

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK NR33 0HT**

2010 RESEARCH VESSEL PROGRAMME

PROGRAMME: RV CEFAS ENDEAVOUR: 06/10

STAFF:

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DURATION: 16 March – 29 March.

LOCATION: Western Channel (ICES area VIIE)

NARRATIVE:

There were a number of difficulties prior to sailing starting with the hire cars. They were not fit for purpose and Pat has recorded the problems. I have also e-mailed Jo Page but I see little in the way of progress. We have been talking about re-tendering for a while, just talked! Also none of the EDC pens supplied by SIGS as spares were working, so we would have had to sail with two spare pens if Richard had not managed to fix some of those from spare parts by cannabisation.

We sailed on the 16th at 8:30 in the morning after offloading frozen samples and fish from the previous two cruises. On the first day we managed no more than the shake down tow off Travose head, due to the distances involved. We caught a good number of sole, plaice and lemons off, but collected no otoliths as this is not part of the cruise area. There were quite a few south coast beamers in the area obviously also taking advantage of some good catches.

On the 17th we started the survey proper just west of the Scillies. The OLEX paid off immediately saving us quite a bit of time trying to figure out where we could shoot. From there we headed further west picking up all stations in Stratum 1 followed by a 3 further stations in Stratum 8. This was a long day to midnight, because the forecast had not been looking good. Catches consisted mainly of megrim, a few monk and sole and benthos. Manuel has been photographing his litter samples, but there isn't very much at the moment.

On the 18th the weather started to turn quite rough, justifying the extended hours the previous day. We started at 8am to give people a bit of time to recuperate from the late night and to sort some technical glitches with the balances. Fishing north from about mid-channel into mounts bay, catches continued to be generally small but diverse with a few rays thrown in. There were some good catches of sole and lemons inshore and an abundance of small monks over the area as a

whole. Little in the way of fishing activity was noted in the area. Bill started processing the fisheries acoustic information, but cannot do much with the multibeam data because we were unable to get access to the Claris dongle.

The 19th saw us finishing sampling Stratum 2 in mounts bay and heading east to the area off Falmouth. The weather was improving so we could make decent progress, but managed only 7 stations because of the long transit distances. Catches represented the typical inshore fauna, with some large hauls of small cuttlefish, though fewer of the large ones usual for this time of year. A small number of cod were encountered in this area, but significantly more than is usual for this survey. No fishing activity was observed. On the last couple of tows of the day I noticed that there were a number of tows quite close to previous tows. In most cases this was coincidental due to the higher sampling density, but for some tows it seemed the identical microgrid had been selected to the previous year. Unable to locate the reason for this a new random selection was made for the remaining strata and a new survey plan developed rather than going through last years data and figuring out which of the positions had been selected before.

The following day we moved further east fishing from the eddie stone to start point. Stations are much closer in the area because of the higher sampling effort so we managed to get 9 tows in. Towards the end of the day there were some good catches of plaice in the area, something that had been lacking the previous year also sole started to be more abundant, with the usual by-catch species.

Fishing continued off the start on the 21st picking up stations mainly in strata 4 and 5, with good catches of sole, plaice monk and lemons, with some very good ones towards the end of the day. Catches were relatively clean but picking up a lot of flustra on occasions. Little fishing activity was noted in the area, but a couple of the Brixham beamtrawl fleet made an appearance, but mostly transiting through the area.

On the 22st we started off start point and fished into Lyme bay. Still some good catches of plaice in the morning with decent amounts of sole, but these petered out in the top of the bay being replaced by the more inshore species such as sollonettes and scald fish. We had some interactions with a number of inshore crabbers and trawlers, mostly amicable and helpful. We had been provided with the information on the local trawling agreement by Plymouth SFI and this made it much easier.

We started the following day off Portland collecting the last two stations on the English coast in stratum 5 before heading south through mid channel to the area between Guernsey and Alderney. We abandoned sampling one station just to the west of Alderney, when it became apparent that the ground was too rough to fish it effectively. Again the Olex made the process of determining possible locations significantly easier. From the start of the day we started to see larger numbers of spider crabs and good numbers of gurnards particularly streaky and tubs, also some nice brill and plaice, finishing the day on a large catch of sole on some sandy bottom. A couple of French trawlers were observed circling some of the local banks, but little in the way of static gear which had been present in previous years.

The 24th started with some good catches of sole and plaice, but numbers declined as we made our way around the channel islands southwards. Also caught were very substantial numbers of spider crabs in the area and some black sea bream usual for stratum 11. Further southward the static gear became very heavy and most of the clearer places were pretty uneven. There had been a number of stations already abandoned on along the east coast since the waters are too shallow to even pass east of Gurnsey. The last station of the day produced some more sole near the bay de Mont Saint Michelle. On further station planned had to be left till day light because of static gear.

We started the 25th outside the bay de Granville in amongst some potters and netters where we only managed to tow just over a mile due to a combination of static gear and poor grounds, and

even then there was little worth speaking of in the haul. The rest of the day was spent dodging brittle stars around the central basin. Station 8 could not be fished at all so we abandoned it for an alternate site the following day. Towards the afternoon we moved west towards the banc de langustine. There was some beaming activity to the east of the bank, but two netters had essentially monopolised the entire area with gillnets. Our stations were slightly to the south of this and we managed to collect our samples. There were more brittle stars, but also some sole seemingly on their way to spawn.

The morning of the 26th started in some swell and was forecast to get worse so we started at 5am with the water sample over the Hurd deep and proceeded north to pick up stations in stratum 9 and the remaining ones in 7. Catches consisted mainly of monk, and cuttlefish and some sole. Heading further south back to the west coast of Guernsey we managed to pick up the alternate for the one dropped the previous day, but could not find a suitable tow for the last station in stratum 11. This stratum has continuously caused difficulties and with the large number of brittle stars and pots the station had to be abandoned without replacement. The day finished with a large hauls of brittle stars having survived some pretty rough seas. Everyone is tired now.

The last day of the random survey started in some turbulent seas, but with sunshine out mid channel picking up the last station in stratum 9 under freshening winds. Heading into stratum 12 where generally the ground is quite rocky, we started to pick up more rocks than fish so the second tow was cut shorter to ensure the rocks did not pierce the cod ends in the increasing swells. It seems we have collected more sharks in the off shore region than in previous trips. Finishing on some more sandy tows with good number of monks and cuttlefish we completed the survey grid, just before crossing back into the UK sector.

The final day was a late start after giving the wet lab staff a bit of time to recover following a number of long days. It was spent fishing in Mounts Bay, where we had been having some trouble with the random grid selection. We collected a further five samples with good numbers of sole and monk as well as some plaice, roughly confirming the composition of previous samples. It will be interesting to see if it is possible to determine within stratum variance estimates from these greater number of samples.

PRIMARY RESULTS BY AIMS.

1. To carry out a beam trawl survey of the Western Channel for stock assessment purposes using standardized 4m beam trawls in order to obtain information on:
 - a) Distribution, size composition and abundance of all fish species caught.

Results:

A total of 85 stations were successfully sampled using the beam trawl gear spread over the 13 strata. Station numbers (including profiler / ctd samples) are shown in Figure 1 and presented in Table 1 with the cruise track and validity codes for the beam gear shown spatially in Figure 2. Total catches by species can be found in Table 2.

The general species composition by station scaled to the total catch in numbers as spatially represented pie charts is shown in Figure 3. For species of commercial importance separate distribution maps are shown in Figure 4 and comparisons with previous surveys for sole and plaice are depicted in Figure 5 and 6. Of interest is the spatial distribution of plaice, which were entirely absent from the French coast last year, but seem reasonable represented here in 2010.

- b) Age – length distribution of selected species.

Results:

Length distributions were collected for all species of fish and a number of select shellfish species. Length distributions for the major commercial species encountered in the survey are shown in Figure 7 and comparisons with the length distribution of previous surveys for sole and plaice are shown in Figure 8 and 9.

- c) Distribution of fish in relation to their environment.

Results:

Temperature and salinity and meteorological data were recorded for each haul, as well as acoustic information on seabed type and bathymetry collected and stored in raw data formats for later analysis.

