

R/V Dana

Cruise 08/2016

"DK IBTS 3Q 2016"



Vessel: R/V DANA
 Cruise number: 08/15

Cruise dates (planned): 2/8 – 19/8 2016
 Cruise name: Danish IBTS 3Q 2016

Port of departure:	Hirtshals	Date:	2 August
Port of return:	Hirtshals	Date:	19 August
Other ports:	Esbjerg	Date and justification:	11 August Scheduled exchange of scientific staff and crew

Participants

Leg 1: Hirtshals – Esbjerg		
Name	Institute and Department	Function and main tasks
Kai Wieland	DTU Aqua, Monitoring and Data Hirtshals	Cruise leader, Fish lab
Helle Rasmussen	DTU Aqua, Monitoring and Data Hirtshals	Technician, Fish lab
Stina B. Hansen	DTU Aqua, Monitoring and Data Charlottenlund	Technician, Fish lab
Maria Jarnum	DTU Aqua, Monitoring and Data Hirtshals	Technician, Fish lab
Per Christensen	DTU Aqua, Monitoring and Data Hirtshals	Technician, Fish lab
Ronny Sørensen	DTU Aqua, Monitoring and Data Hirtshals	Technician, CTD, Maintenance

Leg 2: Esbjerg – Hirtshals		
Name	Institute and Department	Function and main tasks
Helle Rasmussen	DTU Aqua, Monitoring and Data Hirtshals	Cruise leader, Fish lab
Jens Holm	DTU Aqua, Monitoring and Data Charlottenlund	Technician, Fish lab
Lise Sindahl	DTU Aqua, Monitoring and Data Hirtshals	Technician, Fish Lab
Jane Gudmandsen	DTU Aqua, Monitoring and Data Charlottenlund	Technician, Fish lab
Farivar Azour	DTU Aqua, Monitoring and Data Charlottenlund	Technician, Fish lab
Ronny Sørensen	DTU Aqua, Monitoring and Data Hirtshals	Technician, CTD, Maintenance

Objectives

The survey is part of the 3rd 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 3rd 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 3rd 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 collect information of the amount and distribution of marine litter

The area to be covered by Denmark with RV Dana in the 3rd quarter 2015 was allocated during the IBTS Working Group meeting in March/April 2015. Technical details are described in the current version of the survey manual (ICES 2015. Manual for the International Bottom Trawl Surveys. Series of ICES Survey Protocols. SISP 10-IBTS IX. 86 pp.).

Itinerary

R/V Dana left Hirtshals on Tuesday 2nd August 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 Thursday 11th August from 6:30 to 13:00 for the scheduled exchange of scientific staff and crew. R/V Dana returned to Hirtshals on Friday 19th August at 07:00 local time.

Achievements

The main 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 42F7, 41F7, 41F6, 33F3, 33F2 and 35F1, and 5 additional rectangles in the western part of roundfish area 8 in the Skagerrak (Fig. 1). The following activities were carried out:

- 59 valid trawl hauls with GOV 36/47 (chalut á Grande Overture Verticale) all with standard groundgear A and 60 m sweep length (see IBTS Manual for specifications). Tow durations were as planned prior to the survey by the IBTS WG;
- 59 CTD profiles on valid trawl positions.

During the 1st leg, periods with moderate to strong westerly wind occurred whereas favorable weather condition prevailed during the 2nd leg of the survey periods (Fig. 2).

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). The remaining deviations from the theoretical values for door spread and in particular 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. Operational sensors for wing spread were not available for this cruise.

About 70 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).

Relative high amounts and wide distributions of sardine, anchovy and striped red mullet indicate a continuing expansion of southern species. Compared to last year large quantities of small young of the year) individuals for herring, sprat and in particular horse mackerel were caught.

Single fish data (length, weight, sex and, for a few species also 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, hake, turbot, brill, witch flounder, sole and dab (Tab. 2). For these species, a maximum of one individual per cm length group were taken from a single haul except for herring and sprat for which two individuals per semi-centimeter group per haul were collected. The collection of individual fish data for the IBTS target species herring and sprat commenced when the maximum number of 8 per length group and roundfish area had been achieved and the maximum number of single fish data for dab was set to 100. Collection of age samples of herring and sprat from the Skagerrak had not been requested for Denmark since this area is extensively covered by Sweden.

