Cruise report Quarter 1 International Bottom Trawl Survey (IBTS Q1) RV "GO Sars", 14 January – 19 February 2014

Institute of Marine Research, Bergen / Flødevigen

March 2014

Internal SURVEY REPORT

IBTS Q1 2014 GO SARS, survey no. 2014101 Period: 14.01 – 19.02 Area: Northern North Sea between 56° 50' N and 61° 50' N

SUMMARY

The IBTS quarter 1 multispecies bottom trawl survey, coordinated by the ICES IBTS working group, involves 7 countries and covers the North Sea, Skagerrak, and Kattegat. The survey included MIK tows from water ≤ 200 m to provide an index of herring and sprat larvae, bottom trawls in water ≤ 200 m for multiple demersal fish and invertebrate species, and collection of hydrographical data. Also completed were the Utsira W hydrographic transect and MIK-M sampling for fish eggs and gadoid larvae. Guests included seabird observers from JNCC. This report includes a brief summary of only the Norwegian part of the survey. The report for all nations can be found at

http://www.ices.dk/sites/pub/Publication Reports/Expert Group Report/SSGESST/2014/Full Report IBTSWG14.pdf

INTRODUCTION

The IBTS (International Bottom Trawl Survey), coordinated by the ICES International Bottom Trawl Survey Working Group (IBTSWG), is a multi-species trawl survey within the ICES area. The main objectives of the survey are:

- 1) To determine the distribution and relative abundance of pre-recruits of the main commercial species with a view of deriving recruitment indices;
- 2) To monitor changes in the stocks of commercial fish species independently of commercial fisheries data;
- 3) To monitor the distribution and relative abundance of all fish species and selected invertebrates;
- 4) To collect data for the determination of biological parameters for selected species;
- 5) To collect hydrographical and environmental information;
- 6) To determine the abundance and distribution of late herring larvae (February North Sea survey).

Seven countries cooperated in the survey (Table 1). Two countries typically perform one bottom tow and two MIK tows per ICES rectangle, except for in the Skagerrak and Kattegat, where only Sweden surveys (Figure 1). The data from all countries is used to produce a combined age disaggregated abundance index for several demersal species for use in assessments, primarily WGNSSK (ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak), the Herring Assessment Working Group (HAWG), and the Working Group on Multispecies Assessment Methods (WGSAM).

SURVEY DESCRIPTION

Personnel	Role	Period
Martin Dahl	Instrument	14.01-29.01
Ole Sverre Fossheim	Instrument	14.01-29.01
Anne Liv Johnsen	Pelagics	14.01-29.01
Lisbet Solbakken	Demersal	14.01-29.01
Arne Storaker	Demersal	14.01-29.01
Rupert Wienerroither	Demersal	14.01-19.02
Jennifer Devine	Survey leader	14.01-02.02
Arved Staby	Survey leader	02.02-19.02
Asgeir Steinsland	Instrument	29.01-19.02
Bjarte Kvinge	Instrument	29.01-19.02
Janicke Skadal	Demersal	29.01-13.02
Valantine Anthonypillai	Demersal	29.01-19.02
Jennifer Devine	Demersal	29.01-19.02
Ståle Kolbeinson	Pelagics	29.01-19.02
Richard Nash	Fish larvae	29.01-19.02
Lena Omli	Plankton	29.01-02.02
Mona Ring Kleiven	Plankton	29.01-02.02
Guests: JNCC, UK: 4 resear	rchers.	

Narrative

The vessel left port on 14 January and headed south. On route, a calibration for the MIK/MIK-M flow meters were performed in a sheltered, low current area (not open sea) at 20 m depth. Weather conditions were exceptionally poor.

This survey was to begin with trawl calibrations for at least two of the GOVs (those rigged on deck) and testing of the various sensors; however, the extremely poor weather and delays in beginning the survey meant this did not occur. Recommendations from the Fish Capture group were to begin without calibrations and make adjustments as needed because of the time constraints generated by the weather conditions. Standards on the GOV were lengthened to 2 m before setting the net. Clamps for holding the speed sensor to the headline were not on board, which meant the speed sensor was not used until the crew rigged an alternative.

On the first tow (16 January), the trawl eye was mounted on the headline, as specified by the manual (ICES 2012), but readings were odd. The trawl eye was moved off center, but still on headline for the second tow (17 January). Recommendations came from Fish Capture group to mount it behind the kite (as usual) and this was done for subsequent tows. This means that the trawl eye is above the ground rope and is used to determine whether the trawl remains in contact with the bottom, but does not give a true reading of the headline height of the trawl;

Norwegian headline height data is always lower than if it was mounted on the headline. A third tow was attempted despite degrading weather conditions, but there were problems with the sensors and the tow was declared invalid. The GO Sars picked up a CEFAS oceanographic buoy, which had broken from its mooring and was drifting north. The ship then headed for port (Hanstholm) due to major storm moving into area and an emergency drop off of one of the ship's crew.

21st January: Left Hanstholm after several days of high winds and a small delay for a crew replacement (second crew emergency). Aimed to be on station to begin towing 22nd January, attempting to align with pockets of low wind and wave height. Were able to begin trawling. Set up the fishlab so that three measuring stations were available for full biological sampling. New method of collecting otoliths, which needed only one individual per measuring station, was in place and running relatively smoothly.

24 January: Echosounder computer crashed, which caused all activities to cease; one drive to the computer failed completely and the backup was not recording properly. The system had to be backed up and rebuilt, which took until 16:00. System failed again as were about to shoot trawl gear. This failure, which was not easily fixable, and another major storm system moving into the area resulted in the vessel sailing to Stavanger for the crew shift change.

Only 7 trawl stations and no MIKs were completed on the first half of the survey due to a combination of weather, crew emergencies, and electronic difficulties.

Left Stavanger 29th January at 15:00 to begin the Utsira W hydrographic transect. Weather was too poor for Mocness tows, but all other sampling could take place until station 29; did not complete final 3 stations due to storm conditions. Were able to complete one GOV tow on the 30th, but several small issues with the gear (trawl eye sensor malfunctioning, wrong sweep lengths) resulted in hauling of the trawl for adjustments to the gear (including lengthening the sweeps to 110m for deep water); tow was completed. German vessel put out call for co-ordination with Norway and Scotland to work together to ensure the northern area (roundfish areas 1 and 2) had at least 1 GOV and 2 MIK samples per ICES rectangle. All IBTS survey vessels were struggling with the weather conditions.

Arrived in port in Lerwick on the 31^{st} January at 19:00. Participants were able to tour the Scotia while in Lerwick and speak with their gear technician about different gear issues. Scotia staff also toured the GO Sars. Because of the rough ground around Shetland, which increases the chance of ripping the trawl, the rubber bobbins on the ground gear were packed tighter and the length of the adjustment chain was shortened to 1.8 m, based on recommendations from the gear technician onboard the Scotia. A new gear code was made to accommodate the 1.8 m standards + 110 m sweeps (3197).

Adverse weather meant the vessel did not leave Lerwick until 6th February at 09:30; the GO Sars managed to leave port well before the Scotia. One bottom trawl was performed in ICES rectangle 49F0, but the trawl displayed varying and low headline height. The trawl master

noticed the sweeps were uneven when shooting the trawl the following day; wires of mismatched lengths had accidentally been loaded on the spare pallet. MIK tows were able to be taken.

