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FRV *Alba na Mara*

Cruise 1108A

## **REPORT**

6-25 October 2008

### **Ports**

**Loading:** 2 October, Fraserburgh

**Half Landing:** 13 October, Ardrossan

**Unloading:** 28 October, Fraserburgh

### **Personnel**

W Turrell (SIC Part 1)

P Boulcott

D Bova

A Dale (SAMS)

C Johnson (SAMS)

T Howell (SIC Part 2)

M Burns

S Dewey (SeaStar)

J Doran (SeaStar)

**Fishing Gear:** None

**Costs to Project:** 20 days MF02Q

### **Objectives**

#### **Part 1**

- To deploy drifters in the region of the Firth of Lorn SAC in order to validate an oceanographic circulation model (Figure 1).
- To perform supporting CTD survey.

#### **Part 2**

- To carry out an acoustic mapping survey with ground truthing of the Lamlash Bay closed area (S.S.I. 2008/317) and adjacent areas (Figure 1).
- To develop a Pyramid drop frame sampling system for scallop and associated habitat assessments.

## **Narrative**

### **Part 1 – Firth of Lorn**

Scientists joined *Alba na Mara* at 1000 (all times GMT) Monday 6 October in Fraserburgh. After procuring fuel for the small boat *Proteus*, *Alba na Mara* sailed at 1000 and made passage towards the west coast. After sailing through the night, *Alba na Mara* anchored in the lee of Eigg at 1700 Tuesday 7 October.

Passage resumed at 0430 the following day, when *Alba na Mara* proceeded to Oban, where she tied up at 1000. Two visiting scientists were picked up and a crew member attended the local hospital for necessary medication. *Alba na Mara* sailed again at 1115 and proceeded to the western entrance of the Gulf of Corryvreckan. After some initial assessment of tide, two drogued, GPS tracked floats were deployed. Subsequently *Alba na Mara* then proceeded to anchorage for the night in Loch Tarbert, Jura.

The anchor was lifted at 0400 the following day, and *Alba na Mara* returned to the westerly entrance of the Gulf of Corryvreckan. After a short search for the two drifters released the previous day, a CTD section commenced at 0620 Thursday 9 October, and was completed by 0930. *Alba na Mara* then returned to the entrance to the Gulf. A further two drifters were deployed at the first CTD station occupied at the start of the day, at the eastern end of the CTD section. After deployment of the drifters, the first CTD station was reoccupied. *Alba na Mara* then returned to the drifters, and these were recovered on board by 1240. *Alba na Mara* then proceeded to a sheltered anchorage in the Sound of Mull for the night.

*Alba na Mara* left her anchorage at 0600 on Friday 10 October and returned to the innermost end of the CTD section, westwards of the Gulf of Corryvreckan. Three drifters were released at this position at 0915, and a CTD cast was performed. *Alba na Mara* then followed the three drifters, performing CTD casts whenever possible. Mid-way through the day the three drifters were recovered and redeployed close to the centre of the Great Race. Once again CTD casts were performed along the track of the drifters. Finally the drifters were recovered at 1500 after which *Alba na Mara* made passage once more to an anchorage in the Sound of Mull.

### **Part 2 – Lamlash Bay**

On Saturday 11 October, *Alba na Mara* returned to Oban, where she tied up at 0800. Scientific staff were exchanged, and *Alba na Mara* sailed again at 1105 and made for Arran arriving at 0240 12 October. *Alba na Mara* dodged to the east of Holy Island until 0730 before proceeding to Lamlash Bay where preparatory work for the survey commenced. During the day the boundaries of the survey area were explored, the CCTD winch spooling speed was checked, and initial trials of the pyramid frame were carried out. *Alba na Mara* then made for Ardrossan arriving at 1615. The half landing took place during the following day during which the Sea Star Survey team joined the vessel and set up their equipment. The following day sailing was delayed until 10:35 to allow for delivery of a sidescan component, freighted to Ardrossan overnight. Upon arrival at Lamlash a CTD profile was taken followed by preliminary sidescan sonar/bathymetry transects of the northern area of the bay, with one pyramid frame test. Over the following 3 days priority was given to the sidescan survey with pyramid frame testing carried out as time allowed. By 17 October the North, Deacon Rock, and South sidescan transect runs were completed. The outer transects, to the east of Holy Island, were also completed apart from an area inaccessible due to the presence of creels (Figure 9).

