

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

2008 RESEARCH VESSEL PROGRAMME

REPORT: RV CEFAS ENDEAVOUR: SURVEY 14/08

STAFF:

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DURATION:

18 July – 1 August 2008

LOCALITY:

North Sea (IVc), English Channel (VIIId).

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. Additional aims:
7. To carry out detailed survey of sole distribution in selected areas of VIIId and IVc.

Additional Aims:

8. To tag and release any healthy elasmobranchs caught.
9. To release tidal tracking tags for Julian Metcalf at Prime station 78 and also as far north and as central as is possible in the North Sea.
10. To undertake GSI sampling of gonads in line with the SOPs supplied by Peter Whittames.
11. To continue taking photographs of different fish species to extend the Cefas photo ID library.

NARRATIVE:

The SIC and 3 scientific staff joined the ENDEAVOUR on the evening of the 17th July to complete the setting up of the fish room started earlier in the day by the Lowestoft based scientists. In the morning all scientists were aboard by 0800h and the vessel sailed from Lowestoft docks at 1000h. Fishing commenced in the North Sea just south of Lowestoft on station Prime 105 at approximately 1230 on the 18th July. The ship then proceeded southwards and fished a total of 7 fishing tows in the North Sea (IVc) before sailing overnight to station Prime 80 (just inside Area IVc) to begin the eastern stations in Area VIIId. A total of 12 valid fishing stations were completed on 19th July. One fishing tow was moved slightly because of static gear on the towline but this was not recorded as an "Alternate" station as it was only a temporary change due to gear rather than a suggested permanent change. Niskin casts were completed at the start and end of each day. The Endeavour continued fishing west on the 20th July and completed 13 valid fishing stations and 2 Niskin stations. Two of the fishing stations (Prime 56 & 54) had to be reduced to 25 minutes to avoid catching static gear. On the 21st July it was planned to sample on Station Prime 49 but unfortunately it lies in a zone where the Southampton port authority requires all vessels over 61m (including fishing vessels) to carry a pilot. Therefore it was dropped and will need to be removed from the cruise or a suitable alternative found for next year. It also lay on an historical wreck site of the Mary Rose. We continued sampling west and completed a total of 7 valid tows, two of which were reduced to 20 minutes due to historical notes indicating large catches of rocks. One haul had to be repeated because the strong tides made the gear rise off the seabed. The following day the English stations in VIIId were completed but Prime station 46 had to be dropped because the water was too shallow for the vessel. We then continued into the French section and completed 3 stations in the Baie de Seine. On planning the fishing pattern for the next few days the captain also noticed that several more stations were within compulsory pilotage areas. Therefore alternative stations as close as possible to the originals were drawn. Unfortunately one station (Prime 1) has had to be dropped completely from the survey because there is no suitable or "pilot-free" area within 5 miles of the original where an alternative haul could be fished. All of the Alternative tows, except station 72A were kept to 20 minutes to protect the gear.

On the 23rd July a total of 2 niskin casts and 9 fishing tows were successfully completed, 5 of which were 20 minute duration only. These 20 minute tows included 2 tows that were reduced because of large catches of shell whilst the other was reduced because it was originally plotted to tow across a pipeline. Prime station 1 was dropped completely for the reasons described earlier. The following day prime stations 11 and 21 were moved because they lay within the compulsory pilotage area of Le Havre and Rouen. All moved stations have been labelled with the suffix “A” after the original Prime Station number and recorded as valid. In total 9 prime stations were fished. Tow time for all stations, except one was reduced to 20 minutes because of large catches of shell/gravel or because they were new alternate stations and were therefore unknown tows and it was deemed a necessary precaution for protecting the gear. In addition several rays were tagged and released for Jim Ellis. On the 25th July 8 prime stations were fished and 7 were valid tows. The invalid tow was caused by the net filling up with dead shells with an estimated weight of 12 tonnes. This had to be slipped over the side of the ship. The original tow (Prime 41) was only 20 minutes so the tow was not repeated because of the high risk to the gear and deck crew. The French section was completed on the afternoon of the 26th July and the Endeavour sailed back into the southern North Sea to begin fishing the remaining stations from the southern end and Prime stations 78, 79 and 119 were fished. On Sunday 27th July the Prime stations for the survey were completed and we began fishing on the additional North Sea and “Belgian” stations. Between 28th and 29th July, 19 additional “Belgian” stations were completed. The 30th July was dedicated to checking all data, writing reports, checking all samples, trawl and rod caught ray tagging, and cleaning down fish rooms etc. The vessel docked in Lowestoft on the morning tide on the 31st July, a day earlier than planned, to allow the vessels winches and engines to be inspected and repaired (if necessary) for the following North Sea ground fish survey and to allow the incoming SIC to discuss operational and safety issues associated with the additional aims of the next survey.

