

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

*FV Lady Nicola UL 584*

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

## REPORT

16 - 20 July 2018

**Loading:** Kyle of Lochalsh, 16 July 2018

**Boarding:** Kyle of Lochalsh, 16 July 2018

**Unloading:** Kyle of Lochalsh, 20 July 2018

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.

<b>Personnel</b>	<b>Organisation</b>	<b>Role</b>
C Johnston	Crangon Ltd	SIC
G. Course	Seascope Fisheries Research	
G. Pasco	Seascope Fisheries Research	
L. Kamphausen	Scottish Natural Heritage	16 – 18 July
S. Henderson	Scottish Natural Heritage	18 – 20 July

**Project:** 5 days

### Gear

DDV camera frame, umbilicals (300m + 100m), camera system, lights and control unit.

SNH camera sledge, GoPro™ Hero 4 camera in housing, lights, 80m umbilical, surface control unit, GPS

## **Background and Objectives**

This is a partnership project between Marine Scotland (MS) and Scottish Natural Heritage (SNH) and is 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). More information on the project can be found at: <https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/MPAmonitoring/EMFFproject>.

The objectives for this survey were:

- To train staff in the use of the new drop-down video (DDV) system.
- To undertake a programme of targeted DDV sampling to enhance our understanding of the distribution and extent of flame shell beds and other sensitive benthic Priority Marine Features (PMFs) within and adjacent to the Lochs Duich, Long and Alsh MPA (survey areas shown as red and orange polygons in Figure 1).

The focus of the sampling was to carry out targeted surveys of PMFs and MPA protected features including flame shell beds, burrowed mud, maerl and Annex I reefs (including horse mussel reef). The footage 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.

## **Narrative**

Scientists joined the vessel at Kyleakin on 16 July 2018.

The initial plan was to deploy and test a new DDV camera system, from the fishing vessel at or near to pre-identified coordinates within the survey polygons in Figure 1. 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 (SD) 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. 'Snapshot' still images of the seabed were taken at intervals to get a clearer image of the seabed type and flora/fauna. The SCU displayed live 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 was recorded directly on the SCU.

Sample location 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. Sample metadata are shown in Tables 1 and 2.

Weather conditions during the survey were excellent, with several days of flat calm seas, so the stations in the more weather-dependent and less accessible areas in Inner Sound were sampled first. Part of the purpose of this survey was to test the DDV camera system, and some problems were encountered on day 1 with the SCU (erratic positional data), and later with the functioning of both the camera, back up DDV camera system and the 100 m and 300 m umbilicals. The SNH back up camera system was therefore used after the first video drop on day 1 and for the rest of the survey (17 - 20 July) while the problems with the DDV camera systems were resolved with the supplier. This restricted sampling to seabed stations shallower than approximately 60-70 m. Each night at the staff accommodation video and stills files were downloaded from the camera, the camera memory cleared, batteries charged (for the SNH camera), and sampling details transcribed from paper forms into spreadsheets.

Seventy-six video samples (and 90 accompanying still images from the DDV camera system on day 1 only) were taken from all of the high priority areas, with the exception of the deep channel between Scalpay and the Crowlin Islands (inaccessible to the SNH camera system). Video samples were also collected from stations in lower priority areas in outer Kyleakin channel and the burrowed mud habitat in central Loch Alsh. Sampling locations are shown in Figures 2-5.

