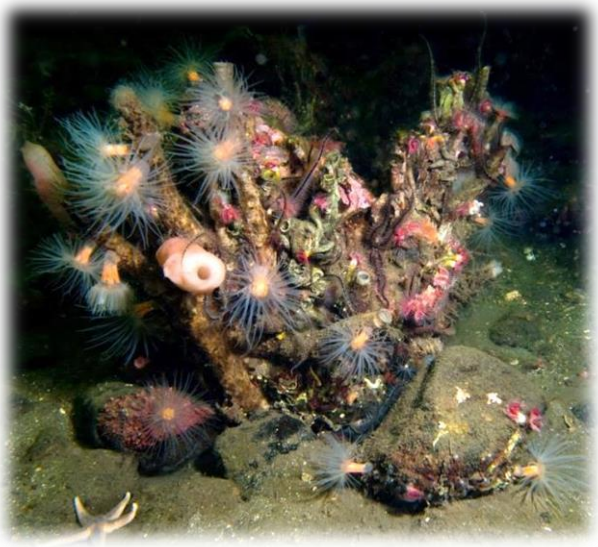


SNH seabed habitats survey - September 2016

Sound of Arisaig SAC and the head of Loch Ailort

Field Report

Drop down video and diver surveys

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
Nàdar air fad airson Alba air fad

Background

The Sound of Arisaig Special Area of Conservation was designated for the marine feature 'sandbanks which are slightly covered by seawater all the time'. This site contains both maerl beds and seagrass beds which form part of the sandbank feature. Maerl and seagrass beds harbour a rich diversity of associated species and are also important in a 'blue carbon' context.

The purpose of the present survey was to investigate the distribution of benthic habitats and species in the Sound of Arisaig with particular attention to defining the extent of the seagrass beds. A secondary aim was to confirm the presence of Serpulid aggregations (a Priority Marine Feature) in the head of Loch Ailort and to map the extent of this feature.

SNH staff from the Coastal and Marine Ecosystems and Use Unit (CMEU) carried out a four day survey as part of the annual diver training event.

Methods/Initial Results

Sampling stations were selected by reviewing existing data and aerial photography from the area. Drop down video footage and still images were collected on the 6th and 7th September 2016 (see Figure 1 overleaf) while dive surveys focused on the head of Loch Ailort on the 8th and 9th September (Figure 2). Sixty four video transects were carried out (0 - 17 m below chart datum) and 10 spot dives.

Short (5-6 minute) video tows were carried out using the SNH mini drop down camera system to determine biotopes and to cover the survey area in the time available. Video footage was captured on a GoPro Hero4 inside a deep water housing deployed from the SNH RIB, *Aphrodite*. HD footage was recorded on the GoPro camera while an SD feed to the surface allowed footage to be viewed by survey staff on deck.

This field report provides a brief summary of the work conducted. The video footage will be analysed by contractors and biotopes assigned to each station. However, initial observations found maerl beds at 7 stations and seagrass beds at 12 stations. The diver survey revealed Serpulid aggregations along the southern shore of the head of Loch Ailort, to the west of a fish farm at approximately 3 - 10m depth (Figure 4).