Trawl height was low for the next four tows. An additional 6 floats were added to the headline. This increased headline height approximately 30–40 cm. After 3 trawl tows, an additional 2 floats were added to the headline, for a total of 68 floats. Several days were lost to bad weather conditions; however, other IBTS vessels were trawling in the same area at this time (e.g., Germany, Scotland).

The vessel had to make a call into Haugesund on February 12th due to a science staff emergency; storm conditions meant the vessel remained in port until the 14th.

Trawling and MIKing resumed on the 14th, but with variable weather conditions causing delays. No tows were able to be taken in ICES rectangle 51F2; previously trawled positions were no longer accessible due to new oil drilling activities. Bottom trawling ceased on the evening of the 18th. A MIK calibration of the flow meters was performed and the final MIK stations were taken. As the vessel sailed to Bergen, an additional 2 MIK/MIK-M tows were taken; these were not part of the IBTS data. The vessel arrived in port in Bergen at 07:30 on the 19th February.

Norway was not able to complete its survey area; 8 out of 40 rectangles were left without bottom trawls and 14 out of 40 were unsampled with MIKs.

Survey protocol: problems and changes

Many problems arose with S2D. Several bugs were found and program updates/fixes were made throughout the survey period; however, there was close collaboration with those on shore regarding issues and fixes. The GO Sars server needed rebooting three times.

For most ICES rectangles, the protocol changes implemented in 2013 were followed. Tows were placed at least 10 n. mi. within a rectangle. The amount of area less than 200 m is restricted in ICES rectangles 50F3 and 49F3. Bottom tows were closer to the border (within 5 n. mi.) and the requirement that MIKs must be 10 n. mi. apart had to be relaxed.

ICES rectangle 51F2 can no longer be sampled due to the installation of a new oil platform on the old trawl station. There is no longer any area without oil infrastructure left for towing in this rectangle. This has been raised at the 2014 IBTS working group; *the agreement was that the Norway will try to sample this rectangle in Q3, but if it is not samplable, there is little that can be done.*

Clustering of MIK samples has been an issue in previous years and while attempts were made to avoid this, weather conditions and/or oil platform locations often foiled efforts to spread MIK activity. A list of potential MIK stations will be supplied to the bridge for future surveys to avoid this issue.

Gear issues

The winch typically used for the MIK wire was occupied by fiber optic cable (winch 108), which meant that a winch along the side of the vessel (on the 1st deck) had to be used (winch 107). The placement of this secondary winch meant that the large crane had to be used to set and retrieve the MIK off the back of the vessel. Because of this setup, fewer MIK stations were completed than would have been possible with the old setup. The gear also had to be modified (short bridles) to use the new setup.

Prior to the survey, some of the trawls were measured and inspected. For tows at depths of 70 m and less, the GOV trawl with short sweeps was used; long sweeps were used otherwise. This is standard procedure on this survey. There was a small error in the loading of the spare wire for extending sweep lengths; uneven lengths were left on the pallet, which meant the trawl was rigged improperly for deep tows. The error was caught and corrected after 2 tows.

The length of the standards was 2 m and adjustments were to be made if the trawl did not appear to be operating properly. The length was not adjusted for shallow water (< 70 m) stations or the first station at > 70 m depth because doorspread and headline height appeared to be within the typical range for the Norwegian gear; however, there were some issues with the trawl eye (and therefore headline height information) for the first 10 tows. Standard length was adjusted to 1.8 m after station 9 for the gear with 110 m sweeps based on the recommendations from the gear technician at Marine Scotland (1.8 m would allow for the trawling in rough bottom areas, e.g., areas near Shetland, with less chance of snagging/ripping the trawl).

Scanmar trawl eye manual (p. 23, Scanmar 2007) has info on how to reset where the trawl eye looks for the groundrope; settings should be: Gain 5. Ftrp: 38. Bott: 22, Satt 4m +- 2m.

The MIK must be strapped down rough weather to avoid damage to the MIK-M frames (ears) and flow meters.

Necessary gear for future IBTS surveys: bottom contact sensor, wingspread sensors, a small CTD that can be attached to the net, and three fully operational work stations in the wetlab (2 for demersal sampling, 1 for pelagic; requires a coarse and fine weight scale at each measuring board).

Biological sampling

Total weight was recorded for the entire catch. Sub-sampling of the smaller species (e.g., Norway pout, American plaice, common dab, benthos) was done when the catch of these species was larger than 10 kg.

The number of samples was reduced from previous years because budget cuts meant reduced manning on the survey. Instead of 2 samples per 1 cm, 2 samples per 2 cm were taken for haddock, whiting, hake, plaice, and witch flounder, 2 per 1 cm for Norway pout, and (as in

previous years) 5 per 5 cm for saithe. All cod were sampled for full biologicals in previous years; this was reduced to 2 per 2 cm length class. As in previous years, herring and mackerel were sampled for full biologicals when more than 30 individuals were captured; otherwise, only length and weight measurements were taken. Samples were collected on up to 100 individuals per station per species for species where full biologicals were sampled, otherwise, length-only measurements on up to 50 individuals were recorded.

Sampling protocol was discussed at the 2014 IBTSWG and sampling must be 2 samples per 1 cm length class for haddock, whiting, hake, plaice, and witch flounder. Most countries sample all cod, but the minimum is 2 samples per 1 cm length class. The goal is to have 8 samples per cm per roundfish area.

In previous years, alternate sampling of haddock and whiting was common procedure; this practice has been discontinued. Haddock and whiting were sampled on every tow.

Full biological sampling was not done on every tow for Norway pout, but every few hauls. This species is found throughout the entire survey area in high abundance, but typically has very few age classes. This sampling strategy was approved prior to sailing by the person responsible for the Norway pout assessment and will be reviewed before the IBTS Q3 survey.

Length, weight, and sex were recorded for all elasmobranchs. *The IBTSWG pointed out that this is the minimum for elasmobranches; maturity status, which can also be obtained externally for males, must also be obtained.* Carapace length and sex was recorded for *Nephrops norvegicus* and 2 crab species, *Cancer pagurus* and *Lithodes maja*.

Catch of benthos was also registered in the database. Since a taxonomist was on board, most benthos could be identified to species with confidence in the results. Benthos cannot be used for quantitative studies due to the nature of collection (e.g., bottom trawl). Work was continued on a benthic identification manual.

A change in biological sampling was trialed. Previously, 2 people were required at each work station, one to measure the fish, the other to collect otoliths and record information on the otolith packet. This is impractical for this survey given the sampling demands coupled with budget restrictions. Two types of trays with numbered wells to hold otoliths were trialed during sampling; the smaller tray with deeper wells (24 in total) was deemed easier to use and a better fit for the space near the measuring board. This meant one person could work each measuring board and take full biological on all required species, which resulted in processing stations faster, without skipping species. Otoliths were added to packets (fish id only) at the close of the tow. Six errors were found: otoliths did not match fish length for two stations for saithe and one for haddock, one station of whiting otoliths were lost, and 2 stations with whiting had missing otoliths. Most errors were able to be rectified afterwards by comparison with age-length data from all stations. Given the small amount of errors, the use of the tray was not a failure; however, there are still a few small issues to resolve (e.g., lack of biological data on otolith packets for readers).