- d) Distribution of macrobenthos

Results:

Presence and absence were recorded for macrobenthic fauna at each station from the starboard gear, and key indicator species were weighed and enumerated.

- e) Length weight & maturity information using individual fish measurements, in support of the EU Data Regulation.

Results length weight information was collected on all the major species up to a total of about 500 specimens per species. A total of 6868 samples were taken in addition to the length weight information provided by the 2167 otolith samples (Table 3).

2. To collect fisheries acoustic data at three operating frequencies (38, 120 & 200 kHz) and multibeam data continuously throughout the cruise. An attempt will be made to use this data to determine habitats and the scale at which these vary.

Results:

Fisheries acoustic data was recorded and processed on board in the hope of being able to link some of this information with the species composition and make some inference about the composition of species in areas not sampled. Multibeam data was also recorded and stored on the OLEX system.

SECONDARY RESULTS BY AIMS:

1. Collect length weight information for DCF work (Ian)

Results:

A total of 6868 length weight data were collected. Table 3 shows the split by species.

2. Tag rays not needed for DCF maturity work (Joana undulate, cockoo, common skate and blonde ray)

Results:

A total of 31 rays were tagged and released.

3. Collect radiology water samples for Trevor Bailey (Sophy AE001)

Results:

Eleven water samples for radiological analysis were collected.

4. Collect Sardine and Anchovie samples for otolithing practice (Bill)

Results:

Few sardine or anchovies were caught during this survey. The ones collected were frozen for analysis at the lab.

5. Use and evaluate the litter evaluation protocol where time permits (Manuel SLA26)

Results:

A total of over 600 individual objects of anthropogenic origin were collected, photographed and described.

6. Collect maturity photographs for DCF (Rob)

Results:

Thirty six maturity photographs in accordance with the new guidelines from the recent maturity workshop were collected for a total of six fish with ancillary information on gonad weight and length.

DISTRIBUTION:

Basic list +

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Table 1: Station Log information:

	Cruise	Station	Time	Stratum	LatS	LongS	LatH	LongH	Distance	LogS	LogH	DepthS	DepthH	Tdir	Wdir	SeaH	SwH	Tspeed	Wspeed	Barom	SwDir	Gear
1	CEND 6/10	1	16/03/2010 14:54	0	50.662733	5.086333	50.662733	0.431666	0	8900	8900	60.5	60.5	64	200	0.5	0.5	0.7	14	1029	200	Profiler
2	CEND 6/10	2	16/03/2010 15:12	0	50.649483	-5.0986	50.62785	0.685583	2.2	8900.3	8902.5	61	63	64	200	0.5	0.5	0.7	16	1029	200	Beams
3	CEND 6/10	3	17/03/2010 06:16	1	49.919583	6.428216	49.919583	-2.5693	0	79.2	79.2	39	39	120	230	1	1	0.3	12	1026	230	Profiler
4	CEND 6/10	4	17/03/2010 06:33	1	49.930033	6.421283	49.962983	-2.4797	1.9	76.8	78.7	53	73	120	230	1	1	0.3	12	1026	230	Beams
5	CEND 6/10	5	17/03/2010 08:42	1	49.90155	6.659266	49.899866	-4.2528	2	90.2	92.2	90	99	174	220	1	1.5	1.1	9	1027	240	Beams
6	CEND 6/10	6	17/03/2010 10:07	1	49.848033	6.826033	49.8555	-5.265	2	98.5	100.5	102	105	208	230	1	1.5	1	14	1027	240	Beams
7	CEND 6/10	7	17/03/2010 12:05	1	49.973933	7.072533	49.955916	0.805583	1.9	111.7	113.6	104	104	262	220	1	1.5	0.9	15	1027	240	Beams
8	CEND 6/10	8	17/03/2010 15:39	1	49.47	-6.9205	49.437516	-5.4285	2	144.4	146.4	115	115	44	180	1	1.5	1.4	20	1026	210	Beams
9	CEND 6/10	9	17/03/2010 17:36	8	49.444966	6.596833	49.418283	-3.7815	2	160.6	162.6	112	115	89	180	0.5	1.5	0.4	22	1025	210	Beams
10	CEND 6/10	10	17/03/2010 19:52	8	49.211283	6.913833	49.196683	-5.2018	2.1	179.8	181.9	121	122	200	160	0.5	1	0.5	21	1025	180	Beams
11	CEND 6/10	11	17/03/2010 22:20	8	49.11705	6.514716	49.106633	-2.792	2	196.7	198.7	114	115	259	130	0.5	1	1	20	1024	160	Beams
12	CEND 6/10	12	18/03/2010 08:01	13	49.200466	5.707183	49.200466	3.535916	0	242.8	242.8	111	111	338	170	1	1.5	0.5	20	1020	180	Profiler
13	CEND 6/10	13	18/03/2010 08:27	13	49.208933	-5.70825	49.232366	3.351583	2.1	243.8	245.9	110	108	338	170	1	1.5	0.5	20	1020	180	Beams
14	CEND 6/10	14	18/03/2010 11:10	13	49.450033	5.343416	49.468033	-1.96975	2.1	265.5	267.6	99	101	249	210	1	1.5	1.3	22	1020	190	Beams
15	CEND 6/10	15	18/03/2010 13:24	8	49.65065	5.777333	49.68545	3.860166	2.1	286.7	288.8	94	92	291	200	1.5	2	1	28	1017	220	Beams
16	CEND 6/10	16	18/03/2010 15:06	8	49.829016	5.688116	49.829016	3.440583	0	298.2	298.2	84	84	326	200	1.5	2	1	28	1016	190	Profiler
17	CEND 6/10	17	18/03/2010 15:23	8	49.841916	5.682466	49.87295	3.315083	2	299	301	85	80	326	200	1.5	2	1	28	1016	190	Beams
18	CEND 6/10	18	18/03/2010 16:39	2	49.910633	5.744933	49.942633	-3.62025	2.2	306.1	308.3	78	77	359	240	3	4	1.2	24	1016	220	Beams
19	CEND 6/10	19	18/03/2010 18:30	2	49.973533	5.876416	50.008033	4.369333	2	316.2	318.2	70	69	91	250	1	2	0.9	20	1017	220	Beams
20	CEND 6/10	20	19/03/2010 06:04	2	49.966916	5.729666	49.966916	3.648333	0	359.3	359.3	70	70	53	120	0.5	1.5	0.5	6	1019	260	Profiler
21	CEND 6/10	21	19/03/2010 06:24	2	49.966533	5.729783	49.9923	3.481416	2	360.4	362.4	70	68	53	120	0.5	1.5	0.5	6	1019	260	Beams
22	CEND 6/10	22	19/03/2010 08:24	2	49.909183	-5.6005	49.942766	2.945333	2.1	370.4	372.5	75	71	95	120	0.5	1.5	0.9	9	1019	220	Beams
23	CEND 6/10	23	19/03/2010 09:39	2	50.008816	5.561083	49.9858	-2.616	2	377.5	379.5	58	59	102	70	0.5	1.5	0.8	16	1017	260	Beams
24	CEND 6/10	24	19/03/2010 11:32	13	49.828666	5.317833	49.8124	1.358416	2	392	394	83	83	236	210	0.5	1.5	1.4	16	1016	240	Beams
25	CEND 6/10	25	19/03/2010 15:31	13	49.857733	-4.58205	49.857733	-2.3282	0	422.4	422.4	80	80	266	190	1	2	0.1	28	1012	190	Profiler
26	CEND 6/10	26	19/03/2010 15:51	13	49.851166	4.574183	49.8233	2.139733	2.2	422.9	425.1	80	82	266	190	1	2	0.1	28	1012	190	Beams
27	CEND 6/10	27	19/03/2010 18:10	3	50.061416	4.725766	50.0943	2.854333	2	442.8	444.8	75	75	31	220	1	1.5	0.5	20	1011	210	Beams
28	CEND 6/10	28	19/03/2010 19:06	3	50.134666	4.657333	50.15875	2.475066	2	448.1	450.1	70	67	62	200	1	1.5	0.4	18	1011	210	Beams
29	CEND 6/10	29	20/03/2010 06:13	3	50.160783	4.734983	50.160783	2.939933	0	483.4	483.4	66	66	36	210	1	2	0.4	28	1008	190	Profiler
30	CEND 6/10	30	20/03/2010 06:36	3	50.164966	-4.759	50.145816	3.216466	2	484.9	486.9	64	67	210	210	1	2	0.4	28	1008	192	Beams
31	CEND 6/10	31	20/03/2010 08:04	3	50.197916	4.872366	50.18345	3.304733	2	6519	6521	40	52	40	220	1.5	2	0.5	15	1013	210	Beams