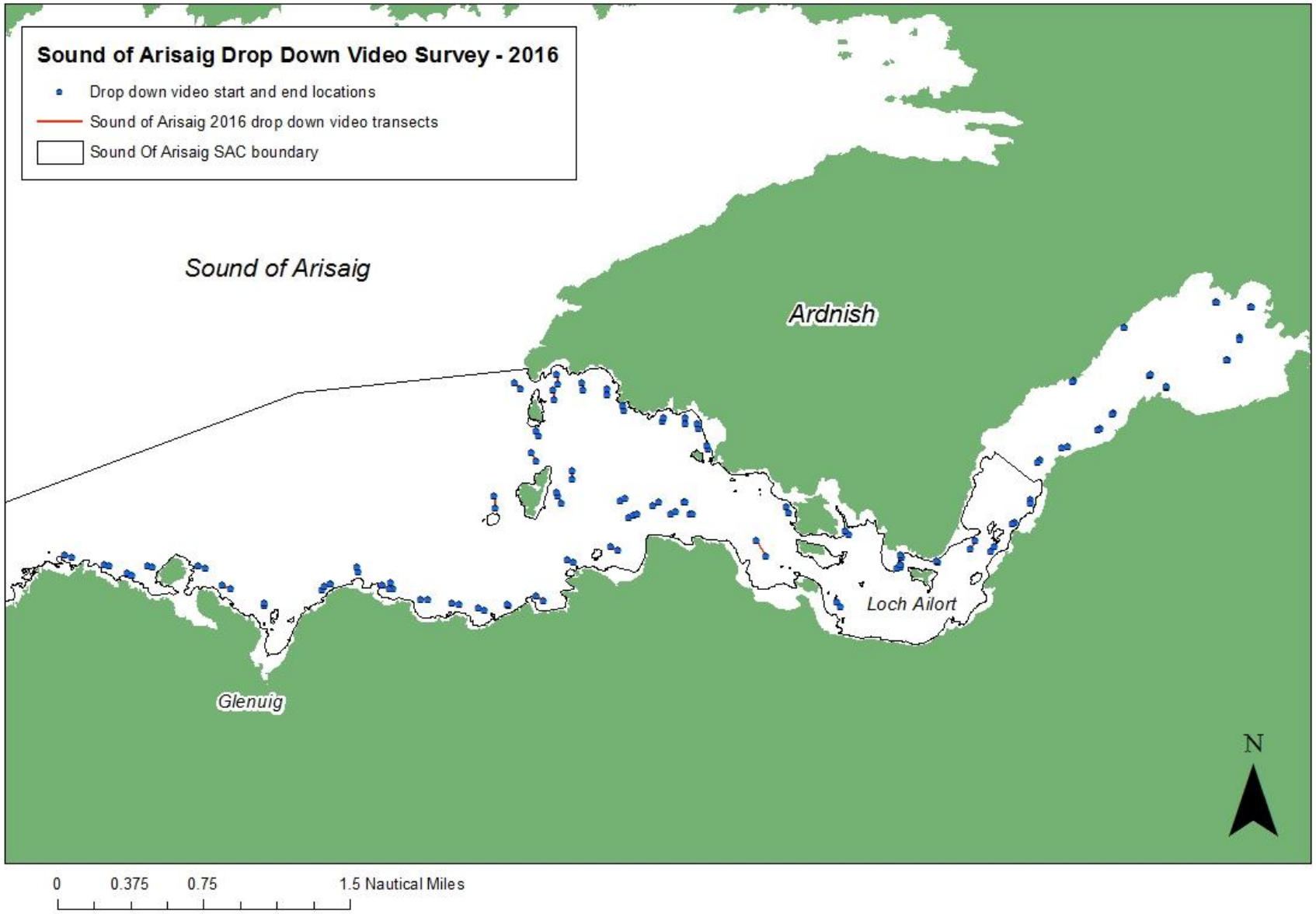

Figure 1. Drop down video stations in the Sound of Arisaig, west coast of Scotland, sampled from *Aphrodite* on the 8th and 9th Sept 2016

Figure 2. Loch Ailort dive transects and spot dives labelled with dive number (1-10).

