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*FV Lady Nicola UL 584*

**REPORT of Survey: Drop-down video survey of seabed habitats and Priority Marine Features in the Sound of Islay and Sound of Jura**

**21-30 June 2019**

**Loading:** Port Ellen, Islay, 21 June 2019

**Boarding:** Port Ellen, Islay, 21 June 2019

**Unloading:** Crinan, 30 June 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.

<b>Personnel</b>	<b>Organisation</b>	<b>Role</b>
G. Pasco	Seascope Fisheries Research	SIC 21-30 June 2019
C. Johnston	Crangon	21-30 June 2019
L. Steel	Scottish Natural Heritage	21-25 June 2019
R. Sinclair	Scottish Natural Heritage	26-30 June 2019

**Project:** 10 days

**Gear**

EMFF camera frame, umbilicals (300m + 100m), camera systems (EMFF system 1 and 2), lights and control unit.

**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 DDV sampling to enhance our understanding of the distribution and extent of Priority Marine Features (such as maerl beds, horse mussel beds, northern sea fan, flame shell beds, fan mussels) and other benthic habitats in nearshore waters around Islay, Jura and Loch Sween.

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 planned survey areas as polygons.

### **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 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 video signal was provided to the surface control unit (SCU) located in the wheelhouse, and red-line lasers (100mm apart) 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 sample metadata transcribed into spreadsheets each day and 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 as backup in case of problems with the camera or vessel positional data, but due to the problems with the SD overlay, post-survey these waypoint positions have been downloaded and used as principal sample location data, and are shown in Tables 1 and 2. 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 Port Ellen harbour (Islay) or Crinan harbour (Jura/Loch Sween) each day from 21:30 June 2019. SNH staff changeover was in Crinan on 25 June.

Weather during the whole survey apart from the last day was very calm consisting of south westerly south easterly and north easterly winds force 1-3, with no appreciable swell. Winds on the 30 June were stronger at SW force 4-5 so sampling was restricted to the sheltered waters of Loch Sween, all other high priority sampling having been completed. Strong tides, however, in both the Sound of Islay and Sound of Jura made obtaining good video footage of the seabed challenging at some locations, particularly those with steep or vertical bedrock and during maximum tidal flow.

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 undertaken with two sets of camera equipment, starting on the first day with EMFF camera system 2, which malfunctioned and was replaced from 22 June with camera system 1 for the rest of the survey. Problems were encountered with the surface control unit display on system 1 during the rest of the survey, but this did not appear to affect the quality of video or images obtained.

225 video samples and 2449 accompanying HD still images and 15 SD still images of the seabed were collected. Table 1 provides the sample station locations (start and end waypoints) and Table 2 brief descriptions of the seabed at each sample station. Figure 2 shows an overview of all stations sampled on this Islay and Jura survey in 2019, and Figures 3-9 show the video start waypoint locations and station numbers for more detailed areas.

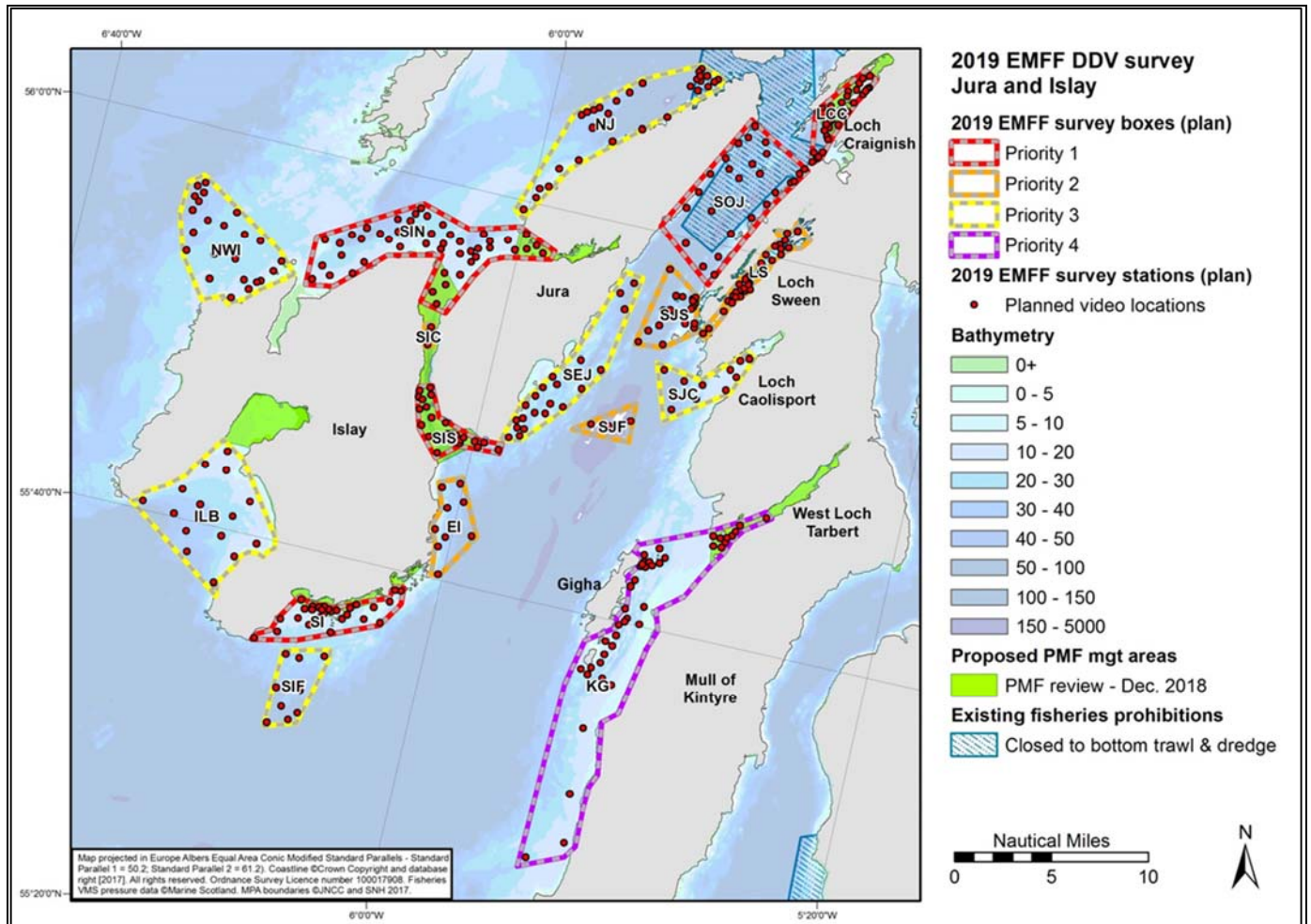
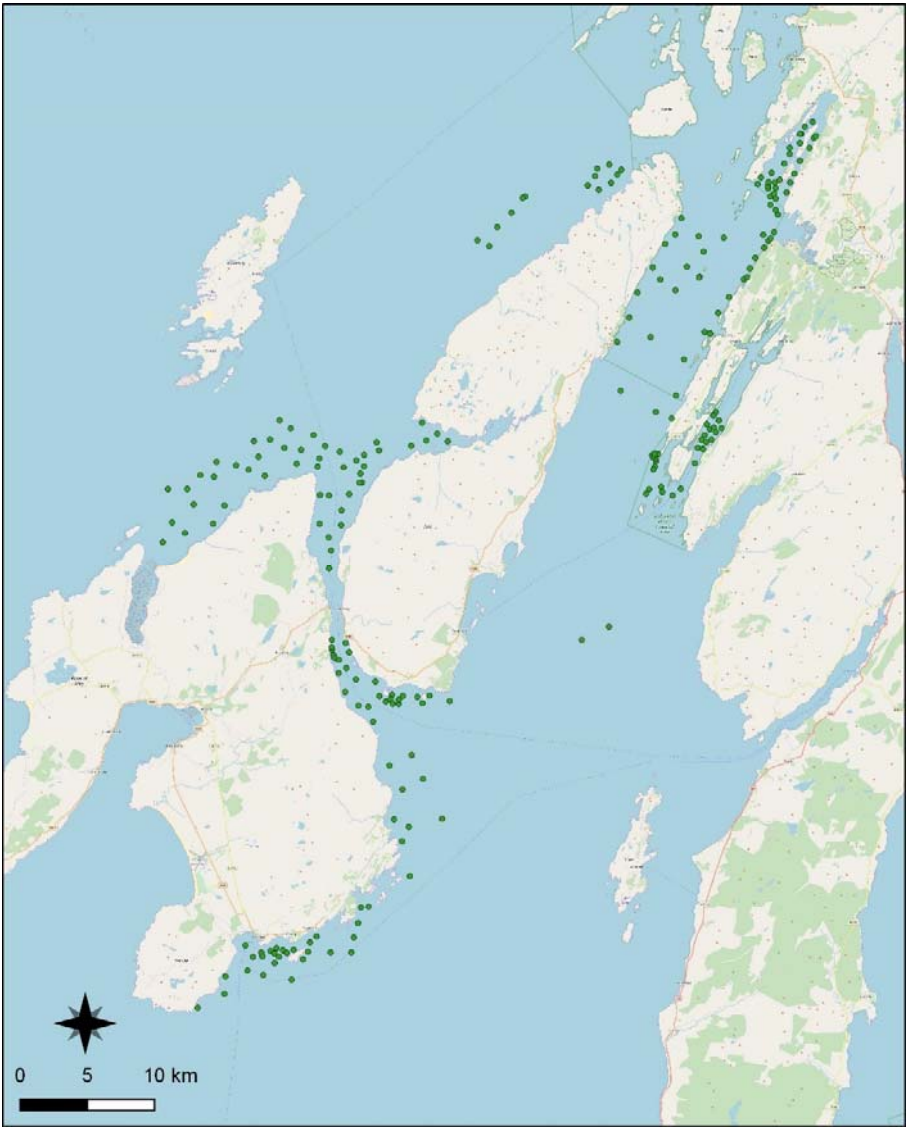
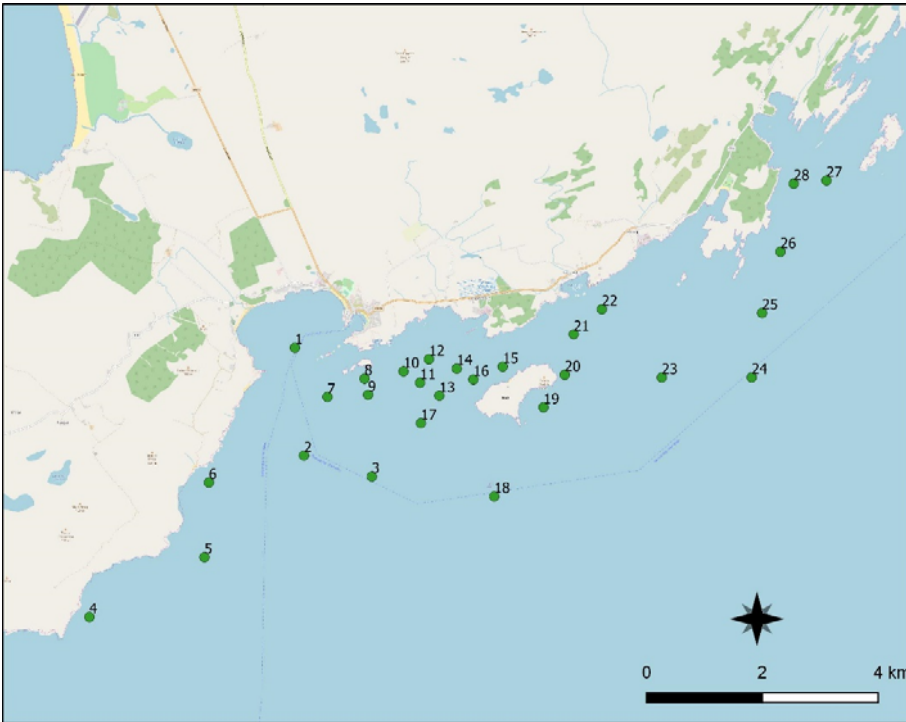


Figure 1. Initially planned 2019 sampling areas in the Sounds of Islay and Jura.