From 17 to 20 October priority was switched to ground truthing using the Sea Star Survey drop frame system. Drop frame runs were carried out by drifting over the sidescan transect

areas. Deteriorating weather cut short drop frame work on 19 October and a poor weather forecast forced a decision to make 20 October the last effective working day of the survey. This meant that the third phase of the ground truthing, using the Day grab, took place on afternoon of 20 October prior to the vessel returning to Ardrossan. It also meant that no further development of the pyramid frame could take place. Sea Star Survey demobilised on the morning of 21 October. After the departure of the survey contractors and scientific staff, *Alba na Mara* made passage for Fraserburgh. Severe weather conditions hampered *Alba na Mara*'s progress on the return journey delaying her arrival in Fraserburgh until Sunday 26 October.

## **Results**

### **Part 1 – Firth of Lorn**

A summary of the fifteen CTD stations and drifter tracks carried out in the Great Race area of the Firth of Lorn westwards from the Gulf of Corryvreckan between 9 and 10 October are shown in Figure 1. Details of the CTD stations are given in Table 1. Results of the CTD section are shown in Figures 2 to 6: Figure 2 shows the station vertical temperature and salinity profiles; figure 3 shows a TS diagram; Figures 4 5 and 6 show salinity temperature and density sections, respectively. Figures 7 and 8 show the drifter profiles collected adjacent to three drifters on 10 October: the vertical temperature and salinity profiles are shown in Figure 7, and Figure 8 shows the TS diagram.

### **Part 2 – Lamlash Bay**

During the sidescan phase of the Lamlash Bay survey a total of 55 sidescan sonar/bathymetry transects were completed between 15-17 October. Fifteen of these were carried out on the North area, 11 on the Deacon Rock area, 18 on the south area, and 11 on the outer area; details are given in Table 3 and Figure 9. The ground truthing phase of the survey took place between 16-20 October during which 22 video and still photography runs were carried out using the SeaStar drop frame: 11 on the North area, 7 on the south area, and 4 on the outer area to the east of Holy Island; details are given in Table 4 and Figure 9. On the 20 October 10 day grab samples were taken; details are given in Table 5 and Figure 9.

In the restricted time available for developing the pyramid frame good progress was made with methods for deployment and handling. Problems with low speed winch control and deterioration of the TV cable conductors limited time to experiment with the frame's camera and lighting systems.

B Turrell (Part 1)  
T Howell (Part 2)

24 November 2008

**Table 1:** CTD Stations Day 1 (9/10/08)

<b>Stn</b>	<b>Lat Deg</b>	<b>Lat Min</b>		<b>Long Deg</b>	<b>Long Min</b>		<b>Start Time</b>	<b>Sounding (m)</b>	<b>Max CTD Pressure (dbar)</b>
128	56	9.49	N	5	47.08	W	06:20	115	101
129	56	9.50	N	5	48.96	W	06:58	127	100
130	56	9.55	N	5	50.82	W	07:25	144	112
131	56	9.55	N	5	52.78	W	07:52	156	124
132	56	9.59	N	5	54.63	W	08:25	116	101
133	56	9.53	N	5	56.40	W	08:52	135	116
134	56	9.54	N	5	58.05	W	09:20	140	118
135	56	9.51	N	5	47.39	W	11:26	133	96

**Table 2:** CTD Stations Day 2 (10/10/08)

Stn	Lat Deg	Lat Min		Long Deg	Long Min		Start Time	Sounding (m)	Max CTD Pressure (dbar)
136	56	9.65	N	5	47.22	W	06:20	145	115
137	56	9.87	N	5	47.73	W	09:44	186	128
138	56	10.29	N	5	49.42	W	11:46	211	211
139	56	11.27	N	5	50.34	W	12:36	176	156
140	56	11.56	N	5	49.54	W	13:16	184	211
141	56	11.40	N	5	49.31	W	13:46	230	197
142	56	10.98	N	5	49.06	W	14:30	213	187