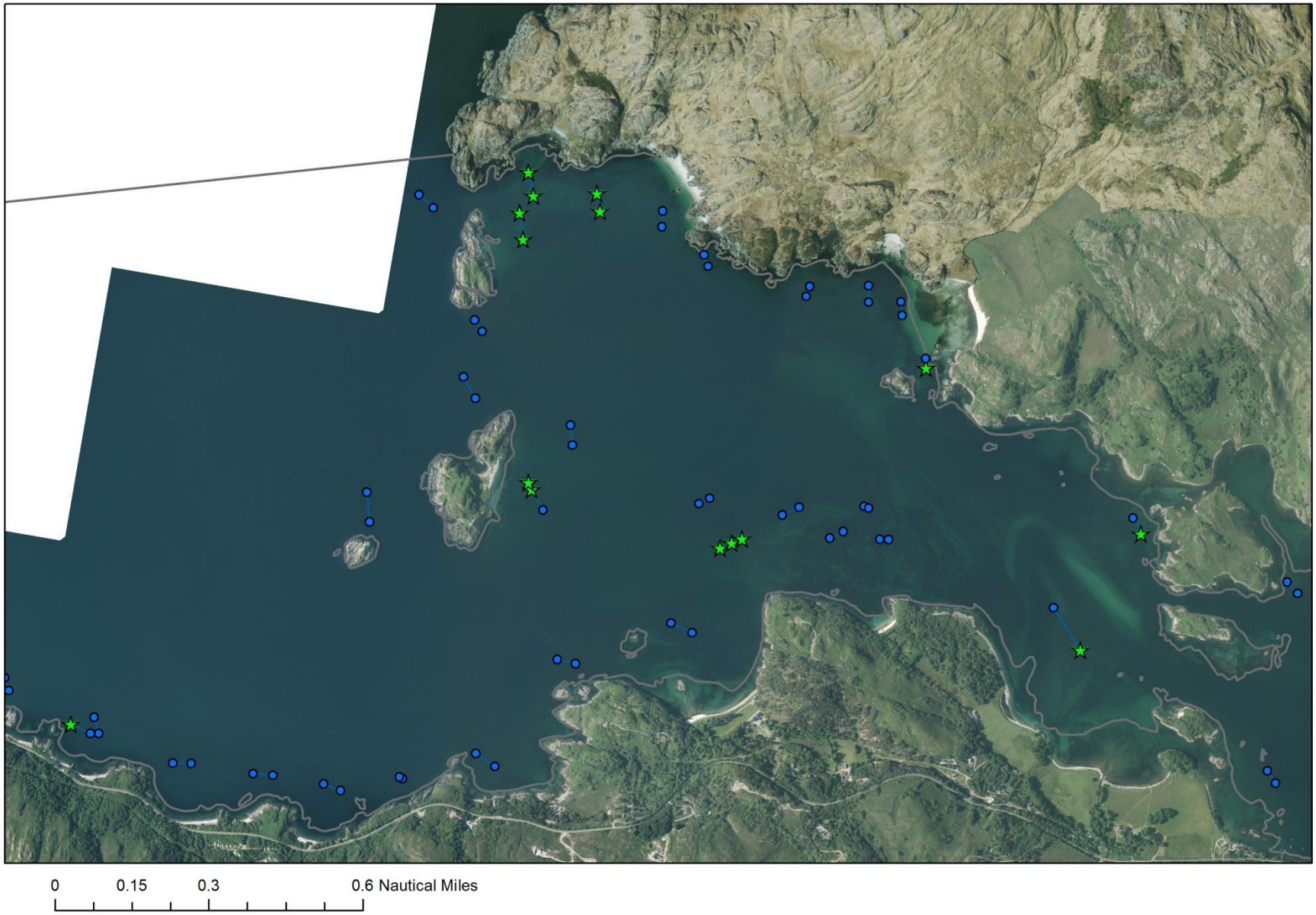

Figure 3. Arisaig 2016 drop down video transects showing seagrass bed records (green stars).

Figure 4. Dive surveys in the head of Loch Ailort showing presence of Serpulid aggregations at the start and end of each dive

Table 1: Details of video stations in the Sound of Arisaig SAC and at the head of Loch Ailort. Positions in decimal degrees (WGS84), times in UTC and depths corrected to chart datum.