**Figure 2.** Drop down video stations surveyed in 2019 around Islay and Jura (start waypoints).

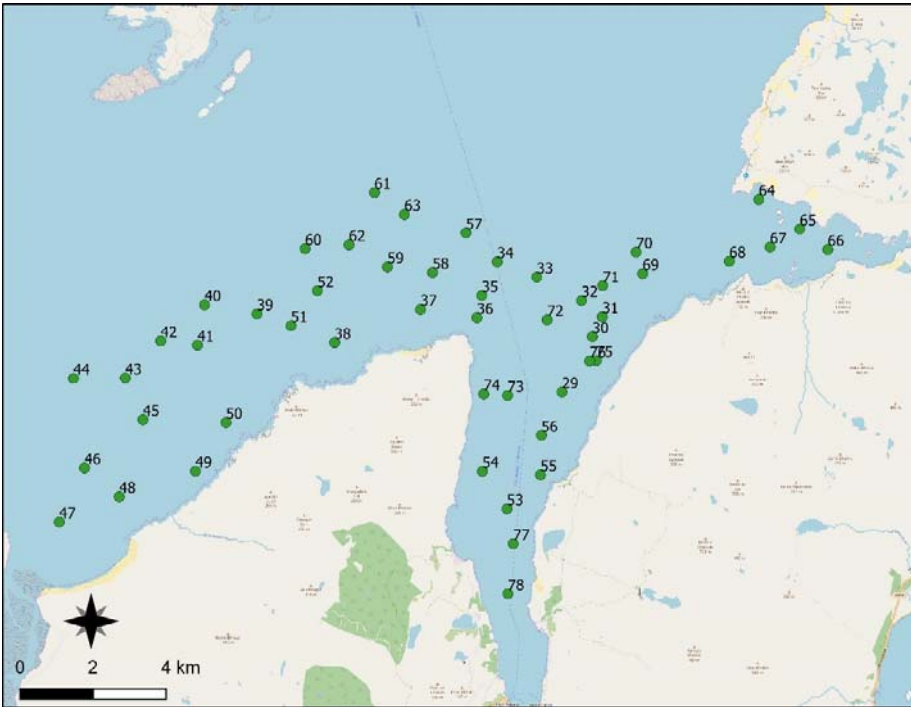


**Figure 3.** 2019 Drop down video stations (with station numbers) around Port Ellen and south east Islay.



**Figure 4.** 2019 Drop down video stations (with station numbers) around south Sound of Islay.

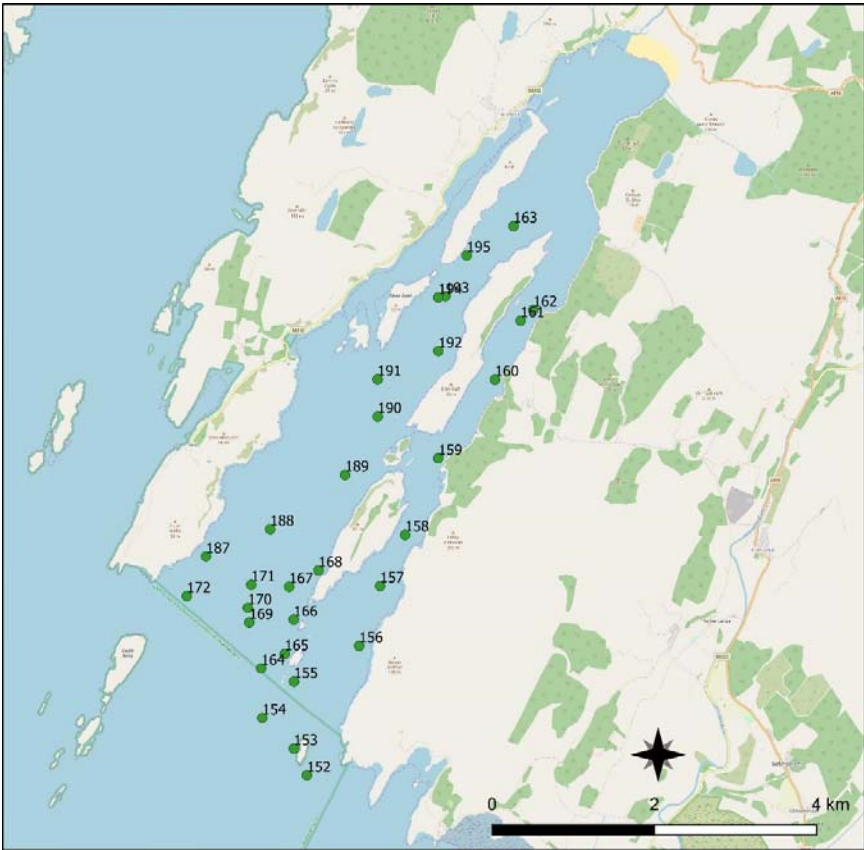




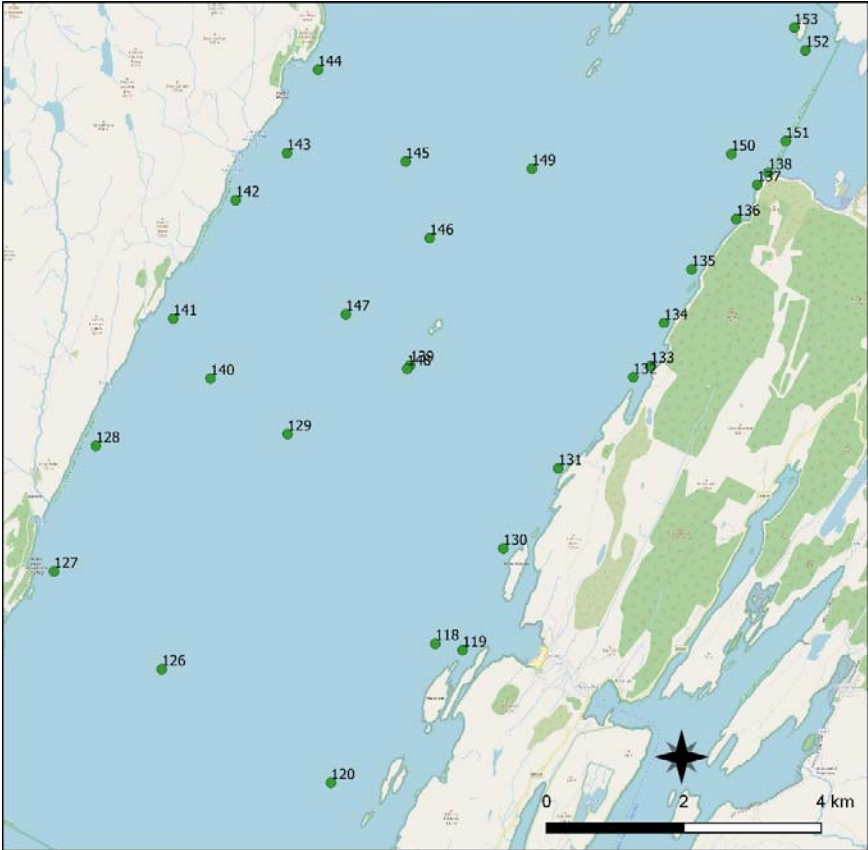
**Figure 5.** 2019 Drop down video stations (with station numbers) around north Sound of Islay.



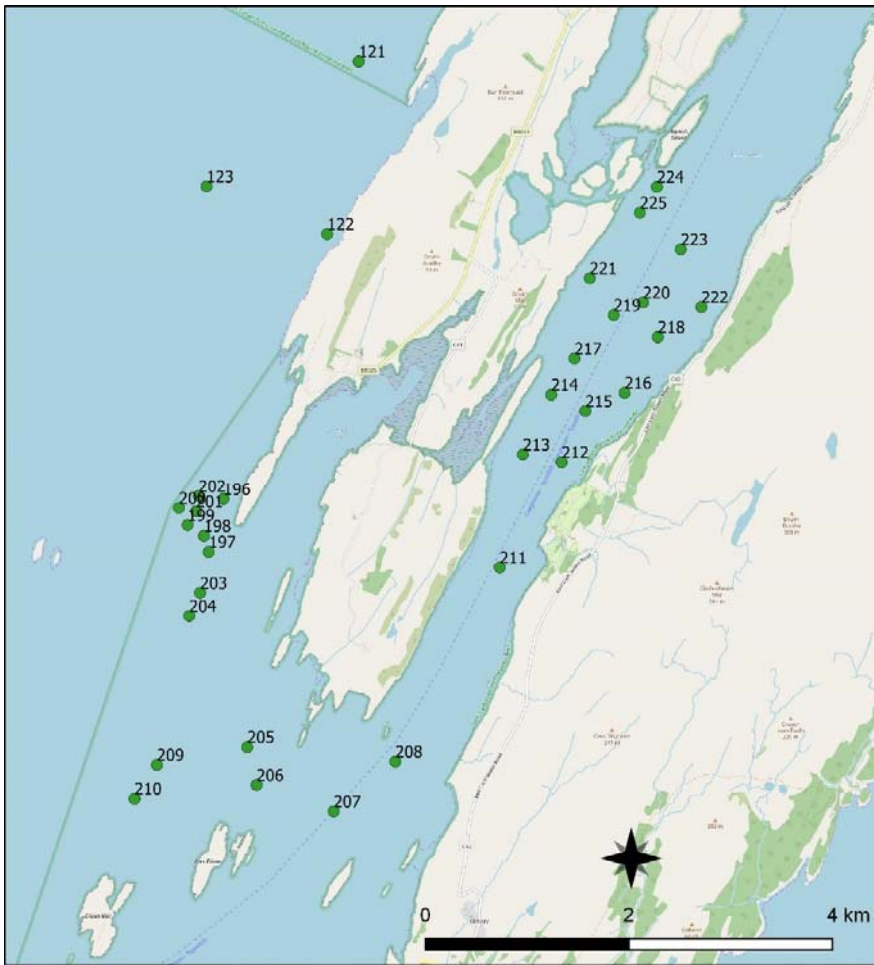
**Figure 6.** 2019 Drop down video stations (with station numbers) around north west Jura.



**Figure 7.** 2019 Drop down video stations (with station numbers) around Loch Craignish.



**Figure 8.** 2019 Drop down video stations (with station numbers) around north Sound of Jura.



**Figure 9.** 2019 Drop down video stations (with station numbers) around south east Sound of Jura and Loch Sween.



**Table 1 Islay and Jura sampling station locations (from hand held GPS waypoints), June 2019**

Project code	Survey area	Station ref.	Site name	Camera gear code	Date	Start time (UTC)	Start Lat.	Start Long.	End time (UTC)	End Lat.	End Long.
MS EMFF	Islay & Jura	1	South Islay	EMFF 2	21/06/2019	09:21:47	55.623878	-6.203559	09:30:01	55.623363	-6.201740
MS EMFF	Islay & Jura	2	South Islay	EMFF 2	21/06/2019	09:41:18	55.607222	-6.201078	09:46:35	55.607596	-6.199071
MS EMFF	Islay & Jura	3	South Islay	EMFF 2	21/06/2019	09:56:22	55.603981	-6.182502	10:01:28	55.604094	-6.180940
MS EMFF	Islay & Jura	4	South Islay	EMFF 2	21/06/2019	10:33:30	55.582290	-6.259784	10:39:06	55.582075	-6.258872
MS EMFF	Islay & Jura	5	South Islay	EMFF 2	21/06/2019	10:52:37	55.591540	-6.228297	10:58:06	55.591654	-6.226451
MS EMFF	Islay & Jura	6	South Islay	EMFF 2	21/06/2019	11:07:00	55.603070	-6.227082	11:12:19	55.602512	-6.226434
MS EMFF	Islay & Jura	7	South Islay	EMFF 2	21/06/2019	11:28:05	55.616279	-6.194653	11:33:17	55.616310	-6.193906
MS EMFF	Islay & Jura	8	South Islay	EMFF 2	21/06/2019	11:40:12	55.619136	-6.184500	11:49:42	55.618506	-6.182403
MS EMFF	Islay & Jura	9	South Islay	EMFF 2	21/06/2019	11:55:13	55.616612	-6.183522	12:00:27	55.616256	-6.184636
MS EMFF	Islay & Jura	10	South Islay	EMFF 2	21/06/2019	12:07:37	55.620255	-6.173829	12:13:03	55.620091	-6.172415
MS EMFF	Islay & Jura	11	South Islay	EMFF 2	21/06/2019	12:17:13	55.618516	-6.169303	12:22:36	55.618730	-6.168530
MS EMFF	Islay & Jura	12	South Islay	EMFF 2	21/06/2019	12:28:59	55.622123	-6.166886	12:34:18	55.621931	-6.165920
MS EMFF	Islay & Jura	13	South Islay	EMFF 2	21/06/2019	13:03:12	55.616472	-6.164029	13:08:50	55.615606	-6.163856
MS EMFF	Islay & Jura	14	South Islay	EMFF 2	21/06/2019	13:17:04	55.620682	-6.159260	13:23:42	55.620411	-6.158621
MS EMFF	Islay & Jura	15	South Islay	EMFF 2	21/06/2019	13:30:08	55.620981	-6.146689	13:34:30	55.620547	-6.146898
MS EMFF	Islay & Jura	16	South Islay	EMFF 2	21/06/2019	13:39:52	55.619002	-6.154722	13:45:04	55.618030	-6.154009
MS EMFF	Islay & Jura	17	South Islay	EMFF 2	21/06/2019	13:53:13	55.612242	-6.169069	13:58:25	55.611671	-6.168854
MS EMFF	Islay & Jura	18	South Islay	EMFF 2	21/06/2019	14:10:12	55.600934	-6.149020	14:15:02	55.600699	-6.148562
MS EMFF	Islay & Jura	19	South Islay	EMFF 2	21/06/2019	14:27:19	55.614669	-6.135535	14:32:59	55.614251	-6.134819
MS EMFF	Islay & Jura	20	South Islay	EMFF 2	21/06/2019	14:40:27	55.619733	-6.129711	14:45:57	55.620361	-6.129248
MS EMFF	Islay & Jura	21	South Islay	EMFF 2	21/06/2019	14:53:58	55.625963	-6.127262	14:59:11	55.626266	-6.126765
MS EMFF	Islay & Jura	22	South Islay	EMFF 2	21/06/2019	15:05:03	55.629848	-6.119568	15:10:19	55.629823	-6.118458
MS EMFF	Islay & Jura	23	South Islay	EMFF 2	21/06/2019	15:21:18	55.619318	-6.103157	15:26:27	55.619433	-6.102234
MS EMFF	Islay & Jura	24	South Islay	EMFF 2	21/06/2019	15:37:46	55.619327	-6.078571	15:43:02	55.619700	-6.077398
MS EMFF	Islay & Jura	25	South Islay	EMFF 2	21/06/2019	15:52:15	55.629275	-6.075714	15:57:18	55.629543	-6.074094
MS EMFF	Islay & Jura	26	South Islay	EMFF 2	21/06/2019	16:04:43	55.638734	-6.070715	16:09:55	55.638979	-6.069657
MS EMFF	Islay & Jura	27	South Islay	EMFF 2	21/06/2019	16:19:07	55.649720	-6.058101	16:24:35	55.649741	-6.057145
MS EMFF	Islay & Jura	28	South Islay	EMFF 2	21/06/2019	16:30:38	55.649234	-6.067079	16:35:36	55.649463	-6.067445
MS EMFF	Islay & Jura	29	Sound of Islay North	EMFF 1	22/06/2019	10:14:52	55.924140	-6.081137	10:20:16	55.923190	-6.081526
MS EMFF	Islay & Jura	30	Sound of Islay North	EMFF 1	22/06/2019	10:34:48	55.937687	-6.067883	10:43:46	55.936478	-6.067821
MS EMFF	Islay & Jura	31	Sound of Islay North	EMFF 1	22/06/2019	10:50:54	55.942585	-6.063530	10:56:45	55.942079	-6.063822
MS EMFF	Islay & Jura	32	Sound of Islay North	EMFF 1	22/06/2019	11:05:55	55.946542	-6.072611	11:11:33	55.946439	-6.071688
MS EMFF	Islay & Jura	33	Sound of Islay North	EMFF 1	22/06/2019	11:22:45	55.952285	-6.092175	11:28:12	55.952241	-6.091092

