Cruise report C END 02/11

C END 02/11 A

Primary Aim

To conduct a multibeam survey of an area of seabed between Start Point to West Rutts in the Prawle Point to Plymouth Sound and Eddystone Reefs cSACand Start Point to Prawle Point dSAC off South Devon.

Narrative

Cefas Endeavour sailed from Lowestoft at 11:45 on 06/01/11 and transited south into the channel and then west to a multibeam calibration site (Figure 1) south of Lyme Bay (HMS Formidable)

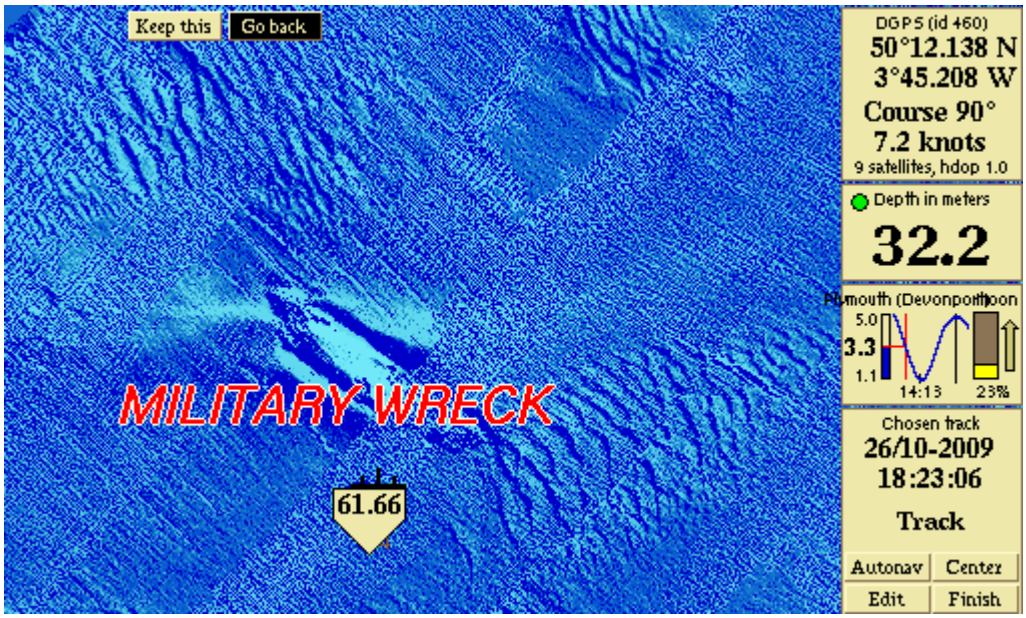

Figure 1. Multibeam image of HMS Formidable

On completion of the calibration exercise *Cefas Endeavour* continued west to begin the multibeam survey between Start Point and Plymouth (Figure 2). On arrival a SVP cast was carried out (14:00, 07/01/11). *Cefas Endeavour* then proceeded to survey the priority area.

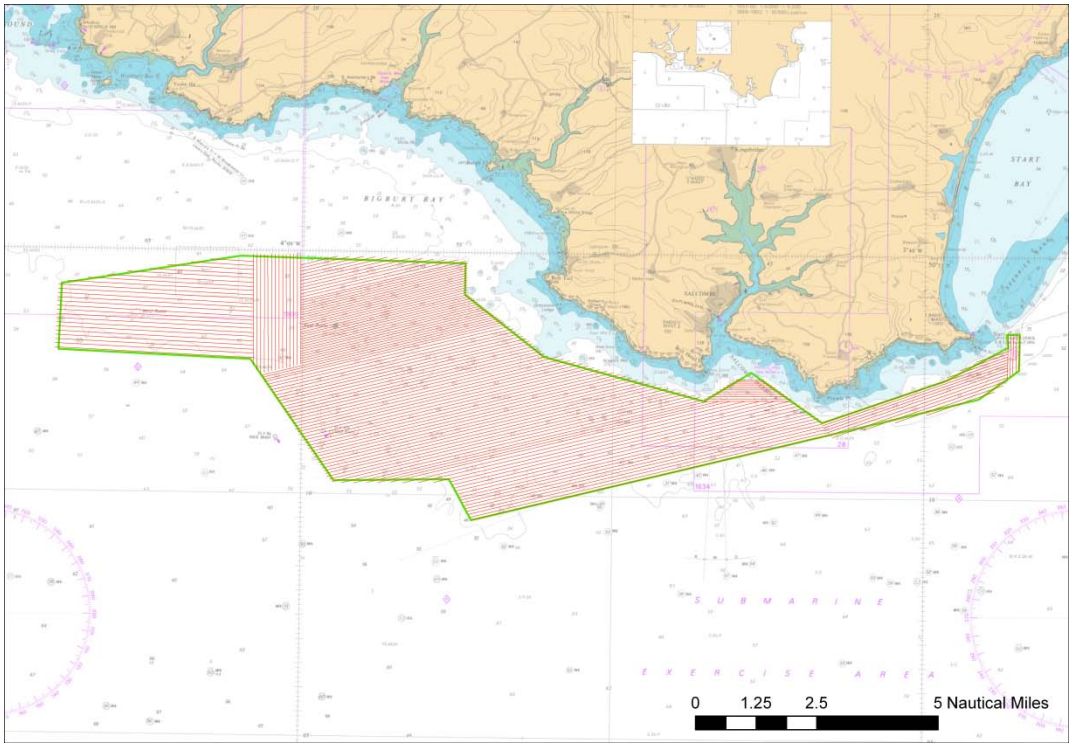

Figure 2. Planned multibeam survey

Several survey lines were run (Annex 1) before a second SVP cast was carried out at (16:29. 08/01/11). On completion of the SVP cast *Cefas Endeavour* continued to acquire multibeam data along planed survey lines (Figure 2). During the acquisition of new acoustic data the previously collected data were post processed using CARIS HIPS to enable the true quality of the data to be assessed (Figures 3-7).

At 13:49, 09/01/11 banging under the hull was noted and checks for fouling of the rudder and propeller were made. No gear was observed so it was decided to return to the survey and reassess the problem when the next SVP cast was carried out (18:00, 09/01/11). While the vessel was stationary the drop camera was deployed over the stern in an attempt to see if any fouling could be observed. With no conclusive evidence that the rudder or propeller were fouled *Cefas Endeavour* returned to the survey grid. At 19:33 the survey was aborted due to a propeller shaft seal alarm. In consultation with the captain and chief engineer it was deemed necessary to transit and dock in Falmouth to allow divers to inspect and assess any damage.

At 09:00 *Cefas Endeavour* docked in Falmouth after completing 577KM of multibeam survey. The planned diver survey was undertaken at 10:00, 10/01/11 and identified rope around the propeller shaft. After removal of this rope damage to the outer shaft seal and rudder was also identified the latter resulting in *Cefas Endeavour* needing to dry dock.