According to a decision of the IBTS WG, preliminary abundance indices for the main commercial species (Tab. 3) are no longer reported to the coordinator of the 3rd quarter IBTS. The indices for small cod, however, appear to be low but a representative estimate of cod recruitment can first be given when the information from all the other countries have been combined. On the other hand, plaice was recorded in all hauls.

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.

Deadline for data submission to DATRAS for all IBTS target species including the corresponding age readings is 23/9-2015 whereas the corrected CTD profiles and the Marine litter data can be submitted to ICES at a later time this year.

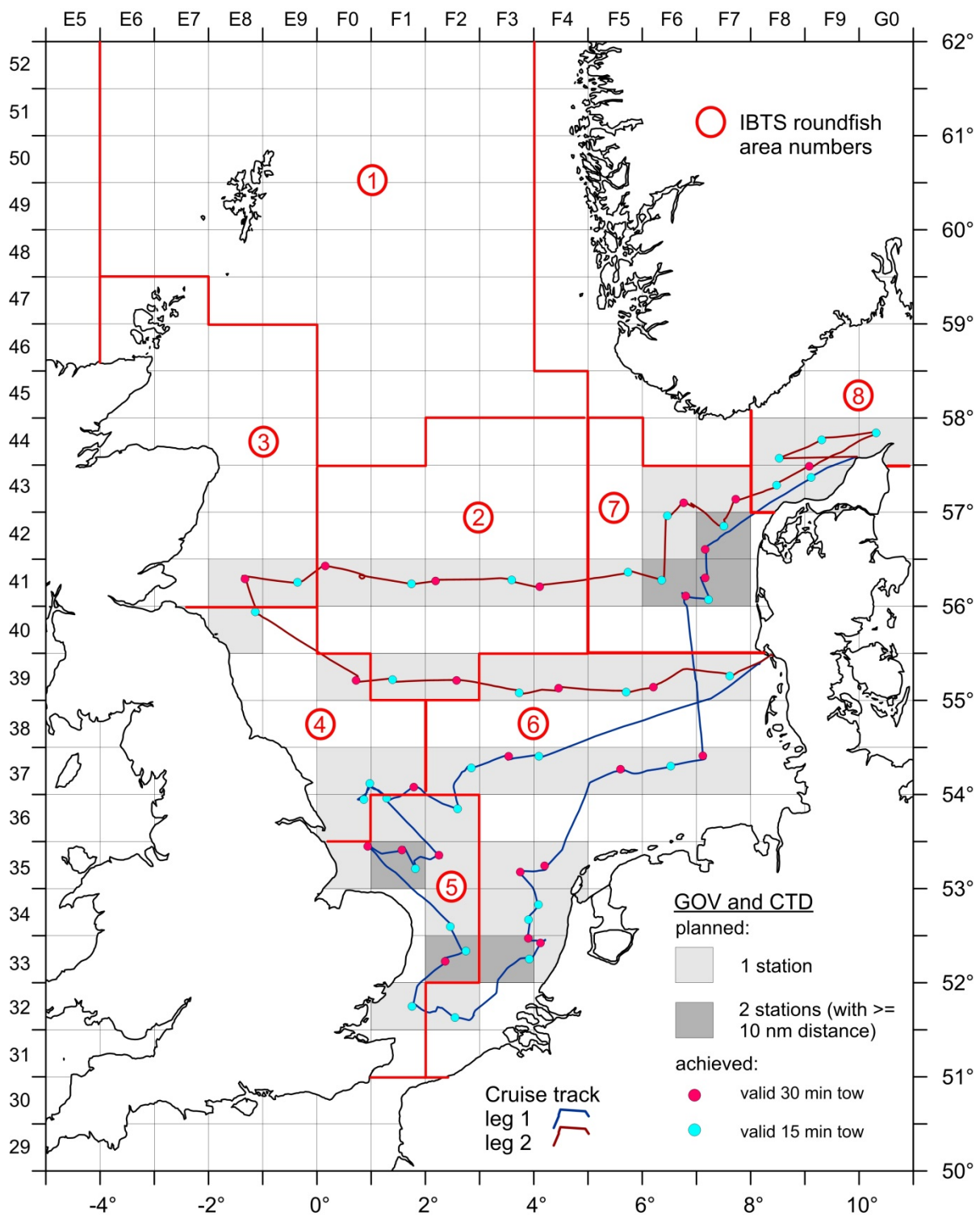


Fig. 1: Survey map with cruise track and sampling locations, Dana 3Q IBTS 2016.