Station ID	Date	Start	End	Start		End		Start	End	Description
		Time	Time	Latitude	Longitude	Latitude	Longitude	Depth (m)	Depth (m)	
4	06/09/2016	11:48	11:50	56.837597	-5.810719	56.837597	-5.810719	9.8	9.9	Rocky kelp
7	06/09/2016	11:56	12:02	56.838018	-5.796351	56.838149	-5.79526	8.2	13.4	Coarse gravel, drift weed, ensis shell, sand poss maerl
8	06/09/2016	12:07	12:13	56.838267	-5.791531	56.838364	-5.790374	8.3	8.2	Stones, Coarse gravel, drift weed, Lsac
42	06/09/2016	12:41	12:49	56.848773	-5.76743	56.849222	-5.766293	2.7	2.8	Sand and shell,Coarse gravel. Seagrass at 13:44 at WP 198. Sparse towards the end with some dead maerl
42	06/09/2016	12:44	12:44	56.849007	-5.766837	56.849007	-5.766837	2.7	2.7	Seagrass
x1	06/09/2016	12:54	13:00	56.850005	-5.769291	56.850258	-5.768729	4.4	4.6	Sand and shell, Coarse gravel
x2	06/09/2016	13:05	13:09	56.850263	-5.764279	56.850627	-5.763429	2.6	2.5	Kelp, Coarse sand and drift weed.
x3	06/09/2016	13:13	13:19	56.849878	-5.76122	56.850178	-5.760526	1	1.5	Dense kelp on sand
x4	06/09/2016	13:21	13:25	56.850204	-5.758306	56.850245	-5.757818	0.8	1.2	Dense kelp
x5	06/09/2016	13:27	13:31	56.851115	-5.759671	56.8511	-5.759377	1.6	1.6	Coarse gravel, kelp, shelly patches
13	06/09/2016	13:39	13:45	56.846048	-5.76931	56.845887	-5.767968	2.3	2.2	Coarse sand and stones. Maerl plus sand and gravel, drfit weed. Dense patches of live maerl, under kelp and drift weed
12	06/09/2016	13:51	13:55	56.844078	-5.77543	56.844073	-5.774326	7.4	5.5	Couse gravel, patches of live maerl, under kelp and drift weed

Station ID	Date	Start	End	Start		End		Start	End	Description
		Time	Time	Latitude	Longitude	Latitude	Longitude	Depth (m)	Depth (m)	
11	06/09/2016	14:02	14:07	56.840531	-5.778902	56.840257	-5.77761	7.3	5.7	Coarse sand and drift weed, seagrass at 15:05 (sparse and mostly not attached)
9	06/09/2016	14:13	14:17	56.838458	-5.787314	56.83838	-5.786251	8	8.6	Coarse sand and drift weed and shelly gravel
5	06/09/2016	14:26	14:32	56.838509	-5.802755	56.838357	-5.801512	4.8	6.3	Dense kelp on sand and cobbles, very sparse seagrass
67	06/09/2016	14:48	14:56	56.835405	-5.827115	56.83532	-5.825676	7.6	10.4	Coarse sand and gravel, sparse seagrass
68	06/09/2016	15:00	15:05	56.836541	-5.831404	56.836451	-5.83026	7.6	13.6	Coarse sand and drift weed
71	06/09/2016	15:15	15:20	56.835622	-5.839092	56.835572	-5.838295	12.7	10.5	Coarse sand and drift weed
72	06/09/2016	15:24	15:28	56.83457	-5.841951	56.834492	-5.841166	7	6.7	KSwss (sand and kelp)
73	06/09/2016	15:31	15:36	56.834822	-5.845787	56.834836	-5.845072	8.2	6.6	Coarse sand and shell, kelp KSwss / cobbles
74	06/09/2016	15:41	15:45	56.834946	-5.852128	56.834879	-5.850992	11.8	10.6	KSwss/ cobbles, Coarse sand, drfit weed
48	07/09/2016	08:16	08:21	56.877767	-5.685508	56.877771	-5.685305	9.9	10.9	Sandy mud. Poss Serps. Parchment worms.
47	07/09/2016	08:33	08:37	56.878043	-5.680023	56.878037	-5.679909	4.3	2.2	Sandy mud. Poss Serps
46	07/09/2016	08:43	08:48	56.875279	-5.680699	56.875081	-5.680601	6.9	5.4	Shelly anemones, mud. Shell.
45	07/09/2016	08:58	09:03	56.873174	-5.681647	56.873181	-5.681758	7.8	9.8	Mud squirts, anemones
55	07/09/2016	09:11	09:16	56.869704	-5.690031	56.86988	-5.690034	3.5	9.7	Squirts. Brittlestars. Parchment worms and anemones.
43	07/09/2016	09:23	09:27	56.870441	-5.693038	56.870585	-5.692921	8.4	4	Shells, squirts, boulders, bedrock, brittlestars. Possibly individual Serps but very sparse.
65	07/09/2016	09:35	09:38	56.873887	-5.698491	56.873909	-5.69861	5.8	4.4	Shelly gravel and drift weed. Kelp, boulders,

