DTU Aqua

Cruise Report

R/V Dana

Cruise 02/2013

”Danish IBTS 1Q 2013”

Vessel: R/V DANA

Cruise dates (planned): 1/2 – 18/2 2013

Cruise number: 02/13

Cruise name: Danish IBTS 1Q 2013

Port of departure:	Hirtshals	**Date:**	1 Feb
Port of return:	Hirtshals	**Date:**	18 Feb
Other ports:	Esbjerg	**Date and justification:**	8 Feb Scheduled exchange of scientific staff and crew

Participants

Leg 1: Hirtshals – Esbjerg		
Name	**Institute**	**Function and main tasks**
Helle Rasmussen	DTU Aqua, Monitoring	Cruise leader, Fish lab
Aage Thaarup	DTU Aqua, Monitoring	Technician, Fish lab
Gert Holst	DTU Aqua, Monitoring	Technician, Herring larvae
Reinhardt Jensen	DTU Aqua, Monitoring	Technician, Fish lab
Flemming Thaarup	DTU Aqua, Monitoring	Technician, Fish lab
Lise Sindahl	DTU Aqua, Monitoring	Technician, Fish lab
Ronny Sørensen	DTU Aqua, Marin Services	Technician, CTD, Maintenance

Leg 2: Esbjerg – Hirtshals		
Name	**Institute**	**Function and main tasks**
Kai Wieland	DTU Aqua, Monitoring	Cruise leader, Fish lab
Gert Holst	DTU Aqua, Monitoring	Technician, Fish lab
Dirk Tijssen	DTU Aqua, Monitoring	Technician, Herring larvae
Tom Svoldgaard	DTU Aqua, Monitoring	Technician, Fish lab
Lise Sindahl	DTU Aqua, Monitoring	Technician, Fish lab
Søren L. Grønby	DTU Aqua, Monitoring	Technician, Fish lab
Ronny Sørensen	DTU Aqua, Marin Services	Technician, CTD, Maintenance

Objectives

The survey is part of the 1st 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 1st 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 1st 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 1st quarter 2013 was allocated during the most recent IBTS Working Group meeting. 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 Friday 1 February at 13:00 local time. Poor weather conditions (Fig. 1) caused a delay in the sampling during the 1st cruise leg. The vessel stayed in the port of Esbjerg on Friday 8 February from 10:45 to 14:15 for the scheduled exchange of scientific staff and crew. Again, strong winds (Fig. 1) did not allow sampling during some periods of the 2nd cruise leg. R/V Dana returned to Hirtshals on Monday 18 February at 10:30 local time after most the planned work had been accomplished.

Achievements

The original working area consisted of 40 ICES statistical rectangles located in IBTS roundfish areas 4, 6 and 7. Here, rectangles 39F8 and 38F8 were given lowest priority due to its rather small area with water depths larger than 15 m. 6 rectangles located in roundfish area 2 were covered related to a swap with Tridens (NL) during the 2nd leg of the survey (Fig. 2). The following activities were carried out:

39 valid trawl hauls with GOV 36/47 (chalut á Grande Overture Verticale), rectangle 39F8 not covered due to its low priority and rectangle 43F7 had to dropped due to time constraints and poor weather conditions, 1 invalid haul in rectangle 37F2 from the 1st leg was repeated successfully during the 2nd leg, all hauls were carried with the standard groundgear A (see IBTS Manual for specifications),

39 CTD profiles

72 valid standard hauls with a 2 m ring net (MIK, see IBTS manual for specification). 3 stations were repeated because of failure in the first attempt due to technical problems encountered at difficult weather conditions.

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 specified in 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.

About 80 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. The preliminary abundance indices for the main commercial species (Tab. 3) were reported to the coordinator of the 1st quarter IBTS. 23 stomachs of Grey gurnard (*Eutrigla gurnadus*) and 6 stomachs of hake (*Merluccius merluccius*) were collected stratified for area and size group.

Marine litter was recorded in each GOV catch using four main categories: plastic, glass, metals and miscellaneous, which were subdivided in several minor categories (Tab. 5) to meet the request by the IBTS Working Group.