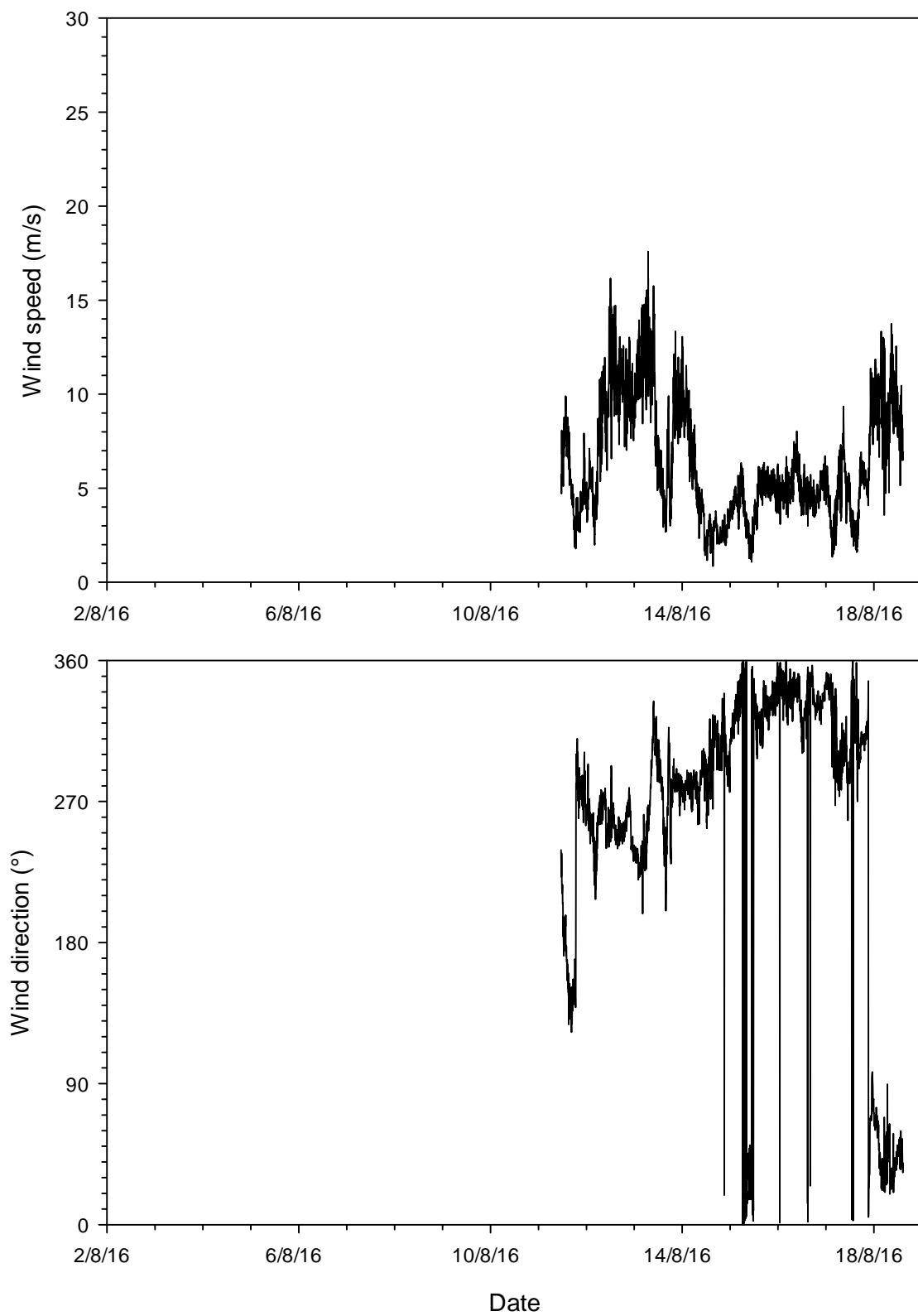


Fig. 2: Wind speed (m/s) and direction recorded along the cruise track, Dana 3Q IBTS 2016 (no correct data recorded during the 1st leg due to technical reasons).