Submitted: Charlotte Johnston 26 November 2018

Approved: P Boulcott 03 February 2020

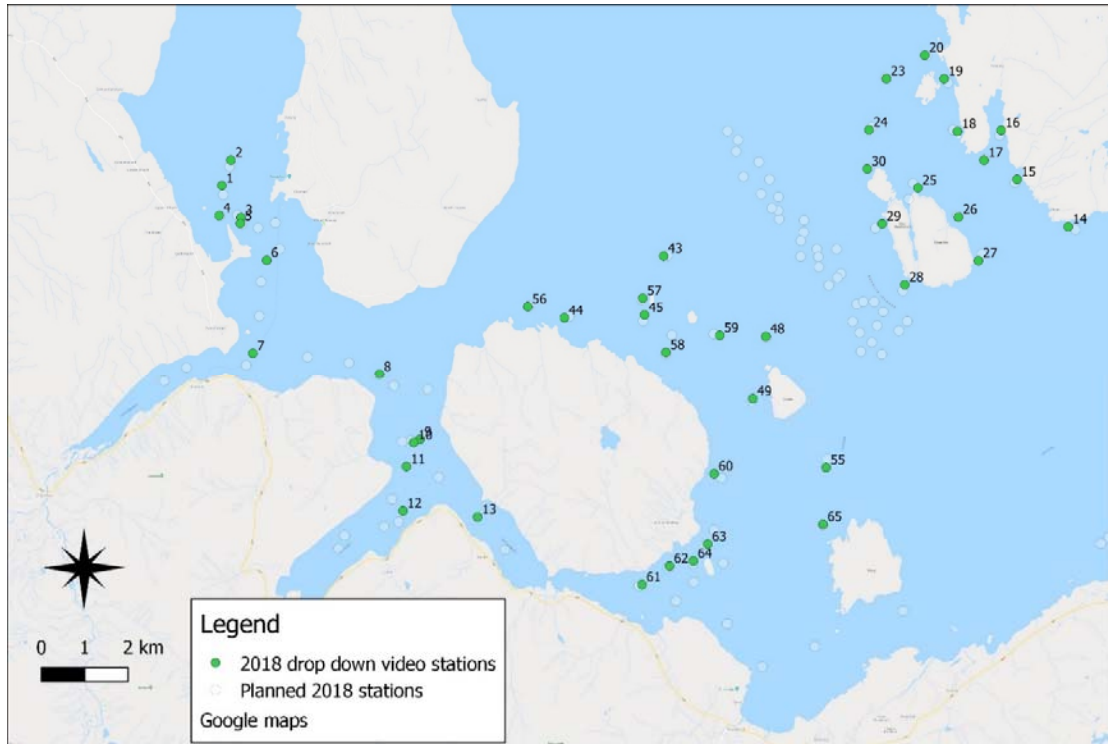


Figure 1 Location of sampling areas in Inner Sound and Loch Alsh July 2018

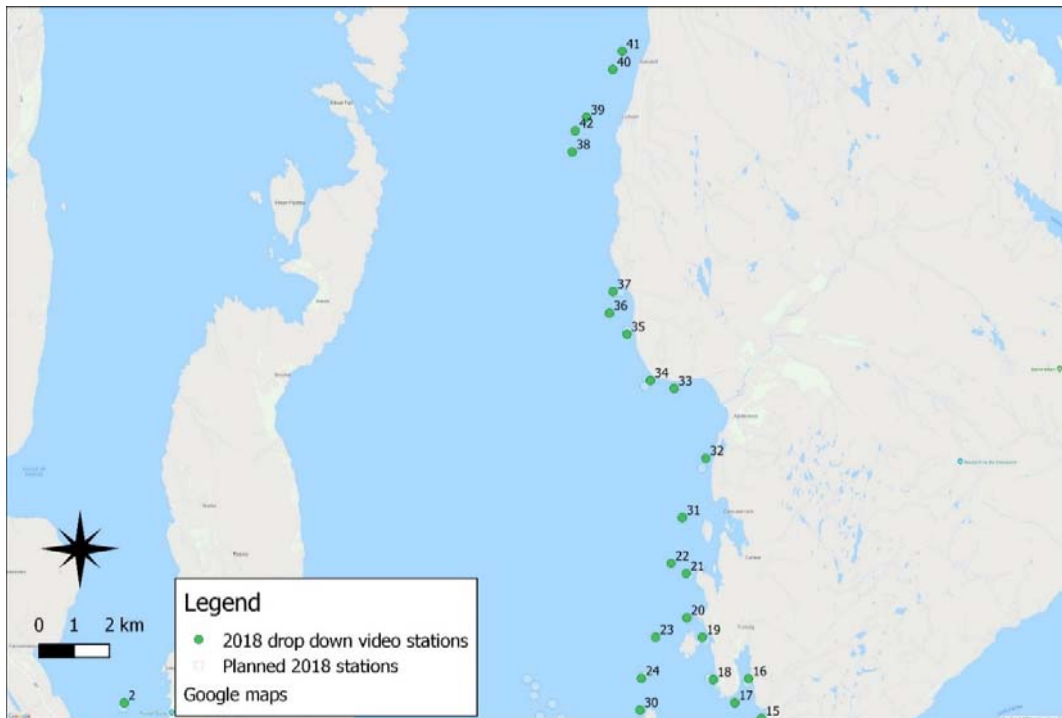


Figure 2. Drop down video stations surveyed in 2018 in Inner Sound and Loch Alsh, with initial planned stations in background.

