

Presentations contributed to the WGBIFS/2017 meeting in Riga, Latvia

Annex 9: Presentations accessible at the WGBIFS 2017 meeting

Notes: Authors are fully responsible for quality of the prepared text and all kind of presented data.

List of presentations:

1. Presentation of logistic information
2. Presentation of done works between WGBIFS 2016 and WGBIFS 2017
3. BITS presentation of Russia;
4. BITS presentation of Germany;
5. BITS presentation of Lithuania;
6. BITS presentation of Poland;
7. BITS presentation of Denmark;
8. BITS presentation of Sweden;
9. BITS presentation of Latvia;
10. BASS, BIAS and BITS presentation of Estonia;
11. BASS and BIAS presentation of Lithuania;
12. BIAS presentation of Russia;
13. BIAS presentation of Poland;
14. BIAS presentation of Finland;
15. BASS and BIAS presentation of Latvia;
16. Gulf of Riga Herring Survey presentation of Latvia;
17. Presentation of intercalibration exercise between new Havfisken and Solea;
18. Presentation of sunrise and sunset calculations;
19. Presentation of LFI and LMI development;
20. Presentation of outcomes of ICES WKBIFS-ACOU;
21. Allocation of BITS hauls from the Tow-Database;
22. Calibration between new and old r/v "Havfisken".



The logistic aspects of the WGBIFS-2017 meeting.

A few facts from the history of Riga city

Włodzimierz Grygiel (NMFRI, Gdynia - Poland)

Timing of the WGBIFS meeting: 27 - 31.03.2017

Time-schedule of the meeting:

- starts on 27.03.2017, from 10:00 to 17:30 o'clock,
- on 28 - 30.03.2017, from 9:00 to 17:00 o'clock,
- meeting will be finalised on 31.03.2017 at about 14:00 o'clock,
- coffee breaks: the 1st at 10:30-10:50 and the 2nd at 15:00-15:20,
- lunch break at 12:30-13:30.

The meeting venue: the BIOR Institute/Fish Resources Research Department - the local organizer and host of the meeting, with Guntars Strods as POC.

Address: Riga - Latvia, Daugavgrivas Street 8 (Daugavgrivas iela 8), the conference room No. 24, on the 2nd floor.

Participants of the meeting: 27 persons, incl. 4 attendees for a part-time only.

- The BITS surveys sub-group - coordinated by Henrik Degel,
- The IBAS surveys sub-group - coordinated by Olavi Kaljuste,
- The Baltic LFI (proportion of large fish) and MML (mean maximum length of fishes) indicators sub-group - coordinated by Scott Large,
- The StoX programme and a new acoustic-trawl database sub-group - coordinated by Hjalte Parner and Espen Johnsen.



The main tasks of the WGBIFS/2017 meeting:

- to work on standard ToRs and response on the additional tasks requested by the WGBFAS, ICES Data Center & others.
- preparation of draft text of the final report,
- deliberation on the ToRs for next 3 years works of WGBIFS and selection of the 2018 venue,
- election of candidate on the position of WGBIFS chairperson for 2018-2020.

Please obey following rules during the meeting:

- 1) punctuality,
- 2) do not use mobile phone inside the conference room,
- 3) if you really needs smoking cigarettes, that outside.

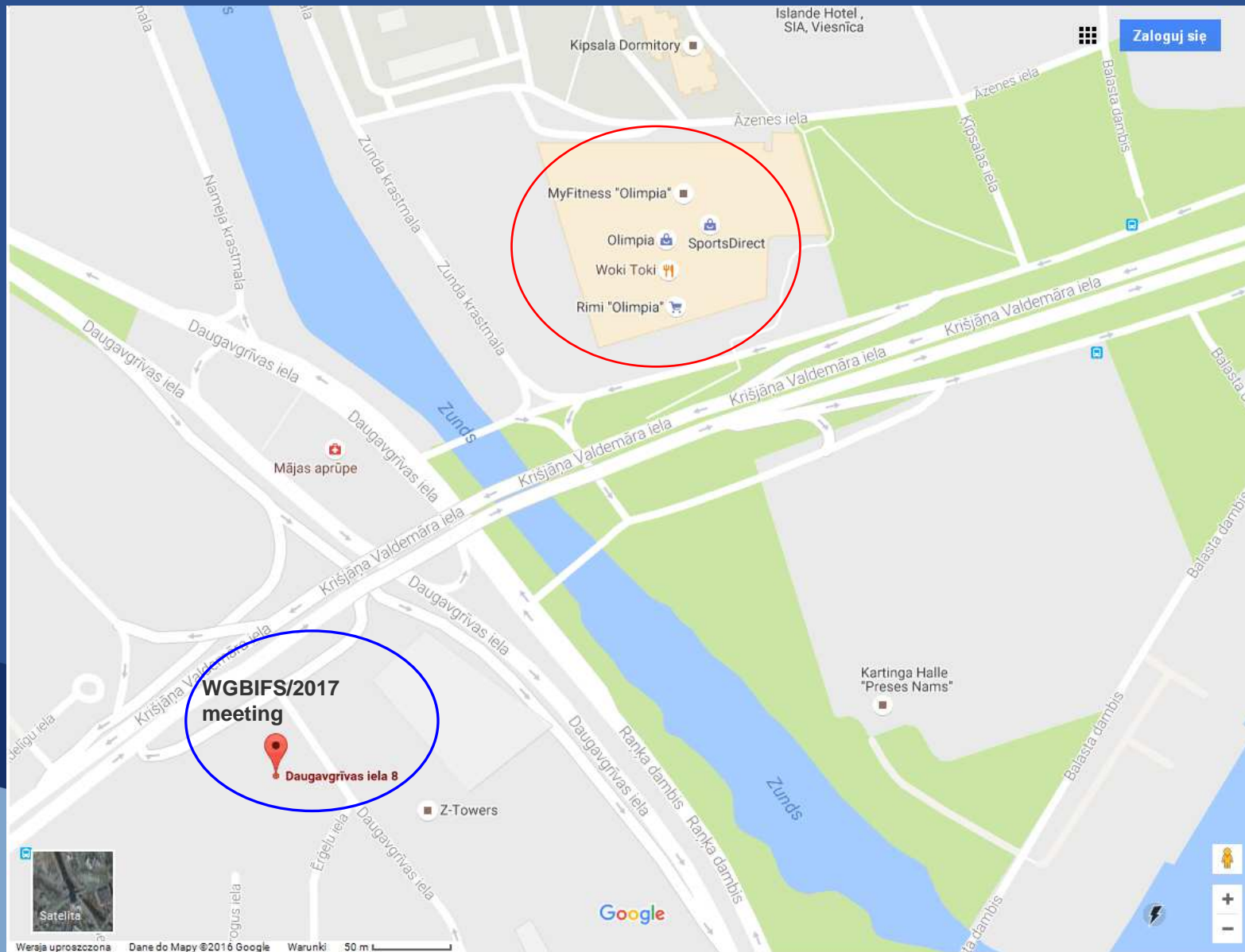
WGBIFS meetings venue in 2000-2017:

Year	Location
2000	Copenhagen ICES HQ
2001	Kaliningrad (Russia)
2002	Copenhagen ICES HQ
2003	Copenhagen ICES HQ
2004	Rostock (Germany)
2005	Rostock (Germany)
2006	Copenhagen ICES HQ
2007	Rostock (Germany)
2008	Gdynia (Poland)
2009	Lysekil (Sweden)
2010	Klaipeda (Lithuania)
2011	Kaliningrad (Russia)
2012	Helsinki (Finland)
2013	Tartu (Estonia)
2014	Gdynia (Poland)
2015	Öregrund (Sweden)
2016	Rostock (Germany)
2017	Riga (Latvia)



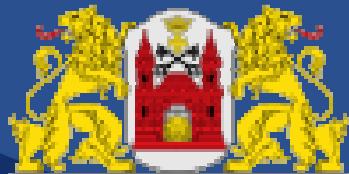
Where we are

Riga, the capital city of Latvia is located at the Daugava River mouth, on the shores of the Gulf of Riga.



Riga from the historical point of view

Riga officially founded in 1201 by Bishop Albert, became one of the most developed seaports in the Hanseatic League during the Middle Ages and has traditionally served as a crossroads for trade between east and west. When an independent Latvian Republic formed in 1918, Riga became the capital.



Above: Riga in the 16th century. Below: the flag and coat of arms of the city.

Historical affiliations

-  Terra Mariana (condominium of Archbishops of Riga and Livonian Order) 1201–1561
-  Imperial Free City 1561–1582
-  Polish–Lithuanian Commonwealth 1582–1629
-  Swedish Empire 1629–1721
-  Russian Empire 1721–1917
-  German Empire 1917–1918
-  Republic of Latvia 1918–1940
-  Soviet Union 1940–1941
-  Nazi Germany 1941–1944
-  Soviet Union 1944–1991
-  Republic of Latvia 1991–present

after: <https://en.wikipedia.org/wiki/Riga>





<https://pl.wikipedia.org/wiki/Ryga>

Riga at present time

Riga is the largest city of Latvia, is also known as the "Heart of the Baltic's". Riga: area (in 2002) - 304 km², population (2015) – 696,6 x 10³ inhabitants.

Today, you can see the entire history of the city reflected in its architecture (Old Town). Due to rich historical and cultural heritage, the city was chosen as the European Capital of Culture 2014.

The building of the Brotherhood of Blackheads is one of the most iconic buildings of Old Riga (Vecriga).



Thank you for your attention!



WGBIFS meeting in Riga - Latvia; 27 - 31.03.2017

What was done between consecutive WGBIFS meetings? The main tasks assigned on the WGBIFS-2017 meeting



Włodzimierz Grygiel - *National Marine Fisheries Research Institute, Gdynia - Poland*

The aim of presentation:

- a) what was done between consecutive WGBIFS meetings - an overview,
- b) requests addressed to WGBIFS chair about accessibility to international and national data and submission of various information/resume,
- c) the basic administrative information about BASS and BIAS surveys accomplishment in the Baltic Sea in 2016 with confrontation to WGBIFS plans,
- d) summary of the WGBIFS/2017 workplan.

What was done at the WGBIFS/2016 meeting?

The Second Interim Report of the WGBIFS-2016 prepared at the meeting and delivered on time to the ICES SCICOM/ACOM, composed from:

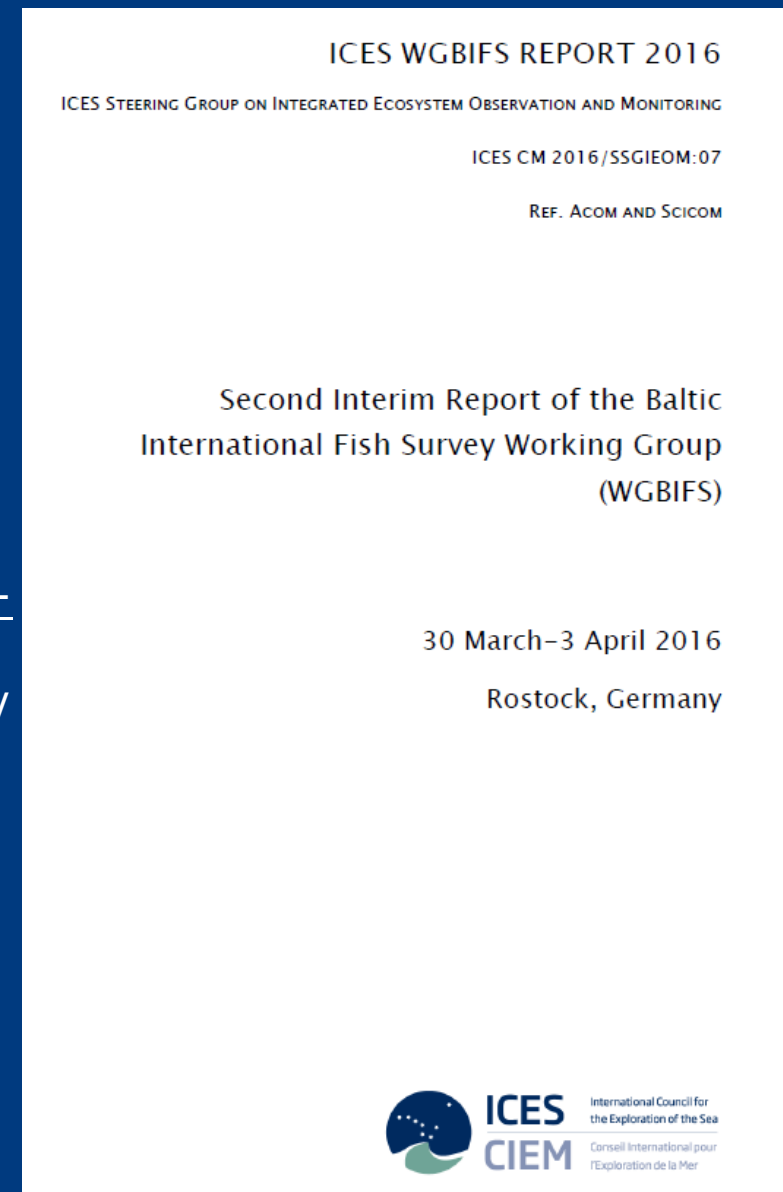
- 597 pages of the text, incl. 23 Annexes,
- description of 12 Terms of References (ToRs),
- discussion and reply on 3 additional, non-routine tasks, i.e. inquiries from the WGBFAS and ICES Secretariat Data-Center.

All the input data linked with the WGBIFS annual report are accessible, and a new one should be systematically uploaded at the ICES WGBIFS Share-Point Website:

<https://community.ices.dk/ExpertGroups/wgbifs/SitePages/HomePage.aspx>

About the present ICES data policy you can read at: <http://ices.dk/marine-data/guidelines-and-policy/Pages/ICES-data-policy.aspx>

After WGBIFS/2016 meeting some significant personnel changes in a group of permanent members of the WGBIFS was noticed. Successors of works realised so far by three colleagues have been founded.



cont. What was done between consecutive WGBIFS meetings?

The presentation made by chair of WGBIFS at the WGBFAS annual meeting in April 2016 with overview concern results from the BITS, BASS and BIAS surveys conducted in 2015 and the 1st quarter of 2016.

Outcomes from the Baltic fishery independent research surveys in 2016-2017 were uploaded to ICES databases (DATRAS, Tow-Database, the BIAS_DB.mdb, the BASS_DB.mdb Access-databases and StoX) and evaluated by WGBIFS will be used as the input data in Baltic fish stocks size assessment, made by WGBFAS.

No change in the submission procedure of the marine litter, occasionally appeared in the BITS survey fish catches, and info about zero-litter hauls must be submitted by the national submitters. The above-mentioned ICES Data Center advice was transferred on 24.05.2016 to all WGBIFS members involved in the BITS surveys realisation.

The national laboratories can continue the Baltic cod stomachs sampling and analysing, based on their experiences, personal and financial possibilities.

The ICES Data-Center coordinated the process of revision incorrect CatCatchWeights data in the DATRAS. This work was expected to be finalized on the 21st of July 2016. Some national delegates to WGBIFS (but not all) respond on the e-mail sent on 21.06.2016 by Anna Osypchuk (ICES Data-Center) however, a final response from the a.m. is expected.

cont. What was done between consecutive WGBIFS meetings?

Danish specialists from the DTU-AQUA requested (April 2016) about revision of fish catch-station distribution in the „gray” zone of the Bornholm (ICES SD 25) during forthcoming the BITS surveys. The problem was solved and the Danish vessel „Dana” will be operated among-others, in the above-mentioned zone and the Polish r/v „Baltica” will inspected the Polish part of the ICES SD 25.

German specialists from the Institut für Ostseefischerei in Rostock requested (end of April 2016) about support by others vessels in realisation of the BASS (2016) survey in the ICES SD 28. The Polish r/v „Baltica” with the Latvian-Polish team on board, in two additional days at sea, realised the above request.

Danish specialists from the DTU-AQUA requested (16.06.2016) about special attention at the WGBIFS/2017 meeting, focused on the results of calibration fish catch data, obtained by old and new the r/v „Havfisken”. The above-mentioned request was repeated on 04.01.2017 by the ICES Secretariat. Calibrated data will be used in April 2017 by the WGBFAS for estimation the Baltic cod stock abundance index.

In connection with the new DC-map ten-years-planning, Danish specialists from the DTU-AQUA requested (12.09.2016) about acceptance of combining the BITS- and Cod-survey in Kattegat by using the facility on the r/v „Havfisken”.

cont. What was done between consecutive WGBIFS meetings?

Working Group on Fisheries Acoustics Science and Technology (WGFAST) on 25.10.2016 submitted recommendation with ID No. 81, suggested to include in the IBAS Manual details on minimum data quality for acoustic (e.g. the list of echosounder frequencies) and trawl data (e.g. the type of trawl and the auxiliary) collection on vessels participating in the BIAS and BASS surveys.

In the period of 06-08.12.2016 at the ICES Secretariat in Copenhagen (based on the ICES Res. 2016/2/SSGIEOM08), held the Workshop on Implementation and Use in IBAS of a New Common Acoustic Database (WKBIFS-ACOU). The StoX programme is proposed as a tool for the IBAS data submission however, the StoX program does not allow us yet to produce the acoustic indices in the same way as they have been calculated so far.

On 19.12.2016 chairman of the WGBIFS submitted to the ICES Secretariat a request concerns financial covering of Mr. Pehr Eriksson's, two days duty trip to Riga on the WGBIFS/2017 meeting. Mr. Eriksson from the Swedish Fishermen's Federation has the long-term experiences in constricting and using in practice as fisherman the pelagic fishing gears in the Baltic, and he initially agree to elaborate independent opinion about standardization of the small-meshed pelagic trawl applied for fish catching during the Baltic routine acoustic surveys. However, the above-mentioned request was not supported (20.12.2016) by the ICES Secretariat because of lack of the budget available to hold-up the suggested duty travel.

cont. What was done between consecutive WGBIFS meetings?

At the WGCHAIRS meeting (23-25.01.2017), WGBIFS chairman expressed opinion about a weak communication between the ICES expert groups and a real advice expected by WGBIFS in following matters:

- a) A new co-chair (Haraldur Einarsson) of the ICES - FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB) was requested to participate at the WGBIFS/2017 meeting with presentation focused on standardisation of the pelagic fishing gear, which will be applied by all the Baltic countries during the BIAS and BASS surveys. Because WGBIFS has not enough competence for proposing particular type of pelagic trawl as standard one, the ICES Secretariat confirmed (24.10.2016) and sent to co-chairs of the WGFTFB recommendation No. 51, concerns the above-mentioned matter.
- b) Who is end-user of the marine litter data reported by WGBIFS during the BITS surveys and what is a present quality status of a part of the DATRAS database devoted storage of the marine debris data?
- c) Why the collected Baltic cod stomachs content data are not yet the subject of the WGSAM interest.

What was done between consecutive WGBIFS meetings?

Requests sent to the WGBIFS chair concerns submission of various information and data

- 1) Henna Rinne from HELCOM (Helsinki) asked (13.04.2016) about aggregated data on herring and sprat from acoustic surveys for produce the maps connected with the Baltic Sea Impact Assessment in 2011-2015, as a part of the of HELCOM holistic assessment of the Baltic Sea Ecosystem Health.
- 2) Jessica Tengvallone, a master student on the Aarhus University (Denmark) asked (23.05.2016) via ICES Secretariat, about description of the procedure of computation and practical use the CPUE data conversion factor, obtained with the national fishing gears and both versions of the TV-3 trawls, during the BITS surveys.
- 3) Jörn Schmidt from the Kiel University (FRG), supported by ICES, asked (15.06.2016) about fulfilling the questionnaire concerns interest of extending the WGBIFS scientific expertises into disciplines from social sciences and humanities.
- 4) The chair of PGDATA and COSTBENWK asked (16.06.2016) about fulfilling the questionnaires related to logistic and technical matters of the Baltic acoustic surveys, what was needed for the ICES workshop.
- 5) Jane Behrens from DTU-Aqua asked (16.06.2016) information about round goby occurrence in the southern Baltic, based on the BITS surveys results.
- 6) Workshop on the Review of the ICES Acoustic-Trawl Survey Database Design (WKIACTDB) asked (16.08.2016) about description of the surveyed area in the routine acoustic-trawl surveys for the ICES geoportal. The same inquire was sent on 20.02.2017 by the ICES Data Center (A. Osypchuk).

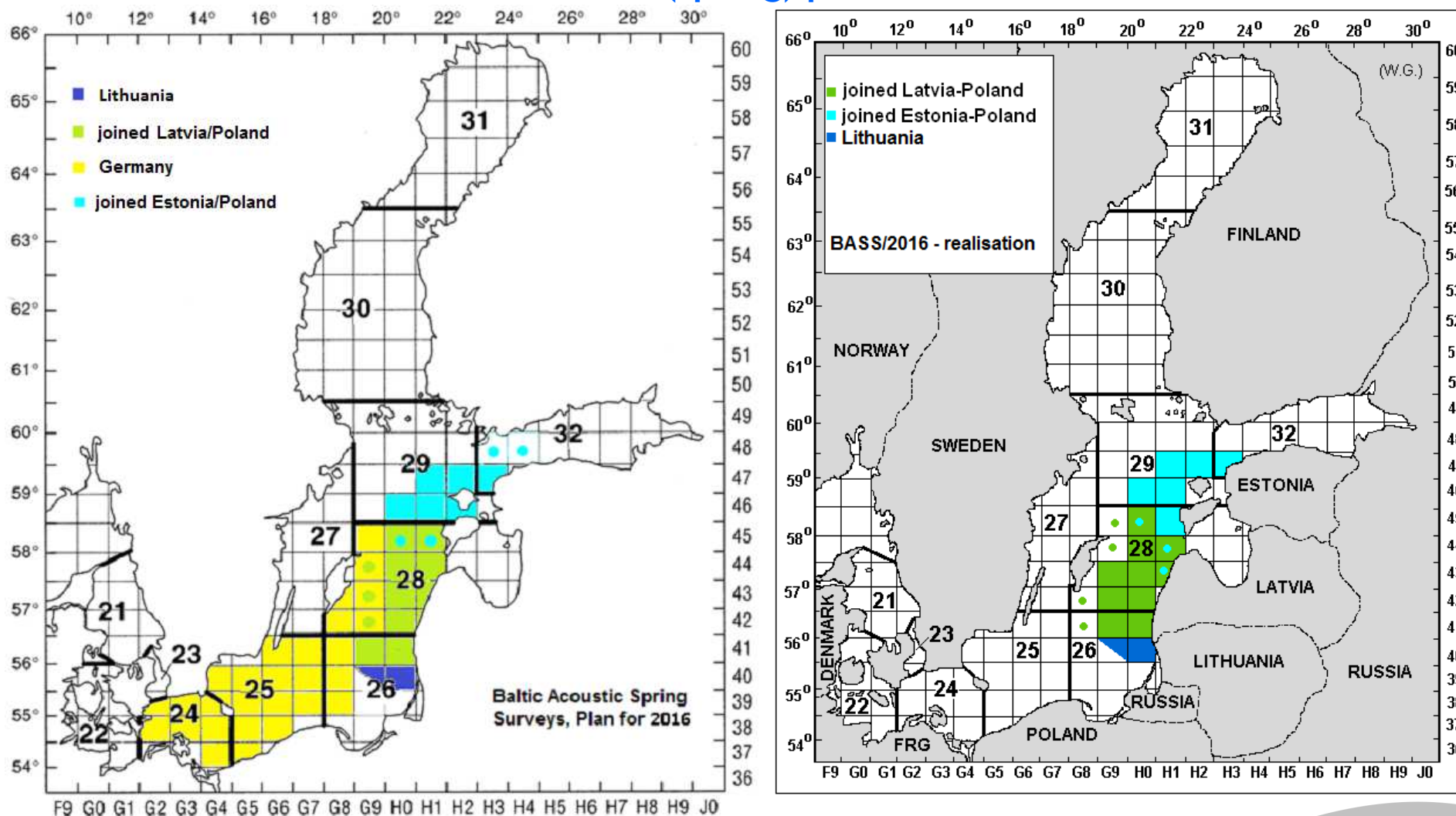
What was done between consecutive WGBIFS meetings? cont. Requests sent to the WGBIFS chair concerns submission of various information and data

- 7a)** Previous chairman of the Steering Group on Integrated Ecosystem Observation and Monitoring (SSGIEOM) asked (September 2016) about an overview of the WGBIFS 2015-2016 outcomes, needed for presentation at a special session during the ICES- ASC/2016.
- 7b)** A new chairman of the SSGIEOM asked (27.02.2017) about provide him with:
- some science highlights the WGBIFS have achieved or are working on,
 - ideas you (WGBIFS) have that would make interactions with the assessment groups (both, stock and integrated ecosystem) more productive; should we provide more documentation or should we look to some joint meetings?,
 - opinion on how we could support more regionalisation of the SSGIEOM groups to draw out regionally common themes from our data collection programs.
- 8)** The ICES Publishing Department asked (02.09.2016) for submission of the description of Category 1 Resolutions, i.e. the SISP Manuals for publication in 2017.
- 9)** The ICES Science Department asked (06.09.2016) for revision the recommendations and action lists, indicated in the WGBIFS/2016 Report, strictly as is advised in the „Guidelines to ICES Expert Groups”.
- 10)** Francois Bastardie from the DTU-Aqua asked (03.10.2016) the ICES Secretariat and WGBIFS chair, for the full access to the WGBIFS SharePoint and intensively demanded submission of the non-aggregated data from BIAS and BASS surveys and shape-files for characterizing Baltic sprat and herring spatial distribution in monitored areas during several recent years; the requested data were planned to be used to inform ongoing Marine Spatial Planning-related projects with relevant ecosystems components; access of the a.m. recipient to the WGBIFS SharePoint, with a list of restrictions indicated by WGBIFS chair, was granted by the ICES Secretariat and raw data from the Baltic acoustic surveys were not transferred by WGBIFS chair.

What was done between consecutive WGBIFS meetings?
cont. Requests sent to the WGBIFS chair concerns submission of various information and data

- 11) In the last days of November 2016, the ICES Secretariat asked for revision of the list of ToRs dedicated on the WGBIFS/2017 meeting; the amended set of ToRs was presented to the ACOM-SCICOM Forum.
- 12) The ICES Data Center (27.01.2017), mobilised by the ACOM/SCICOM, again requested WGBIFS/2017 meeting participants about an attempt to calculate the LFI and MML indicators, based on the BITS survey results.
- 13) In the 1st half of Feb. 2017, the former and the present WGBFAS chairs asked the WGBIFS for continuation works on preparation maps showing demersal fish species distribution in the Baltic, based on the BITS surveys results moreover, about fulfilment a newly prepared table with the status of input data collected during the BITS, BASS and BIAS surveys and directly linked with Baltic fish stocks size assessments realised by the WGBFAS.
- 14) M. Bergenius - the Central Baltic Herring stock assessor asked (22.03.2017) about preparation the BIAS index for the ICES SD 32, so far not considered within the WGBIFS meetings. Such data are needed for the CBH stock assessment process during the benchmark meeting in December 2017.

BASS/2016 (spring) plans vs. realization



The BASS - 2016 survey vs. plan was completed in 47% by coverage of the ICES statistical rectangles however, broad „white” areas in the ICES SDs 24, 25 and parts of ICES SDs 26 and 28 wasn't covered with acoustic-trawl investigations. Materials concerns monitoring of the Baltic sprat stock distribution and abundance in spring 2016 are not completed.

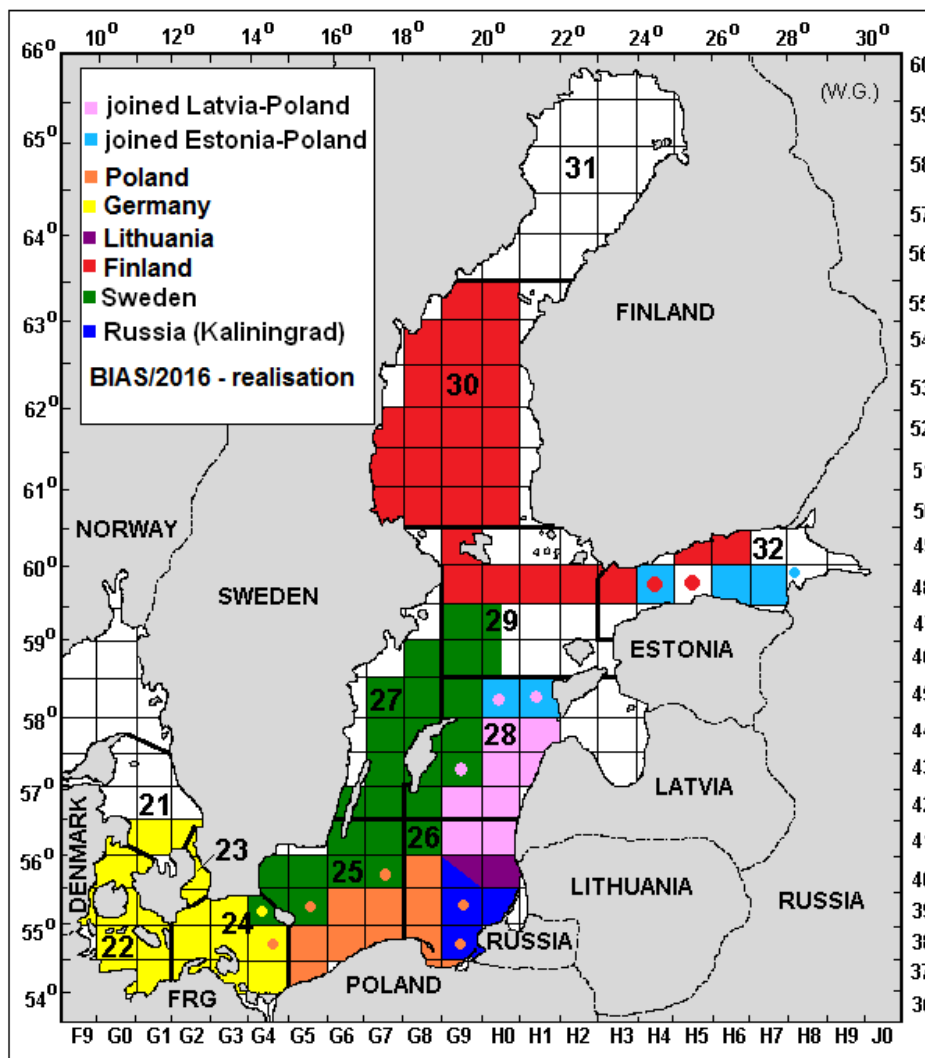
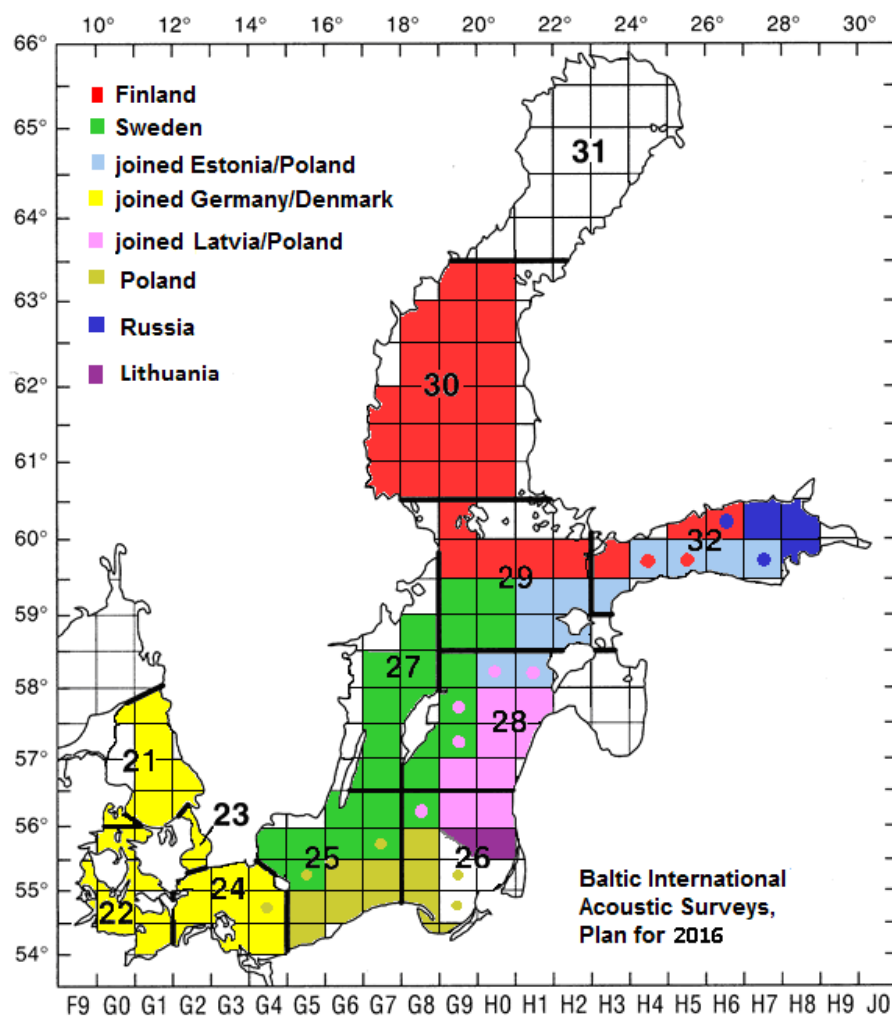
BASS/2016 (spring) realization in details

Executing the survey	Period of investigations	Number of the ICES statistical rectangles covered with acoustic-trawl monitoring	Echointegration tracks on the distance (NM)	Number of fish catch-stations	Number of hydrological stations
LAT-POL	12-20.05.2016	8 whole + 6 partly	645	25	26
EST-POL	22-26.05.2016	6 whole + 3 partly	251	13	13
GER	02-22.05.2016*)	not performed			
LIT	03-04.05.2016	1 whole + 1 partly	126	7	7
RUS	-	not performed			

*) planned period; survey was not realized because of technical problems with the vessel

Summary	Coverage with acoustic-trawl investigations	Linear distance of echointegration tracks (NM)	Number of fish catch-stations	Number of hydrological stations
Plans BASS - 2016	47 of the ICES statistical rectangles			
Realization BASS - 2016	18 whole + 4 partly the ICES rectangles	1022	45	46

BIAS/2016 (autumn) plans vs. realization



The BIAS/2016 survey vs. plan was completed in 96% however, some „white” areas in the ICES SDs 29-S and 32-E are indicated. Materials concern Baltic sprat, herring and cod stocks distribution and abundance in autumn 2016 can be accepted as completed.

BIAS/2016 (autumn) realization in details

Executing the survey	Period of investigations	Number of the ICES statistical rectangles covered with acoustic-trawl monitoring	Echointegration tracks on the distance (NM)	Number of fish catch-stations	Number of hydrological stations
LAT-POL	11-20.10.2016	9 whole + 2 partly	638	23	25
EST-POL*)	21-28.10.2016	5 whole + 1 partly	612	9	9
FIN	22.09.-04.10.2016	28 whole + 2 partly	1760	43	44
GER/DEN	30.09.-20.10.2016	20 whole + 2 partly	1179+178	55	81
LIT	13-14.10.2016	1 whole + 1 partly	124	6	6
POL	13-30.09.2016	11 whole +5 partly	875	36	40
RUS**) - Kaliningrad	01-10.10.2016	3 whole + 1 partly	234	10	20
SWE	01-15.10.2016	24 whole + 2 partly	1381	49	48

*) survey shortened because of technical problems with the vessel,

**) RUS – St. Petersburg, BIAS-2016 survey not performed due to unfortunate coincidence.

Summary	Coverage with acoustic-trawl investigations	Linear distance of echointegration tracks (NM)	Number of fish catch-stations	Number of hydrological stations
Plans BIAS - 2016	112 of the ICES statistical rectangles			
Realization BIAS - 2016	102 whole + 6 partly the ICES rectangles	6981	231	273

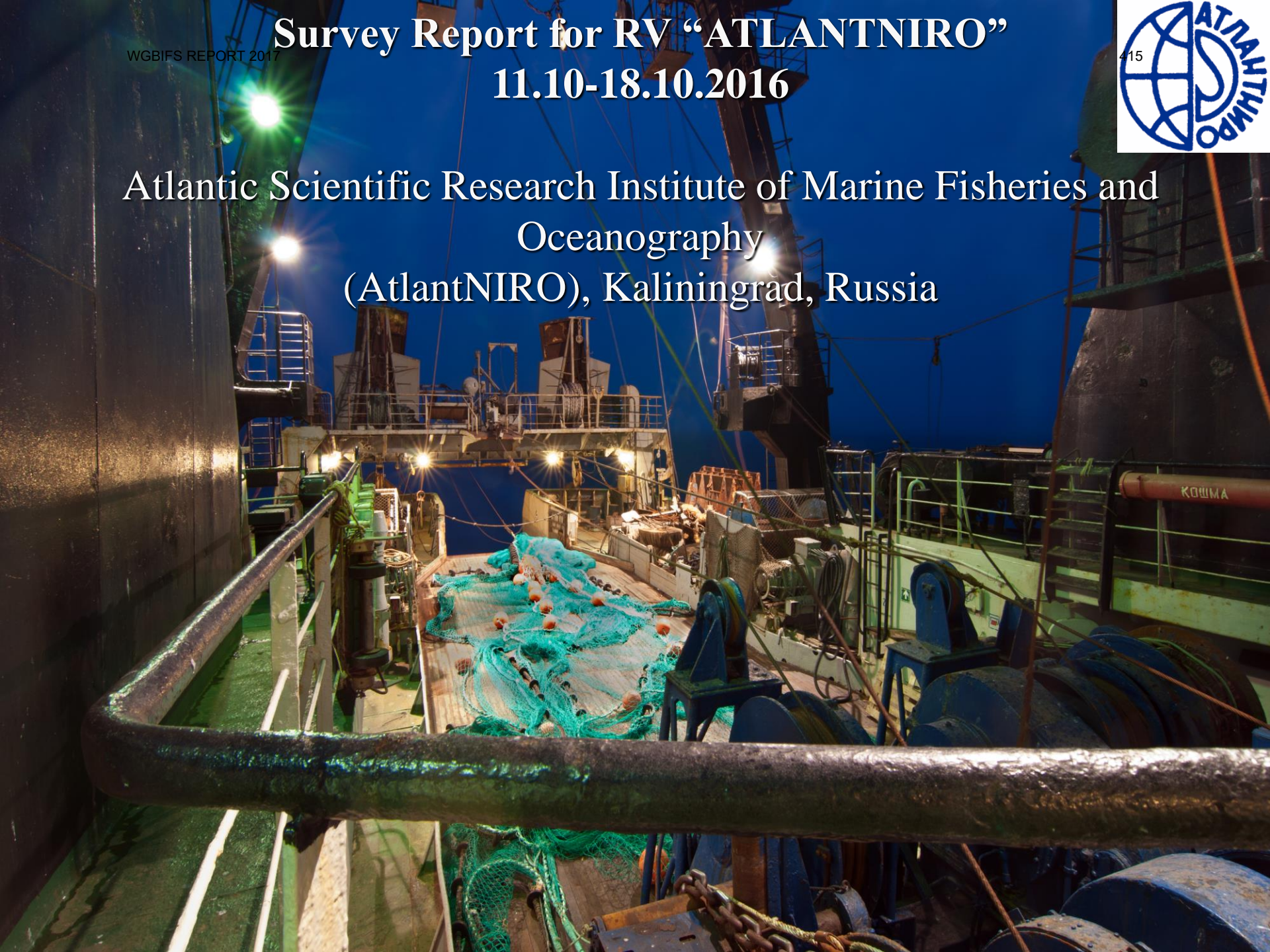
The main tasks of the WGBIFS/2017 meeting - Summary of the Workplan - Year 3rd

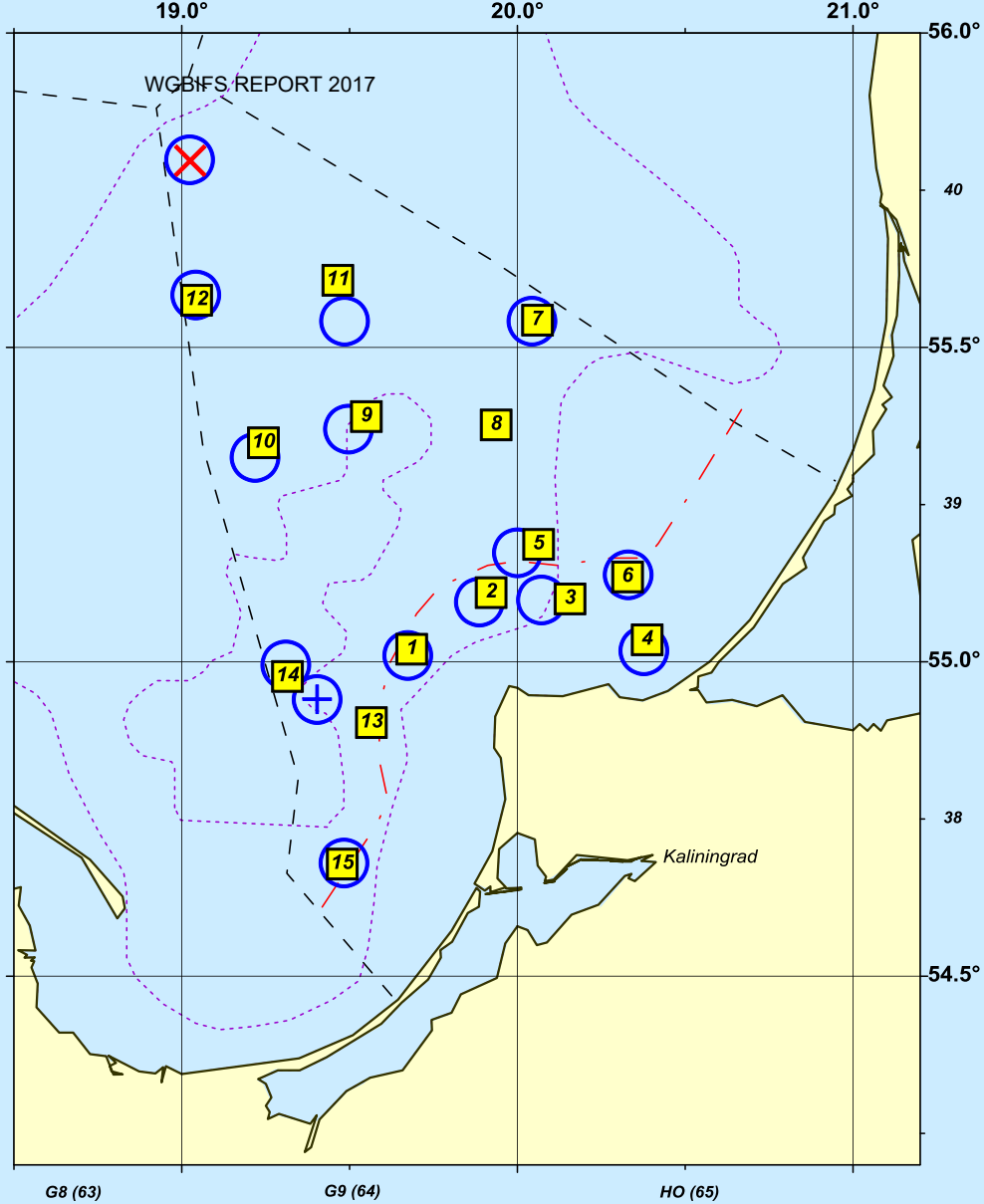
- Compilation the survey results from 2016 and the first half of 2017 and reporting to WGBFAS.
- Coordination and planning the schedule for routine research surveys in the second half of 2017 and the first half of 2018.
- Coordinate the marine litter sampling programme in the BITS.
- Final reviewing and updating the common surveys manuals (IBAS, BITS) according to SISP standards.
- Proposals for improvement of quality of acoustic indices and for further standardization of the BIAS surveys.
- An attempt to implement the standard pelagic fishing gear to control-catches in BIAS and BASS surveys.
- Deliberation on the ToRs for next 3 years work of WGBIFS and selection of the 2018 venue.
- Election of candidate on the position of WGBIFS chairperson for 2018-2020.
- Final report, by 15 May 2017 to SSGIEOM, SCICOM and ACOM - based on 10 standard ToRs and 2 additional tasks requested by other WGs with resume from recent 3 years activities of the WGBIFS.