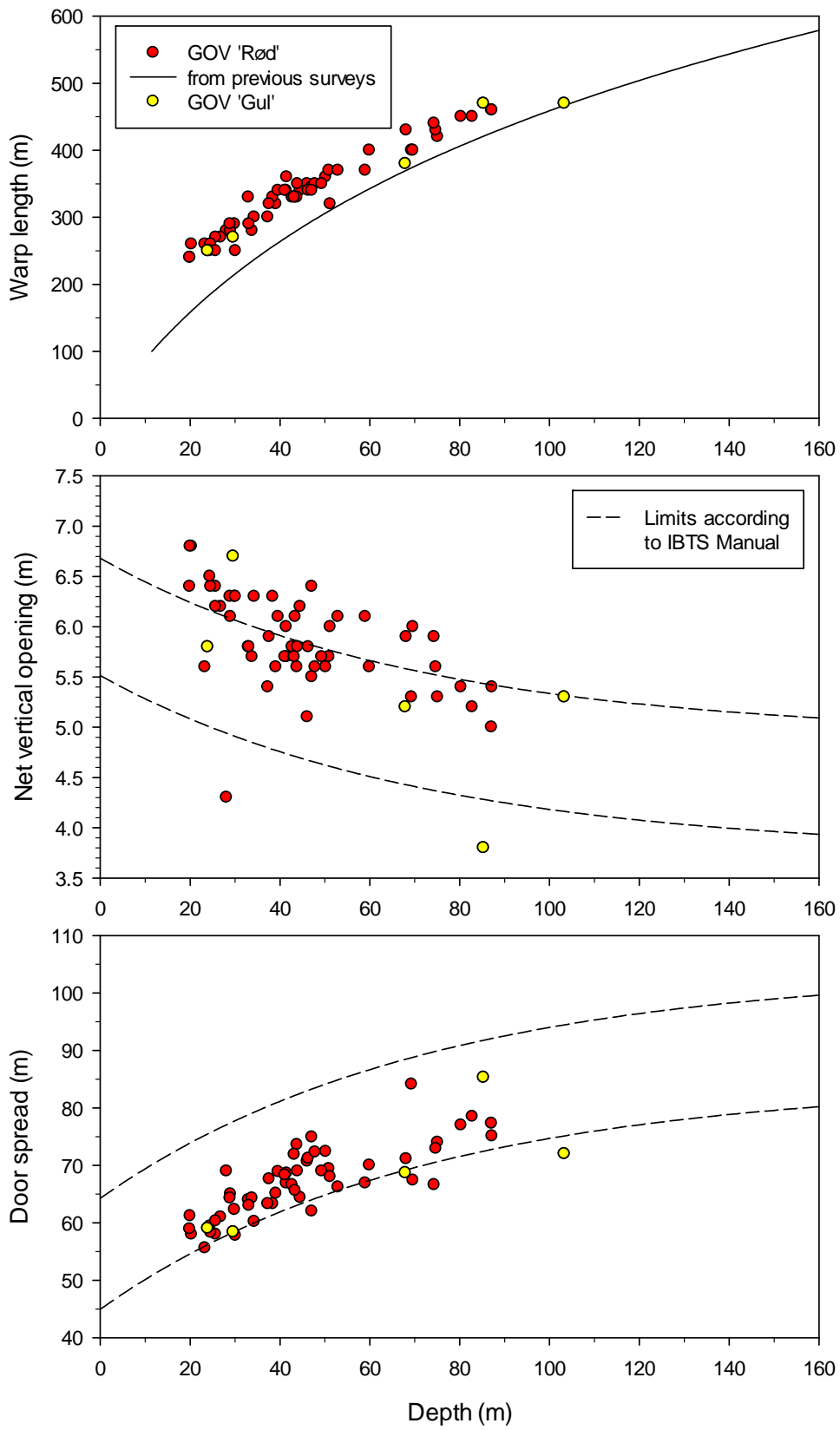


Fig. 3: Warp length, net opening and door spread in relation to depth, Dana 3Q IBTS 2016.

Tab. 1: Species list with total number and weight in the catch, Dana 3Q 2016.

