

**R/V Dana**

**Cruise 07/2014**

**"DK IBTS 3Q 2014"**



Vessel: R/V DANA

Cruise dates (planned): 29/7 – 15/8 2013

Cruise number: 07/14

Cruise name: Danish IBTS 3Q 2013

<b>Port of departure:</b>	Hirtshals	<b>Date:</b>	29 July
<b>Port of return:</b>	Hirtshals	<b>Date:</b>	15 August
<b>Other ports:</b>	Esbjerg	<b>Date and justification:</b>	7 August 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
Lise Sindahl	DTU Aqua, Monitoring	Technician, Fish lab
Maria Jarnum	DTU Aqua, Monitoring	Technician, Fish lab
Dirk Tijssen	DTU Aqua, Monitoring	Technician, Fish lab
Jan Pedersen	DTU Aqua, Monitoring	Technician, Fish lab
Christian Petersen	DTU Aqua, Monitoring	Technician, CTD, Maintenance
Thomas V. Tomsen *	DTU Aqua, Monitoring	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
Stina S. Hansen	DTU Aqua, Monitoring	Technician, Fish lab
Per Christensen	DTU Aqua, Monitoring	Technician, Fish Lab
Søren Grønby	DTU Aqua, Monitoring	Technician, Fish lab
Flemming Thaarup	DTU Aqua, Monitoring	Technician, Fish lab
Christian Petersen	DTU Aqua, Monitoring	Technician, CTD, Maintenance

\*: Training (not covered by DCF project 39058-14)

## Objectives

The survey is part of the 3<sup>rd</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 3<sup>rd</sup> quarter since 1991.

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 3<sup>rd</sup> quarter 2014 was allocated during the IBTS Working Group meeting in March/April 2014. Technical details are described in the current version of the survey manual (ICES 2012: Manual for the International Bottom Trawl Surveys. Series of ICES Survey Protocols. SISP 1-IBTS. 68 pp. <http://datras.ices.dk/Documents/Manuals/>).

## Itinerary

R/V Dana left Hirtshals on Tuesday 29 July at 12:30 local time, and the field work started in the afternoon in the western Skagerrak (Fig. 1). The vessel stayed in the port of Esbjerg on Friday 7 August from 7:00 to 11:45 for the scheduled exchange of scientific staff and crew. Favorable weather condition prevailed during most of leg 1 of the survey but not during leg 2 (Fig. 2). R/V Dana returned to Hirtshals on Friday 15 August at 08:30 local time after all of the planned work had been accomplished.

## Achievements

The original working area consisted of 47 ICES statistical rectangles located in IBTS North Sea roundfish areas 2, 4, 5, 6 and 7 with two stations in rectangles 43F7 and 42F7, one additional station in rectangle 40E8 replacing a station in the English Channel (rectangle 34F3) which had to be dropped due to time constraints after two invalid hauls during leg 1, and one additional station was carried out in the Skagerrak roundfish area 8 (Fig. 1). The following activities were carried out:

52 trawl hauls with GOV 36/47 (chalut à Grande Overture Verticale) all with standard groundgear A, (see IBTS Manual for specifications), 2 of these hauls were invalid although they were carried out on clear tow positions from the previous year and poor

quality of a part of the net material, which was replaced between the two cruise legs, may have contributed to the serious trawl damages at these two stations;

50 CTD profiles.

## Results

The trawl parameters (Net opening and door spread) as monitored with a ScanMar system were in the range or close to the suggested limits specified in the IBTS manual in most cases (Fig. 3). The remaining deviations from the theoretical values for door spread and in particular net opening are likely due to the high sensitivity 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. Sensors for wing spread were used for the first time. The sensors were not applied at rough weather conditions for safety reasons and showed in some other cases unreliable values. However, for 43 stations reasonable data were obtained which indicate a highly significant linear correlation with door spread (Fig. 4) from which the missing values can be estimated.

About 75 different species of fish and selected invertebrates were found (Tab. 1). Length measurements were made for all of the listed species. Sharks, skates and rays and the listed 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.