RESULTS:

Aim 1-7:

It was planned to sample a total of 39 stations in the English sector of the English Channel (VIId). Of these 37 were successfully sampled on 33 Prime stations and 4 additional stations. One of the stations was classed as invalid after the first tow (on Prime 25) but this was successfully repeated. Two Prime stations had to be dropped completely because one was in water too shallow for the Endeavour and one was inside the compulsory piloting area of Southampton.

In the French sector it was planned to sample 36 Prime stations. We successfully completed 34 of these stations with a mix of 20-30 minute tows. Of the two stations that were not sampled, one was invalid and not repeated because we caught a huge catch of sand and shell (>10 tonnes, Prime 41) and the net could not be safely emptied aboard, whilst the other was dropped completely (Prime 1) because piloting rules meant that we could not fish anywhere close to the original position. A further 7 stations had to be moved because of either piloting rules, underwater hazards or because they were in water too shallow for the Endeavour to operate in. Appendix 1 (Table 4) shows the old and new positions for these stations.

The North Sea had 15 stations identified as Prime Stations and 1 station identified as Additional (Prime Station 80). All of these were successfully sampled for 30 minute duration tows. In past years, further stations have also been completed in the southern North Sea and towards the Belgian coast. No official list of these appears in the guidance notes but historically fished positions were used from the 2007 cruise to identify suitable stations. A total of 19 stations were successfully completed last year, all for 30 minutes and this was again achieved on this cruise.

In total 107 fishing tows were carried out during this survey and of these 85 were valid 30 minute tows, 21 were valid 20-29 minute tows, 1 was invalid and repeated successfully and 1 was invalid and not repeated. 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 25 mins	Valid 20 mins	Invalid Unrepeated	Total Valid
VIIId (English)	33	2	2	0	37
VIIId (French)	17	0	17 (includes 7 alternate new stations and one 21 minute tow)	1	35
IVc	16 (includes Prime 80)	0	0	0	16
IVc (additional and Belgian)	19	0	0	0	19
Total	85	2	19	1	107

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 for flatfish, and the new 6-stage key for roundfish. 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: cuttlefish (*Sepia officinalis*); little cuttlefish (*Sepia elegans*); *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*). Queen scallops (*Aequipecten opercularis*) and oysters (*Ostrea edulis*) were weighed and counted only. The numbers of individual fish measured this year for the main commercial species can be seen in Table 3.

In total 74 different species were measured. Some observations on the catches of the main commercial species encountered are given below. Note that the North Sea results also include the additional Belgian stations as the same additional stations

were also completed last year. Bubble plots of catches can be seen in the Appendix and some length frequency distributions are shown in Figure 2 in the Appendix.

Dover sole (*Solea solea*): Compared to last year, the sole catches in VIId overall are lower, although in the English sector they are slightly better. In the North Sea sole catches are up with 1255 being measured this year compared to 773, last year.

Plaice (*Pleuronectes platessa*): The catches of plaice this year are similar to last year in VIId but higher in IVc. In VIId there was a difference in the distribution of plaice between the English and French sectors. Last year the English sector only contributed 261 to the total whereas this year 681 plaice were caught. In the combined English and Belgian North sea areas, 827 plaice were caught compared to 521 in 2007.

Cod (*Gadus morhua*): In both areas cod catches have increased with 96 being caught compared to 48 in 2007.

Other Main Species: Catches of lemon sole (*Microstomus kitt*) are up nearly 50% with 319 being caught compared to 166 previously. Dab (*Limanda limanda*) catches in the Channel were also higher than last year especially in the North Sea where 1006 were caught compared to 469. Turbot (*Scophthalmus maximus*) was slightly down because of poor catches in the French region of VIId and this was a similar pattern with brill (*Scophthalmus rhombus*). Flounder (*Platichthys flesus*) and whiting (*Merlangius merlangus*) on the other hand were both higher this year. However, although these last few species are important and valuable commercial species, they are only caught in low numbers and very little can be interpreted from these results.

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	7 (11)	20 (4)	136 (149)	27 (36)	69 (22)	463 (244)	217 (236)	1 (0)
VIId French	9 (22)	20 (13)	67 (108)	25 (17)	151 (64)	455 (632)	151 (230)	7 (13)
North Sea (IVc)	9 (9)	11 (31)	211 (221)	18 (15)	5 (72)	90 (423)	321 (467)	1 (2)
North Sea (Belgian and Extra)	1	44	66	0	43	247	32	1
Total	26 (42)	95 (48)	480 (478)	70 (68)	268 (158)	1255 (1299)	721 (933)	10 (15)

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

Species	Species Code	VIIId English	VIIId French	IVc North Sea	IVc "Belgian" North Sea	Total
Brill	BLL	7	9	9	1	26
Cod	COD	20	18	13	45	96
Cuttlefish	CTC	184	289	8	16	497
Dab	DAB	434	262	382	624	1702
Flounder	FLE	68	30	20	0	118
Lemon sole	LEM	71	133	71	44	319
Plaice	PLE	681	899	102	725	2407
Sole	SOL	346	154	973	282	1755
Turbot	TUR	2	7	1	1	11
Whiting	WHG	153	86	356	106	701
	Total	1966	1887	1935	1844	7632