**Table 3:** Sidescan sonar/bathymetry transects 15 – 17/10/08

DATE	Site Name	Start Time (GMT)	End Time (GMT)	Direction
15/10/2008	Lamlash North	06:58:03	07:25:43	SW - NE
15/10/2008	Lamlash North	07:31:18	08:00:41	NE - SW
15/10/2008	Lamlash North	08:04:58	08:35:14	SW - NE
15/10/2008	Lamlash North	08:40:26	09:07:59	NE - SW
15/10/2008	Lamlash North	09:12:58	09:42:26	SW - NE
15/10/2008	Lamlash North	09:46:17	10:16:38	NE - SW
15/10/2008	Lamlash North	11:00:55	11:18:18	NE - SW
15/10/2008	Lamlash North	11:22:22	11:41:01	NE - SW
15/10/2008	Lamlash North	11:46:23	12:04:16	SW - NE
15/10/2008	Lamlash North	12:06:40	12:26:03	NE - SW
15/10/2008	Lamlash North	12:28:34	12:45:39	SW - NE
15/10/2008	Lamlash North	12:48:28	13:06:30	NE - SW
15/10/2008	Lamlash North	13:09:23	13:25:45	SW - NE
15/10/2008	Lamlash North	13:27:49	13:45:52	NE - SW
15/10/2008	Lamlash North	14:08:11	14:26:46	NE - SW
15/10/2008	Deacon Rock	14:39:41	14:47:05	S - N
15/10/2008	Deacon Rock	14:49:18	14:57:17	N - S
15/10/2008	Deacon Rock	15:01:55	15:09:59	S - N
15/10/2008	Deacon Rock	15:13:24	15:21:56	N - S
15/10/2008	Deacon Rock	15:25:46	15:34:55	S - N
15/10/2008	Deacon Rock	16:10:18	16:18:25	N - S
15/10/2008	Deacon Rock	16:22:31	16:31:19	S - N
15/10/2008	Deacon Rock	16:34:18	16:42:24	N - S
15/10/2008	Deacon Rock	16:47:41	16:55:38	S - N
15/10/2008	Deacon Rock	16:57:56	17:06:59	N - S
15/10/2008	Deacon Rock	17:11:21	17:19:07	S - N
16/10/2008	Lamlash South	06:46:22	07:16:25	NW - SE
16/10/2008	Lamlash South	07:43:55	08:06:12	SE - NW
16/10/2008	Lamlash South	08:10:37	08:40:17	NW - SE
16/10/2008	Lamlash South	08:43:56	09:14:39	SE - NW
16/10/2008	Lamlash South	09:17:34	09:41:24	NW - SE
16/10/2008	Lamlash South	09:46:40	10:13:27	SE - NW
16/10/2008	Lamlash South	11:03:35	11:22:09	NW - SE

**Table 3:** continued

16/10/2008	Lamlash South	11:26:09	11:47:06	SE - NW
16/10/2008	Lamlash South	11:50:54	12:08:16	NW - SE
16/10/2008	Lamlash South	12:13:21	12:31:55	SE - NW
16/10/2008	Lamlash South	12:35:26	12:50:19	NW - SE
16/10/2008	Lamlash South	12:56:03	13:11:41	SE - NW
16/10/2008	Lamlash South	13:18:26	13:36:53	NW - SE
16/10/2008	Lamlash South	13:42:41	14:06:52	SE - NW
16/10/2008	Lamlash South	14:13:03	14:27:04	NW - SE
16/10/2008	Lamlash South	14:34:02	14:54:45	SE - NW
16/10/2008	Lamlash South	14:59:35	15:06:14	NW - SE
16/10/2008	Lamlash South	15:13:54	15:20:40	SE - NW
17/10/2008	Lamlash Outer	07:14:54	08:11:05	N - S
17/10/2008	Lamlash Outer	08:17:23	09:12:23	S - N
17/10/2008	Lamlash Outer	09:30:00	09:54:09	N - S
17/10/2008	Lamlash Outer	09:59:28	10:25:31	S - N
17/10/2008	Lamlash Outer	11:09:31	11:35:18	N - S
17/10/2008	Lamlash Outer	11:39:32	12:05:23	S - N
17/10/2008	Lamlash Outer	12:28:35	12:50:11	N - S
17/10/2008	Lamlash Outer	12:55:14	13:18:25	S - N
17/10/2008	Lamlash Outer	13:24:43	13:49:24	N - S
17/10/2008	Lamlash Outer	14:01:39	14:09:48	S - N
17/10/2008	Lamlash Outer	16:01:30	16:12:14	N - S