According to a decision of the IBTS WG preliminary abundance indices for the main commercial species are no longer reported to the coordinator of the 3<sup>rd</sup> quarter IBTS.

In total, 162 genetic samples of cod (*Gadus morhua*) were collected from selected rectangles in roundfish areas 5, 6, 7 and 8.

Marine litter was recorded in each GOV catch using four main categories: plastic, glass, metals and miscellaneous, which were subdivided in several minor categories as specified in the IBTS Manual.

## 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).

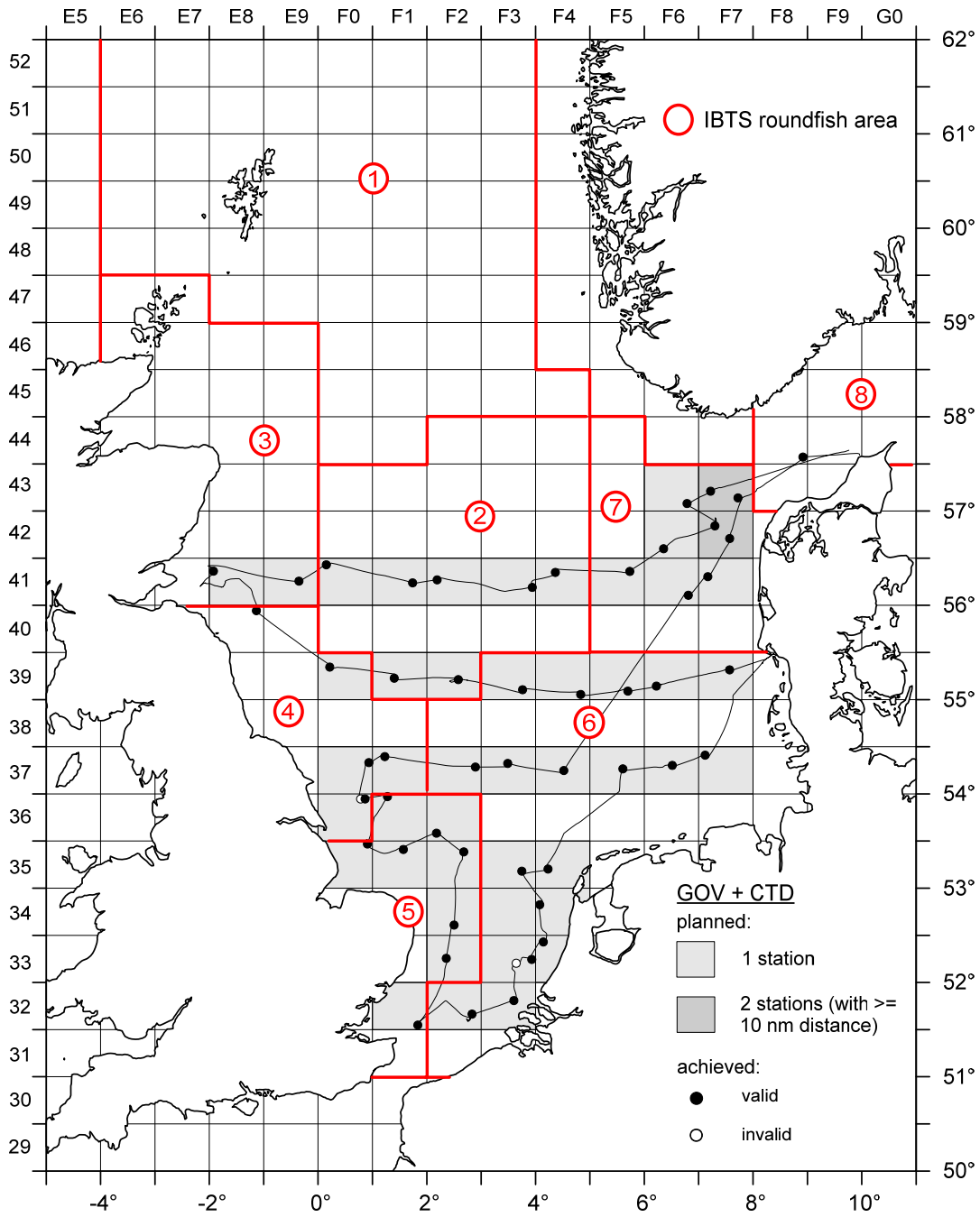


Fig. 1: Survey map with cruise track and sampling locations, Dana 3Q IBTS 2014.