No sorting of the MIK (500 µm cod end mesh size) samples were performed on board. The samples were conserved in 96% ethanol for analysis in laboratory and hence no preliminary results on the catches of clupeid larvae have been reported to the coordinator of the 1st quarter IBTS.

Others

A cruise summary report has been delivered online to

http://seadata.bsh.de/csr/online/V1_index.html.

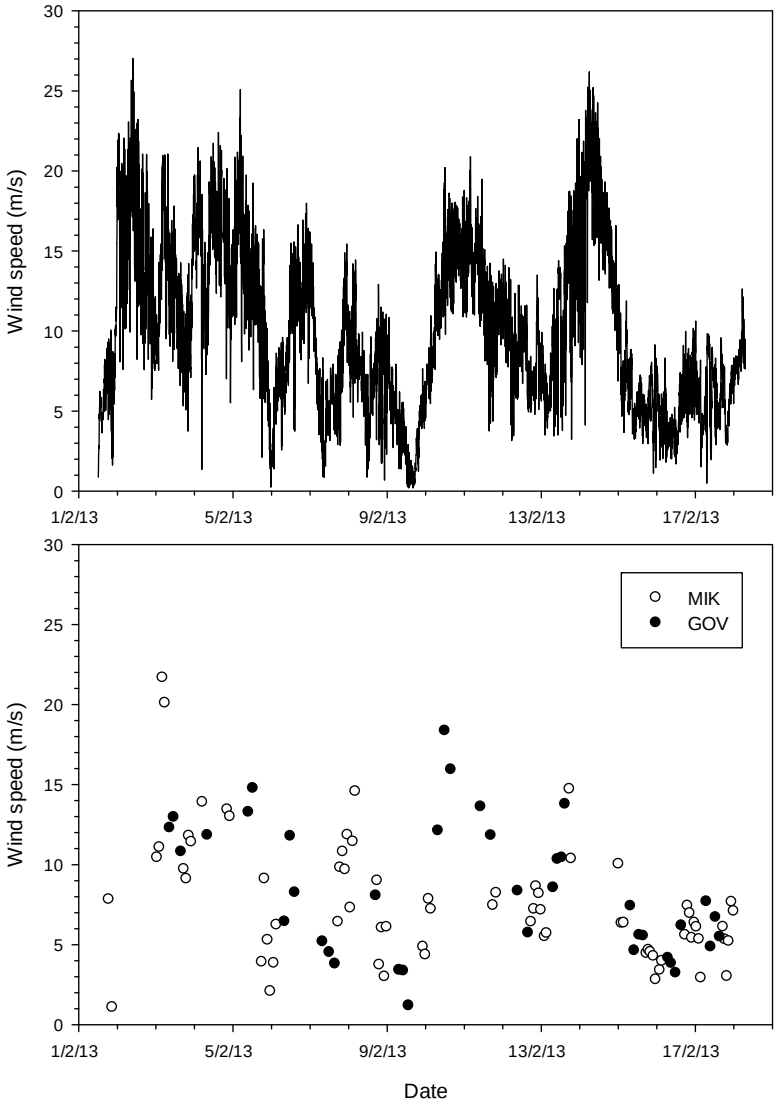

Fig. 1. Wind speed (m/s) recorded along the cruise track and at sampling locations, Dana 1QIBTS 2013.