32	CEND 6/10	32	20/03/2010 09:55	3	50.291383	-4.50375	50.302333	1.808066	-	2	6535.8	6537.8	51	46	97	160	1	1.5	0.5	9	1009	200	Beams
33	CEND 6/10	33	20/03/2010 11:27	4	50.291516	4.233516	50.292516	0.724533	-	2	6546.4	6548.4	48	44	239	190	1	1.5	0.3	11	1009	190	Beams
34	CEND 6/10	34	20/03/2010 13:02	4	50.211733	4.089033	50.183716	0.449533	-	1.9	6554.7	6556.6	57	60	270	190	1	1.5	0.4	16	1010	190	Beams
35	CEND 6/10	35	20/03/2010 14:05	4	50.170816	4.174166	50.149433	-0.8346	-	1.9	6559.3	6561.2	61	63	3	210	0.5	1.5	0.6	15	1010	200	Beams
36	CEND 6/10	36	20/03/2010 15:15	4	50.125133	4.298266	50.125133	1.193066	-	0	6565	6565	68	68	273	270	0.5	1.5	0.4	12	1010	200	Profiler
37	CEND 6/10	37	20/03/2010 15:27	4	50.120333	-4.31145	50.106216	-1.4506	-	2	6565.6	6567.6	69	69	273	270	0.5	1.5	0.4	12	1010	200	Beams
38	CEND 6/10	38	20/03/2010 16:45	4	50.020533	-4.34555	49.988783	-1.2866	-	2.1	6573.2	6575.3	75	76	275	300	0.5	1.5	0.1	18	1011	210	Beams
39	CEND 6/10	39	20/03/2010 18:20	7	49.901583	4.209416	49.882616	0.663466	-	2.1	6582.8	6584.9	78	76	77	350	1	1.5	0.8	23	1014	200	Beams
40	CEND 6/10	40	21/03/2010 06:03	4	49.962716	-3.9726	49.962716	-2.9178	-	0	6627.6	6627.6	76	76	76	290	0.5	1	0.1	10	1024	240	Profiler
41	CEND 6/10	41	21/03/2010 06:24	4	49.9617	3.975666	49.97755	-2.78825	-	2.1	6629	6631.1	77	74	76	290	0.5	1	0.1	10	1024	240	Beams
42	CEND 6/10	42	21/03/2010 07:30	4	50.012666	3.820666	50.006783	-2.3057	-	2.1	6635.7	6637.8	75	73	95	300	0.5	1	0.7	8	1025	230	Beams
43	CEND 6/10	43	21/03/2010 09:30	7	49.932916	3.371883	49.933983	-0.96565	-	2	6653.9	6655.9	72	72	41	270	0	0.5	1	5	1026	250	Beams
44	CEND 6/10	44	21/03/2010 10:35	6	49.9581	-3.35525	49.98045	-1.18195	-	2	6659.1	6661.1	73	71	48	280	0	0.5	1.1	6	1027	25	Beams
45	CEND 6/10	45	21/03/2010 12:09	4	50.083783	3.449133	50.11395	-1.29105	-	2	6667.7	6669.7	66	65	48	290	0	0.5	0.8	8	1028	240	Beams
46	CEND 6/10	46	21/03/2010 13:18	7	50.10125	3.374633	50.10125	-1.1239	-	0	6672.9	6672.9	65	65	54	200	0	0.5	0.2	13	1028	230	Profiler
47	CEND 6/10	47	21/03/2010 13:34	7	50.092766	3.380233	50.065033	-1.2341	-	2	6673.6	6675.6	65	67	80	200	0	0.5	0.1	13	1028	230	Beams
48	CEND 6/10	48	21/03/2010 15:18	4	50.1435	-3.2614	50.173716	-0.7456	-	1.9	6684.5	6686.4	62	61	222	220	0	0.5	0.9	8	1028	190	Beams
49	CEND 6/10	49	21/03/2010 16:28	5	50.239816	-3.28255	50.232216	-1.0037	-	2	6691.2	6693.2	60	60	232	240	0	0.5	1	15	1027	230	Beams
50	CEND 6/10	50	21/03/2010 17:43	5	50.212616	3.379983	50.241266	-1.23425	-	2.1	6696.4	6698.5	62	61	231	2	0	0.5	0.8	8	1028	220	Beams
51	CEND 6/10	51	22/03/2010 06:04	5	50.208166	-3.442	50.208166	-1.326	-	0	6739.6	6739.6	63	63	193	210	0.5	0.5	0.3	19	1024	220	Profiler
52	CEND 6/10	52	22/03/2010 06:34	5	50.216416	3.434466	50.2493	-1.3399	-	2	6741.4	6743.4	62	60	193	210	0.5	0.5	0.3	19	1024	220	Beams
53	CEND 6/10	53	22/03/2010 07:25	4	50.270783	3.470466	50.253883	-1.5459	-	2.3	6745.5	6747.8	58	58	47	210	0.5	0.5	0.3	11	1025	210	Beams
54	CEND 6/10	54	22/03/2010 08:49	5	50.23965	3.579983	50.2703	-1.67635	-	2.1	6753	6755.1	55	52	43	180	0.5	0.5	1.3	16	1024	210	Beams
55	CEND 6/10	55	22/03/2010 11:01	5	50.546733	3.379966	50.555083	-0.9788	-	2	6773.8	6775.8	26	29	87	180	0.5	0.5	0.1	20	1024	200	Beams
56	CEND 6/10	56	22/03/2010 12:11	5	50.5787	3.235533	50.581683	-0.55135	-	2	6780.1	6782.1	24	22	78	180	0.5	0.5	0.2	21	1023	190	Beams
57	CEND 6/10	57	22/03/2010 14:17	5	50.5962	2.815216	50.56625	1.680933	-	0	6796.5	6796.5	32	34	123	190	0.5	1	0.2	21	1023	200	Profiler
58	CEND 6/10	58	22/03/2010 14:17	5	50.5962	2.815216	50.56625	1.680933	-	2	6797	6799	32	34	124	190	0.5	1	0.1	21	1023	200	Beams
59	CEND 6/10	59	22/03/2010 15:24	5	50.4968	-2.87695	50.488416	-1.7647	-	2	6803.4	6805.4	44	49	229	210	0.5	1	0.2	24	1023	210	Beams
60	CEND 6/10	60	22/03/2010 17:37	6	50.235116	2.826366	50.209266	-1.5835	-	2	6819.7	6821.7	59	59	259	210	0.5	1.5	1.5	13	1022	210	Beams
61	CEND 6/10	61	23/03/2010 18:33	6	50.1768	-2.7499	50.150583	-1.4341	-	2	6824.3	6826.3	63	62	270	230	0.5	1.5	1.4	11	1025	240	Beams
62	CEND 6/10	62	23/03/2010 08:04	6	50.421566	-2.4847	50.421566	-0.9694	-	0	6874.2	6874.2	50	50	266	140	0.5	0.5	1.1	12	1025	230	Profiler
63	CEND 6/10	63	23/03/2010 08:18	6	50.4154	2.474016	50.39955	0.886033	-	1.5	6874.9	6876.4	51	53	262	140	0.5	0.5	0.4	12	1025	230	Beams
64	CEND 6/10	64	23/03/2010 10:26	6	50.252883	-2.0288	50.220166	0.039333	-	2	6894.8	6896.8	56	58	72	210	0.5	1	0.6	20	1024	260	Beams