Survey Report for RV “ATLANTNIRO” 11.10-18.10.2016



Atlantic Scientific Research Institute of Marine Fisheries and
Oceanography
(AtlantNIRO), Kaliningrad, Russia





**Figure 1. Trawl positions
for RV "ATLANTNIRO" in 11-
18 October 2016**

- The executed trawling stations
- The recommended ICES trawling stations
- + - Only hydrological are executed in exchange to trawling stations
- X - Did not carried after 2009 (invalid in March 2009)

Table 1. Fish control-catch results in the Baltic Sea ICES SD 26 from Russian BITS survey (RV “ATLANTNIRO”, 11–18.10.2016)

Haul number	Date	ICES rect.	ICES SD	Mean bottom depth [m]	Head-rope depth [m]	Hor. open [m]	Ver. open [m]	Trawl. speed [knt]	Trawl. direct [°]	Geographical position				Time Start	Haul dur. [min]	Total catch [kg]
										Start		End				
										Latitude 00° 00.0'N	Longitude 00° 00.0'E	Latitude 00° 00.0'N	Longitude 00° 00.0'E			
1	11.10.2016	39G9	26	74	74	97	5	3,0	220	55 01.2	19 41.1	55 00.0	19 39.6	17:40	30	262,6
2	12.10.2016	39G9	26	66	66	92	5	3,0	238	55 06.6	19 55.3	55 05.7	19 53.1	8:39	30	520,7
3	12.10.2016	39HO	26	55	55	98	5	3,1	270	55 06.0	20 09.4	55 06.0	20 06.7	13:10	30	297,3
4	12.10.2016	39HO	26	27	27	98	5	2,9	200	55 02.1	20 23.2	55 00.8	20 22.2	17:10	30	62,7
5	13.10.2016	39HO	26	60	60	91	5	2,9	250	55 11.2	20 03.8	55 10.7	20 01.5	10:40	30	177,1
6	13.10.2016	39HO	26	43	43	90	5	3,0	206	55 08.1	20 19.7	55 06.8	20 18.5	14:27	30	159,6
7	14.10.2016	40HO	26	80	80	89	5	3,0	226	55 32.6	20 03.6	55 31.5	20 01.7	8:35	30	225,1
8	14.10.2016	39G9	26	82	82	90	5	3,0	201	55 22.6	19 56.2	55 21.7	19 55.6	13:28	20	141,3
9	14.10.2016	39G9	26	97	97	95	5	2,9	235	55 23.4	19 33.0	55 22.6	19 30.9	17:20	30	3,0
10	15.10.2016	39G9	26	86	86	97	5	3,1	215	55 20.9	19 14.6	55 19.7	19 13.0	8:52	30	43,9
11	15.10.2016	40G9	26	85	85	92	5	3,0	250	55 36.4	19 27.9	55 35.9	19 25.5	14:08	30	108,8
12	17.10.2016	40G9	26	88	88	93	5	3,0	0	55 34.5	19 02.6	55 36.0	19 02.7	7:27	30	333,5
13	17.10.2016	38G9	26	86	86	96	5	3,0	4	54 54.2	19 33.9	54 55.7	19 34.2	15:55	30	344,2
14	18.10.2016	38G9	26	106	106	94	5	2,9	350	54 58.6	19 18.9	55 00.1	19 18.5	7:30	30	9,9
15	18.10.2016	38G9	26	87	87	92	5	2,9	51	54 40.7	19 28.7	54 41.5	19 30.9	11:12	30	200,8
SD26				75	75	94	5	3,0	194							2890

Table 2. Catch composition on the bottom trawl survey in 11-18 October 2016Sub-Division: 26Vessel: STM - "Atlantniro"Net type: bottom trawl - TV-3#930Month/Year: October/2016Haul duration: 30 minuteMesh bar size: 6.5 mm

Total of hauls	recta ngle	depth meter	haul duration	total catch, kg	cod		flounder		herring		sprat	
					kg	%	kg	%	kg	%	kg	%
15	4064, 4065, 3864, 3964, 3965	27- 106	30	2890.4	1735.4	60.0	273.1	9.4	797.8	27.6	71.0	2.5

Number of biological samples (maturity and age material, *maturity only):			
Species	Length	Maturity	Age (otoliths)
<i>Clupea harengus</i>	3526	924	355
<i>Gadus morhua</i>	3789	1026	526
<i>Platichthys flesus</i>	981	512	511
<i>Sprattus sprattus</i>	799	122	122

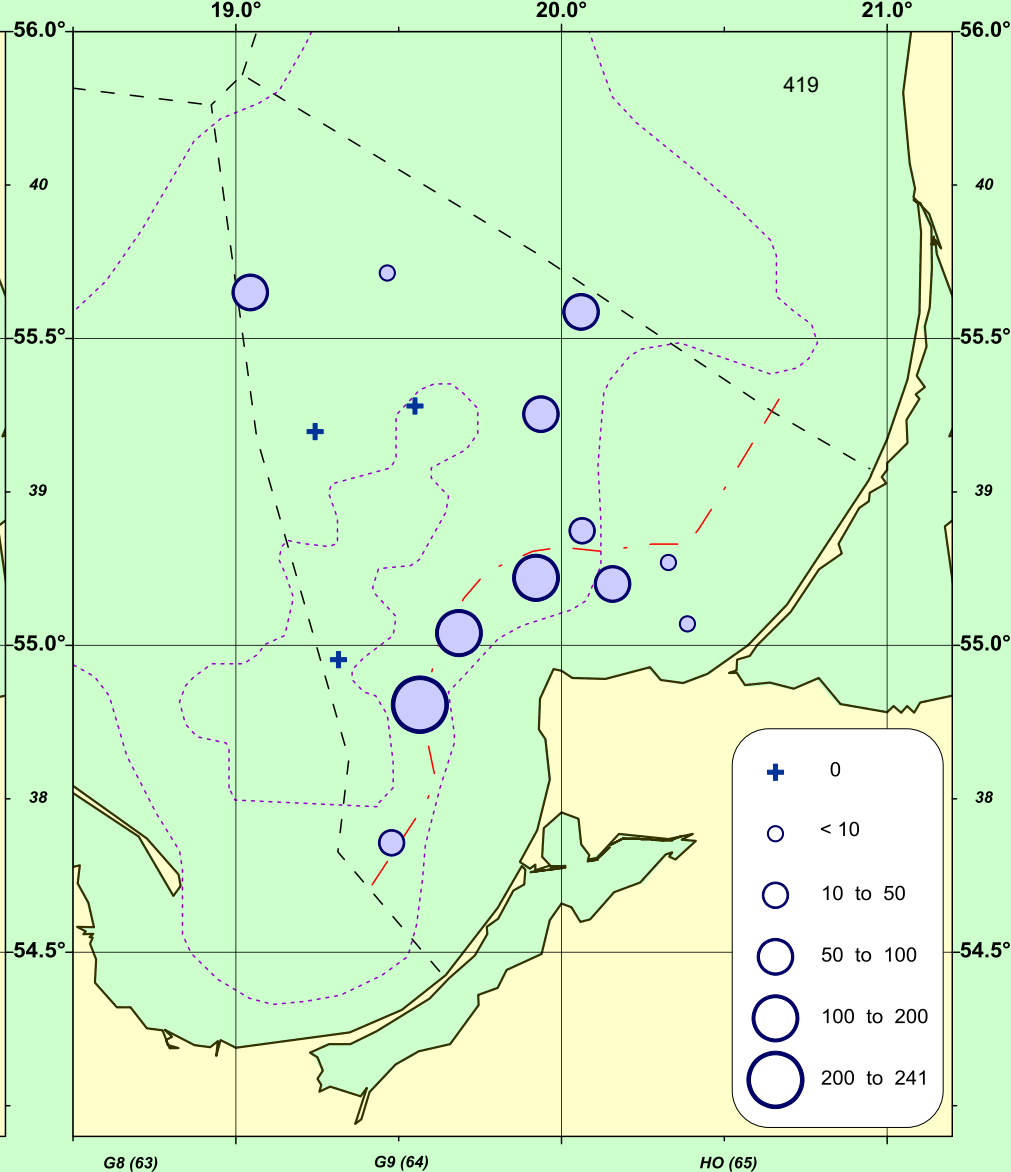
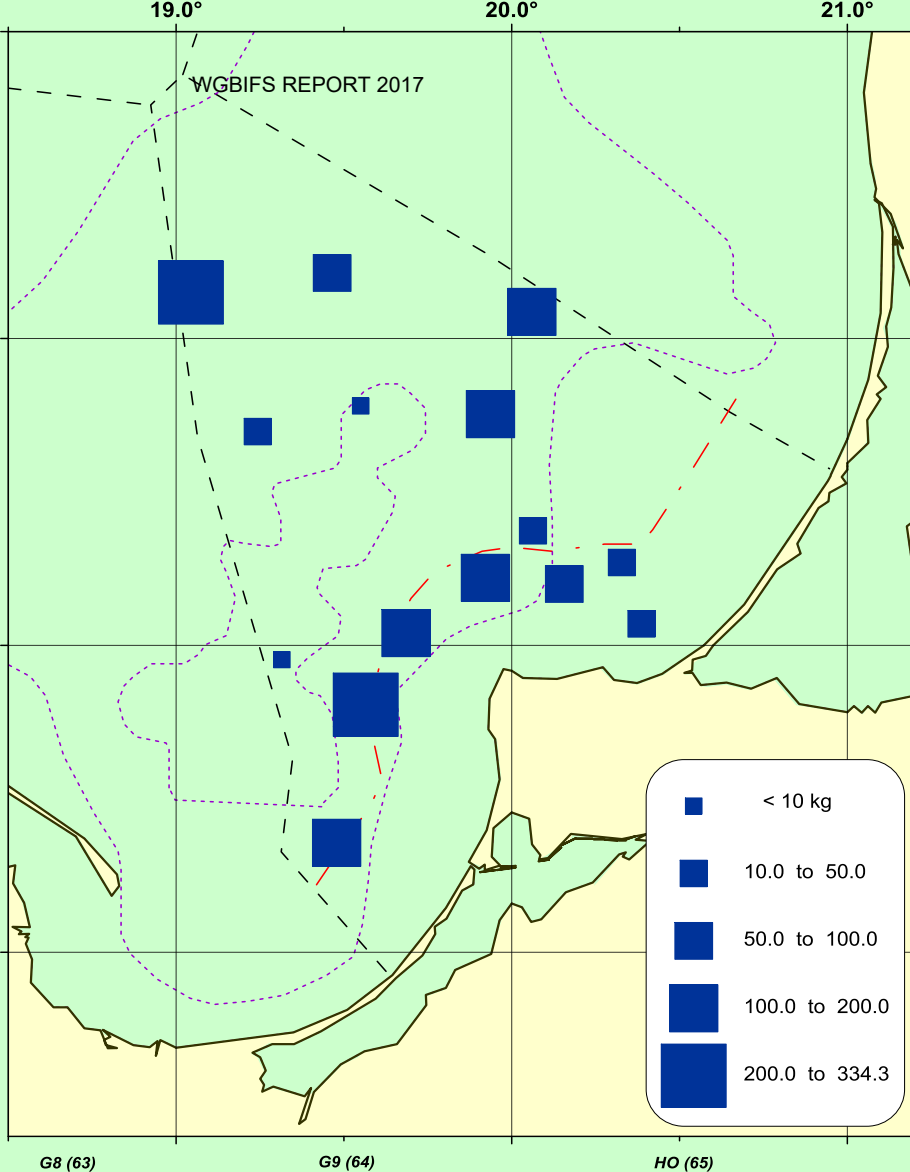


Fig. 2. Landings of cod (kg) for 30 minutes of a haul in 11-18 October 2016

Fig. 3. Landings of young cod in length up to 30 cm (in numbers) for 30 minutes of a haul in 11-18 October 2016

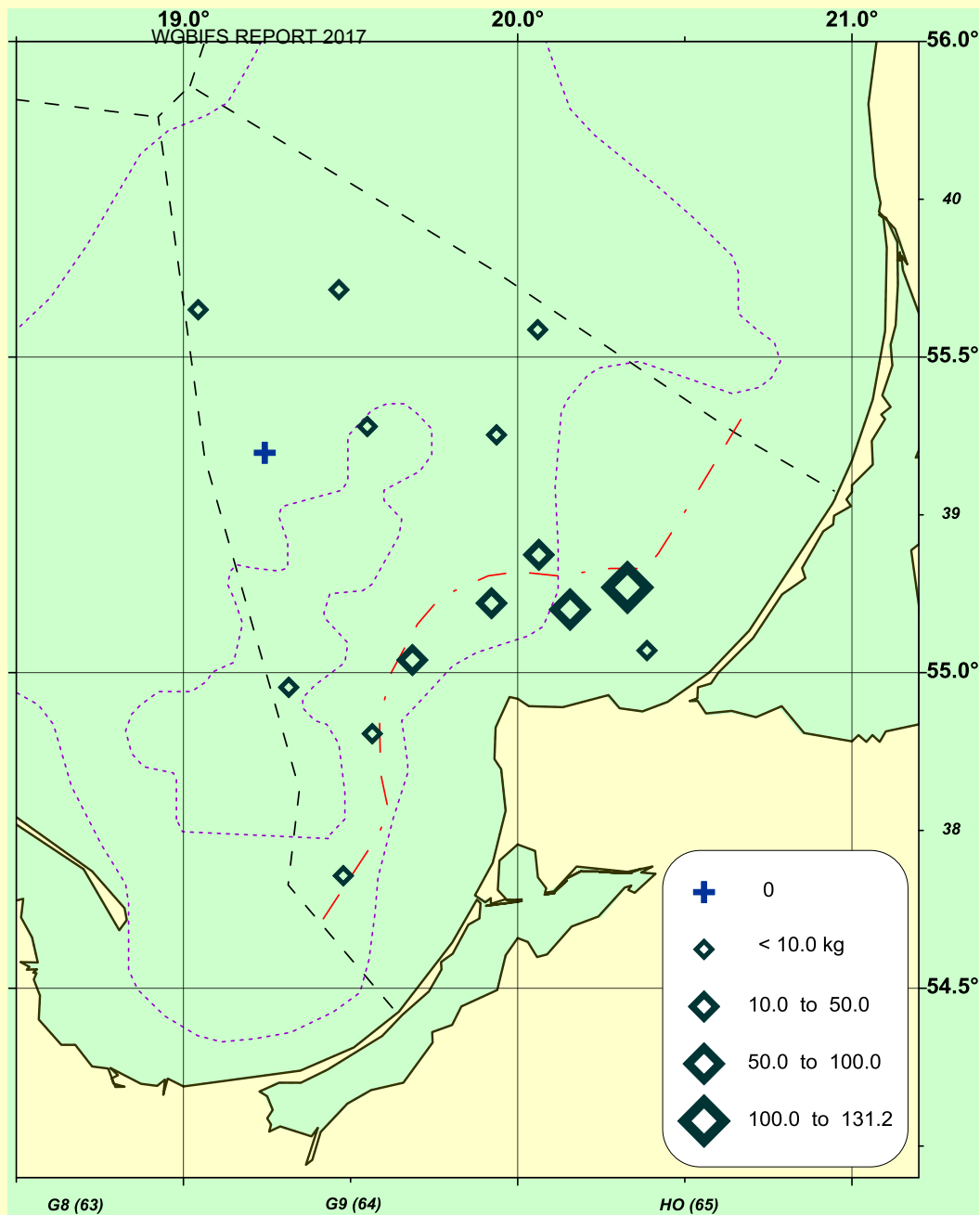


Fig. 4. Landings of flounder (kg) for 30 minutes of a haul in 11-18 October 2016

Fig. 5. Length distribution of cod in Russian water area (Sub-division 26) in 11-18 October 2016 (materials of international bottom trawl survey)

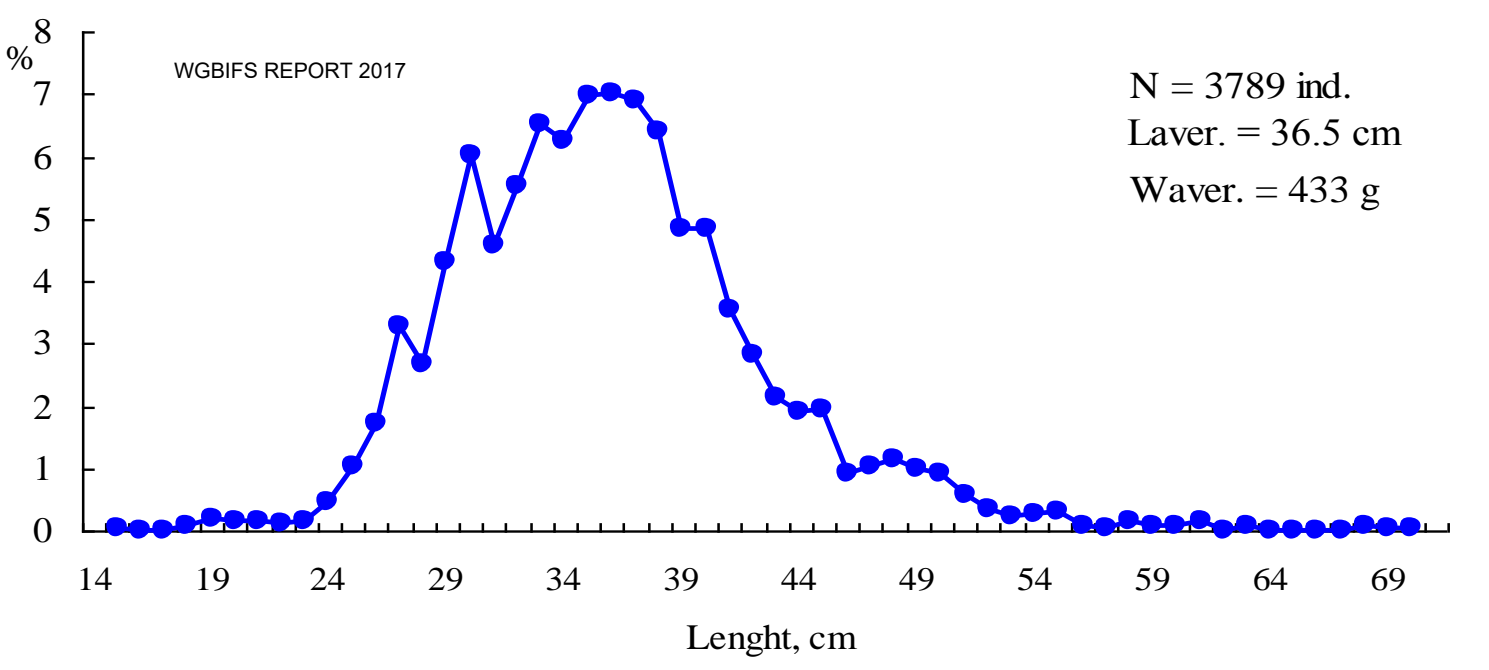
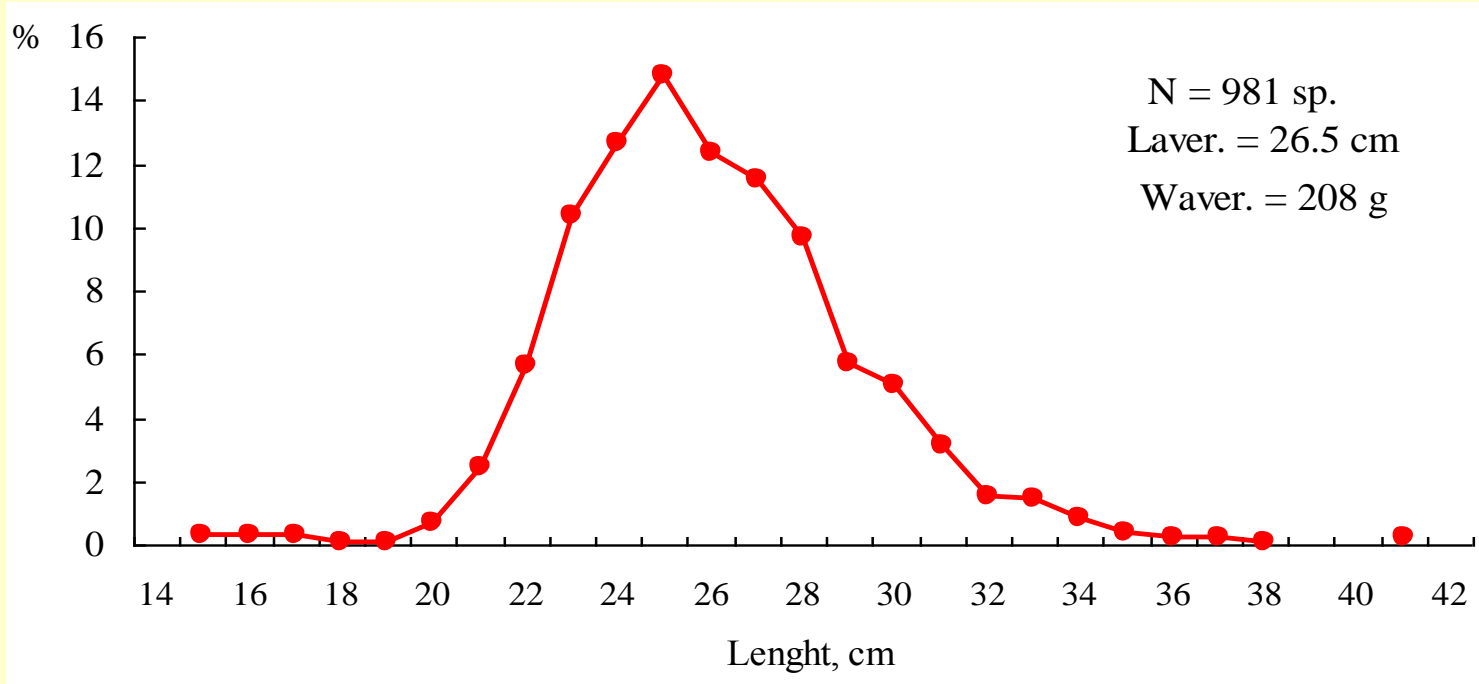
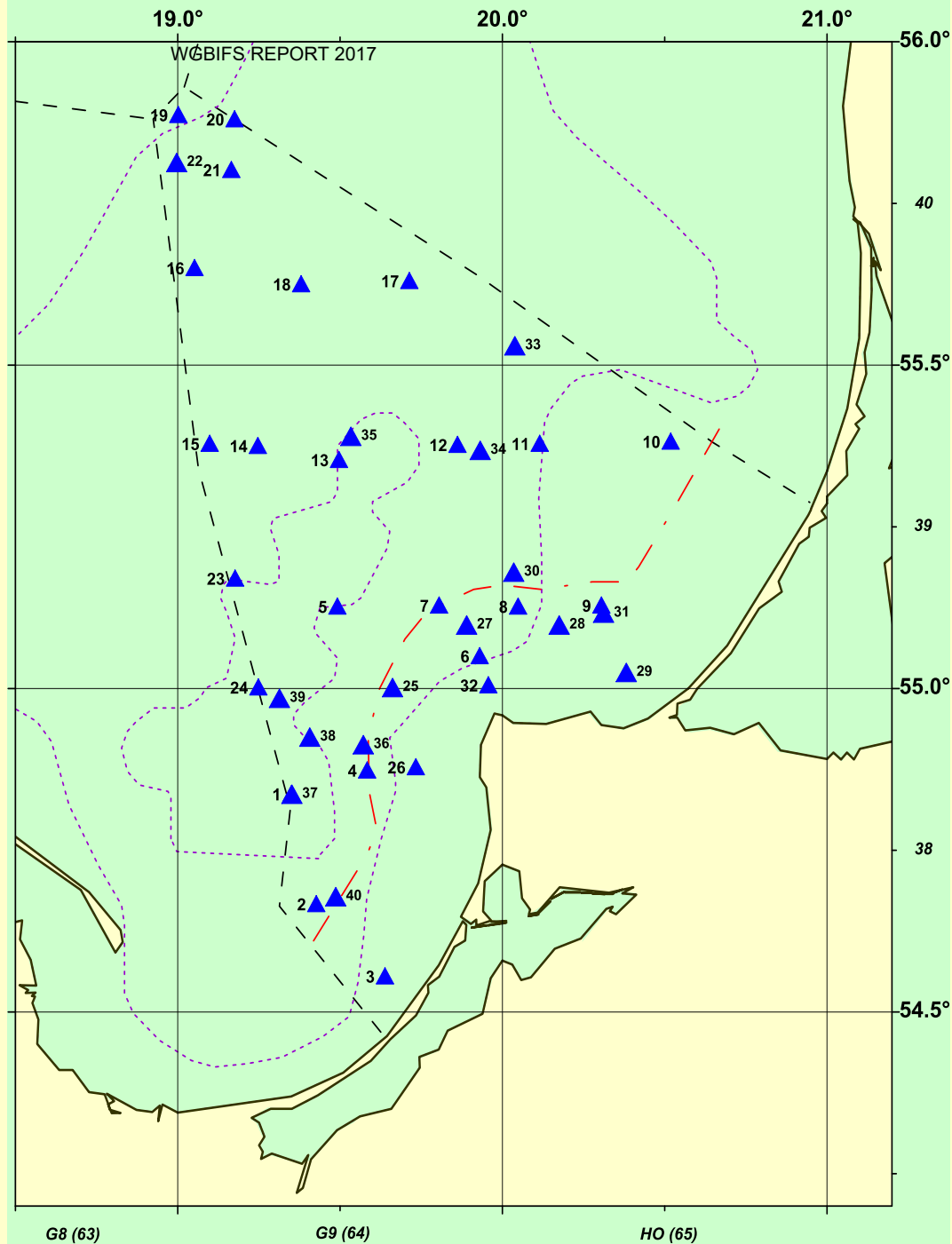


Fig. 6. Length distribution of flounder in Russian water area (Sub-division 26) in 11-18 October 2016 (materials of international bottom trawl survey)





**Fig. 7. Location of⁴²²
hydrographic stations in 02-
18 October 2016, RV
“ATLANTNIRO”**

**Hydrological
stations**

40

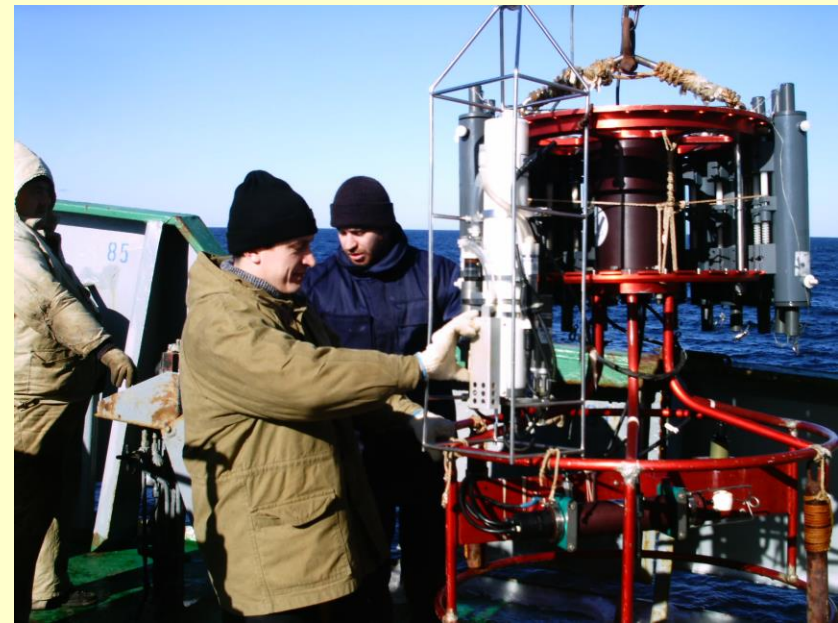


Fig. 8. Bottom water temperature distribution (°C) in 02-13 October 2016, RV "ATLANTNIRO"

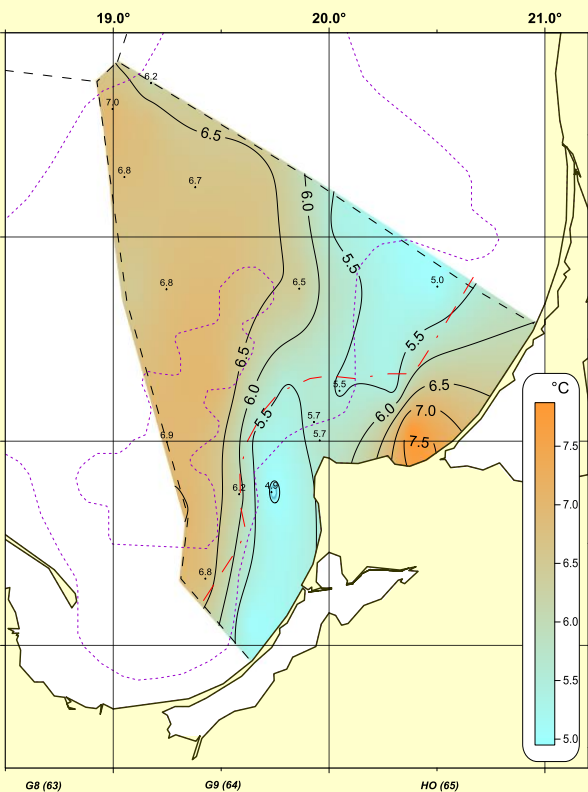


Fig. 9. Bottom water salinity distribution (‰) in 02-13 October 2016, RV "ATLANTNIRO"

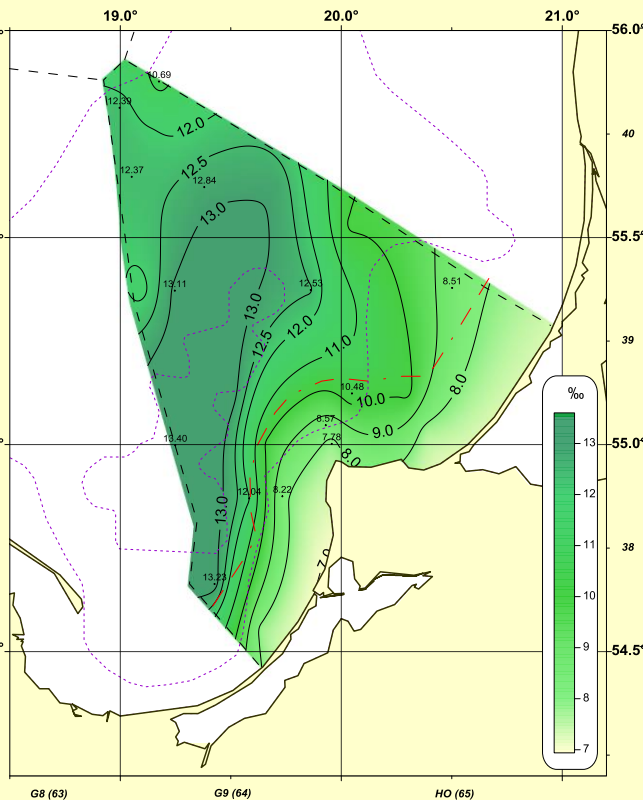


Fig. 10. Bottom water oxygen concentration (ml/l) in 02-13 October 2016, RV "ATLANTNIRO"

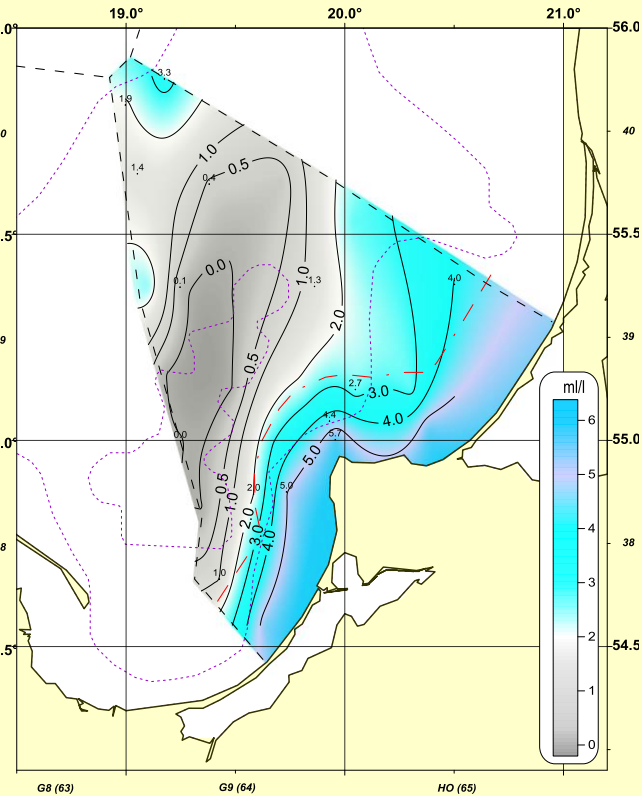






Table 3. The some biological parameters of the main fish species

Species	Length range, cm	Length aver., cm	Weight aver., g
<i>GADUS MORHUA</i> 	15 - 70	36,5	433
<i>PLATICHTHYS FLESUS</i> 	15 - 41	26,5	208
<i>CLUPEA HARENGUS</i> 	11,0 - 29,0	20,6	51,1
<i>SPRATTUS SPRATTUS</i> 	6,5 - 14,5	10,7	8,25

THANK YOU!