Latin name	English name	Danish name	Number	Weight (kg)	Type of registration		
<i>Aequipecten opercularis</i>	Queen scallop	Jomfruesters		0.10	-	-:	not measured
<i>Agonus cataphractus</i>	Pogge	Panser ulk	10	0.12	*	*:	length
<i>Alloteuthis subulata</i>	European common squid	Dværgblæksprutte	694	4.72	*	**:	length by sex
<i>Alosa fallax</i>	Twait shad	Stavsild	1	0.50	*	***:	single fish data
<i>Amblyraja radiata</i>	Starry ray	Tærbe	13	6.78	**		(length, weight, sex, age)
<i>Ammodytes marinus</i>	Sandeel	Tobis-hav	14320	100.08	*	***+:	also maturity
<i>Argentina sphyraena</i>	Lesser silver smelt	Strømsild	2	0.04	*		
<i>Arnoglossus laterna</i>	Scaldfish	Tungevarre	5	0.06	*		
<i>Bathyraja brachyurops</i>	Blonde ray	Blond rokke	6	4.57	**		
<i>Buglossidium luteum</i>	Solenette	Glastunge	37	0.36	*		
<i>Callionymus lyra</i>	Common dragonet	Stribet fløjfisk	34	1.11	*		
<i>Callionymus maculatus</i>	Spotted dragonet	Plettet fløjfisk	2	0.01	*		
<i>Cancer pagurus</i>	Edible crab	Taskekrabbe	117	57.46	**		
<i>Chelidonichthys cuculus</i>	Red gurnard	Tværstribet knurhane	3	0.36	*		
<i>Chelidonichthys lucerna</i>	Tub gurnard	Rød knurhane	48	14.94	*		
<i>Chelon labrosus</i>	Thick lipped mullet	Tyklæbet multe	3	3.89	*		
<i>Clupea harengus</i>	Herring	Sild	226718	10889.61	***		
<i>Echiichthys vipera</i>	Lesser weever	Fjæsing lille	1230	25.47	*		
<i>Eenchelyopus cimbrius</i>	Four-bearded rockling	Firetrådet havkvabbe	29	1.02	*		
<i>Engraulis encrasicolus</i>	Anchovy	Ansjos	112	4.28	*		
<i>Entelurus aequoreus</i>	Snake pipefish	Snippe	1	0.01	*		
<i>Eutrigla gurnardus</i>	Grey gurnard	Grå knurhane	6335	640.52	*		
<i>Gadus morhua</i>	Cod	Torsk	253	161.36	***		
<i>Galeorhinus galeus</i>	Tope	Gråhaj	4	50.70	**		
<i>Glyptocephalus cynoglossus</i>	Witch	Skærsing	16	4.55	***		
<i>Gymnammodytes semisquamatus</i>	Smoothed sandeel	Tobis-nøgen	493	6.80	*		
<i>Hippoglossoides platessoides</i>	American plaice	Håising	3096	156.39	*		
<i>Homarus gammarus</i>	Lobster	Almindelig hummer	14	7.36	**		
<i>Hyperoplus lanceolatus</i>	Greater sandeel	Tobiskonge	12047	261.63	*		
<i>Illex coindetii</i>	Southern shortfin squid	Illex coindetii	16	1.78	*		
<i>Leucoraja naevus</i>	Cuckoo ray	Pletrokke	2	0.59	**		
<i>Limanda limanda</i>	Common dab	Ising	25729	1673.46	***+		
<i>Lithodes maja</i>	Norway king crab	Troldkrabbe	38	11.45	**		
<i>Loliginidae (L. forbesii, L. vulgaris)</i>			2676	14.83	*		
<i>Loligo forbesii</i>	Northern squid	Loligo forbesii	1041	16.52	*		
<i>Lophius piscatorius</i>	Monk	Havtaske	7	12.58	***		
<i>Melanogrammus aeglefinus</i>	Haddock	Kuller	4160	456.98	***		
<i>Merlangius merlangus</i>	Whiting	Hvilling	41158	2940.21	***		
<i>Merluccius merluccius</i>	Hake	Kulmule	117	199.16	***+		
<i>Microstomus kitt</i>	Lemon sole	Rødtunge	632	86.64	*		
<i>Molva molva</i>	Ling	Lange	1	3.41	*		
<i>Mullus surmuletus</i>	Striped red mullet	Stribet (rød) Mulle	72	7.05	*		
<i>Mustelus asterias</i>	Starry smooth hound	Stjernehaj	23	13.54	**		
<i>Mustelus mustelus</i>	Smooth hound	Glathaj	20	38.80	**		
<i>Myoxocephalus scorpius</i>	Sculpin	Ulk	17	1.42	*		
<i>Myxine glutinosa</i>	Hagfish	Slimål		0.04	-		
<i>Nephrops norvegicus</i>	Norway lobster	Jomfruhummer	199	8.98	**		
<i>Pecten maximus</i>	Scallop	Stor kammusling		0.48	-		
<i>Pholis gunnellus</i>	Butter fish	Tangspræl	2	0.04	*		
<i>Phrynorhombus norvegicus</i>	Norwegian topnot	Småvarre	1	0.04	*		
<i>Pleuronectes platessa</i>	Plaice	Rødspætte	2157	454.29	***		
<i>Pollachius virens</i>	Saithe	Sej	11	5.87	***		
<i>Raja clavata</i>	Thornback ray	Sømrrokke	137	91.20	**		
<i>Raja montagui</i>	Spotted Ray	Storpletlet Rokke	11	10.31	**		
<i>Rossia macrosoma</i>	Stout bobtail squid	Ross's blæksprutte		0.06	-		
<i>Sardina pilchardus</i>	Pilchard	Sardin	150	18.35	*		
<i>Scomber scombrus</i>	Mackerel	Makrel	5200	1232.63	***		
<i>Scophthalmus maximus</i>	Turbot	Pighvarre	17	20.08	***		
<i>Scophthalmus rhombus</i>	Brill	Slethvarre	3	3.83	***		
<i>Scyliorhinus canicula</i>	Lesser spotted dogfish	Småpletlet rødhaj	310	160.88	**		
<i>Solea solea</i>	Sole	Tunge	63	8.59	***		
<i>Sprattus sprattus</i>	Sprat	Brisling	75028	879.54	***		
<i>Squalus acanthias</i>	Picked dogfish	Pighaj	14	20.42	**		
<i>Todaropsis eblanae</i>	Lesser flying squid	Todaropsis eblanae	10	1.15	*		
<i>Trachinus draco</i>	Greater weever fish	Fjæsing	128	29.51	*		
<i>Trachurus trachurus</i>	Horse mackerel	Hestemakrel	161085	982.55	*		
<i>Trisopterus esmarkii</i>	Norway pout	Sperling	4628	33.36	***		
<i>Trisopterus luscus</i>	Whiting pout	Skægtorsk	2	0.15	*		
<i>Trisopterus minutus</i>	Poor-cod	Glyse	39	1.14	*		
<i>Zeus faber</i>	John dory	Sct. peter fisk	1	0.21	*		