65	CEND 6/10	65	23/03/2010 13:28	9	49.844	2.149783	49.844	0.299566	0	6916.1	6916.1	77	77	36	210	0.5	1.5	0.9	10	1022	230	Profiler
66	CEND 6/10	66	23/03/2010 13:48	9	49.836866	2.154566	49.8083	-0.3533	2	6921.3	6923.3	83	67	343	210	0.5	1.5	0.8	10	1022	230	Beams
67	CEND 6/10	67	23/03/2010 17:08	11	49.656983	2.228733	49.62435	0.420166	2	6943.9	6945.9	44	40	235	170	0.5	0.5	1.5	11	1021	270	Beams
68	CEND 6/10	68	23/03/2010 18:14	11	49.532483	2.184216	49.512533	-0.2845	2.6	6951.3	6953.9	41	38	209	140	0	0.5	1.1	11	1020	270	Beams
69	CEND 6/10	69	23/03/2010 19:18	11	49.4577	2.203283	49.434933	-0.3176	2	6959	6961	48	45	172	170	0	0	0.9	11	1019		Beams
70	CEND 6/10	70	24/03/2010 06:17	11	49.434633	1.979066	49.434633	0.979066	0	6983.3	6983.3	26	26	186	120	0	0	0.6	14	1013		Profiler
71	CEND 6/10	71	24/03/2010 06:36	11	49.438	1.983516	49.421966	0.055833	2.1	6984.1	6986.2	26	30	187	120	0	0	0.7	14	1013		Beams
72	CEND 6/10	72	24/03/2010 10:06	11	49.111833	2.138033	49.07755	0.284433	2.1	7018	7020.1	26	31	104	190	0	0	1.1	10	1013	260	Beams
73	CEND 6/10	73	24/03/2010 12:01	10	48.9851	2.354916	48.95345	-0.7412	2	7030.8	7032.8	45	47	123	140	0	0.5	0.4	10	1016	140	Beams
74	CEND 6/10	74	24/03/2010 13:50	10	48.833983	-2.19385	48.82785	0.300366	1.8	7044.5	7046.3	37	34	304	160	0	0.5	0.2	14	1016	140	Beams
75	CEND 6/10	75	24/03/2010 14:55	10	48.833966	2.180683	48.846933	0.457133	2	7049.1	7051.1	37	35	288	180	0	0.5	0.6	12	1015	280	Beams
76	CEND 6/10	76	24/03/2010 17:37	11	48.81695	1.860283	48.81695	0.860283	0	7069.1	7069.1	27	27	303	180	0	0	0.5	11	1015		Profiler
77	CEND 6/10	77	24/03/2010 17:46	0	48.812983	-1.86315	48.7792	0.878183	2	7069.4	7071.4	27	27	241	180	0	0	0.2	11	1005		Beams
78	CEND 6/10	78	24/03/2010 18:32	11	48.7613	1.889983	48.751733	0.941233	2.1	7072.8	7074.9	26	24	250	160	0	0	0	12	1010		Beams
79	CEND 6/10	79	25/03/2010 05:34	11	48.712633	2.290083	48.712633	0.580166	0	7105.3	7105.3	31	31	292	160	0	0	0.8	6	1008		Profiler
80	CEND 6/10	80	25/03/2010 05:58	11	48.723	-2.27345	48.7425	0.544466	1.2	7106.4	7107.6	32	34	290	160	0	0	0.7	6	1008		Beams
81	CEND 6/10	81	25/03/2010 08:44	10	49.173883	2.559433	49.145666	1.169966	2.4	7136.4	7138.8	55	56	245	160	0.5	0.5	0.3	6	1006	240	Beams
82	CEND 6/10	82	25/03/2010 11:17	10	49.153233	2.916116	49.150366	-1.728	2.1	7153.8	7155.9	69	70	108	100	0.5	1	1.7	6	1005	270	Beams
83	CEND 6/10	83	25/03/2010 13:31	10	49.001533	2.695816	49.003866	1.493566	1.9	7172.4	7174.3	54	54		130	0.5	1		12	1004	270	Beams
84	CEND 6/10	84	25/03/2010 15:39	10	49.001616	-2.966	49.013066	-0.05475	2.1	7184.4	7186.5	60	64	306	230	0.5	1	0.4	15	1004	270	Beams
85	CEND 6/10	85	25/03/2010 17:44	10	48.935	3.331166	48.9528	-0.9798	1.1	7200.7	7201.8	59	67	269	230	0.5	1	1.1	25	1005	260	Beams
86	CEND 6/10	86	25/03/2010 19:11	10	49.136633	-3.24485	49.144333	-0.88545	2	7213.8	7215.8	72	73	263	220	1	1	1.4	24	1005	230	Beams
87	CEND 6/10	87	25/03/2010 21:02	12	49.171283	3.552716	49.149616	-1.7752	2	7226.6	7228.6	79	79	259	220	1	1	0.4	24	1007	230	Beams
88	CEND 6/10	88	26/03/2010 06:03	9	49.619316	3.466916	49.619316	-1.40075	0	7271	7271	76	76	338	180	1.5	1.5	0.3	26	1007	230	Profiler
89	CEND 6/10	89	26/03/2010 06:33	9	49.6176	3.491916	49.649233	-1.5193	2	7272.7	7274.7	75	75	306	180	1.5	1.5	0.3	26	1007	230	Beams
90	CEND 6/10	90	26/03/2010 07:20	7	49.650716	3.497933	49.63895	-1.34295	2.1	7276	7278.1	73	72	264	170	1.5	1	0.5	25	1007	180	Beams
91	CEND 6/10	91	26/03/2010 09:15	7	49.765666	-3.23265	49.733983	-0.64575	2	7290.3	7292.3	69	71	234	240	1.5	2	0.7	25	1008	270	Beams
92	CEND 6/10	92	26/03/2010 10:58	9	49.57515	3.212716	49.543283	-0.63215	2	7301.8	7303.8	92	78	218	230	2	2	0.6	18	1009	230	Beams
93	CEND 6/10	93	26/03/2010 12:37	9	49.593066	-3.03115	49.588716	-1.9656	1.8	7312.8	7314.6	77	73	140	160	1	2.5	0.2	16	1011	270	Beams
94	CEND 6/10	94	26/03/2010 14:30	10	49.433383	2.756416	49.40395	-1.5665	2	7328.2	7330.2	68	70	121	230	1	3	0.8	25	1009	230	Beams
95	CEND 6/10	95	26/03/2010 15:25	0	49.391183	2.791916	49.391183	1.583833	0	7331.2	7331.2	69	69	89	170	1	2	0.4	19	1007	220	Profiler
96	CEND 6/10	96	26/03/2010 16:58	10	49.336683	3.018166	49.325133	-0.20255	2	7340.6	7342.6	75	75	10	170	1	2	0.8	16	1008	270	Beams
97	CEND 6/10	97	26/03/2010 18:59	10	49.26775	2.809616	49.253416	1.524966	1.9	7354.7	7356.6	67	65	293	160	0.5	1	1.2	18	1008	260	Beams