Station ID	Date	Start	End	Start		End		Start	End	Description
		Time	Time	Latitude	Longitude	Latitude	Longitude	Depth (m)	Depth (m)	
										cobbles pink encrusting algae.
63	07/09/2016	09:49	09:54	56.86856	-5.70446	56.868419	-5.704602	4.4	7.7	Boulders and cobbles and bedrock. Parchment worms, brittlestars, seasquirts.
57	07/09/2016	09:59	10:01	56.866634	-5.697223	56.86652	-5.697384	6.5	6.4	Creel rope? Sand with oc boulders. Bedrock.
58	07/09/2016	10:04	10:08	56.865096	-5.698746	56.864989	-5.699016	6.2	6.5	Sand, starfish. Burrows?
59	07/09/2016	10:14	10:19	56.863008	-5.70306	56.862787	-5.703939	7	6.4	Fine sand, oc cobble. Starfish. Burrows?
60	07/09/2016	10:21	10:26	56.861338	-5.706819	56.861136	-5.707024	2.4	1.8	Sand and cobbles, seaweed patches. Shelly. Starfish.
32	07/09/2016	10:30	10:35	56.857885	-5.70689	56.857556	-5.706817	5.8	4.7	Shelly gravel and fine sand. Clumps of seaweed, starfish. Rocky towards end of tow.
33	07/09/2016	10:38	10:43	56.855727	-5.708488	56.855589	-5.708736	5.2	7	Rocky, boulders with urchins and seaweed. Pink encrusing algae. Stony at end
34	07/09/2016	10:46	10:51	56.853293	-5.710665	56.852854	-5.711112	5.6	4.8	Cobbles and boulders with seaweed and sand patches. Urchins. Pink encrusing algae, brittlestars and urchins.
29	07/09/2016	10:55	11:00	56.853418	-5.713934	56.852728	-5.714259	2.8	4.8	Seaweed on sand. Lam sac. Urchins. Shell
X6	07/09/2016	11:04	11:09	56.850972	-5.718899	56.850983	-5.719092	6.3	6	Starfish on fine sand and shelly gravel.
28	07/09/2016	11:32	11:34	56.850694	-5.724496	56.850856	-5.72482	-0.7	-1.3	Chorda on fine sand. Fucoids at end
X7	07/09/2016	11:36	11:40	56.849823	-5.724286	56.849658	-5.724808	1.2	-1	Fucoids and Lam sac on

Station ID	Date	Start	End	Start		End		Start	End	Description
		Time	Time	Latitude	Longitude	Latitude	Longitude	Depth (m)	Depth (m)	
										cobbles and gravel.
X8	07/09/2016	11:42	11:45	56.850008	-5.724466	56.850008	-5.724466	-0.2	-0.3	Lam sac. Pebbles and sand. Chorda?
27	07/09/2016	11:50	11:54	56.851513	-5.733349	56.851799	-5.734107	2	-0.7	Chorda? Seaweed on cobbles and fine sand Shells.
38	07/09/2016	12:00	12:02	56.845395	-5.732101	56.845721	-5.732733	2.8	2.6	Sand with clumps of seaweed
25	07/09/2016	12:08	12:13	56.852263	-5.743219	56.852704	-5.7439	3.8	1.9	Sand with Lam sac. Poss sparse seagrass

Table 2: Details of dive transects and spot dives (no. 6 & 9) at the head of Loch Ailort, west coast of Scotland. Times in BST, depths corrected to chart datum, positions in decimal degrees (WGS84).

