THE CENTRE FOR ENVIRONMENT, FISHERIES & AQUACULTURE SCIENCE
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT.

2007 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: SURVEY 1/07

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DURATION:
20th July – 3rd August

LOCALITY:
North Sea (IVc), English Channel (VIId).

AIMS:

1. To undertake a beam trawl survey in the southern North Sea and eastern Channel as part of an ICES co-ordinated research programme.

2. To obtain fisheries independent data on the distribution and abundance of commercial flatfish species.

3. To collect biological data, including maturity and weight at age, of commercial species.

4. To derive age compositions of commercial flatfish, whilst at sea, for use in stock assessment.

5. To carry out sampling to satisfy the requirements of the EU data regulations.

6. To identify the epibenthos by-catch taken in the 4-metre beam trawl and to quantify 12 species as agreed at the Beam Trawl Working Group.

NARRATIVE:

The SIC and SIC 2 joined the CORYSTES on the evening of the 19th July to set up all scientific equipment on the morning of the 20th July. The rest of the scientific team joined in the afternoon (1600h) and the vessel sailed from Portland docks at 1900h to hold position at the first station. Fishing commenced the following morning to the west of the Isle of Wight in proximity of Poole and Christchurch Bay. A total of 12 tows were completed of which one was invalid due to damage by flint rocks. It was therefore repeated successfully at a reduced duration of 15 minutes. In addition one tow was prematurely hauled after 20 minutes due to static gear in the way of the tow. On the 22nd July 13 tows were completed, 2 of which were invalid and one tow was shortened to 20 minutes because of static gear on tow and the site of a historic wreck. The first invalid tow was not repeated because of the extent of the damage and the fact that catches were poor in the other stations in this vicinity. The second invalid tow occurred because the cod-end became undone during the fishing operations. This tow was repeated successfully. The vessel then steamed overnight to the stations off Dungeness at the north east of the English Channel. This decision was based on weather forecasts. The following day, 24th July, we proceeded west back down the English coast from Dungeness to Rye Bay and Hastings. We completed 13 tows with no gear problems and all were valid. One proposed station (Station 202) was abandoned, as it was located inside Lydd firing range, which was currently active. This left us with 3 stations to complete on the English side before steaming for the French coast at approximately 0900h. We successfully completed 2 offshore French stations (prime stations 12 and 10) and then proceeded inshore to complete a further 2 French sector stations. There were 7 tows in total for the day, all of which were valid. The following morning we went offshore slightly to Prime 14 and began working inshore and along the coastline of the Baie de Seine. Tow duration was cut to 20 minutes maximum because historic data showed huge catches of broken shell. Even though we did this we still had to steam for an hour or so before the catch was clean enough to lift aboard. Constant pressure on the winches caused by these huge catches raised the temperature of the hydraulic oil and reduced the effectiveness of the winches. Finally at 1400h we hit a catch that was too big to get aboard and the winches could not cope. Towing to wash out the shell etc was ineffectual so we sat overnight to wait for the hydraulic oil to cool. In total 7 tows were completed of which 2 were invalid and not repeated because of risk to gear. Of the 5 valid stations one was of 30 minutes and the rest were of 20 minutes duration to protect the gear and winches. At 0600h on the morning of the 26th July the catch was finally brought to the surface and slipped overboard. This was due to the skill of the fishing skipper and crew on watch, as well as the engineers in successfully reducing the hydraulic oil temperature. The gear had no damage and we were able to begin fishing again. However to reduce the risk of a repeat situation, the first 2 hauls of the day were reduced to 15 minutes duration and the warp to depth ratio reduced to 3:1 from 3.5:1. As confidence grew and we moved clear of troublesome stations the duration increased to 20 minutes and then to 30 minutes by the end of the day. In total we completed 2 tows at 15 minutes, 4 tows at 20 minutes and 3 tows of 30 minutes, all of which were valid. One station (Prime 2) was not attempted as it had a similar history to the station where we completely filled the net with shell and gravel (Prime 3). The weather had begun to deteriorate by this time to about a force 6 or 7. On the 27th July we started at the offshore station west of Fecamp (Prime 29) and worked our way