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MS EMFF	Islay & Jura	34	Sound of Islay North	EMFF 1	22/06/2019	11:37:24	55.956036	-6.109486	11:41:05	55.956345	-6.108971
MS EMFF	Islay & Jura	35	Sound of Islay North	EMFF 1	22/06/2019	11:49:33	55.947774	-6.116237	11:54:40	55.947994	-6.115447
MS EMFF	Islay & Jura	36	Sound of Islay North	EMFF 1	22/06/2019	12:01:30	55.942384	-6.118361	12:06:54	55.942210	-6.117080
MS EMFF	Islay & Jura	37	Sound of Islay North	EMFF 1	22/06/2019	12:17:23	55.944378	-6.143082	12:22:37	55.944949	-6.144000
MS EMFF	Islay & Jura	38	Sound of Islay North	EMFF 1	22/06/2019	12:37:20	55.936254	-6.180656	12:42:34	55.936725	-6.181972
MS EMFF	Islay & Jura	39	Sound of Islay North	EMFF 1	22/06/2019	13:15:40	55.943289	-6.214669	13:20:51	55.943467	-6.215910
MS EMFF	Islay & Jura	40	Sound of Islay North	EMFF 1	22/06/2019	13:32:18	55.945508	-6.237568	13:36:26	55.945542	-6.238794
MS EMFF	Islay & Jura	41	Sound of Islay North	EMFF 1	22/06/2019	13:49:45	55.935606	-6.240687	13:53:47	55.935872	-6.241463
MS EMFF	Islay & Jura	42	Sound of Islay North	EMFF 1	22/06/2019	14:05:16	55.936650	-6.256752	14:08:25	55.936676	-6.257586
MS EMFF	Islay & Jura	43	Sound of Islay North	EMFF 1	22/06/2019	14:21:09	55.927569	-6.272263	14:30:48	55.927949	-6.274084
MS EMFF	Islay & Jura	44	Sound of Islay North	EMFF 1	22/06/2019	14:41:50	55.927480	-6.294984	14:47:07	55.927474	-6.297072
MS EMFF	Islay & Jura	45	Sound of Islay North	EMFF 1	22/06/2019	15:03:00	55.917404	-6.264548	15:06:08	55.917496	-6.265036
MS EMFF	Islay & Jura	46	Sound of Islay North	EMFF 1	22/06/2019	15:21:10	55.905564	-6.290112	15:25:17	55.906035	-6.290169
MS EMFF	Islay & Jura	47	Sound of Islay North	EMFF 1	22/06/2019	15:39:23	55.892318	-6.301161	15:42:15	55.892463	-6.301337
MS EMFF	Islay & Jura	48	Sound of Islay North	EMFF 1	22/06/2019	15:53:50	55.898461	-6.274903	15:56:57	55.898787	-6.275065
MS EMFF	Islay & Jura	49	Sound of Islay North	EMFF 1	22/06/2019	16:10:03	55.904772	-6.241572	16:14:14	55.905237	-6.241911
MS EMFF	Islay & Jura	50	Sound of Islay North	EMFF 1	22/06/2019	16:23:52	55.916712	-6.228192	16:29:01	55.917209	-6.228845
MS EMFF	Islay & Jura	51	Sound of Islay North	EMFF 1	22/06/2019	16:45:55	55.940414	-6.199735	16:51:11	55.940895	-6.200163
MS EMFF	Islay & Jura	52	Sound of Islay North	EMFF 1	22/06/2019	17:01:01	55.948931	-6.188181	17:04:15	55.949304	-6.188341
MS EMFF	Islay & Jura	53	Sound of Islay North	EMFF 1	23/06/2019	07:35:17	55.895518	-6.105230	07:40:37	55.896101	-6.105992
MS EMFF	Islay & Jura	54	Sound of Islay North	EMFF 1	23/06/2019	07:49:16	55.904729	-6.115975	07:55:00	55.905073	-6.117103
MS EMFF	Islay & Jura	55	Sound of Islay North	EMFF 1	23/06/2019	08:06:12	55.903875	-6.090565	08:15:26	55.902759	-6.092795
MS EMFF	Islay & Jura	56	Sound of Islay North	EMFF 1	23/06/2019	08:24:46	55.913532	-6.090115	08:30:17	55.913036	-6.091293
MS EMFF	Islay & Jura	57	Sound of Islay North	EMFF 1	23/06/2019	09:03:21	55.963138	-6.123187	09:08:41	55.962704	-6.122363
MS EMFF	Islay & Jura	58	Sound of Islay North	EMFF 1	23/06/2019	09:19:32	55.953434	-6.137788	09:23:51	55.953087	-6.137317
MS EMFF	Islay & Jura	59	Sound of Islay North	EMFF 1	23/06/2019	09:34:16	55.954800	-6.157545	09:37:41	55.954750	-6.156971
MS EMFF	Islay & Jura	60	Sound of Islay North	EMFF 1	23/06/2019	09:54:36	55.959224	-6.193543	09:59:47	55.959539	-6.192735
MS EMFF	Islay & Jura	61	Sound of Islay North	EMFF 1	23/06/2019	10:16:13	55.972963	-6.163207	10:21:28	55.973304	-6.163127
MS EMFF	Islay & Jura	62	Sound of Islay North	EMFF 1	23/06/2019	10:35:33	55.960180	-6.174365	10:40:44	55.960782	-6.174069
MS EMFF	Islay & Jura	63	Sound of Islay North	EMFF 1	23/06/2019	10:53:14	55.967638	-6.150117	10:58:15	55.967604	-6.149018
MS EMFF	Islay & Jura	64	Sound of Islay North	EMFF 1	23/06/2019	11:46:18	55.971268	-5.995003	11:51:22	55.972022	-5.995394
MS EMFF	Islay & Jura	65	Sound of Islay North	EMFF 1	23/06/2019	12:02:54	55.964052	-5.977087	12:08:04	55.964110	-5.978235
MS EMFF	Islay & Jura	66	Sound of Islay North	EMFF 1	23/06/2019	12:16:14	55.959026	-5.964813	12:21:29	55.959342	-5.966084
MS EMFF	Islay & Jura	67	Sound of Islay North	EMFF 1	23/06/2019	12:32:49	55.959631	-5.990081	12:38:03	55.959748	-5.991407
MS EMFF	Islay & Jura	68	Sound of Islay North	EMFF 1	23/06/2019	12:47:04	55.956187	-6.007896	12:52:15	55.956131	-6.009217

Project code	Survey area	Station ref.	Site name	Camera gear code	Date	Start time (UTC)	Start Lat.	Start Long.	End time (UTC)	End Lat.	End Long.
MS EMFF	Islay & Jura	69	Sound of Islay North	EMFF 1	23/06/2019	13:05:29	55.953148	-6.045876	13:10:36	55.953171	-6.047413
MS EMFF	Islay & Jura	70	Sound of Islay North	EMFF 1	23/06/2019	13:23:14	55.958403	-6.048716	13:28:24	55.958551	-6.049808
MS EMFF	Islay & Jura	71	Sound of Islay North	EMFF 1	23/06/2019	13:39:01	55.950156	-6.063348	13:44:18	55.950666	-6.064525
MS EMFF	Islay & Jura	72	Sound of Islay North	EMFF 1	23/06/2019	13:55:31	55.941854	-6.087640	14:01:12	55.941449	-6.088450
MS EMFF	Islay & Jura	73	Sound of Islay North	EMFF 1	23/06/2019	14:15:27	55.923285	-6.104959	14:20:44	55.923643	-6.105717
MS EMFF	Islay & Jura	74	Sound of Islay North	EMFF 1	23/06/2019	14:26:28	55.923638	-6.115402	14:31:59	55.924462	-6.115628
MS EMFF	Islay & Jura	75	Sound of Islay North	EMFF 1	23/06/2019	14:50:07	55.931852	-6.066093	15:00:02	55.933712	-6.066499
MS EMFF	Islay & Jura	76	Sound of Islay North	EMFF 1	23/06/2019	15:06:40	55.931753	-6.069038	15:11:51	55.932755	-6.068721
MS EMFF	Islay & Jura	77	Sound of Islay North	EMFF 1	23/06/2019	15:48:53	55.886924	-6.102488	15:54:08	55.887942	-6.102772
MS EMFF	Islay & Jura	78	Sound of Islay Centre	EMFF 1	23/06/2019	16:10:26	55.874665	-6.104854	16:12:18	55.875948	-6.104892
MS EMFF	Islay & Jura	79	South Islay Sound	EMFF 1	24/06/2019	07:36:22	55.825054	-6.085271	07:41:40	55.825765	-6.085223
MS EMFF	Islay & Jura	80	South Islay Sound	EMFF 1	24/06/2019	07:48:35	55.818926	-6.081168	07:52:18	55.818433	-6.080443
MS EMFF	Islay & Jura	81	South Islay Sound	EMFF 1	24/06/2019	08:00:50	55.820716	-6.101295	08:07:03	55.821211	-6.101826
MS EMFF	Islay & Jura	82	South Islay Sound	EMFF 1	24/06/2019	08:12:30	55.817162	-6.099362	08:22:46	55.818007	-6.100173
MS EMFF	Islay & Jura	83	South Islay Sound	EMFF 1	24/06/2019	08:27:28	55.815044	-6.098346	08:33:08	55.814278	-6.098990
MS EMFF	Islay & Jura	84	South Islay Sound	EMFF 1	24/06/2019	08:44:28	55.822203	-6.101921	08:49:17	55.821161	-6.101853
MS EMFF	Islay & Jura	85	South Islay Sound	EMFF 1	24/06/2019	08:57:12	55.827241	-6.101522	09:01:21	55.826344	-6.101655
MS EMFF	Islay & Jura	86	South Islay Sound	EMFF 1	24/06/2019	09:11:14	55.813737	-6.093243	09:16:27	55.812654	-6.092630
MS EMFF	Islay & Jura	87	South Islay Sound	EMFF 1	24/06/2019	09:25:02	55.808384	-6.084269	09:30:28	55.807568	-6.083271
MS EMFF	Islay & Jura	88	South Islay Sound	EMFF 1	24/06/2019	09:38:01	55.804998	-6.093561	09:43:18	55.804044	-6.092811
MS EMFF	Islay & Jura	89	South Islay Sound	EMFF 1	24/06/2019	09:53:13	55.800745	-6.073147	09:58:26	55.800190	-6.071802
MS EMFF	Islay & Jura	90	South Islay Sound	EMFF 1	24/06/2019	10:07:55	55.792600	-6.085830	10:13:18	55.792241	-6.084679
MS EMFF	Islay & Jura	91	South Islay Sound	EMFF 1	24/06/2019	10:30:51	55.799416	-6.050151	10:36:02	55.799281	-6.048772
MS EMFF	Islay & Jura	92	South Islay Sound	EMFF 1	24/06/2019	10:45:28	55.789833	-6.045378	10:50:40	55.788765	-6.046193
MS EMFF	Islay & Jura	93	South Islay Sound	EMFF 1	24/06/2019	11:07:11	55.783543	-6.070150	11:12:23	55.783065	-6.069001
MS EMFF	Islay & Jura	94	South Islay Sound	EMFF 1	24/06/2019	11:20:25	55.782739	-6.058481	11:21:41	55.782579	-6.057630
MS EMFF	Islay & Jura	95	South Islay Sound	EMFF 1	24/06/2019	11:30:14	55.772685	-6.052827	11:35:41	55.772558	-6.051416
MS EMFF	Islay & Jura	96	South Islay Sound	EMFF 1	24/06/2019	12:11:01	55.786504	-5.962405	12:16:08	55.786091	-5.963617
MS EMFF	Islay & Jura	97	South Islay Sound	EMFF 1	24/06/2019	12:26:12	55.790135	-5.986403	12:31:22	55.790358	-5.986354
MS EMFF	Islay & Jura	98	South Islay Sound	EMFF 1	24/06/2019	12:39:41	55.785086	-5.994595	12:45:03	55.785871	-5.994771
MS EMFF	Islay & Jura	99	South Islay Sound	EMFF 1	24/06/2019	12:58:14	55.789266	-6.000721	13:05:21	55.789111	-6.001994
MS EMFF	Islay & Jura	100	South Islay Sound	EMFF 1	24/06/2019	13:16:21	55.784721	-6.022735	13:21:30	55.785151	-6.023620
MS EMFF	Islay & Jura	101	South Islay Sound	EMFF 1	24/06/2019	13:26:26	55.787574	-6.022457	13:31:41	55.788090	-6.023275
MS EMFF	Islay & Jura	102	South Islay Sound	EMFF 1	24/06/2019	13:36:25	55.789931	-6.017749	13:41:39	55.790551	-6.017642
MS EMFF	Islay & Jura	103	South Islay Sound	EMFF 1	24/06/2019	13:50:07	55.790588	-6.030491	13:56:26	55.790006	-6.029957

