

**R/V Dana**

**Cruise 02/2014**

**"DK IBTS 1Q 2014"**



Vessel: R/V DANA

Cruise dates (planned): 24/1 – 10/2 2014

Cruise number: 02/14

Cruise name: DK IBTS 1Q 2014

<b>Port of departure:</b>	Hirtshals	<b>Date:</b>	24 Jan
<b>Port of return:</b>	Hirtshals	<b>Date:</b>	9 Feb
<b>Other ports:</b>	Esbjerg	<b>Date and justification:</b>	1 Feb Scheduled exchange of scientific staff and crew

## Participants

<b>Leg 1: Hirtshals – Esbjerg</b>		
<b>Name</b>	<b>Institute</b>	<b>Function and main tasks</b>
Kai Wieland	DTU Aqua, Monitoring	Cruise leader, Fish lab
Bastian Huwer	DTU Aqua, Marine Living Resources	Scientist, Fish larvae
Lise Sindahl	DTU Aqua, Monitoring	Technician, Fish lab
Per Christensen	DTU Aqua, Monitoring	Technician, Fish lab
Tommy Henriksen	DTU Aqua, Monitoring	Technician, Fish lab
René Erlandsen	DTU Aqua, Monitoring	Technician, Fish lab
Eik Ehlert Britsch	DTU Aqua, Marine Service	Technician, CTD, Maintenance

<b>Leg 2: Esbjerg – Hirtshals</b>		
<b>Name</b>	<b>Institute</b>	<b>Function and main tasks</b>
Helle Rasmussen	DTU Aqua, Monitoring	Cruise leader, Fish lab
Gert Holst	DTU Aqua, Monitoring	Technician, Fish larvae
Lise Sindahl	DTU Aqua, Monitoring	Technician, Fish lab
Aage Thaarup	DTU Aqua, Monitoring	Technician, Fish lab
Tom Svoldgaard	DTU Aqua, Monitoring	Technician, Fish lab
Reinhardt Jensen	DTU Aqua, Monitoring	Technician, Fish lab
Bastian Huewer	DTU Aqua, Marine Living Resources	Scientist, Fish larvae
Eik Ehlert Britsch	DTU Aqua, Marine Service	Technician, CTD, Maintenance

## Objectives

The survey is part of the 1<sup>st</sup> quarter International Bottom Trawl Survey (IBTS) in the North Sea, which is coordinated by the ICES International Bottom Trawl Survey Working Group and has been conducted with standard fishing gear in the 1<sup>st</sup> quarter since 1983.

The IBTS aims to provide ICES assessment and science groups with consistent and standardised data for examining spatial and temporal changes in (a) the distribution and relative abundance of fish and fish assemblages; and (b) of the biological parameters of

commercial fish species for stock assessment purposes. The main objectives in the 1<sup>st</sup> quarter IBTS are to:

- To determine the distribution and relative abundance of pre-recruits of the main commercial species (cod, haddock, whiting, Norway pout, saithe, herring, sprat, and mackerel) with a view of deriving recruitment indices;
- To monitor changes in the stocks of commercial fish species independently of commercial fisheries data;
- To monitor the distribution and relative abundance of all fish species and selected invertebrates;
- To collect data for the determination of biological parameters for selected species;
- To collect hydrographical and environmental information;
- To determine the distribution of in particular herring and sprat larvae;

The area to be covered by Denmark with RV Dana in the 1<sup>st</sup> quarter 2014 was allocated during the most recent IBTS Working Group meeting. Technical details are described in the current version of the survey manual (ICES 2013: Manual for the International Bottom Trawl Surveys. Series of ICES Survey Protocols. SISP 1-IBTS IX. 91 pp. <http://datras.ices.dk/Documents/Manuals/>).