inshore to proceed up the Normandy coast towards Dieppe. Based on last year's catches one tow was shortened to 20 minutes and another needed to be hauled 6 minutes early as the reducing towing speed made us fear that the net was filling with shell. However the net was intact and the catch was manageable. In total 9 valid tows were completed, of which 7 were 30 minutes, 1 was 24 minutes and 1 was 20 minutes duration. The following day we proceeded North up the French coast and carried out 7 valid tows to complete the French sector stations and area VIId. One tow near Boulogne was reduced to 20 minutes to avoid fishing in the ferry channel. We then sailed north east and crossed the English Channel back to area IVc where we successfully completed another 2 stations of 30 minutes duration. On the 10th tow (near Margate - Prime 119) we became fast on what was thought to be wreckage. The beam was retrieved to within 2 metres of the towing block but the immense weight in the net caused the winch hydraulic oil to heat excessively. The gear was secured on the safety chain overnight and in the morning (29th July) the crew worked determinedly and eventually managed to get the gear aboard. The net was completely full of small pebbles that could not escape through the liner. The gear was undamaged other than the lazy deckie that required attention as it had snapped during the retrieval process. The crew and fishing skipper on watch performed excellently and without their expertise and determination all of the gear would have been lost. We then continued on to the first station of the morning off the Thames estuary and then proceeded northwards. We completed one valid tow before filling the net with sand again (Prime 97), however after about 2 hours this was successfully retrieved, although the tow was invalid. We went on to complete a further 5 valid tows of 20 minutes and one of 15 minutes. The total tows for the day was 8 tows of which 6 were valid. None of the invalid tows was repeated for fear of losing the gear. The following day (30th July) we continued up the Suffolk coast and carried out 5 valid 30 minute tows before going north of the Corton Buoy and working south to complete a further 4 valid tows. The gear was slightly adjusted before working south to try and reduce the large sand catches. However on one station (Prime 107) we again caught a large quantity of sand but this was washed out successfully. In total 9 valid tows were completed. The next day (31st July) we headed east to the offshore stations then back west then south to complete the offshore Thames stations. We then headed east to the first of the Belgian stations (station 404). In total we completed 9 valid tows of 30 minutes duration. The 1st August was the final day of fishing and we completed 7 valid tows of 30 minutes just off the Belgian coast before steaming for Portland. We docked at 1100h on the 2nd August and stayed aboard overnight before disembarking on the 3rd August and driving back to Lowestoft.

RESULTS:

Aim 1:

A total of 36 valid tows were completed on prime and additionally fished stations in the Eastern English Channel (VIId) in the English sector. In addition 3 invalid tows were also carried out. Of these 2 were successfully repeated and 1 was abandoned to protect the fishing gear from further damage. In the French sector 34 stations were successfully sampled and 2 stations where we caught huge catches of sand and shell were invalid and not repeated, to reduce the damage on the winches and the chances of losing the net. In the southern North Sea 15 stations are considered to be of higher priority. Of these 14 were valid and 1 was invalid and was not repeated as it was likely we could lose the net with the sheer bulk of sand caught. In addition a further

19 valid tows were carried out on secondary importance tows in the North Sea and towards the Belgian coast.
In total 113 tows were carried out during the survey and of these 104 were valid, 5 were invalid and not repeated and 2 were invalid tows that were then repeated successfully. A summary of the tows carried out is shown in Table 1 and their positions are shown in Figure 1.

Table 1. The number of valid and invalid tows fished during the cruise.

Region	Valid 30 mins	Valid 20 mins	Valid 15 mins	Invalid	**Total**
VIId (English)	34	2	1	3	**40**
VIId (French)	20	12 (includes a 24 minute tow)	2	2	**36**
IVc	29	5	1	2	**37**
Total	**84**	**18**	**4**	**7**	**113**