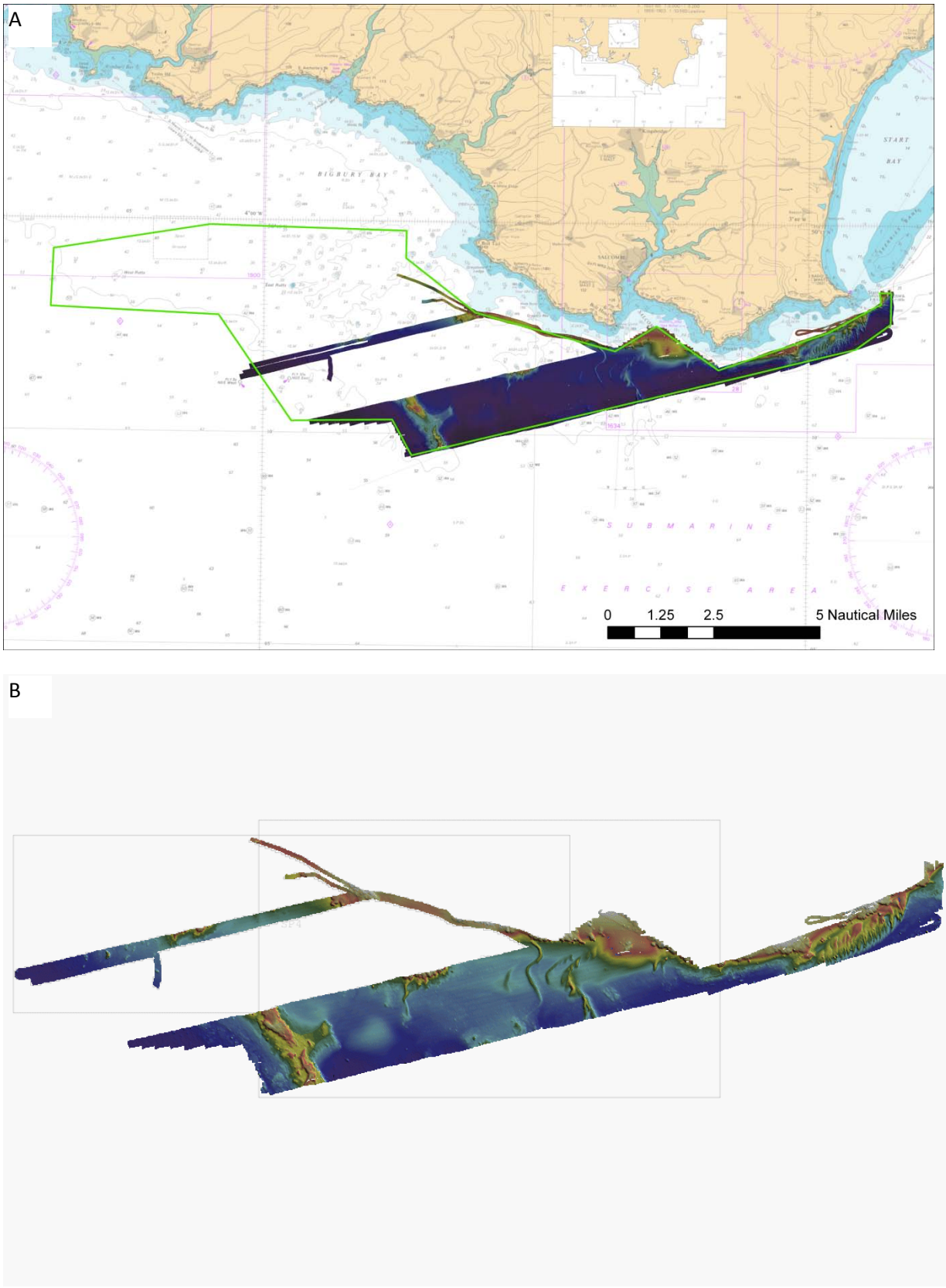

Figure 3 A-B Scope of completed survey

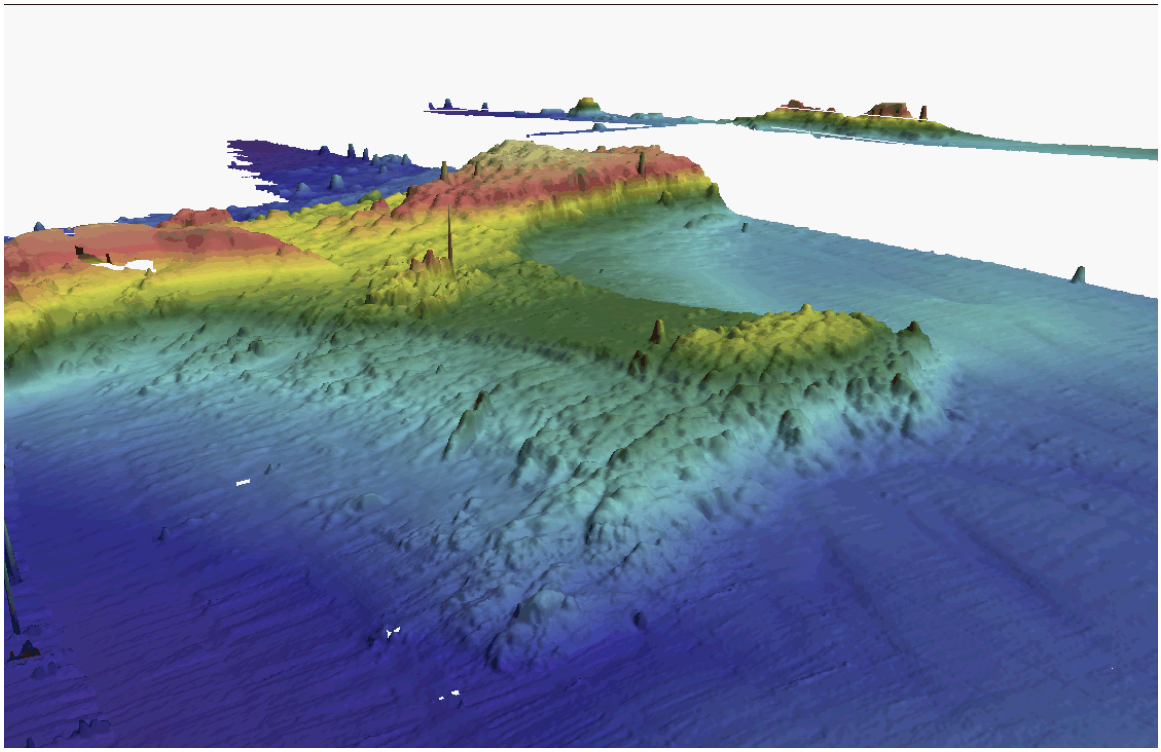

Figure 4 Three dimensional representation reef habitat in the south west of the survey area