German BITS in Q4 2016 & Q1 2017

Martina Bleil & Andrés Velasco

Thünen Institute of Baltic Sea Fisheries, Rostock



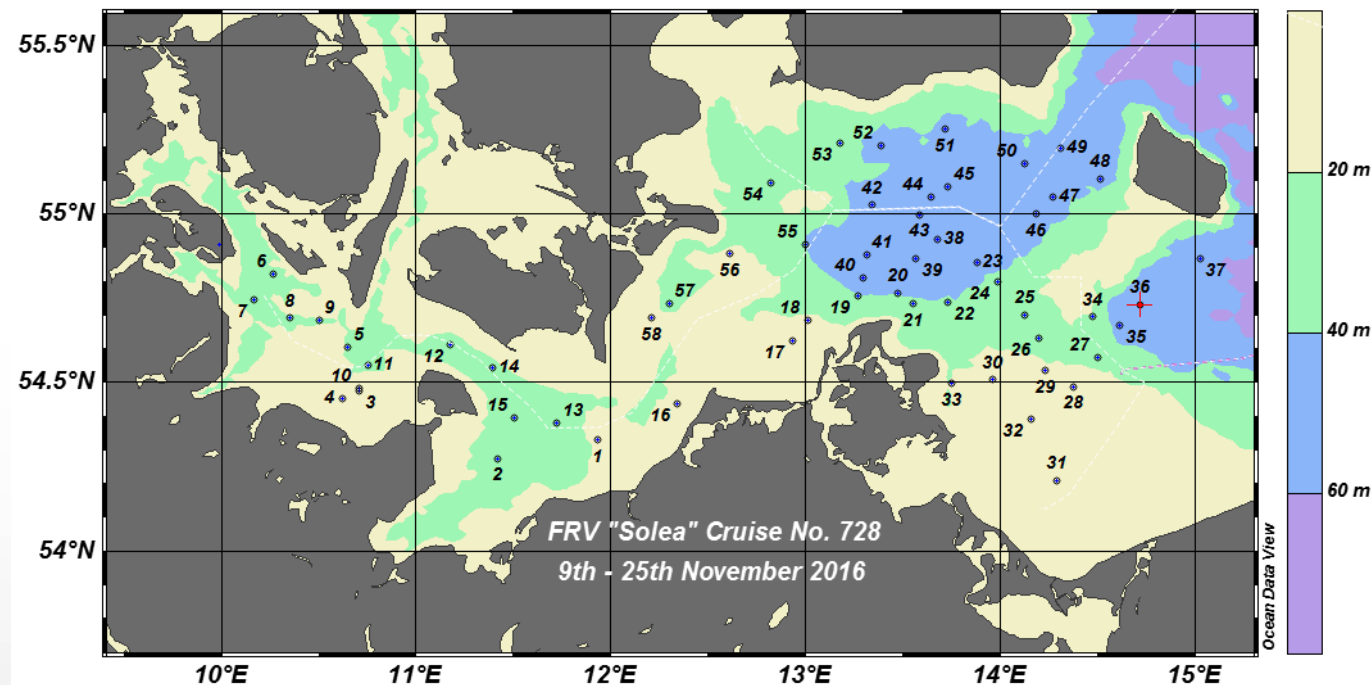
Riga,
27.03.2017

Introduction

- The autumn survey 2016 and the spring survey 2017 are the 35th autumn and the 36th spring German trawl surveys since 1981
- They took place from 9th - 25th November 2016 and from 20th February to 14th March 2017
- The German BITS covers Danish, Swedish, Polish and German territorial waters in the Belt Sea (Mecklenburg- and Kiel Bight and Belts) in ICES SD22 and the Baltic West from Bornholm in ICES SD24 (Arkona Sea)
- In total 114 fishery hauls and 114 hydrography stations (95 % of planned) in ICES SD22 and SD24 were carried out

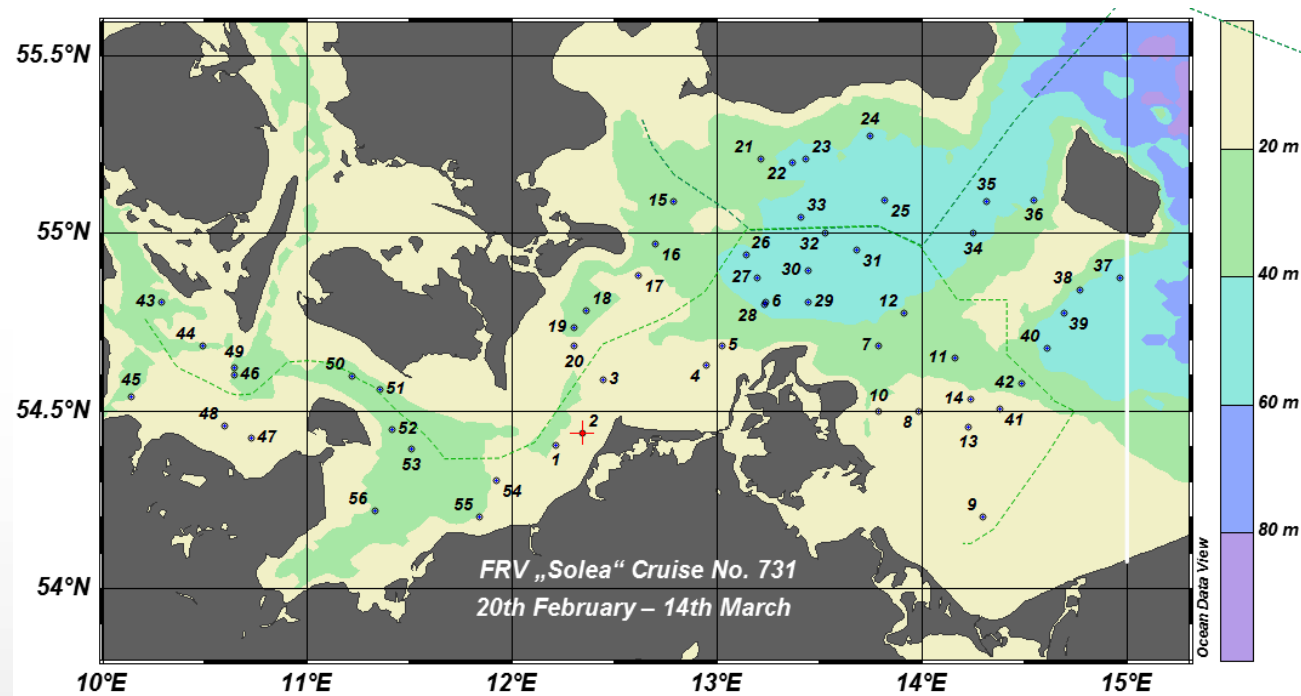
German BITS Q4 2016

- 58 fishery hauls and 58 hydrography stations (97 % of planned due bad weather) were carried out in ICES SD22 and SD 24
- In total 1026 COD, 637 FLE, 920 PLE, 726 DAB, 196 TUR & 5 BLL were collected for measuring length, weight, sex, maturity and age
- The mean catch per half hour (CPUE) was 66.7 kg of COD and 89.0 kg of FLE



German BITS Q1 2017

- 58 fishery hauls and 61 hydrography stations (100 % of planned) were carried out in ICES SD 22 and SD24
- In total 1285 COD, 682 FLE, 758 PLE, 536 DAB, 132 TUR & 3 BLL were collected for measuring length, weight, sex, maturity and age
- The mean catch per half hour (CPUE) was 105.7 kg of COD and 25.4 kg of FLE

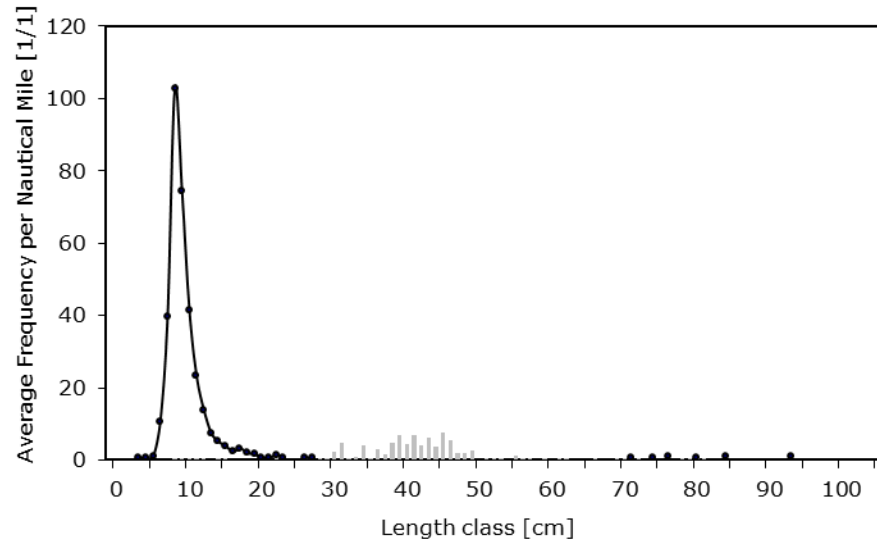


Length frequencies of Cod by depth strata (ICES SD 22, 10-29 m, Q4 2016 & Q1 2017)

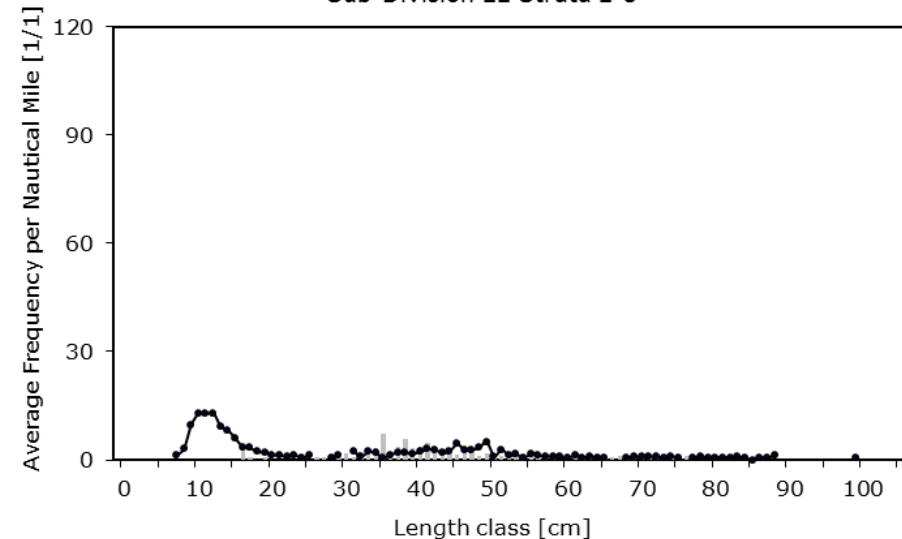
WGBIFS REPORT 2017

430

German BITS Autumn 2016 Stratified Random Groundfish Survey
Survey FRV "SOLEA"
Cod Average Frequency per Nautical Mile
Sub-Division 22 Strata 2-3



German BITS Spring 2017 Stratified Random Groundfish Survey
Survey FRV "SOLEA"
Cod Average Frequency per Nautical Mile
Sub-Division 22 Strata 2-3



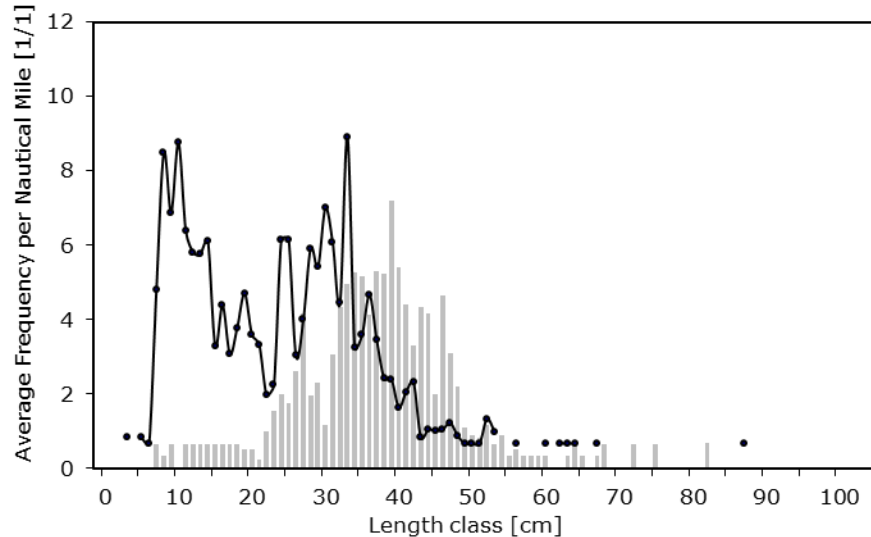
- the length range 10–25 cm of young cod in the depth layer 10-29 m in SD 22 in autumn 2016 and spring 2017 compared to the previous year is increased

Length frequencies of Cod by depth strata (ICES SD 24, 10-39 m, Q4 2016 & Q1 2017)

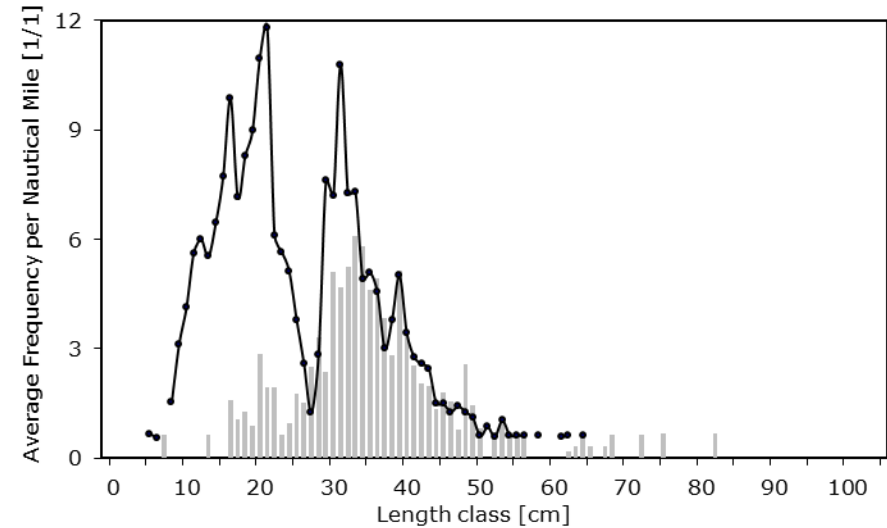
WGBIFS REPORT 2017

431

German BITS Autumn 2016 Stratified Random Groundfish Survey
FRV "SOLEA"
Cod Average Frequency per Nautical Mile
Sub-Division 24 Strata 2-4



German BITS Spring 2017 Stratified Random Groundfish Survey
FRV "SOLEA"
Cod Average Frequency per Nautical Mile
Sub-Division 24 Strata 2-4



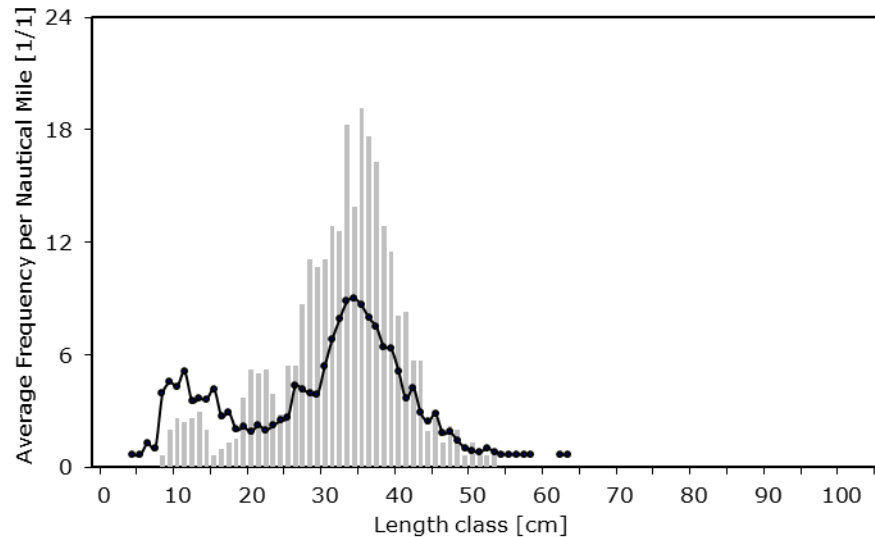
- the number per mile of length range 25–40 cm of young cod in the depth layer 10-39 m in SD 24 in autumn 2016 and spring 2017 compared to the previous year is increased

Length frequencies of Cod by depth strata (ICES SD 24, 40-59 m, Q4 2016 & Q1 2017)

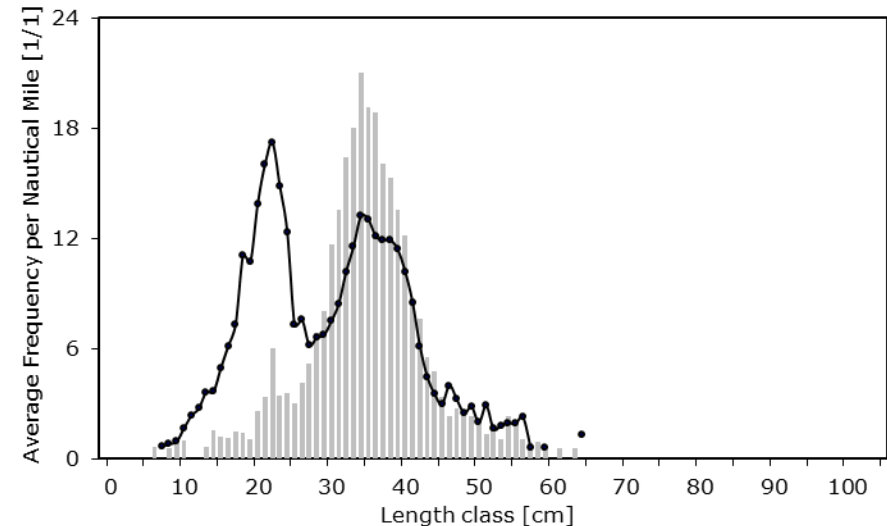
WGBIFS REPORT 2017

432

German BITS Autumn 2016 Stratified Random Groundfish Survey
FRV "SOLEA"
Cod Average Frequency per Nautical Mile
Sub-Division 24 Strata 5-6



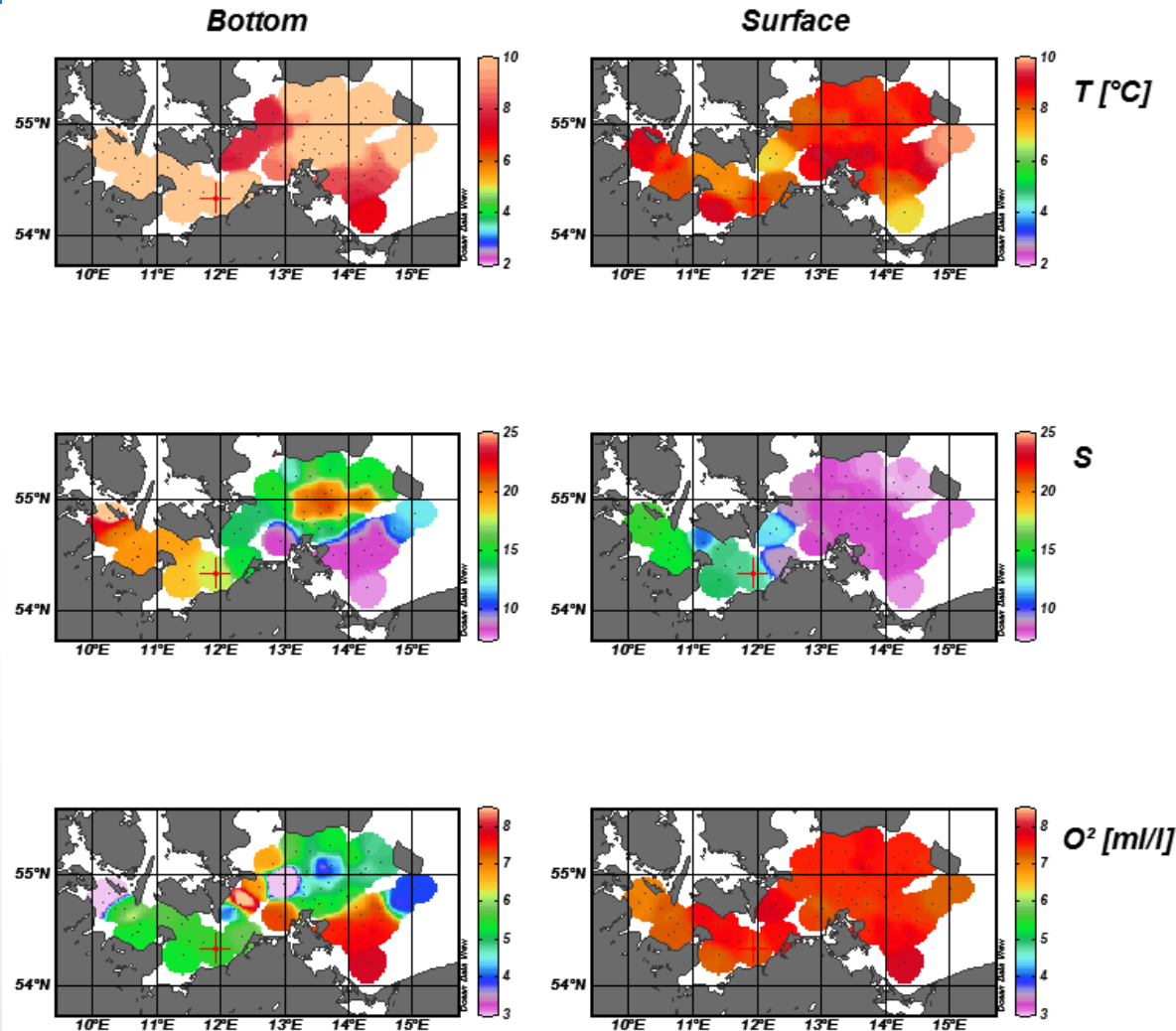
German BITS Spring 2017 Stratified Random Groundfish Survey
FRV "SOLEA"
Cod Average Frequency per Nautical Mile
Sub-Division 24 Strata 5-6



- the number per mile of length range 25–40 cm of young cod in the depth layer 40-59 m in SD 24 in autumn 2016 and spring 2017 compared to the previous year is in autumn decreased and in spring similar

Hydrography in Q4 2016

- typical autumn conditions with surface temperatures between 6.9 - 9.9 °C
- salinity of the surface water decreased from 15.9 - 7.5 from west to east
- lowest temperature value was found in the area south of Bornholm at 6.9 °C
- salinity above the permanent halocline at a water depth of 29 m south of Bornholm was 8.2
- salinity increased below the halocline at a depth of 44 m in the Arkona Sea up to 21.7 at 10.9 °C
- oxygen concentration close to the bottom was between 3.4-9.6 ml/l



Hydrography in Q1 2017

- typical spring conditions with surface temperatures between 2.0 - 3.8 °C
- salinity of the surface water decreased from 16.3 - 7.8 from west to east
- lowest temperature value was found in the area East of island Rügen at 2.0 °C
- salinity above the permanent halocline at a water depth of 20.8 m in the Arkona Basin was 8.4
- salinity increased below the halocline at a depth of 42 m in the Arkona Basin up to 20.8 at 3.6 °C
- oxygen concentration close to the bottom was between 5.9-9.2 ml/l



Thank you!



**BALTIC INTERNATIONAL TRAWL SURVEY (BITS)
IN THE LITHUANIAN ESPECIAL ECONOMIC ZONE OF THE BALTIC SEA**



BITS 2016 Q4

(R/V "DARIUS" 2016-11-24-25)

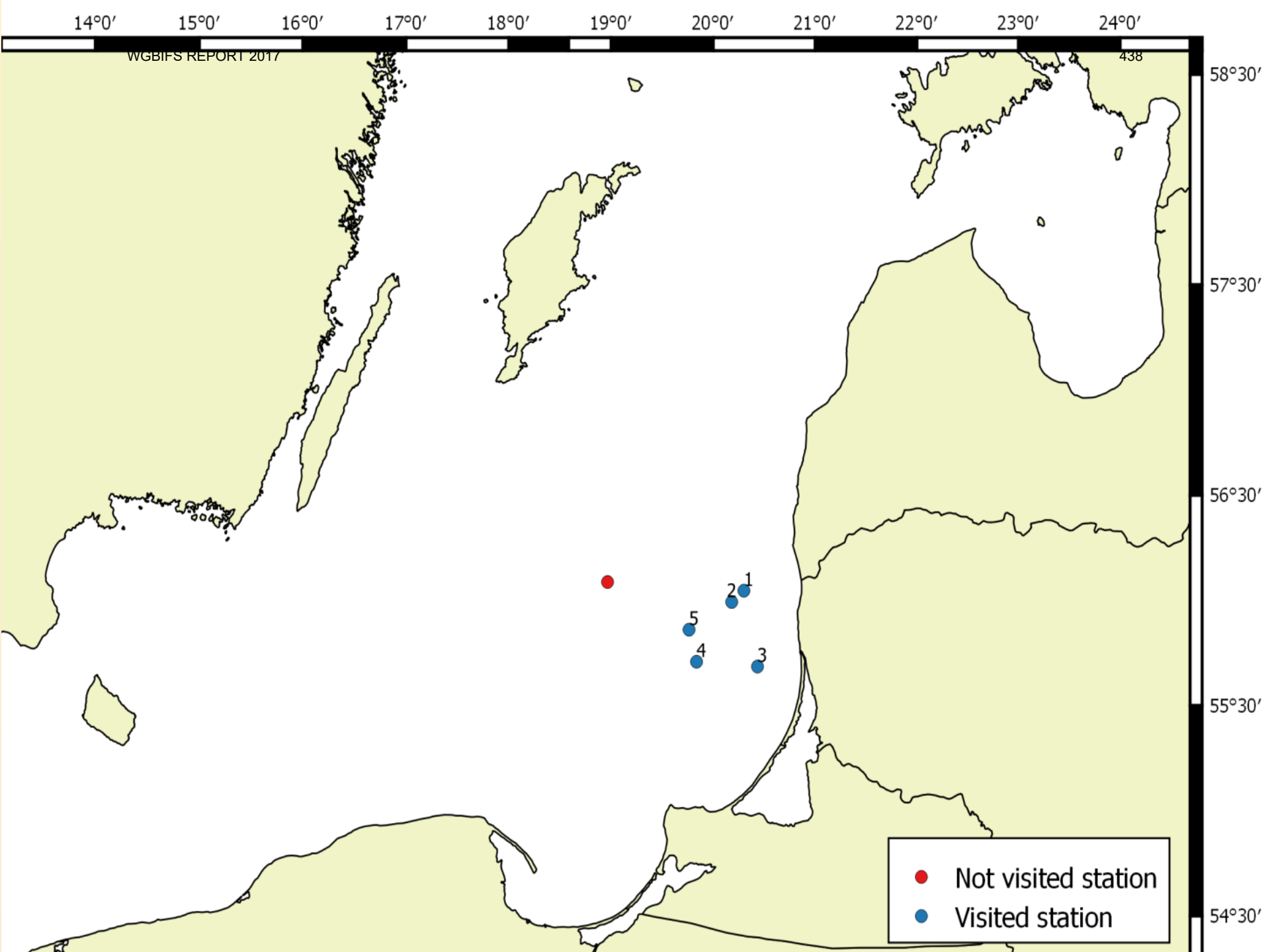
During survey was made 5 trawls and 2 hydrological station (planed 6 trawls).

Trawling was done with the standard trawl TV3/520.

Seabird SBE 19plus v2 was used for hydrological data

The duration of the hauls was 30 minutes and the velocity was 3 knots. The total catch of each haul was analyzed to determine the species composition in weight and number as well as the distribution of length among all species.

Sub-samples of cod, flatfishes were investigated concerning sex, maturity and age.



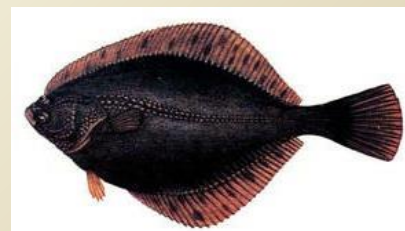
BITS (2016 Q4) RESULTS

Fish catches

Haul number	Catch date	The ICES rectangle and subdivision	Trawling depth (m)	Total CPUE (kg/h)	CPUE per species (kg/h)				
					Cod	Flounder	Place	Turbot	Others
1	2016-11-24	40H0 (26)	32	395.9	25.4	166.0	0	2.1	202.4
2	2016-11-24	40H0 (26)	37	509.1	41.3	360.0	0	0	107.8
3	2016-11-25	40H0 (26)	48	224.4	137.7	86.3	0	0	0.3
4	2016-11-25	40H0 (26)	74	174.5	235.7	33	0.1	0.3	80.0
5	2016-11-25	40H0 (26)	81	0					
Mean					110.0	161.3	0.03	0.6	97.6



29,8%

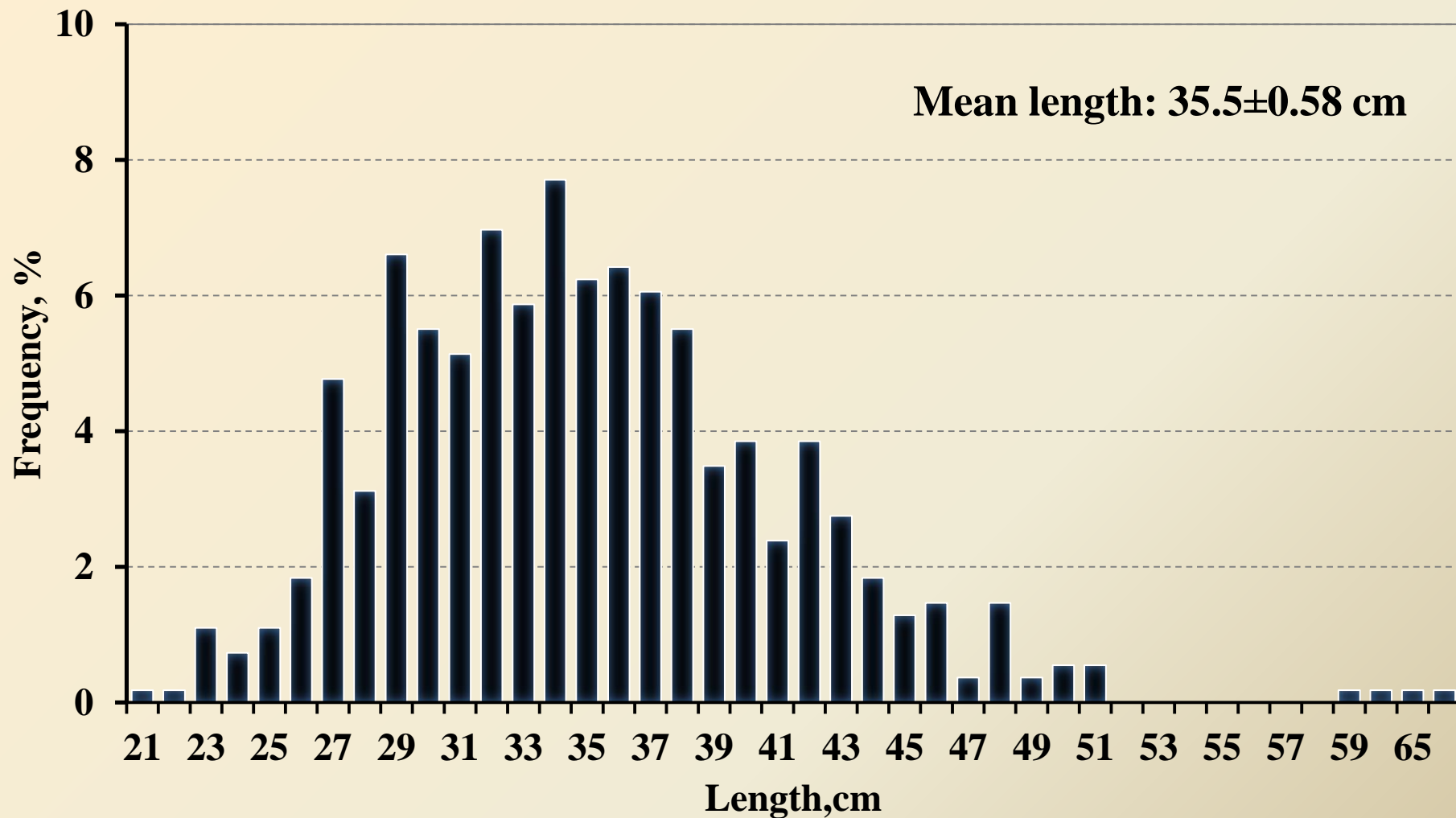


43,7%

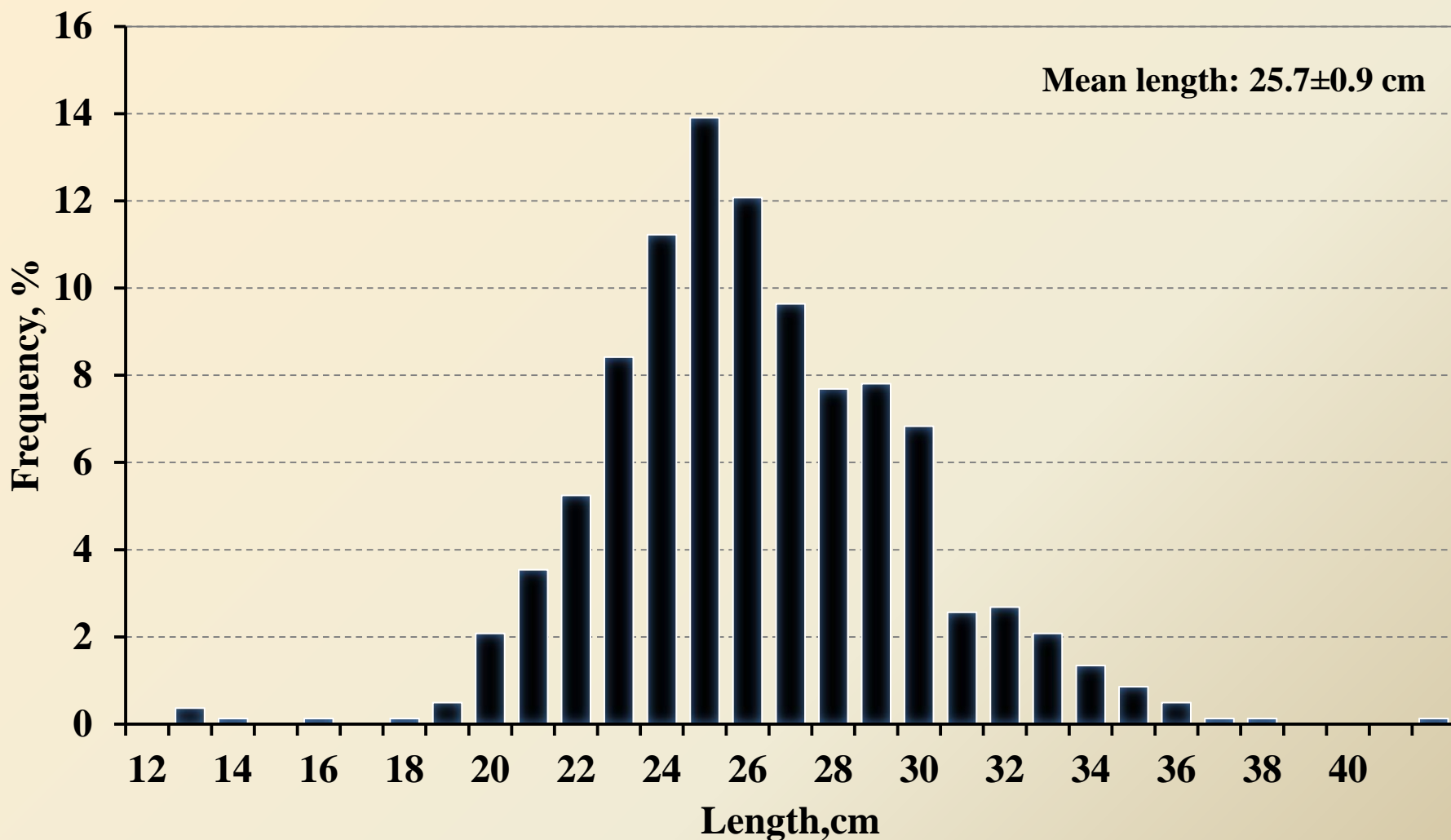
BITS (2016 Q4) RESULTS

Length data	Haul Nr.	Cod	Flounder	Place	Turbot	Other
	1	32	169		4	302
	2	64	353			233
	3	179	231			2
	4	270	64	1	1	183
Age data		298	323	1	5	0
Stomach data		0	0	0	0	0

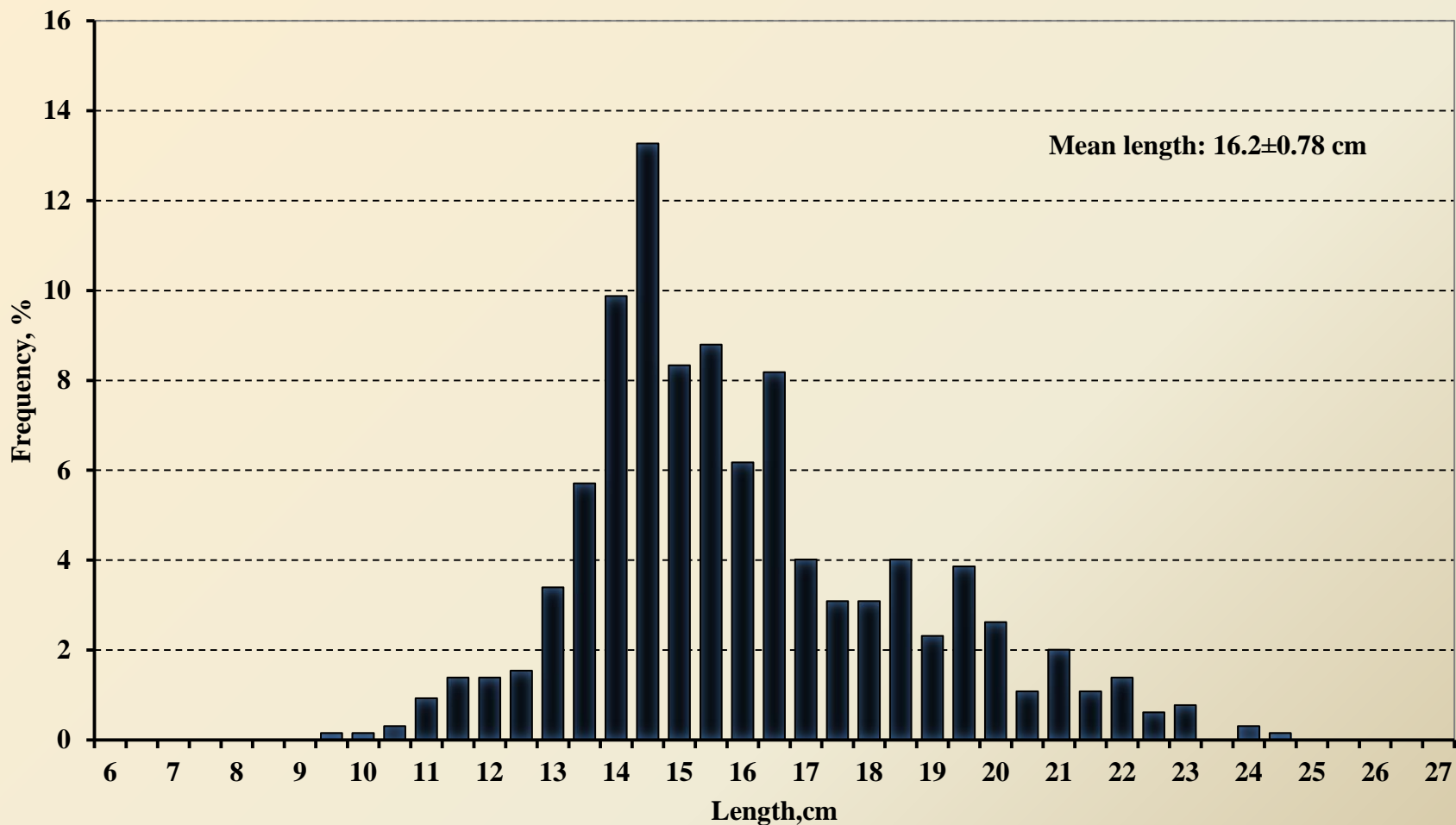
Baltic cod length distribution



Flounder length distribution



Herring length distribution



BITS 2017 Q1

(R/V "DARIUS" 15-16. 02.2017)

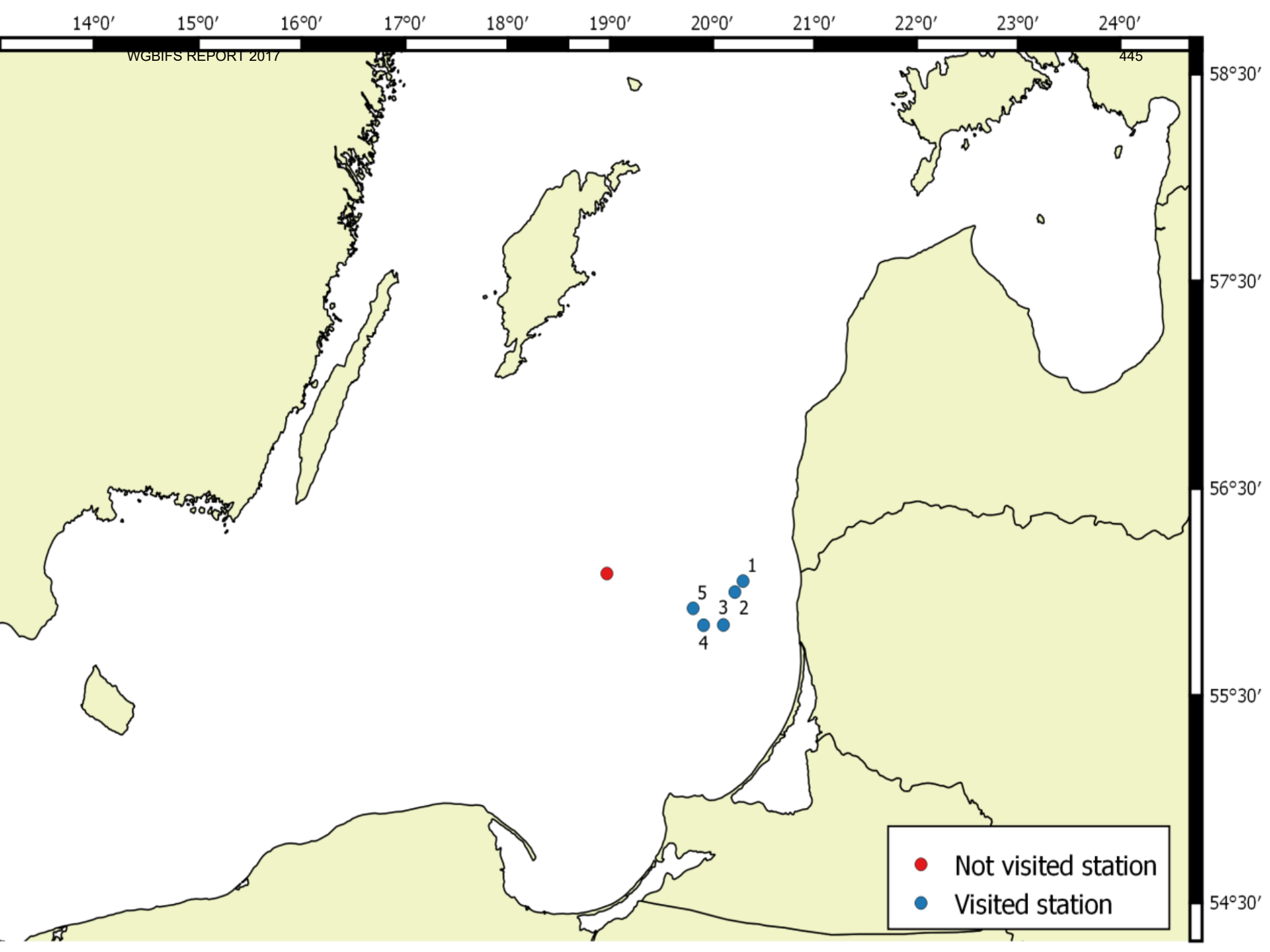
During survey was made five trawls and five hydrological station.

Trawling was done with the standard trawl TV3/520.

Seabird SBE 19plus v2 was used for hydrological data

The duration of the hauls was 30 minutes and the velocity was 3 knots. The total catch of each haul was analyzed to determine the species composition in weight and number as well as the distribution of length among all species.

Sub-samples of cod, flatfishes were investigated concerning sex, maturity and age.