## **Itinerary**

R/V Dana left Hirtshals on Friday 24 January at 12:45 local time. Poor weather conditions (Fig. 1) caused a delay in the sampling in the beginning of the 1<sup>st</sup> cruise leg. The vessel stayed in the port of Esbjerg on Saturday 1 February from 9:30 to 13:15 for the scheduled exchange of scientific staff and crew. Again, strong winds (Fig. 1) did not allow sampling during some periods of the 2<sup>nd</sup> cruise leg. R/V Dana returned to Hirtshals on Sunday 9 February at 15:45 local time. Not all of the planned work had been accomplished (Tab. 1) due to the rather poor weather conditions.

## **Achievements**

The original working area consisted of 39 ICES statistical rectangles located in IBTS roundfish areas 2, 4, 6 and 7 (Fig. 2). In addition, one rectangle in roundfish area 8 which otherwise would not have been covered by another country was sampled on the first day of the survey. The following activities were carried out:

36 valid trawl hauls with GOV 36/47 (chalut á Grande Overture Verticale), all hauls were carried with the standard groundgear A (see IBTS Manual for specifications),

35 CTD profiles

68 valid standard hauls with a 2 m ring net (MIK, see IBTS manual for specification). Technical problems with the ScanMar depth sensor resulted in 3 invalid tows. Two other tows were also invalid. These stations could be repeated due to time restrictions caused by the difficult weather conditions at the time the vessel had been in the respective area. 4 additional tows were conducted during the end of the 2<sup>nd</sup> cruise leg in an area where the other responsible country had not been able to conduct any sampling (Tab. 1).

## Results

The trawl parameters (Net opening and door spread) as monitoring with a ScanMar system were in the range or close to the suggested limits specified in the IBTS manual in most cases (Fig. 3). For a few stations at depths larger than 70 m at a wide door spread was recorded which is related to use of longer sweeps (110 m instead of 60 m as in accordance with the IBTS Manual). Deviations from the theoretical values for door spread and net opening are likely due to the high sensibility of the GOV to current effects. The actual facilities on DANA, however, do not allow to measure adequately current strength and direction in the near bottom layer.

In total, about 70 different species of fish and invertebrates were found in catches and their total weight of catches from the 36 tows has been 11 tons. Length measurements were made for all commercial and non-commercial fish species. Sharks, skates and rays and selected shellfish species were measured separately by sex (length composition and weight). Single fish data (length, weight, sex and maturity) and otoliths were collected for the main commercial species (cod, haddock, whiting, Norway pout, saithe, herring, sprat, mackerel and plaice) as well as for monkfish, turbot, witch flounder, sole and lemon sole (Tab. 2). For all of these species, a maximum of three individuals per cm length group were taken from a single haul. The preliminary abundance indices for the main commercial species (Tab. 1) were reported to the coordinator of the 1<sup>st</sup> quarter IBTS.

Genetic samples were taken from adult and juvenile Atlantic cod and plaice together with single fish data. For cod, 57 samples were collected covering IBTS roundfish areas 4, 6, 7 (northern part) and 8. For plaice, 136 samples were taken from roundfish area 4, 7 and 8.

Entire individuals of 35 different fish and shellfish species were collected which shall be used as demonstration material at the ESOE (EuroScience Open Forum) days 21 – 24 June in Copenhagen.

Marine litter was recorded in each GOV catch using four main categories: plastic, glass, metals and miscellaneous, which were subdivided in several minor categories to meet the request by the IBTS Working Group.

The MIK (500 µm cod end mesh size) samples were conserved in 96% ethanol for later analysis in laboratory. Sorting of MIK started during the 2<sup>nd</sup> cruise leg but no preliminary results on the catches of clupeid larvae have been reported to the coordinator of the 1<sup>st</sup> quarter IBTS during the survey.

Water samples from each of the 35 CTD casts were taken for E-DNA analysis.

## Others

A cruise summary report has been delivered online to

[http://seadata.bsh.de/csr/online/V1\\_index.html](http://seadata.bsh.de/csr/online/V1_index.html).