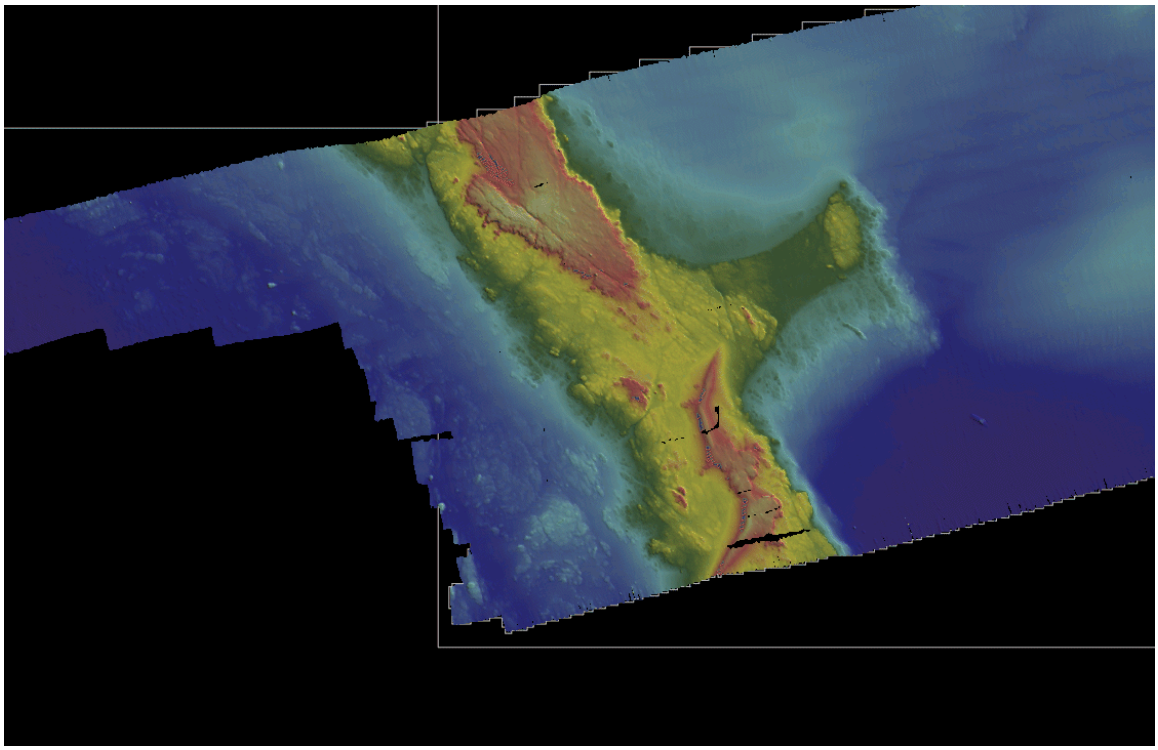

Figure 5 Reef habitat surveyed in the south west of the survey area

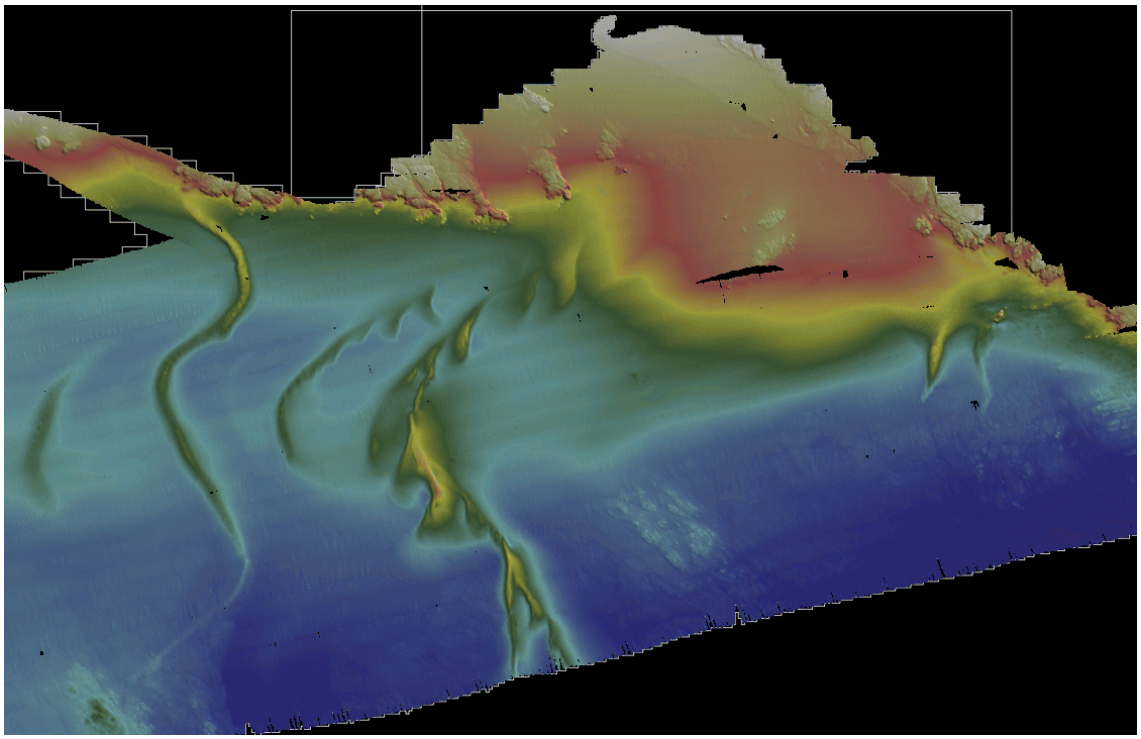

Figure 6 Large sand waves south of Salcombe

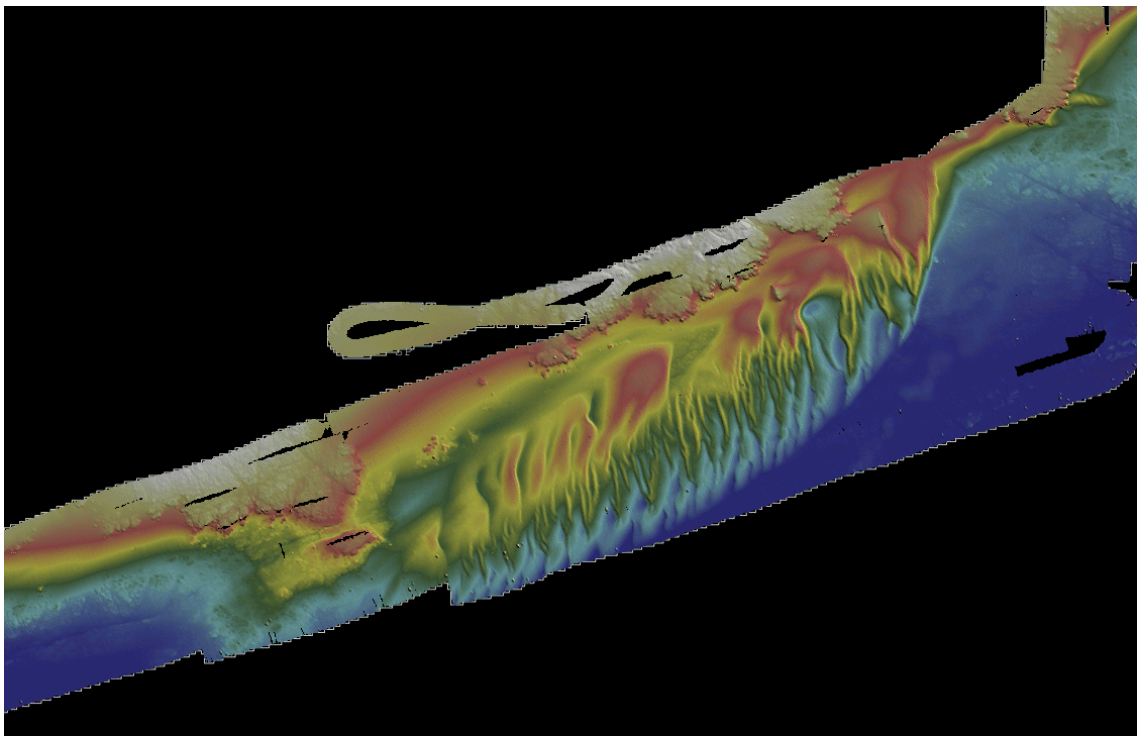

Figure 7 Rocky reef habitat located off Start Point

Annex 1.

Daily multibeam data acquisition log

Date	Line ID	SIS Line start	SIS Start time	SIS Line end	SIS End time	Notes
7th January 2011	NE_017	0	14:43	0	14:51	Slightly off track
	NE_018	2	15:10	2	15:16	Slightly off track. May have to repeat to capture sliver missed
	NE_016	4	15:23	4	15:33	
	NE_005	6	15:53	6	16:00	
	NE_003	8	16:02	8	16:10	
	NE_001	10	16:20	10	16:27	
	NE_004	12	16:32	12	16:39	
	NE_002	14	16:48	14	16:55	
	NE_infill 4/5	16	17:00	16	17:04	
	NE Infill 18	18	17:14	18	17:28	
	NE_015	20	17:48	21	18:20	
	NE_014	23	18:29	24	19:02	
	NE_13	26	19:15	27	19:51	
	NE_012	29	19:59	30	20:31	
	NE_011	32	20:46	33	21:16	
	NE_010	35	21:29	36	21:53	
	NE_009	37	22:07	38	22:36	Fine tuned offsets
	NE_008	40	22:47	40	23:09	
	NE_007	42	23:22	42	23:39	
	NE_006	44	23:53	44	00:04	
8th January 2011	NE_019	46	00:38	48	01:37	West Block start in South to North- very noisy due to bad weather
	NE_020	50	01:46	51	02:44	
	NE_021	53	02:54	55	03:59	Very noisy due to bad weather. Speed slowed at 3:20 to reduce data loss.
	NE_022	57	04:10	59	05:17	
	NE_023	61	05:29	64	07:01	Very noisy due to bad weather. Continued at a reduced speed.
	NE_024	66	07:13	68	08:13	
	NE_025	70	08:25	72	09:41	
	NE_026	74	09:52	76	10:50	
	NE_043	77	11:03	78	11:10	:
	NE_042	79	11:28	80	11:37	
	NE_041	81	11:57	81	12:05	
	NE_033	83	12:20	83	12:32	
	NE_040	85	12:36	85	12:43	
	NE_034	87	12:55	87	13:09	
	NE_039	89	13:15	89	13:23	
	NE_035	91	13:33	91	13:46	
	NE_038	93	13:51	93	14:01	
	NE_036	95	14:09	95	14:20	
	NE_Salcombe infill	96	14:27	96	14:34	Infill north of tip of triangle. Outside of survey area.
	NE_Salcombe infill 2	98	14:37	98	14:41	Infill of northern tip of triangle.
	NE_Salcombe infill 3	100	14:45	100	14:48	Infill of northern tip of triangle.
	NE_Salcombe infill 4	102	14:52	102	14:55	Infill of northern tip of triangle.
	NE_Salcombe infill 5	104	14:59	104	15:01	Final infill of northern tip of triangle.
	NE_037	106	15:12	106	15:22	
	NE_050	108	15:24	109	16:19	
	NE_023_second run	112	17:12	113	18:11	
	NE_049	115	18:40	117	19:41	Check for noise at beginning (weather related). NB Position log error also at
	NE_021_second run	119	20:00	121	21:02	
	NE_048	123	21:31	125	22:40	
	NE_027	127	22:57	129	23:58	
9th January 2011	NE_047	131	00:17	133	01:15	
	NE_046	134	01:21	135	02:20	shoal area needs infill
	NE_045	137	02:28	138	03:24	shoal area needs infill
	NE_044	140	03:31	141	04:28	shoal area needs infill
	NE_032	143	04:34	145	05:36	
	NE_031	147	05:48	148	06:47	
	NE_030	150	06:50	152	07:53	20m Port
	NE_029	154	08:03	155	08:55	20m Starboard
	Infill_A	157	08:58	158	09:14	Infill line
	Infill_B	160	09:25	161	09:32	Infill line
	Infill_C	163	09:36	163	09:37	Infill line
	Infill_D	165	09:42	165	09:43	Infill line
	Infill_E	167	09:46	167	09:50	Infill line
	NE_029_b	169	09:52	169	10:10	Infill line adjacent to NE_029_b
	Infill_F	171	10:14	171	10:16	Infill line
	Infill_G	173	10:24	174	11:10	Infill line
	Infill_H	176	11:13	176	11:25	Infill line
	Infill_I	178	11:29	178	11:38	Infill line
	Infill_J	180	11:43	180	11:47	Infill line
	Infill_K	182	11:51	182	11:57	Infill line
	Coastal Fill A	185	12:39	185	13:08	
	Coastal Fill B	187	13:17	188	13:49	Fixed gear caught at end of transect. Backed water to shed line.
	Coastal Fill C	190	13:52	190	14:18	Possible gear (still) on blade. Check made to make sure blade and prop cle
	NE_075	193	15:25	194	16:10	use turn 192 for beginning of line
	NE_074	195	16:19	196	16:59	includes turn at west end...
	NE_073	198	17:01	199	17:42	slight gap at start of line due to shallow water. CTD and DDV at end of run.
	NE_072	202	19:21	202	19:33	Line aborted early due to engine alarm

Annex 2.