Marine litter was recorded as per IBTS protocol and included type, description, size category, weight, and presence of attached organisms.

Other requests:

- 1. Collection of Sepiolidae for identification to species level, which were mailed to NCB Naturalis, the Netherlands.
- 2. Stomach samples and/or gallbladder stage for hake. Internal IMR request: Arved Staby.
- 3. Gonad samples from saithe. Internal IMR request: Jane Godiksen.
- 4. Plaice whole fish. NIFES, Bergen.
- 5. Number, weight, and identification (or samples for later identification) of all jellyfish and salps from the GOV and MIK. Interal IMR request: Tone Falkenhaug.
- 6. Water sample from 10 m depth at every CTD station associated with a bottom tow, preserved with Lugol's solution. Samples sent to Hamburg, Germany.
- 7. Barnacle parasites from velvet belly lanternsharks. Henrik Glenner, UiB.

RESULTS AND DISCUSSION

Adverse weather conditions, several staff emergencies, and an echosounder system failure meant the survey area was not completed; eight out of 40 rectangles were not sampled by bottom trawls and 14 out of 40 were unsampled with MIKs (Table 2, Figure 2). The Utsira W transect was not completed; weather was too severe to operate the Mocness and deteriorating conditions resulted in omission of the final 3 stations (Table 3, Figure 3).

Table 4 contain the preliminary results of the MIK sampling. Herring larvae were most abundant east of Shetland and along the northeastern North Sea shelf boundary (Figure 4).

Sixty-two CTDs were taken, 29 on the hydrographic transect and the rest as part of the IBTS survey (Figure 3). Waters were likely well mixed due to the extreme weather and sustained wind conditions from the southwest experienced during the survey. CTD data were used to create an isosurface plot of temperature at 10 m depth, which showed warmer water temperatures to the south and west and cooler zones along the Norwegian trench (Figure 5).

Table 5 contains information on the amount of length and age (or length and sex) material collected for the main species. For the pelagic species (herring, mackerel), 305 otoliths were collected and aged. For the eight required demersal species, 1807 otoliths were collected, of which, 1517 were aged (5 species).

Figures 5-13 show the catch in weight and by numbers for cod, whiting, haddock, saithe, Norway pout, plaice, herring, mackerel, and ling. Catches of cod (Fig. 5), whiting (Fig. 6), and haddock (Fig. 7) were highest in the northern part of the Norwegian survey area. Large cod and haddock were found over most of the area (Fig. 5, 7), while large whiting were found mainly in the north or along the shelf edge (Fig. 6). Larger catches of saithe were

predominantly from along the shelf edge or in the northern part of the survey area (Fig. 8). Larger saithe were captured in the north and along the shelf edge, while smaller fish were found in the south (Fig. 8). Large catches of Norway pout were mainly in the central northern part of the survey area (Fig. 9), while place were captured mainly from the south (Fig. 10). Herring were captured in relatively small amounts throughout the survey area (Fig. 11). There were relatively few catches of mackerel (Fig. 12). Ling were mainly captured in the northern part of the Norwegian survey area (Fig. 13).

A summary of the number of stations where material was collected for the additional requests is in Table 6. Table 7 contains information on the total (number and weight) of benthic invertebrates as captured with the GOV bottom trawl.

REFERENCES

ICES. 2012. Manual for the International Bottom Trawl Surveys. Series of ICES Survey Protocols. SISP 1-IBTS VIII. 68 pp.

Scanmar. 2007. SCANMAR Fangstkontroll Systemer Brukermanual. 36 pp.

COUNTRY	SHIP	DATES
Denmark	Dana	24-1/10-2
France	Thalassa II	13-1/14-2
Germany	Walther Herwig III	23-1/24-2
Netherlands	Tridens 2	27-1/28-2
Norway	G.O. Sars	14-1/ 19-2
Scotland	Scotia III	24-1/14-2
Sweden	Dana	09-1/22-1

Table 1. IBTS Q1 2014: Countries, vessels, and sampling periods.

Table 2. IBTS Q1 2014: Stations fished.

ICES Divisions	STRATA	Gear	Tows planned	VALID	Additional	Invalid	% STATIONS FISHED
IVa	ICES	GOV	30	26	0	1	87%
	rectangles	MIK	60	52	0	-	87%
IVb	ICES	GOV	10	6	0	1	60%
	rectangles	MIK	20	0	0	-	0%
Total		GOV	40	31	0	2	78%
		MIK	80	52	0	-	65%

Table 3. Summary of stations and sampling along the Utsira-West hydrographic transect. Stations in grey text were not completed due to foul weather. Stations marked in orange are stations with quantitative sampling for zooplankton, while those in yellow are plankton. Pl. are quantitative phytoplankton samples from 30–0 m, while Al. indicate phytoplankton sampled for 'qualitative tests' from 30–0 m.

			PO	DSIS	JON					PRØVETAKING								
Nr	Grad	Min	Gı	rad	Min	Deci	mal	Dist	Antatt		VANN	NPR(ØVER	r	PLAN	KTON	PRØV	ER
	Ν			E/V	V	N	E/W	n.m.	dyp	CTD	N.salt	02	Chl.	Pl.	WP2	Al.	Secci	MIK
1	59	17	Е	5	2	59.283	5.033		80	x	x		x	30-0*	bunn-0	30- 0***	x	
2	59	17	Е	4	56	59.283	4.933	3.06	140	x	x		x					
3	59		Е	4	50	59.283	4.833	3.06	150	x	x		x		bunn-0		x	х
4	59	17	Е	4	40	59.283	4.667	5.10	270	x	x		x					
5	59	17	Е	4	30	59.283	4.500	5.10	255	X	х		x	30-0*	bunn-0/ 200-0	30- 0***	X	
6	59	17	Е	4	20	59.283	4.333	5.10	260	x	x		x					
7	59	17	Е	4	11	59.283	4.183	4.59	280	x	х		x		bunn-0/ 200-0	30- 0***	x	х
8	59	17	Е	4	2	59.283	4.033	4.59	280	x	x		х					
															bunn-0/	30-		
9	59	17	E	3	51	59.283	3.850	5.62	270	х	Х		х	30-0*	200-0	0***	х	X
10	59	17	Е	3	41	59.283	3.683	5.10	250	x	х		x					
11	59	17	E	3	32	<u>59.283</u>	3.533	4.59	220	х	х		X		bunn-0		х	
12	59	17	Е	3	22	59.283	3.367	5.10	160	x	х		x			30-		
13	59	17	Е	3	13	59.283	3.217	4.59	140	х	х		x	30-0*	bunn-0	0***	х	X
14	59	17	Е	3	4	59.283	3.067	4.59	130	x	x		x					
15	59	17	Е	2	54	59.283	2.900	5.10	105	x	х		x		bunn-0		x	
16	59	17	Е	2	45	59.283	2.750	4.59	115	x	x		x			20		
17	59	17	Е	2	31	59.283	2.517	7.15	130	x	х		x	30-0*	bunn-0	30- 0***	x	х
18	59	17	Е	2	15	59.283	2.250	8.17	125	х	X		x					
19	<u>59</u>	17	Е	2	0	59.283	2.000	7.66	120	х	Х		X		bunn-0		х	
20	59	17	Е	1	39	59.283	1.650	10.72	115	х	X		x			30-		
21	59	17	Е	1	19	59.283	1.317	10.21	110	x	х		x	30-0*	bunn-0	0***	x	X
22	59	17	Е	1	0	59.283	1.000	9.70	110	x	x		x					
23	59	17	Е	0	40	59.283	0.667	10.21	135	х	х		х		bunn-0		х	
24	59	17	Е	0	20	59.283	0.333	10.21	135	x	х		x			20		
25	59	17	Е	0	0	59.283	0.000	10.21	130	х	х		x	30-0*	bunn-0	0***	x	X
26	59	17	W	0	20	59.283	0.333	10.21	135	x	X		x					
27	59	17	W	0	39	59.283	0.650	9.70	125	x	x		x		bunn-0		x	
28	59	17	W	0	59	59.283	- 0.983	10.21	125	x	x		x					
29	59	17	W	1	19	59.283	- 1.317	10.21	110	x	х		x	30-0*	bunn-0	30- 0***	x	х
30	59	17	W	1	38	59.283	- 1.633	9.70	90	Х	х		х					
31	59	17	W	1	56	59.283	- 1.933	9.19	95	х	Х		x					
32	59	17	W	2	14	59.283	2.233	9.19	70	x	x		x	30-0*	bunn-0		x	х