Aims 2-5:
All otolithed fish were measured to the whole cm below, weighed individually, sexed and assigned a sexual maturity code based on a 4-stage key. Table 2 shows the otoliths collected for the main commercial fish species. All non-commercial finfish bycatch caught was identified to the species level (except sand gobies and argentines), weighed and measured. In addition the following shellfish and cephalopods were also weighed and measured while queen scallops (*Aequipecten opercularis*) and oysters (*Ostrea edulis*) were weighed and counted only: cuttlefish (*Sepia officinalis*), *Alloteuthis spp*, *Loligo spp*, edible crab (*Cancer pagurus*), lobster (*Homarus gammarus*), crayfish (*Palinurus gilchristi*), scallops (*Pecten maximus*), velvet swimming crab (*Necora puber*)and spider crab (*Maia squinado*). The numbers of individual fish measured this year for the main commercial species can be seen in Table 3.
In total 70 different species were recorded. Some observations on the catches of the main commercial species encountered are given below. Bubble plots of catches can be seen in Appendix 1 and some length frequency distributions are shown in Figure 2 in the Appendix. Dover sole (*Solea solea*): Compared to last year the sole catches for both regions are lower. The North Sea is especially low with 773 sole being measured this year compared to 1718 last year.
Plaice (*Pleuronectes platessa*): The catches of plaice this year have been higher than last year in both IVc and VIId. In 2006 in the southern North Sea, 327 plaice were caught whereas 521 were caught this year and in the English Channel 1383 were caught compared to 1516 this year.
Cod (*Gadus morhua*): Overall cod catches have been considerably lower than last year. Although 17 cod were caught in VIId compared to 4 in 2006, there was only 31 fish caught in IVc. Last year 251 had been caught in the North Sea and the catches

were dominated by small 0 and 1 group cod. This year they have all but disappeared with only 5 fish below 30cm being caught.

Other Main Species: Catches of lemon sole (*Microstomus kitt*) were very similar to last year with 166 being caught compared to 163 previously. Dab (*Limanda limanda*) catches in the Channel were only 36% of last year's catches but similar for the North Sea. Turbot (*Scopthalmus maximus*) and flounder (*Platichthys flesus*) were slightly down on last year whilst brill (*Scophthalmus rhombus*) was slightly up. However these species are only caught in low numbers.

Table 2. Otoliths collected from the main commercial species in each sampling region. The number of otoliths collected on last year's cruise is shown in brackets.

Region	Brill	Cod	Dab	Flounder	Lemon sole	Plaice	Sole	Turbot
VIId English	11	4 (0)	149	36	22	244 (356)	236 (202)	0
VIId French	22 (18)*	13 (4)	108 (255)*	17 (74)*	64 (83)*	632 (576)	230 (191)	13 (16)*
North Sea (IVc)	9 (6)	31 (96)	221 (237)	15 (27)	72 (34)	423 (297)	467 (544)	2 (2)
Total	42 (24)	48 (100)	478 (492)	68 (101)	158 (117)	1299 (1229)	933 (937)	15 (18)

* The total taken in VIId English and French added together.

Table 3. Numbers of fish measured from the main commercial species list, in each sampling region.

Species	Species Code	VIId English	VIId French	IVc North Sea	Total
Brill	BLL	11	23	10	44
Cod	COD	4	13	31	48
Cuttlefish	CTC	165	384	11	560
Dab	DAB	236	412	469	1117
Flounder	FLE	37	24	16	77
Lemon sole	LEM	23	67	76	166
Plaice	PLE	261	1255	521	2037
Sole	SOL	319	433	773	1525
Turbot	TUR	0	15	2	17
Whiting	WHG	2	7	261	270
	Total	1058	2633	2170	5861

Aim 6:
On certain specified stations a full benthic sort was carried out to identify the numbers and weights of species encountered. In addition on every other station each species of benthos encountered was to be noted as an observation in the database. There were also 9 sentinel species that if encountered at any time on any tow, should be removed and quantified. We primarily encountered Ross Coral (*Pentapora foliacea*) and *Sabelleria spinulosa* of these species, although on one station a mantis shrimp (*Meiosquilla desmaresti*) was caught. In total 11 stations were sampled out of a planned 13. One station was dropped because of the probability of damaging the gear (Prime 30) and the other was invalid because of the huge catches of gravel and shell and the time it took to get the catch out of the water. One tow was reduced to 20 minutes for safety reasons.