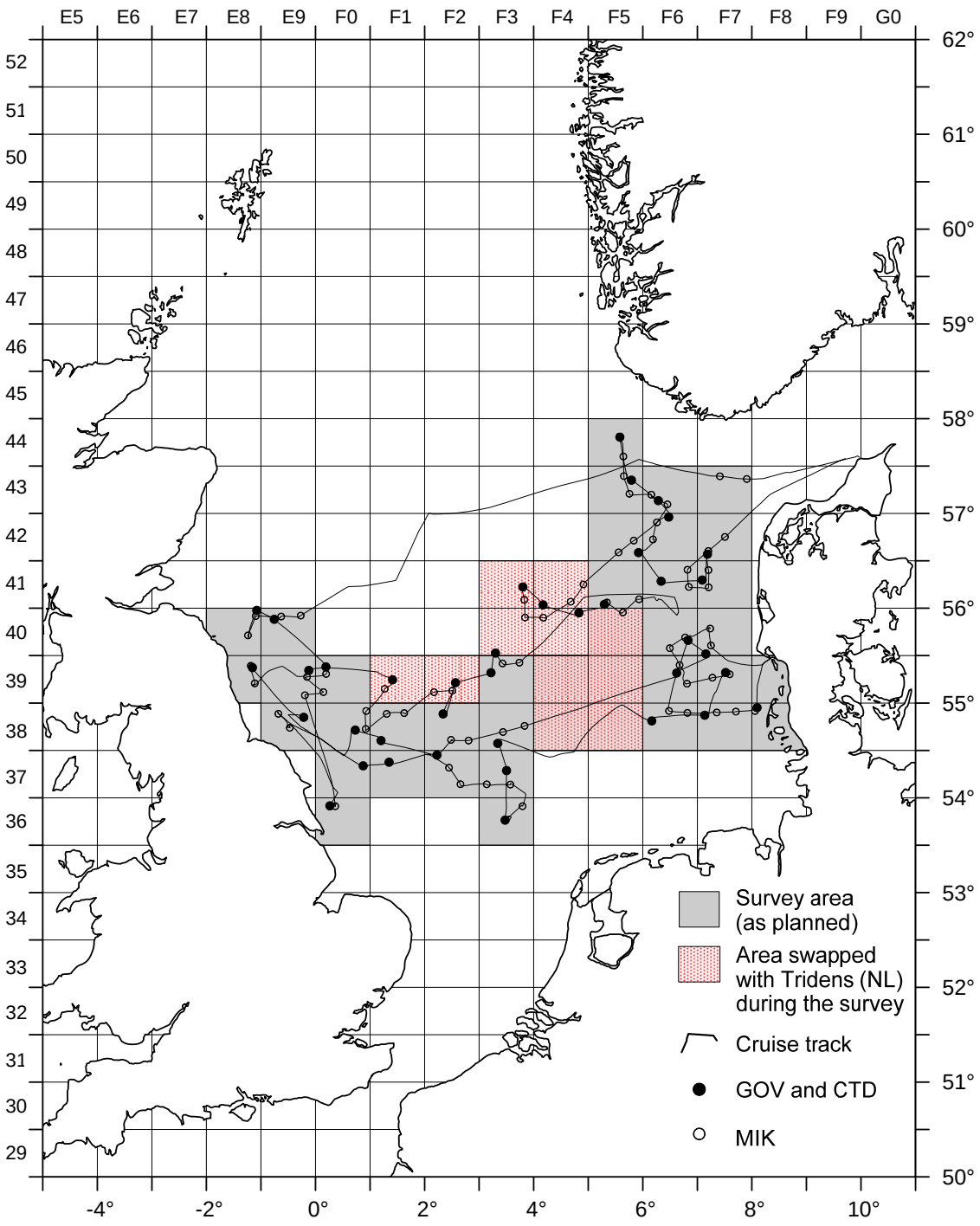

Fig. 2: Survey map with cruise track and sampling locations, Dana 1Q IBTS 2013.