Table 4. IBTS Q1 2014: Preliminary results of the Norwegian MIK sampling; data are only from the IBTS Q1 MIK samples and do not include the extra MIKs taken as part of the process studies program. Numbers of herring larvae are given in n/m^2 .

Haul no	no/m²						
5	0.419	18	0.146	31	0.107	44	0.054
6	0.728	19	0.084	32	0.000	45	0.356
7	0.732	20	0.170	33	0.121	46	1.101
8	0.150	21	0.487	34	0.111	47	0.180
9	0.083	22	0.131	35	0.031	48	0.297
10	0.204	23	0.248	36	0.304	50	0.131
11	0.186	24	0.039	37	0.033	51	0.150
12	0.261	25	0.010	38	0.212	52	0.165
13	0.081	26	0.130	39	0.594	53	0.194
14	0.215	27	0.257	40	0.258	54	0.123
15	0.489	28	0.162	41	0.000	55	0.056
16	0.285	29	0.434	42	0.026	59	0.187
17	0.044	30	0.496	43	0.010	60	0.134

 Table 5. IBTS Q1 2014: Number of biological samples collected (individual length / aging materials)

 collected. Species with an asterix (*) indicate samples collected were length / sex (no aging material).

SPECIES	NO. SAMPLES	SPECIES	No. SAMPLES
Clupea harengus	804 / 205	Merluccius merluccius	335 / 167
* Etmopterus spinax	11 / 11	Molva molve	34 / 33
Eutrigla gurnardus	1134 / 0	* Nephrops norvegicus	234 / 202
Gadus morhua	219 / 171	Pollachius virens	646 / 308
* Galeus melastomus	1 / 1	Pleuronectes platessa	198 / 90
Glyptocephalus cynoglossus	40 / 0	* Raja radiate	42 / 42
Hippoglossoides platessoides	629 / 0	Scomber scombrus	452 / 100
Limanda limanda	899 / 0	* Scyliorhinus canicula	15 / 15
* Lithodes maja	14 / 13	Sprattus sprattus	5 / 0
Melanogrammus aeglefinus	1160 / 448	* Squalus acanthias	12 / 11
Merlangius merlangus	1409 / 420	Trisopterus esmarki	1578 / 170

Table 6. IBTS	Q1 2014	: Summary	of special	requests.
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INSTITUTE	SPECIES	SAMPLE TYPE	NO. STATIONS
NCB Naturalis	Sepiolidae	Whole organism	23
NIFES	Plaice	Whole fish	3
IMR	Saithe	Gonad	15
IMR	Hake	Stomach	18
IMR	Jellyfish, salps	Identification/organism	_
University of Bergen	Velvet belly lanternshark	Barnacle parasites	0
University of Hamburg	_	Water	31

Table 7. Benthic invertebrates recorded on IBTS Q1 2014.

					Total catch	Total weight
Phylum	Class	Order	Family	Species	number	[kg]
Annelida	Polychaeta	Phyllodocida	Aphroditidae	Aphrodita aculeata	158	3.539
		Phyllodocida (suborder Aphroditiforma) indet.			8	0.014
		Sabellida	Serpulidae	Ditrupa arietina	49	0.01
	Polychaeta indet.				104	0.055
Arthropoda	Malacostraca	Decapoda	Cancridae	Cancer pagurus	3	1.236
Thinopodu	Inducostrata		Corvstidae	Corvstes cassivelaunus	71	0.802
			Crangonidae	Crangon allmanni	35	0.025
			Crangoindae	Pontophilus norvegicus	35	0.025
				Pontophilus spinosus	8	0.021
			Crangonidae indet		6	0.004
			Galatheidae	Galathea spp	2	0.001
			Hippolytidae	Spirontocaris lilieborgii	3	0.004
			Inachidae	Inachus dorsettensis	3	0.007
			Indefindue	Macropodia tenuirostris	1	0.001
			Lithodidae	Lithodes maja	14	4 967
			Munididae	Munida spp	6	0.017
			Nephropidae	Nephrops porvegicus	234	11.16
			Oregoniidae	Hvas coarctatus	17	0.044
			Paguridae	Pagurus bernhardus	93	1 339
			Tugundue	Pagurus prideaux	231	0.885
				Pagurus pubescens	80	0.005
			Pandalidae	Dichelopandalus honnieri	46	0.434
			Tundunduo	Pandalus horealis	11	0.085
				Pandalus montagui	1073	2 587
				Pandalus spp	10/3	0.022
			Pasinhaeidae	Pasinhaea spp.	345	0.022
			Polyhiidae	Liocarcinus denurator	267	1 701
			Toryondae	Liocarcinus holsatus	2813	8 406
		Funhausiacea	Funhausiidae	Meganyctinhanes norvegica	2013	0.400
		Isopoda indet	Euphaushdae	ineguiryenphanes norvegieu	7	0.000
	Maxillopoda	Sessilia	Archaeobalanidae	Semibalanus balanoides	15	0.020
	maxinopoda		Balanidae	Balanus spp	40	
		Sessilia indet.	Dalamaac	Duunus spp.	77	-
Bryozoa	Gymnolaemata	Cheilostomatida	Flustridae	Flustra foliacea	-	4.017
				Securiflustra securifrons	-	0.054
			Membraniporidae	Membranipora membranacea	-	0.0004
Chordata	Ascidiacea	Phlebobranchia	Ascidiidae	Ascidia virginea	127	0.458
			Corellidae	Corella parallelogramma	198	0.67
	Ascidiacea indet.			· · · · ·	5	0.02
						1