Acknowledgements
Thank you to the crew and officers of the RV Corystes for their hard work and determination and to the scientific staff for their continuous support and enthusiasm for the survey. Also thanks to Alex Tidd for his assistance in producing this report and in particular for creating the charts.

G Course
24/08/2007

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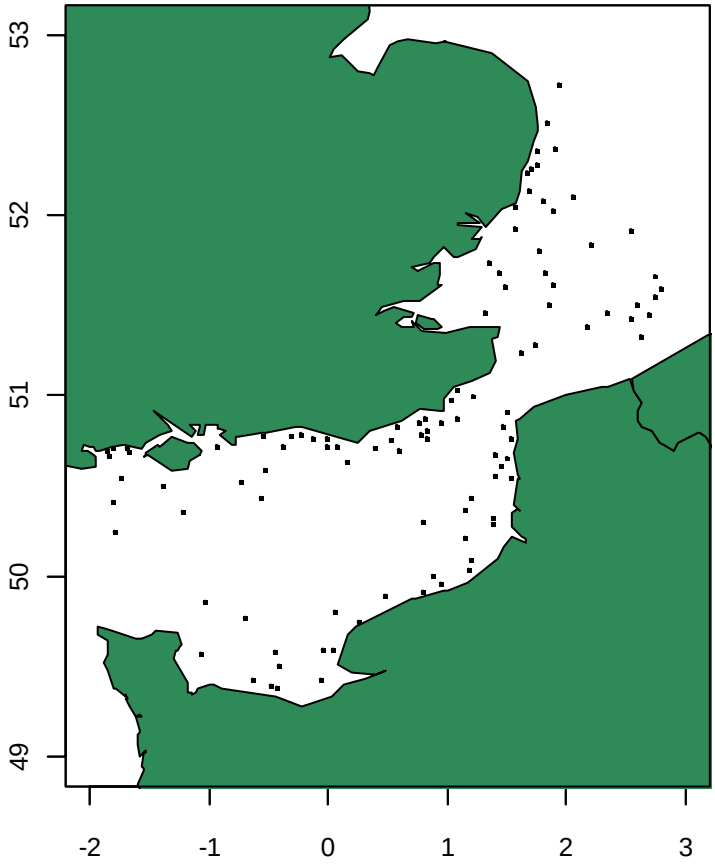
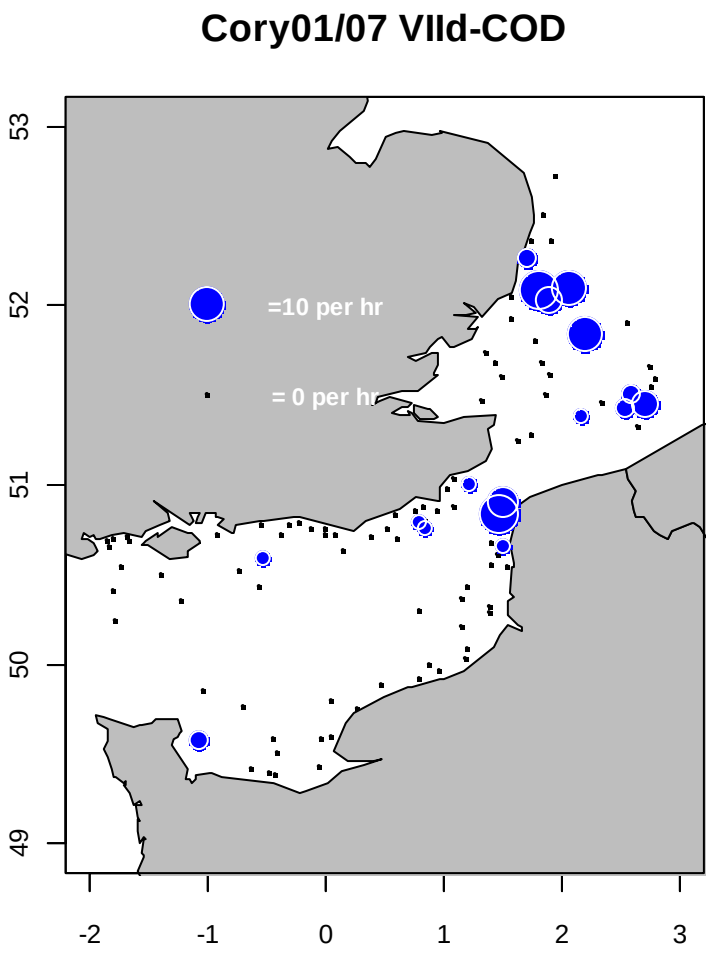


Figure 1. Position of stations sampled during the 2007 English Channel Beam Trawl Survey.