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 all other stations 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 *Sabellaria spinulosa* of these species, although on one station a mantis shrimp (*Meiosquilla desmaresti*) was caught. All stations where it was planned to carry out a full benthic sort were successful. However it should be noted that one station (Prime 30) has been completely removed from the survey and that 3 stations had to be moved this year because of shallow water (Prime 72), underwater pipeline (Prime 14) and static gear on the planned tow (Prime 62). It would be useful for the benthic ecology group to suggest an alternative to Prime 30 and also evaluate the viability of these alternate tows. All alternate tows, except Prime 62 were reduced to 20 minutes for safety reasons, as were Prime Stations 7 and 18. Prime 27 was towed for 32 minutes and Prime 54 for 25 minutes because of static gear on the end of the planned tow.

Aim 8:

At the request of Dr Jim Ellis of Cefas, elasmobranchs were tagged when it was assessed that they would survive the process of being caught by a beam trawl, being tagged and then released. This was done by retaining the live elasmobranchs within

a small holding tank for 10-15 minutes and observing their activity levels. All active and healthy looking elasmobranchs were tagged using Petersen Tags and then returned to the sea using a drop net. This was carried out during the cruise and on several dedicated tows in the North Sea, at the end of the survey. A total of 83 individual fish were tagged and released, with 65 being Thornback Rays, 1 Starry Smooth Hound, 2 Undulate Rays, 3 Blond Rays and 12 Spotted Rays. We also caught a Thornback Ray that had already been tagged (tag ref. E807676) on a previous survey.

Aim 9:

Tidal tracking tags labelled with blue lettering were successfully released for Julian Metcalfe at the shooting time and position for Prime Station 78 as requested. The black labelled tags were not released because the survey did not go far enough north. The tags were therefore passed to Brian Harley for release during the North Sea Ground Fish Survey in August.

Aim 10:

There has been some concern expressed recently over the accuracy of maturity staging by eye. Therefore Dr Peter Whittames requested gonad samples to be collected from female plaice to allow histological research to be carried out. In total 100 samples were collected during this survey which exceeded the requested 80 samples.

Aim 11:

Cefas has been collecting photographs of different species and benthos to enable easier and more accurate identification of different species to be carried out. Over 600 photographs were taken of approximately 40 finfish species and 60 benthic species. These will contribute greatly to the Cefas catalogue.

Additional Aim 12:

Richard Ayers brought the new EDC hardware to sea to test it in a live environment and with real data and conditions. It was loaded with the software from the current EDC units and was used on several hauls to record length frequency data. This proved to be a complete success and the hardware proved to be working perfectly.

Acknowledgements

Thank you to the crew and officers of the RV Cefas Endeavour for their hard work and helpful advice and to the scientific staff for their continuous support, professionalism and enthusiasm for the survey. Also thanks to Giles Rickard and Norlaila Zanuri from Exeter University for participating fully in the cruise as well as completing their own research projects.

G Course
1 August 2008

INITIALLED: Sven Kupscus

DISTRIBUTION:

Basic list +
 Cruise staff
 Master Cefas Endeavour
 Fishing Skipper Cefas Endeavour
 Bart Maertens, Belgium
 Inge de Boois, Netherlands
 Joel Vigneau, France
 Kent and Essex, Sussex, Southern SFCs

Appendix

Table 4. Positions of Alternate tows and tows requiring altered.

Prime Station No.	Old Shoot Position	Old Haul Position	New Shoot Position	New Haul Position	Reason
11 (11A)	49 34.43N 00 03.85W	49 35.63N 00 00.74W	49 40.00N 00 16.25W	49 41.66N 00 14.38W	Pilot
14 (14A)	49 35.00N 00 24.60W	49 35.32N 00 21.53W	49 34.81N 00 26.16W	49 35.13N 00 23.86W	Pipeline
16 (16A)	49 57.40N 00 57.33E	49 58.34N 01 00.32E	49 57.55N 00 56.16E	49 58.48N 00 59.14E	Pilot
21 (21A)	49 36.85N 00 04.27E	49 35.06N 00 02.36E	49 45.01N 00 07.24E	49 46.64N 00 09.14E	Pilot
62 (62A)	50 48.67N 00 32.20E	50 49.59N 00 35.33E	50 48.49N 00 32.27E	50 47.22N 00 29.94E	Static Gear
69 (69A)	50 46.12N 01 32.73E	50 48.04N 01 34.02E	50 50.42N 01 33.58E	50 52.42N 01 32.92E	Pilot
72 (72A)	50 32.66N 01 32.49E	50 35.08N 01 33.12E	50 32.69N 01 31.69E	50 35.07N 01 32.35E	Shallow Water
1	49 25.63N 00 03.62W	49 27.84N 00 03.52W	Needed	Needed	Pilot
30	50 18.27N 00 23.46W	50 18.36N 00 26.89W	Needed	Needed	Dropped of Survey
46	50 42.17N 01 38.06W	50 42.42N 01 41.06W	Needed	Needed	Shallow Water
49	50 44.40N 00 58.39W	50 44.66N 00 54.81W	Needed	Needed	Pilot