Cridaria Anthozoa Actiniaria Hormathisa pallitata 162 0.28 Actiniaria indet, Actiniaria indet, Hormathis spn. 171 6.128 Actonacea Alcvoniaria spn. 121 6.138 Scienctinia Epizoanthis de Erizoanthis arphilesu 21 6.033 Hvdrozoa Leotohecata Ascuorei aso. 10 1.490 Asteroide Ascuorei aso. 10 1.490 Asteroide Ascuorei aso. 10 1.490 Asteroide Ascuorei aso. 10 1.490 Scinulosia Asteroide Ascuorei aso. 10 1.490 Echinodermata Asteroide	Phylum	Class	Order	Family	Species	Total catch number	Total weight [kg]
Actiniaria indet. Actiniaria indet. Actiniaria indet. Actoniaria indet. Actoniaria indet. Actoniaria indet. Actoniaria sp. 145 0.971 Actoniaria Carvophilidae Carvophilidae Carvophilidae Carvophilidae Carvophilidae 1 0.6128 Actoniaria Episoanthidae Farazzonthidae Parazzonthias singuicomas 21 0.033 Hydrozna Leptothecata Actoniaria Parazzonthidae Parazzonthidae Parazzonthidae 0 0.00001 Echinodermata Asteroidea Forcionalatida Asterias rubens 2025 11.435 Echinodermata Asteroidea Forcionalatida Asterias rubens 2025 11.435 Valvatida Asterias rubens 2025 11.435 2025 11.435 Sinulosida Echiniateria Asterias rubens 2025 11.435 Valvatida Asteriade Asterias rubens 2025 11.435 Valvatida Carnarodonta Echiniateria Asteriade Asteriade 40004 Valvatida </td <td>Cnidaria</td> <td>Anthozoa</td> <td>Actiniaria</td> <td>Hormathiidae</td> <td>Adamsia palliata</td> <td>162</td> <td>0.258</td>	Cnidaria	Anthozoa	Actiniaria	Hormathiidae	Adamsia palliata	162	0.258
Actiminaria indet, Alexonacea Alexonidae Alexonidae <td< td=""><td></td><td></td><td></td><td></td><td>Hormathia spp.</td><td>145</td><td>0.975</td></td<>					Hormathia spp.	145	0.975
Alcyonacea Alcyonidae Alcyonidae - 0.547 Scheractinia Carvophilide Carvophilides Carvophilides 512 0.048 Parazonthidae Parazonthidae Parazonthidae 10 1.4001 Hvdrozoa Lenothecata Aeguoreidae Aeguoreidae 10 1.401 Ichinodermata Asteroidae Iafoedae Iafoedae 10 1.401 Fichinodermata Asteroidae Asteroidae Asteroidae 828 14.023 Fichinodermata Asteroidae Iafoedae 10 0.00001 Fichinodermata Asteroidae Asteroidae 10 0.032 Ichinodermata Spinulosida Echinasterilae Mitropactiniae 828 14.020 Valvatida Osternidae Henricia spin 10 0.032 Ichinidee Camarodonta Echinidee Iafoedae 1 0.000 Ichinidee indet Gamarodonta Echinidea Henricia spin 3 0.019 Ichinidea indet Astroidae Spinulosida Spinulosida Spinulosida Spinulosida Spinulosida 1 0.000 Ichinidae indet Astroidae Ophinininidae Ophininidae 1 <td< td=""><td></td><td></td><td>Actiniaria indet.</td><td></td><td></td><td>71</td><td>6.128</td></td<>			Actiniaria indet.			71	6.128
Scienctinia Carvorbillias Carvorbilias Carvorbillias Carvorbilli			Alcyonacea	Alcyoniidae	Alcyonium spp.	-	0.547
Zoambaria Epizoambidae Epizoambidae Epizoambidae Parzazoambidae Accuarte spo. 10 1.491 Lafoedae Lafoedae Lafoedae Lafoedae Jaborathisa spo. - 0.00001 Echinodermata Asteroidae Asteroidae Asteroidae Asteroidae Asteroidae 30.014 Spinulosida Chinasteridae Marcina spinulosida Echinidae Asteroida spinulosida 10 0.034 Echinidea Asteroidae Marcina spinulosida Echinidae Asteroida 10 0.034 Echinidea Asteroidae Asteroidae Marcina spinulosida 10 0.034 Echinidea Camarodonta Echinidae Asteroidae Henricia spinulosida 10 0.034 Echinidea Asteroidae Ophiaridae Echinidae indet. Echinidae Echinidae <td></td> <td></td> <td>Scleractinia</td> <td>Caryophylliidae</td> <td>Carvophyllia smithii</td> <td>32</td> <td>0.048</td>			Scleractinia	Caryophylliidae	Carvophyllia smithii	32	0.048
Parazoambidae Lafocidae Lafocid			Zoantharia	Epizoanthidae	Epizoanthus papillosus	21	0.023
Hedrozoa Lentothecata Accurorciades Latoriciades Latoria Interview 10 1.91 Echinodemuta Asteroidae Latoria sp. - 0.00001 Echinodemuta Asteroidae Asteroidae Asteroidae Asteroidae 2625 11.425 Echinodemuta Asteroidae Asteroidae Asteroidae 2828 44.028 Laidia sp. 10 0.083 28 44.028 28 0.032 Final Spinulosida Echinasteridae Henricia sp. 10 0.084 0.034 Valvatida Ospinulosida Echinidae Asteroida propoda flacenta 1 0.030 Echinidea Camarodonta Echinidae Asteroidae Spinulosida 3 0.011 Holdburroidea Spinulosida Spinulosida Spinulosida 4521 2039.24 Holdburroidea Spinulosida Spinulosida Spinulosida 46.003 0.013 Ophiuroidea Ophiuroidea Spinulosida Spinulosida Spinulosida				Parazoanthidae	Parazoanthus anguicomus	-	0.004
Lafoeidae Lafoeidae Lafoeidae Lafoeidae Lafoeidae Lafoeidae Donomi Serturiaridae Serturiaridae Asterias rubens 2625 11.425 Asteroidea Paxillosida Asteriidae Asterias rubens 2625 11.425 Astropectini dea Astropectini dea Astropectini regularis 828 44.028 Spinulosida Spinulosida Echinasteridae Luidia sorsi 50 0.352 Valvatida Spinulosida Camarodonta Echinasteria dhreysian 87 4.559 Spinulosida Asterinidae Hontroices provina 87 4.599 0.014 Spinulosida Aspidechirotida Stichopodidae Parastichopus tremulus 9 2.812 Ophiurina Ophiurina Ophiurina Ophiurina 6 0.009 Ophiurina Ophiurina Ophiurina 9 2.812 0.014 Mollusca Bivalvia Pertinoida Stichopodidae Parastichopus tremulus 9 2.812 Ophiurina		Hydrozoa	Leptothecata	Aequoreidae	Aequorea spp.	10	1.491
SecularidaeDiphasia sp0.00001EchinodermataAsteriolaeAsteriolaeAsteriolaeAsteriolae intervalarias sp.262511.425PaxillosidaAstorocetinidaeAsterioceton irregularis82844.028LuididaeLuidida sop.100.084ValvatidaSpinulosidaEchinasteridaeHenricia sop.80.019ValvatidaCamarodontaEchinasteridaeHibrosteria phrvetiona874.55EchinideaCamarodontaEchinasteridaeHibrosteria phrvetiona874.55HolohuroideaOphiacidaeEchinasteridaeHibrosteria phrvetiona874.55OphiaroideaOphiacidaeEchinasteridaeHibrosteria phrvetiona874.55OphiaroideaOphiacidaeStatonocidaFarstichopostiae92.812OphiaroideaOphiaridaeOphiaroidaeOphiara adbida80.009OphiaroideaOphiara adbida80.0030.01420.0142OphiaroideaOphiara adbida80.0330.015MolluscaBiyalviaPectinidaPectinidaePectinidaeAlecane tribos92.315MolluscaBiyalviaPectinidaeCotonociaOphiara abbida84932.946CephalopodaMovosidaOnoresteridaeRoadertida minor20.042GastropodaCephalopodaCotonociaCotonocia20.0142GastropodaCephalaspideaSepiola ridens5 </td <td></td> <td></td> <td></td> <td>Lafoeidae</td> <td>Lafoea sp.</td> <td>-</td> <td>0.00001</td>				Lafoeidae	Lafoea sp.	-	0.00001
Echinodermata Asteroidea Forcipulatida Asteriate Asteriate Asteriar ubrar 2625 11 425 Paxillosida Astronectinidae Astronectini (alta sarsi) 50 0.0352 Luidita spr. 10 0.0454 Valvatida Asteriate Astronectini (regularis) 828 44.028 Luidita spr. 10 0.054 2.0014 0.054 Asteriate Asteriate Asteriates 10 0.054 Valvatida Asteriate Asteriates 1 0.004 Asteriate Asteriates 1 0.014 0.014 Echinidea Camarodonta Echinidae Asteriates 1 0.014 Bohnoridea Aspidochirotida Stichopodidae Parastichopus tremulus 9 0.2812 Ophiaridae Aspidochirotida Ophiaridae Ophiaridae Ophiaridae 0 0 Ophiaridae Astronectini as abundata 140 0.0413 0 0.015 Ophiaridae Pectinidae				Sertulariidae	Diphasia sp.	-	0.00001