Appendix 1.

Distribution and abundance of the main commercial species on the 2007 English Channel Beam Trawl Survey.



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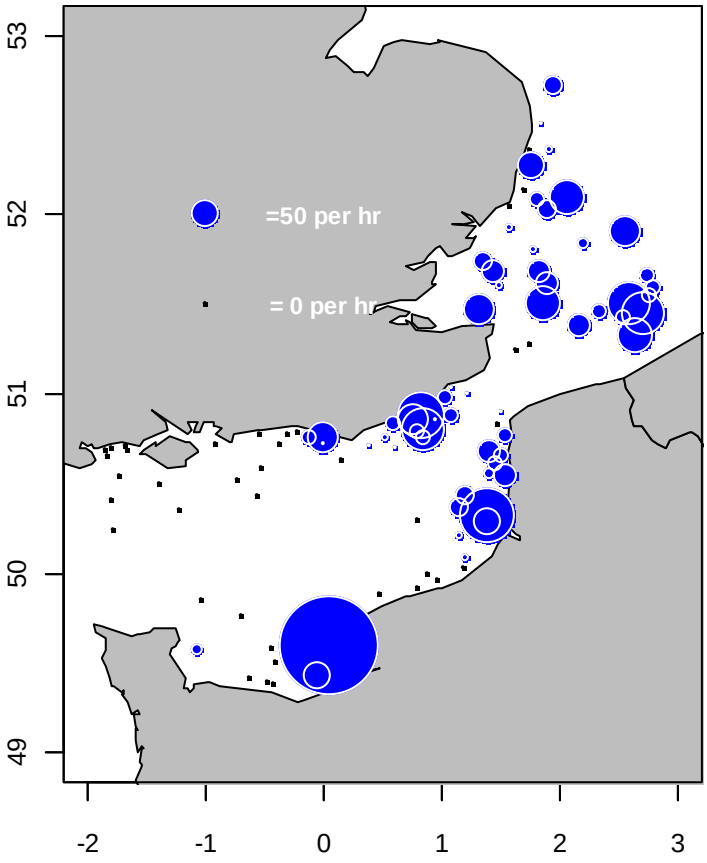

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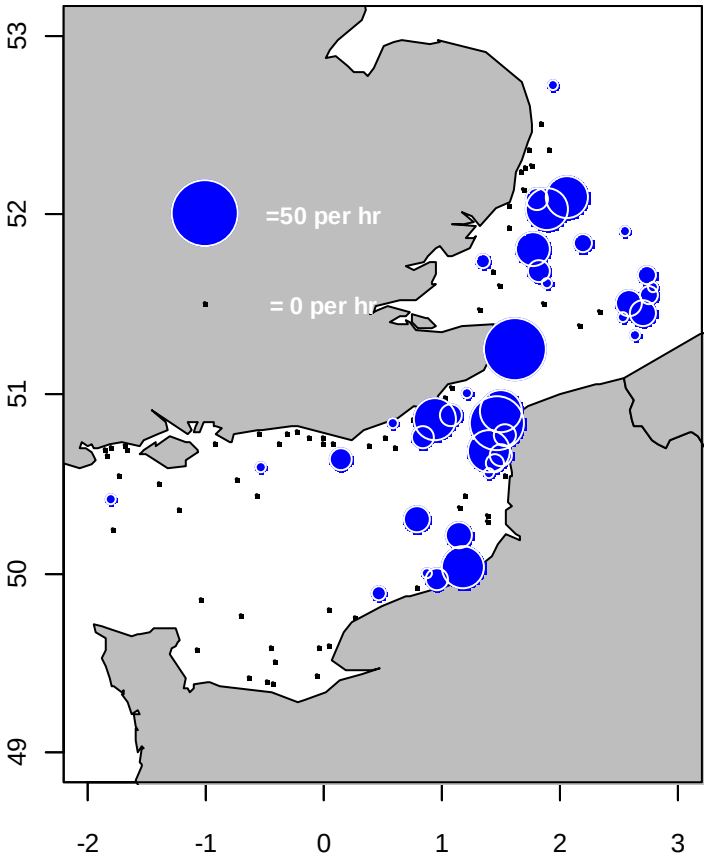