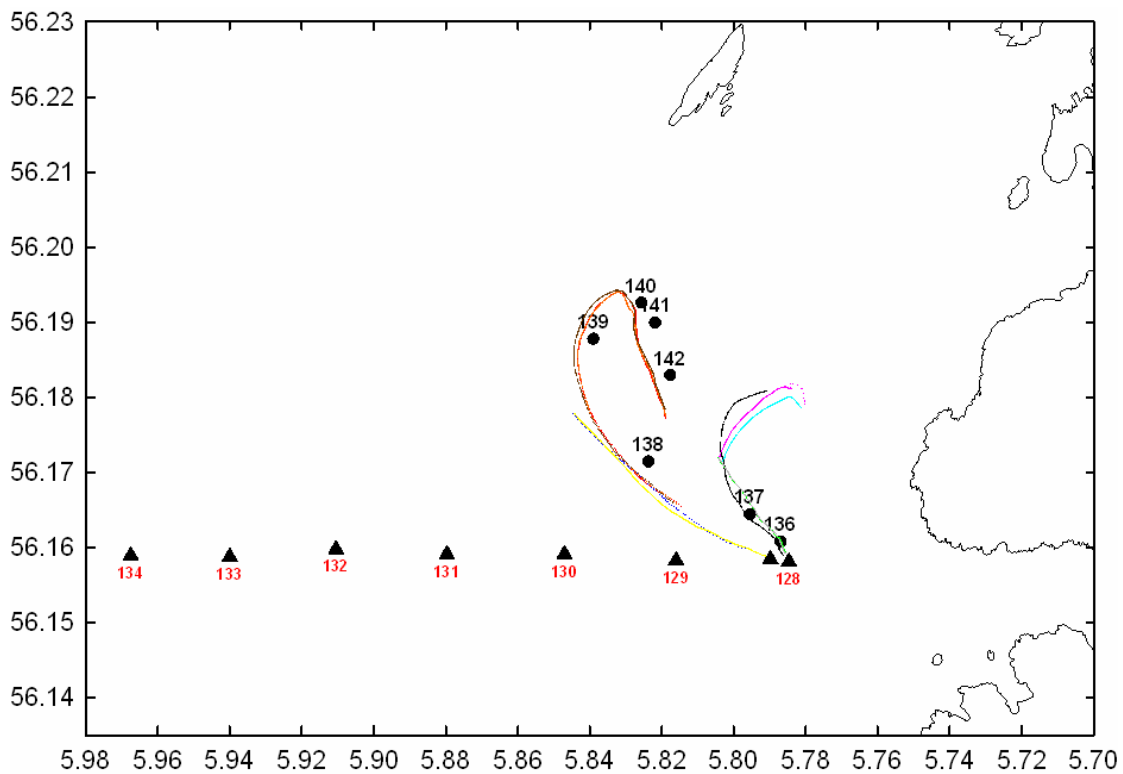
**Table 4:** Drop Frame Runs 17 – 20/10/08

<b>DATE</b>	<b>Site Name</b>	<b>Start Time (GMT)</b>	<b>Video Duration</b>
17/10/2008	Lamlash North	16:53:35	00:22:05
18/10/2008	Lamlash North	09:55:46	00:24:28
18/10/2008	Lamlash North	12:13:51	00:31:18
18/10/2008	Lamlash North	08:00:30	00:30:03
18/10/2008	Lamlash North	08:48:22	00:48:38
18/10/2008	Lamlash North	16:30:24	00:49:02
19/10/2008	Lamlash North	07:53:58	00:31:09
18/10/2008	Lamlash North	13:04:00	00:24:56
18/10/2008	Lamlash North	14:03:10	00:37:22
18/10/2008	Lamlash North	14:58:24	00:40:51
19/10/2008	Lamlash North	08:45:02	00:31:46
16/10/2008	Lamlash South	17:21:03	00:35:05
19/10/2008	Lamlash South	09:36:59	00:39:17
20/10/2008	Lamlash South	10:07:42	00:33:47
20/10/2008	Lamlash South	12:25:46	00:44:18
20/10/2008	Lamlash South	13:23:45	00:20:35
20/10/2008	Lamlash South	13:58:48	00:14:28
20/10/2008	Lamlash South	14:36:37	00:31:05
20/10/2008	Lamlash Outer	07:17:56	00:45:43
20/10/2008	Lamlash Outer	08:18:30	00:14:16
20/10/2008	Lamlash Outer	08:45:25	00:15:26
20/10/2008	Lamlash Outer	09:17:16	00:09:13