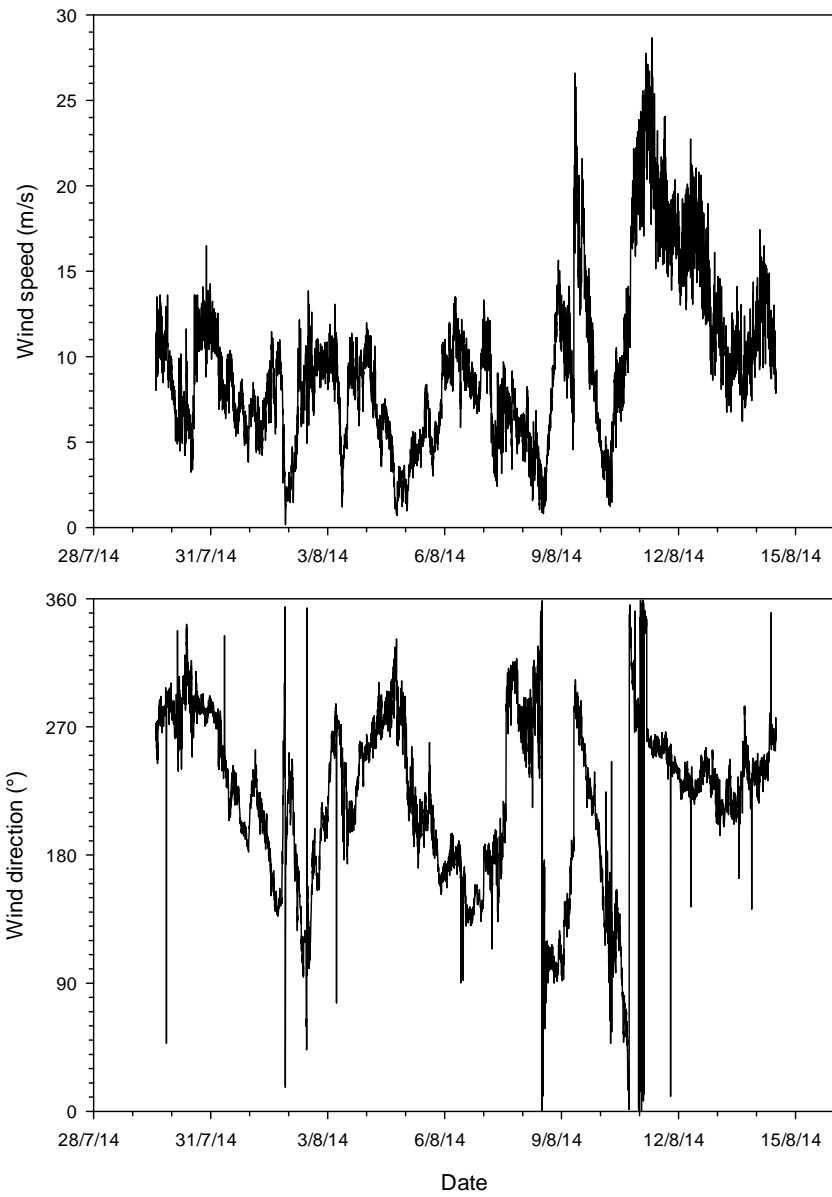


Fig. 2: Wind speed (m/s) and direction recorded along the cruise track, Dana 3Q IBTS 2014.