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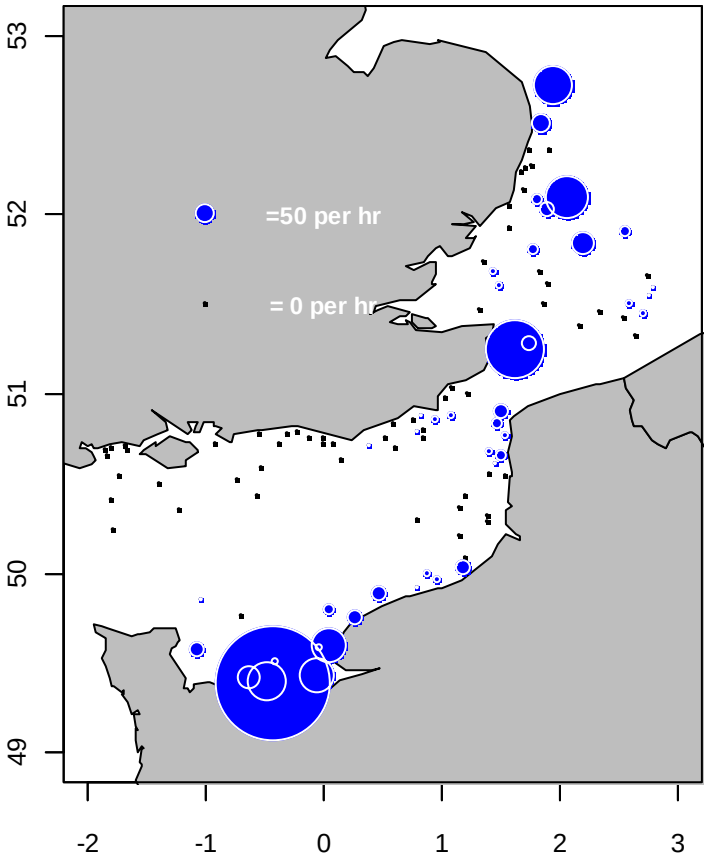
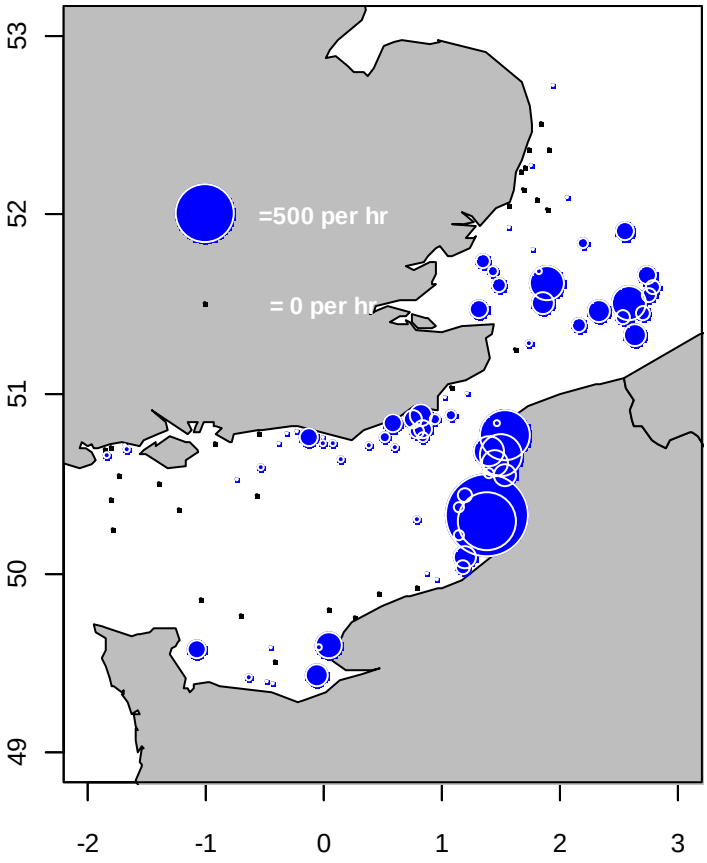