PaxillosidaAstropecter irrecularis82844.028Laidia sop.1000.052PaxillosidaEchinasteridaeHenricia sop.100.084PaxillosidaEchinasteridaeHenricia sop.80.019PaxillosidaCamarodontaEchinaideaAnsernopoda placenta10.004PaxillosidaCamarodontaEchinaideaAnsernopoda placenta874.559Echinidea indet.SpatamgoidaSpatamgoida90.581Echinidea indet.SpatamgoidaSpatamgoida92.812OphiuroideaOphiurinaOphiurinaOphiurina60.009OphiuridaeOphiurinaOphiurina0phiuria60.009OphiuriaOphiurinaOphiurideaOphiuria30.015MolluscaBivalviaPectinoidaPectinidaeAlores servitia30.015MolluscaBivalviaPectinoidaPectinidaePertinidaeAlores servitia30.015MolluscaBivalviaPectinoidaOctopodaOctopodaOctopoda92.315MolluscaBivalviaPectinoidaOctopodaOctopoda0.01421.4032.9446OctopodaOctopodaOctopodaOctopodiaeEledone cirrhosa91.473OgopidaSepidaSepidaeAnselecta20.014CephalaspideaScaphandriidaeSepiola inform20.004OctopodaCephalaspideaScaphandriidae<	Echinodermata	Asteroidea	Forcipulatida	Asteriidae	Asterias rubens	2625	11.425
Ludidia egoLudidia sorsii500.352Jardia sop.Naldia sop.100.084ValvatidaEchinasteridaeHenricia sop.80.019ValvatidaAsterinidaeAnscropoda placenta10.004EchinidaeCamarodontaEchinidae874.559EchinidaeSpatangoidaSpatangoida90.581SpatangoidaSpatangoidaSpatangoida90.881EchinidaeOphiactidaeEchinidae42112039:294HolothuroideaOphiactidaeOphiactidaeOphiactidae42112039:294OphiactidaeOphiactidaeOphiactidaeOphiactidae60.009OphiatriaOphiactidaeOphiatria60.009OphiatriaOphiatria1400.41560.003OphiatriaPectinidaePectinidaeOphiatria atbila80.083ObliuraOphiatria1400.4150.0140.015MolluscaBivalviaPectinidaPectinidaePectinidae2.40.078CephalopodaMyopsidaLoliginidaeAltoeuthis sublata84932.9.46OctorodaOctorodaOctorodaOctoroda segitatas20.54MolluscaBivalviaSepiidaSepiida100.02OctorodaOctorodaOctorodaCetonodidae100.02OphiatriaIndarentis sublata100.022.004CephalaspideaScaphandridae			Paxillosida	Astropectinidae	Astropecten irregularis	828	44.028
Lidida sp.100.084SpinulosidaEchinasteridaeHerricia sp.80.019AsterinidaeAsterinidaeAsternoda placenta10.004GoniasteridaeHinnsterinaB74.559EchinidaCamarodontaEchinidaeEchinus sp.90.581SpatangoidaSpatangoidaSpatangoida92.812OphiactidaeAspidochirotidaStichopodidaeParastichopus tremulus92.812OphiarinaOphiactidaeOphiactidaeOphiactidae60.009OphiactidaeOphiactidaeOphiactidae80.83OphiarinaOphiactidaeOphiactidae80.83OphiarinaOphiactidaeOphiactidae80.83OphiarinaOphiactidaeOphiara ophiara1400.415MolluscaBivalviaPectinoidaCetopada00MolluscaBivalviaPectinoidaOctopodidae100.44OctopodaOctopodiaOctopodidae100.440.018OctopodaOctopodiaOctopodiae100.440.018SepidaOmmastrephidaeSepiola minor20.044GastropodaCephalaspideaScaphandridaeAserosona7OctopodaCephalaspideaScaphandridaeSepiola tridens100.02GastropodaCephalaspideaScaphandridaeScaphandridae100.021GastropodaCephalaspideaScaphandridae<				Luidiidae	Luidia sarsii	50	0.352
SpinulosidaEchinaseridaeHenricia spo.80.019ValvaidaChasterinidaeAnseronda placenta10.004GeniasteridaeHinnasteria phrysiana874.559Echinidea indet.SpatangoidaEchinidae indet.30.014Echinidea indet.SpatangoidaStatangoida endet.30.014HolothuroideaAspidochirotidaStichopodidaeParastichopus trenulus92.812OphiuroideaOphiurinaOphiotrichidaeOphiotrichidaeOphiotrichidae60.009OphiuroideaOphiurinaOphiurinaOphiurina1400.415OphiuriaOphiurinaOphiuriae0phiuriae1400.415OphiuroideaPectinoidaPectinidaePectinidae80.039MolluscaBivalviaPectinoidaPectinidaePectinidae80.92486CephalopodaMyopsidaLoliginidaePecudamussium peslutrae20.442OctopodiaOctopodiaeCoctopodiae14330.142OctopodiaOctopodiaeRoselectarinos20.041CephalopodaMyopsidaLoliginidaeRoselectarinos20.041CephalopodaMyopsidaCotopodiaeRoselectarinos20.042CephalopodaMyopsidaSepiolaSepiola20.041CephalopodaMyopsidaSepiolaSepiola00.142GastropodaCephalaspideaScaphandridae70.042 </td <td></td> <td></td> <td></td> <td></td> <td>Luidia spp.</td> <td>10</td> <td>0.084</td>					Luidia spp.	10	0.084
valvatidaAsterinidaeAnseropoda placenta10.004GoniasteridaeHiposteria phrysiana874.559EchinideaCamarodontaEchinidaeEchinidae87SpatangoidaSotamegidae indet.30.014EchinideaAspidochirotidaParastichopus tremulus92.812OphiuroideaOphiurinaOphiactidaeOphiactidae0.016/16/16/16/16/16/16/16/16/16/16/16/16/1			Spinulosida	Echinasteridae	Henricia spp.	8	0.019
ConstruitaConstruitaHitonasteria874.559EchinidaeSpatangoidaSpatangoidaSpatangida indet.30.014Echinidae indet.AspidochirotidaSpatangidae indet.452112039.294HolothuroideaAspidochirotidaStichopodidaeParastichopus tremulus92.812OphiuroideaOphiurinaOphiuridaeOphiuria60.003OphiuroideaOphiuriaOphiuria60.003OphiuroideaOphiuriaOphiuria1400.415OsticatidaeOphiura aphitra1400.415OphiuroideaPectinoidaPectinoida80.083OphiuroideaPectinoidaPectinoida0.0153MolluscaBivalviaPectinoidaPectinidaeAlega in the statistica in the statist			Valvatida	Asterinidae	Anseropoda placenta	1	0.004
EchinidaeCamarodontaEchinidaeEchinidaeEchinidae90.881SpatangoidaSpatangoidaSpatangidae indet.30.014HolothuroideaAspidochirotidaStichopodidaeParastichopus tremulus92.812OphiuroideaOphiurinaOphiactidaeOphiopholis aculeata40.003OniuroideaOphiurinaOphiactidaeOphiopholis aculeata40.003OniuroideaOphiurinaOphiuridaeOphiura albida80.009OphiuraOphiura albida80.0030.015MolluscaEcrinoidaPectinoidaPectinoida0.015MolluscaBivalviaPectinoidaPectinoidaPecudomussium peslutrae240.078MolluscaBivalviaPectinoidaOctopodaOctopoda0.0140.015MolluscaOctopodaOctopodaOctopodideEledone cirrhosa91.473OctopodaOctopodaOmmastrephidaeTodarodes satitutus20.54OctopodaSepidaSepida inder.20.0140.014OnegonsidaGastropodaRosida indernosis elbanae30.015OrdiaSepidaSepida inder.20.0440.011OnegonsidaGastropodaSepida inder.20.044OnegonsidaSepida inder.Sepida inder.30.015OrdiaSepidaSepida inder.10.0020.014OnegonsidaSepida inder.S				Goniasteridae	Hippasteria phrygiana	87	4.559
meanSpatangoidaSpatangoida indet.30.014Echinder indet.AspidochirotidaStichopodidaeParastichopus tremulus92.812OphiuroideaOphiurinaOphiactidaeOphiothilaeOphiothilaeOphiothilae04OphiuroideaOphiurinaOphiothilaeOphiothilaeOphiothilae060.009OphiuroideaOphiuroideaOphiuroideaOphiuroidea80.0830OphiuroideaOphiuroideaOphiuroideaOphiuroidea80.083OphiuroideaPectinoidaPectinidaePectinidae84932.9446MolluscaBivalviaPectinoidaPectinidaeAlloteuthis subulata84932.9446OctopodaOctootidaeCotootidaeLoligo spp.92.315OctopodaOctootidaeCotoodidaeEledone cirthosa91.473OphiuroideaSepidaOmmastrephidaeTodarodes sagittuts20.042Optiacti adaminor220.041Sepida2.00142.0004OctopodaCetootidaeRossia macrosoma70.042Optiacti adaminor220.014Sepiola tridens100.02Optiacti adaminor220.014Sepiola tridens100.02Optiacti adaSepiola tridens100.020.020.012Optiacti adaminor220.004Sepiola tridens100.02Optiacti adaminor220.004Sepiola		Echinidea	Camarodonta	Echinidae	Echinus spp.	9	0.581