98	CEND 6/10	98	27/03/2010 06:04	9	49.328133	3.943383	49.328133	-2.83015	0	7405.6	7405.6	87	87	246	300	1	1.5	0.4	18	1007	280	Profiler
99	CEND 6/10	99	27/03/2010 06:23	9	49.32065	-3.96525	49.302516	-0.053	2.2	7406.5	7408.7	86	86	246	300	1	1.5	0.6	18	1007	280	Beams
100	CEND 6/10	100	27/03/2010 08:38	12	49.022433	3.980166	49.003133	0.085933	2	7426.6	7428.6	86	85	266	300	1.5	2	1.5	25	1011	280	Beams
101	CEND 6/10	101	27/03/2010 10:04	12	48.961116	-4.19915	48.962466	0.954733	1.2	7436.2	7437.4	91	92	268	300	1.5	2	0.4	22	1013	280	Beams
102	CEND 6/10	102	27/03/2010 12:30	12	49.186566	4.434033	49.186566	1.736133	0	7453.7	7453.7	93	93	82	300	0.5	2	0.6	18	1019	270	Profiler
103	CEND 6/10	103	27/03/2010 12:47	12	49.1872	4.445566	49.187833	1.990333	2	7454.1	7456.1	93	96	66	300	0.5	2	1	18	1019	270	Beams
104	CEND 6/10	104	27/03/2010 15:19	12	49.279533	4.796583	49.281416	2.970933	1.9	7470.6	7472.5	100	100	69	270	0.5	2	1.2	20	1020	210	Beams
105	CEND 6/10	105	27/03/2010 17:43	13	49.441816	4.282316	49.454733	0.936733	2.1	7493.6	7495.7	92	91	248	290	0.5	1.5	0.1	11	1021	240	Beams
106	CEND 6/10	106	28/03/2010 09:03	2	50.03795	5.456866	50.03795	2.284333	0	7569.8	7569.8	47	47	260	270	0	0.5	0.6	7	1018	200	Profiler
107	CEND 6/10	107	28/03/2010 09:17	2	50.03685	5.472816	50.026583	-2.6115	2	7570.7	7572.7	47	52	266	270	0	0.5	0.7	7	1018	200	Beams
108	CEND 6/10	108	28/03/2010 11:00	0	50.003433	-5.6637	49.984916	3.542416	1.7	7578.4	7580.1	64	66	60	170	0	0.5	1.1	7	1016	240	Beams
109	CEND 6/10	109	28/03/2010 12:45	2	49.887016	5.838033	49.857216	4.061333	2.1	7588.6	7590.7	76	84	3	200	0	1	1	7	1015	200	Beams
110	CEND 6/10	110	28/03/2010 13:37	2	49.850816	5.833866	49.825633	4.343166	2	7592.2	7594.2	85	88	24	270	1	1	0.9	18	1014	270	Beams
111	CEND 6/10	111	28/03/2010 14:50	2	49.878466	-5.8972	49.854633	4.676833	2	7598.9	7600.9	79	83	60	260	1	1.5	0.8	22	1013	260	Beams

Table 2: Total Catch by species:

SCIENTIFIC	SampledCatch	TotalCatch	MAFF
ASSORTED ROCKS	3904.788	3904.788	ROK
EPIBENTHIC MIXTURE	6760.255	6760.255	BEN
Symphodus bailloni	2.497	2.497	BLW
Eunicella verrucosa	1.267	1.267	EUV
Meiosquilla desmaresti	0.045	0.045	MED
PENTAPORA SPP	13.245	13.245	PET
Gobiidae	0.119	0.119	POM
PECTEN MAXIMUS	0.422	60.166	SCE
ROSSIA MACROSOMA	0.12	0.12	ROM
SEPIOLA ATLANTICA	0.002	0.002	SPA
SEPIA ELEGANS	1.622	1.622	SEE
SEPIA OFFICINALIS	102.174	102.174	CTC
LOLIGO FORBESI	0.794	0.794	NSQ
ALLOTEUTHIS SUBULATA	0.39	0.39	ATS
OMMASTREPHES (TODAROPSIS)			
EBLANAE	1.065	1.065	OME
ELEDONE CIRROSA	144.23	144.23	EDC
HOMARUS GAMMARUS	2.143	2.143	LBE
PALINURUS SPP	0.058	0.058	CRW
DROMIA PERSONATA	2.302	2.302	DRP
MAIA SQUINADO	509.334	509.334	SCR
CANCER PAGURUS	60.895	60.895	CRE
SCYLIORHINUS CANICULA	397.947	397.947	LSD
SCYLIORHINUS STELLARIS	3.142	3.142	DGN
MUSTELUS ASTERIAS	75.386	75.386	SDS
TORPEDO MARMORATA	8.125	8.125	MER
RAJA BRACHYURA	12.72	12.72	BLR
RAJA MICROCELLATA	0.55	0.55	PTR
RAJA MONTAGUI	3.501	3.501	SDR
RAJA BATIS	7.324	7.324	SKT
RAJA NAEVUS	17.351	17.351	CUR
RAJA UNDULATA	58.81	58.81	UNR
RAJA CLAVATA	20.123	20.123	THR
CONGER CONGER	20.89	20.89	COE
CLUPEA HARENGUS	0.557	0.557	HER
SPRATTUS (CLUPEA) SPRATTUS	0.627	0.627	SPR
SARDINA (CLUPEA) PILCHARDUS	0.08	0.08	PIL
ENGRAULIS ENCRASICOLUS	0.035	0.035	ANE
ARGENTINIDAE	0.626	0.626	ARG
DIPLECOGASTER BIMACULATA	0.002	0.002	TSC
LOPHIUS PISCATORIUS	392.914	392.914	MON
LOPHIUS BUDEGASSA	3.873	3.873	WAF
GADUS MORHUA	12.446	12.446	COD
POLLACHIUS POLLACHIUS	9.74	9.74	POL
MELANOGRAMMUS AEGLEFINUS	38.306	38.306	HAD
ENCHELYOPUS CIMBRIUS	0.044	0.044	FRR
PHYCIS BLENNOIDES	0.025	0.025	GFB
TRISOPTERUS MINUTUS	165.834	206.706	POD
TRISOPTERUS LUSCUS	156.742	156.742	BIB

TRISOPTERUS ESMARKI	0.053	0.053	NOP
MERLANGIUS MERLANGUS	24.288	24.288	WHG
MOLVA MOLVA	5.25	5.25	LIN
GAIDROPSARUS VULGARIS	0.6	0.6	TBR
GADICULUS ARGENTEUS	0.017	0.017	SYP
MICROMESISTIUS POUTASSOU	4.673	4.673	WHB
RANICEPS RANINUS	0.03	0.03	LFB
CILIATA MUSTELA	0.596	0.596	FVR
MERLUCCIUS MERLUCCIUS	7.361	7.361	HKE
ZOARCES VIVIPARUS	0.014	0.014	ELP
ZEUS FABER	6.175	6.175	JOD
CAPROS APER	6.863	6.863	BOF
SYNGNATHUS ACUS	0.404	0.404	GPF
HIPPOCAMPUS HIPPOCAMPUS	0.021	0.021	SNH
TRIGLA LUCERNA	40.657	40.657	TUB
EUTRIGLA GURNARDUS	13.733	13.733	GUG
TRIGLOPORUS LASTOVIZA	50.403	50.403	GUS
ASPITRIGLA CUCULUS	122.632	122.632	GUR
MYOXOCEPHALUS SCORPIUS	0.003	0.003	BRT
TAURULUS BUBALIS	0.157	0.157	SSN
AGONUS CATAPHRACTUS	1.952	1.952	POG
LIPARIS LIPARIS	0.085	0.085	SSL
TRACHURUS TRACHURUS	1.063	1.063	HOM
SPONDYLIOSOMA CANTHARUS	9.352	9.352	BKS
MULLUS SURMULETUS	16.839	16.839	MUR
CEPOLA RUBESCENS	0.051	0.051	RPF
DICENTRARCHUS (MORONE) LABRAX	1.375	1.375	ESB
CENTROLABRUS EXOLETUS	0.034	0.034	SMW
CTENOLABRUS RUPESTRIS	2.377	2.377	GDY
LABRUS BERGYLTA	21.575	21.575	BNW
LABRUS MIXTUS	8.174	8.174	CUW
TRACHINUS (ECHIICHTHYS) VIPERA	1.614	1.614	WEL
TRACHINUS DRACO	0.31	0.31	WEG
BLENNIUS OCELLARIS	0.435	0.435	BBY
BLENNIUS(PARABLENNIUS)GATTORUGINE	0.368	0.368	TBY
PHOLIS GUNNELLUS	0.052	0.052	BTF
AMMODYTES TOBIANUS	0.225	0.225	TSE
HYPEROPLUS LANCEEOLATUS	0.294	0.294	GSE
CALLIONYMUS LYRA	70.463	70.463	CDT
CALLIONYMUS MACULATUS	0.602	0.602	SDT
BUENIA JEFFREYSII	1.419	1.419	JYG
SCOMBER SCOMBRUS	0.722	0.722	MAC
SCOPHTHALMUS MAXIMUS	4.709	4.709	TUR
SCOPHTHALMUS RHOMBUS	28.72	28.72	BLL
ARNOGLOSSUS LATERNA	9.302	9.302	SDF
ARNOGLOSSUS IMPERIALIS	11.691	11.691	ISF
ZEUGOPTERUS PUNCTATUS	3.864	3.864	TKT
PHRYNORHOMBUS NORVEGIUS	0.397	0.397	NKT
PHRYNORHOMBUS REGIUS	0.91	0.91	EKT
LEPIDORHOMBUS WHIFFIAGONIS	46.621	46.621	MEG