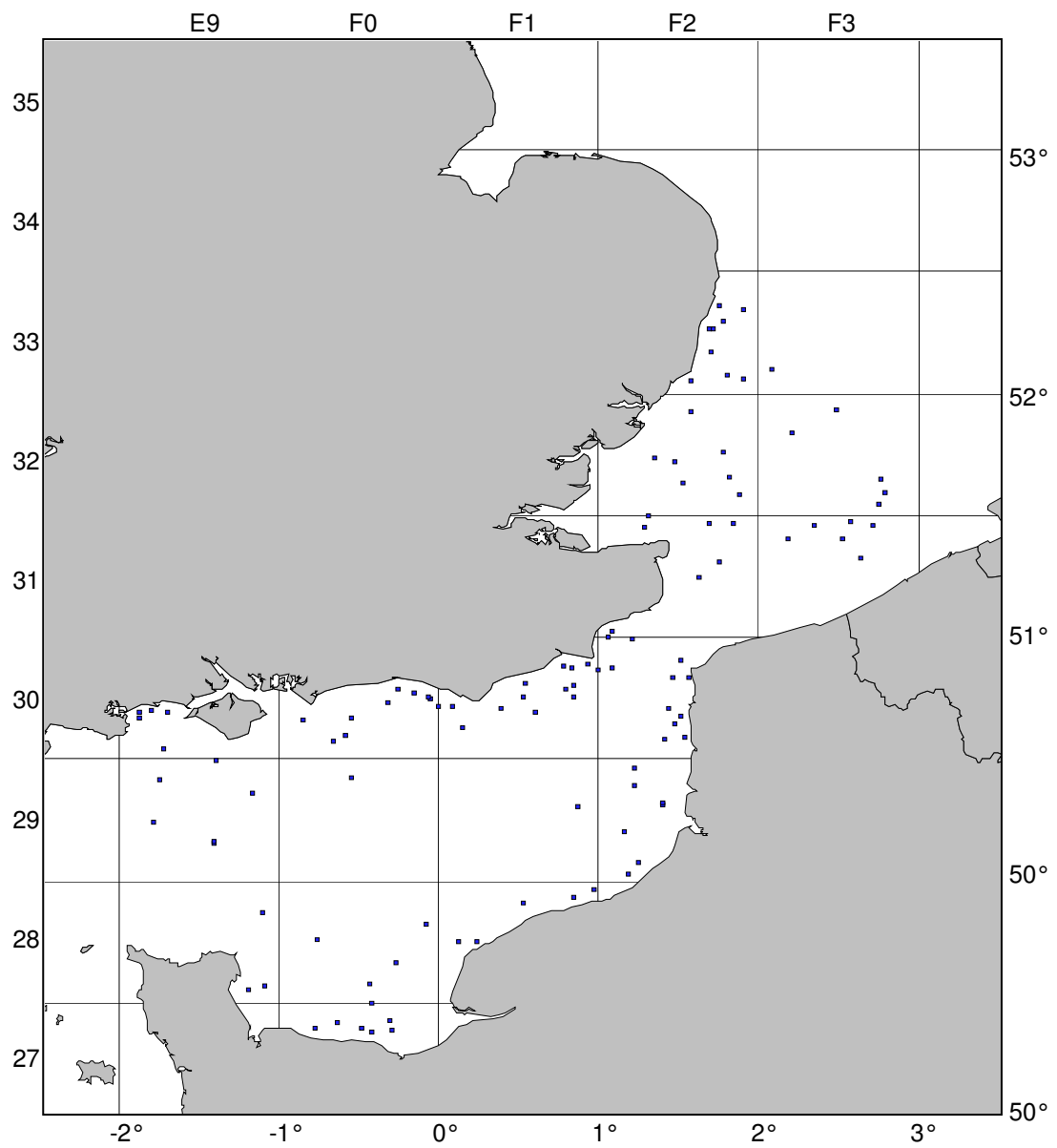
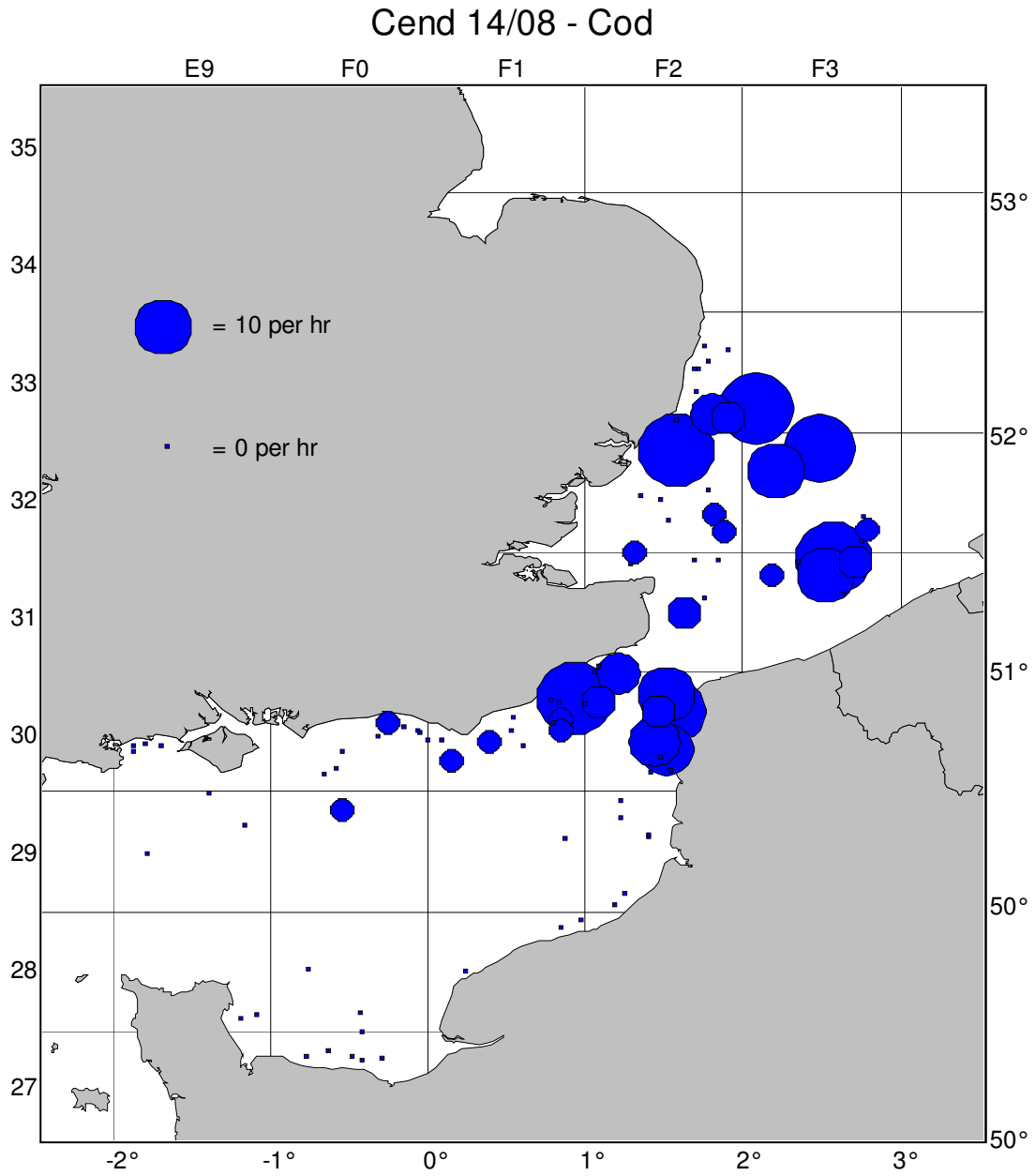