Cory01/07 Vlld-PLE



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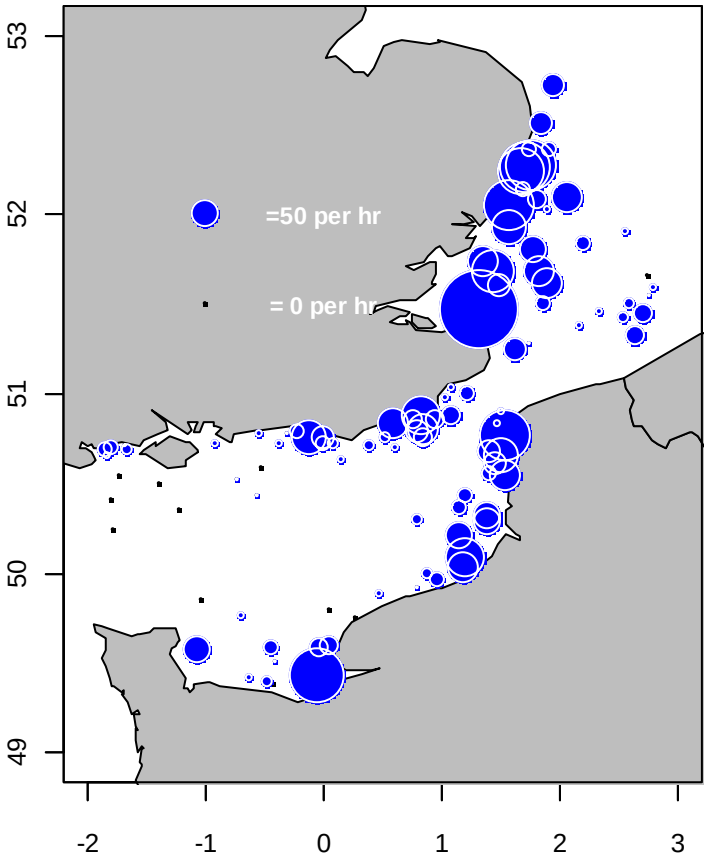
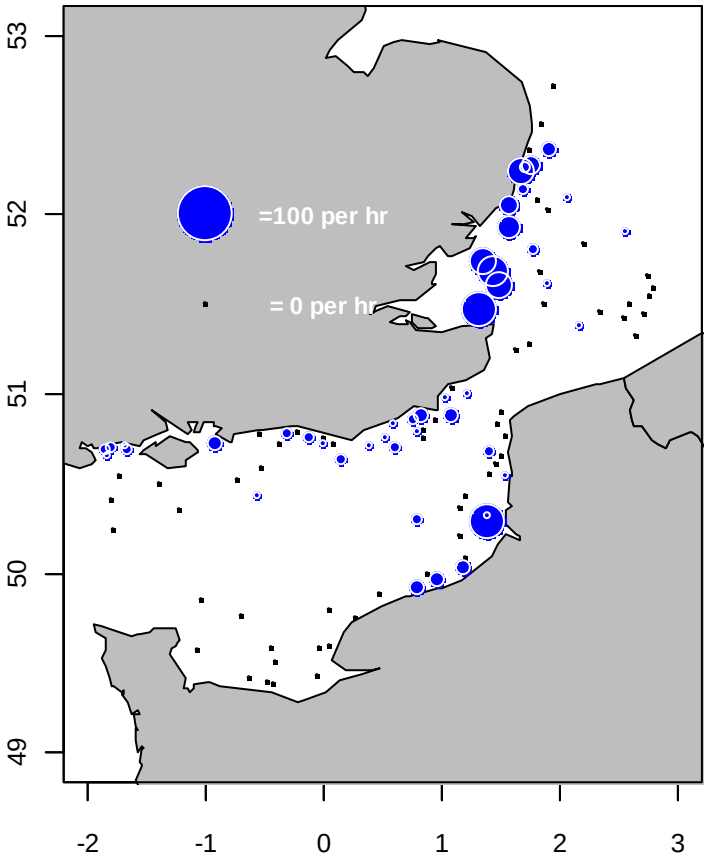