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 2016.

Species	IBTS roundfish area							Total
	2	3	4	5	6	7	8	
Herring (<i>Clupea harengus</i>)	155	92	54	90	126	132	not	649
Sprat (<i>Sprattus sprattus</i>)	38	20	53	102	164	63	requested	440
Cod (<i>Gadus morhua</i>)	not stratified by roundfish area (1 fish per cm per haul)							27
Haddock (<i>Melanogrammus aeglefinus</i>)								134
Whiting (<i>Merlangius merlangus</i>)								510
Norway pout (<i>Trisopterus ermarkii</i>)								8
Mackerel (<i>Scomber scombrus</i>)								277
Saithe (<i>Pollachius virens</i>)								1
Plaice (<i>Pleuronectes platessa</i>)								610
Monkfish (<i>Lophius piscatorius</i>)								7
Hake (<i>Merluccius merluccius</i>)								53
Turbot (<i>Scophthalmus maximus</i>)								16
Brill (<i>Scophthalmus rhombus</i>)								3
Witch flounder (<i>Glyptocephalus cynoglossus</i>)								7
Sole (<i>Solea solea</i>)								33
Dab (<i>Limanda limanda</i>)								104
							Sum:	2879

Tab. 3: Preliminary abundance indices (number per hour trawling) for commercial IBTS target species, Dana 3Q 2016.