Daily Progress Reports

C END 02/11 C

Primary Aim

To investigate the effect of a given pressure gradient (bottom trawling) on infaunal community characteristics. Three sites were identified and selected following a comprehensive desk study. In this instance bottom trawling was selected as a viable pressure for investigation, due to the readily accessible Vessel Monitoring System (VMS) data that reports a vessels position every two hours. The data were cleaned (to remove VMS data relating to vessels in transit) leaving only data which was indicative of vessels engaged in fishing activity. The data were assessed across several areas to identify sites that displayed a distinct gradient in fishing pressure. (Selected sites shown below in Fig 8). The site to the north east of Haig Fras was determined to demonstrate the best pressure gradient, and was thus selected as the primary site, with the others prioritised depending on weather conditions. Sidescan sonar was deemed the best way to assess the seabed for fishing pressure. Upon completion of the remote sensing portion of the investigation a statistically viable sampling regime was to be employed for future assessment of the benthic infauna and to determine whether present sampling methods are suitable for detecting this level of pressure gradient.

Secondary Aim

Following the recommendation of Haig Fras site SCI (site of community Importance) to the European Commission, as a candidate Special Area of Conservation for Annex I reef habitat, new evidence came to light in the form of Sonar data gathered from fishing vessels. This indicated that the reef habitat extended significantly outside the existing site boundary. The secondary aim of this survey was to conduct a bathymetric survey to map the extent of the Annex I reef habitat and to collect ground truth data from representative locations within the survey area to characterise the seabed habitats present.

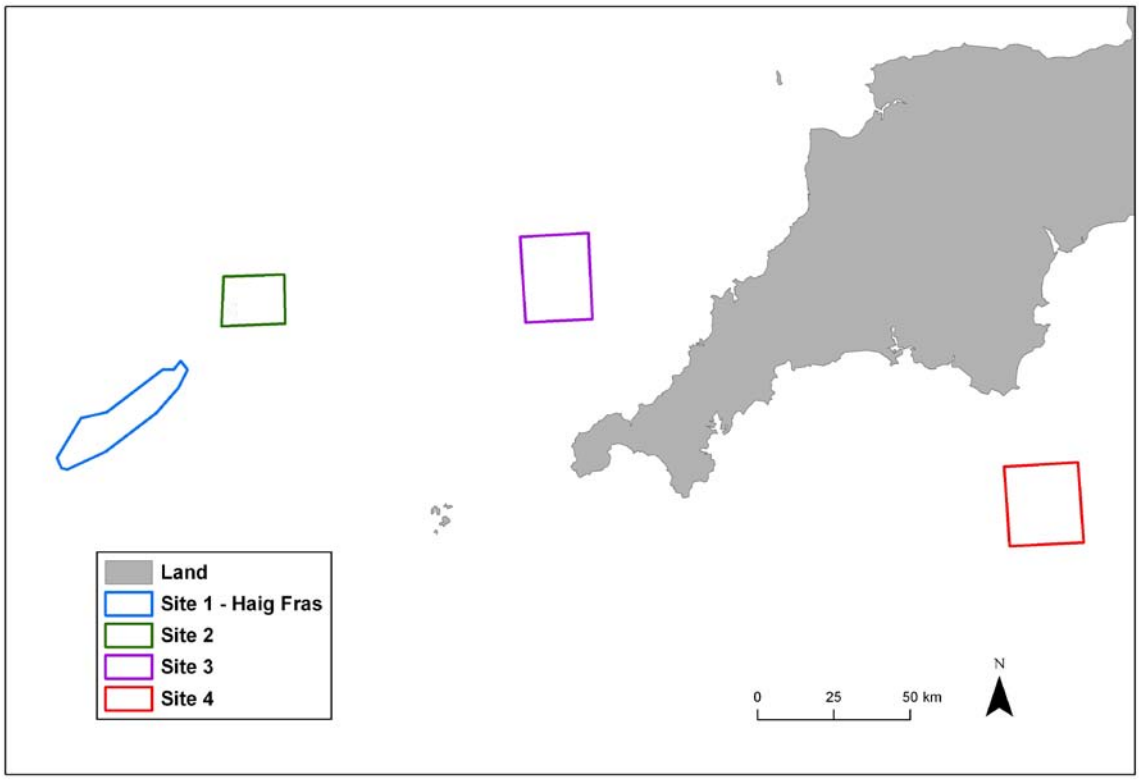

Fig 8 – Haig Fras and fishing pressure survey areas

Narrative

Prior to Parts B and C of CEND 2/11, RV Endeavour had entered dry dock in Falmouth to effect repairs to the rudder. Aims of segment B (fishing pressure) were transferred to Part C of the cruise as a priority – leaving the original mapping component as a secondary aim. The Haig Fras fishing pressure site 1 was selected as weather was forecast to be suitable for acoustic survey in this area. Endeavour sailed from Falmouth dry dock 15:30 20/1/11 and reached Haig Fras site 1 at 01:30 on 21/1/11. Onboard were a multidisciplinary survey team (Geologists, Biologists and acoustic survey specialists) comprising JNCC and Cefas staff, accompanied by a Fisheries Liaison Officer (FLO) and two marine life observers.

At 1:55 acoustic survey commenced with a prospecting line through the proposed high impact area using the 100/400kHz SIS1624 sidescan sonar system. Trawl tracks were soon detected, so to confirm the extent a parallel line was also surveyed. The 300/600kHz 4200FS sidescan was also deployed to assess the optimum frequency (in terms of range and resolution) for trawl track detection. The 300kHz frequency was subsequently selected and employed for the dedicated surveys of the two experimental boxes.

The high impact area (a 25km^2 box) was initially surveyed with sidescan sonar and multibeamsonar. The sidescan's live display was used to perform a rapid assessment technique developed for this experiment – measuring track density in real time. (see fig 9 Measured track density)

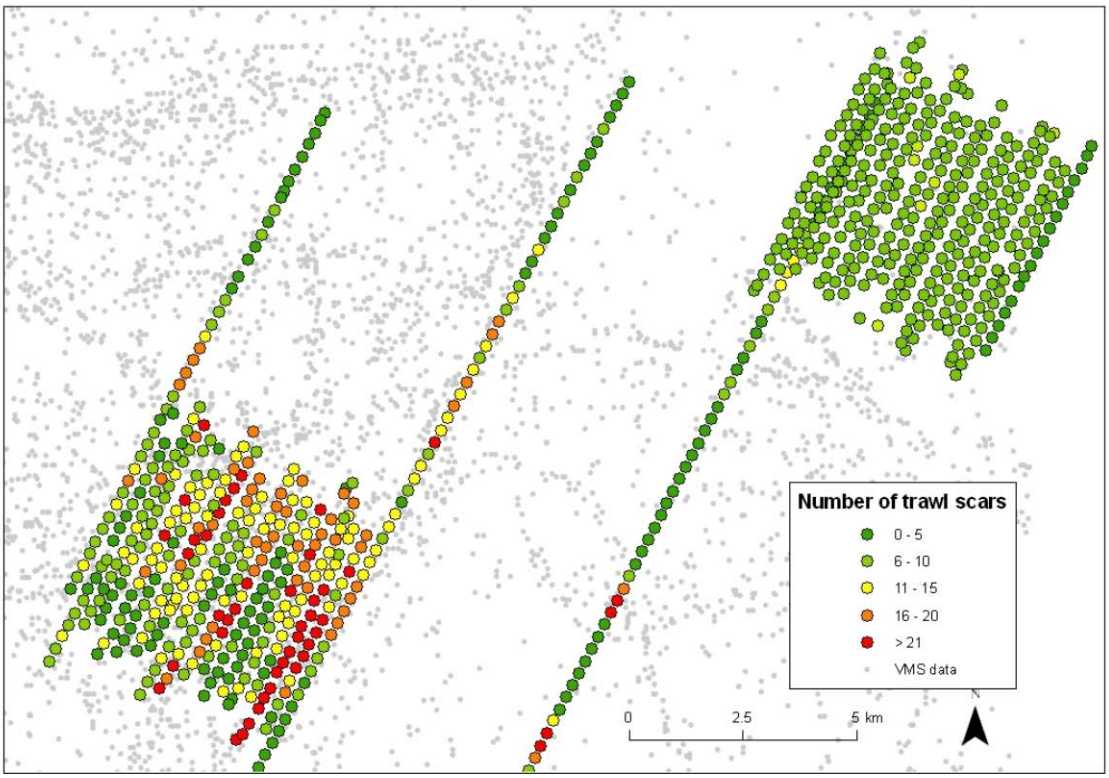

Figure 9 Track Density overlaying VMS data

At 00:46 on 22/1/11 the high intensity box was completed. The low intensity box was also surveyed to ensure that the selected area accurately represented a region of low trawling pressure (determined by low densities of trawl scars) and comprised a similar sediment composition to the high intensity box.(see fig 10).

Two sidescan sonar cross lines were run to help understand if line direction provided any differing sensitivity to track detection and at 09:25 on 24/1/11 Endeavour steamed to the Haig Fras SCI.