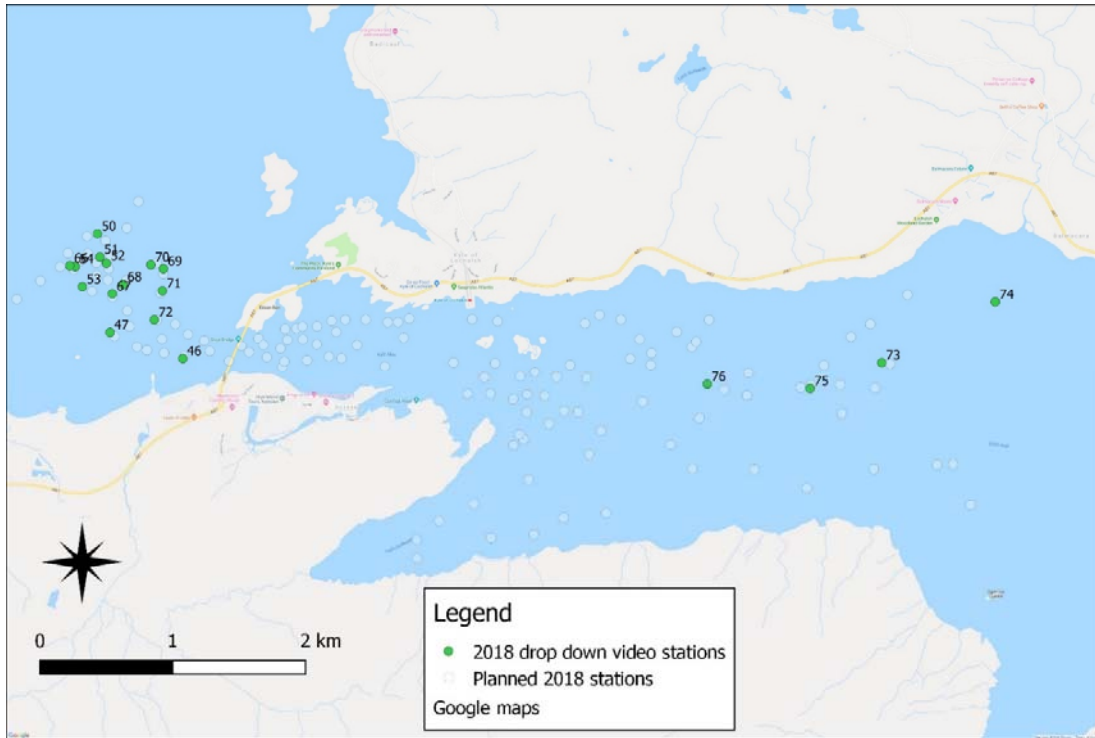




**Figure 3.** Drop down video stations surveyed in 2018 in Inner Sound around Scalpay and the Crowlin Islands, with initially planned stations in background.



**Figure 4.** Drop down video stations surveyed in 2018 in Inner Sound off Applecross, with initially planned stations in background.



**Figure 5.** Drop down video stations surveyed in 2018 in outer Kyle Akin and Loch Alsh, with initially planned stations in background.

**Table 1 Loch Alsh and Inner Sound sampling station locations, July 2018**

Project code	Survey area name	Station ref	Site name	Gear code	Date sampled	Start time (UTC)	Start Lat Deg	Start Lat mins	Start Long Deg	Start Long mins	End time (UTC)	End Lat Deg	End Lat mins	End Long Deg	End Long mins
MS EMFF	Loch Alsh and Inner Sound	1	Scalpay	DDV	16/07/2018	11:14:00	57	21.225	-6	6.391	11:19:00	57	21.269	-6	6.389
MS EMFF	Loch Alsh and Inner Sound	2	Scalpay	DDV	16/07/2018	11:36:00	57	21.540	-6	6.183	11:47:00	57	21.615	-6	6.167
MS EMFF	Loch Alsh and Inner Sound	3	Scalpay	DDV	16/07/2018	12:08:00	57	20.826	-6	5.951	12:14:00	57	20.876	-6	6.033
MS EMFF	Loch Alsh and Inner Sound	4	Scalpay	DDV	16/07/2018	12:26:00	57	20.853	-6	6.455	12:33:00	57	20.885	-6	6.436
MS EMFF	Loch Alsh and Inner Sound	5	Scalpay	DDV	16/07/2018	13:37:00	57	20.755	-6	5.967	13:42:00	57	20.819	-6	6.021
MS EMFF	Loch Alsh and Inner Sound	6	Scalpay	DDV	16/07/2018	14:01:00	57	20.300	-6	5.361	14:07:00	57	20.374	-6	5.361
MS EMFF	Loch Alsh and Inner Sound	7	Scalpay	DDV	16/07/2018	14:27:00	57	19.146	-6	5.679	14:30:00	57	19.176	-6	5.645
MS EMFF	Loch Alsh and Inner Sound	8	Scalpay	DDV	16/07/2018	14:54:00	57	18.885	-6	2.774	14:59:00	57	18.917	-6	2.753
MS EMFF	Loch Alsh and Inner Sound	9	Scalpay	DDV	16/07/2018	15:17:00	57	18.075	-6	1.845	15:28:00	57	18.201	-6	1.867
MS EMFF	Loch Alsh and Inner Sound	10	Scalpay	DDV	16/07/2018	15:41:00	57	18.035	-6	1.989	15:52:00	57	18.124	-6	2.025
MS EMFF	Loch Alsh and Inner Sound	11	Scalpay	DDV	16/07/2018	16:05:00	57	17.740	-6	2.156	16:12:00	57	17.791	-6	2.111
MS EMFF	Loch Alsh and Inner Sound	12	Scalpay	DDV	16/07/2018	16:25:00	57	17.194	-6	2.235	16:31:00	57	17.228	-6	2.240
MS EMFF	Loch Alsh and Inner Sound	13	Scalpay	DDV	16/07/2018	16:46:00	57	17.118	-6	0.523	16:51:00	57	17.118	-6	0.501
MS EMFF	Loch Alsh and Inner Sound	14	Crowlins	SNH	17/07/2018	12:38:00	57	20.713	-5	46.973	12:42:00	57	20.736	-5	46.961
MS EMFF	Loch Alsh and Inner Sound	15	Crowlins	SNH	17/07/2018	12:57:00	57	21.303	-5	48.148	13:02:00	57	21.338	-5	48.159
MS EMFF	Loch Alsh and Inner Sound	16	Crowlins	SNH	17/07/2018	13:14:00	57	21.909	-5	48.513	13:20:00	57	21.946	-5	48.512
MS EMFF	Loch Alsh and Inner Sound	17	Crowlins	SNH	17/07/2018	13:29:00	57	21.540	-5	48.904	13:34:00	57	21.578	-5	48.916
MS EMFF	Loch Alsh and Inner Sound	18	Crowlins	SNH	17/07/2018	13:43:00	57	21.895	-5	49.515	13:48:00	57	21.933	-5	49.506
MS EMFF	Loch Alsh and Inner Sound	19	Crowlins	SNH	17/07/2018	13:59:00	57	22.544	-5	49.821	14:04:00	57	22.606	-5	49.816
MS EMFF	Loch Alsh and Inner Sound	20	Crowlins	SNH	17/07/2018	14:13:00	57	22.839	-5	50.264	14:18:00	57	22.842	-5	50.262

