 2	20/03/2019	12:04:43	57.328023	-5.981522	12:14:03	57.328859	-5.978988
MS EMFF	Inner Sound	150	North Scalpay	MS C-Tecnic 2	20/03/2019	12:28:23	57.321512	-5.940694	12:37:06	57.323450	-5.940000
MS EMFF	Inner Sound	151	Longay	MS C-Tecnic 2	20/03/2019	12:59:30	57.313938	-5.889323	13:08:38	57.314182	-5.887520

Table 2 Inner Sound sampling station descriptions, March 2019

Station ref.	Site name	Date sampled	Depth Start (mBSL)	Depth End (mBSL)	Vessel speed (knots)	Video duration	Seabed physical type	Notes on flora and fauna
1	Kyleakin channel	12/03/2019	16.8	9.3	1	00:03:00	Coarse gravel with shell debris, some boulders	Dense flame shell bed with some kelp
2	Kyleakin channel	12/03/2019	15.7	17	1	00:05:10	Coarse gravel with shell debris	Dense flame shell bed with some kelp, echinoderms, and algae turf
3	Kyleakin channel	12/03/2019	16	17.5	1.2	00:05:39	Coarse gravel with shell debris	Dense flame shell bed with some kelp & echinoderms
4	Kyleakin channel	12/03/2019	16.8	17.2	0.6	00:10:20	Flame shell nest, parts coarse gravel/ shell debris	Flame shell bed with a few anemones
5	Kyleakin channel	12/03/2019	17	17	1/1.5	00:09:07	Cobbles and shell debris into flame shell bed	Brittlestar bed on flame shell bed
6	Kyleakin channel	12/03/2019	15	22.5	1.5/2	00:09:12	Flame shell bed	Brittlestar bed on flame shell bed, hydroids
7	Kyleakin channel	12/03/2019	18.4	23.5	1.5/2	00:07:34	Flame shell bed	Dense brittlestar bed on a flame shell bed, echinoderms
8	Kyleakin channel	12/03/2019	16.8	20	1.5	00:08:10	Boulders into flame shell bed, some patches of gravel sand	Flame shell bed, brittlestars, feather stars, echinoderms
9	Longay	13/03/2019	10.4	19.1	0.3	00:05:30	fine sand and boulders, razor clam shells	burrows in sand, some kelp
10	Longay	13/03/2019	33.8	36.7	0.2	00:05:04	coarse sand, pebbles and shells	queen scallop, squat lobster
11	Longay	13/03/2019	33.9	41	0.8	00:05:31	coarse sand, pebbles and shells	Squat lobster
12	Longay	13/03/2019	17	17.7	0.2	00:05:45	sand with cobbles, razor clam shells	algae turf, some kelp
13	Longay	13/03/2019	36	33.6	0.5	00:06:11	bedrock with boulders and pebbles, muddy fine sand	Squat lobster, feather stars
14	Longay	13/03/2019	17.9	33.5	0.4	00:06:08	coarse sand, shell debris - razors	echinoderms - urchins
15	W Scalpay	13/03/2019	16	21	0.6	00:09:23	coarse sand with pebbles, cobbles and occ. Boulders. Becomes more mixed with some silt	empty flame shells on sediment surface with some patchy nest material at start. Quite a lot of horse mussel shells (some live at start of run). Celtic feather star, king and queen scallops, holes in sediment
16	W Scalpay	13/03/2019	14.5	19.7	0.8	00:05:38	fine sand	Algae turf / silt