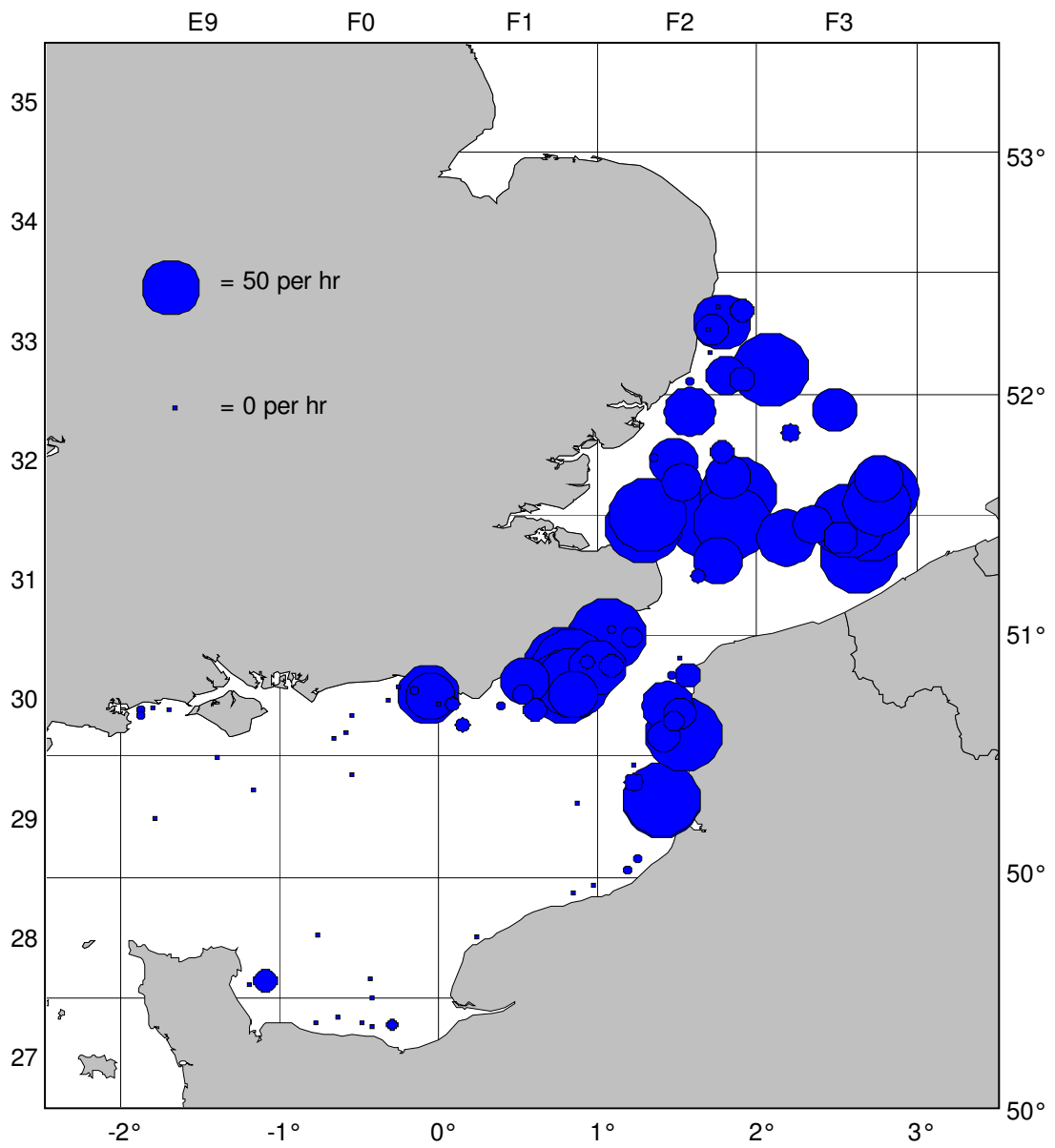