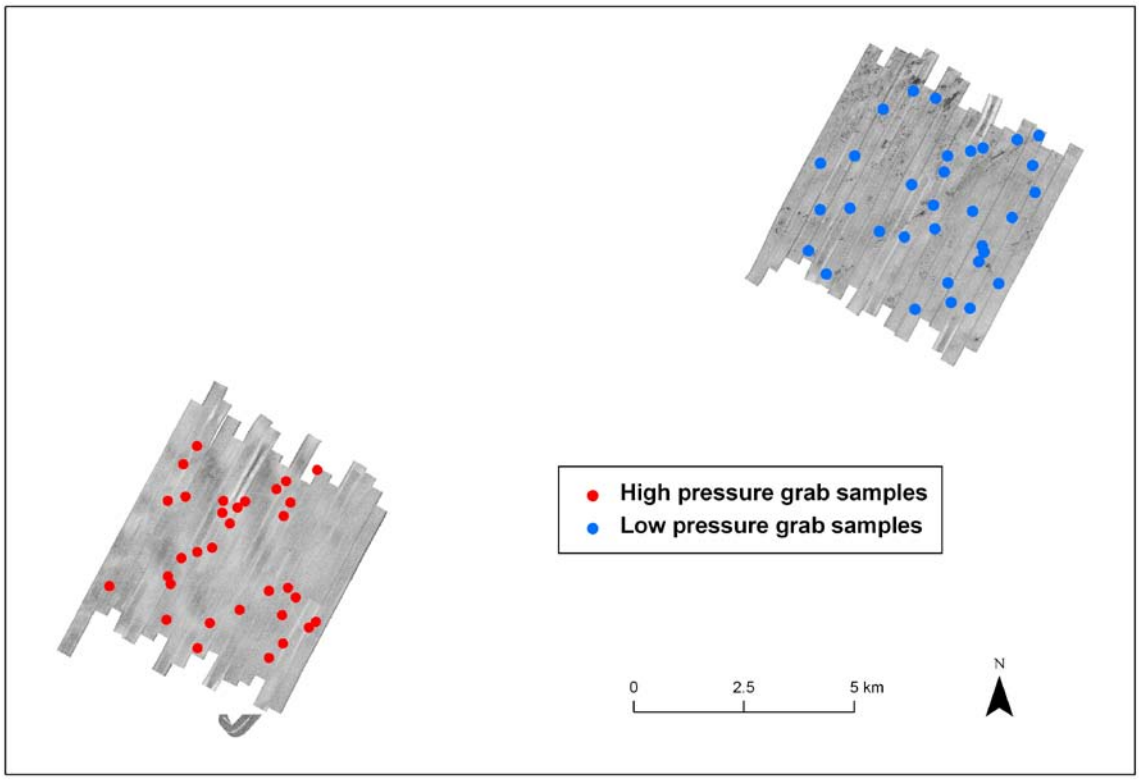

Fig 10 Sidescan Acoustic backscatter and sample positions

A randomised array of day grab stations was generated within each box. Those stations falling within 100 metres of the box edge or each other, and those over harder substrate were eliminated, until 32 remained per box.

Ground truth sampling started at 00:35 on 23/1/11 and 64 Day grab samples (32 from each experimental box) were collected for macrofaunal analsysis and sediment Particle Size Analysis (PSA). Faunal samples were sieved on board over a 1mm mesh and the retained fraction was fixed and preserved for transport back to the laboratory for subsequent analysis.

Cefas Endeavour then transited to the Haig Fras to begin acoustic characterisation of the survey area.

Secondary Aim - Haig Fras SCI

As the reef structure and limits were poorly understood, at 11:30 on 24/1/11 *Cefas Endeavour* embarked on a multibeam sonar search pattern (fig 11 prospecting lines) of very coarse scale to examine the reef extent. Once complete the approximate reef extents were defined at 31 crossing points and the area divided into 7 blocks (fig 11 - A in the South West to G in the North East)

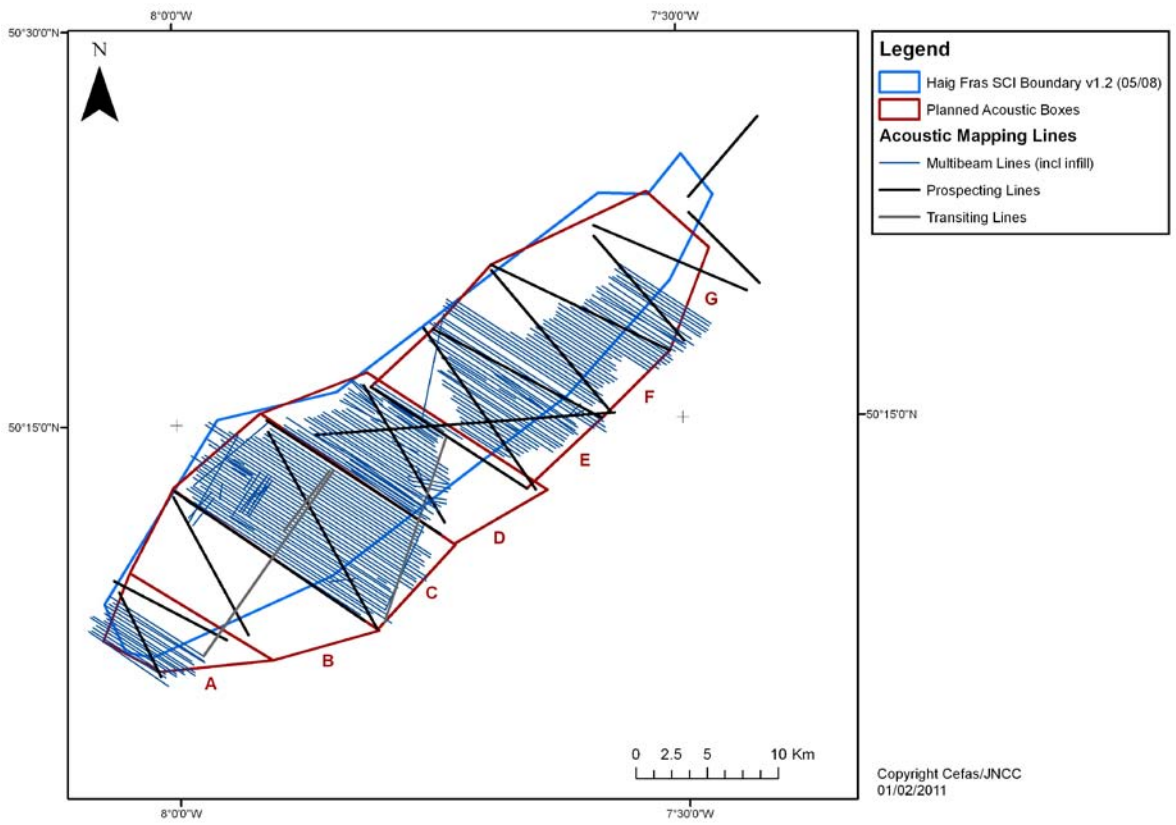

Fig 11 - Haig Fras survey blocks and lines run in the bathymetric survey

Block A was surveyed, followed by part of block D – thought to be over the shallowest section. This information directed the deployment of nine experimental fish traps onto a known 'reefy' area which were laid at 13:24 on 25/1/11

Recovery of the traps produced samples of cryptic epifaunal species which were not visible in the video footage and still images obtained by the drop camera. Three mesh sizes were employed in the fish traps (1mm, 5mm and 50mm) to ensure that the fauna retained were representative of the size spectra of species present (Figure 12).

Figure 12. Fish traps with 50mm, 5mm and 1mm mesh liners.

Species present in the recovered traps comprised conger eel (*Conger conger*), edible crab (*Cancer pagurus*), squat lobster (*Munida rugosa*) and a number of scavenging isopods and juvenile gastropods.

Five camera transects were also run with a drop frame combined video and stills camera. Transects were selected to improve our understanding of the extent and characteristics of biotopes present within the Haig Fras SCI.

The multibeam imagery was also used to assist in the optimum location of sites for the camera tows. These were selected after careful inspection of the reef profile to find a safe downhill path with no nasty surprises for the camera frame. The vessel and frame were tracked in real time on 3D bathymetric imagery as the ship moved across the planned line under dynamic positioning at 0.3 knots (Figure 13).