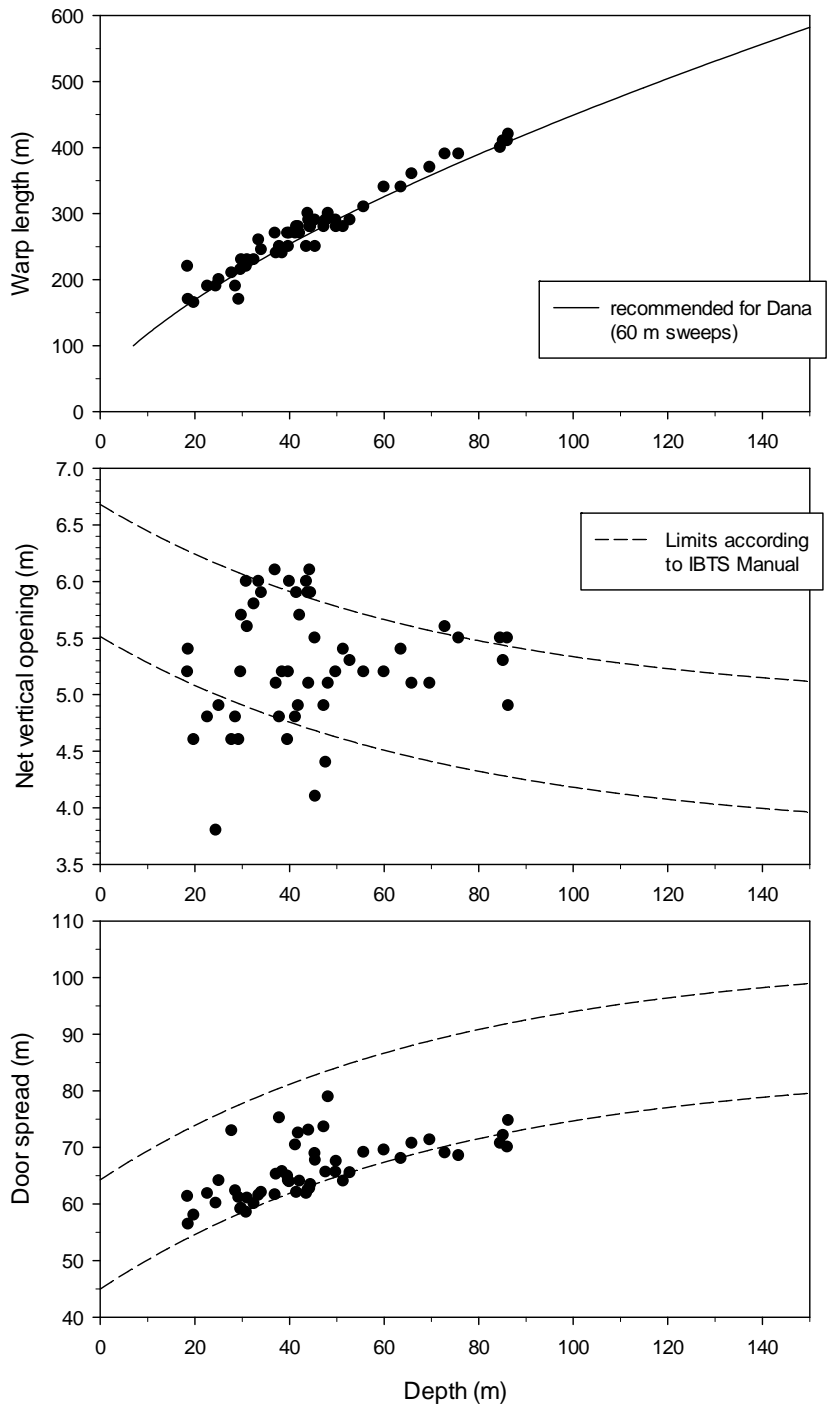


Fig. 3: Warp length, net opening and door spread in relation to depth, Dana 3Q IBTS 2014.