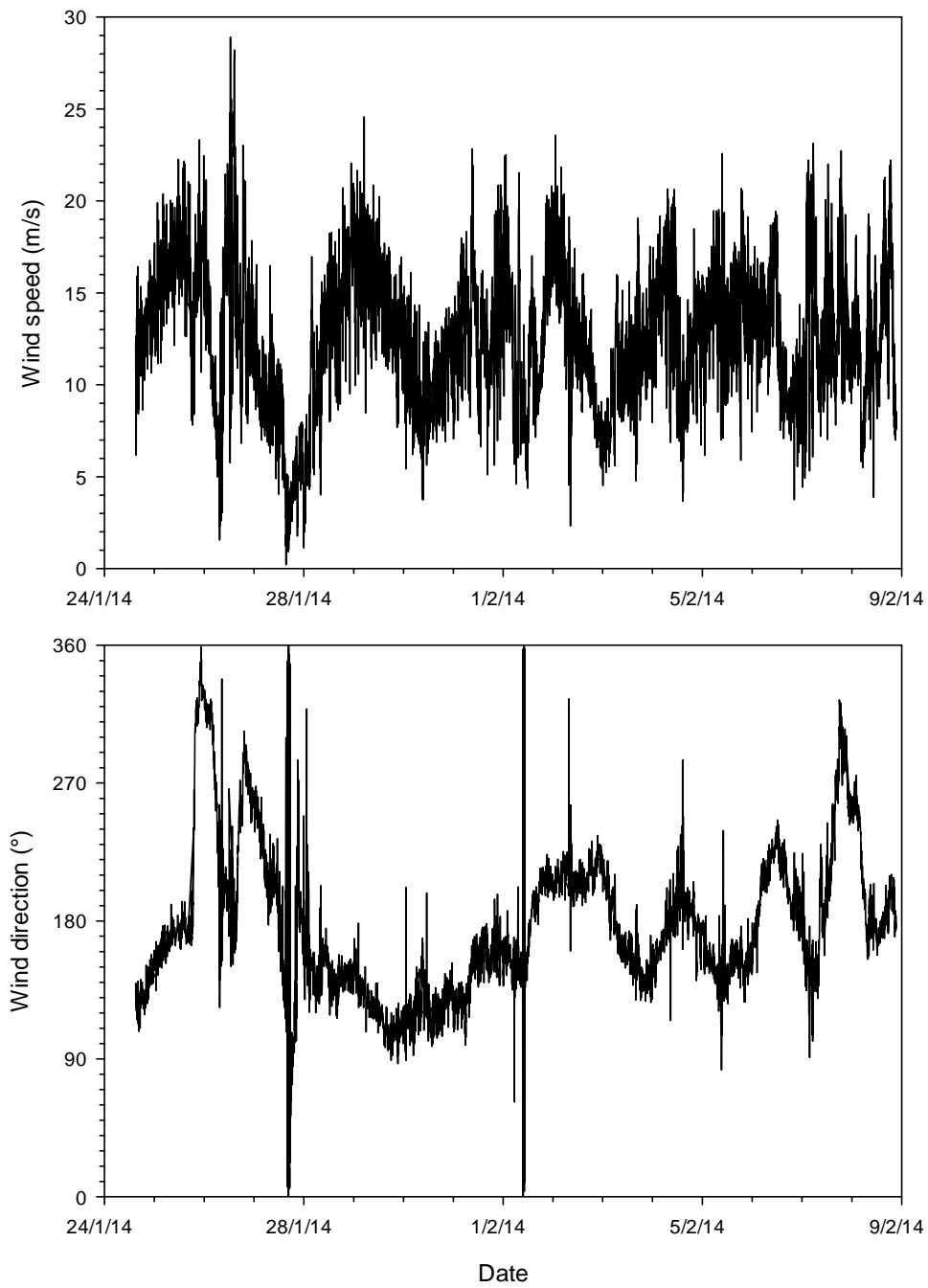


Fig. 1. Wind speed (m/s) and wind direction (°) recorded along the cruise track, Dana DK IBTS 1Q 2014.