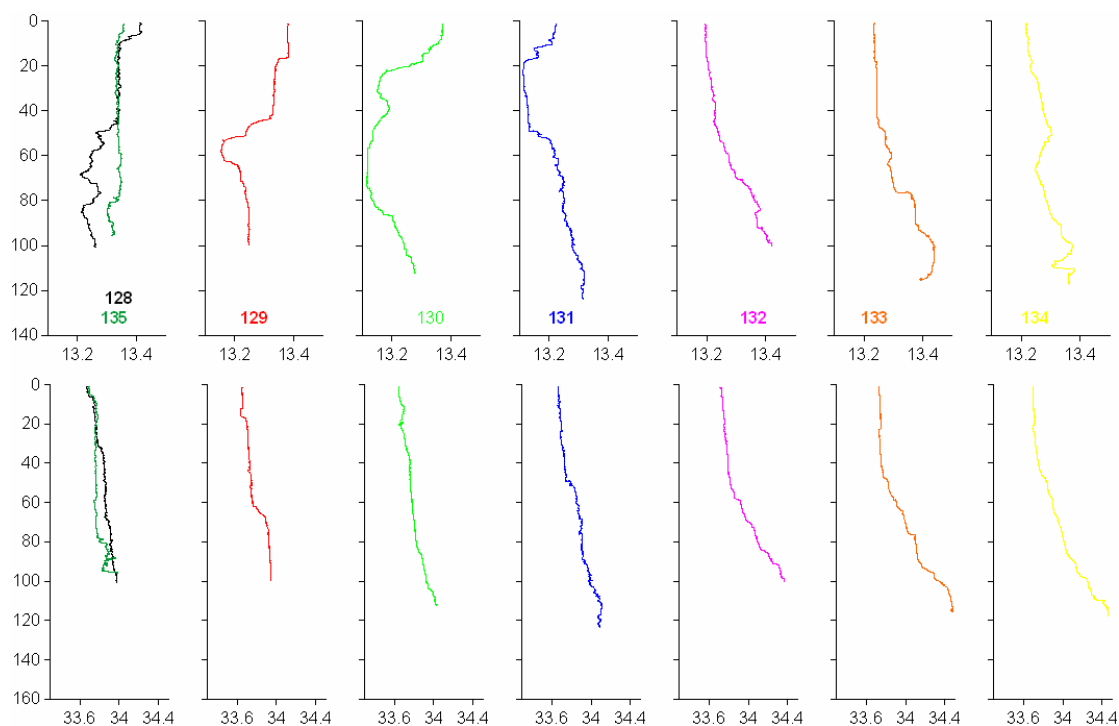
**Table 5:** Grab Samples (20/10/08)

DATE	Site Name	Start Time (GMT)
20/10/2008	Lamlash North	16:20:50
20/10/2008	Lamlash North	16:39:47
20/10/2008	Lamlash North	16:51:10
20/10/2008	Lamlash North	17:02:37
20/10/2008	Lamlash North	17:17:46
20/10/2008	Lamlash North	17:30:10
20/10/2008	Lamlash North	17:43:47
20/10/2008	Lamlash North	17:52:10
20/10/2008	Lamlash North	18:03:30
20/10/2008	Lamlash North	18:12:15

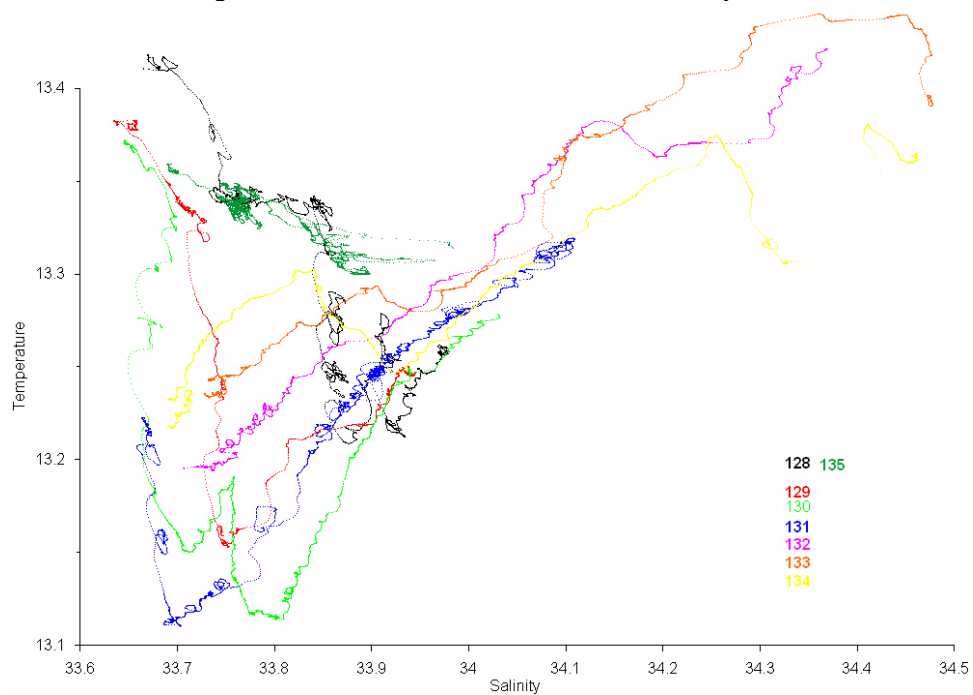
**Figure1.** Survey summary – The Great Race Area Firth of Lorn. Location of CTD stations 9/10/08 (triangles) and 10/10/08 (circles). Drifter tracks are also shown.