Project code	Survey area name	Station ref	Site name	Gear code	Date sampled	Start time (UTC)	Start Lat Deg	Start Lat mins	Start Long Deg	Start Long mins	End time (UTC)	End Lat Deg	End Lat mins	End Long Deg	End Long mins
MS EMFF	Loch Alsh and Inner Sound	21	Crowlins	SNH	17/07/2018	14:29:00	57	23.513	-5	50.278	14:35:00	57	23.522	-5	50.260
MS EMFF	Loch Alsh and Inner Sound	22	Crowlins	SNH	17/07/2018	14:51:00	57	23.671	-5	50.707	14:56:00	57	23.713	-5	50.680
MS EMFF	Loch Alsh and Inner Sound	23	Crowlins	SNH	17/07/2018	15:13:00	57	22.545	-5	51.144	15:18:00	57	22.598	-5	51.101
MS EMFF	Loch Alsh and Inner Sound	24	Crowlins	SNH	17/07/2018	15:30:00	57	21.914	-5	51.544	15:36:00	57	21.936	-5	51.501
MS EMFF	Loch Alsh and Inner Sound	25	Crowlins	SNH	17/07/2018	15:51:00	57	21.197	-5	50.420	15:56:00	57	21.225	-5	50.401
MS EMFF	Loch Alsh and Inner Sound	26	Crowlins	SNH	17/07/2018	16:08:00	57	20.833	-5	49.491	16:13:00	57	20.864	-5	49.508
MS EMFF	Loch Alsh and Inner Sound	27	Crowlins	SNH	18/07/2018	08:31:00	57	20.294	-5	49.032	08:37:00	57	20.307	-5	49.029
MS EMFF	Loch Alsh and Inner Sound	28	Crowlins	SNH	18/07/2018	08:55:00	57	19.998	-5	50.723	09:00:00	57	20.013	-5	50.750
MS EMFF	Loch Alsh and Inner Sound	29	Crowlins	SNH	18/07/2018	09:13:00	57	20.750	-5	51.242	09:18:00	57	20.747	-5	51.254
MS EMFF	Loch Alsh and Inner Sound	30	Crowlins	SNH	18/07/2018	09:32:00	57	21.433	-5	51.585	09:38:00	57	21.439	-5	51.593
MS EMFF	Loch Alsh and Inner Sound	31	Applecross	SNH	18/07/2018	10:09:00	57	24.367	-5	50.388	10:15:00	57	24.369	-5	50.373
MS EMFF	Loch Alsh and Inner Sound	32	Applecross	SNH	18/07/2018	10:31:00	57	25.274	-5	49.727	10:36:00	57	25.273	-5	49.767
MS EMFF	Loch Alsh and Inner Sound	33	Applecross	SNH	18/07/2018	10:52:00	57	26.334	-5	50.622	10:57:00	57	26.310	-5	50.638
MS EMFF	Loch Alsh and Inner Sound	34	Applecross	SNH	18/07/2018	11:07:00	57	26.456	-5	51.292	11:12:00	57	26.475	-5	51.317
MS EMFF	Loch Alsh and Inner Sound	35	Applecross	SNH	18/07/2018	11:26:00	57	27.162	-5	51.956	11:31:00	57	27.190	-5	51.962
MS EMFF	Loch Alsh and Inner Sound	36	Applecross	SNH	18/07/2018	11:40:00	57	27.482	-5	52.451	11:45:00	57	27.519	-5	52.468
MS EMFF	Loch Alsh and Inner Sound	37	Applecross	SNH	18/07/2018	11:53:00	57	27.811	-5	52.350	11:58:00	57	27.852	-5	52.347
MS EMFF	Loch Alsh and Inner Sound	38	Applecross	SNH	18/07/2018	12:22:00	57	29.936	-5	53.507	12:27:00	57	29.998	-5	53.496
MS EMFF	Loch Alsh and Inner Sound	39	Applecross	SNH	18/07/2018	12:37:00	57	30.462	-5	53.100	12:42:00	57	30.524	-5	53.099
MS EMFF	Loch Alsh and Inner Sound	40	Applecross	SNH	18/07/2018	12:55:00	57	31.185	-5	52.358	13:00:00	57	31.228	-5	52.358
MS EMFF	Loch Alsh and Inner Sound	41	Applecross	SNH	18/07/2018	13:08:00	57	31.466	-5	52.091	13:13:00	57	31.497	-5	52.077
MS EMFF	Loch Alsh and Inner Sound	42	Applecross	SNH	18/07/2018	13:34:00	57	30.256	-5	53.418	13:40:00	57	30.336	-5	53.416