Project code	Survey area	Station ref.	Site name	Camera gear code	Date	Start time (UTC)	Start Lat.	Start Long.	End time (UTC)	End Lat.	End Long.
MS EMFF	Islay & Jura	104	South Islay Sound	EMFF 1	24/06/2019	14:01:02	55.787690	-6.032130	14:06:28	55.788318	-6.032546
MS EMFF	Islay & Jura	105	South Islay Sound	EMFF 1	24/06/2019	14:13:24	55.784789	-6.029727	14:18:46	55.785316	-6.030410
MS EMFF	Islay & Jura	106	South Islay Sound	EMFF 1	24/06/2019	14:24:39	55.786209	-6.037871	14:30:07	55.786556	-6.038736
MS EMFF	Islay & Jura	107	South East of Islay	EMFF 1	24/06/2019	15:03:57	55.734872	-5.993977	15:09:19	55.735376	-5.992818
MS EMFF	Islay & Jura	108	South East of Islay	EMFF 1	24/06/2019	15:27:59	55.743657	-6.033645	15:33:08	55.743879	-6.034716
MS EMFF	Islay & Jura	109	South East of Islay	EMFF 1	24/06/2019	15:47:24	55.750621	-6.007328	15:50:34	55.750599	-6.008181
MS EMFF	Islay & Jura	110	South East of Islay	EMFF 1	25/06/2019	09:19:11	55.670017	-6.009417	09:25:33	55.668984	-6.010052
MS EMFF	Islay & Jura	111	South East of Islay	EMFF 1	25/06/2019	09:44:15	55.693373	-6.018686	09:50:47	55.692375	-6.018722
MS EMFF	Islay & Jura	112	South East of Islay	EMFF 1	25/06/2019	09:59:56	55.702896	-6.010736	10:05:10	55.702083	-6.010791
MS EMFF	Islay & Jura	113	South East of Islay	EMFF 1	25/06/2019	10:27:17	55.708290	-5.971280	10:32:26	55.707628	-5.971397
MS EMFF	Islay & Jura	114	South East of Islay	EMFF 1	25/06/2019	10:55:28	55.707849	-6.028234	11:00:41	55.706838	-6.028292
MS EMFF	Islay & Jura	115	South East of Islay	EMFF 1	25/06/2019	11:16:02	55.727643	-6.018230	11:21:17	55.726907	-6.017986
MS EMFF	Islay & Jura	116	South Sound of Jura	EMFF 1	25/06/2019	12:55:35	55.827075	-5.806614	13:04:51	55.826110	-5.807156
MS EMFF	Islay & Jura	117	South Sound of Jura	EMFF 1	25/06/2019	13:37:13	55.835776	-5.774568	13:46:23	55.834952	-5.774664
MS EMFF	Islay & Jura	118	Sound of Jura - Upper	EMFF 1	26/06/2019	08:33:21	56.031198	-5.661646	08:38:51	56.031159	-5.663062
MS EMFF	Islay & Jura	119	Sound of Jura - Upper	EMFF 1	26/06/2019	08:47:51	56.030363	-5.655244	08:53:10	56.029880	-5.656804
MS EMFF	Islay & Jura	120	Sound of Jura - Upper	EMFF 1	26/06/2019	09:18:06	56.013054	-5.685990	09:22:36	56.014015	-5.685790
MS EMFF	Islay & Jura	121	Sound of Jura - Upper	EMFF 1	26/06/2019	09:45:43	55.989318	-5.695453	09:51:17	55.990093	-5.695966
MS EMFF	Islay & Jura	122	Sound of Jura - Upper	EMFF 1	26/06/2019	10:08:04	55.974152	-5.700412	10:13:14	55.973344	-5.700594
MS EMFF	Islay & Jura	123	Sound of Jura - Upper	EMFF 1	26/06/2019	10:24:30	55.978348	-5.719371	10:32:48	55.978875	-5.719969
MS EMFF	Islay & Jura	124	Sound of Jura - Upper	EMFF 1	26/06/2019	10:55:13	55.992501	-5.760749	11:04:23	55.993274	-5.761443
MS EMFF	Islay & Jura	125	Sound of Jura - Upper	EMFF 1	26/06/2019	11:26:09	56.024706	-5.764748	11:34:36	56.023555	-5.764436
MS EMFF	Islay & Jura	126	Sound of Jura - Upper	EMFF 1	26/06/2019	11:51:31	56.027896	-5.725498	12:01:16	56.026744	-5.727540
MS EMFF	Islay & Jura	127	Sound of Jura - Upper	EMFF 1	26/06/2019	12:58:54	56.040669	-5.750642	13:08:03	56.039205	-5.750551
MS EMFF	Islay & Jura	128	Sound of Jura - Upper	EMFF 1	26/06/2019	13:25:51	56.057010	-5.740872	13:29:41	56.056233	-5.741345
MS EMFF	Islay & Jura	129	Sound of Jura - Upper	EMFF 1	26/06/2019	13:50:45	56.058554	-5.696116	13:56:03	56.057644	-5.696078
MS EMFF	Islay & Jura	130	Sound of Jura - Upper	EMFF 1	26/06/2019	14:21:47	56.043638	-5.645749	14:31:54	56.042530	-5.646284
MS EMFF	Islay & Jura	131	Sound of Jura - Upper	EMFF 1	26/06/2019	14:50:03	56.054114	-5.632925	14:55:46	56.053552	-5.632899
MS EMFF	Islay & Jura	132	Sound of Jura - Upper	EMFF 1	26/06/2019	15:10:05	56.065978	-5.615430	15:19:15	56.065666	-5.616771
MS EMFF	Islay & Jura	133	Sound of Jura - Upper	EMFF 1	26/06/2019	15:25:24	56.067431	-5.611372	15:32:57	56.066950	-5.612740
MS EMFF	Islay & Jura	134	Sound of Jura - Upper	EMFF 1	26/06/2019	15:44:43	56.073042	-5.608239	15:53:53	56.074541	-5.608137
MS EMFF	Islay & Jura	135	Sound of Jura - Upper	EMFF 1	26/06/2019	16:05:30	56.080044	-5.601788	16:10:01	56.080376	-5.600703
MS EMFF	Islay & Jura	136	Loch Craignish and Loch Crinan	EMFF 1	26/06/2019	16:18:18	56.086609	-5.591359	16:27:44	56.088055	-5.590704

Project code	Survey area	Station ref.	Site name	Camera gear code	Date	Start time (UTC)	Start Lat.	Start Long.	End time (UTC)	End Lat.	End Long.
MS EMFF	Islay & Jura	137	Loch Craignish and Loch Crinan	EMFF 1	26/06/2019	16:36:02	56.091055	-5.586480	16:44:53	56.092018	-5.586082
MS EMFF	Islay & Jura	138	Loch Craignish and Loch Crinan	EMFF 1	26/06/2019	16:51:16	56.092645	-5.583930	17:00:26	56.092992	-5.583597
MS EMFF	Islay & Jura	139	Sound of Jura - Upper	EMFF 1	27/06/2019	07:52:59	56.067572	-5.667519	07:53:57	56.067690	-5.668520
MS EMFF	Islay & Jura	140	Sound of Jura - Upper	EMFF 1	27/06/2019	08:19:07	56.065809	-5.714107	08:25:23	56.066544	-5.713829
MS EMFF	Islay & Jura	141	Sound of Jura - Upper	EMFF 1	27/06/2019	08:38:26	56.073637	-5.722816	08:43:49	56.074236	-5.722112
MS EMFF	Islay & Jura	142	Sound of Jura - Upper	EMFF 1	27/06/2019	08:57:53	56.089052	-5.708250	09:03:04	56.089927	-5.708108
MS EMFF	Islay & Jura	143	Sound of Jura - Upper	EMFF 1	27/06/2019	09:16:25	56.095192	-5.696276	09:21:34	56.095720	-5.696616
MS EMFF	Islay & Jura	144	Sound of Jura - Upper	EMFF 1	27/06/2019	09:32:18	56.106063	-5.689026	09:34:51	56.106373	-5.688527
MS EMFF	Islay & Jura	145	Sound of Jura - Upper	EMFF 1	27/06/2019	09:52:53	56.094098	-5.668557	09:58:26	56.094932	-5.668484
MS EMFF	Islay & Jura	146	Sound of Jura - Upper	EMFF 1	27/06/2019	10:13:37	56.084099	-5.662908	10:19:04	56.084808	-5.661970
MS EMFF	Islay & Jura	147	Sound of Jura - Upper	EMFF 1	27/06/2019	10:33:20	56.074192	-5.682524	10:38:36	56.074918	-5.683749
MS EMFF	Islay & Jura	148	Sound of Jura - Upper	EMFF 1	27/06/2019	10:55:19	56.067078	-5.668179	11:03:28	56.067891	-5.669326
MS EMFF	Islay & Jura	149	Sound of Jura - Upper	EMFF 1	27/06/2019	11:25:56	56.093175	-5.639083	11:31:20	56.093849	-5.639933
MS EMFF	Islay & Jura	150	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	12:00:00	56.095067	-5.592500	12:05:27	56.094816	-5.592964
MS EMFF	Islay & Jura	151	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	12:34:52	56.096739	-5.579816	12:40:07	56.096336	-5.579889
MS EMFF	Islay & Jura	152	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	12:52:34	56.108579	-5.575246	12:58:02	56.108127	-5.575161
MS EMFF	Islay & Jura	153	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	13:36:27	56.111550	-5.577836	13:41:32	56.111235	-5.577691
MS EMFF	Islay & Jura	154	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	13:50:27	56.114932	-5.584089	13:57:31	56.113639	-5.584109
MS EMFF	Islay & Jura	155	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	14:06:34	56.118949	-5.577804	14:11:51	56.118511	-5.578163
MS EMFF	Islay & Jura	156	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	14:20:55	56.122903	-5.564888	14:26:06	56.122456	-5.565140
MS EMFF	Islay & Jura	157	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	14:35:55	56.129513	-5.560725	14:40:59	56.129023	-5.560947
MS EMFF	Islay & Jura	158	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	14:49:18	56.135173	-5.555766	14:54:29	56.134828	-5.556441
MS EMFF	Islay & Jura	159	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	15:04:18	56.143627	-5.549181	15:10:16	56.143339	-5.550095