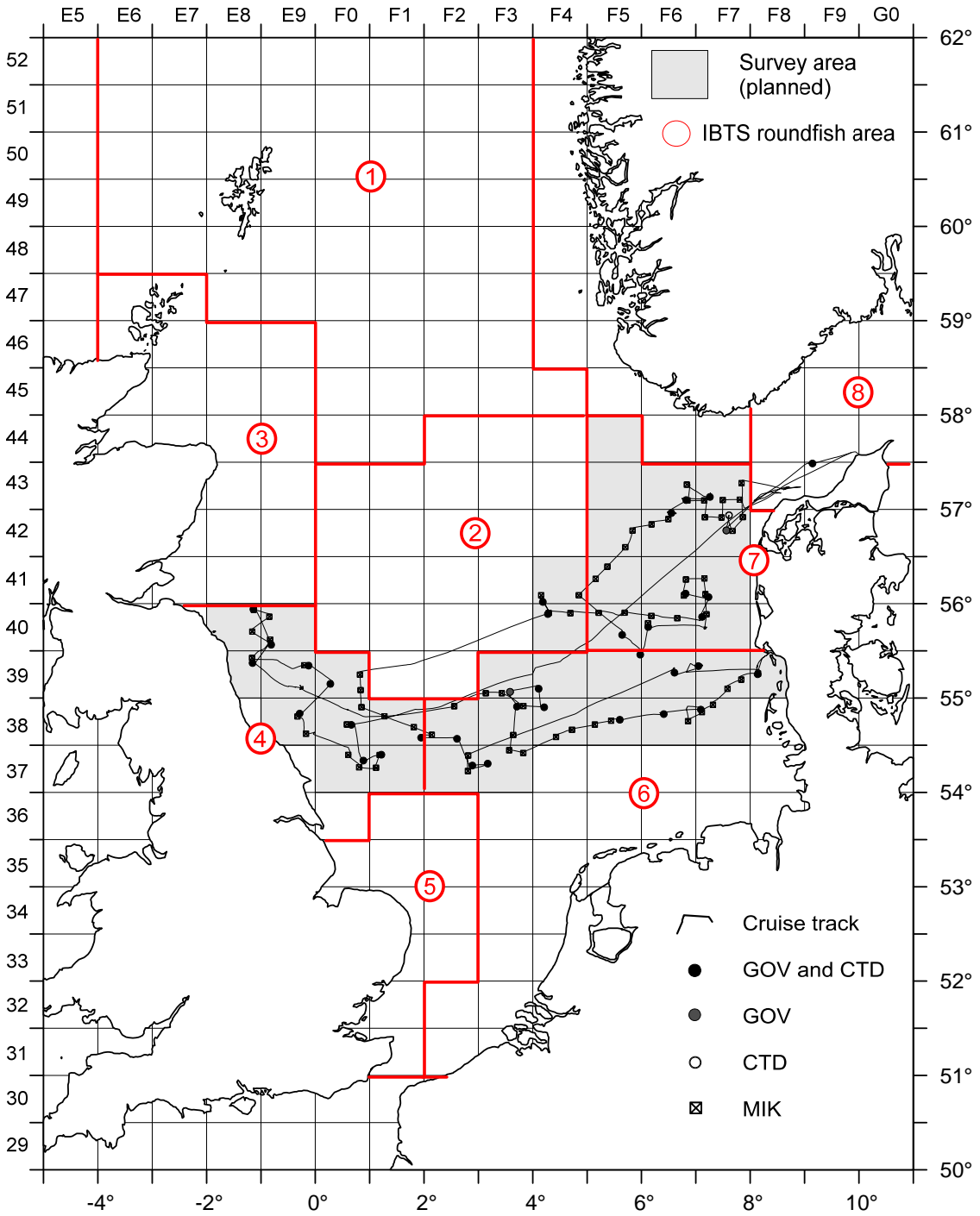


Fig. 2: Survey map with cruise track and sampling locations, Dana DK IBTS 1Q 2014.