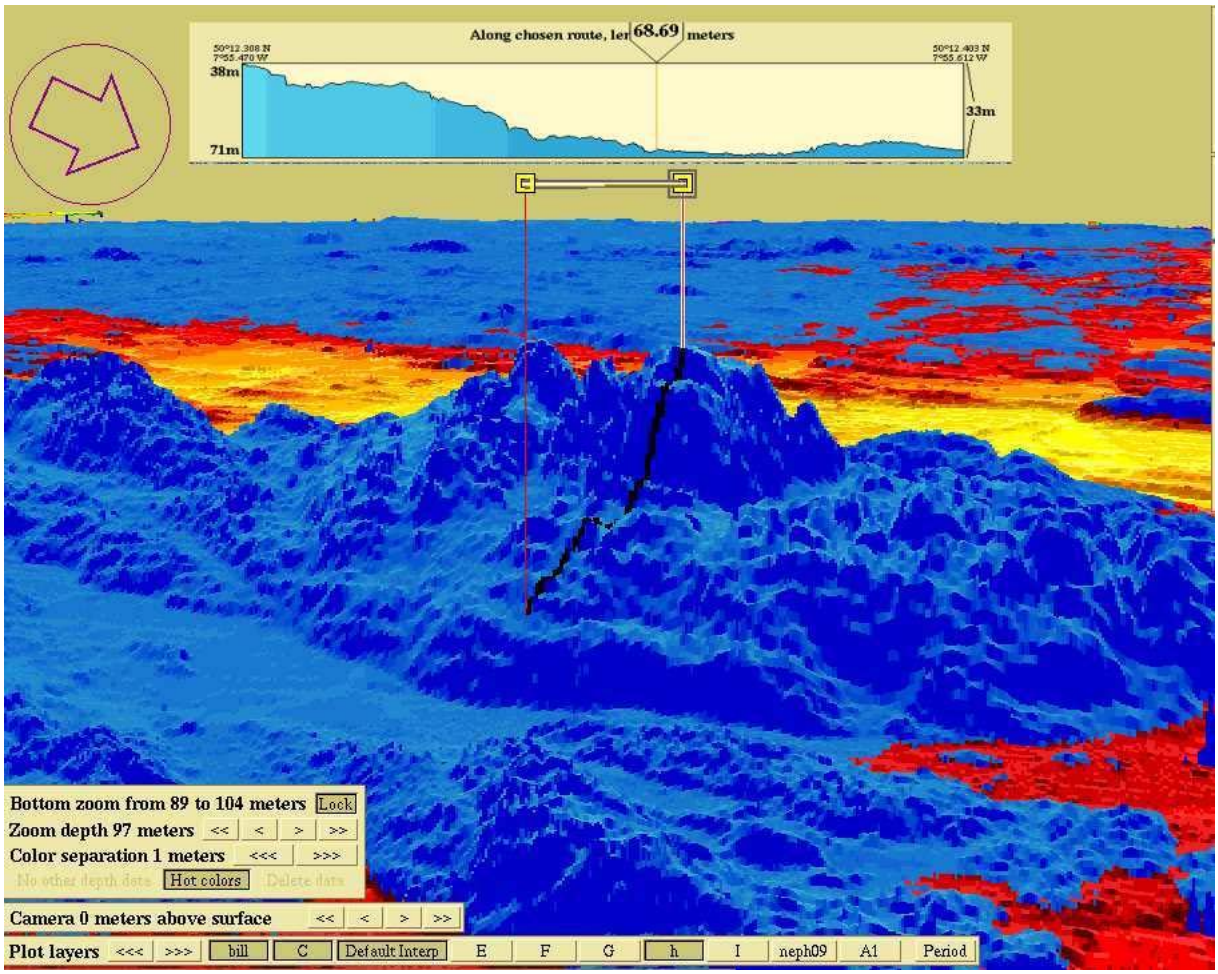

Fig 13 camera tow viewed over bathymetric 3d representation of the highest known peak on Haig Fras (approx 40m below surface)

A number of epifaunal species were identified from the seabed imagery as being relatively ubiquitous across the reef area and these included the jewel anemone (*Corynactis viridis*), the Devonshire cup coral (*Carophyllia smithii*) and the staghorn bryozoan (*Omalosecosa ramulosa*) (Figure 14).

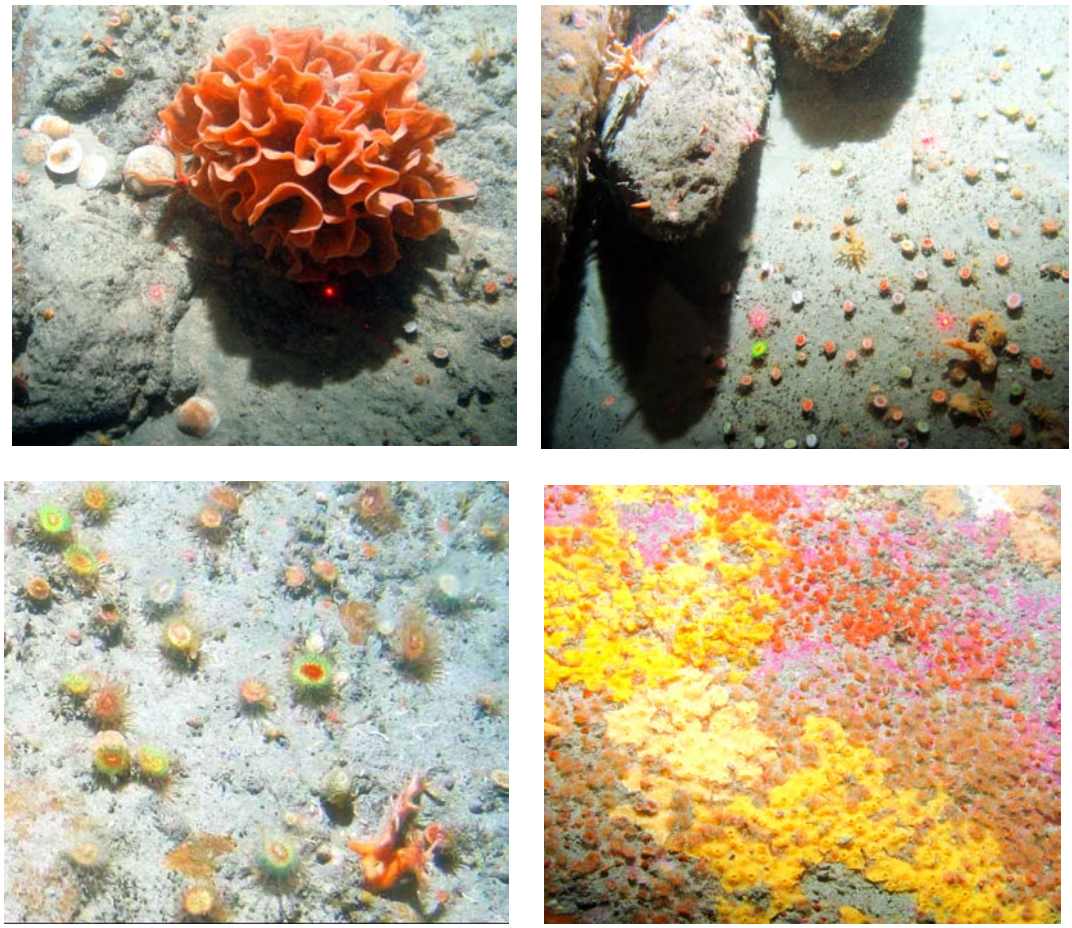

Fig 14 – Selected underwater stills pictures of Haig Fras reef

Further multibeam survey lines were run until bad weather stopped operations at 16:56 on 26/1/11. When the weather abated at 04:28 on 28/1/11 blocks D and C were completed. Multibeam data were processed as each line was completed allowing an assessment of data quality and any gaps encountered. Gaps were filled in on a block by block basis. Further processing of the multibeam backscatter (using Geocoder software) allowed a preliminary assessment of sediment types found in the area (fig 15). Coarser sediment (presumably gravel) was detected as a very slight (1 metre) series of wave-shaped depressions– characterised as flat but reflective (pink) areas in the less reflective (blue) areas around the reef edge. Similar features have been found in various locations around the world and are termed 'sorted bedforms'. How these peculiar features are formed is still not well understood.

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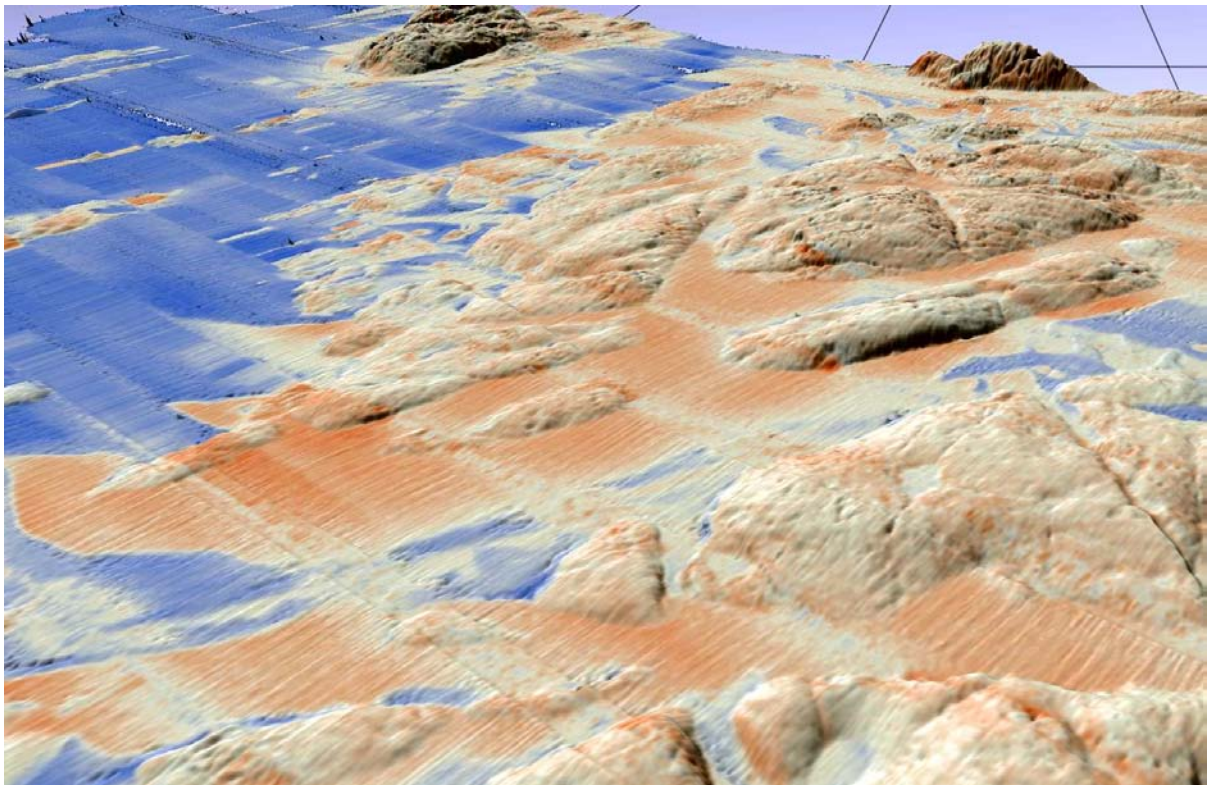

Fig 15 backscatter overlaid on 3d bathymetric view of Haig Fras

Resumption of the survey began in blocks C and D but plans to survey further blocks were changed (fig 16) to avoid fixed fishing gear (indicated by green lines) that was encountered in the North of block F and G.