Figure 1. Positions sampled during the 2008 English Channel Beam Trawl Survey.

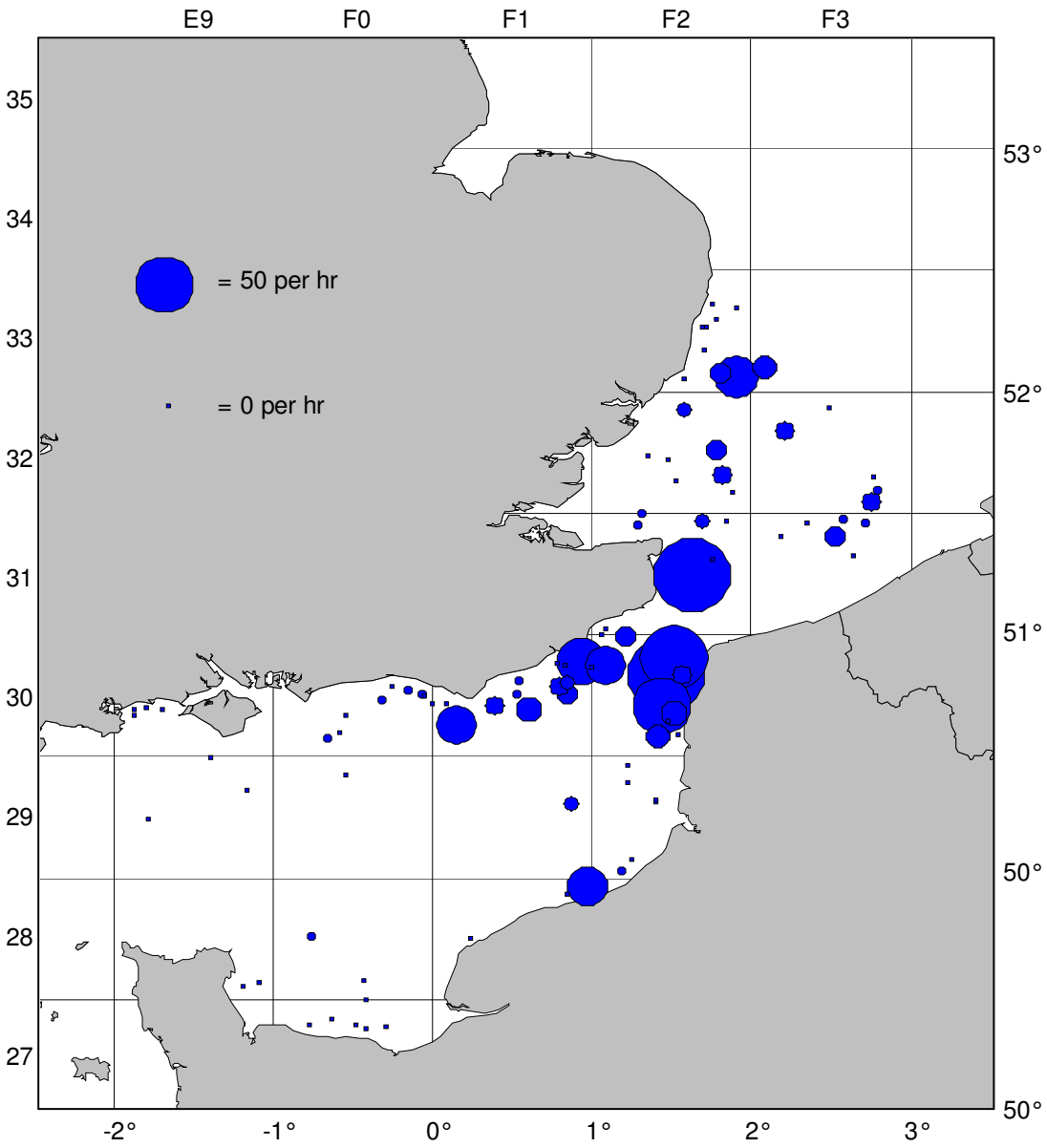
Appendix 1.
Distribution of the main commercial species on the 2008 English Channel Beam
Trawl Survey.