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MS EMFF	Islay & Jura	160	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	15:21:05	56.152331	-5.537972	15:26:18	56.152309	-5.538874
MS EMFF	Islay & Jura	161	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	15:36:38	56.158841	-5.532872	15:41:06	56.158699	-5.531869
MS EMFF	Islay & Jura	162	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	15:51:23	56.160021	-5.530370	15:56:47	56.160582	-5.530223
MS EMFF	Islay & Jura	163	Loch Craignish and Loch Crinan	EMFF 1	27/06/2019	16:09:42	56.169290	-5.534294	16:13:44	56.169162	-5.535023
MS EMFF	Islay & Jura	164	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	07:34:47	56.120417	-5.584301	07:40:10	56.120882	-5.585896
MS EMFF	Islay & Jura	165	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	07:48:08	56.122033	-5.579646	07:53:18	56.121954	-5.581295
MS EMFF	Islay & Jura	166	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	08:03:03	56.125804	-5.577841	08:16:00	56.126683	-5.580718
MS EMFF	Islay & Jura	167	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	08:24:44	56.129443	-5.578769	08:27:59	56.129672	-5.579874
MS EMFF	Islay & Jura	168	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	08:34:45	56.131232	-5.572949	08:39:51	56.131259	-5.574220
MS EMFF	Islay & Jura	169	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	08:52:50	56.125489	-5.586673	08:58:01	56.125495	-5.588063
MS EMFF	Islay & Jura	170	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	09:06:05	56.127116	-5.586943	09:09:19	56.127549	-5.587952
MS EMFF	Islay & Jura	171	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	09:18:06	56.129658	-5.586262	09:25:03	56.128999	-5.588410
MS EMFF	Islay & Jura	172	Loch Craignish and Loch Crinan	EMFF 1	28/06/2019	09:33:38	56.128416	-5.599057	09:39:14	56.128758	-5.600742
MS EMFF	Islay & Jura	173	North Jura	EMFF 1	28/06/2019	10:34:01	56.137850	-5.759844	10:39:42	56.137778	-5.761395
MS EMFF	Islay & Jura	174	North Jura	EMFF 1	28/06/2019	10:52:29	56.134648	-5.764620	11:01:42	56.134722	-5.766888
MS EMFF	Islay & Jura	175	North Jura	EMFF 1	28/06/2019	11:14:54	56.129221	-5.772020	11:23:31	56.129473	-5.773781
MS EMFF	Islay & Jura	176	North Jura	EMFF 1	28/06/2019	11:42:03	56.124755	-5.786549	11:47:12	56.124883	-5.787239
MS EMFF	Islay & Jura	177	North Jura	EMFF 1	28/06/2019	12:02:47	56.133606	-5.790833	12:08:41	56.134034	-5.791238
MS EMFF	Islay & Jura	178	North Jura	EMFF 1	28/06/2019	12:36:02	56.138521	-5.788380	12:42:10	56.139179	-5.787978
MS EMFF	Islay & Jura	179	North Jura	EMFF 1	28/06/2019	12:58:53	56.141261	-5.774135	13:04:23	56.141930	-5.773835
MS EMFF	Islay & Jura	180	North Jura	EMFF 1	28/06/2019	14:00:29	56.087629	-5.915839	14:08:04	56.088464	-5.915122
MS EMFF	Islay & Jura	181	North Jura	EMFF 1	28/06/2019	14:16:47	56.091439	-5.929705	14:25:59	56.092170	-5.930177

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MS EMFF	Islay & Jura	182	North Jura	EMFF 1	28/06/2019	14:39:49	56.100067	-5.906396	14:45:27	56.100658	-5.906266
MS EMFF	Islay & Jura	183	North Jura	EMFF 1	28/06/2019	14:56:54	56.109779	-5.889628	15:02:04	56.110382	-5.889524
MS EMFF	Islay & Jura	184	North Jura	EMFF 1	28/06/2019	15:17:21	56.120317	-5.873397	15:21:49	56.120751	-5.873311
MS EMFF	Islay & Jura	185	North Jura	EMFF 1	28/06/2019	15:28:58	56.119429	-5.876427	15:34:43	56.120179	-5.876549
MS EMFF	Islay & Jura	186	North Jura	EMFF 1	28/06/2019	16:04:25	56.127552	-5.799541	16:09:40	56.128250	-5.799332
MS EMFF	Islay & Jura	187	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	07:34:32	56.132788	-5.595249	07:38:29	56.132266	-5.595936
MS EMFF	Islay & Jura	188	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	07:50:50	56.135790	-5.582515	07:56:19	56.135930	-5.582400
MS EMFF	Islay & Jura	189	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	08:04:18	56.141801	-5.567682	08:09:28	56.142249	-5.567428
MS EMFF	Islay & Jura	190	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	08:15:59	56.148242	-5.561211	08:21:00	56.148613	-5.560727
MS EMFF	Islay & Jura	191	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	08:26:59	56.152370	-5.561233	08:32:43	56.152711	-5.560781
MS EMFF	Islay & Jura	192	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	08:39:12	56.155482	-5.549179	08:42:22	56.155843	-5.548924
MS EMFF	Islay & Jura	193	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	08:48:07	56.161531	-5.547790	08:49:22	56.161559	-5.547610
MS EMFF	Islay & Jura	194	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	08:56:45	56.161394	-5.549196	09:01:52	56.161060	-5.549625
MS EMFF	Islay & Jura	195	Loch Craignish and Loch Crinan	EMFF 1	29/06/2019	09:08:34	56.166033	-5.543559	09:13:46	56.166053	-5.542510
MS EMFF	Islay & Jura	196	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	11:39:20	55.950789	-5.716709	11:48:30	55.951411	-5.717937
MS EMFF	Islay & Jura	197	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	11:56:39	55.946106	-5.719030	12:02:18	55.946666	-5.718781
MS EMFF	Islay & Jura	198	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	12:08:06	55.947510	-5.719781	12:13:20	55.947838	-5.719246
MS EMFF	Islay & Jura	199	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	12:20:42	55.948464	-5.722354	12:28:27	55.949384	-5.721917
MS EMFF	Islay & Jura	200	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	12:36:45	55.949979	-5.723711	12:42:01	55.950732	-5.724237
MS EMFF	Islay & Jura	201	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	13:08:41	55.949692	-5.721017	13:13:51	55.949812	-5.720122

Project code	Survey area	Station ref.	Site name	Camera gear code	Date	Start time (UTC)	Start Lat.	Start Long.	End time (UTC)	End Lat.	End Long.
MS EMFF	Islay & Jura	202	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	13:20:16	55.951062	-5.720614	13:25:32	55.950507	-5.720862
MS EMFF	Islay & Jura	203	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	13:34:13	55.942489	-5.720378	13:39:30	55.941937	-5.720521
MS EMFF	Islay & Jura	204	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	13:44:15	55.940469	-5.722091	13:49:39	55.939788	-5.722775
MS EMFF	Islay & Jura	205	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	14:00:39	55.928916	-5.712966	14:04:36	55.928449	-5.712817
MS EMFF	Islay & Jura	206	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	14:09:30	55.925566	-5.711509	14:14:43	55.924931	-5.710434
MS EMFF	Islay & Jura	207	Loch Sween	EMFF 1	29/06/2019	14:21:14	55.923268	-5.699386	14:26:18	55.922930	-5.698427
MS EMFF	Islay & Jura	208	Loch Sween	EMFF 1	29/06/2019	14:33:15	55.927649	-5.689692	14:38:29	55.927647	-5.689111
MS EMFF	Islay & Jura	209	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	14:55:34	55.927355	-5.727176	15:04:44	55.926024	-5.727701
MS EMFF	Islay & Jura	210	Sound of Jura and outer Loch Sween	EMFF 1	29/06/2019	15:09:14	55.924370	-5.730691	15:18:28	55.922811	-5.730370
MS EMFF	Islay & Jura	211	Loch Sween	EMFF 1	30/06/2019	09:28:37	55.944725	-5.673285	09:34:25	55.945459	-5.672504
MS EMFF	Islay & Jura	212	Loch Sween	EMFF 1	30/06/2019	09:42:58	55.954073	-5.663565	09:48:01	55.954742	-5.663274
MS EMFF	Islay & Jura	213	Loch Sween	EMFF 1	30/06/2019	09:54:07	55.954758	-5.669645	09:59:18	55.954998	-5.668500
MS EMFF	Islay & Jura	214	Loch Sween	EMFF 1	30/06/2019	10:08:19	55.960019	-5.665202	10:13:30	55.960076	-5.663885
MS EMFF	Islay & Jura	215	Loch Sween	EMFF 1	30/06/2019	10:20:27	55.958570	-5.659832	10:29:33	55.959674	-5.659730
MS EMFF	Islay & Jura	216	Loch Sween	EMFF 1	30/06/2019	10:34:47	55.960184	-5.653662	10:39:55	55.960966	-5.653664
MS EMFF	Islay & Jura	217	Loch Sween	EMFF 1	30/06/2019	10:46:17	55.963199	-5.661542	10:51:25	55.963834	-5.661024
MS EMFF	Islay & Jura	218	Loch Sween	EMFF 1	30/06/2019	10:57:59	55.965091	-5.648444	11:02:09	55.965760	-5.648382
MS EMFF	Islay & Jura	219	Loch Sween	EMFF 1	30/06/2019	11:07:56	55.967013	-5.655369	11:13:01	55.967490	-5.654433
MS EMFF	Islay & Jura	220	Loch Sween	EMFF 1	30/06/2019	11:17:29	55.968122	-5.650772	11:22:37	55.968728	-5.650215
MS EMFF	Islay & Jura	221	Loch Sween	EMFF 1	30/06/2019	11:28:37	55.970268	-5.659137	11:34:04	55.970689	-5.658650
MS EMFF	Islay & Jura	222	Loch Sween	EMFF 1	30/06/2019	11:42:39	55.967716	-5.641599	11:47:46	55.968442	-5.640752
MS EMFF	Islay & Jura	223	Loch Sween	EMFF 1	30/06/2019	11:53:46	55.972797	-5.644833	11:59:27	55.973657	-5.644344
MS EMFF	Islay & Jura	224	Loch Sween	EMFF 1	30/06/2019	12:06:30	55.978301	-5.648584	12:11:34	55.978860	-5.648312
MS EMFF	Islay & Jura	225	Loch Sween	EMFF 1	30/06/2019	12:16:18	55.976019	-5.651264	12:25:28	55.977018	-5.650551

Note: \* station 150 data for start time, latitude and longitude are from vessel navigation system due to missing hand held GPS waypoint

**Table 2 Islay and Jura sampling station descriptions, June 2019**

Station ref.	Site name	Date	Start depth (mBSL)	End depth (mBSL)	Vessel speed (knots)	Video notes Main substrate type	Video notes Flora and/or fauna
1	South Islay	21/06/2019	12.6	12.1	0.50	Coarse sand & patchy maerl in waves with whole shells	Patchy sparse live maerl with occasional <i>S. latissima</i>
2	South Islay	21/06/2019	19.4	19.3	0.50	Shelly sand with whole razor shells	Green algae
3	South Islay	21/06/2019	19.3	21.3	0.50	Slightly muddy sand with scattered shell debris	Patchy green algae
4	South Islay	21/06/2019	16.7	18.9	0.50	Rock, boulders & shell gravel	Foliose red & green algae, Echinus, brittlestars ( <i>O. nigra</i> ) with Alcyonium, sponges & hydroids on rock/boulders
5	South Islay	21/06/2019	22.6	22.1	0.50	Sand with shelly maerl gravel	Mostly dead maerl, sparse algal 'fluff'
6	South Islay	21/06/2019	11.4	13.7	0.50	Sand waves & shell gravel with whole razor shells	Sparse foliose algae and <i>S. latissima</i>
7	South Islay	21/06/2019	14.2	21.1	0.50	Coarse shelly sand with patches of maerl & gravel, then boulders 3:46 onwards	Sparse live maerl gravel, kelp on rock
8	South Islay	21/06/2019	11.5	11.4	0.50	Bedrock with patches of shell gravel, from 5:52 off reef onto sand with maerl gravel, 7:55 back to reef	Coralline algae, kelp, Echinus on reef, sparse live maerl on sand
9	South Islay	21/06/2019	18	18.7	0.50	Sand & pebbles, from 0:32 shelly sand	Foliose algae, occasional <i>S. latissima</i> & Echinus
10	South Islay	21/06/2019	16.5	15.3	0.50	Maerl gravel with shells	Sparse live maerl, foliose algae & occasional <i>S. latissima</i>
11	South Islay	21/06/2019	14.5	14.6	0.50	Sand with sparse maerl gravel, sparse live maerl and shells	sparse live maerl, occasional <i>S. latissima</i>
12	South Islay	21/06/2019	12.5	12.8	0.50	shelly maerl gravelly sand. 3:00 onwards more stony with foliose algae	sparse live maerl in patches
13	South Islay	21/06/2019	15.6	16.4	0.50	gravelly sand with shells and sparse live maerl. 0.32 up onto rock reef. 2:46 stoney then sand and maerl	foliose algae and occasional kelp
14	South Islay	21/06/2019	11.3	11.8	0.50	maerl gravel with green 'fluff'	sparse live maerl 2:47 & 5:43 cucumbers. <i>S. lat</i> & <i>chorda filum</i> , 4:09 anemone
15	South Islay	21/06/2019	12.9	10.4	0.50	sand maerl gravel & shells	<i>S. lat</i> , foliose algae, 2:25 fan mussel <i>modiolus</i> ???
16	South Islay	21/06/2019	13.7	13	0.50	sand maerl gravel & shells	<i>S. lat</i> , foliose algae, <i>asterias</i> frequent
17	South Islay	21/06/2019	17.7	18	0.50	sandy gravel & stones	foliose algae, <i>S. lat</i> , <i>O. nigra</i> , echinus
18	South Islay	21/06/2019	18.8	15.6	0.50	bedrock with coralline crusts, boulders from 2:13 onwards	Alcyonium, echinus common, <i>marthasterias</i> , <i>clavellina</i> , 3:50 kelp@15.4m
19	South Islay	21/06/2019	15	17.6	0.50	sandy, muddy gravel & shells	Foliose algae & <i>S. lat</i> occasional worm mounds