Cory01/07 VIId-THR



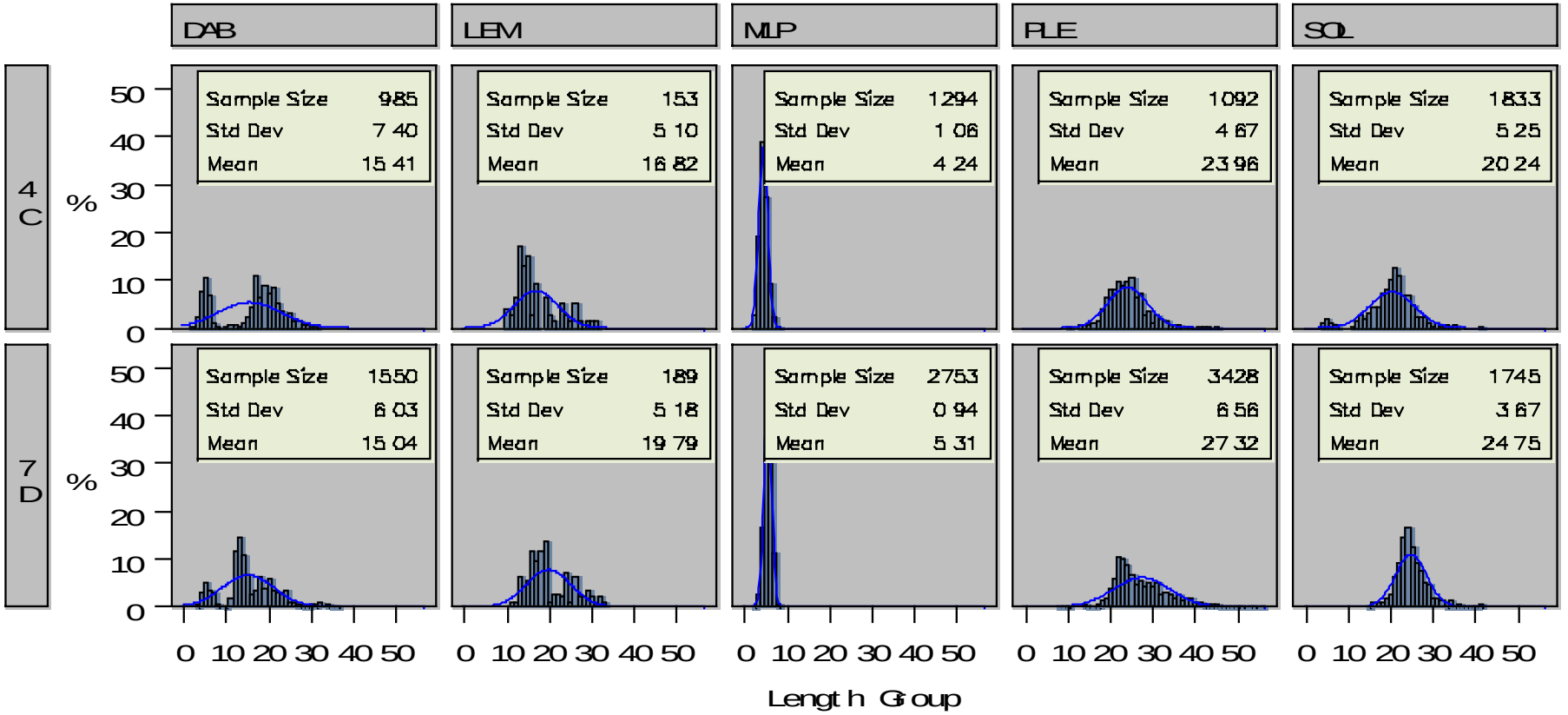


Figure 2. Length frequency distributions for some of the main species captured during the English Channel Beam Trawl Survey 2007.