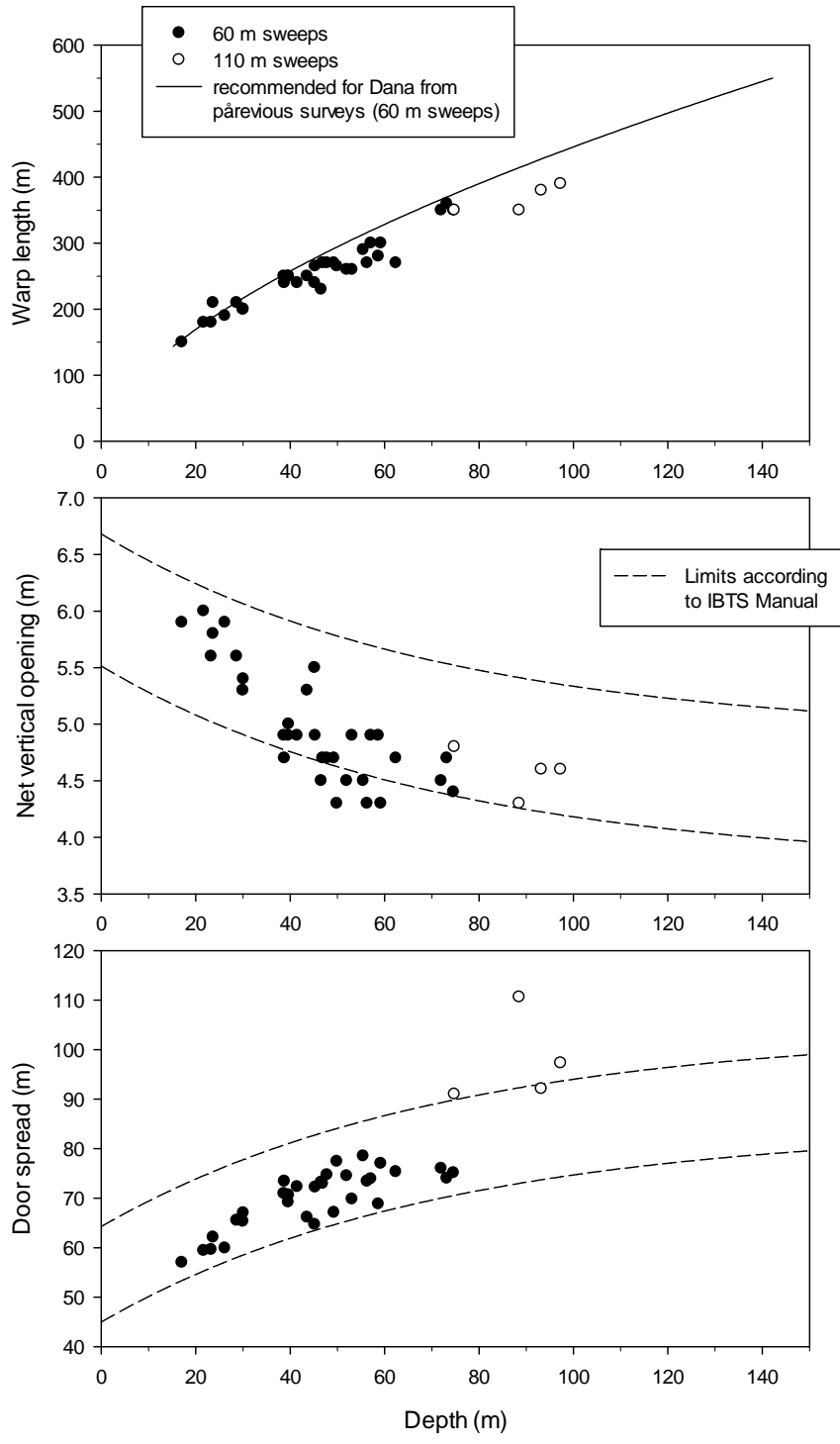


Fig. 3: Warp length, net opening and door spread in relation to depth, Dana DK IBTS 1Q 2014

Tab. 1: Preliminary abundance indices (number per hour trawling) for commercial IBTS species and number of valid MIK hauls per rectangle, Dana DK IBTS 1Q 2014.