Project code	Survey area name	Station ref	Site name	Gear code	Date sampled	Start time (UTC)	Start Lat Deg	Start Lat mins	Start Long Deg	Start Long mins	End time (UTC)	End Lat Deg	End Lat mins	End Long Deg	End Long mins
MS EMFF	Loch Alsh and Inner Sound	43	E Scalpay	SNH	18/07/2018	15:11:00	57	20.353	-5	56.255	15:16:00	57	20.367	-5	56.238
MS EMFF	Loch Alsh and Inner Sound	44	E Scalpay	SNH	18/07/2018	15:34:00	57	19.585	-5	58.532	15:39:00	57	19.599	-5	58.551
MS EMFF	Loch Alsh and Inner Sound	45	E Scalpay	SNH	18/07/2018	15:53:00	57	19.622	-5	56.694	15:58:00	57	19.614	-5	56.669
MS EMFF	Loch Alsh and Inner Sound	46	Kyleakin	SNH	19/07/2018	07:44:00	57	16.551	-5	44.977	07:46:00	57	16.565	-5	45.070
MS EMFF	Loch Alsh and Inner Sound	47	Kyleakin	SNH	19/07/2018	07:55:00	57	16.657	-5	45.522	07:57:00	57	16.679	-5	45.573
MS EMFF	Loch Alsh and Inner Sound	48	E Scalpay	SNH	19/07/2018	08:49:00	57	19.355	-5	53.910	08:54:00	57	19.399	-5	53.879
MS EMFF	Loch Alsh and Inner Sound	49	E Scalpay	SNH	19/07/2018	09:13:00	57	18.574	-5	54.214	09:18:00	57	18.611	-5	54.203
MS EMFF	Loch Alsh and Inner Sound	50	Kyleakin	SNH	19/07/2018	10:10:00	57	17.056	-5	45.616	10:15:00	57	17.098	-5	45.573
MS EMFF	Loch Alsh and Inner Sound	51	Kyleakin	SNH	19/07/2018	10:24:00	57	16.961	-5	45.598	10:29:00	57	17.010	-5	45.548
MS EMFF	Loch Alsh and Inner Sound	52	Kyleakin	SNH	19/07/2018	10:42:00	57	16.936	-5	45.549	10:47:00	57	16.987	-5	45.506
MS EMFF	Loch Alsh and Inner Sound	53	Kyleakin	SNH	19/07/2018	10:53:00	57	16.842	-5	45.729	10:58:00	57	16.897	-5	45.722
MS EMFF	Loch Alsh and Inner Sound	54	Kyleakin	SNH	19/07/2018	11:08:00	57	16.923	-5	45.783	11:13:00	57	16.987	-5	45.758
MS EMFF	Loch Alsh and Inner Sound	55	E Scalpay	SNH	19/07/2018	12:08:00	57	17.727	-5	52.526	12:13:00	57	17.758	-5	52.513
MS EMFF	Loch Alsh and Inner Sound	56	E Scalpay	SNH	19/07/2018	12:56:00	57	19.724	-5	59.373	13:01:00	57	19.758	-5	59.319
MS EMFF	Loch Alsh and Inner Sound	57	E Scalpay	SNH	19/07/2018	13:19:00	57	19.831	-5	56.734	13:23:00	57	19.870	-5	56.732
MS EMFF	Loch Alsh and Inner Sound	58	E Scalpay	SNH	19/07/2018	13:41:00	57	19.158	-5	56.203	13:46:00	57	19.226	-5	56.216
MS EMFF	Loch Alsh and Inner Sound	59	E Scalpay	SNH	19/07/2018	13:59:00	57	19.368	-5	54.968	14:04:00	57	19.425	-5	54.954
MS EMFF	Loch Alsh and Inner Sound	60	E Scalpay	SNH	19/07/2018	14:34:00	57	17.650	-5	55.096	14:39:00	57	17.695	-5	55.076
MS EMFF	Loch Alsh and Inner Sound	61	E Scalpay	SNH	19/07/2018	15:05:00	57	16.279	-5	56.750	15:08:00	57	16.311	-5	56.707
MS EMFF	Loch Alsh and Inner Sound	62	E Scalpay	SNH	19/07/2018	15:19:00	57	16.508	-5	56.119	15:24:00	57	16.582	-5	56.059
MS EMFF	Loch Alsh and Inner Sound	63	E Scalpay	SNH	19/07/2018	15:31:00	57	16.782	-5	55.245	15:37:00	57	16.843	-5	55.182
MS EMFF	Loch Alsh and Inner Sound	64	E Scalpay	SNH	19/07/2018	15:46:00	57	16.571	-5	55.574	15:52:00	57	16.635	-5	55.525