17	W Scalpay	13/03/2019	33.8	41.3	0.8	00:06:05	fine muddy sand, pebbles with shell debris	cat shark egg case, squat lobster
18	W Scalpay	13/03/2019	21	34.6	0.8	00:05:20	fine muddy sand with pebbles and shell debris	echinoderms
19	W Scalpay	13/03/2019	17.9	27.6	0.8	00:05:50	fine muddy sand with shell debris	echinoderms, scallops

Station ref.	Site name	Date sampled	Depth Start (mBSL)	Depth End (mBSL)	Vessel speed (knots)	Video duration	Seabed physical type	Notes on flora and fauna
20	W Scalpay	13/03/2019	12.2	39.1	0.6	00:09:10	muddy sand into boulders	rocky reef, kelp and echinoderms
21	W Scalpay	13/03/2019	47.7	50.5	0.6	00:04:07	mud	
22	W Scalpay	13/03/2019	10.9	18.7	0.9	00:08:32	fine sand and maerl sand into mud	kelp and maerl
23	W Scalpay	13/03/2019	23.9	10.3	0.8	00:06:11	coarse sand with shell debris, boulders	echinoderms, feather stars and brittlestars
24	W Scalpay	13/03/2019	10	8	0.8	00:02:43	maerl bed	Dense maerl bed, kelp and brittlestars
25	W Scalpay	13/03/2019	10.2	9.5	0.8	00:02:22	maerl bed	brittlestar
26	W Scalpay	13/03/2019	17.4	10.3	1.1	00:07:01	fine muddy sand, boulders	kelp echinoderms
27	W Scalpay	13/03/2019	22.3	18.9	0.5	00:09:11	mud	slender sea pen, feather star
28	N Scalpay	13/03/2019	17.8	34.2	0.6	00:09:08	coarse sand shell debris and boulders	kelp, echinoderms, plumose anemone
29	Paabay	13/03/2019	27.5	29.8	0.3	00:06:22	coarse sand, pebbles and shells into fine muddy sand	echinoderms - urchins, feather stars, squat lobsters
30	Paabay	13/03/2019	28.9	30.2	0.2	00:09:57	Silty mud	burrowed mud - nephrops, slender sea pen
31	Paabay	13/03/2019	15.3	15.1	0.2	00:07:44	fine sand, some pebbles and boulders	small burrows, small cone shells
32	W Scalpay	14/03/2019	17.5	15.2	0.7	00:04:27	fine sand, pebbles	some kelp, echinoderms, algae turf patches
33	W Scalpay	14/03/2019	19	13	0.9	00:15:07	mixed sediments with shells and pebbles on silty fine sand. Coarse sand and horse mussels	mixed sediments with lots of queen scallops and patchy fil. red algal turf. Occ. parchment worm tubes & empty horse mussel shells. Starfish, brittlestars and patchy kelp with clumps of live horse mussels from ~05:40. Catshark eggs
34	W Scalpay	14/03/2019	27.7	10.3	0.8	00:07:53	fine muddy sand with increasing coarse material including horse mussel shells and some cobbles later in the run	horse mussel shells, Turritella communis shells, drift algae, occ. feather stars, barnacles and red algal turf on sediment at the end of the run
35	W Scalpay	14/03/2019	20.2	25.2	1	00:12:55	burrowed mud into mud with shelly gravel with horse mussel shells (sparse)	burrows in mud, sparse squirts. Horse mussels, sparse foliose red algae and fil. turf. More frequent horse mussel shells in places (a few live?)