BITS (2017 Q1) RESULTS:

Fish catches and biological data

Haul number	Catch date	The ICES rectangle	Trawling depth (m)	Total CPUE (kg/h)	CPUE per species (kg/h)					
					Cod	Flounder	Plaice	Turbot	Herring	Others
1	2017-02-14	40H0	38	270.976	45,932	215,712		1,024	0,14	8,168
2	2017-02-14	40H0	34,5	39,496	1,196	25,408			7,732	5,16
3	2017-02-15	40H0	51	68,082	11,34	30,9			8,874	16,978
4	2017-02-15	40H0	54	176,146	2,576	78,632			9,696	85,242
5	2017-02-15	40H0	32	260,098	6,05	95,78			96,64	61,628
Mean					13,509	89,286		1,024	24,616	35,435



54.76%



15.1%

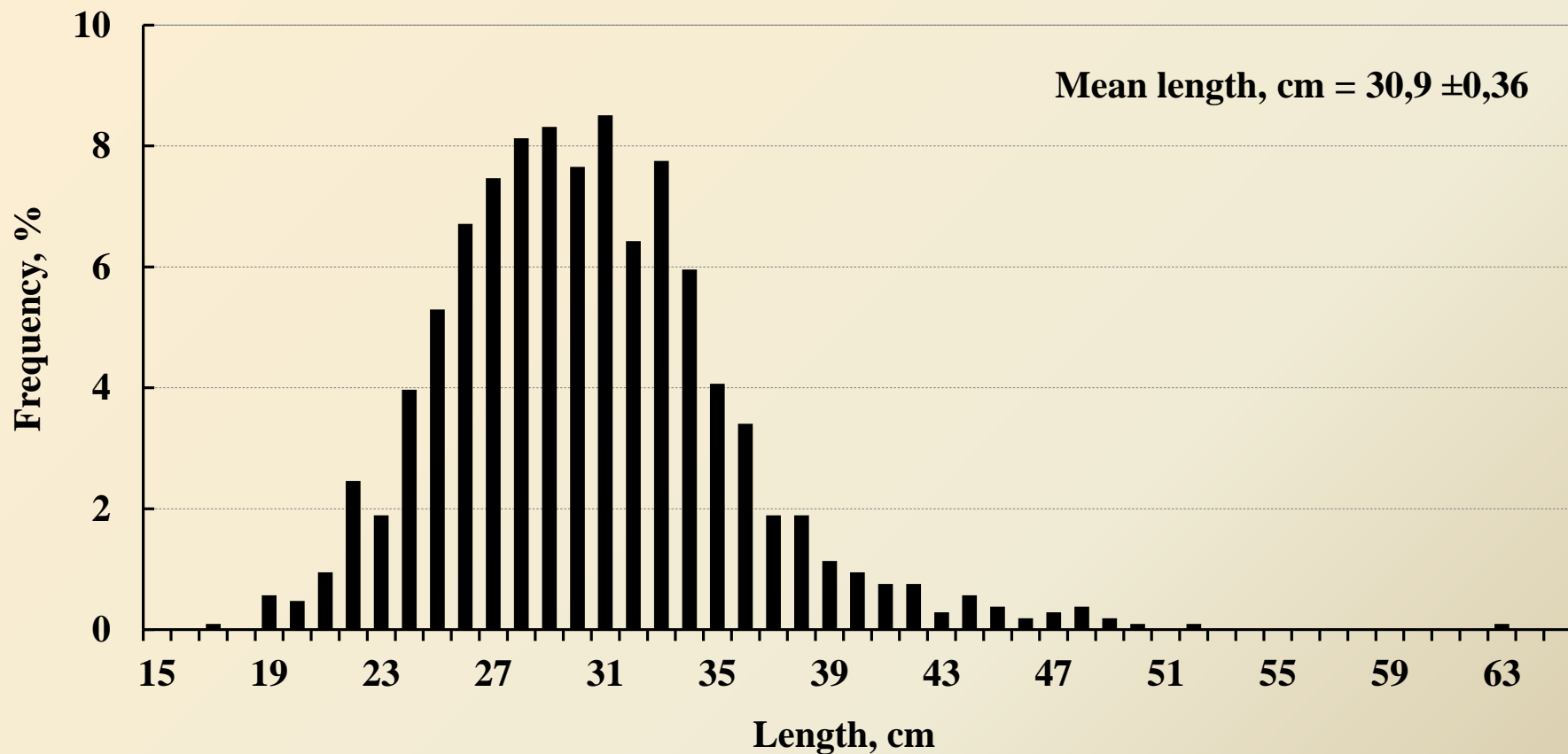


8.28%

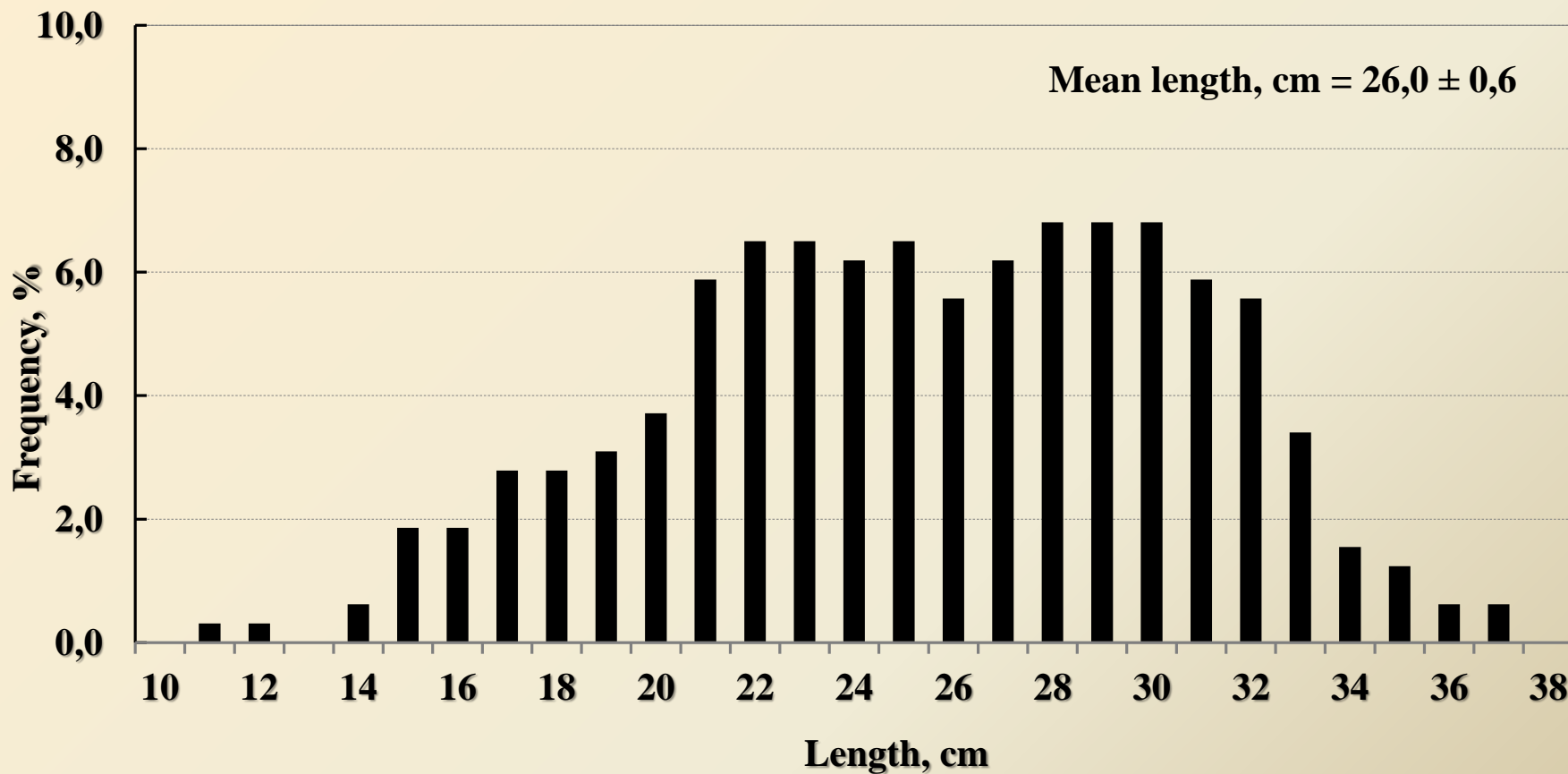
BITS (2017 Q1) RESULTS

Length data	Haul Nr.	Cod	Flounder	Place	Turbot	Other
	1	41	384		2	36
	2	1	79			803
	3	13	90			701
	4	4	215			417
	5	17	248			655
Age data		60	292		2	0

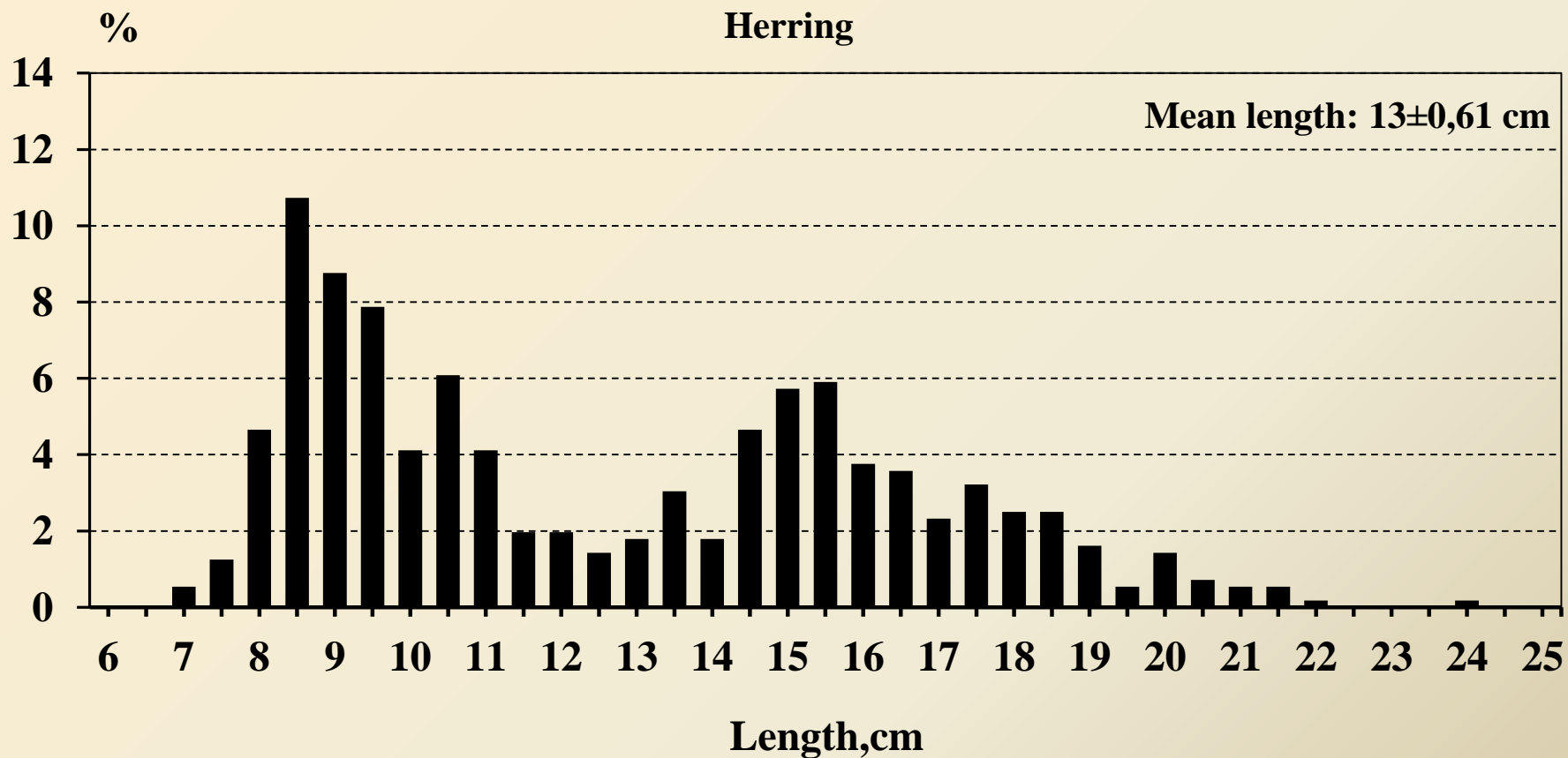
Baltic cod length distribution

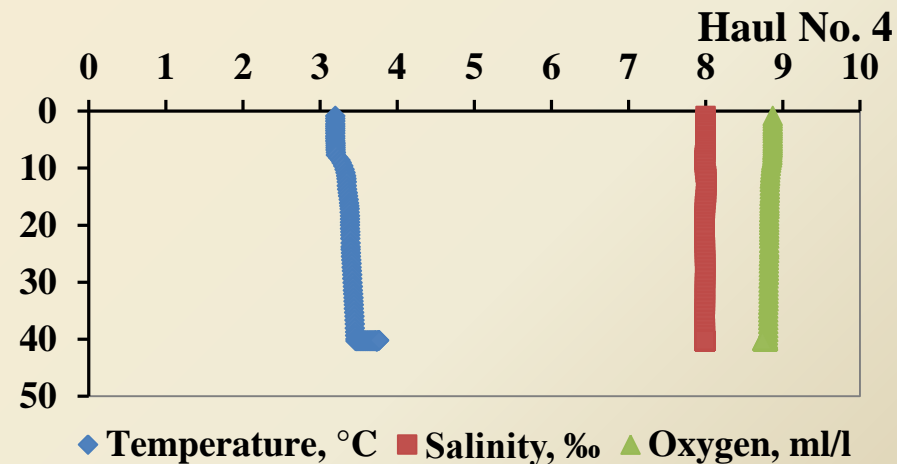
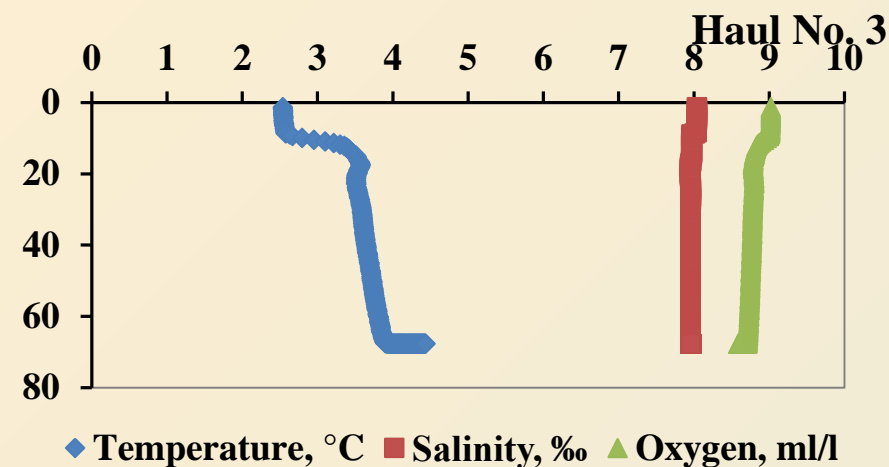
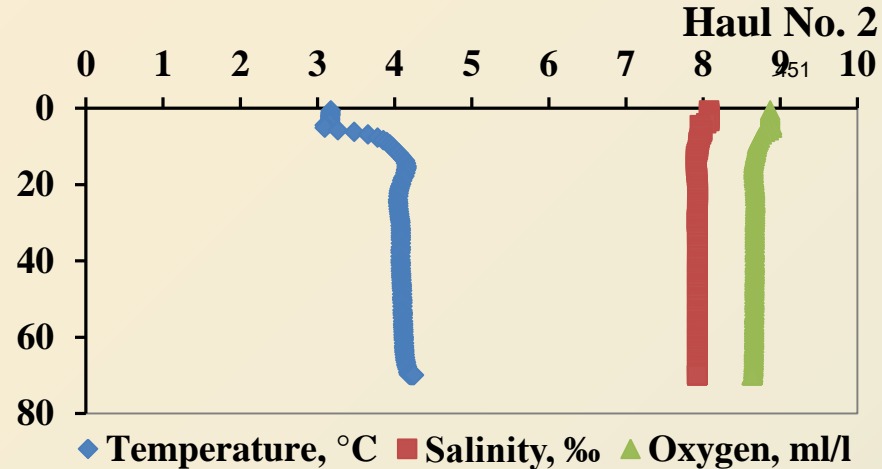
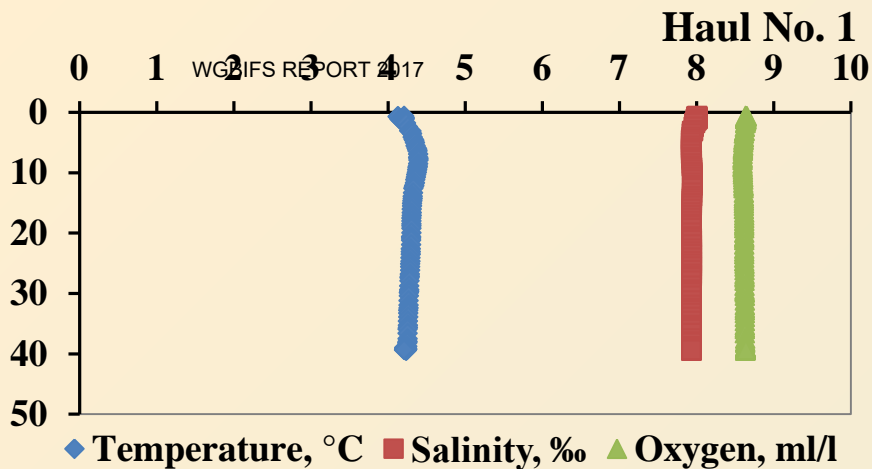


Flounder length distribution



Herring length distribution









WGBIFS meeting in Riga - Latvia; 27 - 31.03.2017

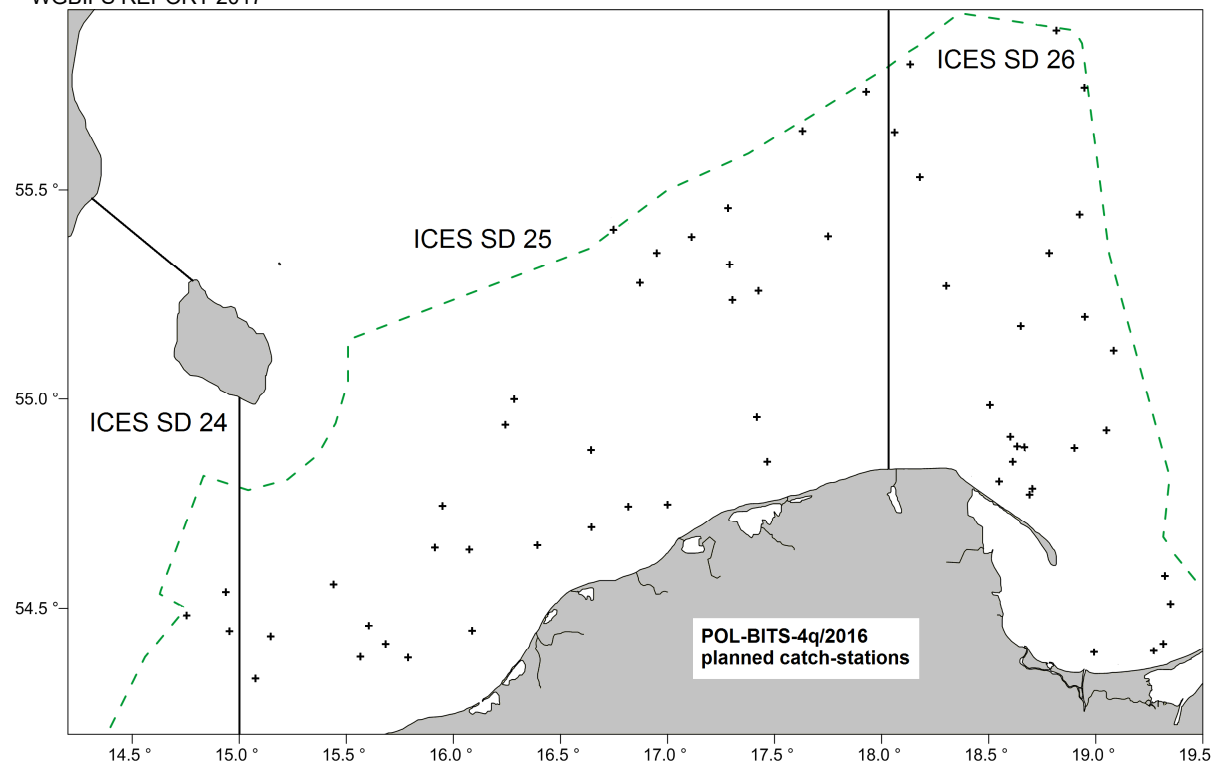
The BITS-4q/2016 and BITS-1q/2017 surveys in the Polish marine waters

Włodzimierz Grygiel, Krzysztof Radtke and Tycjan Wodzinowski
National Marine Fisheries Research Institute, Gdynia - Poland

The main topics of presentation:

- accomplishment and main results of investigations linked with the Polish part of the BITS-4q/2016 and BITS-1q/2017 surveys in the southern Baltic,
- plans vs. realisation of the BITS surveys on board of the Polish r.v. „Baltica”.



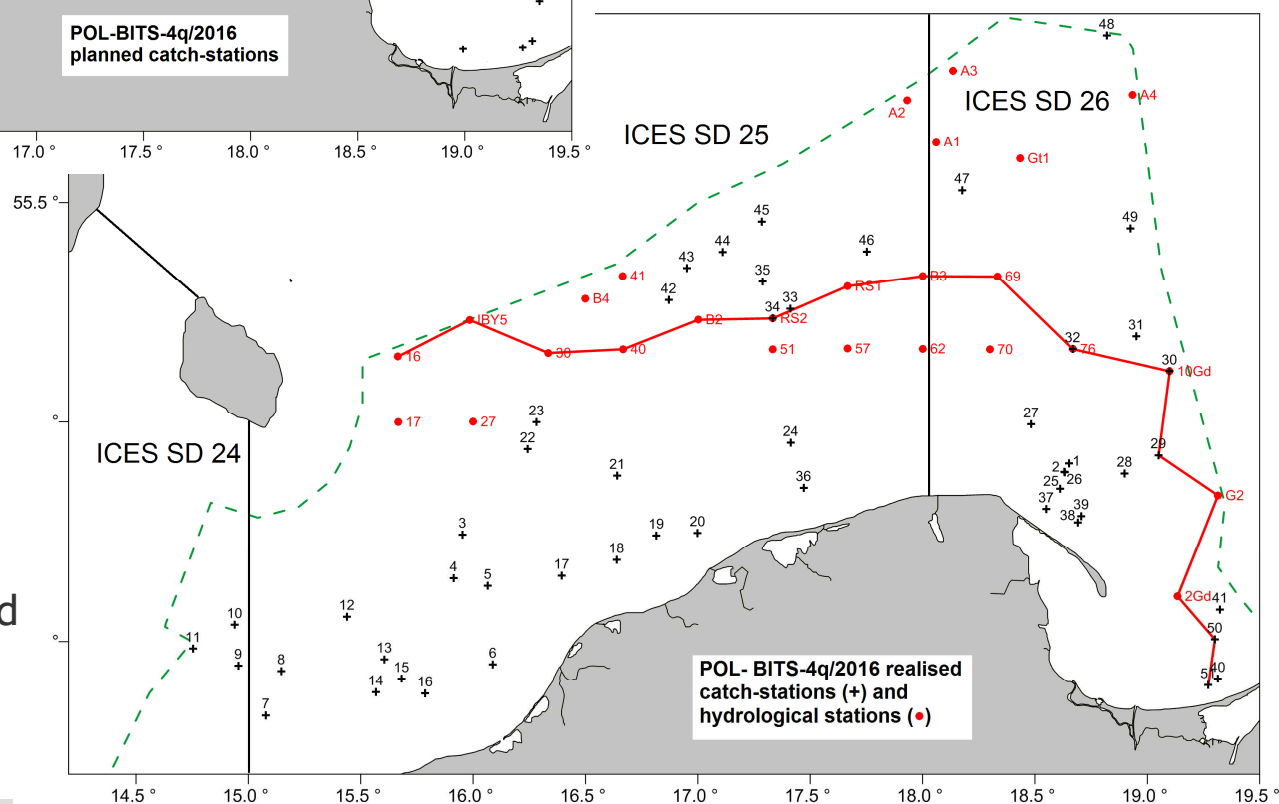


POL-BITS-4q; plans vs. realization (08-29.11.2016)

Location of the bottom trawl control-hauls planned to realise (60) and inspected (51) by the r.v. “Baltica” in the Polish part of the southern Baltic.

85% of planned hauls was realised, incl.:

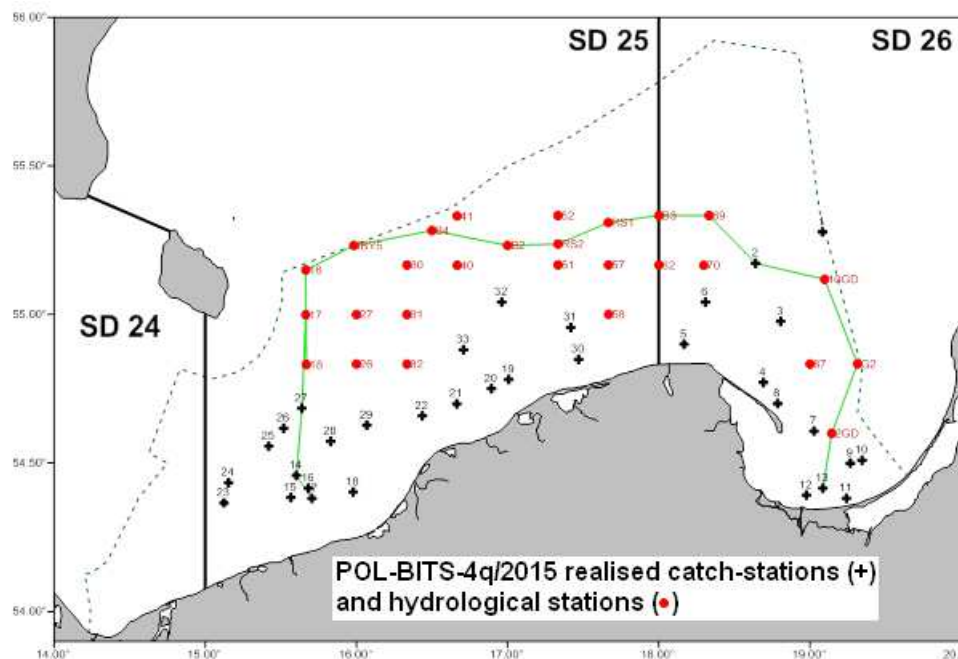
- 3 hauls in ICES SD 24,
- 28 hauls in ICES SD 25,
- 20 hauls in ICES SD 26,
- 72 hydrological stations,
- due to stormy weather occurred on 21-22.11.2017 and partly on 14.11.2017 the number of realised hauls was reduced vs. planned.



Scope of surveys

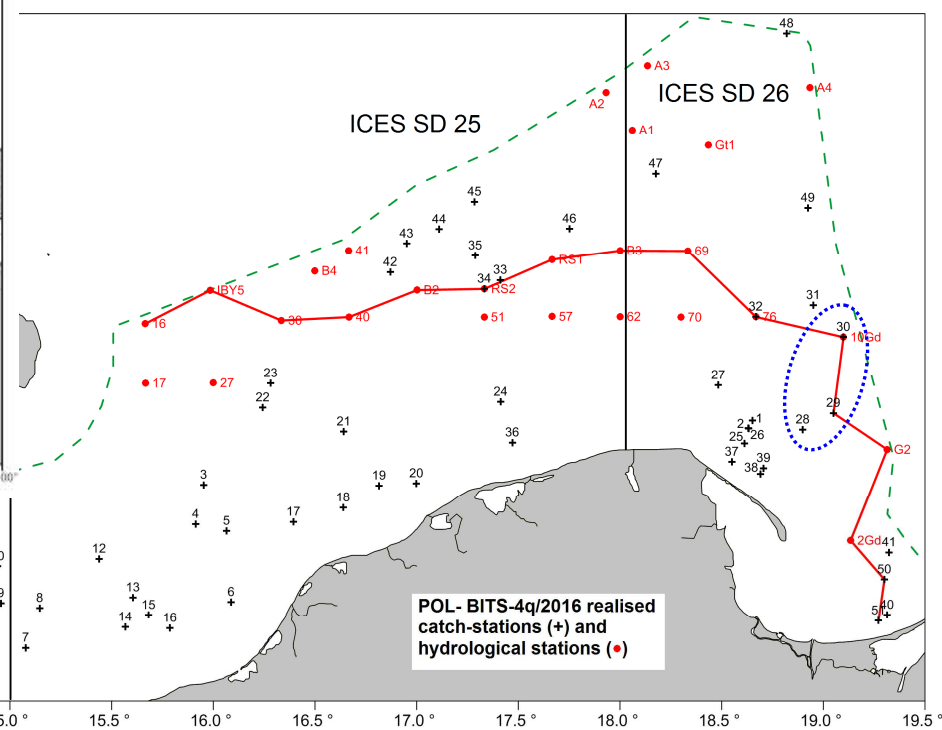
POL-BITS-4q (Nov. 2015)

- period of survey: 15-27.11.2015,
- 12 days at sea,
- number of successfully realised hauls: 32 out of 33,
- zero catches not achieved,
- number of recognised fish-like species: 19,
- area of investigations:



POL-BITS-4q (Nov. 2016)

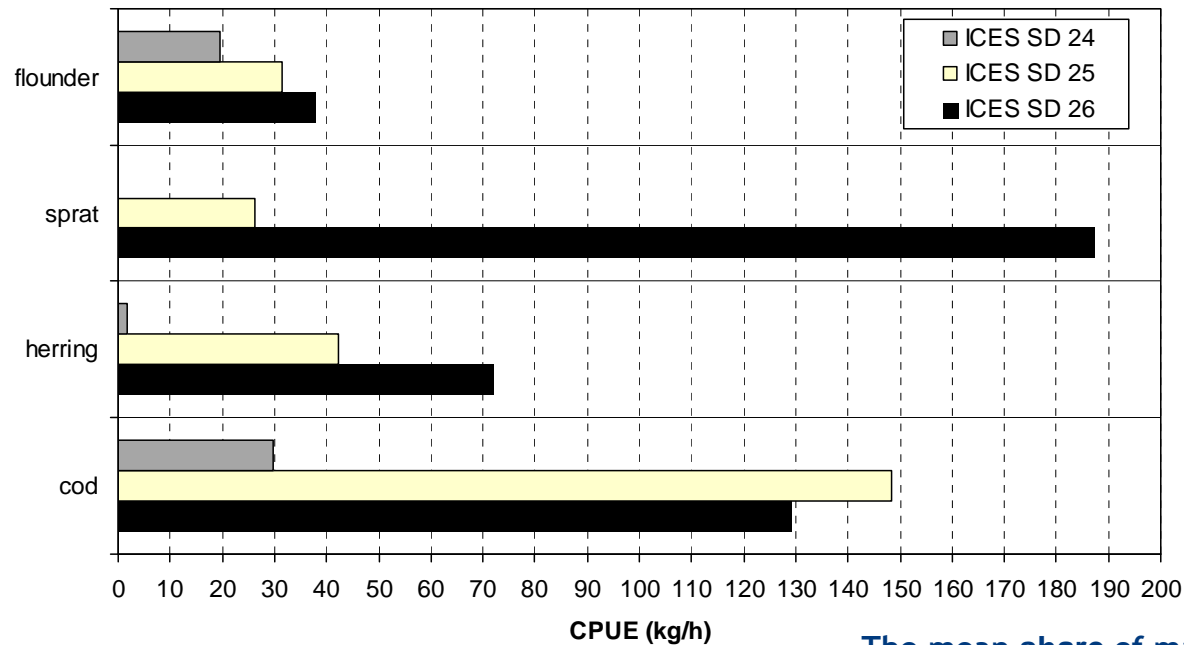
- period of survey: 08-29.11.2016,
- 22 days at sea,
- number of successfully realised hauls: 48 out of 60,
- zero catches achieved (no sufficient O₂) at more three hauls out of 48 catch-stations,
- number of recognised fish-like species: 24,
- area of investigations:



COLLECTED MATERIALS - POL-BITS-4q/2016

Name of fish species	No. of fish with	
	measured length	determined age
cod - <i>Gadus morhua</i> Linnaeus, 1758	9609	512
whiting - <i>Merlangius merlangus</i> (Linnaeus, 1758)	19	19
European flounder - <i>Platichthys flesus</i> (Linnaeus, 1758)	3471	788
European plaice - <i>Pleuronectes platessa</i> Linnaeus, 1758	821	498
turbot - <i>Scophthalmus maximus</i> (Linnaeus, 1758)	25	24
sprat - <i>Sprattus sprattus</i> (Linnaeus, 1758)	4714	515
herring - <i>Clupea harengus</i> Linnaeus, 1758	6514	1024
round goby - <i>Neogobius melanostomus</i> (Pallas, 1814)	9	7
sand goby - <i>Pomatoschistus minutus</i> (Pallas, 1770)	12	6
threespine stickleback - <i>Gasterosteus aculeatus</i> Linnaeus, 1758	61	0
ninespine stickleback - <i>Pungitius pungitius</i> (Linnaeus, 1758)	1	0
greater sand eel - <i>Hyperoplus lanceolatus</i> (Le Sauvage, 1824)	128	35
sea scorpion/shorthorn sculpin - <i>Myoxocephalus scorpius</i> (Linnaeus, 1758)	87	80
hooknose, armed bullhead, pogge - <i>Agonus cataphractus</i> (Linnaeus, 1758)	3	0
four-bearded rockling - <i>Enchelyopus cimbrius</i> (Linnaeus, 1766)	616	95
perch - <i>Perca fluviatilis</i> Linnaeus, 1758	1	1
Atlantic horse mackerel/scad - <i>Trachurus trachurus</i> (Linnaeus, 1758)	3	2
twaite shad - <i>Alosa fallax</i> (de Lacépède, 1803)	3	3
zander/pikeperch - <i>Sander lucioperca</i> (Linnaeus, 1758)	52	15
European anchovy - <i>Engraulis encrasicolus</i> (Linnaeus, 1758)	39	15
European smelt - <i>Osmerus eperlanus</i> (Linnaeus, 1758)	114	3
lumpfish - <i>Cyclopterus lumpus</i> Linnaeus, 1758	7	4
European eel - <i>Anguilla anguilla</i> (Linnaeus, 1758)	1	0
river (brook) lamprey - <i>Lampetra fluviatilis</i> (Linnaeus, 1758)	1	0
total (24 species)	26311	3646

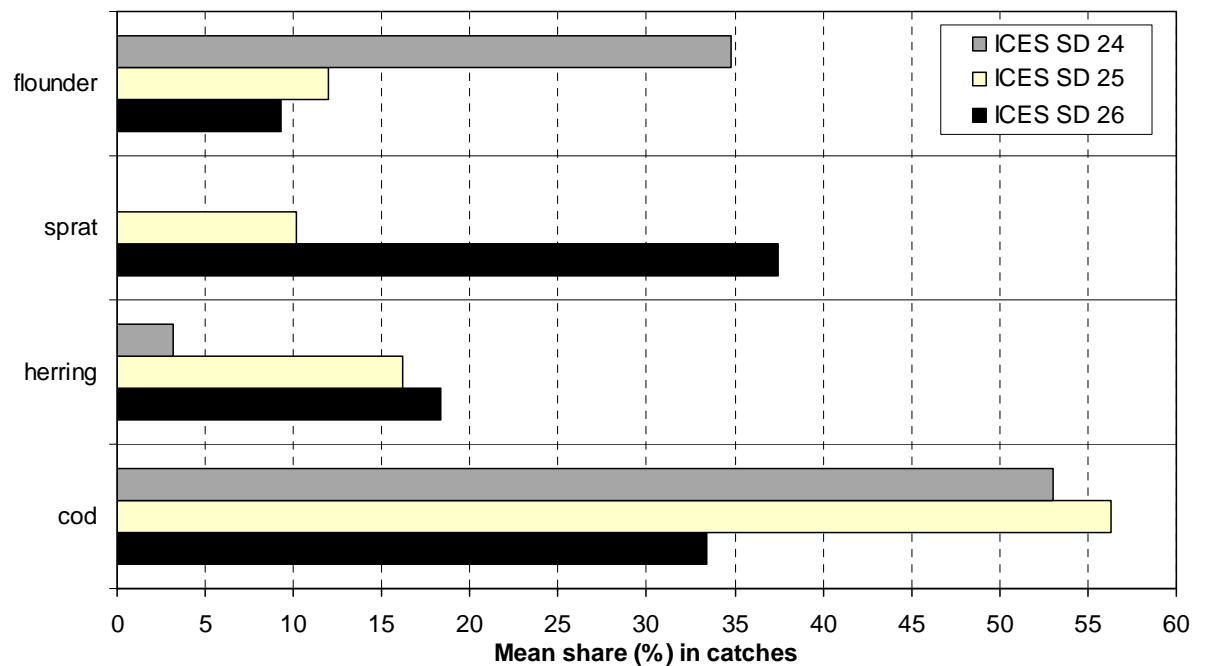
The mean CPUE of main fish species per the ICES SDs.



RESULTS

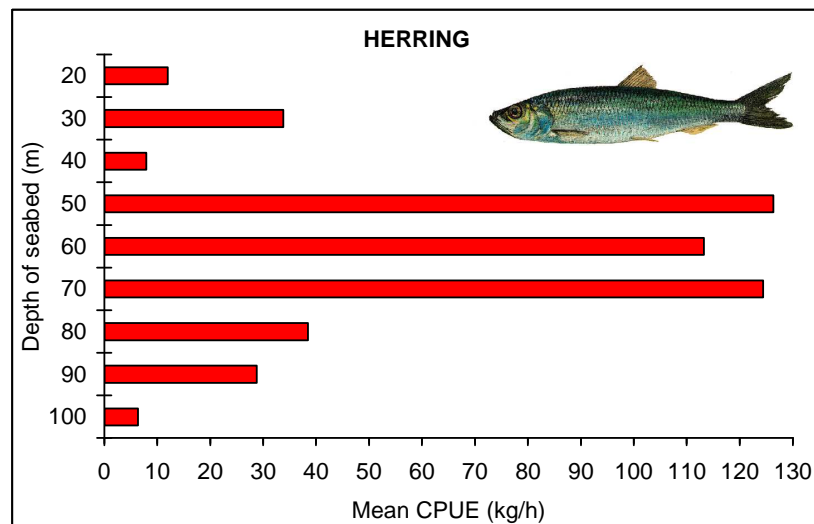
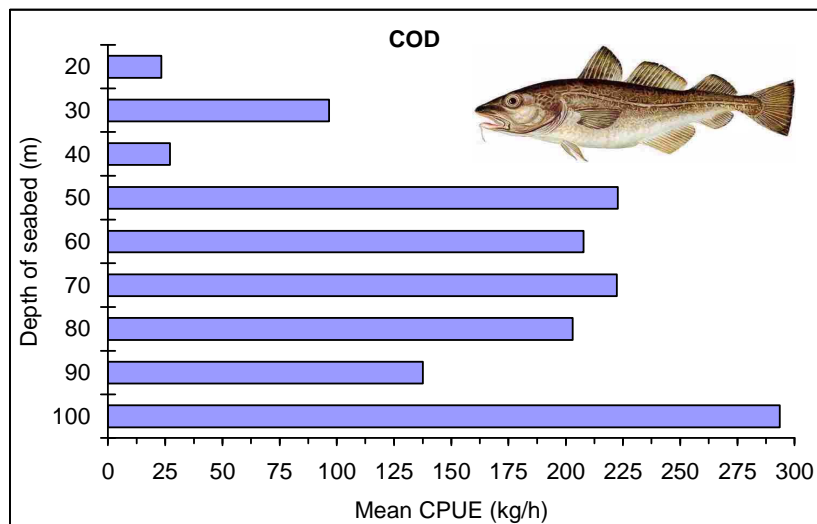
POL-BITS-4q/2016

The mean share of main fish species in catches per the ICES SDs.