Dive	Diver	Start Time	End Time	Start Latitude	End Longitude	Start Latitude	End Longitude	Max Depth	Description
1	SH&JD	12:40	13:08	56.86947	-5.68939	56.8696	-5.69045	5.6	Worm tubes becoming fewer towards end of dive but still a few there
2	LK&JC	13:34	14:02	56.86947	-5.68939	56.86936	-5.68783	7.2	Worm tubes continuing
3	RM&FK	14:21	14:53	56.86926	-5.6887	56.86928	-5.68811	10	A few small worm tubes at start. Tubes end at WPT 197
4	SH&JD	15:57	16:28	56.86944	-5.69085	56.86912	-5.69173	5.0	Worm tubes continuing but getting fewer
5	LK&JC	16:54	17:35	56.86947	-5.68939	56.8696	-5.69045	7.0	Taking video of Serpulid aggregations
6	FK	09:41	09:48	56.86884	-5.68187	56.86884	-5.68187	2.8	Spot dive behind fish farm. One mini aggregation.
7	FK&RM	10:00	10:32	56.86926	-5.69141	56.86878	-5.69265	5.0	Good aggregations but stopped at end (WBT 204), then sediment with Fucoids
8	LK	10:52	11:02	56.86774	-5.69435	56.86761	-5.69465	1.4	Few encrusting Serps, no aggregations, lots of dead mussel shell, worm cast hills. All looking a bit dead and unpleasant.
9	LK&JC	11:12	11:46	56.86919	-5.6898	56.86919	-5.6898	4.8	Spot dive. Taking stills and video of Serp aggregations
10	FK&RM	12:09	12:45	56.87075	-5.69462	56.87188	-5.69393	7.7	Very few aggregations (1 or 2) at start none at end, some encrusting Serps, some oysters.

Example images

Figure 3.Seagrass on maerl, maerl gravel and sand at station 18.

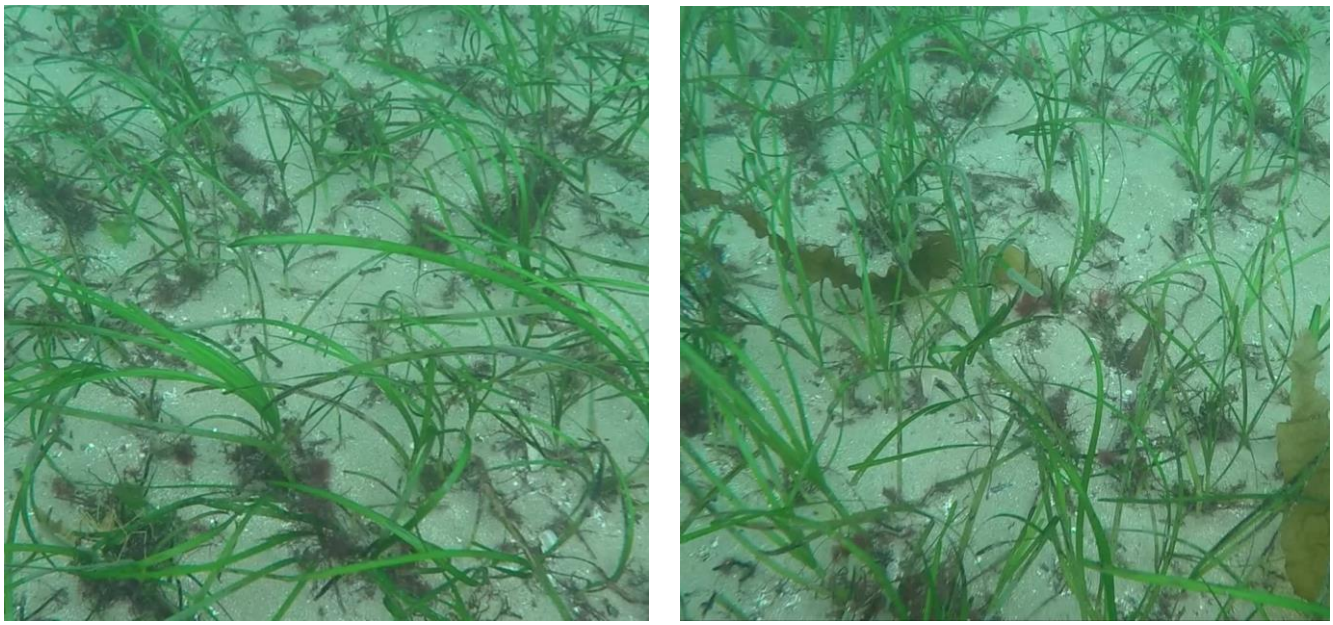

Figure 4. Seagrass bed at station 42.