36	W Scalpay	14/03/2019	25.6	27.9	0.5	00:05:10	coarse sand, pebbles	some kelp, echinoderms
37	W Scalpay	14/03/2019	27	28.8	0.5	00:05:20	fine muddy sand, shell debris	some echinoderms
38	W Scalpay	14/03/2019	34.4	30.8	0.8	00:05:07	stony seabed, coarse sand	queen scallop, feather stars
39	W Scalpay	14/03/2019	23.8	23.6	0.6	00:05:07	coarse sand, razor shells	some kelp (drift), enc. pink algae on shells
40	W Scalpay	14/03/2019	32	29.1	1	00:06:22	coarse sand, stones	lots of feather stars

Station ref.	Site name	Date sampled	Depth Start (mBSL)	Depth End (mBSL)	Vessel speed (knots)	Video duration	Seabed physical type	Notes on flora and fauna
41	W Scalpay	14/03/2019	53.3	50.3	0.7	00:06:14	fine sand, a few pebbles and cobbles	burrows in sand, urchins at end
42	W Scalpay	14/03/2019	25.5	32.6	0.4	00:06:03	fine sand with pebbles, cobbles and boulders	urchins, feather stars
43	N Scalpay	14/03/2019	19.2	23.9	0.5	00:06:47	sand, fine sand and boulders	sand brittlestars, some burrows, common starfish, urchins
44	N Scalpay	14/03/2019	22.7	34.7	0.5	00:02:30	sand and boulders	urchins, encrusting algae
45	N Scalpay	14/03/2019	21.4	29.6	0.6	00:07:47	pebble, cobbles, boulders, bedrock outcrops, coarse sand, maerl bed habitat	encrusting algae, urchins, squatties, starfish, maerl (live and gravel in pockets)
46	N Scalpay	14/03/2019	20.7	19.2	0.5	00:05:36	boulders, patches of sand	coralline algae with turf, kelp, urchins, feather stars
47	N Scalpay	14/03/2019	24.4	27.1	0.6	00:05:24	sand, cobbles, pebbles, boulder / bedrock	sponge, kelp, occ. urchins, sparse maerl thalli, small orange sponge
48	W Scalpay	15/03/2019	23.8	64.1	0.5	00:08:25	rock with pockets of coarse sand and boulders, into fine mud with stones after steep drop off	feather stars, starfish, urchins, scallops, ?single northern sea fan and cup sponge on rock at base of cliff, fireworks anemone
49	W Scalpay	15/03/2019	26.7	45.5	0.7	00:08:02	boulders, coarse sand, cobbles	encrusting coralline algae, echinoderms
50	W Scalpay	15/03/2019	28.1	20	0.7	00:06:46	fine muddy sand, small boulders	odd feather stars
51	W Scalpay	15/03/2019	69	93.5	0.6	00:06:00	?highly silted bedrock slope with 'matted' surface initially then onto very fine muddy sand	anemones and peacock worms with urchins before steep drop to mud with assorted burrows incl. nephrops
52	W Scalpay	15/03/2019	22.9	29.3	0.8	00:05:52	coarse sand, stones, boulders	echinoderms, encrusting coralline algae
53	W Scalpay	15/03/2019	18.6	21.8	0.9	00:05:15	fine sand with turf?	odd kelp
54	W Scalpay	15/03/2019	13	11.4	0.5	00:05:10	fine muddy sand	burrowed mud
55	W Scalpay	15/03/2019	40.8	40	0.9	00:03:40	very fine muddy sand	burrowed mud
56	W Scalpay	15/03/2019	40.3	74.1	0.6	00:05:45	boulder wall, silty	burrowed mud
57	W Scalpay	15/03/2019	13.5	57	0.7	00:09:09	bedrock with pockets of coarse sediments. Silty mixed seds deeper	kelp forest to park with echinoderms, kelp disappears with depth, sparse red algae on rocks with enc. pink, occ. starfish, squirts (incl. football) and cup corals
58	W Scalpay	15/03/2019	73.4	69.6	0.7	00:05:15	soft mud	burrowed mud
59	W Scalpay	15/03/2019	59.6	67.5	0.7	00:05:16	mud	burrowed mud
60	W Scalpay	15/03/2019	36.9	45.5	0.6	00:05:04	mud / muddy sands	burrowed mud