Station ref.	Site name	Date	Start depth (mBSL)	End depth (mBSL)	Vessel speed (knots)	Video notes Main substrate type	Video notes Flora and/or fauna
20	South Islay	21/06/2019	14.7	15.9	0.50	bedrock with sandy gravel patches, pebbles & cobbles & shells in deeper 4:00	Foliose algae, echinus, sparse kelp,
21	South Islay	21/06/2019	13	14.6	0.50	bedrock onto shelly gravel, 2:58 back to bedrock - gravel	Foliose algae & S.lat, L.hyp, echinus
22	South Islay	21/06/2019	19.6	20.3	0.50	cobbles & pebbles in sand	S.lat, foliose algae (sparse), coralline crusts, echinus, L.hyp debris
23	South Islay	21/06/2019	20	18.8	0.50	bedrock cobbles & pebbles embedded in sand	coralline crusts, encrusting bryozoa, foliose algae, echinus, cliona, crossaster
24	South Islay	21/06/2019	27.9	25.3	0.50	fine slightly shelly sand, muddier & more gravel towards middle	Asterias, 'fluff', Luidia?,
25	South Islay	21/06/2019	20.8	14.5	0.50	cobbles & pebbles in sand. 1:28 reef steep 14m & silt then down on other side	coralline & red crusts, Kelp L.hyp, Echinus
26	South Islay	21/06/2019	18.6	19.7	0.50	shelly gravelly sand, worm mounds	Asterias, algal debris
27	South Islay	21/06/2019	17.1	17.4	0.50	muddy shelly sand	?horse mussel, diatom fluff, worm mounds
28	South Islay	21/06/2019	13.9	13.7	0.50	gravelly sand with shell debris	S.lat & kelp debris
29	Sound of Islay North	22/06/2019	13.5	13.6	1.20	cobbles pebbles sand and boulders	S.lat, foliose algae, L.hyp, echinus
30	Sound of Islay North	22/06/2019	25.1	24.5	1.00	cobbles, pebbles	bryozoan/hydroid turf, flustra, crossaster, ascidians (?flame shell bed?-probably not)
31	Sound of Islay North	22/06/2019	18.7	18.3	0.40	cobble pebble shell sand	dead maerl R, bryozoan/hydroid turf, s.lat
32	Sound of Islay North	22/06/2019	42.4	32.6	0.20	shell pebbles on mud	Munida, burrowing anemones common, hydroids
33	Sound of Islay North	22/06/2019	15.5	16.5	0.40	dead maerl? Shell pebble	foliose algae, S.lat
34	Sound of Islay North	22/06/2019	21.5	22	0.30	sand fine broken shells,	foliose algae
35	Sound of Islay North	22/06/2019	21.9	19.5	0.40	sand shell debris, odd cobble	foliose algae, fried egg anemone (Actinothoe sphyrodeta ), sunstar
36	Sound of Islay North	22/06/2019	14.4	13.9	0.30	cobble pebbles into more sand	kelp foliose algae, sunstar, urchin, starfish
37	Sound of Islay North	22/06/2019	15	15.7	0.50	sand some shells	foliose algae, S.lat, Asterias
38	Sound of Islay North	22/06/2019	17	17.5	0.60	cobbles, pebbles, gravel, shells	L.hyp, Asterias, foliose algae, echinus
39	Sound of Islay North	22/06/2019	45	47.6	0.20	mud, shell, pebbles,	Munida, feather star?
40	Sound of Islay North	22/06/2019	38.5	38.6	0.30	sand waves	-
41	Sound of Islay North	22/06/2019	82	83	0.30	sand some shell debris	squat lobster, starfish
42	Sound of Islay North	22/06/2019	36.1	37.2	0.40	sand rippled	-
43	Sound of Islay North	22/06/2019	73.6	70.6	0.70	cobble, pebble, gravel, shell,	Modiolus shell? Crossaster
44	Sound of Islay North	22/06/2019	32.5	32.4	0.50	silty gravel and assorted whole shells	Alcyonidium diaphanum from 4mins onwards
45	Sound of Islay North	22/06/2019	24.5	24.5	0.20	fine sand	-



Station ref.	Site name	Date	Start depth (mBSL)	End depth (mBSL)	Vessel speed (knots)	Video notes Main substrate type	Video notes Flora and/or fauna
46	Sound of Islay North	22/06/2019	60.1	59.8	0.40	rippled sand with occasional cobble and shells	pogge
47	Sound of Islay North	22/06/2019	14	14.2	0.30	rippled fine sand	diatom film?
48	Sound of Islay North	22/06/2019	14.5	15.3	0.30	rippled fine sand	diatom film?
49	Sound of Islay North	22/06/2019	12.3	13.7	0.40	bedrock, cobbles and gravel in patches	kelp forest L.hyp, foliose red algae on stipes and rock & coralline crusts
50	Sound of Islay North	22/06/2019	17.3	17.6	0.40	gravel with cobbles pebbles and boulders	occasional kelp L.hyp, foliose red algae, echinus, ?sponges
51	Sound of Islay North	22/06/2019	28.4	31.7	0.40	sand with pebbles and broken shell	foliose algal fluff, Asterias, Ophiuroid
52	Sound of Islay North	22/06/2019	36.3	37.1	0.40	fine sand with a few shell fragments	sparse algal fluff
53	Sound of Islay North	23/06/2019	20.2	19.8	0.50	Rock, cobble	Flustra, foliose red, bryozoan, hydroid, ascidian, turf, dahlia & fried egg anemones, kelp (L.hyperborea), Metridium
54	Sound of Islay North	23/06/2019	15.3	16.3	0.50	Lots of shells incl. Modiolus, cobbles, pebbles	L. hyperborea park, foliose reds, dahlia anemones, coralline crusts, S. latissima
55	Sound of Islay North	23/06/2019	13.3	15.2	1.00	Bedrock and boulders with sandy patches	Sparse maerl, L. hyperborea park, S. latissima, foliose reds, Alaria esculenta
56	Sound of Islay North	23/06/2019	14	14.3	0.80	Shell and gravel, Modiolus shells	Foliose algae, S. latissima, L. hyperborea, Alaria esculenta
57	Sound of Islay North	23/06/2019	26.6	26.9	0.60	Shell gravel, Modiolus shells, mud	Crossaster, 'fluff', Asterias
58	Sound of Islay North	23/06/2019	27.4	27.6	0.30	Pebble, gravel, mud, shell	Fluff', bryozoans, Asterias
59	Sound of Islay North	23/06/2019	29.8	29.8	0.30	Sand, mud with some shells, pebbles, Modiolus shells occasional	Fluff', bryozoans
60	Sound of Islay North	23/06/2019	42	43	0.20	Muddy sand and shells	Asterias, Nemertesia?, 'fluff', Ophiuroid
61	Sound of Islay North	23/06/2019	33	34	0.20	Mud, shells	Burrowing anemones, ophiuroids, Alcyonium digitatum, bryozoans, Flustra, Turritella
62	Sound of Islay North	23/06/2019	33	28	0.30	Mud, gravel, pebble, shells	Asterias
63	Sound of Islay North	23/06/2019	29	29	0.70	Pebble, shells, mud	Burrowing anemones, Asterias, Bryozoans, Crossaster
64	Sound of Islay North	23/06/2019	13.3	12	0.60	Sand, occasional pebbles & shells	S. latissima, foliose algae, crabs
65	Sound of Islay North	23/06/2019	19.8	21	0.40	Fine sand, burrows	Virgularia abundant, burrowing anemones
66	Sound of Islay North	23/06/2019	12.6	14.2	0.50	Fine sand, razor shells	Foliose algae, S. latissima, worm casts
67	Sound of Islay North	23/06/2019	16.9	10.4	0.40	Fine sand	Turritella, S. latissima, Virgularia (rare)
68	Sound of Islay North	23/06/2019	16.1	16.8	0.50	Fine sand	Algal fluff, S. latissima, Arenicola casts

Station ref.	Site name	Date	Start depth (mBSL)	End depth (mBSL)	Vessel speed (knots)	Video notes Main substrate type	Video notes Flora and/or fauna
69	Sound of Islay North	23/06/2019	17.1	17	0.70	Sand, cobbles, pebbles	foliose algae, L. hyperborea, echinus, S. latissima, ophiuroids, Asterias
70	Sound of Islay North	23/06/2019	25	27	0.80	cobble, pebble, gravel, shell, mud	Flustra, Asterias, hermit crabs, algal 'fluff', Crossaster, Cerianthus
71	Sound of Islay North	23/06/2019	28	29	0.60	Pebbles, shells on mud, sand	Aequipecten, Ascidian, Asterias, Crossaster
72	Sound of Islay North	23/06/2019	12	12	0.20	Shell gravel	S. latissima, Alaria, red algae, coralline crusts, foliose algae
73	Sound of Islay North	23/06/2019	14.9	16.8	0.40	Consolidated gravel, broken & whole mussel shells	Occasional kelp at beginning of tow, starfish
74	Sound of Islay North	23/06/2019	12.5	12.2	0.50	Consolidated gravel, broken & whole mussel shells	Sparse kelp, L.hyperborea, Alaria, S. latissima, starfish
75	Sound of Islay North	23/06/2019	14.2	16.4	0.60	sandy gravel & pebbles	Mixed kelp and foliose red & green algae, Saccorhiza polyschides
76	Sound of Islay North	23/06/2019	19.1	20.4	0.70	Gravel	Algal turf, ?bryozoa, N. antennina, ?sponges
77	Sound of Islay North	23/06/2019	16.9	17.7	0.70	Consolidated cobbles & pebbles and sand	Sparse kelp, green & red foliose algae, starfish, sponges, hydroids, anemones
78	Sound of Islay Centre	23/06/2019	29.8	28	3.20	Boulders cobble, coarse gravel & sand	Coralline crusts, kelp rare, current too fast!
79	South Islay Sound	24/06/2019	15.4	13.9	0.70	Bedrock with cobbles & pebbles in patches	Sparse kelp, dense foliose red algae, coralline crusts, Crossaster, Alaria
80	South Islay Sound	24/06/2019	15.7	13.8	0.40	Coarse clean mobile sand over bedrock & cobbles	Tatty & sparse kelps & foliose red algae
81	South Islay Sound	24/06/2019	11.6	11.3	0.40	Maerl gravel with pebbles & shells	Dense live maerl, sparse kelp (S. latissima, L. hyp & Alaria), foliose red & brown and green algae. Dense kelp 3:30 onwards, less maerl more cobbles & pebbles
82	South Islay Sound	24/06/2019	12.6	12.2	0.40	Rock and cobbles	Dense kelps (S. lattissima, L. hyp, Alaria) and red algae. 4:09 onwards maerl bed @ 11.2m bsl
83	South Islay Sound	24/06/2019	13	11.2	0.20	Cobbles & pebbles	Dense kelps & red algae, coralline crusts
84	South Islay Sound	24/06/2019	12.4	11.2	0.20	Cobbles & pebbles with coarse sand	Sparse kelps & red algae
85	South Islay Sound	24/06/2019	16	12.5	0.30	Pebbles, gravel & cobbles	Sparse red algae & kelps, barnacles. 2:30 onwards more dense kelps & red algae on boulders

Station ref.	Site name	Date	Start depth (mBSL)	End depth (mBSL)	Vessel speed (knots)	Video notes Main substrate type	Video notes Flora and/or fauna
86	South Islay Sound	24/06/2019	17.9	19.3	0.90	Cobbles & boulders	Dense foliose red algae, dense sponges around algal holdfasts, ?Actinothoe, Urticina felina, tunicates, Echinus, hydroids, Nemertesia antennina.
87	South Islay Sound	24/06/2019	22.8	22.8	0.90	Cobbles & pebbles	Barnacles, Flustra/Securiflustra, Parasmittina v common, anemones, echinoderms, faunal turf, coralline crusts, Dahlia anemones common, orange sponge, Asterias, Cliona
88	South Islay Sound	24/06/2019	11.5	11.6	1.00	Pebbles & cobbles	Kelps, red algae, coralline crusts
89	South Islay Sound	24/06/2019	18.5	17.6	0.90	Cobbles, pebbles, gravel	Dense red algae, sparse kelp, hydroids, echinoderms, anemones
90	South Islay Sound	24/06/2019	12.3	13.2	0.60	Cobbles & pebbles with gravel (maerl)	Live maerl (less towards end), sparse kelps & foliose algae
91	South Islay Sound	24/06/2019	15.4	11.8	0.30	Boulders, cobbles, pebbles, gravel	Kelp & foliose red algae, Crossaster, Echinus
92	South Islay Sound	24/06/2019	16.9	29.2	0.70	Pebbles & gravel	Flustra/Securiflustra, encrusting corallines, faunal turf, sparse kelps & foliose red algae to 20m bsl, brittlestars (O.nigra) 25m+ @3:40mins
93	South Islay Sound	24/06/2019	13.3	15.3	0.70	Bedrock with gravelly patches & cobbles & pebbles	Kelp forest L. hyp. With foliose reds, coralline crusts, anemones, Echinus
94	South Islay Sound	24/06/2019	28.4	27.4	3.10	Boulders & cobbles with gravel	Faunal turf, hydroids
95	South Islay Sound	24/06/2019	13.8	17.8	0.80	Gravel, pebbles, cobbles	Mixed kelps, foliose reds, Echinus, coralline crusts, faunal turf & hydroids in deeper water at end of tow.
96	South Islay Sound	24/06/2019	25.1	28.3	0.60	Silty boulders with muddy gravel between	Crossaster, barnacles, Echinus, thin faunal turf, Solaster
97	South Islay Sound	24/06/2019	17.1	17.5	0.20	Pebbles in muddy gravel, cobbles	Foliose red & brown algae, sparse S. latissima, sponges, tunicates
98	South Islay Sound	24/06/2019	15.2	13.6	0.30	Pebbles, maerl gravel, cobbles, shells	Live maerl, S. latissima, Crossaster
99	South Islay Sound	24/06/2019	12.5	13.2	0.30	Muddy pebbles, cobbles, gravel	Red & green algal turf, S. latissima, starfish, Echinus
100	South Islay Sound	24/06/2019	23.7	24	0.60	Muddy gravel & cobbles, a few burrows	Fluff', ophiuroid, worm mounds, Cerianthus, Asterias, diatom film
101	South Islay Sound	24/06/2019	18.2	18.8	0.40	Muddy sand with shells & gravel	Sparse red & green foliose algae, worm mounds & diatom film, Echinus, Asterias
102	South Islay Sound	24/06/2019	16.5	16.1	0.30	Muddy sand, shells, pebbles	Foliose algae, S. latissima, 'fluff'.