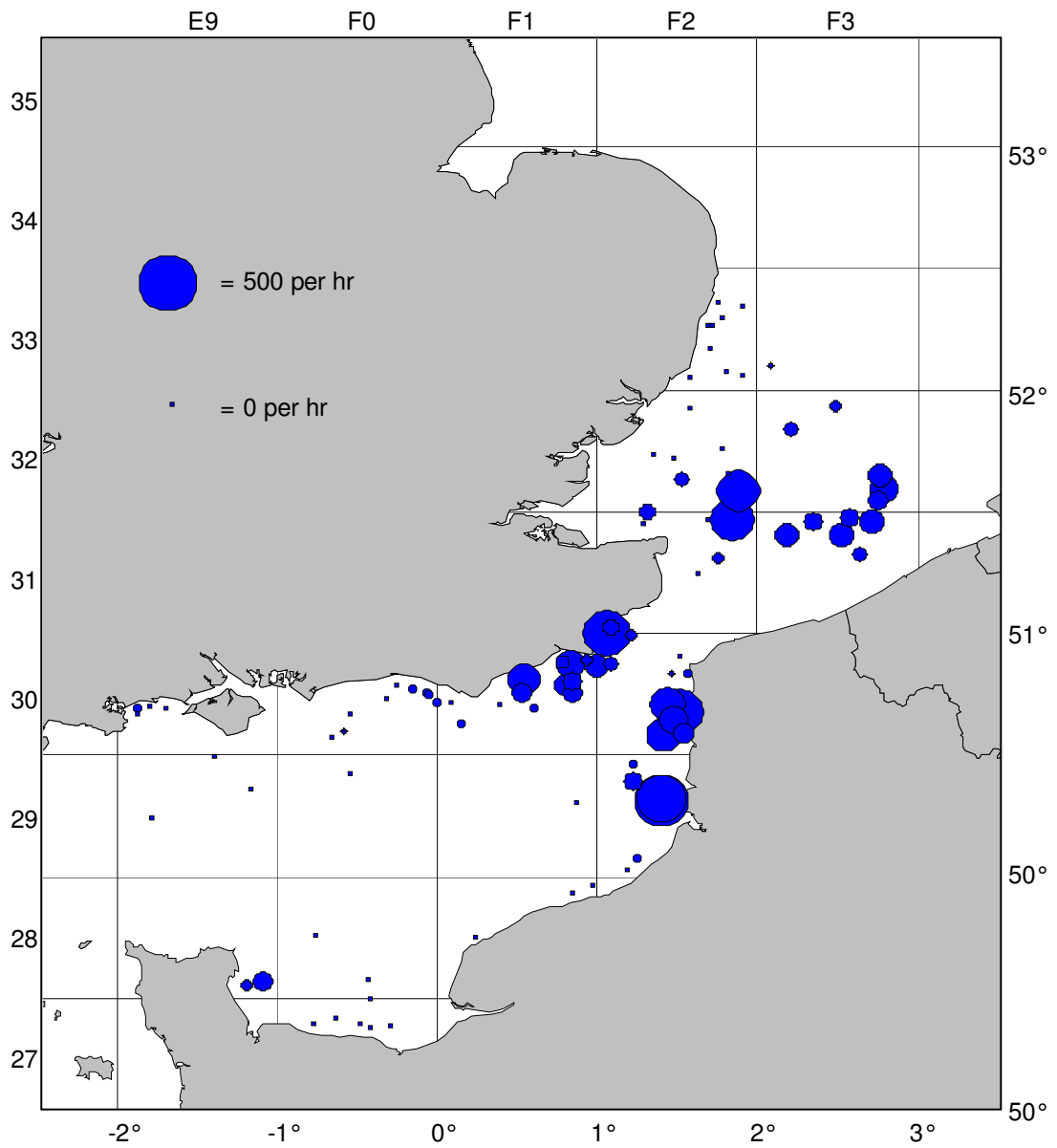
Cend 14/08 - Dab



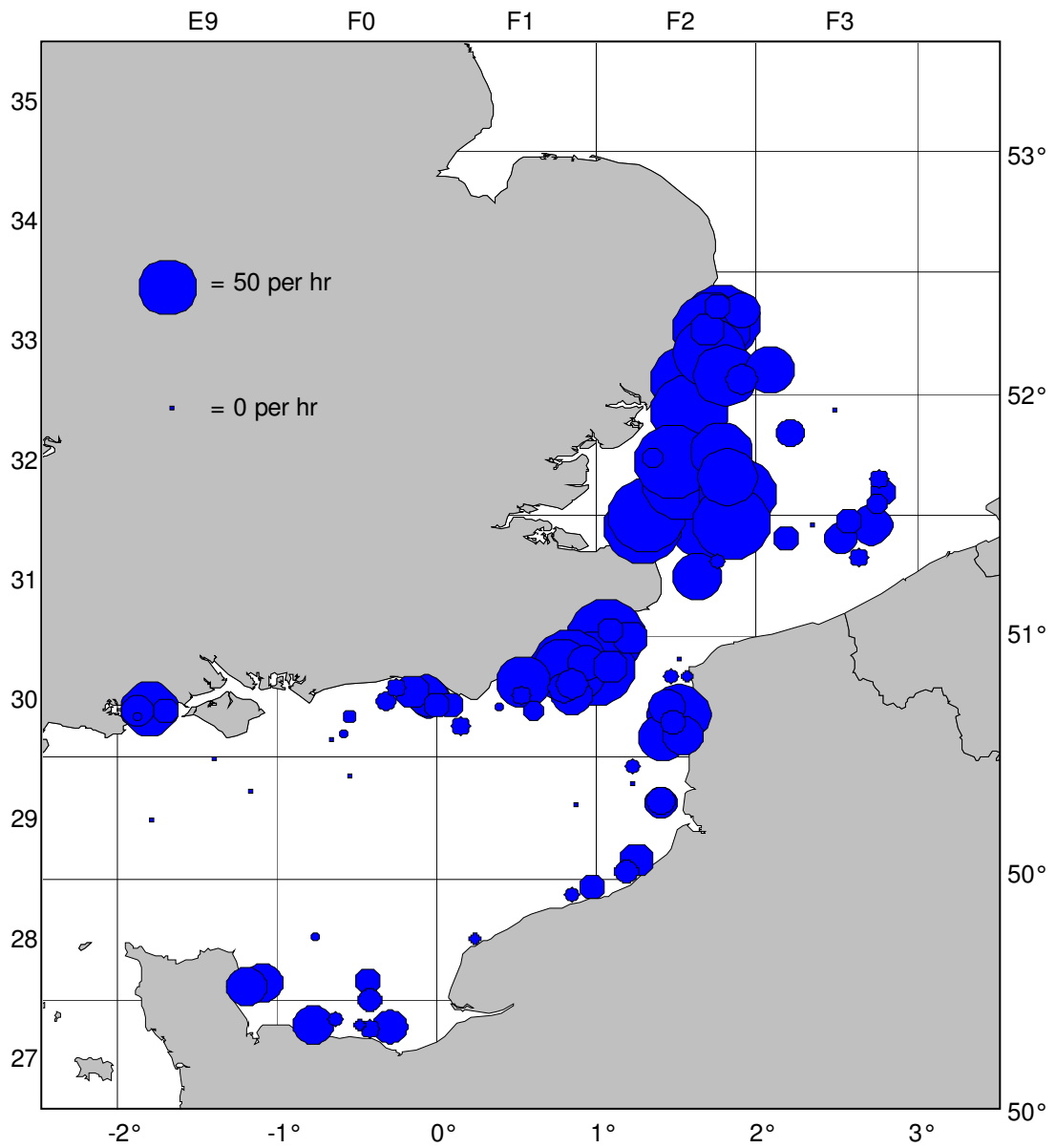
Cend 14/08 - Lemon sole



Cend 14/08 - Ple



Cend 14/08 - Sole



Cend 14/08 - Thornback ray