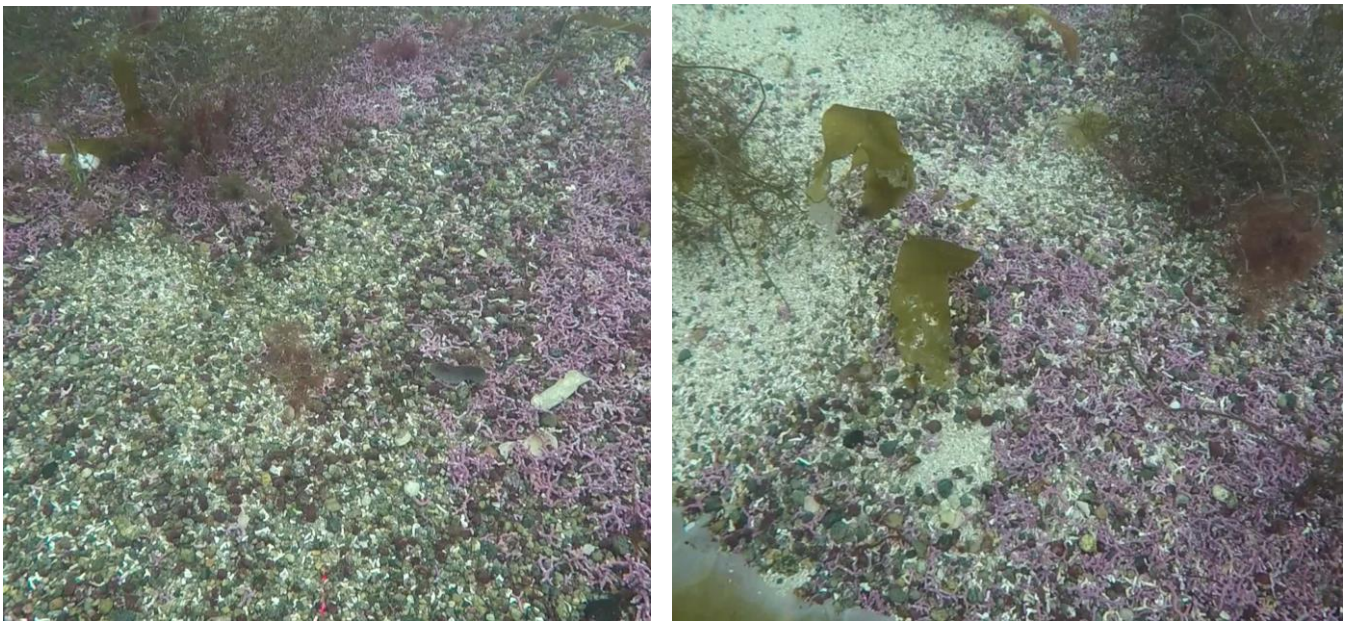

Figure 5. Maerl bed – Station 13

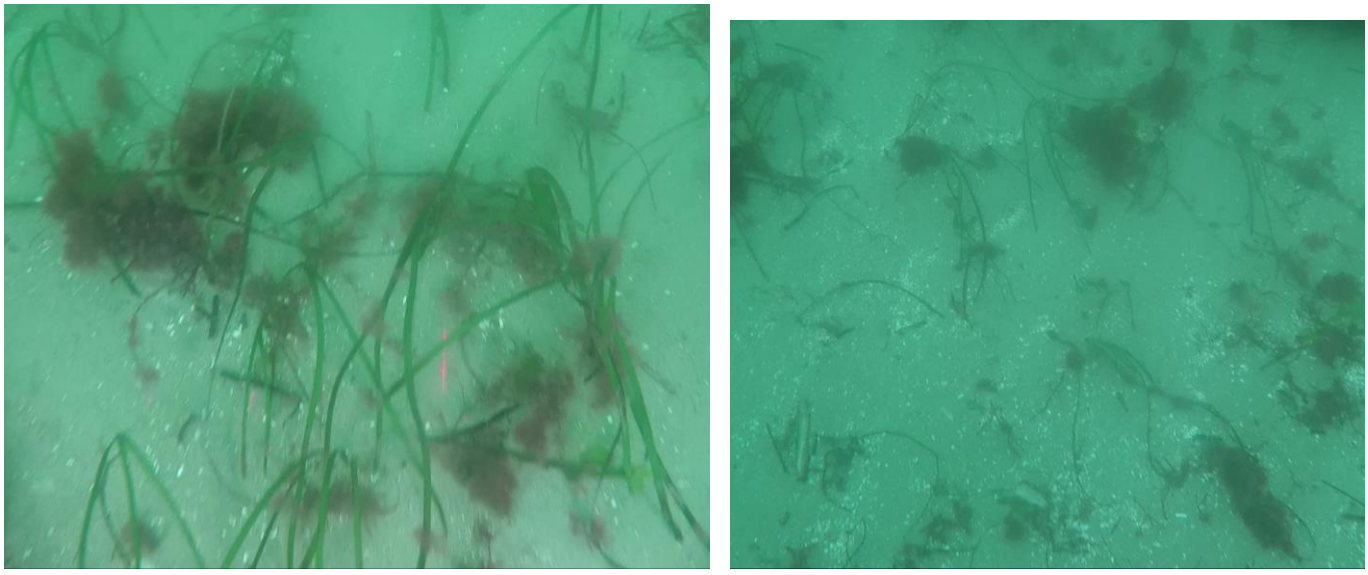