GLYPTOCEPHALUS CYNOGLOSSUS	2.225	2.225	WIT
HIPPOGLOSSOIDES PLATESSOIDES	0.432	0.432	PLA
LIMANDA LIMANDA	20.308	20.308	DAB
MICROSTOMUS KITT	64.227	64.227	LEM
PLATICHTHYS FLESUS	4.439	4.439	FLE
PLEURONECTES PLATESSA	145.294	145.294	PLE
SOLEA SOLEA (S.VULGARIS)	97.332	97.332	SOL
PEGUSA (SOLEA) LASCARIS	9.966	9.966	SOS
BUGLOSSIDIUM LUTEUM	9.049	10.819	SOT
MICROCHIRUS VARIEGATUS	37.134	41.339	TBS

Table 3: Biological samples, including length weight information collected:

Species / Sex	Length weight sample	Otolith	Ray wing width
AGONUS CATAPHRACTUS U	163	0	0
ALLOTEUTHIS SUBULATA U	43	0	0
AMMODYTES TOBIANUS U	5	0	0
ARGENTINIDAE U	14	0	0
ARNOGLOSSUS IMPERIALIS U	154	0	0
ARNOGLOSSUS LATERNA U	512	0	0
ASPITRIGLA CUCULUS F	0	68	0
ASPITRIGLA CUCULUS M	0	52	0
ASPITRIGLA CUCULUS U	1	11	0
BLENNIUS OCELLARIS U	24	0	0
BLENNIUS(PARABLENNIUS)GATTORUGINE U	15	0	0
BUENIA JEFFREYSII U	130	0	0
BUGLOSSIDIUM LUTEUM U	471	0	0
CALLIONYMUS LYRA U	559	0	0
CALLIONYMUS MACULATUS U	68	0	0
CANCER PAGURUS B	10	0	0
CANCER PAGURUS F	62	0	0
CANCER PAGURUS M	37	0	0
CAPROS APER U	138	0	0
CENTROLABRUS EXOLETUS U	1	0	0
CEPOLA RUBESCENS U	1	0	0
CILIATA MUSTELA U	40	0	0
CLUPEA HARENGUS U	16	0	0
CONGER CONGER U	12	0	0
CTENOLABRUS RUPESTRIS U	88	0	0
DICENTRARCHUS (MORONE) LABRAX M	0	1	0
DIPLECOGASTER BIMACULATA U	2	0	0
ENCHELYOPUS CIMBRIUS U	3	0	0
ENGRAULIS ENCRASICOLUS U	4	0	0
EUTRIGLA GURNARDUS F	0	48	0
EUTRIGLA GURNARDUS M	0	33	0
EUTRIGLA GURNARDUS U	6	4	0
GADUS MORHUA F	0	13	0
GADUS MORHUA M	0	4	0
GAIDROPSARUS VULGARIS U	5	0	0
GLYPTOCEPHALUS CYNOGLOSSUS U	6	0	0
Gobiidae U	55	0	0
HIPPOCAMPUS HIPPOCAMPUS U	2	0	0
HIPPOGLOSSOIDES PLATESSOIDES U	5	0	0
HOMARUS GAMMARUS F	1	0	0
HOMARUS GAMMARUS M	2	0	0
HYPEROPLUS LANCEEOLATUS U	6	0	0
LABRUS BERGYLTA U	39	0	0
LABRUS MIXTUS U	42	0	0
LEPIDORHOMBUS WHIFFIAGONIS F	1	149	1
LEPIDORHOMBUS WHIFFIAGONIS M	0	40	0

LIMANDA LIMANDA F	58	0	0
LIMANDA LIMANDA M	32	0	0
LIMANDA LIMANDA U	5	0	0
LIPARIS LIPARIS U	11	0	0
LOLIGO FORBESI U	2	0	0
LOPHIUS BUDEGASSA F	0	2	0
LOPHIUS BUDEGASSA M	0	5	0
LOPHIUS PISCATORIUS F	0	183	10
LOPHIUS PISCATORIUS M	0	132	8
LOPHIUS PISCATORIUS U	12	1	3
MAIA SQUINADO B	67	0	0
MAIA SQUINADO F	256	0	0
MAIA SQUINADO M	141	0	0
MELANOGRAMMUS AEGLEFINUS F	0	49	1
MELANOGRAMMUS AEGLEFINUS M	0	42	0
MELANOGRAMMUS AEGLEFINUS U	6	0	0
MERLANGIUS MERLANGUS F	0	70	0
MERLANGIUS MERLANGUS M	0	55	0
MERLUCCIUS MERLUCCIUS F	0	12	0
MERLUCCIUS MERLUCCIUS M	0	13	0
MERLUCCIUS MERLUCCIUS U	3	1	0
MICROCHIRUS VARIEGATUS U	575	0	0
MICROMESISTIUS POUTASSOU U	81	0	0
MICROSTOMUS KITT F	0	90	0
MICROSTOMUS KITT M	0	67	0
MICROSTOMUS KITT U	2	0	0
MOLVA MOLVA U	1	0	0
MULLUS SURMULETUS F	0	33	0
MULLUS SURMULETUS M	0	37	0
MULLUS SURMULETUS U	1	3	0
MUSTELUS ASTERIAS F	36	0	0
MUSTELUS ASTERIAS M	31	0	0
MUSTELUS ASTERIAS U	1	0	0
MYOXOCEPHALUS SCORPIUS U	1	0	0
OMMASTREPHES (TODAROPSIS) EBLANAE U	5	0	0
PALINURUS SPP F	1	0	0
PECTEN MAXIMUS U	195	0	0
PEGUSA (SOLEA) LASCARIS U	50	0	0
PHOLIS GUNNELLUS U	4	0	0
PHRYNORHOMBUS NORVEGIUS U	49	0	0
PHRYNORHOMBUS REGIUS U	26	0	0
PLATICHTHYS FLESUS U	4	0	0
PLEURONECTES PLATESSA F	0	228	2
PLEURONECTES PLATESSA M	0	136	2
POLLACHIUS POLLACHIUS U	4	0	0
RAJA BATIS F	0	2	0
RAJA BATIS M	0	1	0
RAJA BRACHYURA F	0	6	0
RAJA BRACHYURA M	0	8	2
RAJA CLAVATA F	0	15	0

RAJA CLAVATA M	0	10	0
RAJA MICROOCELLATA M	0	1	0
RAJA MONTAGUI F	0	5	1
RAJA MONTAGUI M	0	7	0
RAJA NAEVUS F	0	10	0
RAJA NAEVUS M	0	12	0
RAJA UNDULATA F	0	18	0
RAJA UNDULATA M	0	24	0
RANICEPS RANINUS U	1	0	0
SARDINA (CLUPEA) PILCHARDUS U	1	0	0
SCOMBER SCOMBRUS U	9	0	0
SCOPHTHALMUS MAXIMUS F	0	2	0
SCOPHTHALMUS MAXIMUS M	0	2	0
SCOPHTHALMUS RHOMBUS F	0	8	0
SCOPHTHALMUS RHOMBUS M	0	15	0
SCYLIORHINUS CANICULA F	262	0	0
SCYLIORHINUS CANICULA M	390	0	0
SCYLIORHINUS CANICULA U	5	0	0
SCYLIORHINUS STELLARIS M	1	0	0
SEPIA ELEGANS U	49	0	0
SEPIA OFFICINALIS U	265	0	0
SOLEA SOLEA (S.VULGARIS) F	1	154	0
SOLEA SOLEA (S.VULGARIS) M	0	86	1
SPONDYLIOSOMA CANTHARUS U	88	0	0
SPRATTUS (CLUPEA) SPRATTUS U	41	0	0
Symphodus bailloni U	26	0	0
SYNGNATHUS ACUS U	22	0	0
TAURULUS BUBALIS U	3	0	0
TORPEDO MARMORATA F	5	0	0
TRACHINUS (ECHIICHTHYS) VIPERA U	65	0	0
TRACHURUS TRACHURUS U	29	0	0
TRIGLA LUCERNA F	0	58	0
TRIGLA LUCERNA M	0	53	3
TRIGLOPORUS LASTOVIZA F	0	39	0
TRIGLOPORUS LASTOVIZA M	0	43	0
TRIGLOPORUS LASTOVIZA U	0	6	0
TRISOPTERUS ESMARKI U	2	0	0
TRISOPTERUS LUSCUS U	539	0	0
TRISOPTERUS MINUTUS U	563	0	0
ZEUGOPTERUS PUNCTATUS U	78	0	0
ZEUS FABER U	19	0	1
ZOARCES VIVIPARUS U	1	0	0