St No	Age: Length: Rect	COD			HADDOCK			WHITING			NORWAY POUT			HERRING			SPRAT		MACKEREL			SAITHE			PLAICE		
		<18	18-37	≥38	<17	17-29	≥30	<17	17-23	≥24	<13	13-15	≥16	<15.5	5.5-22.5	≥23	<13	≥13	<17	17-29	≥30	<22	22-32	≥33	<10	10-18	≥19
1	43F9															4				119	16					8	364
4	42F7			4				6	40	14				4		4				4	2					6	195
5	41F7							6978	58	2			24	18		2355	1234			76	44					14	116
7	41F7							8	4											306	80					60	127
9	41F6				2			6					18300	161809		38800	15441									10	126
12	37F7							2923	192	4			2008			1773	7		130	108					4	48	
13	37F6							5679	75				108702			4160	673	8	16	4							100
15	37F5							948	15				5826			303	2										24
18	35F4							2					1349			1446	26		26	6					6	10	
19	35F3								36				16			952	170			12	2				8	24	
21	34F4								32				4						147	111					4	12	
23	34F3																		63	12					36	32	
25	33F3								12				16			8	4								46	32	
29	33F4							107	200	13			46108			11906	2089		604	73					199	82	
30	33F3								59	8			48			8	8		266	56					24	63	
32	32F2		4						100	168							4		12	100						76	
35	32F1							655	216	180			8		4	296									12	24	
36	33F2								2964	4447				1996	2279				693	210						18	
38	33F2		4						351	397				4	4				12	24					8	20	
40	34F2		4						8295	5355				183	16		8		36	36						115	
43	35F0							10	60	122					2	6	2			12	8				10	2	
44	35F1							941	30	6			216		2	2830	43		420	155					20	102	
47	35F1							196	562	32			4			24	8		8	4					48	120	
48	35F2							4								1287	16		50	4						132	
51	36F0				4		4		16009	6611									140	196					24	112	
52	37F0				4			8	202	20						1714	2486		8	4					16	111	
54	36F1				4			776	36	4			1100			1549	44								12	172	
56	37F1							258	12480	3146		2	2	76		245	33									112	
58	36F2							439	1189	132				7174		1093	26			4						48	
61	37F2							100	100	20				16		517	16										172
62	37F3							86	385					2341		3770	6										40
64	37F4							169	1770	13				2009		9939	16								4	281	
66	39F7							837	8					30519		63430			44	91					8	4	
69	39F6							4443	516	14			855	14	40	993	35									270	
71	39F5							1024	1560				5444	137	4	19685	409		4							226	
72	39F4			2				375	1941	51			1114	238	4	7458	690									297	
74	39F3				8			2234	1181	13					4												144
77	39F2		2	2	18			6	84	2			8	335	4	6	32		254	61						56	
78	39F1				4			65						8	16	8			16	61						4	
80	39F0		2	2		599	739		876	1824				4	219	604	149		4	12						36	
83	40E8				761	4		211	24	8	76			4		56	12		4	24						16	
84	41E8	40				3508			56	10					11	3678			100	676					16	22	
86	41E9				18	368	253		427	519					40329	34142	135	286		147	175					115	
89	41F0		2			274	321		82	327		2	12		25329	42599	746	130		8						54	
91	41F1		4			151	40		175	446	36	20	12		550	2634										4	
93	41F2					56	20		128	194					30	32											62
94	41F3				415	8			384	59						4			44	12	4					75	
96	41F4				526	2	4	16	264	26						2			726	345						42	
99	41F5				16		4	1432	275	24				607	970	12	1280	253		423	100				8	52	
101	41F6							52	12	4				4	8		24	8		56	71					246	
102	42F6		12	8	8	16	28	104	155	243			56	1319		20			1443	590						24	
104	43F6	28		2	210	2	2	433	6	8	608				4	2										6	
107	42F7			12					20	4									1505	239						174	
108	43F7				2			4	2				4	36						4						12	
110	43F8			4				12							4											279	
112	43F9																		1654	238						199	
115	44G0	44	8	64	158		16	916	167		10838	878	439	8	30755	2158			10	473		4	4			68	
116	44F9	100	236	24		64	136	7986	917	1441	2834			7	1238	143			12		4					60	
118	44F8	24	220	68	951	143	465	113	14	477	1080	515	263		192	549			92		16	12				32	