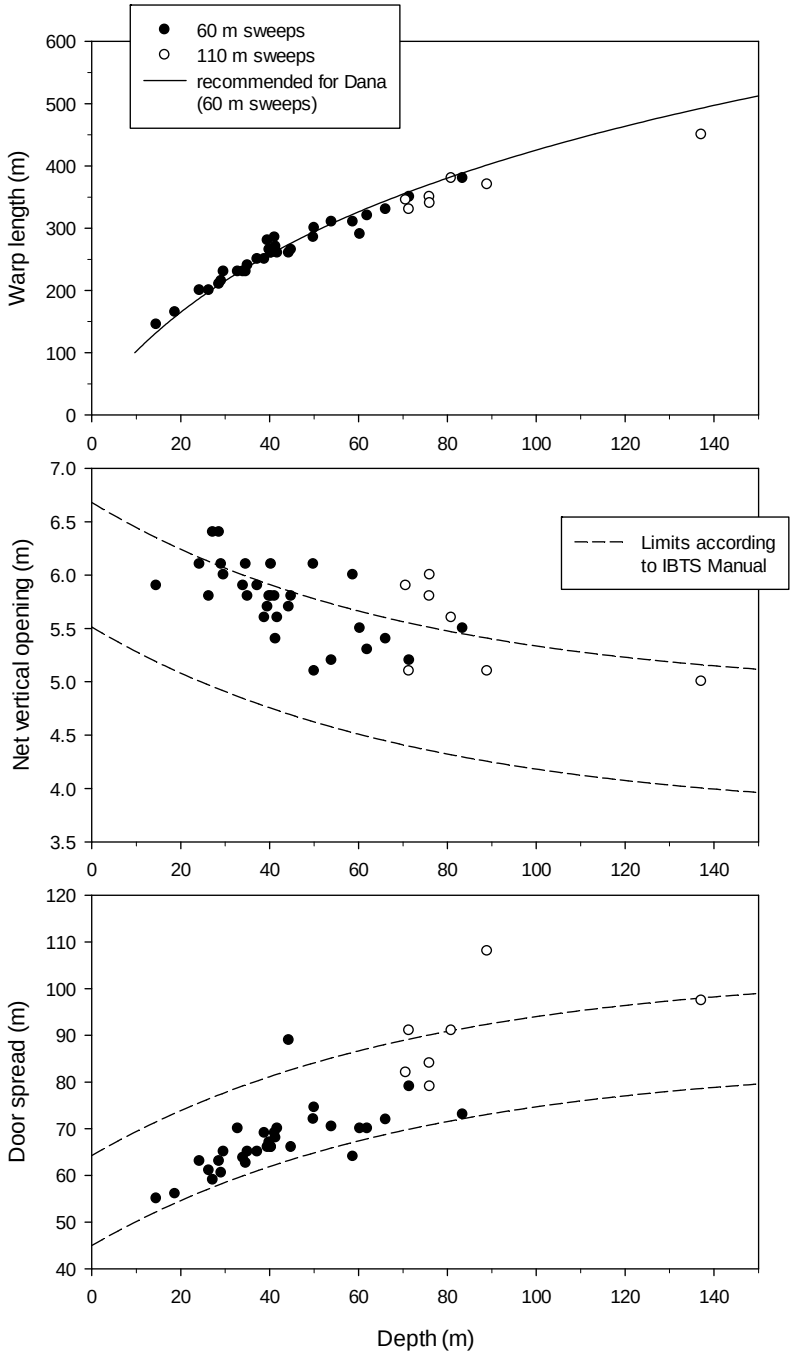

Fig. 3: Warp length, net opening and door spread in relation to depth, Dana 1Q IBTS 2013

Tab. 1: Species list, Dana 1Q 2013.