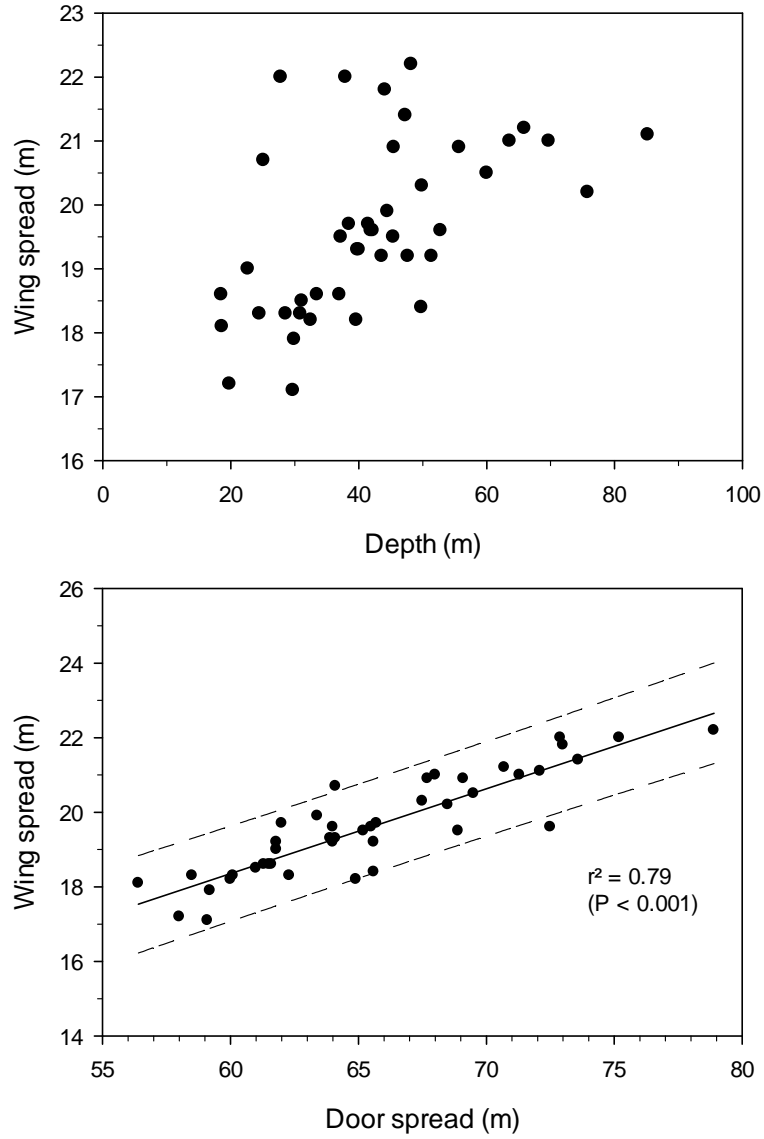


Fig. 4: Wing spread in relation to depth (no limits specified in the IBTS Manual) and wing spread in relation to door spread (solid line: linear regression  $y = 4.689 + 0.228 * x$ , dashed lines: 95 % prediction limits), Dana 3Q IBTS 2014.



Tab. 1: Species list, Dana 3Q 2014.