**Figure 2.** CTD Section – The Great Race Area Firth of Lorn. Temperature (upper) and salinity (lower) vertical profiles (9/10/08) westwards along CTD section out from the Gulf of Corryvreckan. (Vertical axis is pressure dbar).

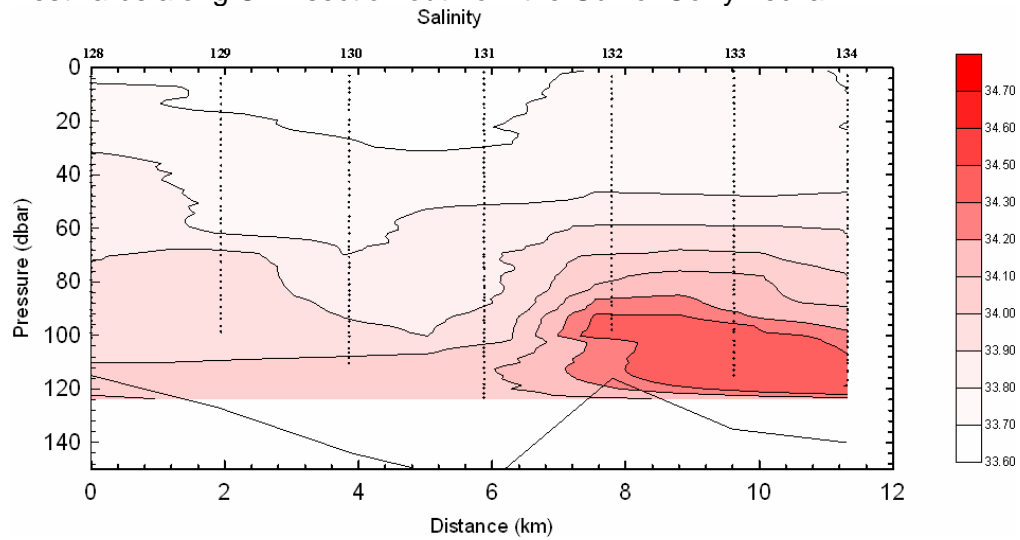


**Figure 3.** CTD Section – The Great Race Area Firth of Lorn. TS diagram (9/10/08) westwards along CTD section out from the Gulf of Corryvreckan.