Fish			Invertebrates		
Danish name	Latin name		Danish name	Latin name	
Ålekvabbe	Zoarces viviparus	*	Hummer	Homarus gammarus	**
Ansjos	Engraulis encrasicolus	*	Jomfruhummer	Nephrops norvegicus	**
Brisling	Sprattus sprattus	***	Taskekrabbe	Cancer pagurus	**
Fjæsing	Trachinus draco	*	Troldkrabbe	Lithodes maja	**
Fjæsing lille	Echiihthys vipera	*	Hestereje	Crangon crangon	-
Fløjfisk (pl)	Callionymus maculatus	*	Lyskrebs	Euphausiidae sp.	-
Fløjfisk (str)	Callionymus lyra	*	Reje konge	Pandalus montagui	-
Glastunge	Buglossidium luteum	*			
Glyse	Trisopterus minutus	*	-	Alloteuthis subulata	*
Guldlaks	Argentina silus	*	-	Illex coindetti	*
Håising	Hippoglossoides platessoides	*	-	Loligo forbesii	*
Havbars	Dicentrarchus labrax	*	-	Loligo vulgaris	*
Havkvabbe (3tr)	Gaidropsarus vulgaris	*	-	Rossia macrosoma	-
Havkvabbe (4tr)	Enchelyopus cimbrius	*	-	Sepiola atlantica	-
Havtaske, alm.	Lophius piscatorius	***	-	Sepietta oweniana	-
Havtaske, sort	Lophius budegassa	***			
Hestemakrel	Trachurus trachurus	*	Stor kammusling	Pecten maximus	*
Hundestejle 3 p	Gasterosteus aculeatus	*	Jomfru øster	Aequipecten opercularis	*
Hvilling	Merlangius merlangus	***			
Ising	Limanda limanda	***	Almindelig søstjerne	Asterias rubens	-
Knurhane (grå)	Eutrigla gurnardus	*			
Knurhane (rød)	Trigla lucerna	*			
Kuller	Melanogrammus aeglefinus	***	-:	not measured	
Kulmule	Merluccius merluccius	***	*:	length	
Kutling-sand	Pomatoschistus spp.	*	**:	length by sex	
Laksesild	Maurolicus muelleri	*	***:	single fish data (length, weight,	
Lange	Molva molva	*		sex, maturity and age samples)	
Makrel	Scomber scombrus	***			
Pighvarre	Psetta maxima	***			
Ringbug (årfin)	Liparis montagui	*			
Ringbug (finnebr)	Liparis liparis	*			
Rødspætte	Pleuronectes platessa	***			
Rødtunge	Microstomus kitt	***			
Sild	Clupea harengus	***			
Skægtorsk	Trisopterus luscus	*			
Skælbrosme	Phycic blennoides	*			
Skærising	Glyptocephalus cynoglossus	***			
Skrubbe	Platichthys flesus	*			
Slethvarre	Scophthalmus rhombus	*			
Småhvarre	Phrynorhombus norwegicus	*			
Smelt	Osmerus eperlanus	*			
Snippe	Entelus aequoreus	*			
Sperling	Trisopterus esmarkii	***			
Stavsild	Alosa fallax	*			
Stenbider	Cyclopterus lumpus	*			
Stribet Mulle	Mullus surmuletus	*			
Strømsild	Argentina sphyraena	*			
Tangnæl	Syngnathidae	*			
Tangspræl	Pholis gunnelus	*			
Tobis-hav	Ammodytes marinus	*			
Torsk	Gadus morhua	***			
Tunge	Solea solea	***			
Tungehvarre	Arnoglossus laterna	*			
Ulk	Myoxocephalus scorpius	*			
Ulk-panserulk	Agonus cataphractus	*			
Glathaj	Mustelus mustelus	**			
Rødhaj (smpl)	Scyliorhinus canicula	**			
Sternehaj	Mustelus asterias	**			
		**			
Pletrokke	Leucoraja naevus	**			
Sømrokke	Raja clavata	**			
Storplettet Rokke	Raja montagui	**			
Tærbe	Amblyraja radiata				

Tab. 2: Number of single fish data (length, weight, sex and maturity) and samples for ageing, Dana 1Q 2013.

		IBTS Roundfish area			
Species	2	4	6	7	Total
Herring (Clupea harengus)	58	222	203	308	791
Sprat (Sprattus sprattus)	31	139	245	158	573
Cod (Gadus morhua)	5	9	7	90	111
Haddock (Melanogrammus aeglefinus)	5	125	-	105	235
Whiting (Merlangius merlangus)	43	210	44	172	469
Norway pout (Trisopterus ermarkii)	5	61	-	38	104
Mackerel (Scomber scombrus)	1	2	-	3	6
Hake (Merluccius merluccius)	-	1	-	37	38
Saithe (Pollachius virens)	-	-	-	27	27
Plaice (Pleuronectes platessa)	105	86	183	192	566
Monkfish (Lophius piscatorius)					4
Turbot (Psetta maxima)			not		3
Witch flounder (Glyptocephalus cynoglossus)			stratified		7
Sole (Solea solea)		by roundfish area			7
Lemon sole (Microstomus kitt)					169
				Sum:	3110
-: not caught					

Tab. 3: Preliminary abundance indices (number per hour trawling) for commercial IBTS species and number of valid MIK hauls per rectangle, Dana 1Q 2013.