Project code	Survey area name	Station ref	Site name	Gear code	Date sampled	Start time (UTC)	Start Lat Deg	Start Lat mins	Start Long Deg	Start Long mins	End time (UTC)	End Lat Deg	End Lat mins	End Long Deg	End Long mins
MS EMFF	Loch Alsh and Inner Sound	65	E Scalpay	SNH	19/07/2018	16:09:00	57	17.027	-5	52.597	16:16:00	57	17.112	-5	52.561
MS EMFF	Loch Alsh and Inner Sound	66	Kyleakin	SNH	20/07/2018	10:52:00	57	16.926	-5	45.823	10:55:00	57	16.968	-5	45.861
MS EMFF	Loch Alsh and Inner Sound	67	Kyleakin	SNH	20/07/2018	11:05:00	57	16.813	-5	45.505	11:36:00	57	16.982	-5	45.526
MS EMFF	Loch Alsh and Inner Sound	68	Kyleakin	SNH	20/07/2018	12:06:00	57	16.851	-5	45.424	12:23:00	57	16.927	-5	45.410
MS EMFF	Loch Alsh and Inner Sound	69	Kyleakin	SNH	20/07/2018	12:32:00	57	16.914	-5	45.122	12:37:00	57	16.927	-5	45.089
MS EMFF	Loch Alsh and Inner Sound	70	Kyleakin	SNH	20/07/2018	12:48:00	57	16.930	-5	45.216	12:57:00	57	16.934	-5	45.139
MS EMFF	Loch Alsh and Inner Sound	71	Kyleakin	SNH	20/07/2018	13:08:00	57	16.825	-5	45.130	13:09:00	57	16.825	-5	45.099
MS EMFF	Loch Alsh and Inner Sound	72	Kyleakin	SNH	20/07/2018	13:21:00	57	16.708	-5	45.191	13:30:00	57	16.678	-5	45.093
MS EMFF	Loch Alsh and Inner Sound	73	Loch Alsh	SNH	20/07/2018	14:29:00	57	16.534	-5	39.746	14:34:00	57	16.543	-5	39.694
MS EMFF	Loch Alsh and Inner Sound	74	Loch Alsh	SNH	20/07/2018	14:52:00	57	16.780	-5	38.896	14:58:00	57	16.794	-5	38.842
MS EMFF	Loch Alsh and Inner Sound	75	Loch Alsh	SNH	20/07/2018	15:32:00	57	16.428	-5	40.282	15:37:00	57	16.442	-5	40.234
MS EMFF	Loch Alsh and Inner Sound	76	Loch Alsh	SNH	20/07/2018	15:56:00	57	16.445	-5	41.052	16:04:00	57	16.444	-5	40.936

**Table 2 Loch Alsh and Inner Sound sampling station descriptions, July 2018**

Station ref	Site name	Date sampled	Start depth (m BCD)	End depth (m BCD)	Vessel speed Kn	Video drop duration	Video quality	Seabed physical type	Notes on fauna & flora
1	Scalpay	16/07/2018	52.50	51.60	0.5	00:05	Good	Muddy sand and boulders	Few echinoderms, squat lobsters.
2	Scalpay	16/07/2018	38.40	50.50	0.5	00:11	Good	Muddy sand, cobbles & boulders	Starfish ( <i>Luidia</i> sp), kelp debris
3	Scalpay	16/07/2018	42.50	47.50	0.5	00:06	Good	Fine sand & pebbles, boulders towards end	Kelp debris
4	Scalpay	16/07/2018	17.10	16.70	0.5	00:07	Good	Shelly sand with cobbles	Few echinoderms
5	Scalpay	16/07/2018	22.80	37.80	0.5	00:05	Good	Sand with pebbles, cobbles & few boulders	
6	Scalpay	16/07/2018	11.80	10.40	0.5	00:06	Good	Pebbly sand	Kelp ( <i>Sacc. latissima</i> )
7	Scalpay	16/07/2018	8.55	7.80	0.5	00:03	Good	Pebbly sand	Kelp ( <i>Sacc. latissima</i> )

Station ref	Site name	Date sampled	Start depth (m BCD)	End depth (m BCD)	Vessel speed Kn	Video drop duration	Video quality	Seabed physical type	Notes on fauna & flora
8	Scalpay	16/07/2018	27.80	25.30	0.5	00:05	Good	Shelly sand, cobbles @ 4min	Echinus, Luidia, Pecten
9	Scalpay	16/07/2018	20.30	31.30	0.5	00:11	Good	Gravelly muddy sand to sand and boulders, back to muddy sand	Kelp debris in deeper water, kelps on boulders in shallow
10	Scalpay	16/07/2018	28.20	34.20	0.5	00:11	Good	Gravelly muddy sand to sand and boulders, back to muddy sand	Echinoderms
11	Scalpay	16/07/2018	21.20	22.20	0.5	00:07	Good	Gravelly sand, boulders & cobbles	
12	Scalpay	16/07/2018	5.20	5.20	0.5	00:06	Good	Muddy sand	Saccarina latissima, lots of brittlestars on kelp, maerl beneath
13	Scalpay	16/07/2018	5.80	6.80	0.5	00:05	Good	Muddy shelly sand	Algal 'fluff'!
14	Crowlins	17/07/2018	25.80	19.80	0.5	00:04	Good	Shelly muddy sand	Algal debris, Luidia, squat lobsters, coralline algae on stones
15	Crowlins	17/07/2018	24.70	24.70	0.5	00:05	Good	Cobbles on coarse sand	Corallines on cobbles
16	Crowlins	17/07/2018	20.70	18.70	0.5	00:06	Good	Muddy sand, pebbles and shells	Echinus, coralline algae, algal debris
17	Crowlins	17/07/2018	15.70	13.70	0.5	00:05	Good	Cobbles & fine sand	Hydroids, Virgularia mirabilis, Echinus Luidia, feather stars
18	Crowlins	17/07/2018	16.70	18.70	0.5	00:05	Good	Shelly sand, cobbles @ 3-4min	Swarm' of queen scallops, corallines, algal debris
19	Crowlins	17/07/2018	12.80	16.80	0.5	00:05	Good	Cobbles and large boulders, then fine sand with pebbles & shells	Kelp, algal 'fluff', corallines, hydroids, abundant queenies on kelp
20	Crowlins	17/07/2018	26.80	25.80		00:05	Good	Steep slope of silty rock, boulders, then sand	Corallines, squat lobsters, hydroids
21	Crowlins	17/07/2018	17.80	16.80	0.5	00:06	Good	Shelly sand, pebbles, maerl	Kelps, red algae, few queenies, patch maerl, Marthasterias
22	Crowlins	17/07/2018	24.80	23.80	0.5	00:05	Good	Pebbly shelly sand, large boulder	Featherstars, abundant sea squirts, corallines, green & red algae, squat lobsters
23	Crowlins	17/07/2018	18.80	22.80	0.5	00:05	Good	Dense maerl bed on rise, rock & boulders in deeper water	Maerl, hydroids, featherstars, red algae, ?Swiftia/hydroid, corallines on boulders
24	Crowlins	17/07/2018	20.80	19.80	0.5	00:06	Good	Cobbles, boulders & shell gravel	Algal 'fluff', ?maerl patches, hydroids, corallines on boulders. ?Possible empty Limaria shells
25	Crowlins	17/07/2018	33.10	34.10		00:05	Good	Muddy shelly sand	Lots of squatties, mud mounds, queenies, echinus - anecdotally previously dredged
26	Crowlins	17/07/2018	22.80	22.80	0.5	00:05	Good	Shelly gravel, cobbles & pebbles	Red & green algae, corallines, squatties, hydroids, featherstars, Luidia, Pecten & empty shells, seasquirts
27	Crowlins	18/07/2018	21.80	22.80	0.1	00:06	Good	Shelly sand with few cobbles	Coralline algae, hydroids, squatties, Virgularia
28	Crowlins	18/07/2018	20.00	19.00	0.1	00:05	Good	Shelly gravel and pebbles with maerl patches	Sparse red algae, queenies, Luidia, coralline algae on stones
29	Crowlins	18/07/2018	23.00	24.00	0.1	00:05	Good	Gravel, pebbles & cobbles with sand between	Corallines, red & green/brown algae, queenies (few) sea squirts