61	W Scalpay	15/03/2019	18.3	25.5	0.7	00:05:25	boulders	kelp bed/forest
62	Pabay	16/03/2019	26.8	29.1	0.3	00:09:01	mud, v occasional boulder	seapens (tall & phosph), burrows, shells (incl. turret shells), cerianthid anemones

Station ref.	Site name	Date sampled	Depth Start (mBSL)	Depth End (mBSL)	Vessel speed (knots)	Video duration	Seabed physical type	Notes on flora and fauna
63	Pabay	16/03/2019	12.1	14.8	0.2	00:16:07	boulders, cobbles, coarse sand, occasional bedrock	starfish, scattered kelp, ?consolidated flame shell nests (shells visible), feather stars, urchins, maerl (clumpy), scallops
64	Pabay	16/03/2019	12.5	14.8	0.2	00:09:20	coarse sand	scallops, starfish, spoon worm, algal patches
65	Pabay	16/03/2019	13.6	19.9	0.3	00:10:02	coarse sand, shell	starfish, scallops, clam, sparse algal patches
66	Pabay	16/03/2019	12.1	17.1	0.4	00:10:01	coarse sand, shell, maerl, occasional boulders	starfish, patchy maerl (incl. live) then into denser bed (clumpy - ?flame shells), sparse algal patches
67	Pabay	16/03/2019	12.5	13.7	0.4	00:10:00	coarse sand with maerl and shells	maerl (bed in part), scallop, urchin, starfish, burrows, flame shells (bed in part), sparse algal patches
68	Pabay	16/03/2019	13.9	17.4	0.4	00:14:17	bedrock, coarse sand, maerl gravel pockets, occasional boulders	urchins, starfish, feather stars, flame shell bed, areas of maerl bed
69	Pabay	16/03/2019	13.3	11.8	0.4	00:07:01	coarse sand, maerl gravel, occasional boulders, occasional cobbles, bedrock	patchy sparse maerl (some live) initially, sparse seaweeds, feather stars, urchins, starfish, sparse kelp, encrusting pink algae
70	Pabay	16/03/2019	20.1	16.2	0.5	00:06:14	coarse sand, gravel, cobbles	starfish, urchin, turf
71	Longay	16/03/2019	30.5	34.2	0.3	00:07:11	coarse sand, cobbles, gravel	scallops, queenies, urchins, squatties, starfish
72	Longay	16/03/2019	20.4	30.7	0.5	00:06:04	coarse sand, pebbles	urchins, queenies
73	Longay	16/03/2019	23	27.9	0.3	00:06:13	coarse sand, gravel, occ cobbles	squatties, queenies, urchins
74	Longay	16/03/2019	27.9	33.2	0.2	00:06:11	coarse sand, v. occ. boulders	urchins, squatties
75	Longay	16/03/2019	20.2	24.4	0.2	00:06:13	bedrock, boulders, cobbles, sand	urchins, starfish, feather stars
76	Longay	16/03/2019	17.3	16.4	0.2	00:06:22	coarse sand, shell, occ boulders becoming more frequent	urchins, starfish, encrusting pink algae
77	Longay	16/03/2019	31.1	25.9	0.2	00:06:54	coarse sand, pebbles, cobbles, occ boulders	urchins, queenies, feather stars, starfish, encrusting pink algae,
78	Longay	16/03/2019	16	17.9	0.4	00:06:18	coarse sand, occ pebbles, boulders	urchin, starfish, kelp
79	N Scalpay	16/03/2019	28.5	23.6	0.5	00:10:01	coarse-silty sand, maerl, occ. large boulders and onto bedrock towards the end of the run	maerl (bed), feather stars, squirts?, cushion stars, urchins, encrusting pink algae
80	N Scalpay	16/03/2019	23.1	36.5	0.5	00:18:02	bedrock and boulders with pockets of coarse sand and maerl, coarse sands and mixed sed in deeper water at end	starfish, maerl (bed pockets initially), feather stars, encrusting pink algae, urchins, squirts (inc. football)

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81	N Scalpay	16/03/2019	21.6	13.8	0.4	00:04:54	bedrock	starfish, feather stars, urchins, enc pink algae, turf, sparse kelp