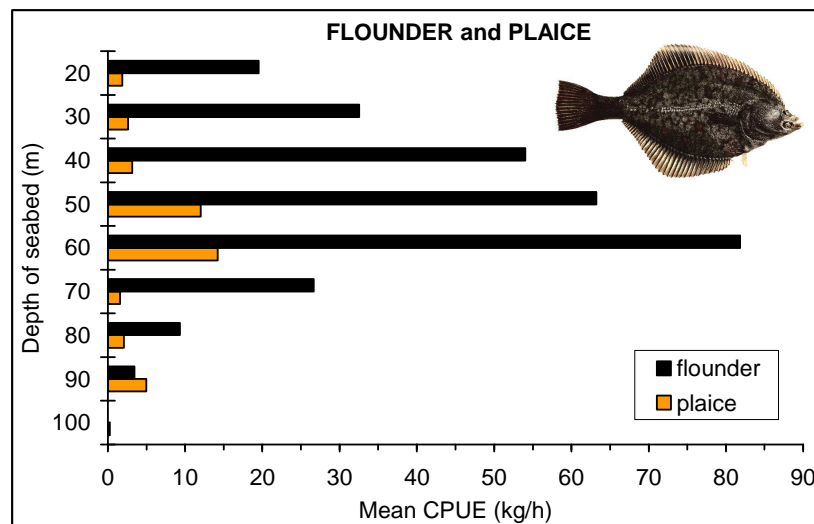
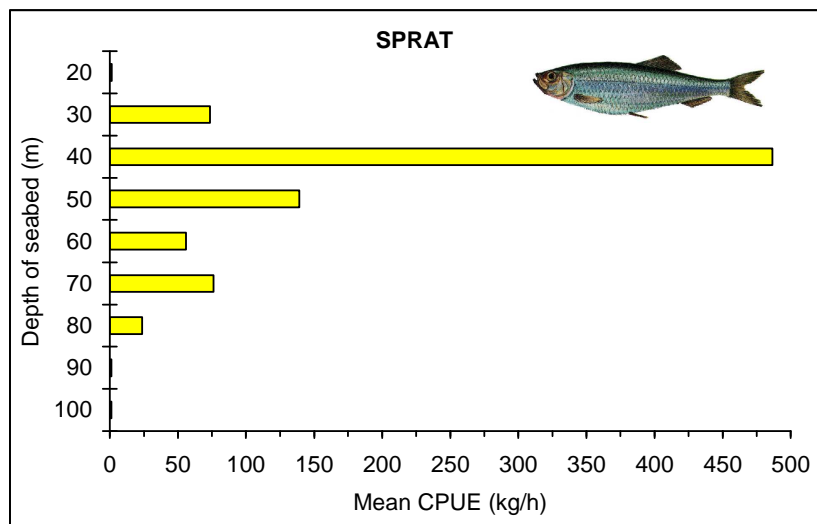


RESULTS

POL-BITS-4q/2016



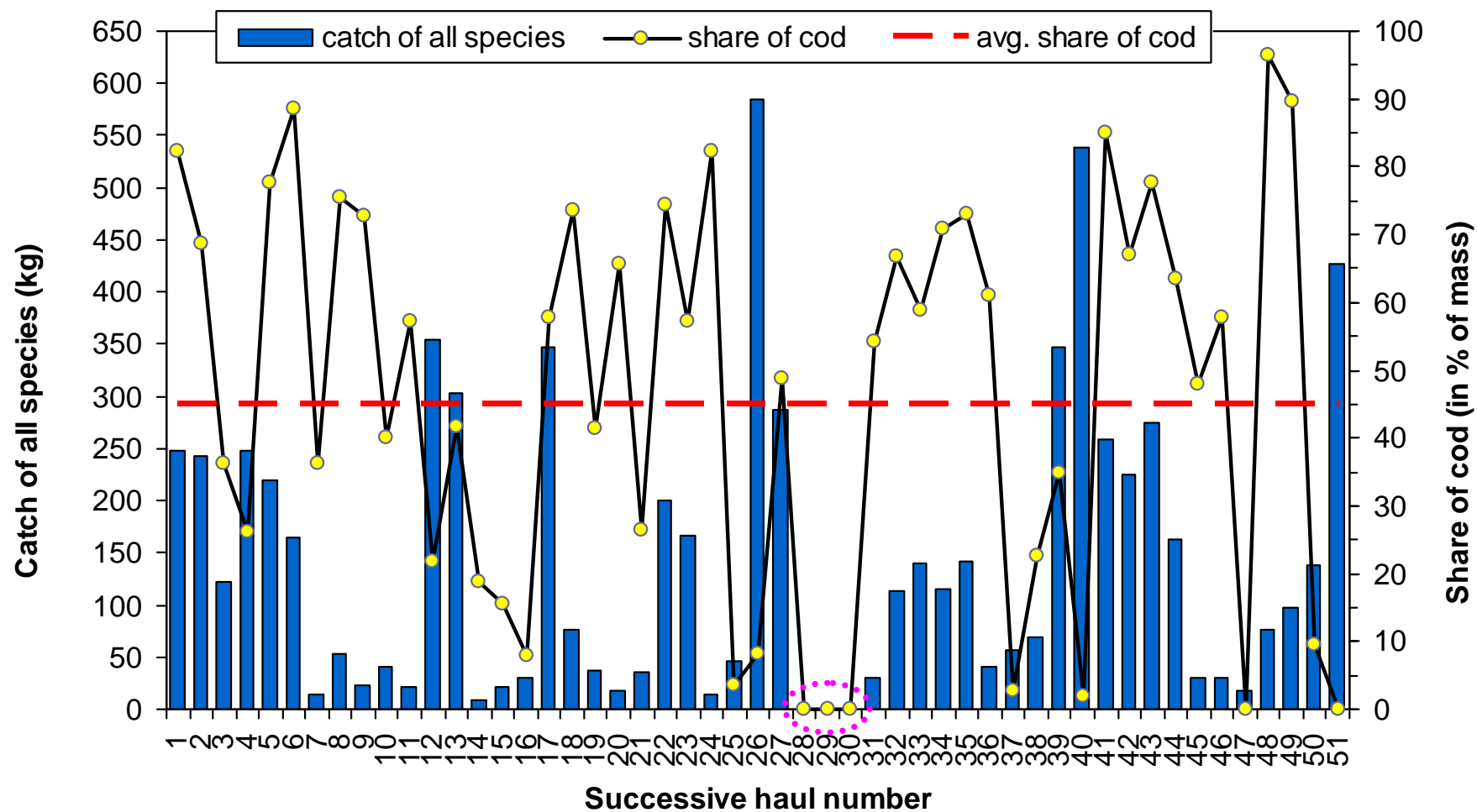
Seabed depth (m)	Number of hauls
20	7
30	11
40	4
50	8
60	4
70	3
80	5
90	5
100	1
total	48



The mean CPUE of fishes dominated in the control-catches per depth of trawling.

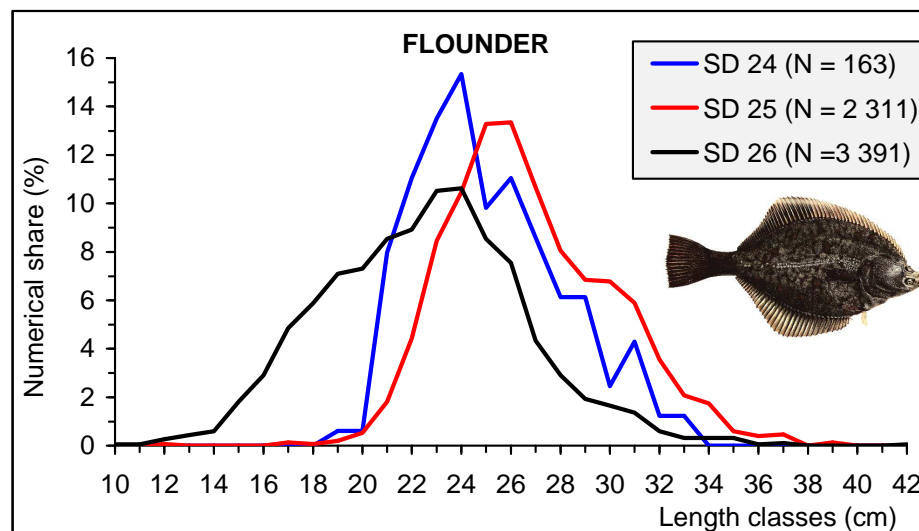
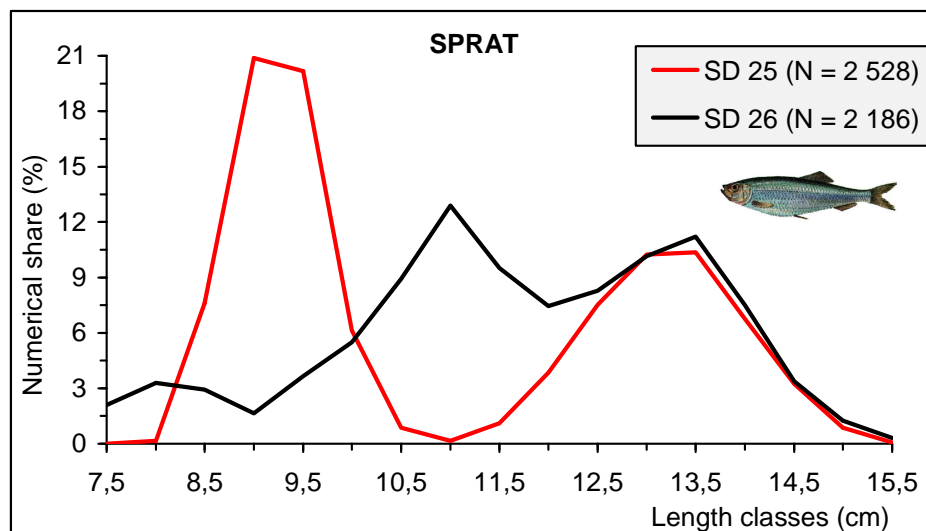
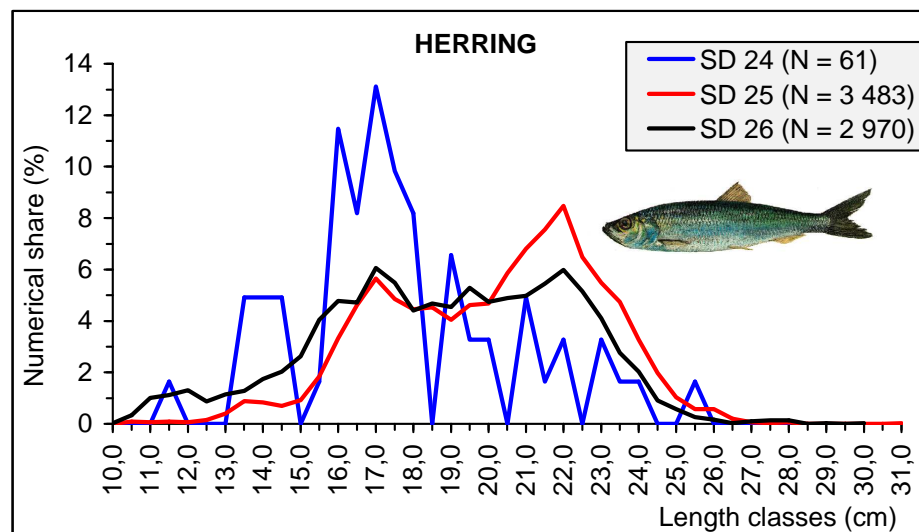
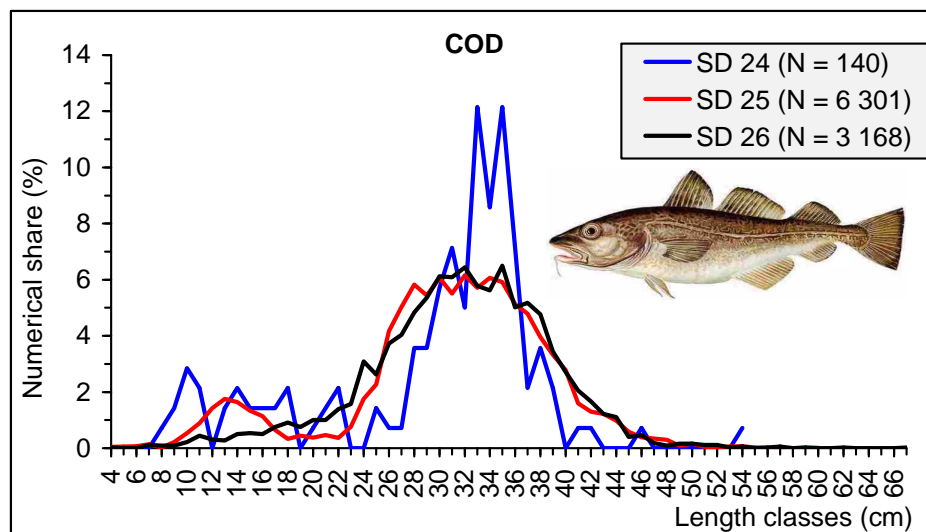
RESULTS

POL-BITS-4q/2016



RESULTS

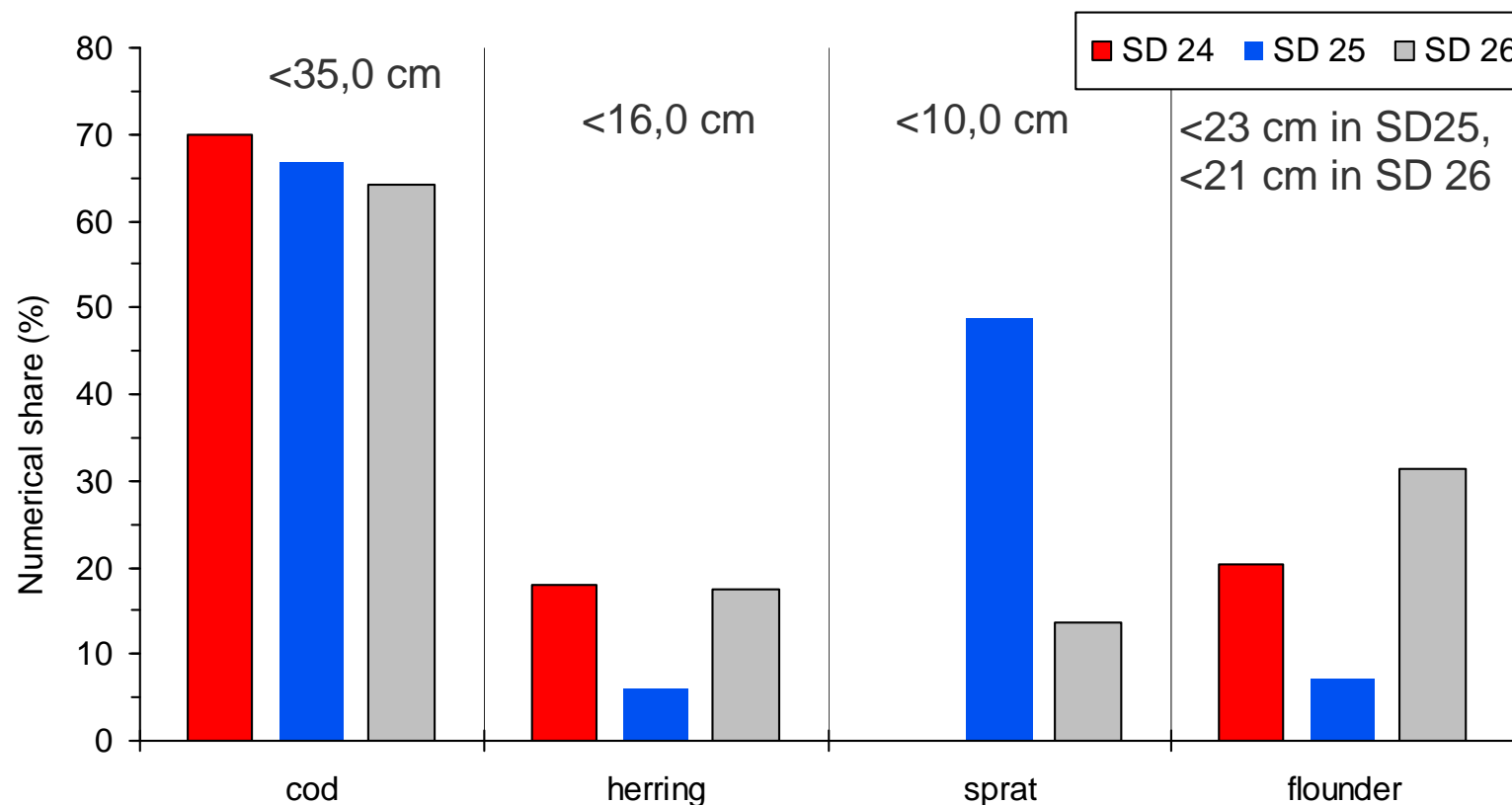
POL-BITS-4q/2016



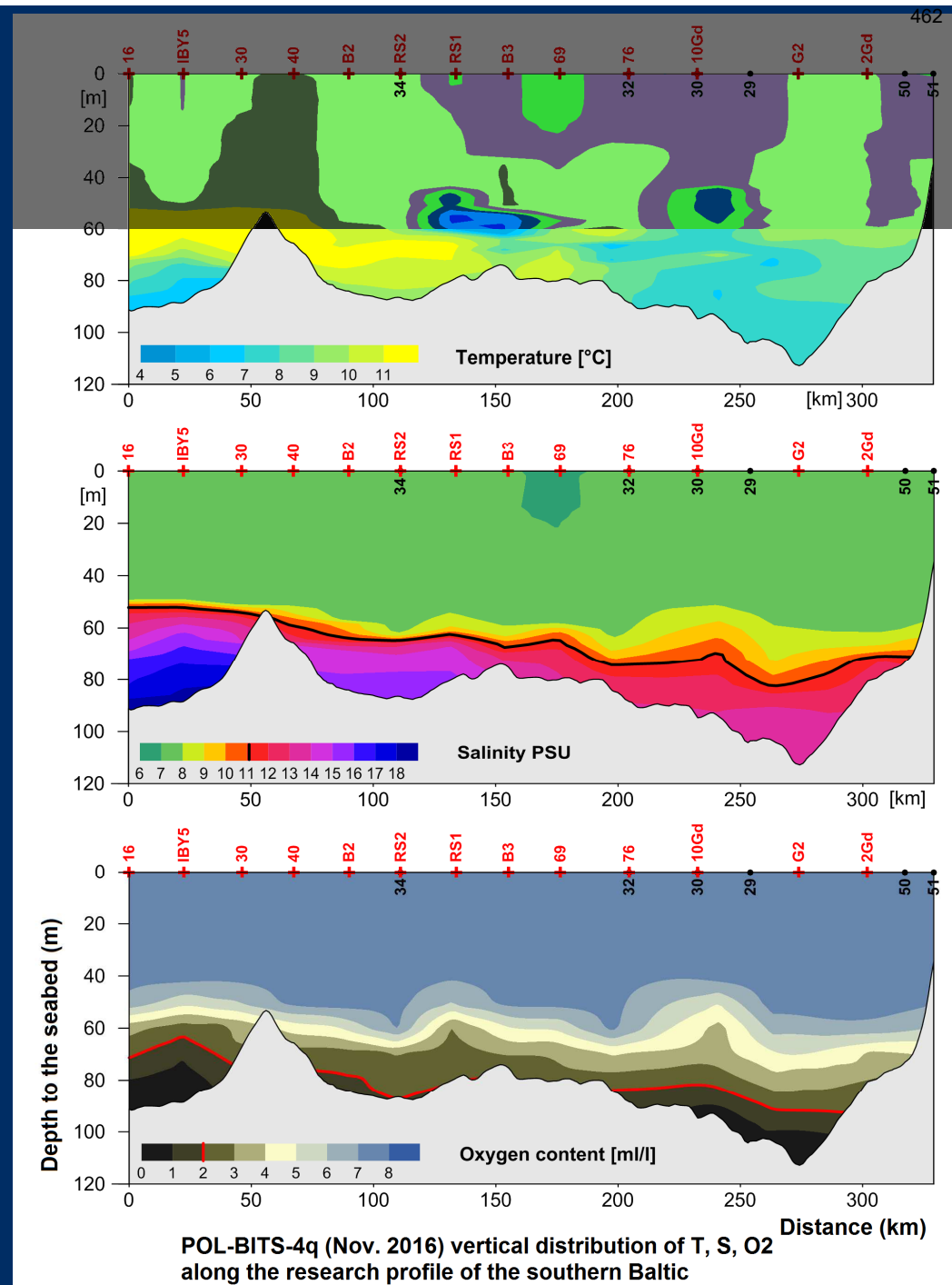
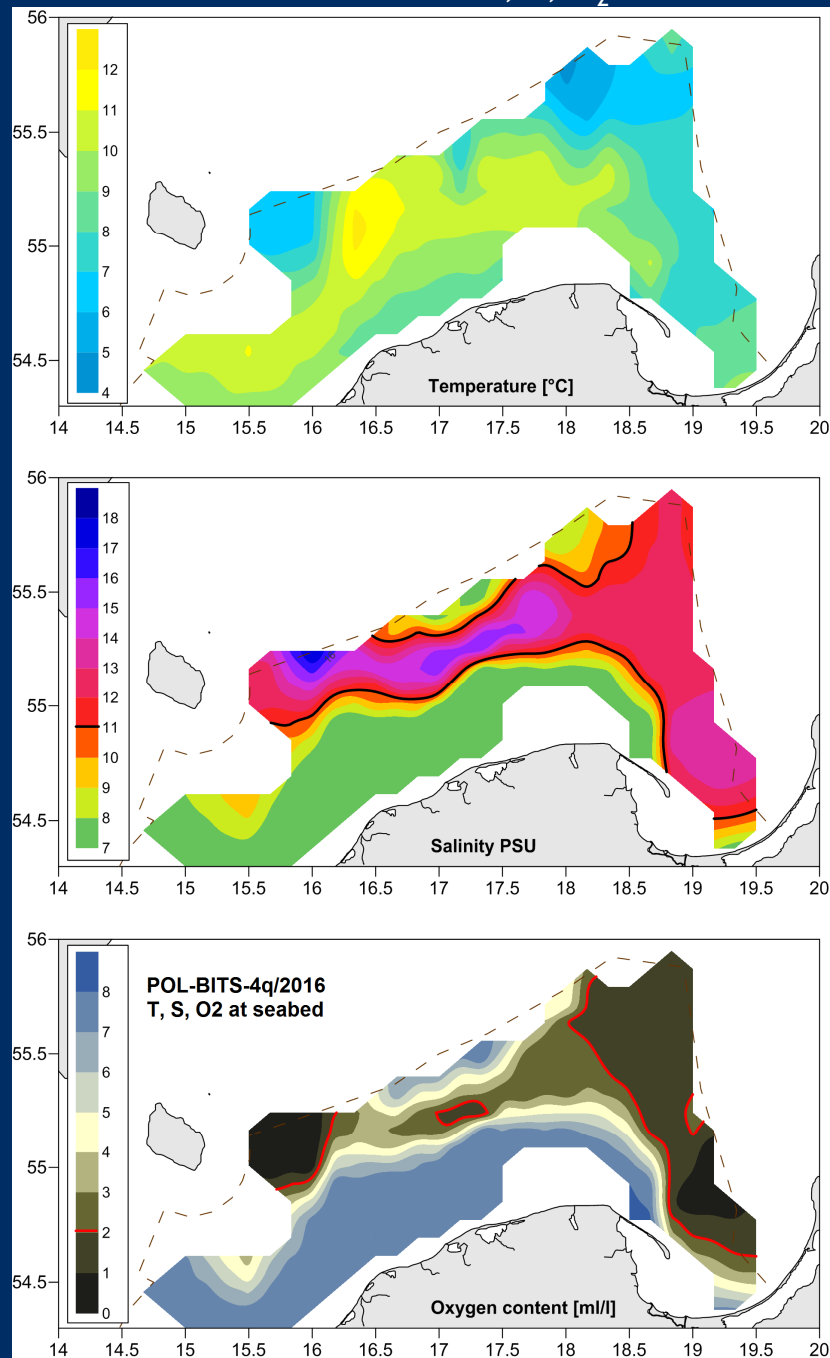
The main fish species length distribution in samples originated from research catches acc. to the ICES SDs.

RESULTS

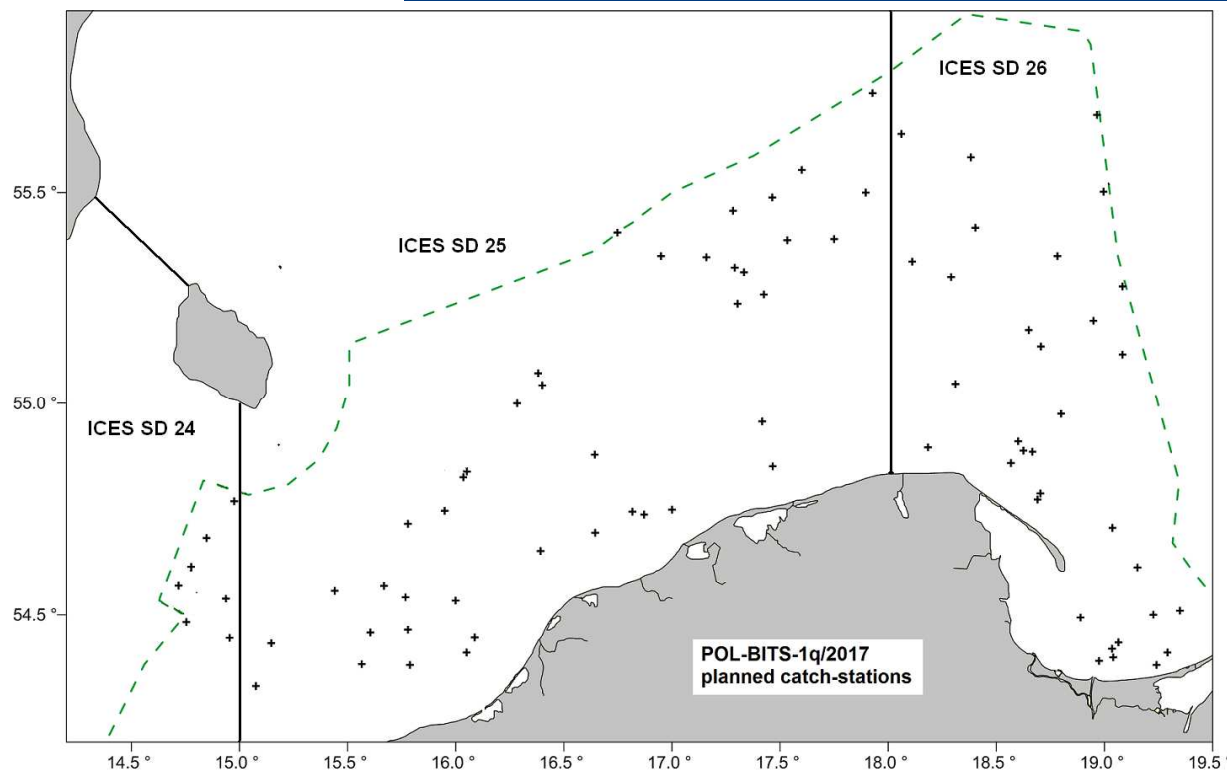
POL-BITS-4q/2016



The average numerical share of young, undersized fish species in samples originated from research catches acc. to the ICES SDs.

Horizontal distribution of T, S, O₂ near seabed

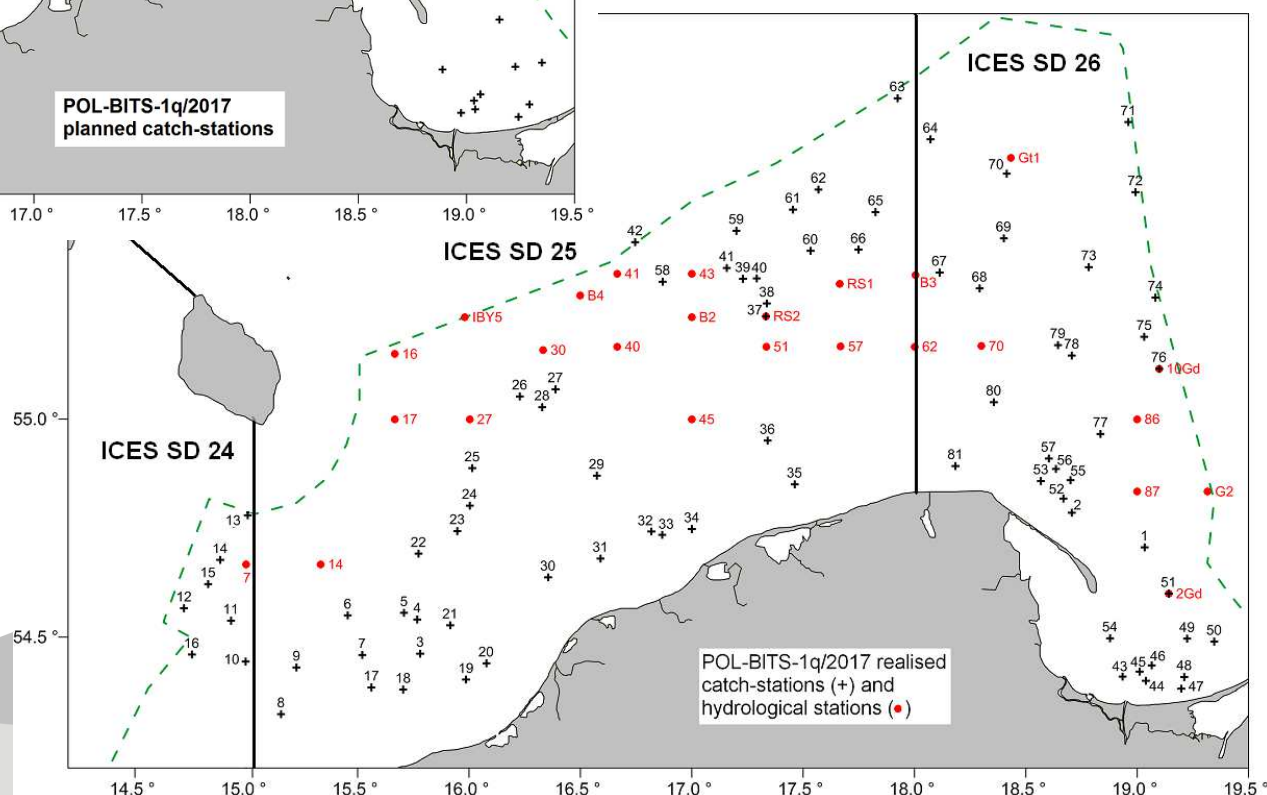
POL-BITS-1q; plans vs. realization (09.02.-08.03.2017)



Location of the bottom trawl control-hauls planned to realise (81) and inspected (81) by the r.v. “Baltica” in the Polish part of the southern Baltic.

100% of planned hauls was realised, incl.:

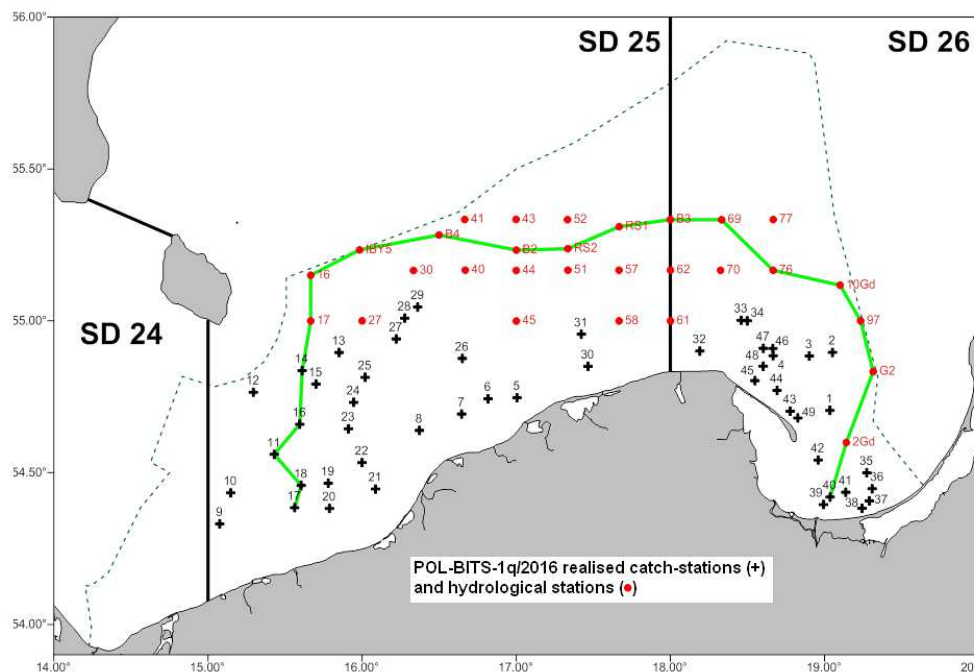
- 7 hauls in ICES SD 24,
- 41 hauls in ICES SD 25,
- 33 hauls in ICES SD 26,
- 101 hydrological stations.



Scope of surveys

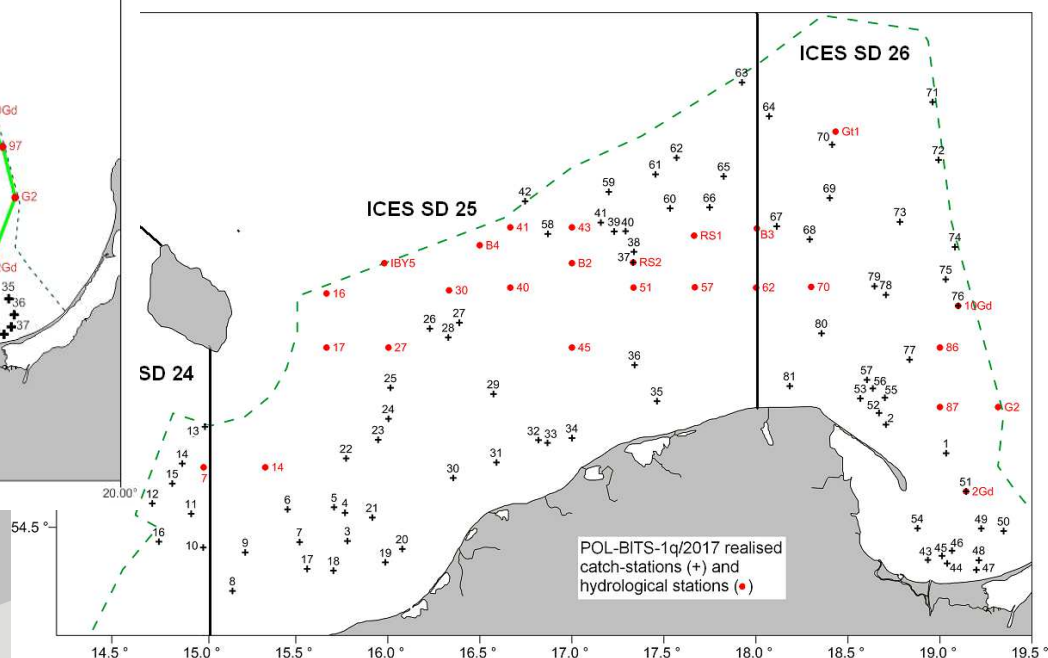
POL-BITS-1q (Feb. 2016)

- period of survey: 11-26.02.2016,
- 16 days at sea,
- number of successfully realised hauls: 47 out of 49,
- zero catches achieved at more two hauls (no sufficient O_2) out of 47 catch-stations,
- number of recognised fish-like species: 24,
- area of investigations:



POL-BITS-1q (Feb.-March 2017)

- period of survey: 09.02.-08.03.2017,
- 27 days at sea,
- number of successfully realised hauls: 81 out of 81,
- zero catches not achieved,
- number of recognised fish-like species: 27,
- area of investigations:

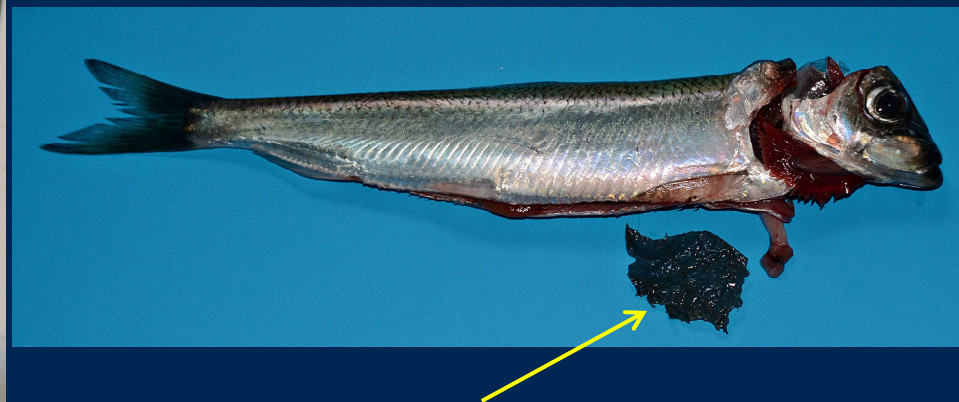


COLLECTED MATERIALS - POL-BITS-1q/2017

Name of fish species	No. of fish with	
	measured length	determined age
cod - <i>Gadus morhua</i> Linnaeus, 1758	13197	661
whiting - <i>Merlangius merlangus</i> (Linnaeus, 1758)	157	72
European flounder - <i>Platichthys flesus</i> (Linnaeus, 1758)	9752	1047
European plaice - <i>Pleuronectes platessa</i> Linnaeus, 1758	1819	754
turbot - <i>Scophthalmus maximus</i> (Linnaeus, 1758)	53	52
herring - <i>Clupea harengus</i> Linnaeus, 1758	10583	979
sprat - <i>Sprattus sprattus</i> (Linnaeus, 1758)	8476	730
four-bearded rockling - <i>Enchelyopus cimbrius</i> (Linnaeus, 1766)	583	13
sea scorpion/shorthorn sculpin - <i>Myoxocephalus scorpius</i> (Linnaeus, 1758)	576	8
Atlantic horse mackerel/scad - <i>Trachurus trachurus</i> (Linnaeus, 1758)	15	4
eelpout - <i>Zoarces viviparus</i> Linnaeus, 1758	27	0
European anchovy - <i>Engraulis encrasicolus</i> (Linnaeus, 1758)	42	6
European smelt - <i>Osmerus eperlanus</i> (Linnaeus, 1758)	287	0
greater sand eel - <i>Hyperoplus lanceolatus</i> (Le Sauvage, 1824)	11	0
hooknose, armed bullhead, pogge - <i>Agonus cataphractus</i> (Linnaeus, 1758)	8	0
lumpfish - <i>Cyclopterus lumpus</i> Linnaeus, 1758	68	4
Atlantic mackerel - <i>Scomber scombrus</i> Linnaeus, 1758	8	4
perch - <i>Perca fluviatilis</i> Linnaeus, 1758	7	0
poor cod - <i>Trisopterus minutus</i> Linnaeus, 1758	1	1
round goby - <i>Neogobius melanostomus</i> (Pallas, 1814)	109	0
sand goby - <i>Pomatoschistus minutus</i> (Pallas, 1770)	47	0
snakeblenny - <i>Lumpenus lampretaeformis</i> (Walbaum, 1792)	2	0
striped seasnail - <i>Liparis liparis</i> (Linnaeus, 1766)	1	0
threespine stickleback - <i>Gasterosteus aculeatus</i> Linnaeus, 1758	5	0
tub gurnard - <i>Chelidonichthys lucerna</i> (Linnaeus, 1758)	1	0
twaite shad - <i>Alosa fallax</i> (de Lacépède, 1803)	58	2
zander/pikeperch - <i>Sander lucioperca</i> (Linnaeus, 1758)	9	1
total (27 species)	45902	4338

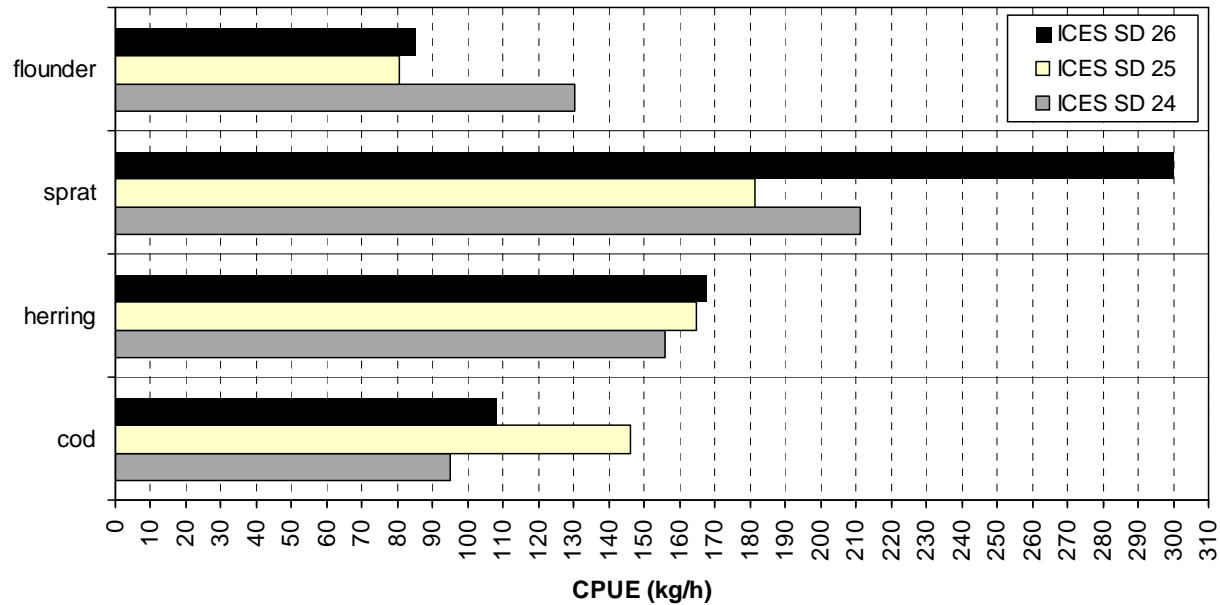
cont. COLLECTED MATERIALS

	POL-BITS-4q/2016	POL-BITS-1q/2017
number of sampled cod stomachs	511	SD 24 - 183; SD 25 - 212; SD 26 - 267; total = 662
number of stations with monitored marine litter	48	81



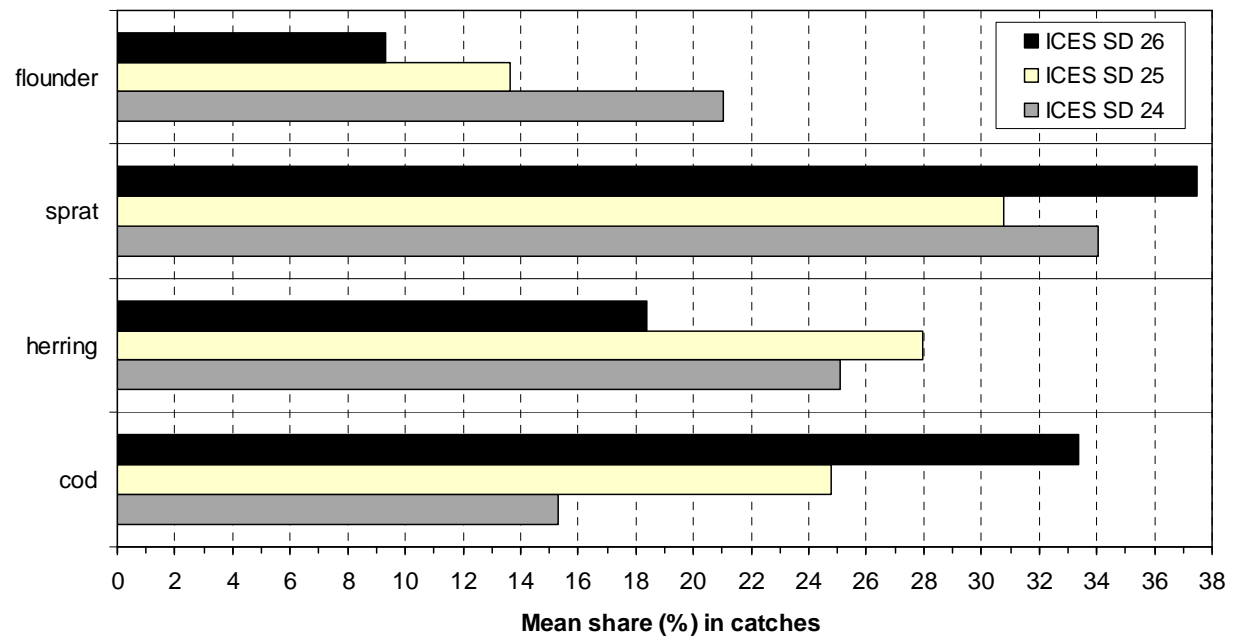
photos: M. Wszyński
(NMFRI), Gdynia

The mean CPUE of main fish species per the ICES SDs.