Figure 1: Chart of station numbers for CEND 6/10 including profiler stations:

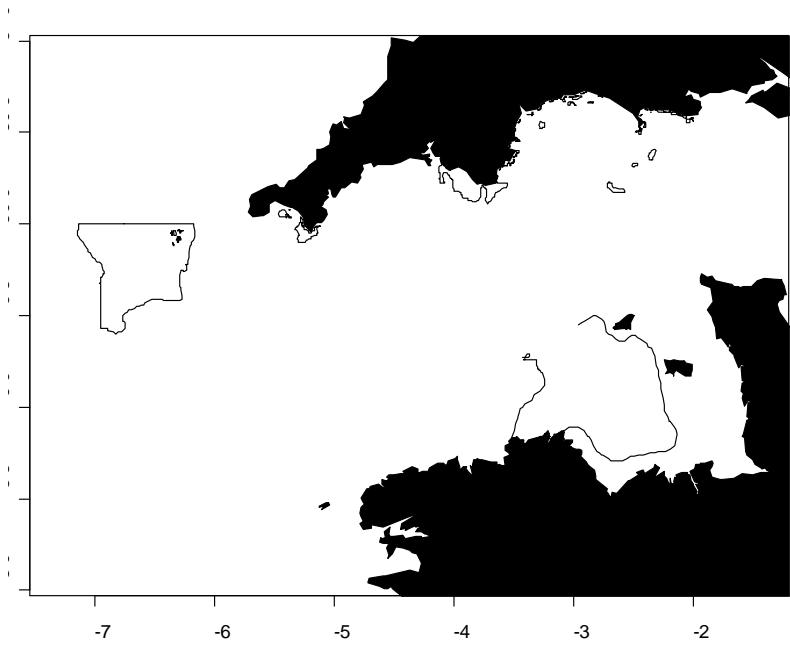


Figure 3: Species composition in number by station, circle radius proportional to the square root of the total number of individuals with angle proportional to the number by species.

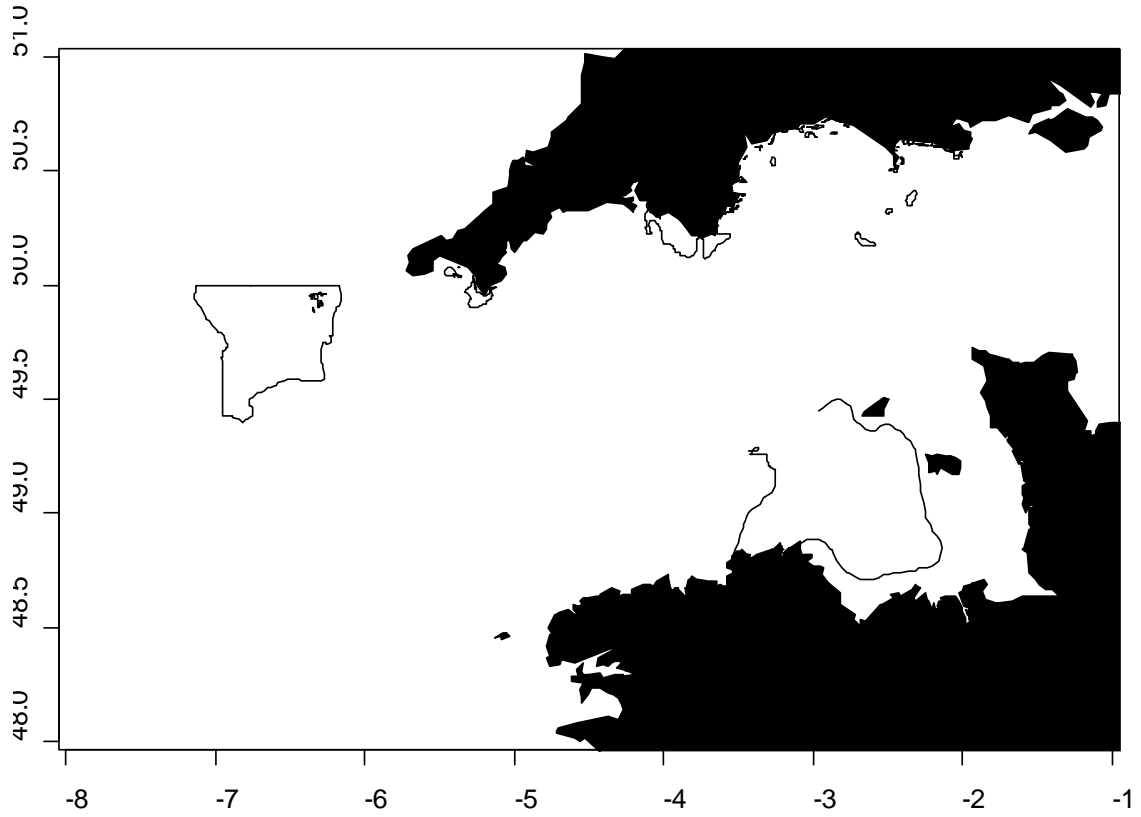


Figure 4: Distribution of major commercial species by station

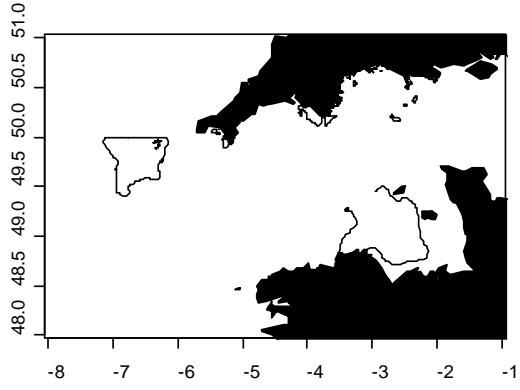


Figure 5: Timeseries of sole distribution, note that the size of bubbles is not to the same scale.

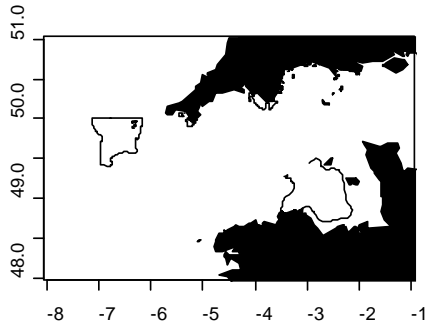


Figure 6: Timeseries of plaice distribution, note that the size of bubbles is not to the same scale.

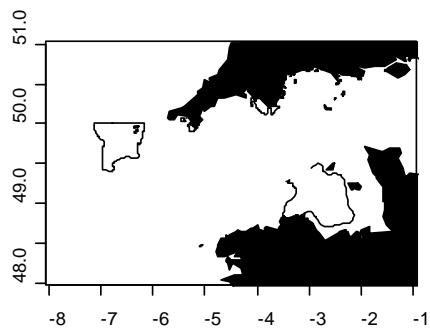


Figure 6: Length distributions for the major commercial species with total catch numbers by the two different gear types.