Figure 6. Sand, seagrass and seaweed – Station X13

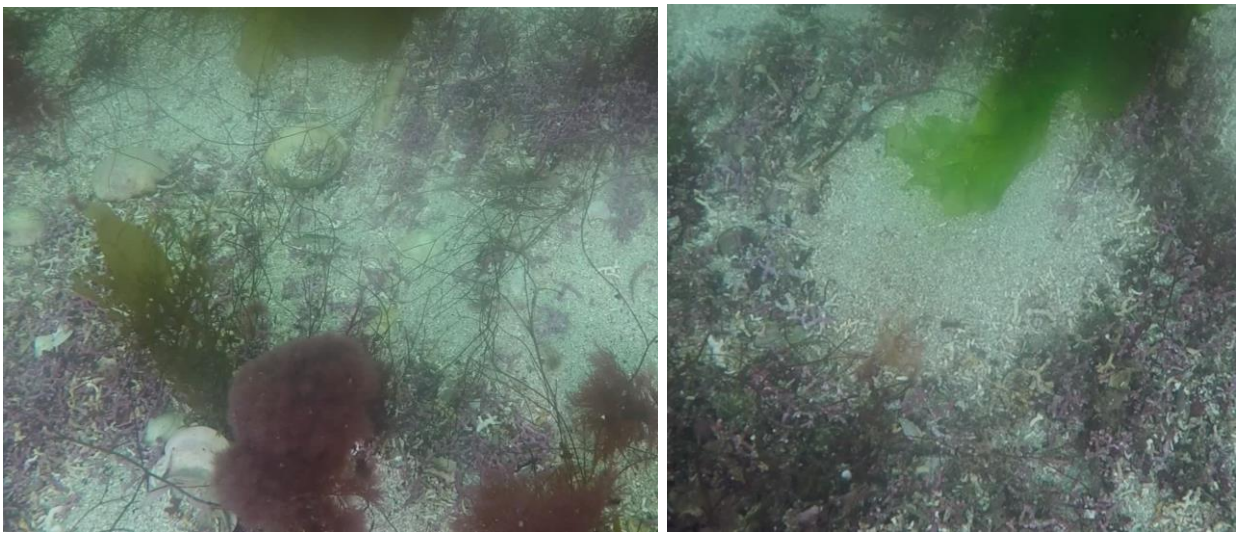

Figure 7. Patches of live maerl on coarse sand and seaweed