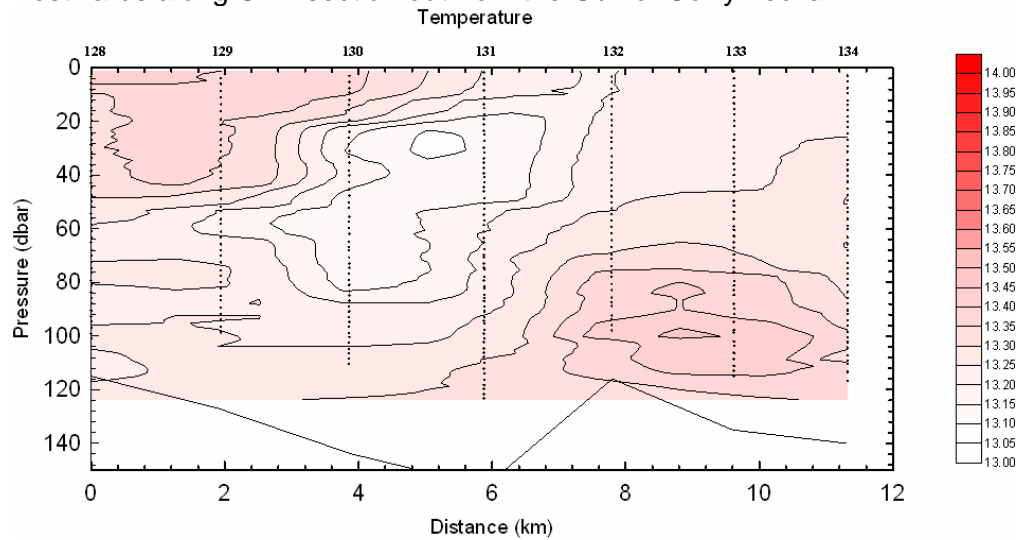




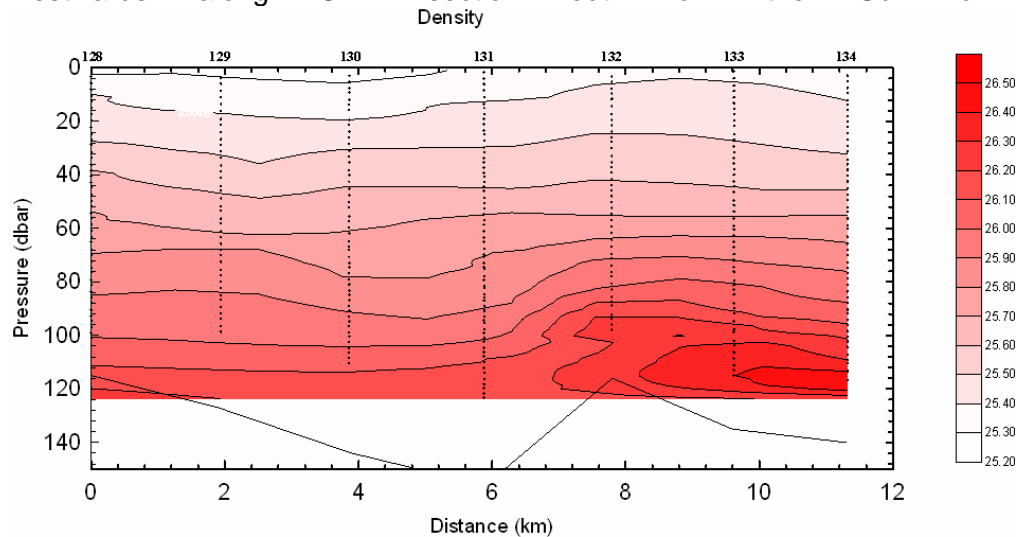
**Figure 4.** CTD Section – The Great Race Area Firth of Lorn. Salinity section (9/10/08) westwards along CTD section out from the Gulf of Corryvreckan.



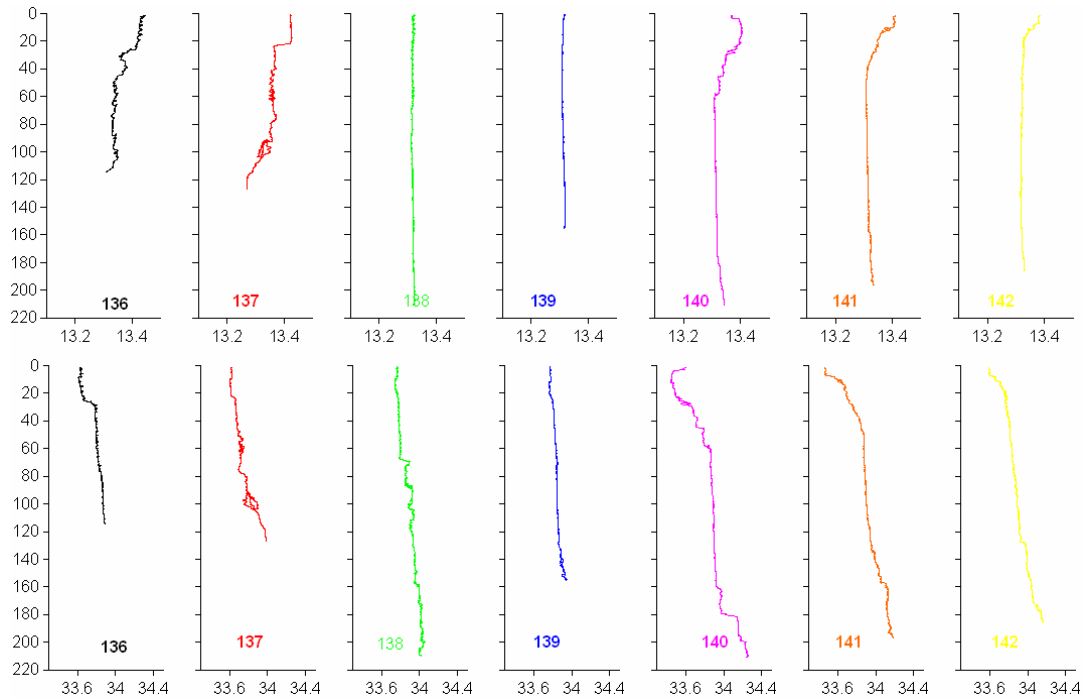
**Figure 5.** CTD Section – The Great Race Area Firth of Lorn. Temperature section (9/10/08) westwards along CTD section out from the Gulf of Corryvreckan.