GOV haul	Rectangle	Herring < 20 cm	Cod < 25 cm	Haddock < 20 cm	Whiting < 20 cm	Norway pout < 15 cm	Sprat < 10 cm	Mackerel < 25 cm	Number of valid MIK hauls
1	43F9	1329	17	0	75	2	595	0	*
2	38F0	26591	2	0	548	46	18	0	2
3	37F0	19977	0	0	719	4	2	0	2
4	37F1	97405	2	0	224	0	12	2	2
5	38E9	72	14	0	180	340	0	0	2
6	39F0	108	2	4	26974	1097	0	0	2
7	39E9	18	0	4	212	70	82	0	1
8	40E8	54	2	4	324	60	8	0	2
9	40E9	506	4	41	1486	1279	48	0	2
10	39E8	8	18	2	672	208	608	0	1
11	38F4	45523	6	0	126	0	124179	0	2
12	39F4	9778	4	0	84	0	20688	0	-
13	39F3	9848	10	0	60	0	25461	0	2
14	38F3	10624	2	0	205	0	11023	0	2
15	38F5	7524	4	0	48	0	29960	0	2
16	38F6	548	2	0	33	0	31	0	1
17	38F7	49520	2	0	6	0	14439	0	2
18	39F8	25728	12	0	2	0	43707	0	1
19	39F7	57316	0	0	2	0	7167	0	2
20	39F6	5280	6	0	14	0	3490	0	-
21	37F3	10418	0	0	336	0	427	0	2
22	37F2	98592	5	0	622	2	113068	0	2
23	38F2	4	4	0	14	0	2	0	2
24	38F1	0	0	0	5	0	0	0	2
25	40F4	24	2	0	17	0	0	0	2
26	41F4	18	2	0	34	0	0	0	2
27	40F7	17661	0	0	6	0	31010	0	2
28	41F7	4594	2	0	12	0	2360	0	2
29	41F6	4106	4	0	28	0	498	0	2
30	40F6	1994	2	0	25	0	22727	0	2
31	39F5	16202	6	0	44	0	1305	0	-
32	40F5	7065	0	0	22	0	12511	0	2
33	42F6	205	31	0	81	0	33	0	2
34	43F6	430	6	0	46	4	194	0	2
35	43F7	423	5	0	40	3	7251	0	4
36	42F7	164	0	0	4	0	548	0	4
-	41F5								2
-	42F5								2
-	43F5								-
-	44F5								-
*: no MIK planned									
-: cancelled due to bad weather									



Tab. 2: Number of single fish data (length, weight, sex and maturity) and samples for ageing, Dana DK IBTS 1Q 2014.

Species	IBTS Roundfish area					Total
	2	4	6	7	8	
Herring ( <i>Clupea harengus</i> )	19	209	260	214	38	740
Sprat ( <i>Sprattus sprattus</i> )	-	256	189	76	21	542
Cod ( <i>Gadus morhua</i> )	3	26	34	53	10	126
Haddock ( <i>Melanogrammus aeglefinus</i> )	3	88	-	11	-	102
Whiting ( <i>Merlangius merlangus</i> )	-	23	113	128	25	289
Norway pout ( <i>Trisopterus ermarkii</i> )	-	59	-	-	-	59
Mackerel ( <i>Scomber scombrus</i> )	-	-	-	-	-	0
Hake ( <i>Merluccius merluccius</i> )	-	3	-	-	-	3
Saithe ( <i>Pollachius virens</i> )	-	-	-	1	-	1
Plaice ( <i>Pleuronectes platessa</i> )	71	125	231	197	35	659
Monkfish ( <i>Lophius piscatorius</i> )						0
Turbot ( <i>Psetta maxima</i> )			not			6
Witch flounder ( <i>Glyptocephalus cynoglossus</i> )			stratified			0
Sole ( <i>Solea solea</i> )			by roundfish area			11
Lemon sole ( <i>Microstomus kitt</i> )						147
					Sum:	2685
-.: not caught						