82	N Scalpay	16/03/2019	34.7	38.5	0.5	00:05:56	coarse sand, gravel, bedrock, boulders, becoming muddy sand	encrusting pink algae
83	N Scalpay	16/03/2019	24.4	24.8	0.4	00:06:03	bedrock, coarse sand and some maerl gravel, gravel, boulders	starfish, some maerl (gravel and low % live)
84	N Scalpay	16/03/2019	13.9	11	0.4	00:05:00	bedrock, coarse sand, boulders	urchins, starfish, kelp, enc pink algae
85	N Scalpay	16/03/2019	28.3	15.4	0.5	00:05:05	bedrock (wall), boulders, coarse sand in patches	urchins, starfish, kelp, enc pink algae
86	N Scalpay	16/03/2019	22	19.5	0.5	00:30:19	boulders, bedrock, coarse sand/gravel with maerl	urchins, queenies, feather stars, starfish enc pink algae, flame shell bed, maerl (live and gravels)
87	N Scalpay	16/03/2019	19.5	26	0.4	00:07:02	coarse sand, shell	brittlestars, urchins, unattached kelp tangle
88	Pabay	16/03/2019	21.6	32	0.5	00:07:17	coarse sand, shell, muddy sand	urchins
89	Pabay	16/03/2019	13.8	17.2	0.6	00:07:30	coarse sand	Lots of queenies, urchins, feather stars, starfish brittlestars, filamentous algae
90	Crowlins to Meallabhan	17/03/2019	21.2	20.1	0.6	00:10:01	coarse sand, shell, pebbles	Lots of queenies, urchins, starfish
91	Crowlins to Meallabhan	17/03/2019	16.4	32.9	0.7	00:09:11	sand, shell	urchins, feather stars, starfish, queenies
92	Crowlins to Meallabhan	17/03/2019	17.1	24	0.6	00:09:00	coarse sand, shell	starfish, crab, urchins
93	Kyleakin channel	17/03/2019	17.8	16.9	1	00:14:11	dense brittlestar bed, becoming coarse sand and shell	brittlestars, with flame shell bed underneath, starfish. 1 flame shell swimming
94	Kyleakin channel	17/03/2019	28.2	15.6	0.6	00:09:57	flame shell patches amongst coarse sand, becomes boulders and bedrock	flame shell bed, starfish, scattered kelp
95	Kyleakin channel	17/03/2019	12.1	28.2	0.7	00:09:10	coarse sand, gravel, shell, becomes flame shell bed	flame shell bed, dahlia anemones, starfish, kelp
96	Kyleakin channel	17/03/2019	20.8	23.1	0.9	00:10:13	coarse sand, gravel, cobbles, shell	brittlestars, starfish, crabs, enc pink algae, flame shell bed towards end
97	Kyleakin channel	17/03/2019	23	18.8	0.7	00:05:56	coarse sand, boulders	patchy flame shell burrows, brittlestars, urchins, enc pink algae
98	Kyleakin channel	17/03/2019	21.8	23	0.6	00:09:11	flame shell bed, dense brittlestar bed towards end	flame shell burrows, brittlestars, starfish, dahlia anemone

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99	Kyleakin channel	17/03/2019	21.6	15.9	0.4	00:10:06	dense brittlestar bed, flame shell bed beneath	flame shell burrows, brittlestars, starfish, urchins
100	Kyleakin channel	17/03/2019	17.6	20.6	0.4	00:10:02	flame shell bed	crabs, urchins, starfish
101	Kyleakin channel	17/03/2019	22.6	22.8	0.4	00:02:57	flame shell bed (patch) becoming more continuous	flame shell burrows, starfish
102	Kyleakin channel	17/03/2019	15.2	16.7	0.5	00:09:57	dense brittlestar beds, with flame shell beds beneath	brittlestars, flame shell burrows, dahlia anemones
103	Kyleakin channel	17/03/2019	26.3	34.7	0.5	00:05:33	dense brittlestar beds, with flame shell beds beneath	brittlestars, flame shell burrows, starfish, urchins