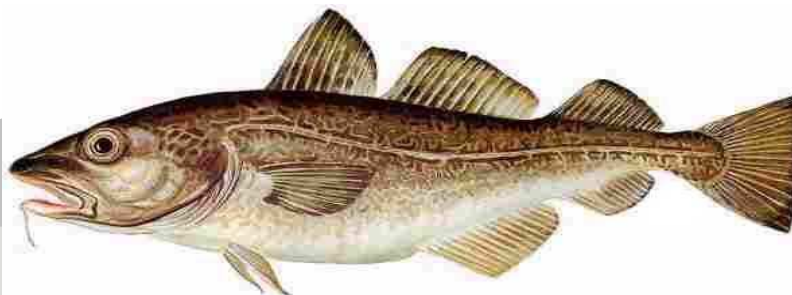
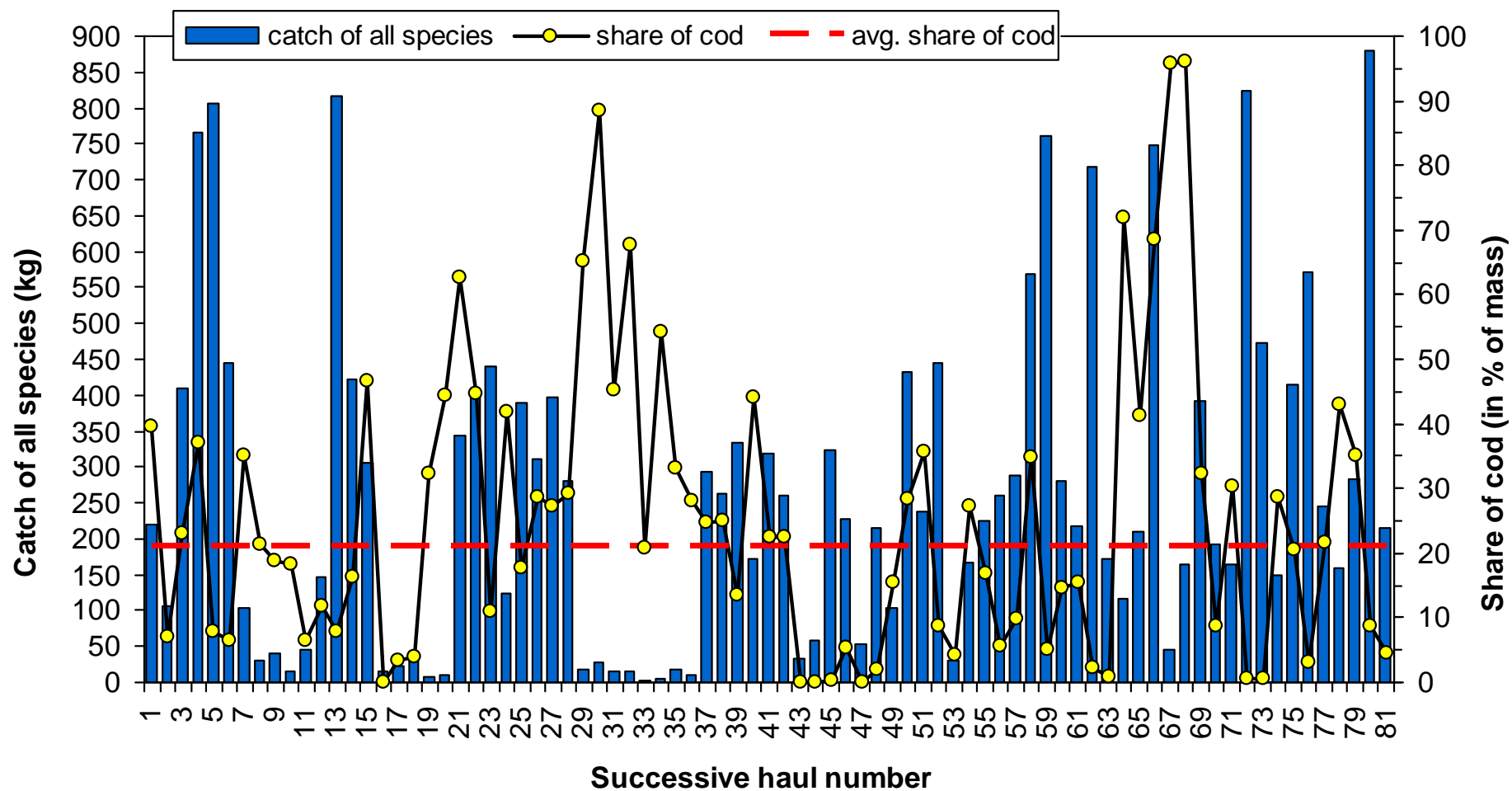
RESULTS
POL-BITS-1q/2017

The mean share of main fish species in catches per the ICES SDs.



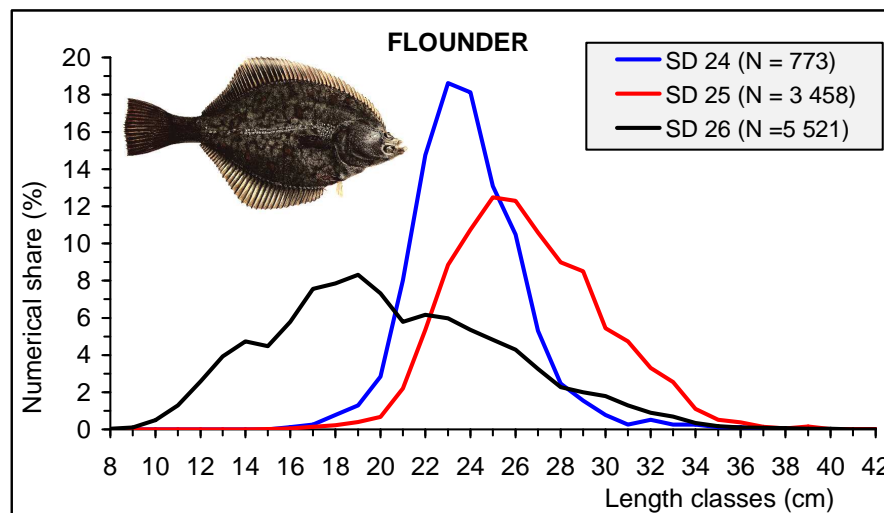
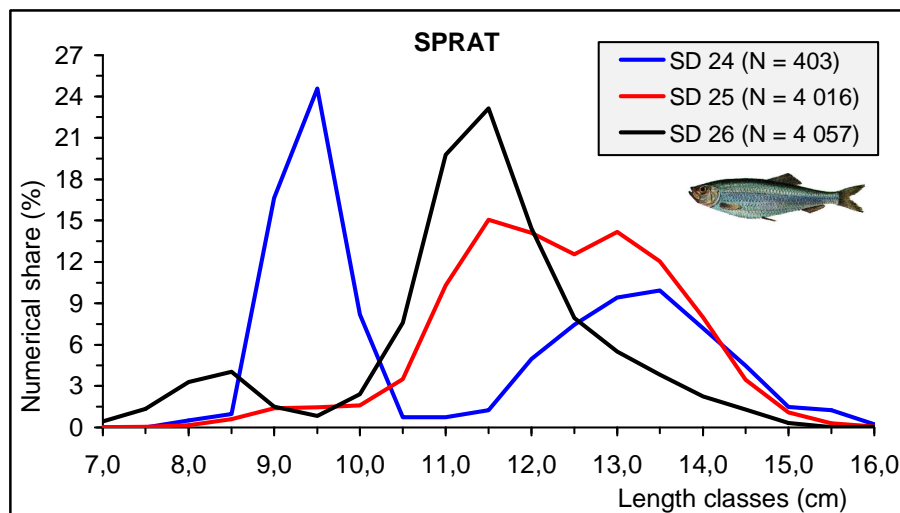
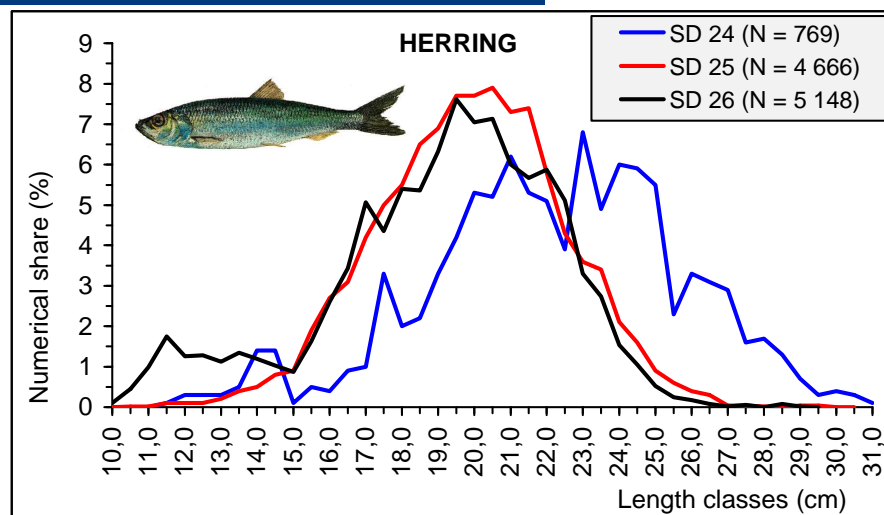
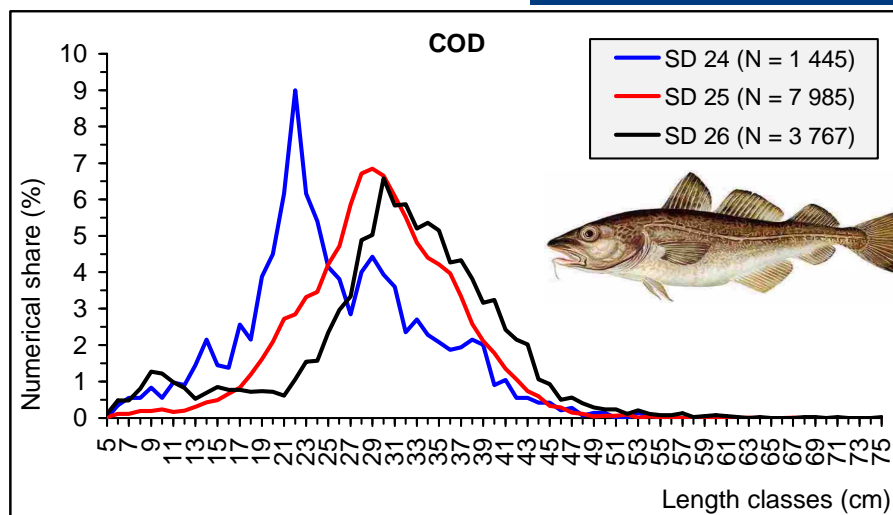
RESULTS

POL-BITS-1q/2017



RESULTS

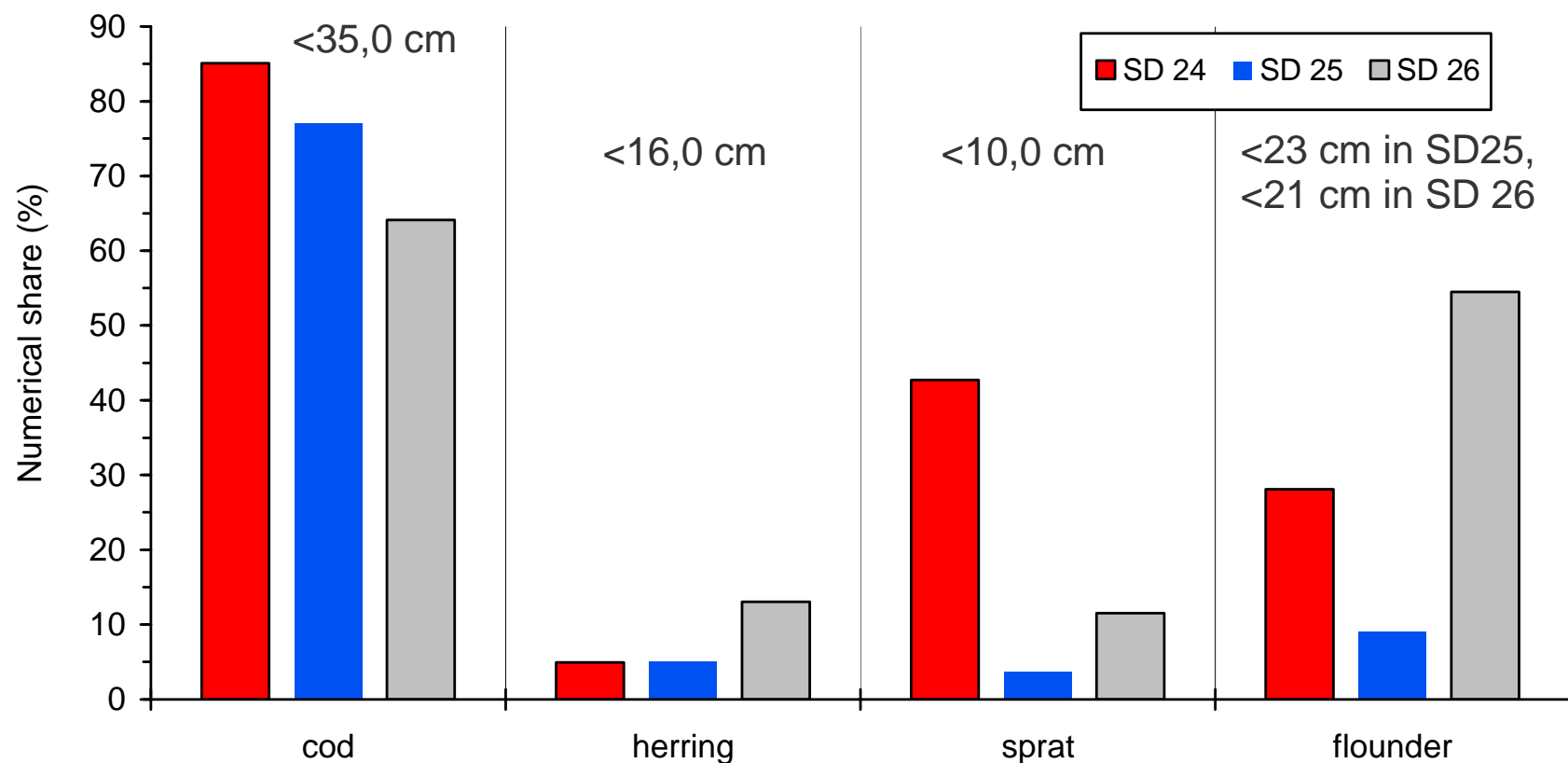
POL-BITS-1q/2017



The main fish species length distribution in samples originated from research catches acc. to the ICES SDs.

RESULTS

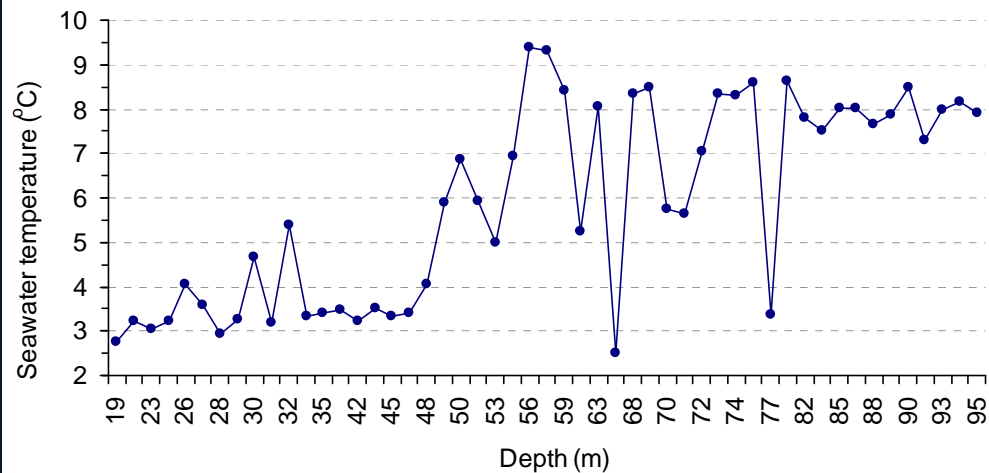
POL-BITS-1q/2017



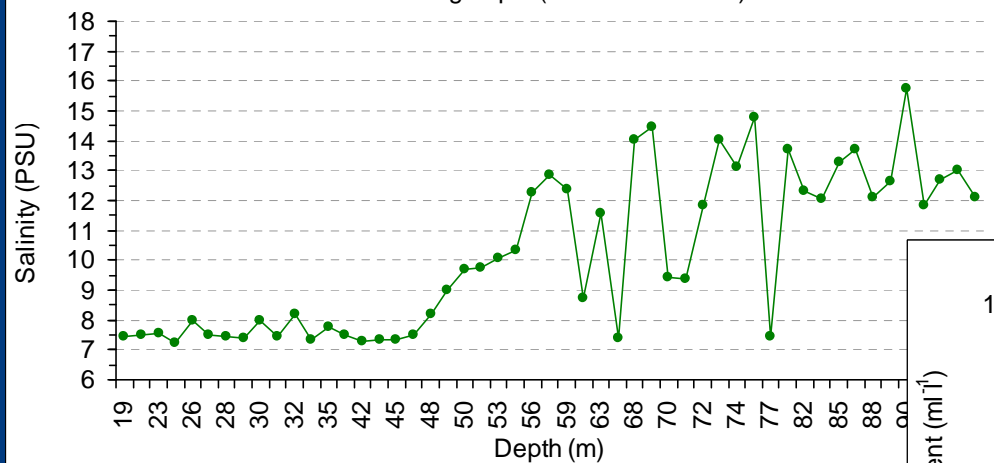
The average numerical share of young, undersized fish species in samples originated from research catches acc. to the ICES SDs.

The mean T, S, O₂ near seabed at particular isobaths (POL-BITS 1q/2017)

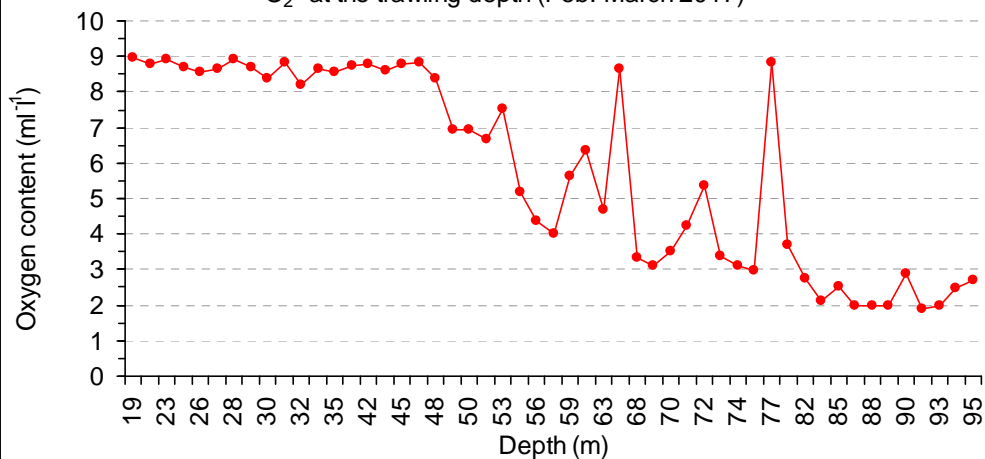
"T" at the trawling depth (Feb.-March 2017)



"S" at the trawling depth (Feb.-March 2017)



"O₂" at the trawling depth (Feb.-March 2017)



Poland - planned activities at sea during the BITS-4q/2017 and BITS-1q/2018 surveys

BITS 4q/2017 period of survey: 11 Nov. - 03 Dec. 2017,
22 days at sea,
60 fish control-hauls is planned,

BITS 1q/2018 period of survey: app. 09 Feb. - 08 March 2018,
27 days at sea,
81 fish control-hauls is planned,

Thank you for your attention!

BITS survey status and main results for Dana and Havfisken

By: Henrik Degel
DTU Aqua

**BIFS meeting
27/3 – 31/3, 2016
Riga**

DTU Aqua
National Institute of Aquatic Resources

$$M2_i = \frac{\sum_j \frac{dR}{dt} N_j \frac{\varphi_{ji}}{\varphi_j}}{N_i \omega_i} \int_a^b \epsilon \Theta^{\sqrt{17}} + \Omega \int \delta e^{i\pi} = \{2.7182818284\}$$

Δ ∞ χ^2 Σ $!$ \gg \approx

Nation:	Denmark	Vessel:	Dana
Survey:	BITS	Dates:	1-18/11 - 2016

Cruise	
Gear details:	The big (#920) standard TV3 trawl is used. The construction of the trawl follows the specifications in the manual. No rock
Notes from survey (e.g. problems, additional work etc.):	Stomack sampling from cod, plankton fishing during night.

ICES Sub-Divisions and Depth stratum	Gear (TVL,TVS)	Number of hauls planned	Number of valid hauls realized using "Standard" ground gear	Number of valid hauls realized using Rock-hoppers	Number of assumed zero-catch hauls	Number of replacement hauls	Number of invalid hauls	% stations fished
25								
2	TVL	0	1	0	0	0	0	#DIV/0!
3	TVL	16	15	0	0	0	0	81,3
4	TVL	22	22	0	0	0	0	86,4
5	TVL	11	10	0	0	0	0	90,9
6	TVL	0	1	0	0	0	0	#DIV/0!
26								
3	TVL	1	1	0	0	0	0	100,0
4	TVL	1	1	0	0	0	0	100,0
24								
2	TVL	1	1	0	0	0	0	100,0
3	TVL	4	4	0	0	0	0	100,0

Number of biological samples (maturity and age material, *maturity only):			
Species	Age	Species	Age
<i>Clupea harengus</i>			
<i>Gadus morhua</i>			
<i>Sprattus sprattus</i>			



Dana 4th quarter 2016. Dana (SD 25, 26)

Cruise summary

Cruise: BITS
 Cruise number: 11
 Quarter: 4
 Year: 2016
 Periode: 1-18/11
 Country: Denmark

Number of hauls planned: 56

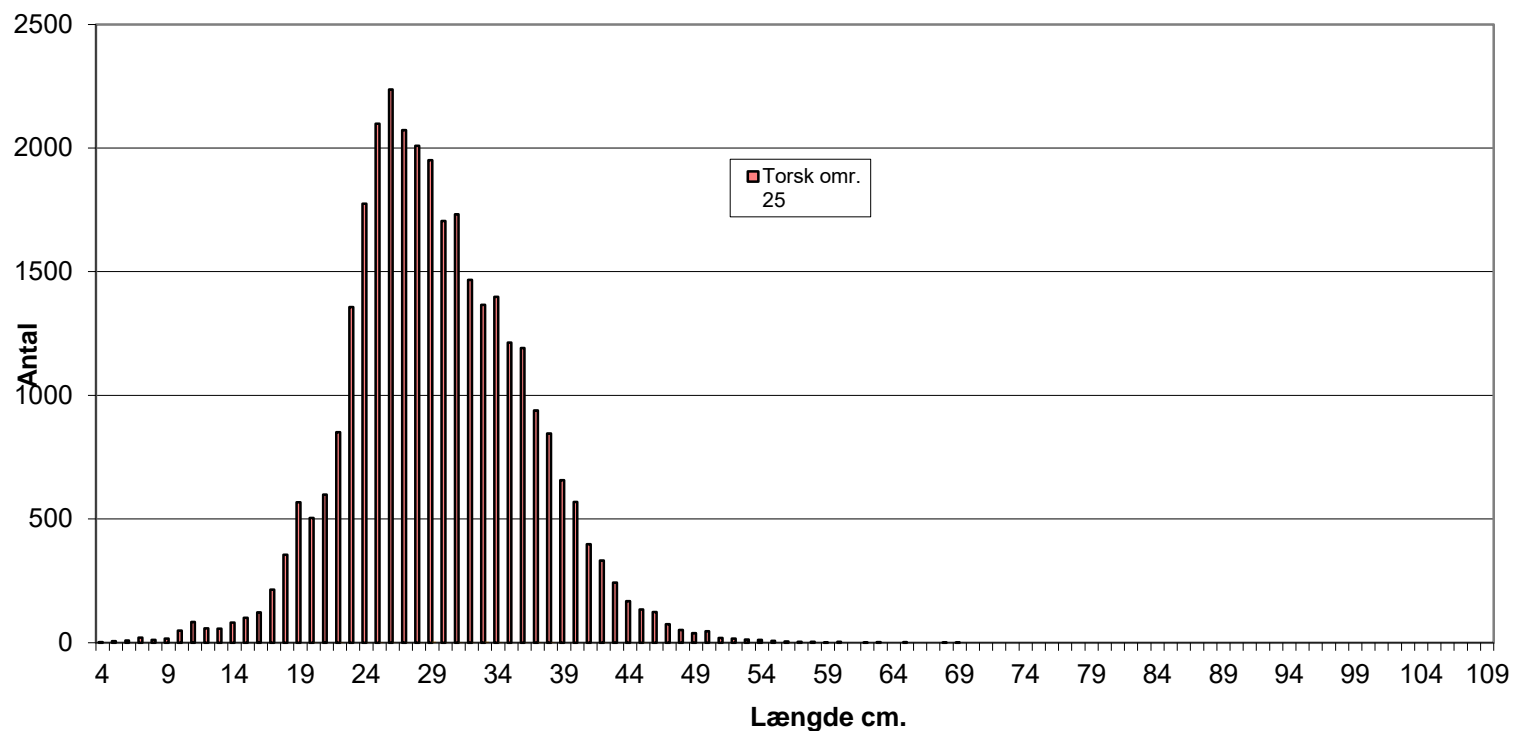
	Index qualified	Non-index qualified
Number of succesful trawl hauls carried out in total:	43	
Number of invalid trawl hauls carried out:		0
Number of "No oxygen trawl hauls" carried out (assumed zero-catch):	13	
SUM	56	0

Number of trawl related CTD stations performed: 0
 Number of NON-trawl related CTD stations performed: 89
 Number of succesful BONGO hauls carried out: 61
 Number of succesful IKMT hauls carried out: 0
 Number of succesful Appi hauls carried out: 0
 Number of succesful WP2 hauls carried out: 4
 Number of succesful BOM hauls carried out: 0
 Number of succesful Multi-NET hauls carried out: 0

Total kgs of cod cached: 1345,3
 Total number of cod measured: 24019,909
 Total number of cod otoliths collected: 0

BITS Dana 4q 2016

Samlet fangst af torsk BITS November 2016



Havfisken BITS 4 q 2016

Nation:	Denmark	Vessel:	Havfisken/26HF
Survey:	KASU-2	Dates:	18/10-5/11

Cruise	
Gear details:	The small (#520) standard TV3 trawl is used. The construction of the trawl follows the specifications in the manual.
Notes from survey (e.g. problems, additional work etc.):	

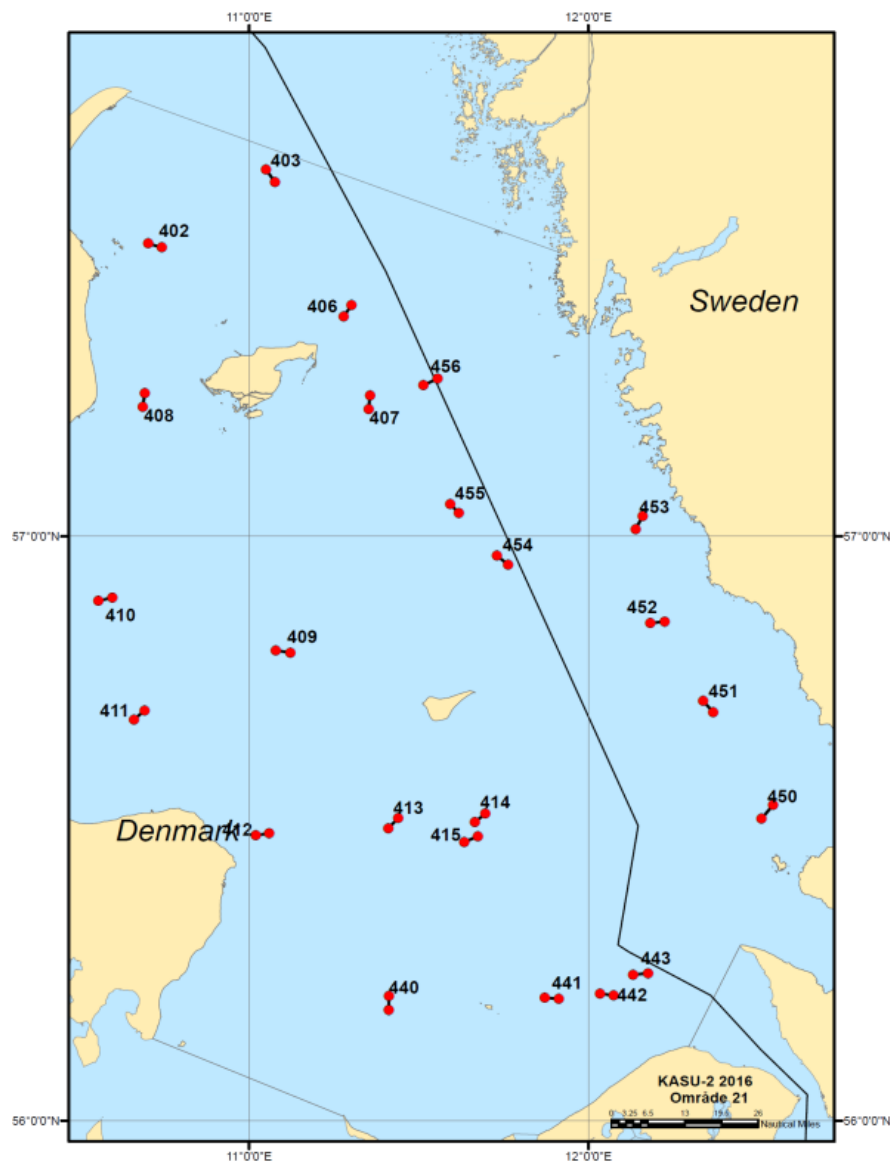
CES Sub-Divisions		Gear (TVL,TVS)	Depth strata (1 -6)	Number of hauls planned	Number of valid hauls realized using "Standard" ground gear	Number of valid hauls realized using Rockhoppers	Number of assumed zero-catch hauls	Number of replacement hauls	Number of invalid hauls	% stations fished
22		TVS	1(0-19m)		15					100%
22		TVS	2(20-39m)		10					100%
21		TVS	1(0-19m)		5					100%
21		TVS	2(20-39m)		13					100%
21		TVS	3(40-59m)		1					100%
21		TVS	4(60-79m)		3					100%
21		TVS	5(80-99m)		1					100%
20		TVS	2(20-39m)		2					100%
23		TVS	1(0-19m)		4					100%
23		TVS	2(20-39m)		1					100%
24		TVS	1(0-19m)		1					100%

Number of biological samples (maturity and age material, *maturity only):

Species	Number of otoliths	Species	Number of otoliths
Sole	182	Saith	10
Cod	941	Dab	331
Withing	227	Haddock	10
Witch	23	Turbot	81*
Hake	23	Brill	118*
Plaice	729		

Havfiskeri BITS 4 q 2016, Haul plot, Kattegat

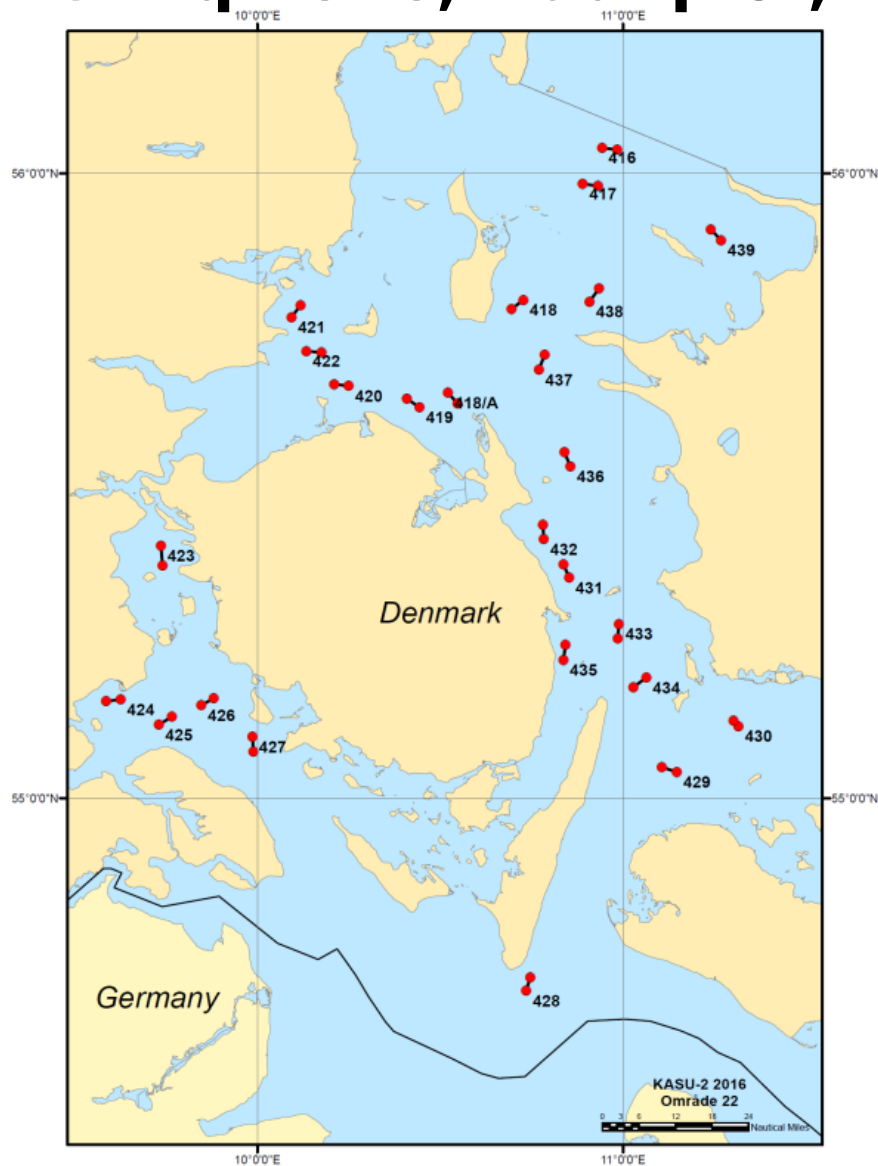
WGBIFS REPORT 2017



Havfiskeri BITS 4 q 2016, Haul plot, Belt area

WGBIFS REPORT 2017

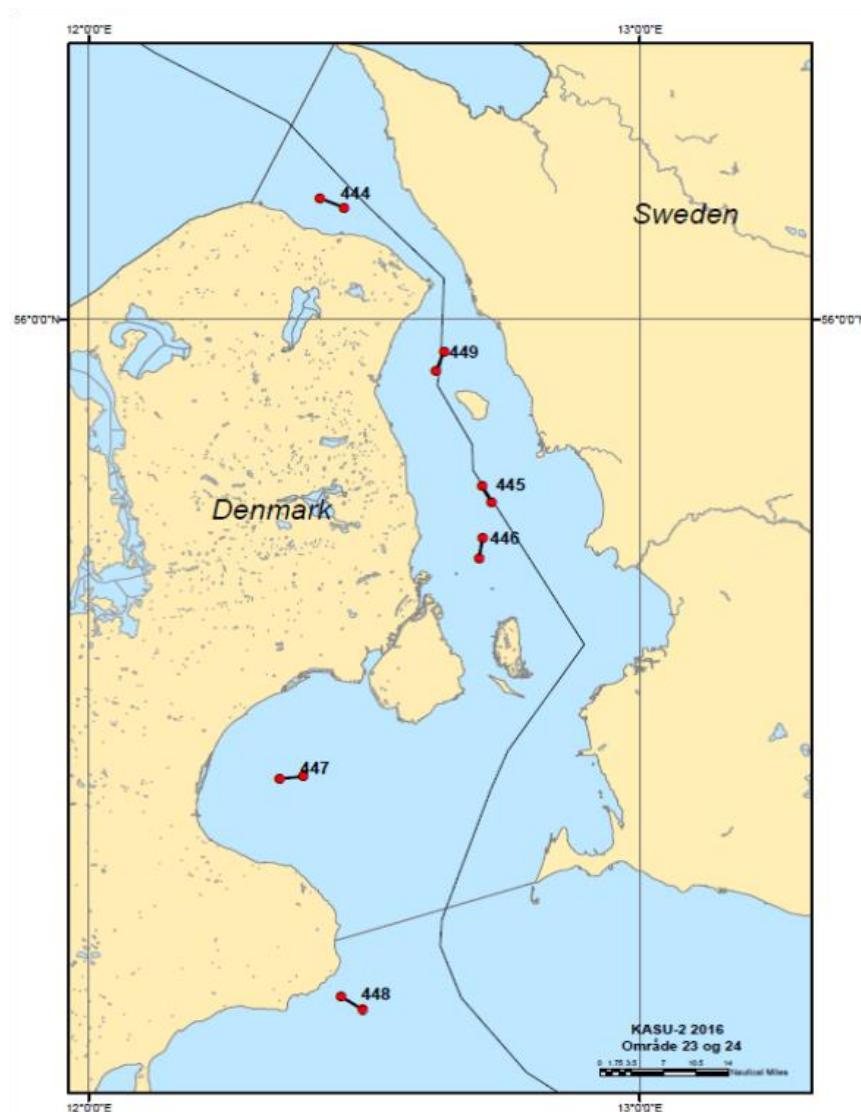
480



Havfiskeri BITS 4 q 2016, Haul plot, Øresund

WGBIFS REPORT 2017

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Havfisker BITS 4 q 2016, Species list

UK Name	dk Name	Latin	Number	Subsample	Sum O'weightTo	Sum O'lengthTo
Squid, common	Slaskpiulva	Capteolopoda	0	0	0	9,313
Demersal	Flafak (uspe)	Calliopygodes	719	1519	1519	19,087
Wrasse	Øfke	Labridae sp	1	1	1	0,004
Tusk goby	Luskog	Gobidae	1	1	1	0,030
Pipe-fishes/Gobioninae	Luspe	Syngnathidae sp	3	3	3	0,036
Ed	Al	Aequila aequila	2	2	2	0,908
Edgous	Åkvalde	Zonotrichia	40	40	40	1,030
Acrobary	Åsjes	Engraulis encrinurus	88	194	194	2,591
	Stegylis	Lobus bogylis	5	5	5	0,138
Spine	Stilleg	Spirochaeta	2749	102818	102818	1328,569
Marine polychaete	Dybendsige	Poecilus borealis	0	0	0	52,157
Four-headed scorpion	Frunder, borkvæbde	Scorpaenidae	31	31	31	0,922
Green wrasse fish	Fisseg	Tachinus diaca	1127	11022	11022	671,410
Silverside	Geswage	Bugula striatula	11	15	15	0,145
Pomarine	Øfke	Tisopterus amarus	12	28	28	0,294
Grey pout	Økvalde	Euphrasia	607	948	948	71,785
Ammonite plate	Heseg	Hippoglossus platessa	1425	5334	5334	217,183
Shad	Havbør	Clupeoides	3	3	3	1,206
Goldfish	Havbør	Cyclopterus	10	10	10	0,108
Marine mackerel	Havbør	Tachinus	1472	4943	4943	20,572
Whiting	Hvileg	Macropodus	4807	103784	103784	2530,672
Large whiting	Hvileg	Macropodus	0	0	0	333,009
Common shad	Hvileg	Macropodus	4425	100352	100352	4834,788
Marine labrid	Jaspe	Macropodus	330	330	330	21,807
Quercus leaf	Kamulag	Aequila aequila	0	0	0	1,547
Haddock	Kulle	Macropodus	82	82	82	13,755
Hake	Kulle	Macropodus	79	79	79	18,334
Black goby	Kulleg	Gobus	236	3118	3118	39,802
Shaggy sculpin / Pomarine	Luskog	Macropodus	2	6	6	0,030
Pollack	Lysg	Pollachius	1	1	1	1,810
Mackerel	Makel	Scorpaenidae	29	29	29	4,988
Mud	Makel	Macropodus	0	0	0	0,108
Pogon	Pogon	Aequila aequila	31	31	31	0,598
Pinked dogfish	Pogon	Squalus	63	63	63	142,536
Turbot	Pogon	Scorpaenidae	82	82	82	49,475
Plaice	Plaice	Macropodus	0	0	0	9,263
Spotted dogfish	Plaice	Calliopygodes	6	6	6	0,107
Tub goby	Reddus	Chelodactylus	7	7	7	2,132
Plaice	Reddus	Plaice	3100	13086	13086	2153,229
Common sole	Reddus	Macropodus	144	185	185	23,614
Sand goby	Sand luskog	Pomarine	27	43	43	0,175
Codling	Sorgylis	Syngnathidae	4	4	4	0,088
Sole	Sq	Pollachius	15	15	15	5,727
Herring	Sild	Clupea	3282	45392	45392	582,623
Witch	Sild	Hyphessopus	39	39	39	4,882
Plaice	Stilleg	Plaice	1330	2670	2670	626,286
	Stilleg	Plaice	1	1	1	0,536
Shill	Stilleg	Scorpaenidae	134	134	134	47,671
Marine goby	Stilleg	Scorpaenidae	2	2	2	0,030
Sand blenny	Stilleg	Tisopterus	586	7882	7882	76,938
Twaite shad	Stilleg	Luspe	46	51	51	0,736
Sand eel	Stilleg	Alia	3	3	3	1,376
Sand eel	Stilleg	Alia	0	0	0	0,300
Sand eel	Stilleg	Alia	94	100	100	2,403
Common dogfish	Stilleg	Calliopygodes	232	696	696	7,813
Blue-leg wrasse	Stilleg	Luspe	0	0	0	16,970
Sand eel	Stilleg	Alia	6	10	10	4,505
Sand eel	Stilleg	Alia	0	0	0	325,031
Sand eel	Stilleg	Alia	6	6	6	0,095
Sand eel	Stilleg	Alia	8	8	8	0,990
Sand eel	Stilleg	Alia	11	11	11	0,138
Green sea bream	Stilleg	Hyphessopus	36	36	36	0,564
Sand eel	Stilleg	Alia	1	1	1	0,030
Cod	Stilleg	Alia	2915	9322	9322	911,770
Three-headed scorpion	Stilleg	Scorpaenidae	75	75	75	1,788
Sole	Stilleg	Alia	492	492	492	74,130
Sand eel	Stilleg	Alia	128	135	135	2,092
Sculpin	Stilleg	Macropodus	182	182	182	18,600

31450 415560 15219,336

Dana BITS 1q 2017

Nation:	Denmark	Vessel:	Dana
Survey:	BITS	Dates:	7-25/3 - 2017

Cruise	
Gear details:	The big (#920) standard TV3 trawl is used. The construction of the trawl follows the specifications in the manual. No rock hopper was used
Notes from survey (e.g. problems, additional work)	Stomack sampling from cod, plankton fishing during night.