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	40E8	14	6	6	38	246	0	0	2
2	40E9	524	0	140	58	4407	0	0	2
3	39F0	2291	0	2	0	8801	0	2	2
4	36F0	0	0	0	0	0	0	0	1
5	37F0	64	0	0	8706	1088	0	0	0
6	37F1	0	0	0	0	12	0	0	0
7	36F3	385	0	0	52	0	13926	0	2
8	37F3	238	2	0	56	0	4178	0	2
9	38F3	33	0	0	2	0	236	0	2
10	38F6	84	0	0	2	0	2244	0	2
11	38F7	17768	2	0	0	0	3088	0	2
12	39F7	826	0	0	0	0	682	0	2
13	38F8	172	0	0	0	0	102	0	1
14	40F6	5038	2	0	8	0	278	0	2
15	40F7	2863	8	0	4	0	3854	0	2
16	39F6	1812	0	0	6	0	400	0	2
17	37F2	42	0	0	0	0	1159	0	2
18	38F1	0	0	0	0	0	2	0	2
19	38F0	422	0	0	216	1487	8	2	2
20	38E9	6	0	0	36	23	0	0	2
21	39E8	8	0	2	27	31	25	0	2
22	39E9	6	2	0	12	284	0	0	2
23	39F1	0	0	0	0	2	0	0	1
24	38F2	12	0	0	4	0	40	0	2
25	39F2	328	0	0	40	0	18	0	2
26	39F3	17	0	0	0	0	2	0	2
27	40F3	6	0	0	0	0	0	0	1
-	40F5	-	-	-	-	-	-	-	1
28	41F5	143	0	0	23	0	37	0	2
29	40F4	12	2	0	0	0	2	0	1
30	41F4	110	0	0	12	0	0	0	1
31	41F3	14	0	0	30	20	0	2	1
32	42F6	60	64	0	493	26	0	0	2
33	43F6	101	4	0	74	0	0	0	2
34	43F5	0	14	122	775	0	0	0	2
35	44F5	0	2	48	0	56493	0	4	2
26	42F5	308	0	0	46	0	2	0	2
37	41F6	736	0	0	16	0	110	0	2
38	41F7	64430	0	0	64	0	1868	0	2
39	42F7	1470	2	0	56	0	359	0	2
-	43F7	-	-	-	-	-	-	-	2

Tab. 4. Marine litter categories.

Litter overview			
A: Plastic	**B: Sanitary waste**	**C: Metals**	**Related size category**
A1. Bottle	B1. diapers	C1. Cans (food)	A: <5*5 cm= 25 cm^2
A2. Sheet	B2. cotton buds	C2. Cans (beverage)	B: <10*10 cm= 100 cm^2
A3. Bag	B3. cigarette butts	C3. Fishing related	C: <20*20 cm= 400 cm^2
A4. Caps/ lids	B4. condoms	C4. Drums	D: <50*50 cm= 2500 cm^2
A5. Fishing line (monofilamen	B5. syringes	C5. appliances	E: <100*100 cm= 10000 cm^2= 1 m^2
A6. Fishing line (entangled)	B6. sanitary towels/ tampon	C6. car parts	F: >100*100 cm = 10000 cm^2= 1 m^2
A7. Synthetic rope	B7. other	C7. cables	
A8. Fishing net		C8. other	
A9. Cable ties			
A10. Strapping band			
A11. crates and containers			
A12. other			
D: Rubber	**E: Glass/ Ceramics**	**F: Natural products**	**G: Miscellaneous**
D1. Boots	E1. Jar	F1. Wood (processed)	G1. Clothing/ rags
D2. Balloons	E2. Bottle	F2. Rope	G2. Shoes
D3. bobbins (fishing)	E3. piece	F3. Paper/ cardboard	G3. other
D4. tyre	E4. other	F4. pallets	
D5. glove		F5. other	
D6. other			