Echinidea indet.AspidochirotidaStichopodidaeParastichopus tremulus452112039.294OphiuroideaOphiurinaOphiacidaeOphiacidaeOphiacidaeOphiacidae92.812OphiuroideaOphiurinaOphiacidaeOphiacidaeOphiacidae092.812OphiuroideaOphiurinaOphiacidaeOphiacidaeOphiacidae60.003OniuroideaOphiuroideaOphiura carsii60.003Obiura atrasiOphiuro ophiura1400.415MolluscaBivalviaPectinidaePeculamussium peslutrae240.078CephalopodaMyopsidaLoliginidaeAlloteutiis subulata849329.446OctopodaOctopodaOctopodiaeEledone cirrhosa91.473OctopodaOctopodaSepiolidaeTodaropsis elbanae30.142OctopodaSepiolidaeSepiolidaeRosia macrosoma70.935Image: SepiedaSepieda eglecta20.00120.001CastropodaCephalaspideaScaphandridaeScapiandridae40.011GastropodaCephalaspideaScaphandridaeScaphandridae560.294Image: SepiedaScaphandridaeScaphandridae500.0003CastropodaCephalaspideaScaphandridaeScaphandridae500.001Sepieda liguitat40.0110.0020.0130.0210.013Coria spiceScaphandridaeSca			Spatangoida	Spatangidae indet.		3	0.014
HolothuroideaAspidochirotidaStichopodiaeParastichopus tremulus92.812OphiuroideaOphiurinaOphiactidaeOphiophis aculeata40.003OphiuroideaOphiotrichidaeOphiotrichidaeOphiura albida80.083OniurinaOphiura albida80.0830.0415Ophiura albida0phiura abrida80.0830.015MolluscaBivalviaPectinoidaPectinidaePseudamussium peslutrae240.078MolluscaBivalviaPectinoidaLoliginidaeAlloteuthis subulata849329.446CephalopodaMyopsidaLoliginidaeAlloteuthis subulata849329.446OctopodiaOctopodiaeEledone cirrhosa92.315OctopodaOctopodiaeOmastrephidaeTodaroopsis elbanae30.142OegopsidaOmastrephidaeTodaroopsis elbanae30.142OphiuraSepiidaSepiolidaeRossia macrosoma70.295OctopodaCephalaspideaScaphandridae30.011Sepietta neglecta20.011Sepietta neglecta100.002GastropodaCephalaspideaScaphandridaeScaphandridae30.0043OptiorinophaVelutindaeLamellaring negresicaa10.0003OptiorinophaVelutindaeScaphandridaeScaphandridae30.044OptiorinophaVelutindaeScaphandridaeScaphandrideeScaphandridee3 </td <td></td> <td>Echinidea indet.</td> <td></td> <td></td> <td></td> <td>45211</td> <td>2039.294</td>		Echinidea indet.				45211	2039.294
OphiuroideaOphiurinaOphiactidaeOphiophilis aculeata40.003ObiotricichidaeOphiophilis aculeata60.009OphiuridaeOphiuridaeOphiura albida80.083OniuridaeOphiura abida80.0830.015Ophiura ophiura1400.4150.0150.015MolluscaBivalviaPectinoidaPectinidaePseudamussium peslutrae240.078MolluscaBivalviaPectinoidaPectinidaePseudamussium peslutrae240.078CephalopodaMvopsidaLoliginidaeAlloteuthis subulata849329.446OctopodaOctopodaOctooodidaeEledone cirrhosa91.473OctopodaOctopodaOctooodidaeTodarodes sagittatus20.54OgeopsidaOmmastrephidaeTodarodes sagittatus20.044OSepiidaSepiolidaeRondeletiola minor20.004OctopodaSepiolaSepiolata40.0010.02OGastropodaCephalaspideaScaphander lignarius560.294IIScaphandridaeScaphander lignarius560.044INeogastropodaBuccinidaeBuccinidaeMollus100.021OrdificaeCephalaspideaScaphandridaeScaphander lignarius560.294IOctopodaCephalaspideaScaphander lignarius560.294INeogastropodaBuccinidae <td< td=""><td></td><td>Holothuroidea</td><td>Aspidochirotida</td><td>Stichopodidae</td><td>Parastichopus tremulus</td><td>9</td><td>2.812</td></td<>		Holothuroidea	Aspidochirotida	Stichopodidae	Parastichopus tremulus	9	2.812
Image: Constraint of the constra		Ophiuroidea	Ophiurina	Ophiactidae	Ophiopholis aculeata	4	0.003
Image: constraint of the second sec				Ophiotrichidae	Ophiothrix fragilis	6	0.009
MolluscaBivalviaPectinoidaOphiura ophiura1400.415MolluscaBivalviaPectinoidaPectinidae <i>Ophiura sarsii</i> 30.015MolluscaCephalopodaMvopsidaLoliginidaeAlloeuthis subulata849329.446CephalopodaMvopsidaOctopodiaOctopodiaeEledone cirrhosa92.315OctopodaOctopodaOctopodiaeEledone cirrhosa91.473OctopodaOctopodiaeOctoposis elbanae30.142OctoposidaOctoposis elbanae30.142OctopodaSepiolidaeSepiolidaeRoska macrosoma70.295OctopodaCephalaspideaSepiolidaeRoska macrosoma70.004OctopodaCephalaspideaSepiolidaeSepieta ovenimaa70.001OctopodaCephalaspideaScaphandridaeSepiola liguitat40.011OctopodaUcturinimorphaVelutinidaeLamellaria perspicua10.0003UtitorinimorphaVelutinidaeLamellaria perspicua10.00030.21OctopodaEpiosponaBuccinnidaeBuccinum adatum713.143OctopodaCephalaspideaScaphandridaeSepiola liguita40.021OctopodaEpiosponaOctopodaOctopoda0.210.021OctopodaEpiosponaOctopodaNeogastropoda0.210.21OctopodaEpiosponaEpisopia100.21 <t< td=""><td></td><td></td><td></td><td>Ophiuridae</td><td>Ophiura albida</td><td>8</td><td>0.083</td></t<>				Ophiuridae	Ophiura albida	8	0.083
MolluscaBivalviaPectinoidaPectinidaePectinidaePesudamussium peslutrae240.015MolluscaBivalviaPectinoidaAlloteuthis subulata849329.446CephalopodaMyopsidaLoliginidaeAlloteuthis subulata849329.446DecopodaOctopodaOctopodidaeEledone cirthosa91.473DecoposidaOctopodidaeOctopodidaeEledone cirthosa91.473DecoposidaOctopodidaeEledone cirthosa91.473DecoposidaOctopodidaeSepiolidaeTodaropsis elbanae30.142DecoposidaSepiolidaeSepiolidaeRossia macrosoma70.295DecoposidaSepiolidaeSepietta neglecta20.011DecoposidaCephalaspideaScaphandridae100.022DecoposidaCephalaspideaScaphandridae50.0041DemospongiaeHalichondridaAxinellidaeAxinellidaeAxinellia infundibuliformis440.683PoriferaDemospongiaeHalichondridaAxinellidaeAxinelliaeAxinelliae37.916					Ophiura ophiura	140	0.415
MolluscaBivalviaPectinoidaPectinidaePseudamussium peslutrae240.078CephalopodaMyopsidaLoliginidaeAlloteuthis subulata849329.446Loligo spp.92.315OctopodaOctopodaOctopodidaeEledone cirrhosa91.473OctoposidaOegopsidaOmmastrephidaeTodarobes sagittatus20.54Image: Construction of the cirrhosa01.4730.1420.004Image: Construction of the cirrhosa020.0040.004Image: Construction of the cirrhosa020.0040.004Image: Construction of the cirrhosa020.0040.004Image: Construction of the cirrhosa020.0040.004Image: Construction of the cirrhosa000.0040.004Image: Construction of the cirrhosa000.0040.004Image: Construction of the cirrhosa00.0040.0040.004Image: Construction of the cirrhosa000.0040.011Image: Construction of construction of cirrhosa100.0020.004Image: Construction of construction of construction of cirrhosa100.003Image: Construction of construction of construction of cirrhosa100.004Image: Construction of con					Ophiura sarsii	3	0.015
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Figure 1. Map of the IBTS Q1 survey area listing the countries responsible for sampling each ICES rectangle. SC = Scotland, GE = Germany, NO = Norway, DK = Denmark, FR = France, NL = The Netherlands, S = Sweden.