Station ref	Site name	Date sampled	Start depth (m BCD)	End depth (m BCD)	Vessel speed Kn	Video drop duration	Video quality	Seabed physical type	Notes on fauna & flora
30	Crowlins	18/07/2018	19.50	19.50	0.1	00:06	Good	Maerl, shell gravel, pebbles, some rock	Coralline algae, reds and green/brown algae, featherstars
31	Applecross	18/07/2018	34.50	35.50	0.1	00:06	Good	Coarse shelly sand, silt & boulders	Coralline algae, ?Leptometra, hydroids, ball sea squirt
32	Applecross	18/07/2018	26.50	27.50	0.1	00:05	Good	Shelly sand, cobbles & pebbles	Corallines, urchin
33	Applecross	18/07/2018	20.30	30.30	0.1	00:05	Good	Shell gravel	Corallines, squatties, Echinus, few fauna
34	Applecross	18/07/2018	23.30	21.30	0.5	00:05	Good	Shelly gravel, pebbles	Corallines, Cerianthus, squat lobsters, ball sea squirt
35	Applecross	18/07/2018	15.30	11.30	0.4	00:05	Good	Sandy gravel, shells	Red & green algae, corallines, squat lobsters
36	Applecross	18/07/2018	18.30	22.30	0.4	00:05	Good	Maerl	Queenies, red & green algae, sea pen, Cerianthus, Cancer
37	Applecross	18/07/2018	15.50	16.50	0.6	00:05	Good	Shelly gravel, maerl	Modiolus, squat lobster, coralline algae, red & green algae, Cancer
38	Applecross	18/07/2018	23.50	23.50	0.8	00:05	Good	Maerl, cobbles, pebbles	Coralline, Luidia, sea cucumber, featherstars
39	Applecross	18/07/2018	24.50	25.50	0.8	00:05	Good	Maerl	Dense maerl bed, feather stars
40	Applecross	18/07/2018	20.00	24.00	0.5	00:05	Good	Maerl	Maerl bed, Luidia, ?flame shell nests, cushion star
41	Applecross	18/07/2018	25.00	22.00	0.4	00:05	Good	Maerl	Maerl, queenies, Cancer
42	Applecross	18/07/2018	23.90	25.90	0.8	00:06	Good	Maerl, few pebbles	Dense maerl, echinoderms, cushion stars, sea squirts
43	E Scalpay	18/07/2018	23.90	23.90	0.2	00:05	Good	Maerl, plus bedrock at end	Maerl, cushion star, sea squirt, squat lobster, feather star, queenies, urchin
44	E Scalpay	18/07/2018	19.90	20.90	0.2	00:05	Good	Maerl, shells	Maerl, fluffy seaweed, hermit crab
45	E Scalpay	18/07/2018	17.30	16.30	0.2	00:05	Good	Maerl	Maerl bed, brown algae (sugar kelp)
46	Kyleakin	19/07/2018	12.80	11.30	1.1	00:02	Poor	Rock?	Kelps, red algae, tide too fast to see properly
47	Kyleakin	19/07/2018	8.40	7.60	1.1	00:02	Poor	Rock?	Kelps, red algae, tide too fast to see properly
48	E Scalpay	19/07/2018	25.50	32.60	0.5	00:05	Mod (too fast)	Cobbles, boulders & shelly sand	Squatties, seasquirts, echinoderms
49	E Scalpay	19/07/2018	36.10	27.10	0.5	00:05	Mod (too fast)	Sandy mud, cobbles, burrows, broken shells	Squatties, Turritella, squirts, scallops
50	Kyleakin	19/07/2018	31.10	24.80	0.5	00:05	Mod (too fast)	Shelly sand, cobbles, boulders, sand (?rope)	Kelp, hydroids, featherstars
51	Kyleakin	19/07/2018	15.20	25.70	0.7	00:05	Mod (too fast)	Cobbly	Algal turf, occasional kelp, hydroids, possible flame shell nests at start
52	Kyleakin	19/07/2018	14.20	18.40	0.8	00:05	Mod (too fast)	Cobbly boulders & shelly sand	Kelp & red algal turf, possible flame shell bed
53	Kyleakin	19/07/2018	8.90	11.30	0.9	00:05	Mod (too fast)	Cobbles, boulders, sandy shells	Dense kelp, possible flame shell bed
54	Kyleakin	19/07/2018	10.90	31.40	0.6	00:05	Mod (too fast)	Boulders, cobbles, shelly sand	Kelp, red algal turf, hydroids