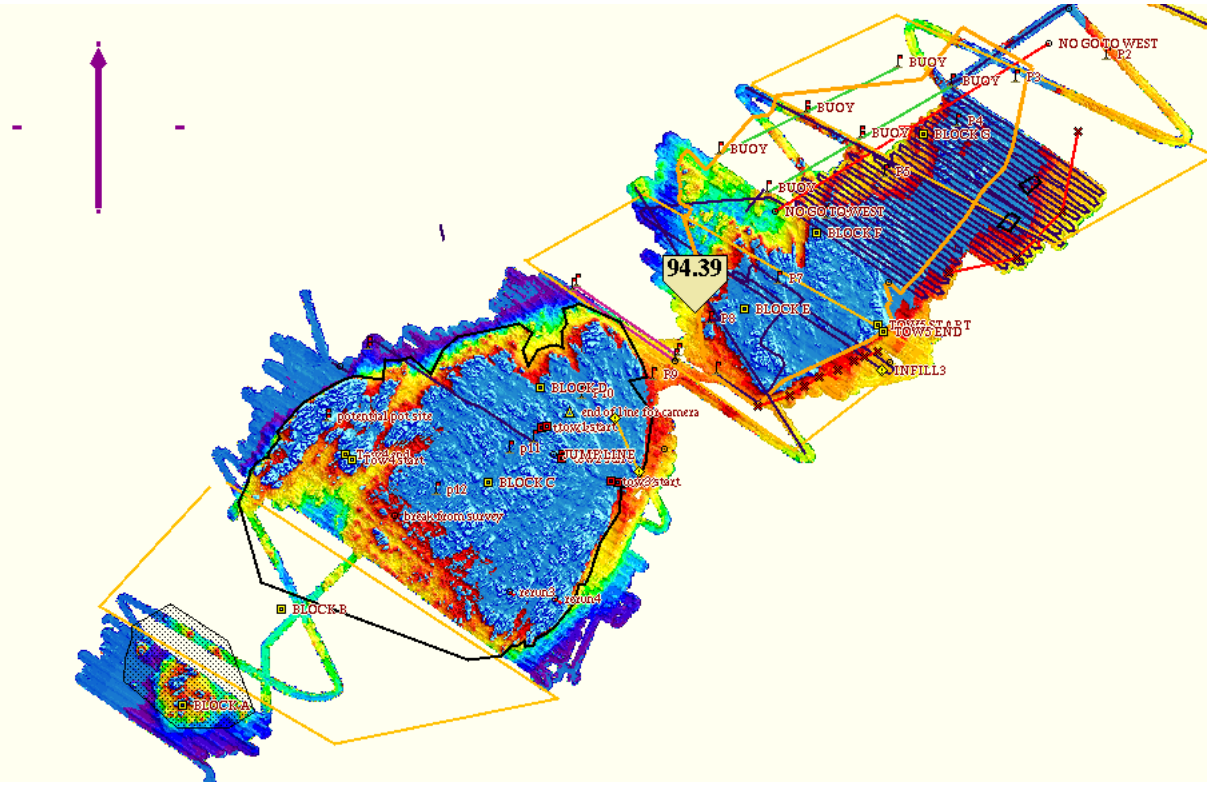

Fig 16 – Overall survey coverage (reef coloured by contour to delineate the approximate extent of the main structure)

In General both fixed gear fishing and bottom trawl fishing were observed in and around the Haig Fras whilst *Cefas Endeavour* was conducting surveys - leading to the observation that the area is actively fished. (FLO report annex 2)

Fig 17 – Fishing vessel lining on Haig Fras

In all approximately 1700 kilometres of multibeam sonar were covered, until *Cefas Endeavour* completed survey and under a worsening South Westerly swell left the site at 13:00 on 1/2/11 for passage to Lowestoft. Whilst passing Newlyn the fisheries liason officer was transferred off by small boat. *Cefas Endeavour* made port at 09:00 hrs on 3//3/11 to finish cruise 2_11C.

Excerpts from Daily Progress report – Primary Aim

DPR No. 1 - 20/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00:00	Mob	
15:30:00	Transit	Depart Falmouth for Haig Fras survey site
24:00:00	Transit	1.5 hours from site

DPR No. 2 - 21/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00:00	TOSu	Testing of the utility of acoustic techniques for detecting fishing pressure gradient based on density of trawl marks – rapid assessment from sidescan sonar (inc SVP measurement every 24hrs). Prospecting Survey using SS/MBES
01:30	Calibration	CTD/SVP
01:55		
16:47	TOSu	High Fishing Pressure Box – (25km^2 box) - 100% sidescan and MBES coverage. Problems with Winch 'tripping out' for no apparent reason; reduced retrieval speed.

DPR No. 3 - 22/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSu	Continued acoustic survey of High Fishing Pressure Box – (25km^2 box) - 100% sidescan coverage. Rapid assessment was undertaken on the fly during data acquisition. This showed clear evidence of large numbers of trawl tracks visible from sidescan data.
00:16	Offshore Calibrations	CTD/SVP drop
00:46	TOSu	Completed High Pressure Box Moved onto acoustic survey of Low Fishing Pressure Box (25km^2) – 100% sidescan coverage. Rapid assessment undertaken on the fly during data acquisition, showed only limited evidence of trawl scars as anticipated. Heading incorrect on MBES (due to malfunction in Motion Reference Unit) – affected lines HFLP10A and HFLP14AB. Action – MRU reset.

DPR No. 4 - 23/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSu	Completion of Low Pressure Box
00:35	TOSa	Commence day grab sampling operation in High Pressure Box; as sidescan data had been processed for this area and suitable grab positions could be randomly generated.
08:30	Other	Fire drill and muster
10:48	TOSa	Continue day grab sampling in High Pressure Box (32 samples taken)
17:00	TOSa	Commence day grab sampling in Low Pressure Box (32 samples to be taken)

DPR No. 5 - 24/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSa	Completion of day grab sampling in Low Pressure Box (32 samples to be taken)
06:00:00	Offshore Calibrations	CTD/SVP drop
06:30:00	TOSu	Transit to High Pressure Box and complete sidescan cross lines
09:25:00	Transit	Transit to Haig Fras reef
11:00:00	Offshore Calibrations	CTD/SVP drop
11:30:00	TOSu	Start prospecting MBES lines on Haig Fras reef.

Excerpts from Daily Progress report – Secondary Aim Haig Fras SCI

DPR No. 6 - 25/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	**TOSa**	**Continue completing prospecting lines over Haig Fras reef to better define extent of reef and then start detailed coverage of Block A**
10:28:00	**Equipment/Downtime**	**Multibeam system failed to restart pinging after reset**
11:35:00	**TOSu**	**Continue detailed coverage of Block A**
13:24:00	**TOSa**	**Move to selected site and deploy set of fish traps (pots) with various mesh sizes to sample cryptic fauna on reef.**
13:42:00	**OffshoreCalibrations**	**CTD/SVP drop**
14:12:00	**TOSu**	**Move to Block D and commence detailed MBES coverage**
20:39:00	**ToSa**	**Commence groundtruthing of Haig Fras reef with drop camera in Block D**

DPR No. 7 - 26/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSa	Continue camera drops in Haig Fras reef area D
01:13	TOSu	Recommence multibeam data acquisition in Area D
13:00	Offshore Calibrations	CTD/SVP drop
13:21	TOSu	Start gathering multibeam data in Area C
16:56	Waiting on Weather	Weather downtime – rough weather causing data quality issues with multibeam data.
19:52	TOSu	Exploratory infill lines to test data acquisition in poor weather.
22:04	Waiting on Weather	Conditions deteriorated further. Infill lines stopped.

DPR No. 8 - 27/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	Waiting on weather	Weather downtime – rough weather continues to prevent multibeam data collection due to poor quality results.