Figure 2. Bottom trawl (left) and MIK (right) stations completed in IBTS Q1 2014. Numbers indicate station number and colors indicate different trawl gear configurations (3191: 60 m sweeps, 2 m adjustment chain; 3194: 110 m sweeps, 2 m adjustment chain; 3197: 110 m sweeps, 1.8 m adjustment chain). MIK stations 2–4, 49, 56, 61, and 62 were taken for additional egg and larvae samples and were not part of the IBTS survey.Contour lines are 100 m (green) and 200 m (blue) depth.



Figure 3. Hydrographic transect (WPII and CTD stations) and locations of all CTDs taken at bottom trawl and, where needed, MIK stations.



Figure 4. Abundance (number m⁻²) of herring larvae in the Norwegian part of the 2014 IBTS survey area.



Figure 5. Location of CTDs (right) used for plotting (left) temperature at 10 m depth (extrapolated using 20 x 20 bins).



Figure 5. (left) Total catch weight (kg) and (right) mean length (cm) of cod from IBTS Q1 stations in 2014.



Figure 6. (left) Total catch weight (kg) and (right) mean length (cm) of whiting from IBTS Q1 stations in 2014.



Figure 7. (left) Total catch weight (kg) and (right) mean length (cm) of haddock from IBTS Q1 stations in 2014.



Figure 8. (left) Total catch weight (kg) and (right) mean length (cm) of saithe from IBTS Q1 stations in 2014.



Figure 9. (left) Total catch weight (kg) and (right) mean length (cm) of Norway pout from IBTS Q1 stations in 2014.



Figure 10. (left) Total catch weight (kg) and (right) mean length (cm) of plaice from IBTS Q1 stations in 2014.



Figure 11. (left) Total catch weight (kg) and (right) mean length (cm) of herring from IBTS Q1 stations in 2014.



Figure 12. (left) Total catch weight (kg) and (right) mean length (cm) of mackerel from IBTS Q1 stations in 2014.



Figure 13. (left) Total catch weight (kg) and (right) mean length (cm) of ling from IBTS Q1 stations in 2014.