Station ref	Site name	Date sampled	Start depth (m BCD)	End depth (m BCD)	Vessel speed Kn	Video drop duration	Video quality	Seabed physical type	Notes on fauna & flora
55	E Scalpay	19/07/2018	41.10	42.40	0.7	00:05	Mod (too fast)	Fine muddy sand with burrows and boulders	Squat lobsters, ?Thornback ray
56	E Scalpay	19/07/2018	17.80	23.50	0.5	00:05	Mod (too fast)	Shelly gravel, cobbles, razor shells	Hydroids, Virgularia mirabilis, brittlestars
57	E Scalpay	19/07/2018	13.00	10.50	0.6	00:04	Mod (too fast)	Boulders, shelly sand	Kelp, red algal turf, urchins, featherstars
58	E Scalpay	19/07/2018	15.60	22.60	0.9	00:05	Mod (too fast)	Bedrock with sandy patches	Kelp, featherstars, hydroids, red algae, urchins
59	E Scalpay	19/07/2018	21.60	16.20	0.6	00:05	Mod (too fast)	Boulders, cobbles, sandy patches, then cliff bedrock	Kelp, not much turf, starfish, urchins, hydroids, featherstars
60	E Scalpay	19/07/2018	30.90	29.30	0.8	00:05	Mod (too fast)	Cobbles, mud, bedrock	Squatties, Virgularia, scallop, squirts, Turritella - ?dredged
61	E Scalpay	19/07/2018	31.60	21.40	0.5	00:03	Mod (too fast)	Burrowed mud	Squatties - dredged?
62	E Scalpay	19/07/2018	20.70	17.90		00:05	Mod (too fast)	Muddy sand & a few shells & boulders	Burrows, squatties - dredged?
63	E Scalpay	19/07/2018	20.50	23.20	0.9	00:06	Mod (too fast)	Boulder, cobbles, sandy shelly patches	Red algae, hydroids, close to prev. flame shell record
64	E Scalpay	19/07/2018	19.40	10.80	0.8	00:06	Mod (too fast)	Cobbles, sandy, boulders/bedrock	Queenies, red algae, kelp, turf, featherstars
65	E Scalpay	19/07/2018	27.90	29.20	0.7	00:07	Mod (too fast)	Muddy fine sand, shells, burrows	Nephrops, - ?dredged
66	Kyleakin	20/07/2018	12.00	42.30	1	00:03	Good	Steep slope of cobbles, muddy sand	Kelp
67	Kyleakin	20/07/2018	11.00	17.70	0.4	00:31	Good	Cobbles, shelly sand patches	Kelp, red algal turf ?flame shell bed
68	Kyleakin	20/07/2018	9.90	14.90	0.3	00:17	Good	Cobbles, shelly sand	Kelps, corallines
69	Kyleakin	20/07/2018	20.80	22.50	0.3	00:05	Good	Cobbles, shells	Red algae, mussel, queenies, squatties, featherstars
70	Kyleakin	20/07/2018	15.70	20.70	0	00:09	Good	Cobbles, shelly sand	Kelp, Oyster, queenies, hydroids, scallop shells, featherstars, octopus
71	Kyleakin	20/07/2018	15.00	15.40	0	00:01	Good	Cobbles, shelly sand	Kelp, brittlestars, queenies, red algae
72	Kyleakin	20/07/2018	11.60	10.30	0	00:09	Good	Cobbles, shelly sand	Kelp, flame shell bed >70%
73	Loch Alsh	20/07/2018	65.80	65.00	0	00:05	Good	Burrowed mud	Funiculina, virgularia, Pennatula
74	Loch Alsh	20/07/2018	52.30	51.30	0.4	00:06	Good	Burrowed mud	Kelp debris, nephrops
75	Loch Alsh	20/07/2018	56.00	65.00	0	00:05	Good	Silty bedrock then burrowed mud	Pennatula, Funiculina, Virgularia, squatties/nephrops
76	Loch Alsh	20/07/2018	68.30	58.90	0.4	00:08	Good	Mud, shells, burrows	Squatties, Nephrops burrows, orange tentacled cucumber, Leptometra, hydroids