Fish			Invertebrates		
Danish name	Latin name		Danish name	Latin name	
Ansjos	Engraulis encrasicolus	*	Hummer (alm.)	Homarus gammarus	**
Brisling	Sprattus sprattus	***	Jomfruummer	Nephrops norvegicus	**
Fjæsing	Trachinus draco	*	Taskekrabbe	Cancer pagurus	**
Fjæsing lille	Trachinus vipera	*	Troldkrabbe	Lithodes maja	*
Fløjfisk (str)	Callionymus lyra	*	Hestereje	Crangon crangon	-
Fløjfisk (pl)	Callionymus maculatus	*	Reje konge	Pandalus montagui	-
Havlampret	Petromyzon Marinus	*			
Glastunge	Buglossidium luteum	*		Alloteuthis subulata	*
Glyse	Trisopterus minutus	*		Loligo forbesii	*
Havbars	Dicentrarchus labrax	*		Loligo vulgaris	*
Hårhvarre	Zeugopterus punctatus	*		Eledone cirrhosa	*
Havkat	Anarhichas lupus	*		Sepia officinalis	*
Havkvabbe (4tr)	Enchelyopus cimbrius	*		Rossia macrosoma	-
Havtaske	Lophius piscatorius	***+			
Hestemarkrel	Trachurus trachurus	*	Jomfruesters	Aquiptecten opercularis	-
Hvilling	Merlangius merlangus	***			
Håising	Hippoglossoides platessoides	*			
Ising	Limanda limanda	*			
Knurhane (grå)	Eutrigla gurnardus	*		:-: not measured	
Knurhane (rød)	Trigla lucerna	*		*: Length	
Knurhane (tvst)	Aspitrigla cuculus	*		**.: Length by sex	
Kuller	Melanogrammus aeglefinus	***		***.: single fish data (length, weight, sex) and age samples	
Kulmule	Merluccius merluccius	***+		+: maturity	
Lange	Molva molva	*			
Majsild	Alosa alosa	*			
Makrel	Scomber scombrus	***			
Mørksej	Polachius virens	***			
Pighvarre	Psetta maxima	***			
Rødspætte	Pleuronectes platessa	***			
Rødtunge	Microstomus kitt	*			
Sandkutling	Pomatoschistus ssp.	*			
Sardin	Sardina pilchardus	*			
Sct. peter fisk	Zeus faber	*			
Sild	Clupea harengus	***			
Skægtorsk	Trisopterus luscus	*			
Skærising	Glyptocephalus cynoglossus	***			
Skrubbe	Platichthys flesus	*			
Slethvarre	Scophthalmus rhombus	***			
Snippe	Entelurus aequoreus	*			
Stavsild	Alosa fallax	*			
Stribet (rød) mulle	Mullus surmuletus	*			
Sperling	Trisopterus esmarkii	***			
Strømsild	Argentina sphyraena	*			
Tangnål (stor)	Sygnatus acus	*			
Tangspræl	Pholis gunnellus	*			
Tobis-hav	Ammodytes marinus	*			
Tobiskonge	Hyperoplus lanceolatus	*			
Torsk	Gadus morhua	***			
Tunge	Solea solea	***+			
Tungehvarre	Arnoglossus laterna	*			
Ulke	Myoxocephalus scorpius	*			
Ulke-panserulke	Agonus cataphractus	*			
Gråhaj	Galeorhinus galeus	**			
Glathaj	Mustelus mustelus	**			
Pighaj	Squalus acanthias	**			
Rødhaj (smpl)	Scyliorhinus canicula	**			
Stjernehaj	Mustelus asterias	**			
Sildehaj	Lamna nasus	**			
Sømrøkke	Raja clavata	**			
Storplettet røkke	Raja montagui	**			
Tærbe	Amblyraja radiata	**			

Tab. 2: List of species for which single fish data (length, weight and sex; maturity for selected species only see, Tab. 1) were recorded and number of samples collected for ageing (-: not caught or below size limit above which sampling is required according to the IBTS Manual), Dana 3Q 2014.

Species	IBTS roundfish area							Total
	2	3	4	5	6	7	8	
Herring ( <i>Clupea harengus</i> )	364	49	130	130	187	373	2	1235
Sprat ( <i>Sprattus sprattus</i> )	-	-	106	157	207	97	-	567
Cod ( <i>Gadus morhua</i> )	41	20	63	56	6	69	63	318
Haddock ( <i>Melanogrammus aeglefinus</i> )	103	49	32	-	-	21	18	223
Whiting ( <i>Merlangius merlangus</i> )	120	25	111	108	127	133	30	654
Norway pout ( <i>Trisopterus ermarkii</i> )	-	-	9	-	-	-	-	9
Mackerel ( <i>Scomber scombrus</i> )	36	22	8	52	57	-	-	175
Saithe ( <i>Pollachius virens</i> )	1	-	-	-	-	8	-	9
Plaice ( <i>Pleuronectes platessa</i> )	126	36	139	142	217	157	31	848
Monkfish ( <i>Lophius piscatorius</i> )	not stratified by roundfish area							6
Hake ( <i>Merluccius merluccius</i> )								15
Turbot ( <i>Psetta maxima</i> )								10
Brill ( <i>Scophthalmus rhombus</i> )								3
Witch flounder ( <i>Glyptocephalus cynoglossus</i> )								6
Sole ( <i>Solea solea</i> )								38
							Sum:	4116