104	Kyleakin channel	17/03/2019	25.4	26.6	0.7	00:10:02	coarse sand, gravel	brittlestars, urchins, starfish
105	Kyleakin channel	17/03/2019	40.1	49	0.5	00:10:00	flame shell bed (patchy), some bedrock & boulders, coarse sand & shell	flame shell burrows, starfish, urchins, feather stars, squatties
106	Kyleakin channel	17/03/2019	48.1	49.8	0.4	00:06:07	gravel, cobbles, shell, sand patches, some bedrock	
107	Kyleakin channel	17/03/2019	50.4	38.6	0.4	00:07:36	gravel, shell, pebbles, some bedrock & boulders	squatties, starfish, urchins
108	Kyleakin channel	17/03/2019	21.5	37.2	0.6	00:09:23	silty fine sands with shell debris (pockets of dense mussel shell debris), some cobbles	dense brittlestars (bed) - possibly over flame shell or horse mussel bed, edible crabs, starfish, horse mussel shells and live horse mussels, scallop shells
109	Longa to Rubha Reidh	18/03/2019	16.2	14	0.3	00:05:35	sand, gravel, shell, boulders (a creel)	urchins, shells, drift weed, brittlestars, feather stars on rocks, starfish, sparse kelp
110	Longa to Rubha Reidh	18/03/2019	19.3	18.7	0.7	00:09:17	sand ripples	maerl (live and gravel) on sand waves, accumulations in troughs, burrowing sea cucumbers
111	Longa to Rubha Reidh	18/03/2019	17.8	17.3	0.6	00:10:05	sand, gravel, boulders	urchins, starfish, maerl, enc. pink
112	South Erradale to Callakillie	18/03/2019	14.2	13.4	0.7	00:10:09	coarse sand ripples, shell	starfish
113	South Erradale to Callakillie	18/03/2019	13.5	14.4	0.4	00:10:04	sand ripples,	starfish
114	South Erradale to Callakillie	18/03/2019	17.9	17.9	0.5	00:19:22	coarse sand and maerl gravel, boulders towards end	clear mat eggs extensive and patches, feather stars, maerl
115	South Erradale to Callakillie	18/03/2019	20.9	17	0.5	00:42:05	fine and medium sand in waves with shells and some maerl	clear mat eggs extensive and patches, some maerl
116	South Erradale to Callakillie	18/03/2019	21.9	21.1	0.7	00:05:46	coarse sand	maerl, feather stars

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117	South Erradale to Callakillie	18/03/2019	19.6	18.9	0.5	00:05:49	coarse sand ripples	maerl patches
118	Crowlins to Meallabhan	18/03/2019	14.2	20.8	0.7	00:09:07	sand, shell, some maerl, flame shell bed	sand with cerianthid anemones and razor shells, then patchy flame shell bed with red algal turf, feather stars, starfish, urchins
119	Crowlins to Meallabhan	18/03/2019	26.1	40.8	0.5	00:10:05	muddy sand, gravel, some maerl initially, broken shells (inc. Arctica in deeper water) and burrows	maerl, queenies
120	Kyleakin channel	19/03/2019	28.8	24.6	0.6	00:09:18	coarse sand, shell, gravel, dead modiolus	brittlestars, modiolus, urchins, starfish, flame shell burrows
121	Kyleakin channel	19/03/2019	35.8	40.5	1	00:09:40	coarse sand, shell, flame shell nests	feather stars, starfish, sea squirts
122	Inner Loch na Beiste	19/03/2019	24.1	19.8	0.9	00:06:46	muddy sand, nephrops burrows	starfish, feather stars, urchins
123	Inner Loch na Beiste	19/03/2019	28.3	28.6	1.1	00:06:19	muddy sand with shells and cobbles, burrows	feather stars, starfish, sea pens, Arctica shells, squatties
124	Kyleakin channel	19/03/2019	20.5	35.3	1.2	00:13:59	sand, gravel, outcrops of bedrock, boulders, flame shell nests	starfish, urchins, crab, feather stars, sea squirts