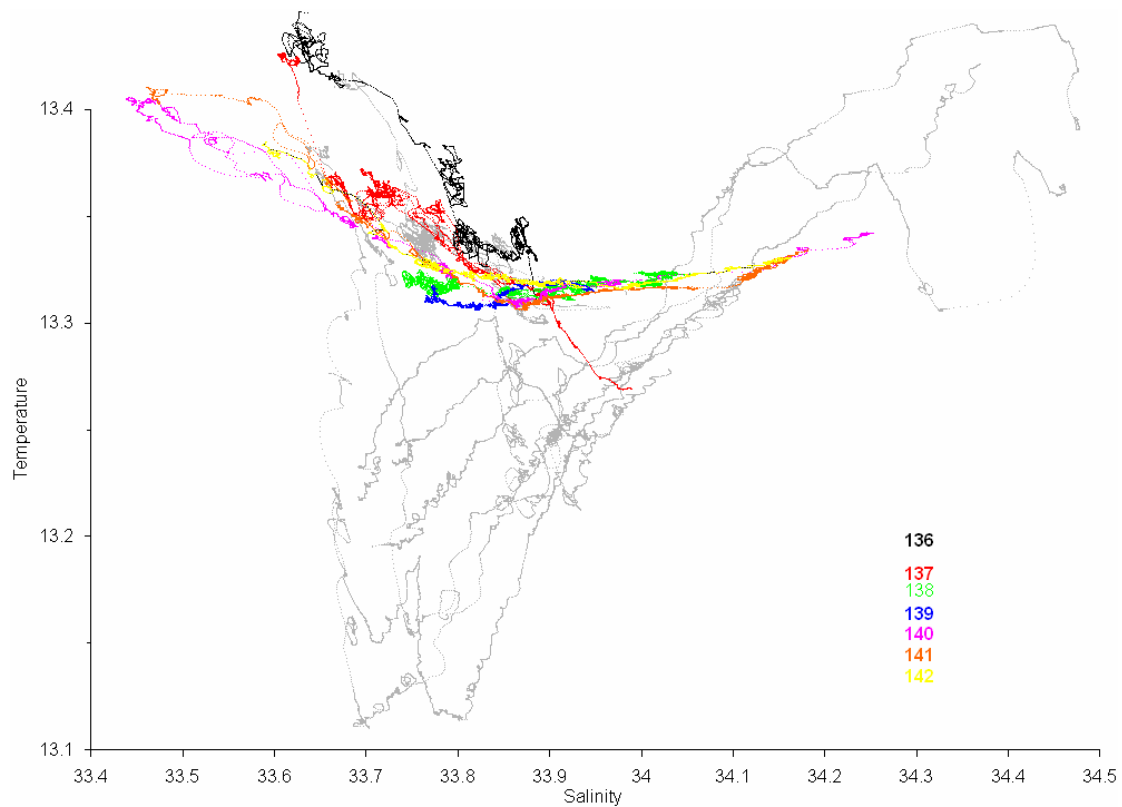
**Figure 6.** CTD Section – The Great Race Area Firth of Lorn. Salinity section (9/10/08) westwards along CTD section out from the Gulf of Corryvreckan.



**Figure 7.** Drifter Profiles – The Great Race Area Firth of Lorn. Temperature (upper) and salinity (lower) vertical profiles (10/10/08) collected adjacent to three drifters, westwards from the Gulf of Corryvreckan. (Vertical axis is pressure dbar).



**Figure 8.** Drifter Profiles – The Great Race Area Firth of Lorn. TS diagram (10/10/08) collected adjacent to three drifters, westwards from the Gulf of Corryvreckan. Grey TS profiles are from 9/10/08.



**Figure 9.** Lamlash Sidescan Survey 14 - 20/10/08, showing the transects, drop frame runs, and grab sample positions