09:24	TOSu	Test line run to infill a gap in Block D and test multibeam quality.
09:43	Waiting on weather	Weather downtime – multibeam quality too low due to rough weather. Hove to awaiting moderating wind/sea
15:25	Waiting on Weather	Move to Block D and commence tests on multibeam coverage over gaps in previous data collected and non-reef areas. Quality too low at normal survey speed.

DPR No. 9 - 28/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSu	**Block D infill lines**
04:28	Offshore Calibrations	CTD/SVP drop
04:48	TOSu	Block C multibeam coverage

DPR No. 10 - 29/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSu	Block C multibeam full coverage
07:00	Offshore Calibrations	CTD/SVP drop
07:30	TOSu	Continue Block C multibeam coverage

DPR No. 11 - 30/1/11

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	TOSu	Block C multibeam
02:06	TOSa	Camera drop – DC04
07:00	Offshore Calibrations	CTD/SVP drop
08:05	Other	Drill – Man overboard simulation
18:55	TOSa	Camera drop – DC05
20:20	TOSu	Move to Block F and undertake multibeam survey

Annex 2 – FLO Fishing Activity report

Fishing liaison – Haig Fras survey (Jan 2011).

Start Date - Thurs 20/01/2011. Finish Date -Tues 01/02/2011.

FLO Karl Menear.

Contact details: Tel – 01326 291 218. Mobile – 07977 262 338. E-mail k.menear@btinternet.com.

Vessels engaged in fishing within a 20nm radius of position Lat 50 12.638 Long 007 55.548 have been recorded during the HAIG FRAS survey.

Friday 21/01/2011.

FV Hent Ar Mor	Call sign-FQHI / MMSI No-227486000	TRAWLER.
FV Skipper	Call sign-EI 7060	TRAWLER.
FV Eridan	Call sign-FHKW / MMSI No-227538000	TRAWLER.

Sat 22/01/2011.

FV Eridan	Callsign-FHKW / MMSI No-227538000	TRAWLER.
FV Hent Ar Mor	Callsign-FQHI / MMSI No-227486000	TRAWLER.
FV Damien Florent	Callsign-FNSD / MMSI No-226216000	TRAWLER.
FV Alphaver	Callsign-FVXS / MMSI No-227314000	TRAWLER.
FV Chephren	Callsign-FHBW / MMSI No-227902000	TRAWLER.
FV Pors Moguer	Callsign-FHVT / MMSI No-228213000	TRAWLER.

Sun 23/01/2011.

FV Eridan	Callsign-FHKW / MMSI No-227538000	TRAWLER.
FV Chephren	Callsign-FHBW / MMSI No-227902000	TRAWLER.

Sun 23/01/2011 con't.

FV Saint Josse Callsign-EI 6123 / MMSI No-250379000 TRAWLER.

FV Emer Jane Callsign-EI 6933/ MMSI No-250122460 TRAWLER.

FV ???????????? Callsign-???? / MMSI No-250126460 TRAWLER.

FV Hent Ar Mor Callsign-FQHI / MMSI No-227486000 TRAWLER.

FV Damien Florent Callsign-FNSD / MMSI No-226216000 TRAWLER.

Mon 24/01/2011.

FV Corona Gloria Callsign-EICN 5 / MMSI No-250001093 TRAWLER.

FV Durre Berria Callsign-EAOQ / Reg No-3 BI 4504 LONG LINE VESSEL (STATIC GEAR).

Tues 25/01/2011.

FV Brian Eoin Callsign-EI 8869 / MMSI No-250000699 TRAWLER.

Wed 26/01/2011.

FV Durre Berria Callsign-EAOQ / Reg No-3 BI 4504 LONG LINE VESSEL.

STATIC GEAR.

Gear positions - Lat 50 22.970 Long 007 29.408 Laid SW to position – Lat 50 20.315 Long 007 33.127.

Thurs 27/01/2011.

FV Durre Berria Callsign-EAOQ / Reg No- 3 BI 4504 LONG LINE VESSEL.

STATIC GEAR.

Gear position-Lat 50 13.953 Long 007 45.561 Laid W to position-Lat 50 13.707 Long 007 46.994.

Gear position-Lat 50 14.545 Long 007 48.448 Laid W to position-Lat 50 14.050 Long 007 50.586.

FV Pluton Callsign-FGRK / MMSI No-226243000 TRAWLER.

Thurs 27/01/2011 con't

FV Aine Christina	Callsign-EI 6227 / MMSI No-250470000	TRAWLER.
FV Adventurer	Callsign-EICC 9 / MMSI No-250001128	TRAWLER.
FV Le Balbuzard	Callsign-FINH / MMSI No-227406000	TRAWLER.
FV Berlewen	Callsign-VQRW 6 / MMSI No-235005980	TANGLE NETTING VESSEL .

STATIC GEAR.

Gear position-Lat 50 19.400 Long 007 42.100 Laid SW to position-Lat 50 21.400 Long 007 35.600.
Gear position-Lat 50 19.100 Long 007 35.800 Laid SW to position-Lat 50 20.250 Long 007 32.330.
Gear position-Lat 50 18.500 Long 007 40.400 Laid SW to position-Lat 50 21.000 Long 007 33.700.

Fri 28/01/2010.

FV Adventurer	Callsign-EICC 9 / MMSI No-250001028	TRAWLER.
FV Claude Moinier 2	Callsign-FHQI / MMSI No-227909000	TRAWLER.
FV Lours Des Mers	Callsign-EIFB 2 / MMSI No-250001415	TRAWLER.
FV Hannah J	Callsign-EI 8715 / MMSI No-250000608	TRAWLER.

FV BERLEWEN STATIC GEAR POSITIONS SAME AS Thursday 27/01/2010.

Sat 29/01/2010.

NO FISHING VESSELS SIGHTED, FV BERLEWEN STATIC GEAR POSITIONS AS Thursday 27/01/2010.

Sun 30/01/2011.

FV Annelies Ilena	Callsign-PHKE / MMSI No-244563000	TRAWLER.
FV Connemara	Callsign-FGSR / MMSI No-227485000	TRAWLER.
FV Eurysthee	Callsign-FGSN / MMSI No-227317000	TRAWLER.

Sun 30/01/2011 con't

FV Le Nautile	Callsign-FGRG / MMSI No-227366000	TRAWLER.

FV BERLEWEN STATIC GEAR POSITIONS SAME AS Thursday 27/01/2011.

Mon 31/01/2011.

FV Eurysthee	Callsign-FGSN / MMSI No-227317000	TRAWLER.
FV Connemara	Callsign-FGSR / MMSI No-227485000	TRAWLER.
FV Nautile	Callsign-FGRG / MMSI No-227366000	TRAWLER.
FV Alphaver	Callsign-FVXS / MMSI No-227314000	TRAWLER.
FV Damien Florent	Callsign-FNSD / MMSI No-226216000	TRAWLER.

FV BERLEWEN STATIC GEAR SAME POSITION AS Thursday 27/01/2011.

Tues 01/02/2011.

FV Connemara	Callsign-FGSR / MMSI No-227485000	TRAWLER.
FV Berlewen	HAULING STATIC GEAR, RETAINING ONBOARD.	
FV Alphaver	Callsign-FVXS / MMSI No-227314000	TRAWLER.
FV Eurysthee	Callsign-FGSN / MMSI No-227317000	TRAWLER.
FV Nautile	Callsign-FGRG / MMSI No-227366000	TRAWLER.
FV Adventurer	Callsign-EICC 9 / MMSI No-250001028	TRAWLER.

END OF SURVEY 1300Hrs Tuesday 01/02/2011…

Annex 3 – MMO sitings summary report - Jamie Coleman

Marine Mammal Observers carried out their work from the bridge of the vessel where they recorded any sightings of marine mammals and sea birds during the hours of daylight (0815-1700).

The trip provided a total of 21 cetacean sightings from 4 different species. White Beaked Dolphin (*Lagenorhynchus albirostris*), Common Dolphin (*Delphinus capensis*) and Harbour Porpoise (*Phocoena Phocoena*) were the representatives of the dolphin family, with a single sighting of a Fin Whale (*Balaenoptera physalus*) on the 22nd January providing the highlight of the trip. The most frequently sighted of these species were common dolphins, which correspond to 15 of the total sightings.

Sightings of seabirds were far more frequent although also lacking in diversity. Five species of Gull, three Auk species, two shearwater species and a single from both the Gannet and Skua families were seen during the period of surveying with shags also being recorded on transit

The majority of species were evenly distributed throughout both survey areas. However, there was a noticeable increase in the Northern Gannet at Haig Fras and also more frequent sightings of the Great Skua which were commonly seen harassing juvenile Kittiwakes and Herring Gulls. An ornithological highlight of the trip came on the 25th January when a single Manx Shearwater was observed enjoying the North Easterly winds.

Herring Gull Larus argentatus

Lesser Black Backed Gull Larus fuscus

Great Black Backed Gull – Larus marinus

Little Gull Hydrocoloeus minutes

Kittiwake – Rissa tridactyla

Puffin – Fratercula arctica

Guillemot Uria aalge

Razorbill Alca torda

Fulmar – Fulmarus glacialis

Manx Shearwater Puffinus puffinus

Gannet Morus bassanus

Great Skua – Stercorarius skua