125	Inner Loch na Beiste	19/03/2019	48.2	50.2	1.1	00:05:42	muddy sand, burrows	starfish, urchin, feather stars, squat lobsters
126	Outer Loch na Beiste	19/03/2019	54.4	67.6	1.2	00:06:09	muddy sand, burrows	starfish, phosphorous sea pens
127	Inner Loch na Beiste	19/03/2019	19.6	17.2	1.4	00:05:07	muddy sand	starfish, urchins, tall sea pens
128	Sgeir na Caillich	19/03/2019	36.4	45.3	0.2	00:09:10	muddy sand, burrows	squat lobsters, mixed sea pens throughout
129	Sgeir na Caillich	19/03/2019	28.6	47.1	0.2	00:09:14	muddy sand, burrows	tall sea pens
130	Sgeir na Caillich	19/03/2019	20.5	41.5	0.2	00:06:26	muddy sand, shell, gravel	none
131	Sgeir na Caillich	19/03/2019	43.3	50.4	0.2	00:06:02	muddy sand	squat lobsters
132	Glas Eilean	19/03/2019	23	12.4	1.5	00:05:29	coarse sand, gravel, pebbles, shells	maerl at start, starfish, urchins, enc. pink, scattered kelp
133	Glas Eilean	19/03/2019	39.7	38.6	0.8	00:09:02	gravel, pebble, shell	urchin, starfish, sea squirts, squat lobsters
134	Glas Eilean	19/03/2019	12.5	10	0.8	00:02:33	gravel, cobbles	urchins, kelp bed
135	Glas Eilean	19/03/2019	22.7	18.7	0.8	00:06:26	sand, cobbles, pebbles	urchin
136	Glas Eilean	19/03/2019	17.4	15.7	0.6	00:06:00	burrowed mud	sea pens
137	Outer Loch na Beiste	19/03/2019	74.7	80.5	0.7	00:05:38	burrowed mud, wreck debris, kelp debris	starfish, squat lobsters
138	Kyleakin channel	19/03/2019	31.7	76.5	0.6	00:24:49	coarse sand, cobbles, shell, boulders, bedrock sections	urchins, squat lobsters, feather star, sea squirts

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139	Longay	20/03/2019	28.4	27.1	0.7	00:09:06	coarse sand, pebbles, boulders	queenies, urchins, feather stars, sea squirts, starfish
140	Longay	20/03/2019	28.6	44.5	0.8	00:10:02	coarse sand, pebbles, boulders	urchins, sea squirts, squat lobsters
141	Longay	20/03/2019	21.1	28.1	0.6	00:10:03	coarse sand, pebbles	starfish, urchins
142	Longay	20/03/2019	29.8	35.5	0.8	00:07:51	coarse sand, pebbles	feather stars, scallops, sea squirts, queenies
143	Longay	20/03/2019	17.2	52.3	0.8	00:10:08	bedrock, coarse sand, pebbles	urchins, starfish, squat lobsters, small patches of potential flame shell habitat on rock at the start, enc. pink algae, algal turf on rocks
144	Longay	20/03/2019	21.3	42.4	0.6	00:10:03	coarse sand, bedrock	starfish, urchins
145	North Scalpay	20/03/2019	21.1	24.1	0.9	00:10:01	coarse sand, boulders	starfish, urchins
146	North Scalpay	20/03/2019	17.8	17.7	1.2	00:08:33	bedrock, sand ripples, pebbles	urchins
147	North Scalpay	20/03/2019	20.8	39.8	1	00:09:14	hard packed silty sand with maerl patches / ridges	maerl (live % decreases with depth), sparse slender sea pen, burrow / small holes in sediment, feather star, urchin, ?cerianthid anemones, starfish
148	North Scalpay	20/03/2019	33.6	48.8	1	00:07:13	boulders, cobbles, sand, muddy sand, burrows	urchins, enc. pink algae
149	North Scalpay	20/03/2019	19.6	21.5	1	00:09:20	coarse sand, boulders, bedrock, maerl	maerl (gravel & some live), urchins, enc. pink algae
150	North Scalpay	20/03/2019	22.7	22.7	0.9	00:08:14	coarse sand, pebbles, occasional boulders	starfish, feather stars, urchins, some maerl gravel, Arctica shells
151	Longay	20/03/2019	17.6	25.9	0.3	00:09:08	sand, shell, pebbles	sparse fauna - starfish, feather stars