Station ref.	Site name	Date	Start depth (mBSL)	End depth (mBSL)	Vessel speed (knots)	Video notes Main substrate type	Video notes Flora and/or fauna
103	South Islay Sound	24/06/2019	11.6	13.7	0.50	Maerl gravel & pebbles	Live maerl at start of tow, green foliose algae, S.latissima, red foliose algae, Echinus, Dilsea, Ulva, Virgularia
104	South Islay Sound	24/06/2019	17.6	17.3	0.40	Muddy shelly sand, pebbles, gravel	Foliose algal turf- brown, coralline crusts, Luidia, Echinus, Asterias
105	South Islay Sound	24/06/2019	23.3	19.2	0.30	Muddy gravel, pebbles & cobbles	Faunal turf, Echinus, crab, Asterias, sparse red algae, barnacles, Crossaster
106	South Islay Sound	24/06/2019	15.2	14.2	0.30	Cobbles, pebbles, coarse sand/gravel.	Dense foliose reds, S.latissima, L.hyp occasional, Crossaster, coralline crusts, Echinus
107	South East of Islay	24/06/2019	53.9	53.8	0.90	Pebbles & shells embedded in muddy sand	One anemone, otherwise barren!
108	South East of Islay	24/06/2019	18.6	17	0.30	Muddy sand with odd shell fragments & pebbles	Diatom film, sparse kelp and foliose reds, mollusc tracks on sediment, Virgularia, Ophiura ophiura, worm mounds, Turritella
109	South East of Islay	24/06/2019	48.4	50.4	0.60	Consolidated pebbles & shells in sand	Barren
110	South East of Islay	25/06/2019	35	31	0.60	Sand with pebbles and shells, occasional boulders	Ophiura, Asterias hydroids, Solaster
111	South East of Islay	25/06/2019	22	21	0.60	Muddy sand, pebbles, shells	Burrowing anemones, Asterias, Ophiura, Virgularia®
112	South East of Islay	25/06/2019	29.9	33	0.50	Muddy sand, some gravel & shell	Crab, Ophiura, anemone, hydroids, Virgularia?
113	South East of Islay	25/06/2019	102	108	0.50	Cobble, shell, pebble, mud	Spider crab?
114	South East of Islay	25/06/2019	12.3	12.1	0.30	Sand with shells & pebbles	Foliose algae, green algae, S.latissima,
115	South East of Islay	25/06/2019	24.5	19	0.70	Cobble, pebble, gravel, boulders	Hydroids, coralline algae, bryozoan turf, featherstar, Nemertesia, red algae, Echinus
116	South Sound of Jura	25/06/2019	190	190	0.40	Burrowed muddy sand	Virgularia, burrowing anemones, dense small burrows
117	South Sound of Jura	25/06/2019	142	131	0.40	Burrowed muddy sand, with patch of silty rock/boulders mid-tow	Lots of ?mysids, Nephrops, Asterias, Virgularia. Anemones, hydroids, Sabella on rock in mid-tow, back to less dense burrows at end.
118	Sound of Jura - Upper	26/06/2019	54.7	61.9	0.30	Rock and boulders with gravel, onto muddy gravel plain	Starfish, echinus, parasmittina
119	Sound of Jura - Upper	26/06/2019	19.8	19.6	0.50	Boulders with muddy gravel between	Foliose algae, sparse kelp, featherstars, echinus, hydroids
120	Sound of Jura - Upper	26/06/2019	20.1	44	0.70	Rock, then boulders with gravel patches, going onto cobbles	alcyonium, pink crusts, red foliose algae, echinus, squat lobster, featherstars, faunal turf

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121	Sound of Jura - Upper	26/06/2019	22.9	35.5	0.40	Rock, gravel in dips	Coraline crusts, starfish, sparse red algae, echinus, faunal turf, crossaster, barnacles, solaster, swiftia (?), alcyaniun
122	Sound of Jura - Upper	26/06/2019	26.2	21.6	0.50	Muddy gravel, few shells and cobbles	Brittlestars ( <i>O. nigra</i> ), sparse red algae, coraline crusts, hydroids, sparse turf
123	Sound of Jura - Upper	26/06/2019	35.1	38.1	0.30	Silty boulders, cobbles, muddy gravel	Barnacles, faunal turf, feather stars, swiftia (?), sponges, crossaster, solasta, squat lobster
124	Sound of Jura - Upper	26/06/2019	58.3	52.8	0.10	Silty boulders, cobbles, gravel	Alcyonium common at the start, sponges, faunal turf, hydroids, squat lobsters, nemertesia, caryophyllia, echinus, swiftia
125	Sound of Jura - Upper	26/06/2019	22.5	24.9	0.90	Gravel with boulders	faunal and algal turf, sparse flustra, echinus, barnacles, swiftia (?), luidua
126	Sound of Jura - Upper	26/06/2019	35.9	57	0.60	Silty bedrock and boulders, gravel between	Echinus, faunal turf, flursta, starfish, ridge with alcyonium, cancer, barnacles, nemertesia, crossaster
127	Sound of Jura - Upper	26/06/2019	29.6	54.1	0.70	Rock and boulders with gravel patches	Faunal turf, flustra, echinus, swiftia, axinellid sponges, caryophyllia, nemertesia, antennina, diazona, barnacles
128	Sound of Jura - Upper	26/06/2019	41.1	49.7	0.80	Silty boulders and cobbles with gravel, just gravel at end	Faunal turf, solaster, barnacles
129	Sound of Jura - Upper	26/06/2019	52.5	55.2	0.70	Cobbles embedded in gravel	Faunal turf, crossta, luidia, hydroids, spirobranchus, flustra
130	Sound of Jura - Upper	26/06/2019	67.2	45	0.50	Gravel/pebble plain in sand and cobbles	Barnacles, luidia, faunal turf, leptometra (?), diaozona, sponges, starfish
131	Sound of Jura - Upper	26/06/2019	57.8	36.4	0.50	Bottom of wall, cobbles and pebbles in sandy gravel	Faunal turf, diazona, alcyonium, hydroids, flustra, echinus, sponges, alcyonidium, nemertesia
132	Sound of Jura - Upper	26/06/2019	36.1	39.7	0.90	Gravel, cobbles and boulders, then onto gravel plain with few boulders at the end	Barnacles, swiftia, luidia, diazona, faunal turf, tunicates, feather stars
133	Sound of Jura - Upper	26/06/2019	18.6	41.5	0.50	Muddy sand and gravel, drop off to boulders on gravel	Sparse kelps, diazona, faunal turf, hydroids, swiftia, sponges, wall with rich fauna
134	Sound of Jura - Upper	26/06/2019	31.7	57.9	0.40	Rock, boulders, and gravel, then wall, then boulders in gravel	Diazona, feather stars, echinus, sponges, leptometra (?), luidia, faunal turf, hydroids
135	Sound of Jura - Upper	26/06/2019	69.2	44.3	0.70	Boulders, cobbles, gravel, onto wall	Rich fauna similar to previous sites



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136	Loch Craignish and Loch Crinan	26/06/2019	17.4	44.5	1.10	Muddy sand then rock wall	Dense burrows, swiftia, algal/faunal turf, boulders with anemones, wall with swiftia, sponges, diazona and feather stars
137	Loch Craignish and Loch Crinan	26/06/2019	18.2	37.9	0.50	Silty rock and boulders	Algal/faunal turf, swiftia, diazona, sponges, squat lobsters, branched sponges
138	Loch Craignish and Loch Crinan	26/06/2019	26.4	29.2	0.20	Muddy sand and gravel and boulders	Sponges, faunal turf, axinella (?), scallop, virgularia
139	Sound of Jura - Upper	27/06/2019	27.2	24.3	2.10		
140	Sound of Jura - Upper	27/06/2019	101	100	0.70	Consolidated pebbles, shells, gravel	Faunal turf, barnacles, Spirobranchus, Luidia, Flustra, Alcyonium (R), Crossaster, anemone
141	Sound of Jura - Upper	27/06/2019	25.4	23.7	0.50	Bedrock with gullies	Faunal & red algal turf, Alcyonium, hydroids, starfish, Echinus, Nemertesia antennina, Pachymatisma johnstonia
142	Sound of Jura - Upper	27/06/2019	49.8	48.2	0.80	Rock, boulders, cobbles, gravel	Faunal turf, hydroids, brittlestars, ?Porella compressa, Luidia, Echinus, Alcyonium, Luidia ciliaris, Nemertesia ramosa
143	Sound of Jura - Upper	27/06/2019	63.7	44	0.50	Bedrock	Faunal turf sparse, Alcyonium, hydroids, barnacles (A), Echinus, Luidia ciliaris, Nemertesia antennina
144	Sound of Jura - Upper	27/06/2019	34.3	32.1	0.50	Rock, boulders & cobbles	Faunal turf, Cliona, Alcyonium, Pachymatisma johnstonia, N. antennina
145	Sound of Jura - Upper	27/06/2019	24.9	25.2	0.30	Rugged bedrock	Faunal & redl algal turf, Alcyonium, Nemertesia, hydroids, Pachymatisma, barnacles, orange sponge?
146	Sound of Jura - Upper	27/06/2019	19.7	17.1	0.70	Bedrock	Kelp forest (L.hyp), foliose red algal turf, starfish, Echinus, barnacles
147	Sound of Jura - Upper	27/06/2019	47.2	37.7	0.90	Rugged bedrock and boulders	Sparse faunal turf, hydroids, Alcyonium (dense in patches), Echinus, starfish, Cancer pagurus, barnacles
148	Sound of Jura - Upper	27/06/2019	38.6	33.2	0.80	Boulders, cobbles, gravel - then wall	Flustra, faunal turf, algal & faunal turf from 25m shallower, hydroids, sparse Alcyonium at first, then dense, starfish, anemones, barnacles, Pachymatisma johnstonia
149	Sound of Jura - Upper	27/06/2019	15.8	21.6	0.90	Rugged bedrock, patches of fine gravel	Dense red algal turf, brittlestars, hydroids/bryozoan turf

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150	Loch Craignish and Loch Crinan	27/06/2019	38.5	46	0.20	Silty bedrock, boulders, gravel patch	Swiftia, Caryophyllia, hydroids, featherstars, Echinus, Marthasterias, wrasse, Diazona, sponges
151	Loch Craignish and Loch Crinan	27/06/2019	25.1	21.2	0.30	Burrowed mud	Virgularia (R)
152	Loch Craignish and Loch Crinan	27/06/2019	15.7	19	0.40	Burrowed mud	Algal fluff, small starfish
153	Loch Craignish and Loch Crinan	27/06/2019	21.3	14.7	0.30	Gravelly muddy rock	Spirobranchus, Luidia ciliaris, green algal fluff
154	Loch Craignish and Loch Crinan	27/06/2019	51	47	0.50	Bedrock & boulders	Faunal turf, hydroids, barnacles, squat lobster, brittlestars, Cliona, Echinus, Luidia ciliaris, Nemertesia antennina, crab, Swiftia, Diazona
155	Loch Craignish and Loch Crinan	27/06/2019	27.8	28.1	0.20	Burrowed mud	Virgularia, starfish
156	Loch Craignish and Loch Crinan	27/06/2019	25.6	29.5	0.40	Cobbles, muddy pebbles & gravel	Spirobranchus, sparse faunal turf, starfish, occasional red foliose algae
157	Loch Craignish and Loch Crinan	27/06/2019	27.8	27.7	0.30	Burrowed mud	Squat lobster, kelp debris, starfish, ?Astropecten, Cerianthus
158	Loch Craignish and Loch Crinan	27/06/2019	32.8	30.5	0.30	Muddy sand with shell pieces	Cerianthus, squat lobster, Virgularia, few burrows, starfish
159	Loch Craignish and Loch Crinan	27/06/2019	12.9	26.1	0.60	Muddy sand with some shelly gravel	Starfish, squat lobsters, crabs
160	Loch Craignish and Loch Crinan	27/06/2019	20	22.8	0.40	Muddy sand with shell fragments	Cerianthus (C), swimming crab, Virgularia, starfish, hermit crab
161	Loch Craignish and Loch Crinan	27/06/2019	24.5	20.6	0.30	Muddy sand	Virgularia, burrowing brittlestars, starfish, Cerianthus
162	Loch Craignish and Loch Crinan	27/06/2019	22.3	21.9	0.30	Muddy sand	Virgularia, starfish, squat lobsters, brittlestars, scallop. ??silted seasquirts??
163	Loch Craignish and Loch Crinan	27/06/2019	17.9	18.4	0.40	Mud	Few burrows, Virgularia
164	Loch Craignish and Loch Crinan	28/06/2019	38	51.4	0.90	Bedrock & boulders - silty	Faunal turf, sponges, Echinus, Parasmittina, barnacles, Diazona, starfish, anemones, Swiftia, squatties, Cliona