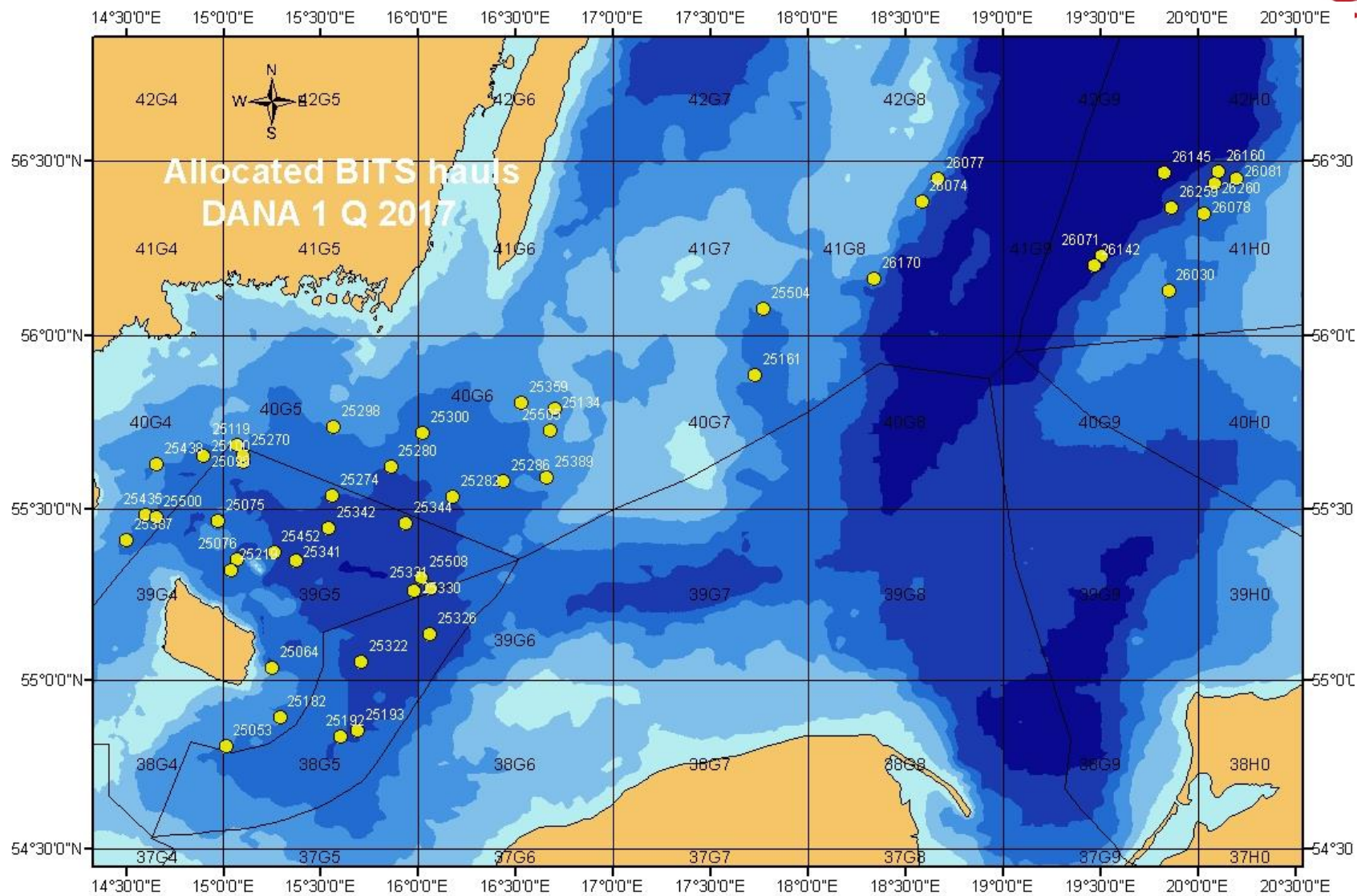
ICES Sub-Divisions and Depth stratum	Gear (TVL,TVS)	Number of hauls planed	Number of valid hauls realized using "Standard" ground gear	Number of valid hauls realized using Rock-hoppers	Number of assumed zero catch hauls	Number of replacement hauls	Number of invalid hauls	% stations fished
25	TVL							
3	TVL	9	7	0	0	0	1	88,9
4	TVL	24	21	0	0	0	0	87,5
5	TVL	10	13	0	0	0	0	130,0
6	TVL	0	1	0	0	0	0	-
26	TVL							
3	TVL	3	3	0	0	0	0	100,0
4	TVL	4	4	0	0	0	0	100,0
5	TVL	4	1	0	0	0	0	25,0

Number of biological samples (maturity and age material, *maturity only):

Species	Age	Species	Age
<i>Clupea harengus</i>			
<i>Gadus morhua</i>			
<i>Sprattus sprattus</i>			

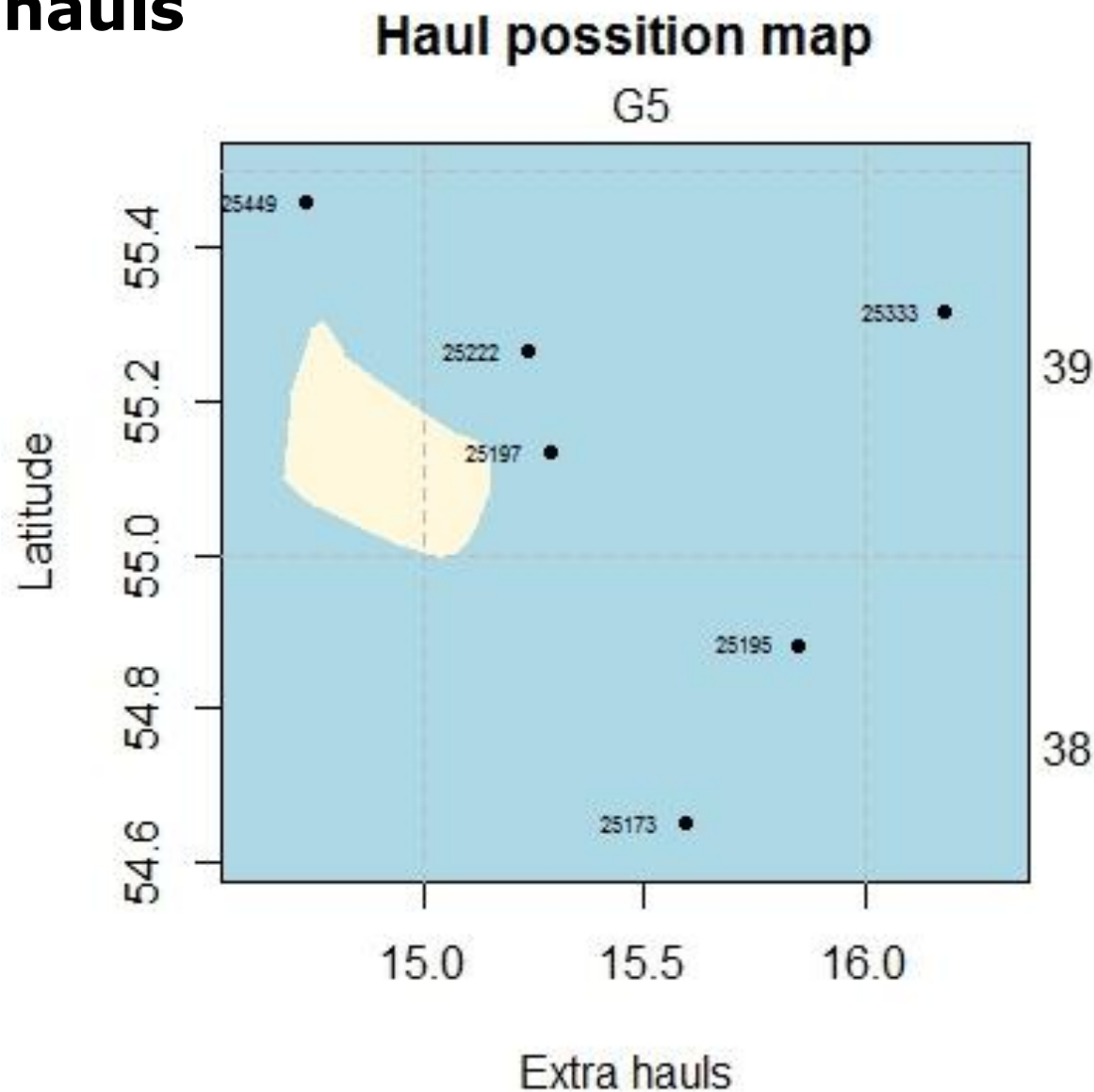
Dana BITS 1q 2017

484



Dana BITS 1q 2017

Extra hauls



Dana BITS 1q 2017

Cruise summary

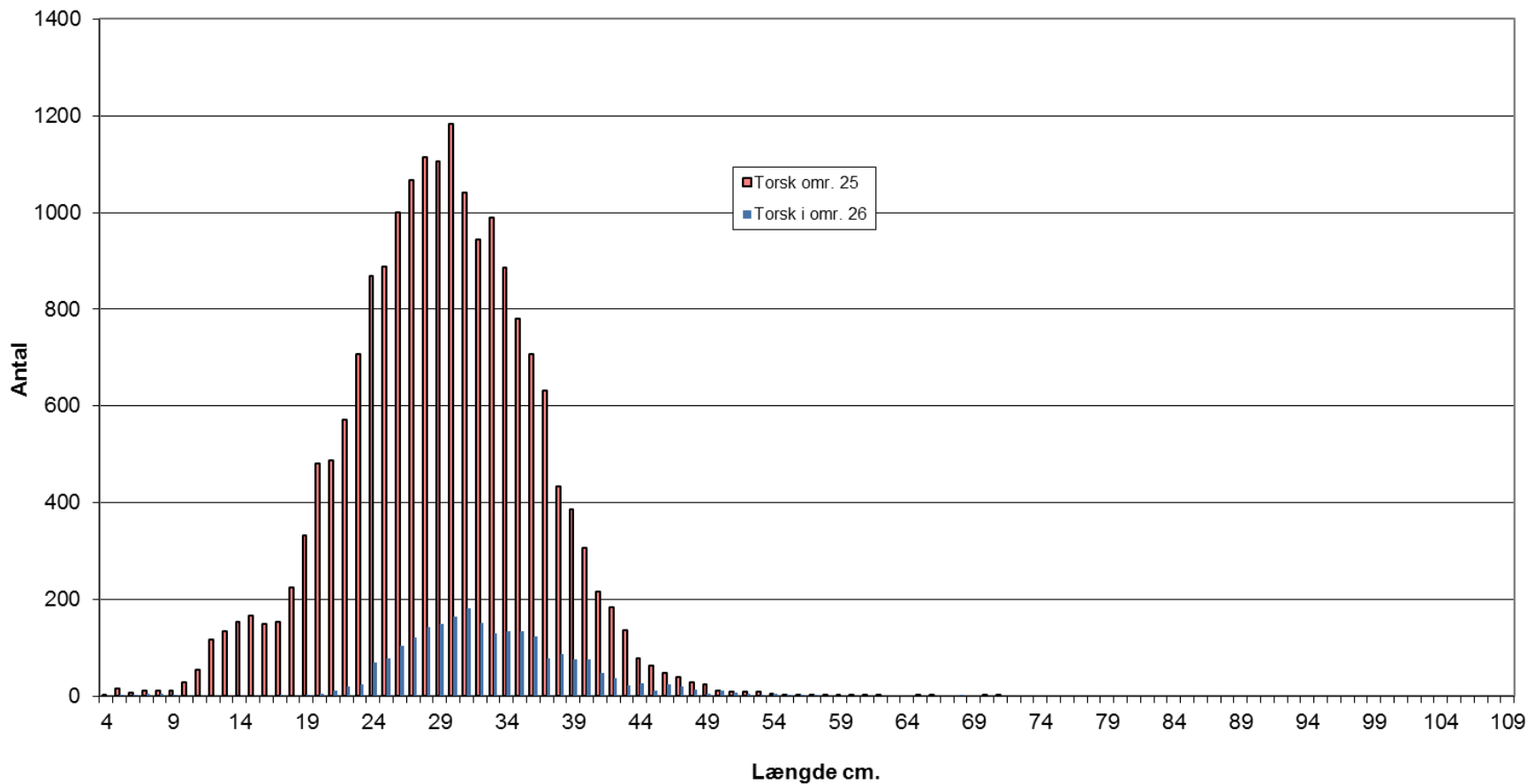
Cruise: BITS
 Cruise number: 4
 Quarter: 1
 Year: 2017
 Periode: 7-25/3
 Country: Denmark

Number of hauls planed: 47

	Index qualified	Non-index qualified
Number of succesful trawl hauls carried out in total:	50	
Number of invalid trawl hauls carried out:		1
Number of "No oxygen trawl hauls" carried out (assumed zero-catch):	0	
SUM	50	1

Number of trawl related CTD stations performed:	0
Number of NON-trawl related CTD stations performed:	77
Number of succesful BONGO hauls carried out:	43
Number of succesful IKMT hauls carried out:	0
Number of succesful Appi hauls carried out:	0
Number of succesful WP2 hauls carried out:	0
Number of succesful BOM hauls carried out:	0
Number of succesful Multi-NET hauls carried out:	0
Total kgs of cod cached	6776
Total number of cod measured	21353
Total number of cod otoliths collected	0

Length distribution for cod



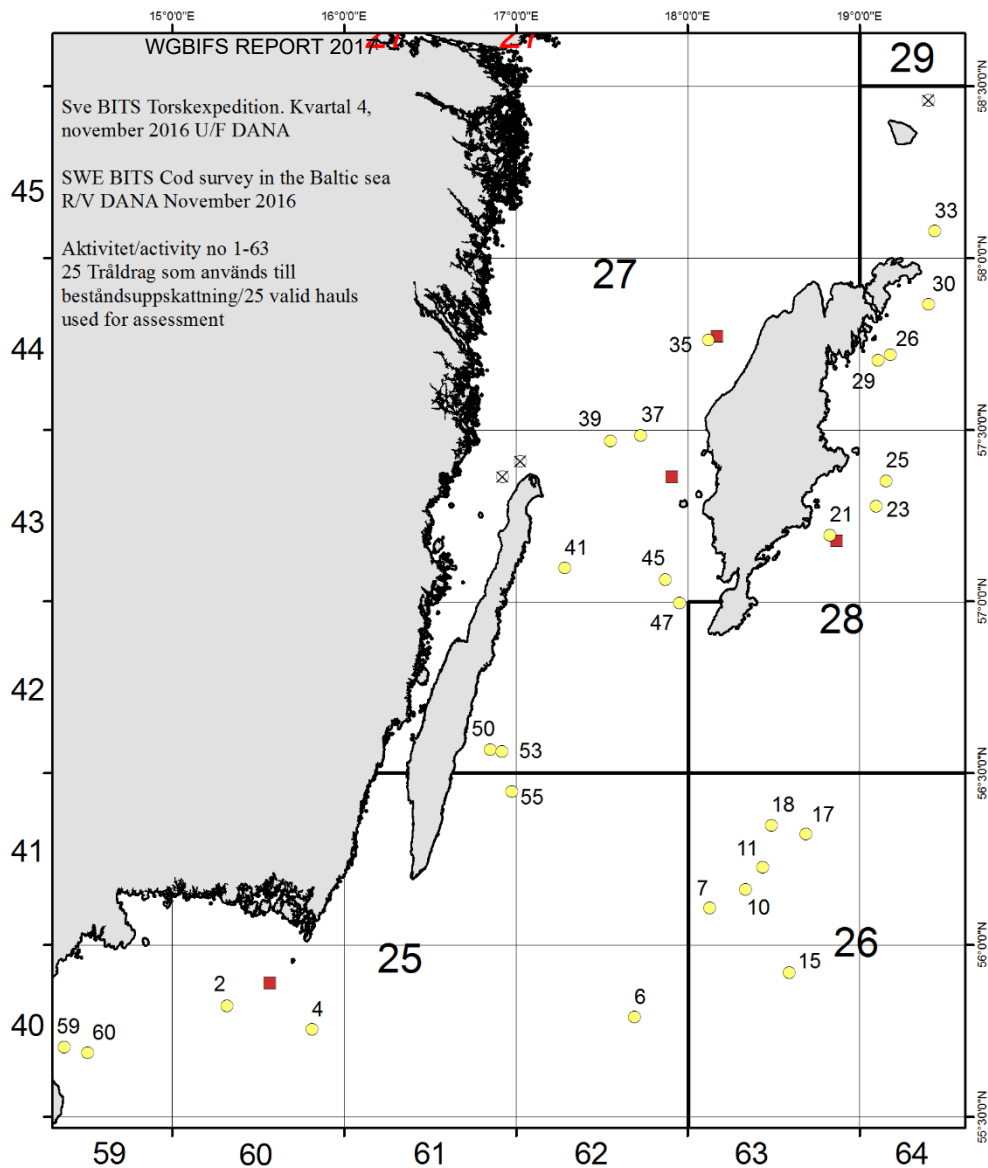
WGBIFS Riga

27/3– 31/03-17

BITS 2016 Q4 and 2017 Q1
R/V Dana

BITS 2016 Q4

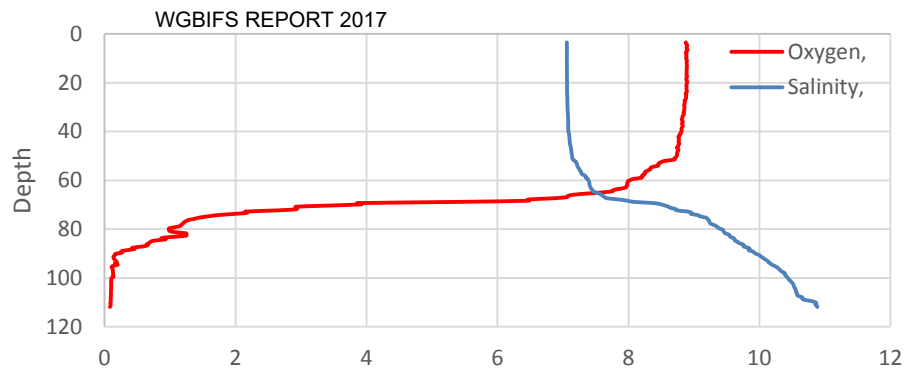
- Nov 18– nov 28
- Nine days survey (30 stations)
- Stomach sampling cod and flounder
- Additional sampling, Saduria entomon Length distribution



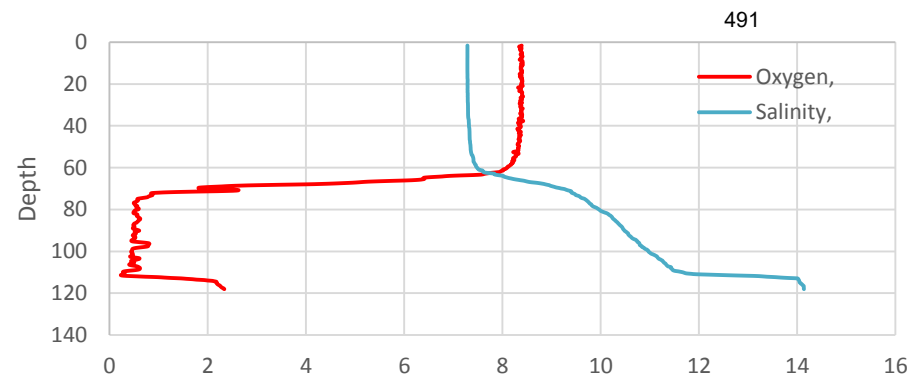
2016 Q4 Stations

- Crossed circles. Forbidden stations
- Red squares. Replaced stations
- Yellow circles. Planned and executed stations
- On this survey some of the old prohibited stations were allowed.
- Continuesly rising levels of salinity and oxygene, (ml/L) in some areas, particularly in Bornholm basin and parts of SD 26

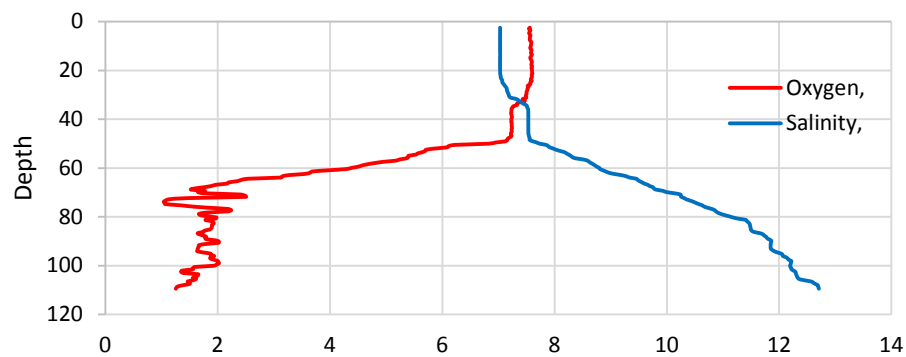
201302 Station No. 26141



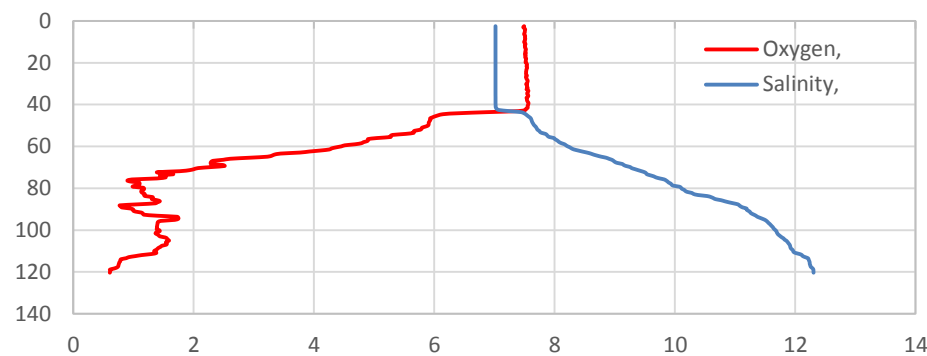
201502 Station No. 26140



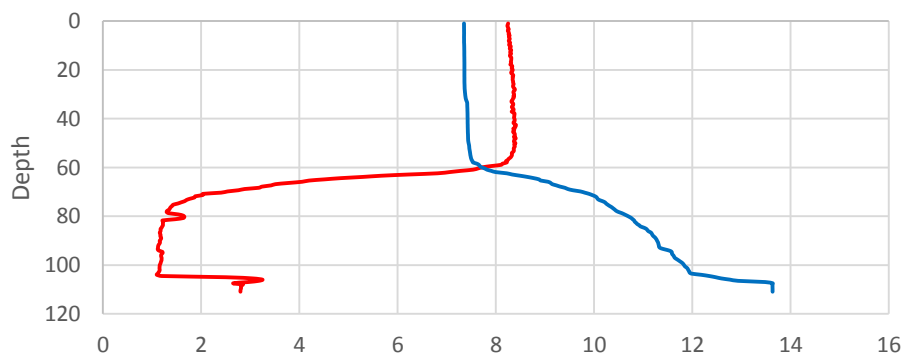
201611 Station No. 26221



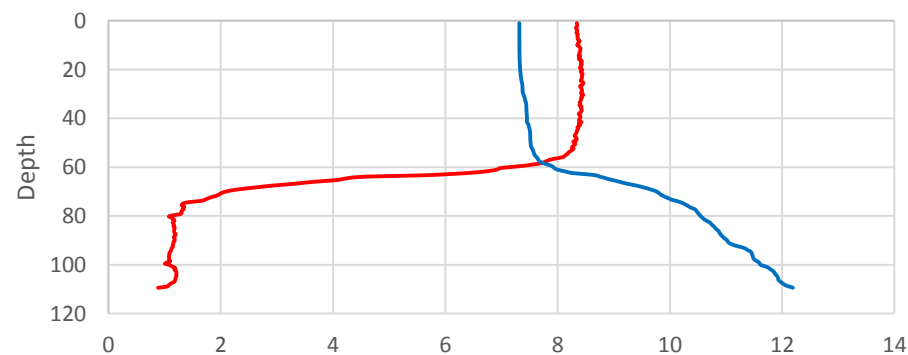
201611 Station No. 26141

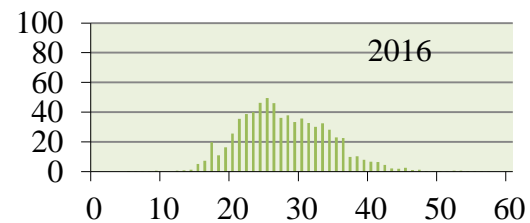
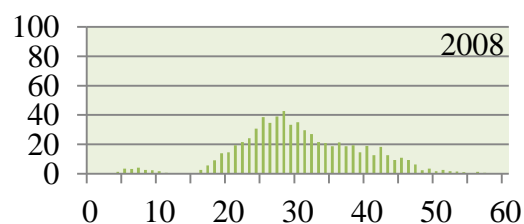
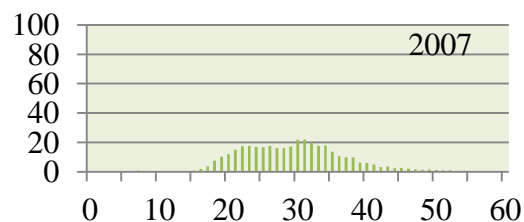
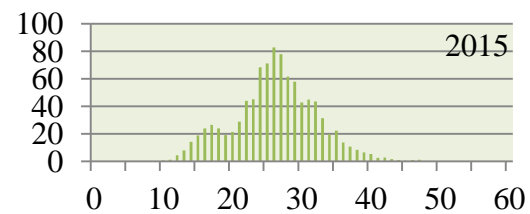
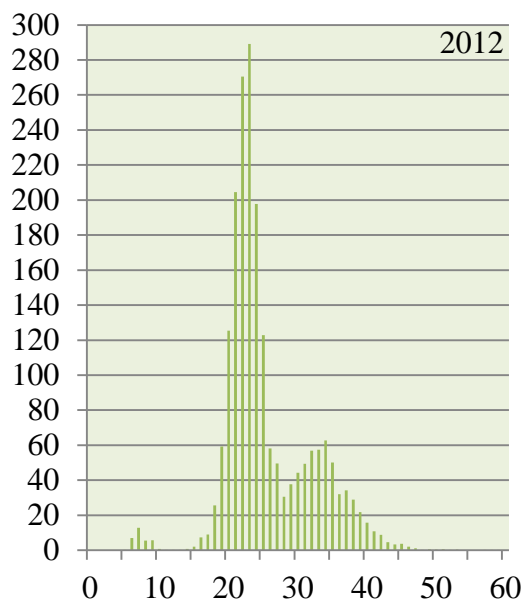
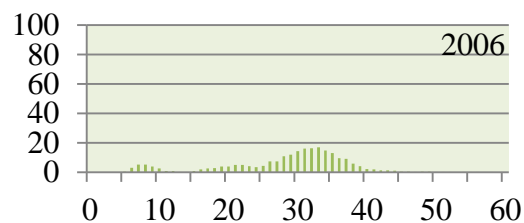
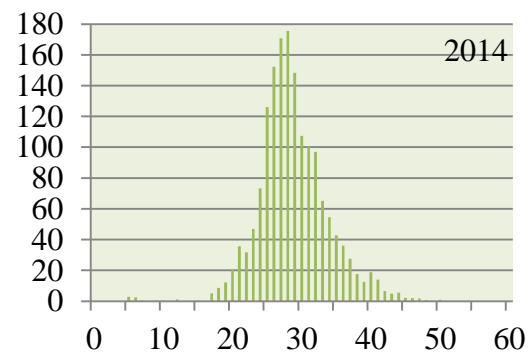
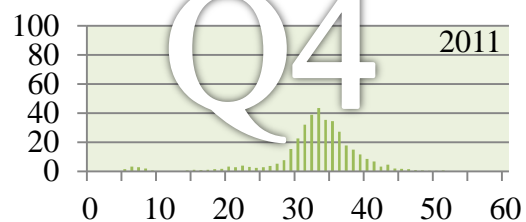
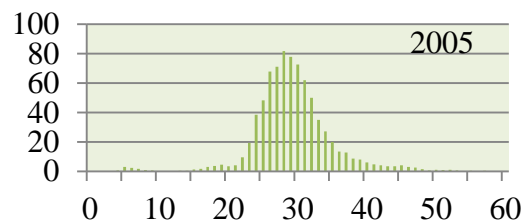
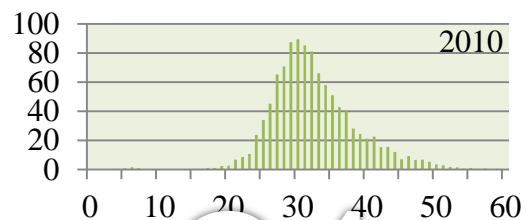
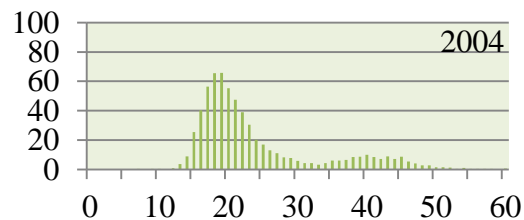
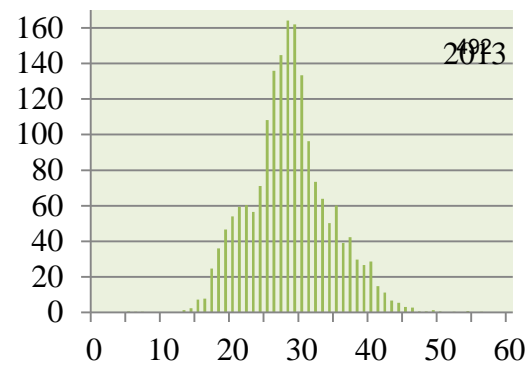
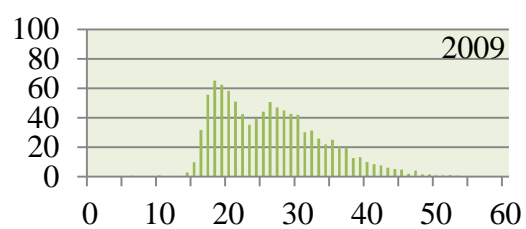
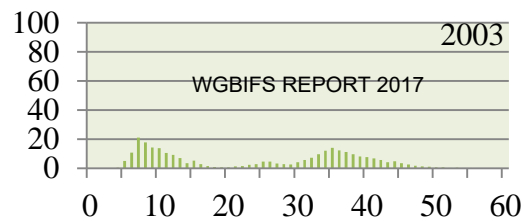


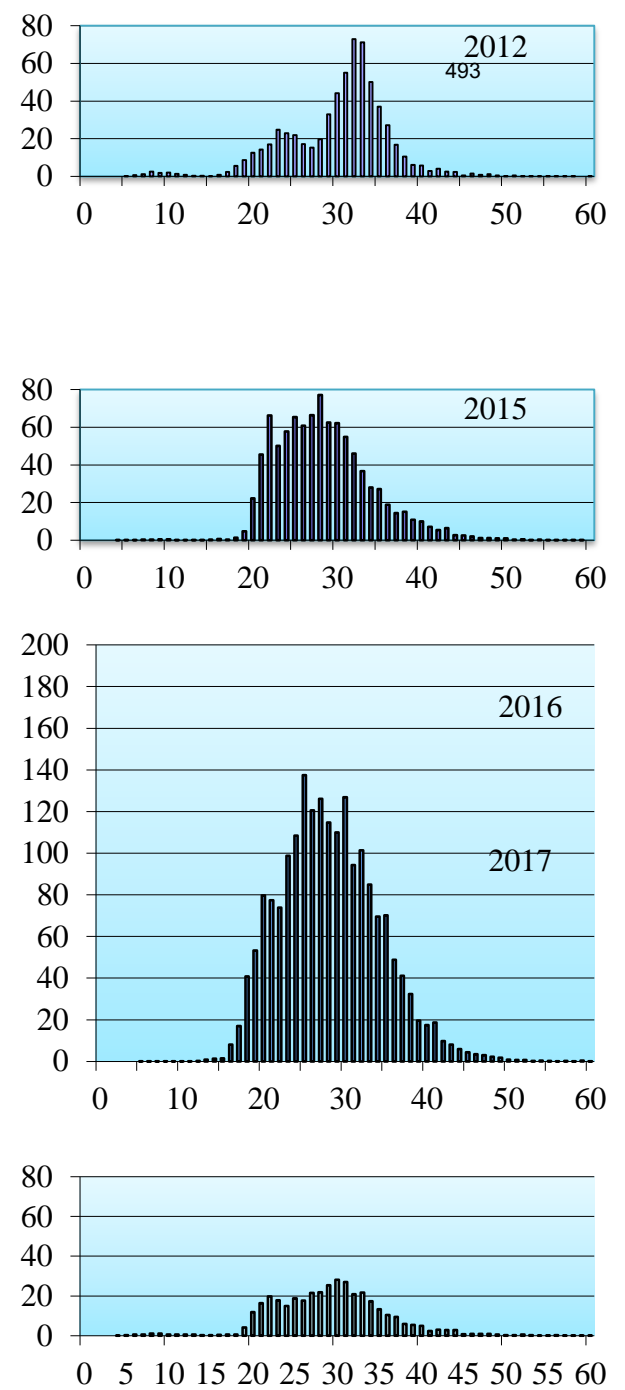
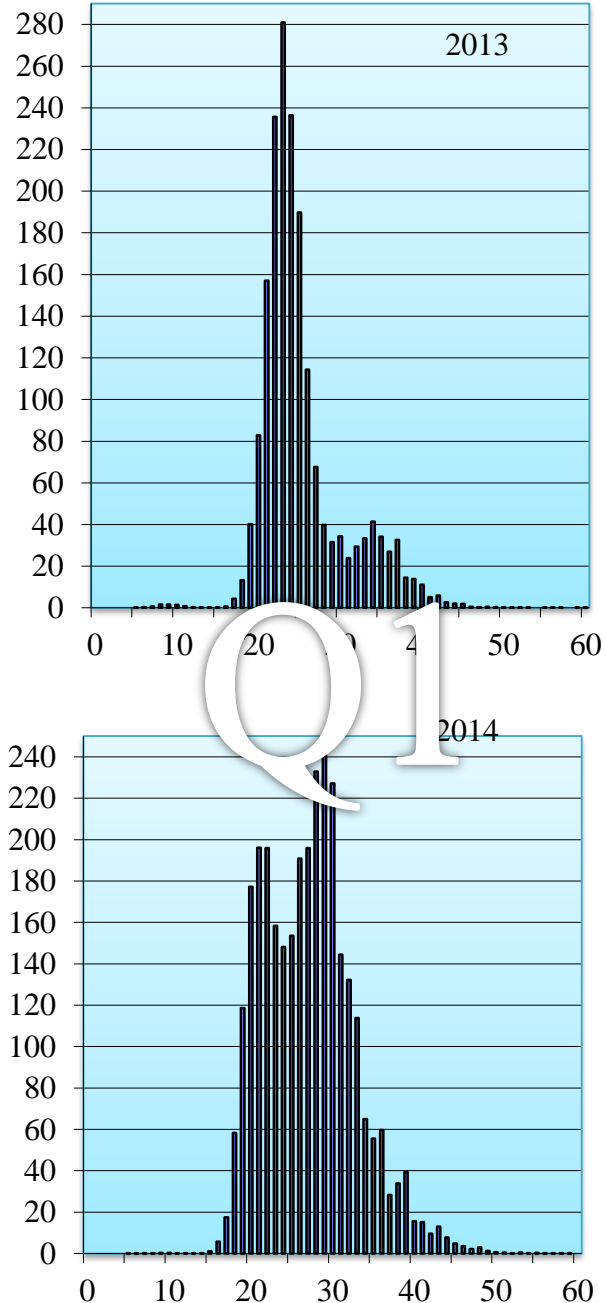
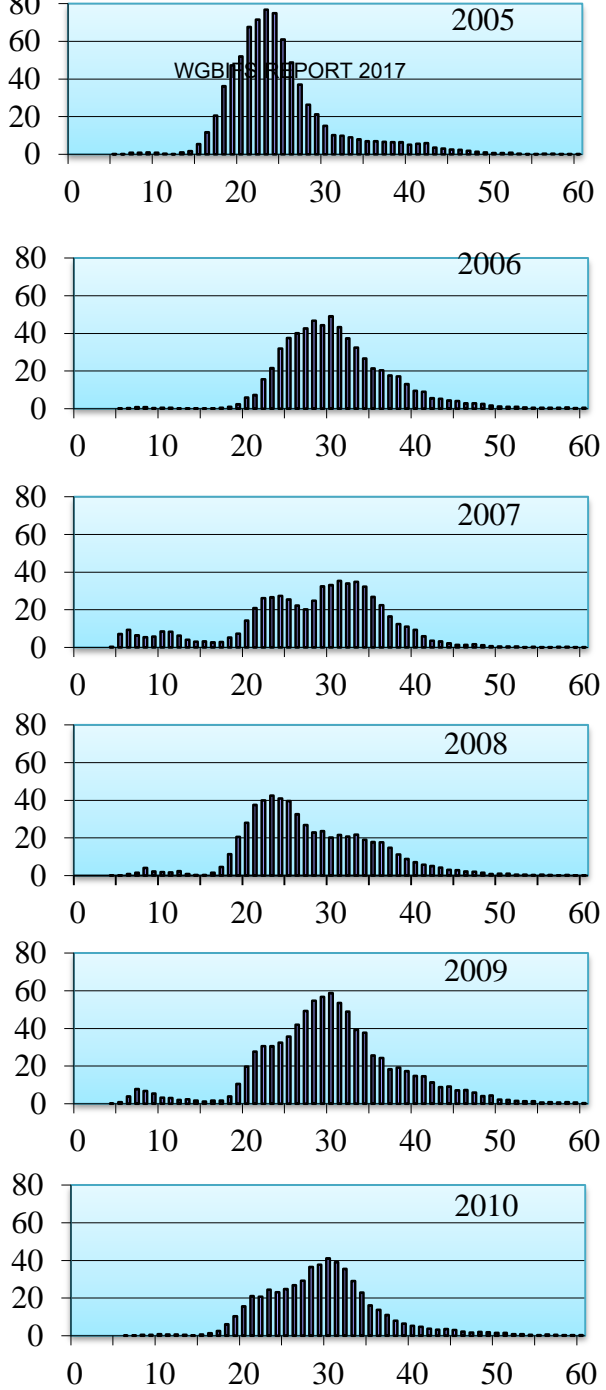
201702 Station No. 26221