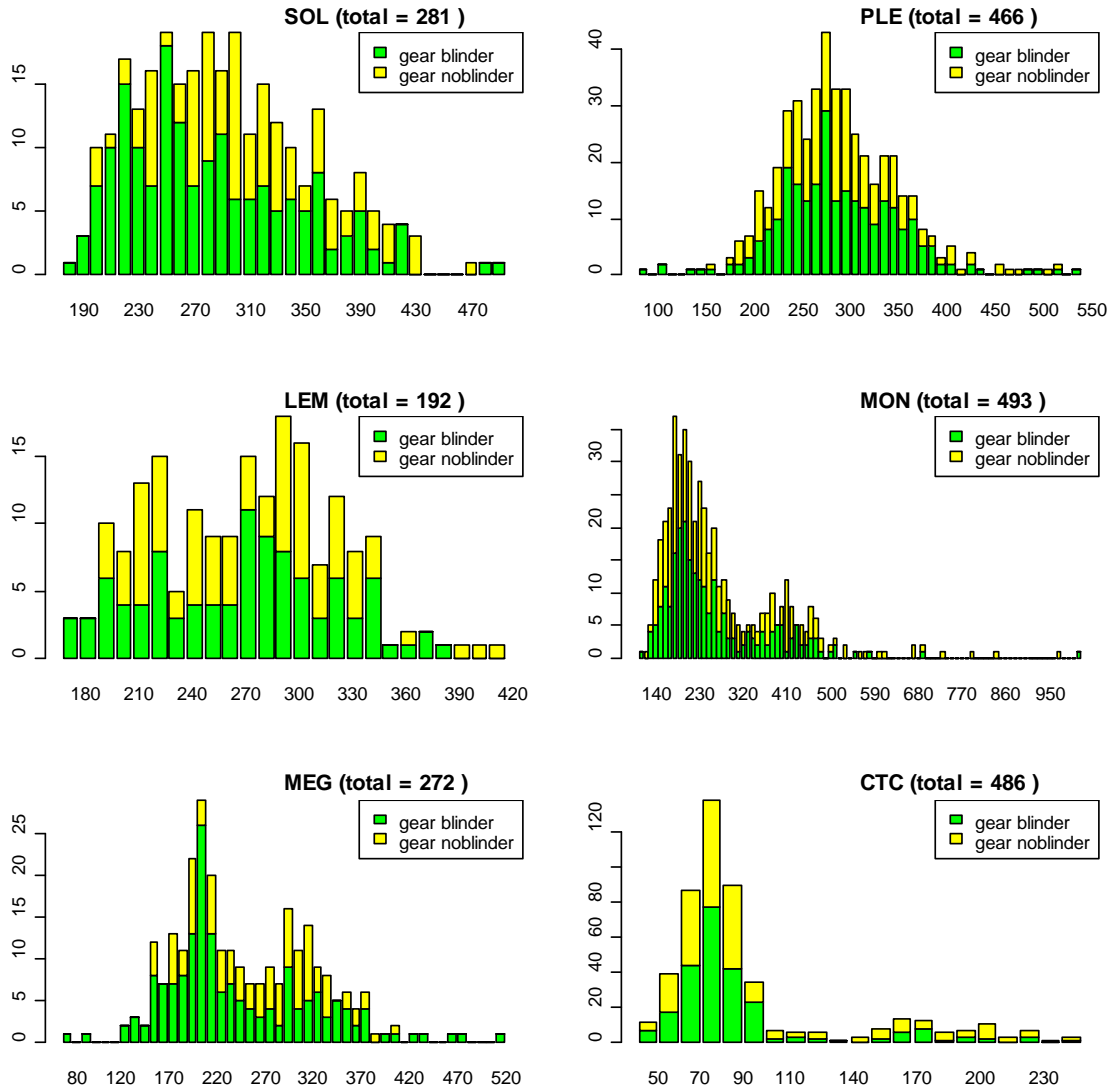


Figure 8: Timeseries of sole length frequency distributions by the two different gear types. Note that in 2010 five additional stations were sampled in stratum 2.

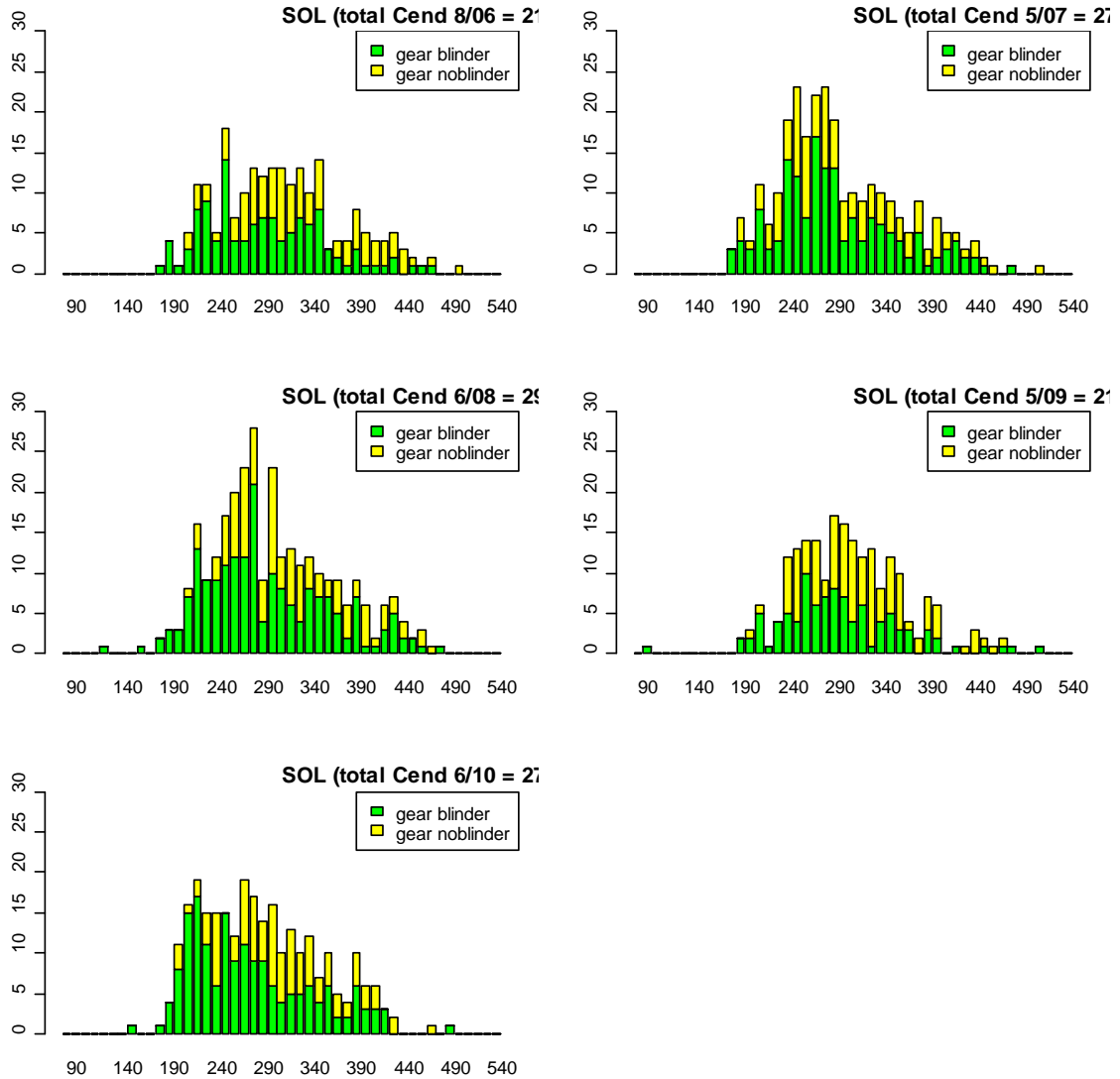


Figure 9: Timeseries of plaice length frequency distributions by the two different gear types. Note that in 2010 five additional stations were sampled in stratum 2.