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165	Loch Craignish and Loch Crinan	28/06/2019	21.9	18.3	0.60	Rock, cobbles, sandy gravel, bedrock wall towards end of tow	Octopus (@9:19 on SD), red algal turf, coralline crusts, up steep wall then kelp, Echinus, red algae
166	Loch Craignish and Loch Crinan	28/06/2019	38.1	54	0.60	Silty boulders onto gravel, silty boulders at end	Diazona, Swiftia, Solaster, Axinellid sponges, Swiftia, ?Leptometra, sponges, brittlestars, Cliona
167	Loch Craignish and Loch Crinan	28/06/2019	31.7	38.7	0.60	Gravelly sand	-
168	Loch Craignish and Loch Crinan	28/06/2019	17.6	18.3	0.40	Burrowed mud	Virgularia, diatom film, Asterias rubens
169	Loch Craignish and Loch Crinan	28/06/2019	20.8	24.1	0.60	Boulders with muddy gravel	Diazona, lots of Swiftia, few Echinus, red algae, hydroids, Parasmittina, branching sponge, Caryophyllia
170	Loch Craignish and Loch Crinan	28/06/2019	32.4	37.3	0.80	Fine sand with shell fragments & gravel	Ophiura, crab
171	Loch Craignish and Loch Crinan	28/06/2019	45.2	43.8	0.60	Burrowed mud	?Nephrops burrows
172	Loch Craignish and Loch Crinan	28/06/2019	32.1	28.9	1.10	Rock, boulders, cobbles, silty gravel between	Flustra, hydroids, barnacles, featherstars, N.antennina, pink crusts, ?Leptometra, Echinus, starfish
173	North Jura	28/06/2019	61.6	72.7	0.70	Muddy rock & boulders	barnacles, Flustra, squattie, ?Leptometra, A. ramosa, Echinus, Cliona, Luidia ciliaris, Diazona, Caryophyllia, Asterias
174	North Jura	28/06/2019	78.7	79.2	0.50	Silty gravel/sand	Featherstars (C), ?Leptometra, Luidia ciliaris, queenie, squatties, Spirobranchus, ?Antedon petasus
175	North Jura	28/06/2019	48.2	58.4	0.50	Silty sand and fine gravel on to rock and boulders	Flustra, L.ciliaris, Parasmittina trispinosa, sponges, barnacles, featherstars, Echinus, Diazona, Alcyonium, Cliona, squattie, Asterias
176	North Jura	28/06/2019	56.6	63.7	0.20	Silty rock, boulders gravel between	Squattie, hydroids, sparse Alcyonium, anemones, Diazona, Echinus, featherstars, Flustra, Cliona, starfish
177	North Jura	28/06/2019	108	110	0.20	Muddy sand	Burrows at beginning and end of tow, hermit crab, Nephrops at end
178	North Jura	28/06/2019	93.7	101	0.50	p	Burrows, squat lobster, starfish, Nephrops

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179	North Jura	28/06/2019	50.2	42.9	0.60	Silty rock & boulders	Faunal turf, Echinus, Flustra, barnacles, Crossaster, squattie, Parasmittina, hydroids, wrasse
180	North Jura	28/06/2019	37.9	38.9	0.80	Muddy sand, silty boulders after 2:50 on SD	Hydroids, ?Swiftia, Cliona, ?Leptometra, Diazona, Echinus, Axinellid sponge, Alcyonium
181	North Jura	28/06/2019	24.5	35.1	0.40	Rock with sandy patches	Red algal turf, N.ramosa, Alcyonium, anemones, wrasse, Echinus, Caryophyllia, Crossaster, Swiftia - lots
182	North Jura	28/06/2019	44.6	43.9	0.30	Mud	Dense burrows - some Nephrops?
183	North Jura	28/06/2019	44.1	45.1	0.30	Mud, shell?gravel fragments	Few burrows, ?Nephrops, squattie
184	North Jura	28/06/2019	36.4	46.9	0.20	Silty bedrock	Alcyonium, Swiftia, faunal turf, hydroids, Flustra, squattie
185	North Jura	28/06/2019	33	37	0.40	Bedrock and boulders - silty	Swiftia, sponges, anemones, Caryophyllia, Alcyonium, Flustra, Crossaster, ?Leptometra, Diazona
186	North Jura	28/06/2019	135	121	0.50	Mud	Dense burrows, Nephrops
187	Loch Craignish and Loch Crinan	29/06/2019	17.1	25	0.50	Silty pebbles, gravel, sand	Sparse red algal turf, Asterias, sparse kelp, squattie, hydroids, swimming crab
188	Loch Craignish and Loch Crinan	29/06/2019	12.2	12.1	0.20	Mud	Burrows, diatom film, Virgularia, kelp debris, starfish
189	Loch Craignish and Loch Crinan	29/06/2019	11.4	11.3	0.70	Muddy sand with gravel	Red & green algal turf, worm mounds, starfish, Chorda filum
190	Loch Craignish and Loch Crinan	29/06/2019	12.6	12.1	0.30	Muddy sand	Small burrows/holes, foliose red & green fluff, Virgularia, worm mounds, swimming crab, starfish
191	Loch Craignish and Loch Crinan	29/06/2019	12.4	12.5	0.30	Muddy sand	Holes, worm casts, red algal fluff, Asterias, swimming crab, Virgularia
192	Loch Craignish and Loch Crinan	29/06/2019	13.3	13.6	0.30	Muddy sand	Burrows, Virgularia, diatom film, swimming crab, algal debris. Red algae on occasional pebble/shell
193	Loch Craignish and Loch Crinan	29/06/2019	15	15.7	0.30	Muddy sand	Virgularia - lots
194	Loch Craignish and Loch Crinan	29/06/2019	15.4	14.6	0.50	Muddy sand	Starfish, Virgularia, burrows, Asterias, red algal fluff, tunicates?, worm mounds, ?Queenie, swimming crab

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195	Loch Craignish and Loch Crinan	29/06/2019	16.1	18.2	0.50	Muddy sand	Burrows, Virgularia - lots, starfish, Cerianthus
196	Sound of Jura and outer Loch Sween	29/06/2019	19.2	30.8	0.60	Rock, bedrock & boulders at end of tow	Barnacles, red algal & faunal turf, Echinus, pink crusts, starfish, N.ramosa, O. nigra, seasquirt, anemone, hydroids, Crossaster, squatties
197	Sound of Jura and outer Loch Sween	29/06/2019	24.2	23.1	0.40	Cobbles, pebbles, gravel	Red algae, hydroids, Crossaster, O.nigra, pink crusts, barnacles, Asterias, Echinus, seasquirt
198	Sound of Jura and outer Loch Sween	29/06/2019	34.8	30.9	0.30	Boulders, cobbles, pebbles, gravel	Spirobranchus, hydroids, pink crusts, starfish, O.nigra, Parasmittina, seasquirt, anemones, Crossaster
199	Sound of Jura and outer Loch Sween	29/06/2019	47.1	45.9	0.60	Cobbles, pebbles, gravel	Brittlestar bed (O.nigra & O.fragilis), Alcyonium, Asterias, hydroids, Solaster, Spirobranchus, anemones
200	Sound of Jura and outer Loch Sween	29/06/2019	69.1	69.5	0.60	Cobbles, pebbles, gravel, coarse sand	Alcyonium, brittlestars O.fragilis, hydroids - sparse, starfish, Solaster, scallop
201	Sound of Jura and outer Loch Sween	29/06/2019	43.9	42	0.40	Pebbles, gravel, shells (Modiolus)	Very sparse Alcyonium, brittlestar (only one?!) - pretty barren
202	Sound of Jura and outer Loch Sween	29/06/2019	47.3	46.1	0.30	Pebbles, gravel, shells (Modiolus)	Brittlestar, Alcyonium (sparse), Spirobranchus, Asterias, ?Flustra, pink crusts (sparse)
203	Sound of Jura and outer Loch Sween	29/06/2019	24.2	23.4	0.40	Cobbles, pebbles, gravel - boulders at end of tow	Faunal turf (sparse), pink crusts, barnacles, Spirobranchus, Asterias, Echinus, Crossaster - boulders with kelp at end of tow
204	Sound of Jura and outer Loch Sween	29/06/2019	27.4	28.6	0.40	Pebbles, gravel, mobile coarse sand waves over gravel, then cobbles	Anemone, starfish, Crossaster, barnacles
205	Sound of Jura and outer Loch Sween	29/06/2019	22.8	22.6	0.60	Pebbles, shells, gravel	Sparse Alcyonium, pink crusts, Asterias, Crossaster
206	Sound of Jura and outer Loch Sween	29/06/2019	17	14.2	0.60	Pebbles, gravel - rock at end of tow	Sparse kelp, foliose reds, faunal turf, Crossaster, pink crusts, hydroids, Echinus, dense Alcyonium at end, sparse kelp, barnacles
207	Loch Sween	29/06/2019	16.5	19.5	0.60	Pebbles, gravel, muddy sand, shells	Sparse red and faunal turf, Asterias, small kelps, Echinus, worm mounds, Ophiura, ?Diazona
208	Loch Sween	29/06/2019	23.8	21.2	0.60	Muddy gravelly sand with shell fragments	Crabs, worm mounds, sparse red algae, ?Turritella (A), starfish

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209	Sound of Jura and outer Loch Sween	29/06/2019	18.8	20.1	0.60	Pebbles, gravel, sand	Small sparse kelp, sparse Alcyonium, Asterias, red algae, faunal turf, pink crusts, crab, dead maerl fragments at the end
210	Sound of Jura and outer Loch Sween	29/06/2019	16.9	24.8	1.10	Rock & cobbles, with ?maerl gravel in dips	Kelp forest with red algae, Echinus, Asterias, hydroids, dense faunal turf towards end of tow, N.antennina, Crossaster, Solaster
211	Loch Sween	30/06/2019	18.6	19.7	0.60	Muddy sand, pebbles, shells, gravel	Swimming crabs, queenie, starfish, goby, Turritella
212	Loch Sween	30/06/2019	10.9	12.6	0.80	Muddy sand	Holes & burrows, Virgularia, Turritella, diatom film
213	Loch Sween	30/06/2019	29.2	26.5	0.60	Mud	Nephrops burrows, holes, Turritella, crab, starfish
214	Loch Sween	30/06/2019	24	18.4	0.50	Mud	Burrows, crab
215	Loch Sween	30/06/2019	17.3	10.8	0.40	Mud	Nephrops burrow, holes, diatom film, crabs, starfish - more algal debris in shallower
216	Loch Sween	30/06/2019	16.3	13.3	0.30	Mud	Nephrops, burrows, diatom film, goby
217	Loch Sween	30/06/2019	16.2	16.4	0.60	Mud	Diatom film, Nephrops burrows, holes, crab, trails, starfish
218	Loch Sween	30/06/2019	13.7	8.6	0.60	Mud	Burrows, diatom film, ?seasquirts, few Nephrops burrows, starfish
219	Loch Sween	30/06/2019	14.1	14.8	0.70	Mud	Burrows, Nephrops burrows, diatom film, starfish, crabs
220	Loch Sween	30/06/2019	19.7	16.1	0.90	Mud, stones/shells	Burrows, diatom film, starfish, Virgularia, Ophiura, less burrows, hydroids on stones/shells
221	Loch Sween	30/06/2019	13	13.5	0.50	Sandy mud	Diatom film, holes - sparse, trails
222	Loch Sween	30/06/2019	15.5	13.8	0.50	Mud	Burrows, diatom film, seasquirts, Turritella, crabs
223	Loch Sween	30/06/2019	18.8	14.9	0.60	Mud	Burrows, queenie, Nephrops burrows, crabs, diatom film
224	Loch Sween	30/06/2019	13.4	10.9	0.60	Muddy sand, pebbles, shells, rock at end	Abundant seasquirts, Echinus, red algal fluff, crabs, starfish, green algae, barnacles on rock



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225	Loch Sween	30/06/2019	14.4	11.9	0.60	Mud, pebbles, shells, boulders at end with ?anoxic sediment between (blue/grey)	Burrows, abundant seasquirts, Solaster, Echinus, Cancer pagurus, pink crusts on boulders, swimming crabs, Turritella - onto rock with pink crusts, hydroids, seasquirts, green algal fluff, Solaster