201702 Station No. 26141

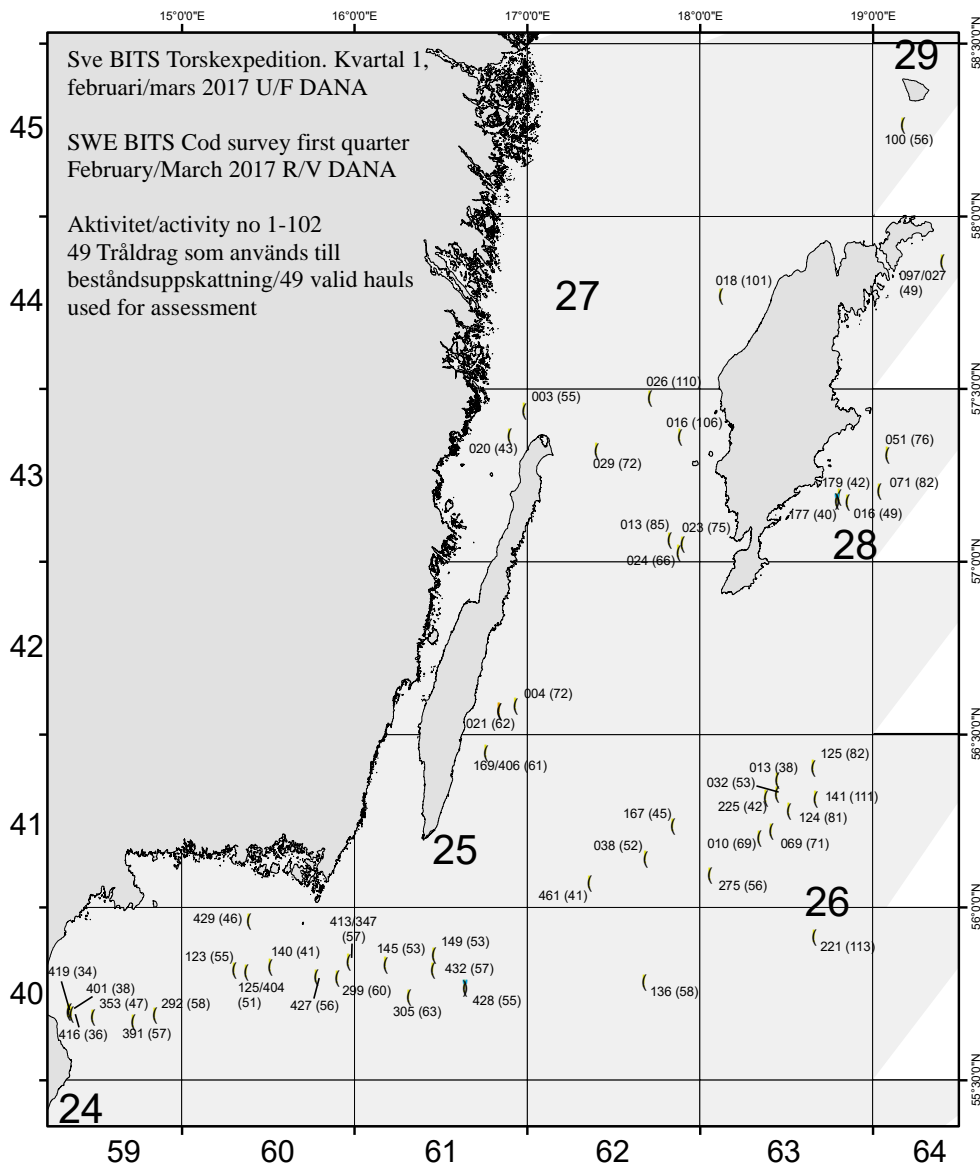






BITS 2017 Q1

- February 23– March 07
- 13 days survey (50 stations)
- Stomach sampling cod and flounder
- Additional sampling, Saduria entomon Length distribution
- Genetic sampling on cod



Stations BITS 2017 Q1

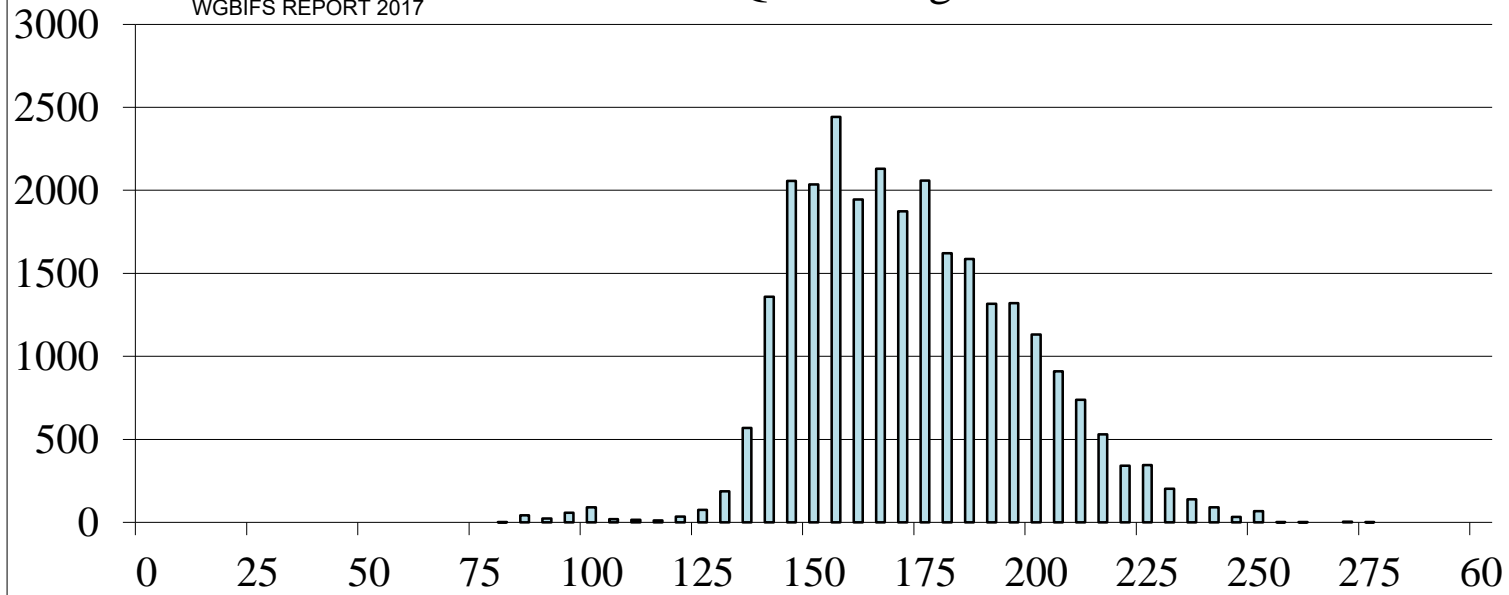
- Squares. Replaced stations
- Orange circles. Additional stations
- Yellow circles. Planned and executed stations
- No stations forbidden by the military this year

Oxygenated water mainly in areas bornholm basin and SD 26 but also in some place east of gotland SD 28

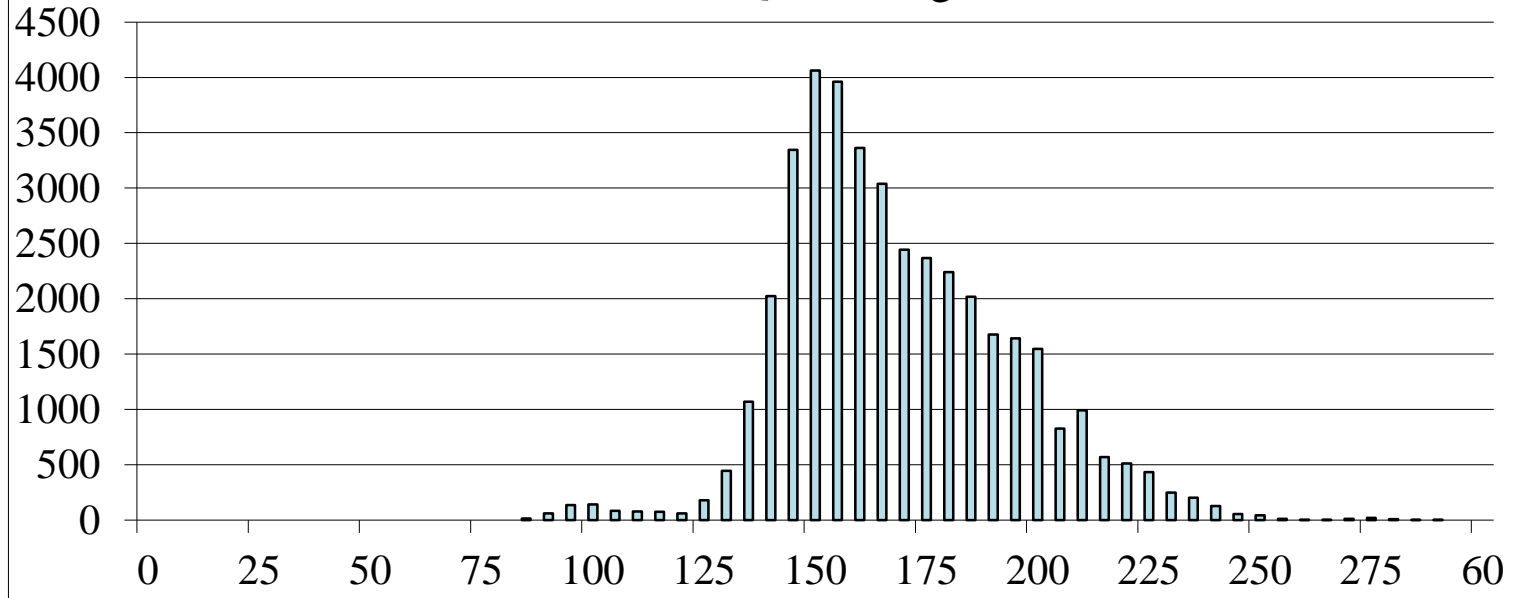
2016 Q4 Herring

WGBIFS REPORT 2017

Herring No/h
Baltic basin



2017 Q1 Herring



Swe BITS 2014 Q1

Total weight Kg 45 185
Cod weight Kg 11 155
Number of Cod 55 031

Swe BITS 2014 Q4

Total weight Kg 20 343
Cod weight Kg 3 693
Number of Cod 16 484

Swe BITS 2015 Q1

Total weight Kg 38 837
Cod weight Kg 4 631
Number of Cod 18 565

Swe BITS 2015 Q4

Total weight Kg 21000
Cod weight Kg 1 792
Number of Cod 7 191

Swe BITS 2016 Q1

Total weight Kg 38 754
Cod weight Kg 10 485
Number of Cod 37 420

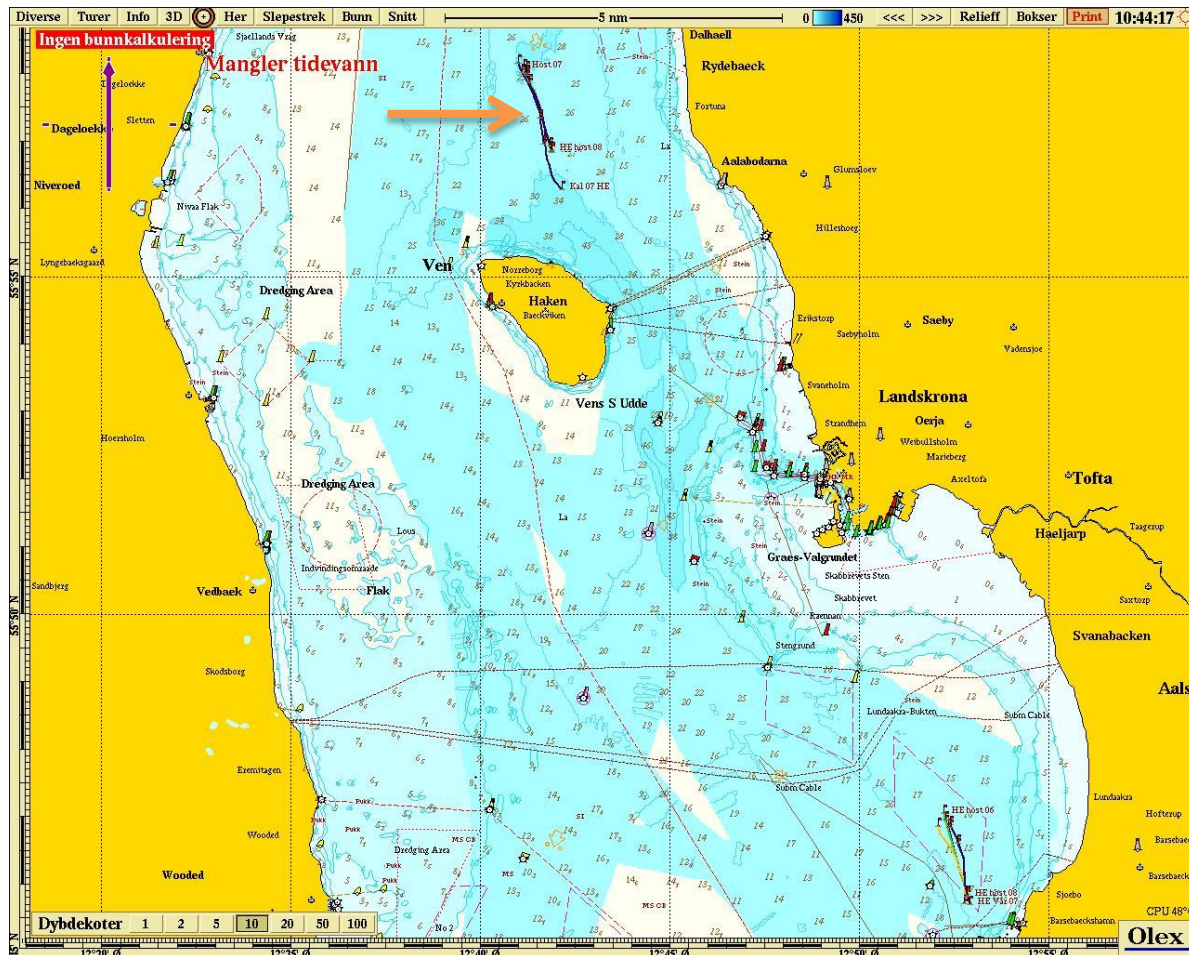
Swe BITS 2016 Q4

Total weight Kg 22 804
Cod weight Kg 1 699
Number of Cod 5 307

Swe BITS 2017 Q1

Total weight Kg 45 538
Cod weight Kg 2 114
Number of Cod 8 196

The Sound Öresund



Two Stations in the sound to be included in the west baltic stock

HÅLABBEN

Swe BITS 2016 Q4

Total weight Kg	927
Cod weight Kg	679
Number of cod	513

Swe BITS 2017 Q1

Total weight Kg	204
Cod weight Kg	142
Number of Cod	163



LATVIA

2016 BITS Q4 AND 2017 BITS Q1 SURVEYS

IVO ŠICS
GUNTARS STRODS



Both surveys were performed in cooperation with Polish colleagues on the Polish r.v. “Baltica”

During these surveys big TV3 with rochopper were used

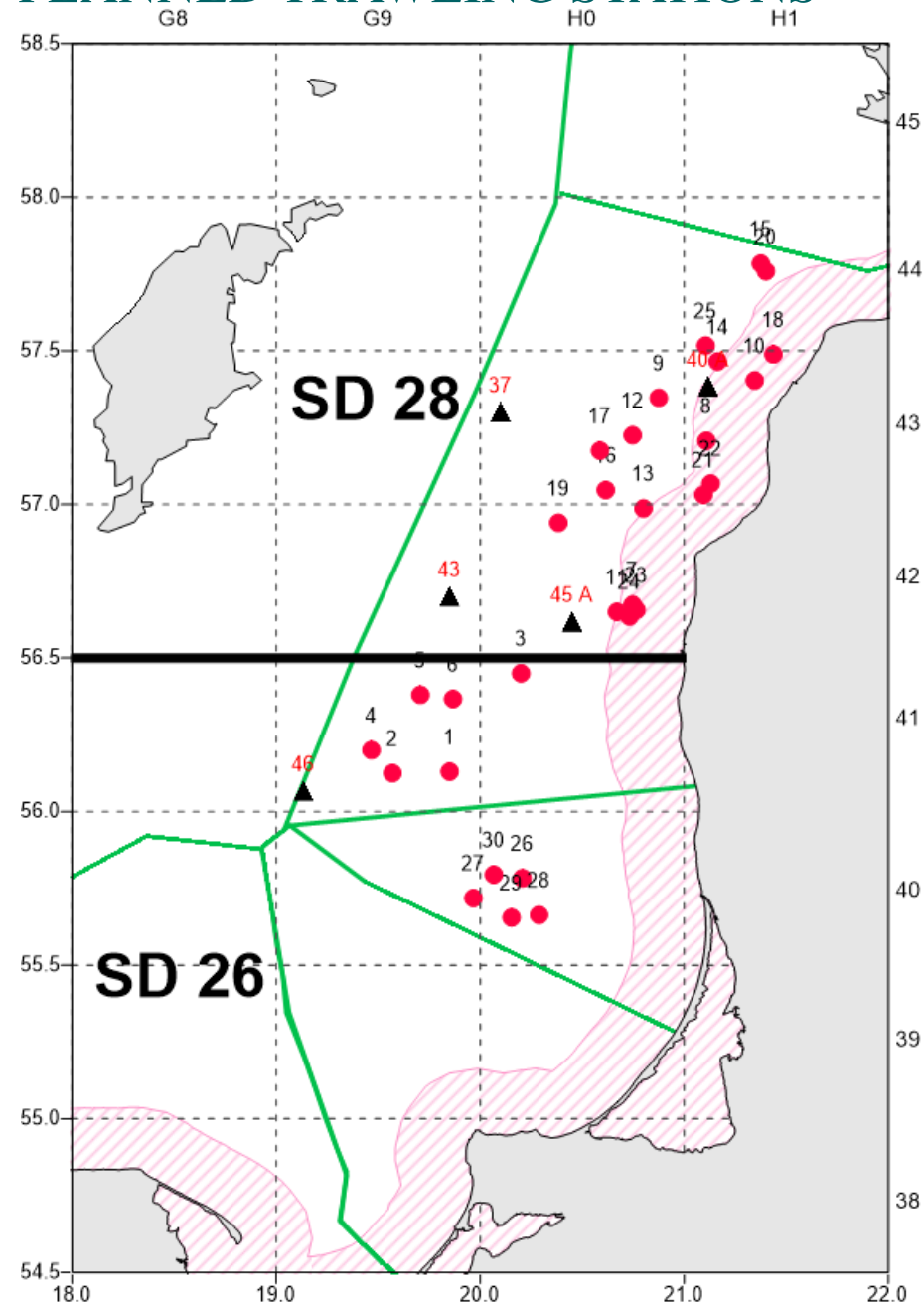


2016. BITS Q4 survey

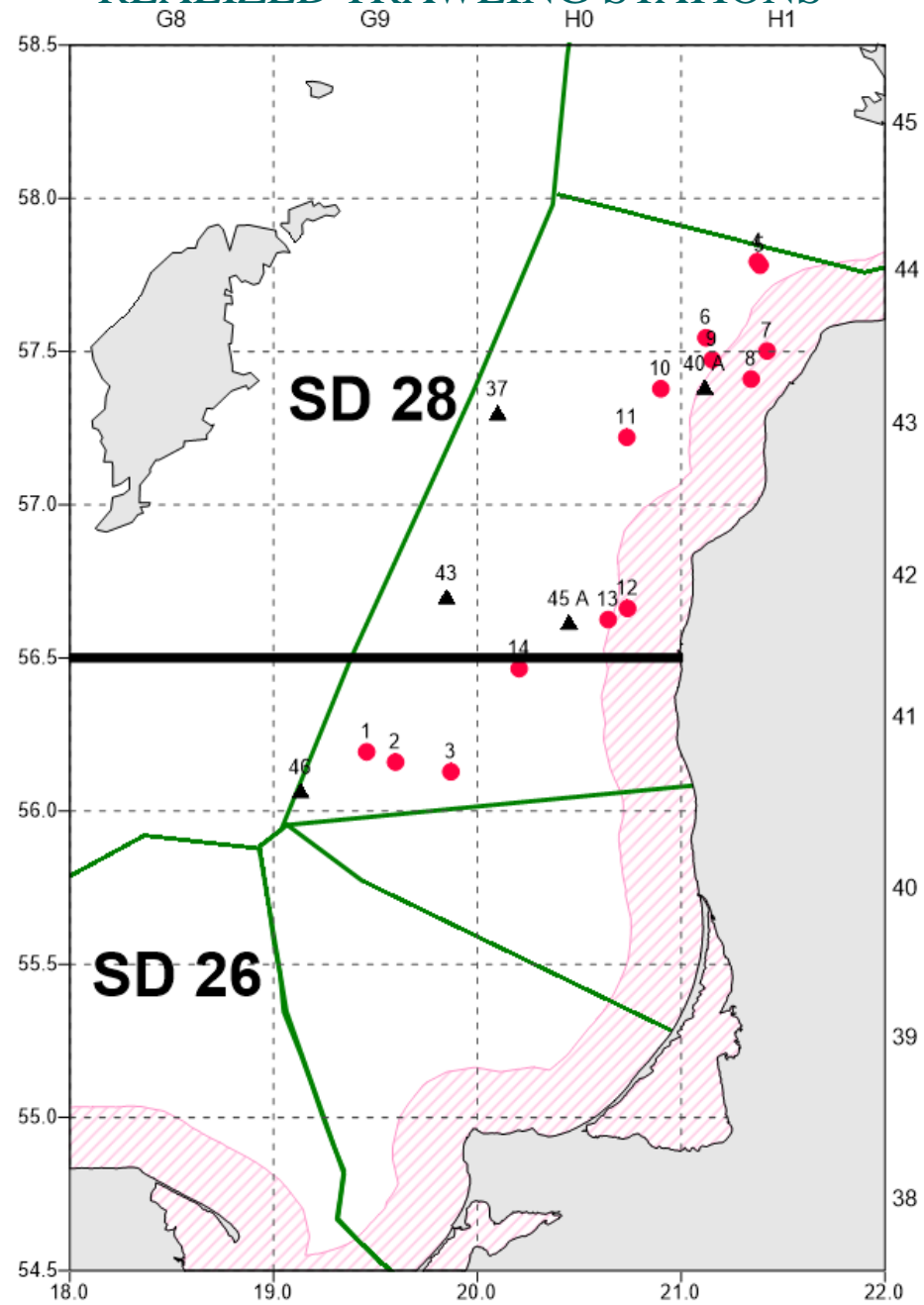
The joint Latvian-Polish BITS survey, conducted in the period of 03-12.12.2016 on the r.v. “Baltica” , in the Latvian EEZs (the ICES Sub-divisions 26 and 28).



PLANNED TRAWLING STATIONS



REALIZED TRAWLING STATIONS



NUMBERS OF FISH BIOLOGICALLY ANALYSED DURING THE BITS-4Q SURVEY

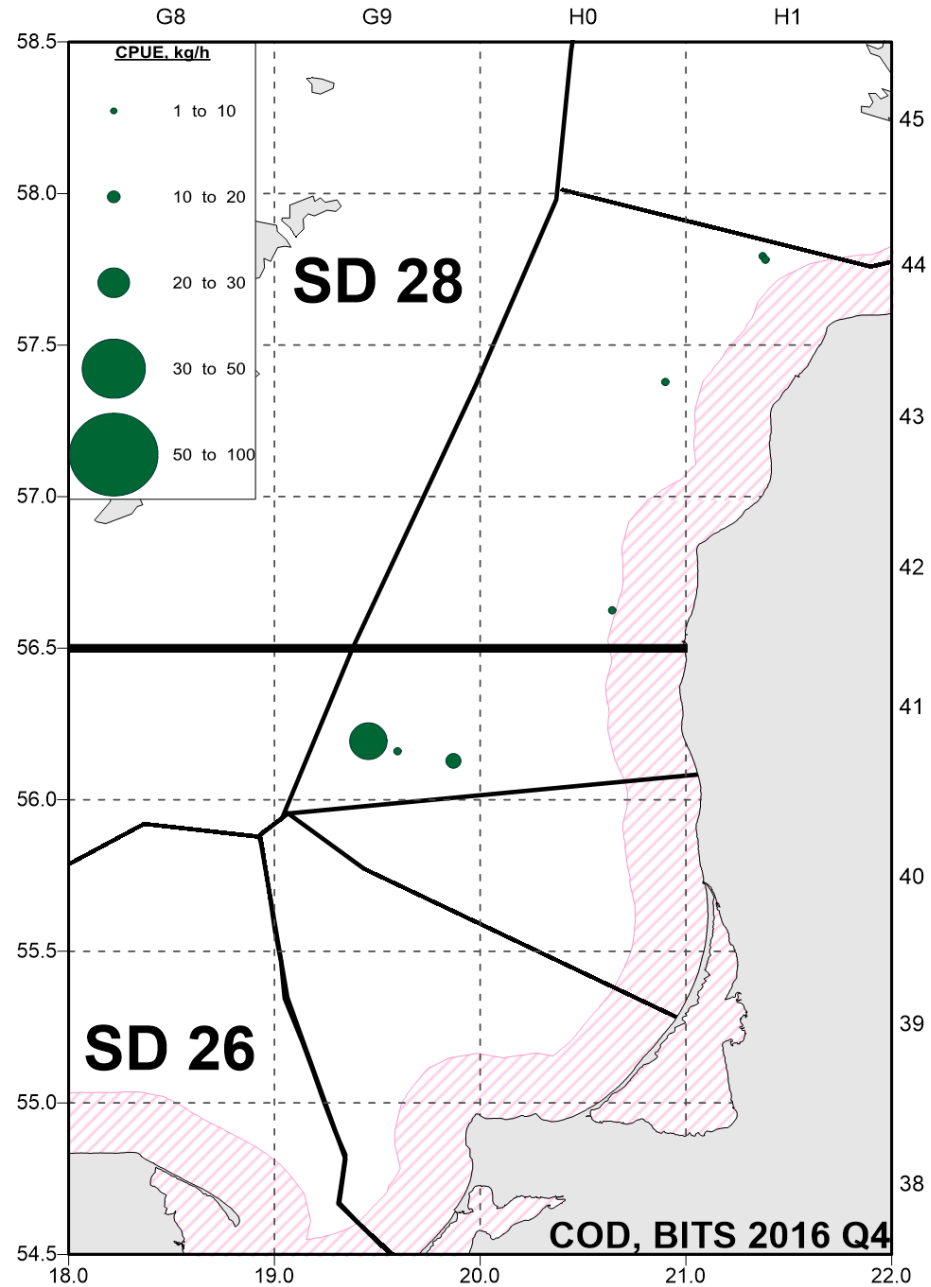
WGBIFS REPORT 2017

505

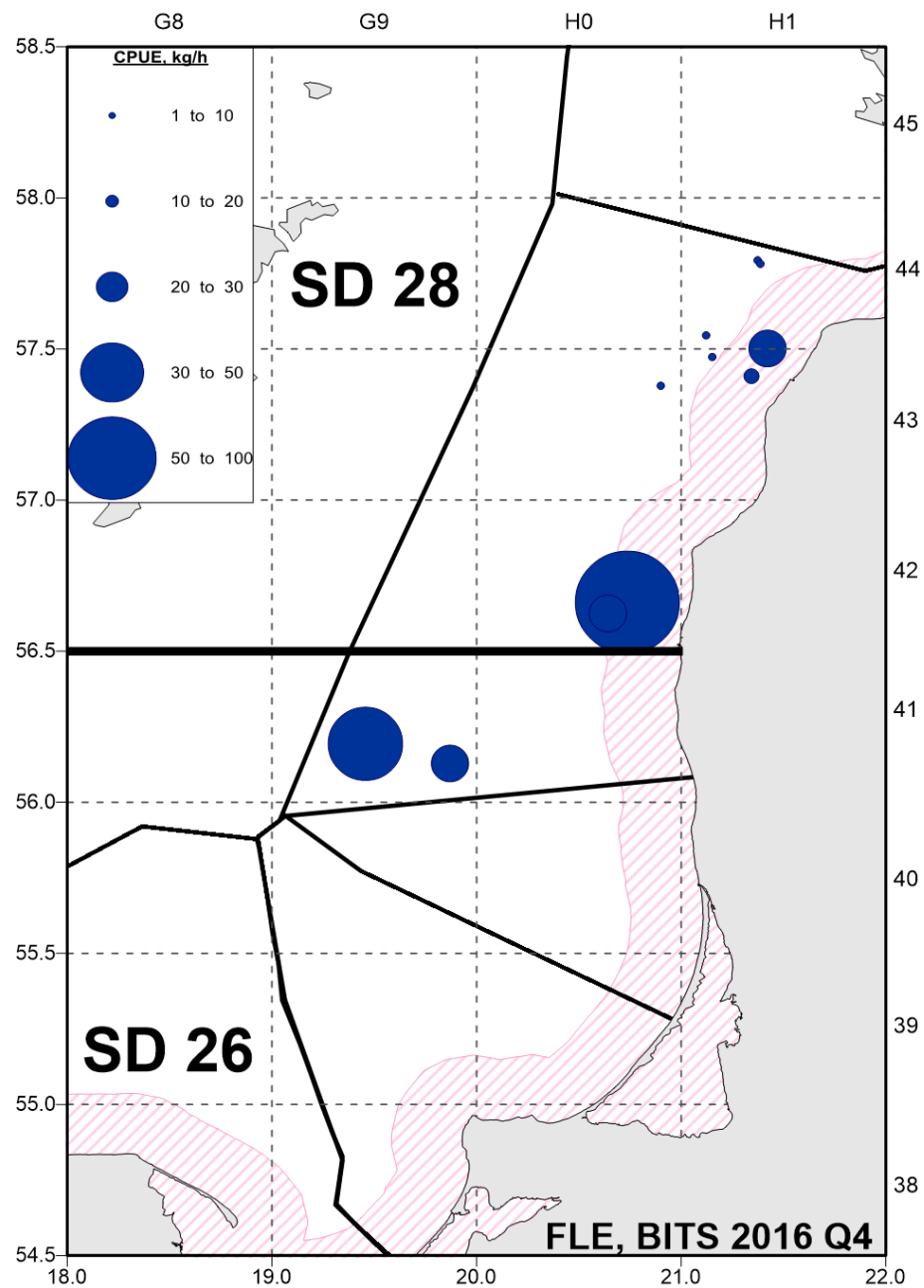
(OVERALL, 13 FISH SPECIES)

Species	ICES SD	Number of samples	Number of fish		
			measured	analyzed	stomach samples
Cod	26	3		34	34
	28	4		14	14
	Total	7		48	48
Flounder	26	3		64	
	28	9	82	212	
	Total	12	82	276	
Turbot	26				
	28	1	1		
	Total	1	1		
Plaice	26	1	3		
	28				
	Total	1	3		
Herring	26	4	342		
	28	10	1037		
	Total	14	1379		
Sprat	26	4	419		
	28	10	1030		
	Total	14	1449		
All other species	26	2	6		
	28	8	84		
	Total	10	90		
Total	26	17	770	98	34
	28	42	2234	226	14
	Total	59	3004	324	48

DISTRIBUTION OF COD DURING THE BITS 2016 Q4 SURVEY



DISTRIBUTION OF FLOUNDER DURING THE BITS 2016 Q4 SURVEY

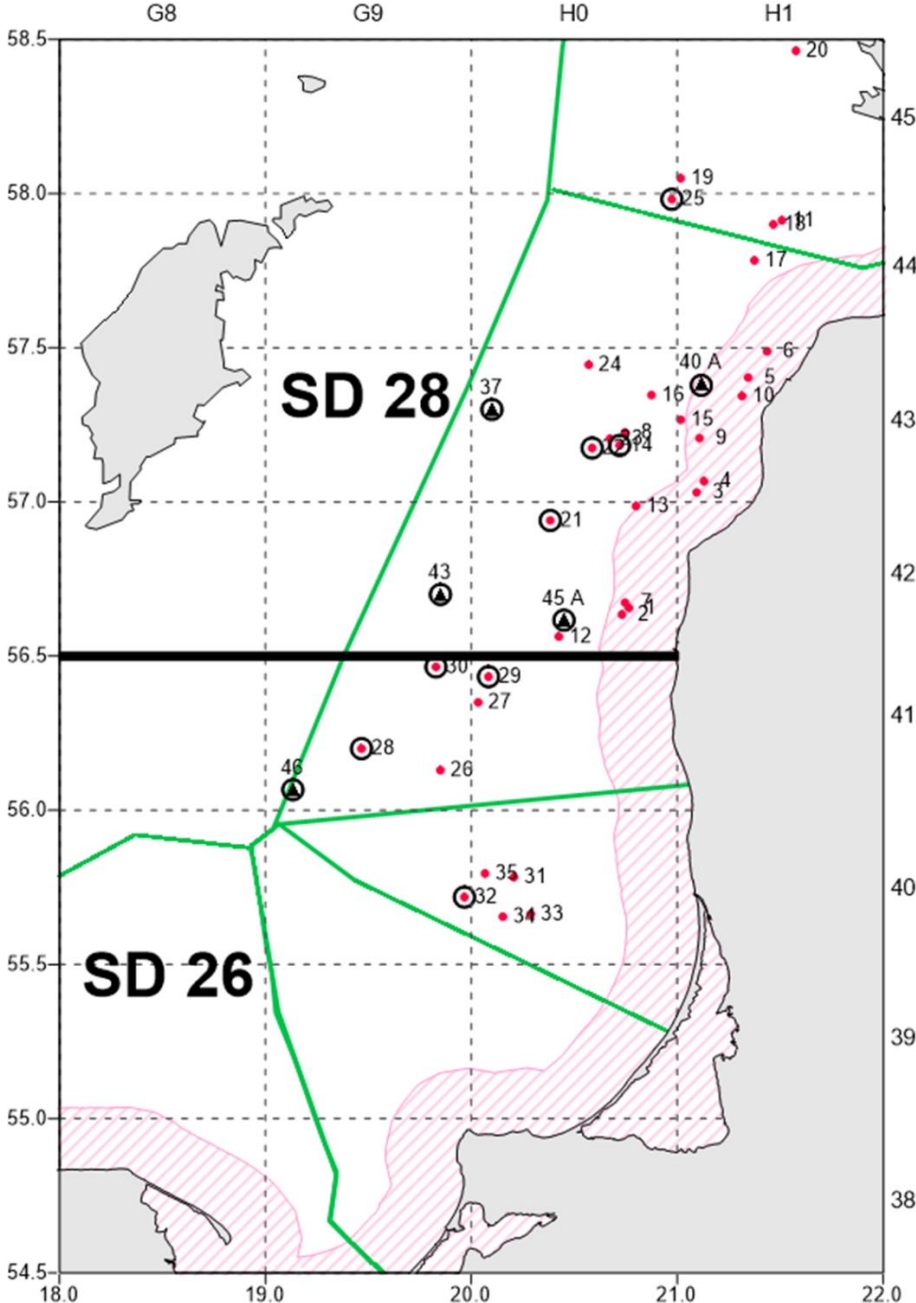


2017. BITS Q1 survey

The joint Latvian-Polish BITS survey, conducted in the period of 11-19.03.2017 on the r.v. “Baltica”, in the Latvian and Estonian EEZs (the ICES Subdivisions 26 and 28).



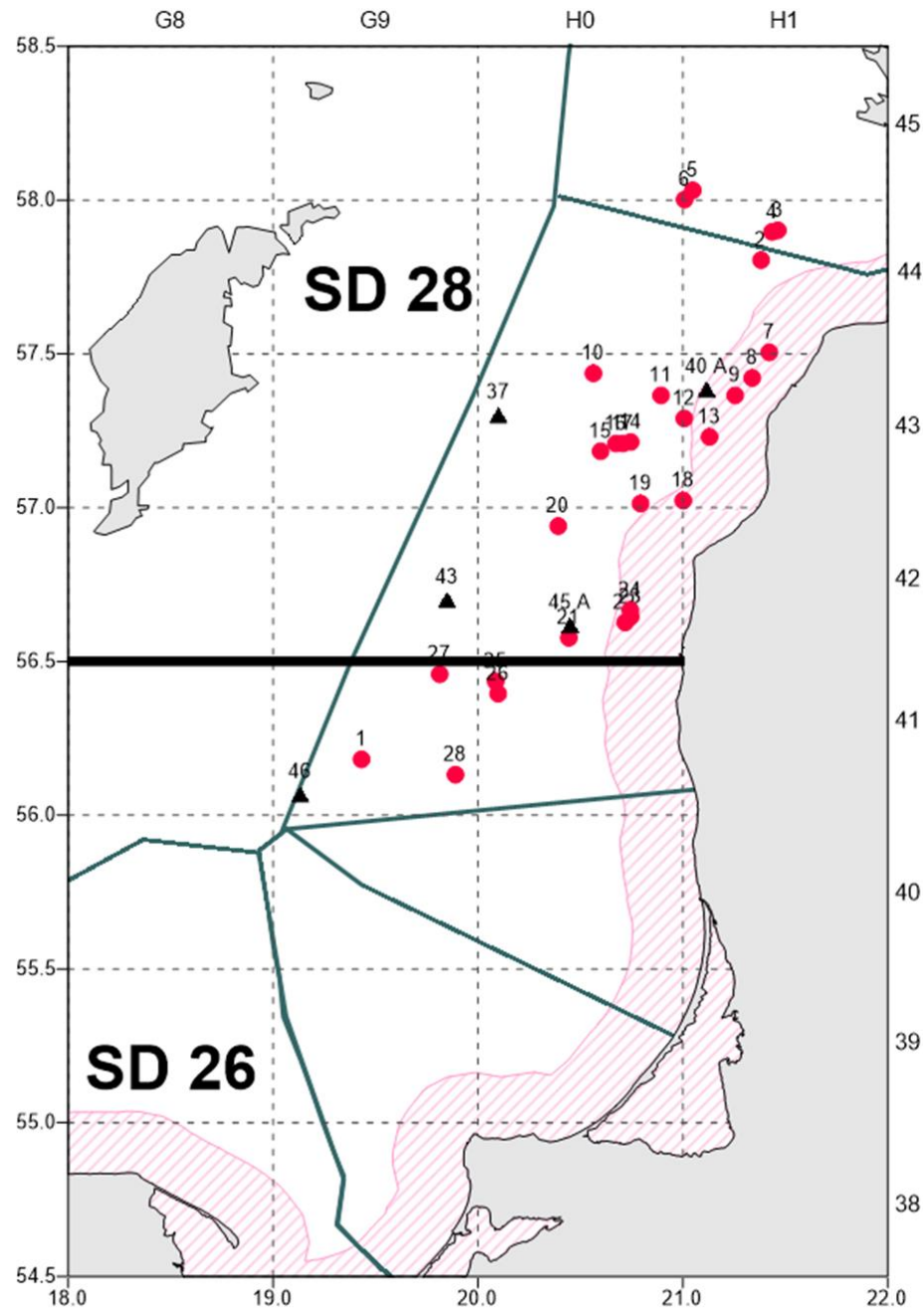
PLANNED TRAWLING STATIONS



REALIZED TRAWLING STATIONS

WGBIFS REPORT 2017

510

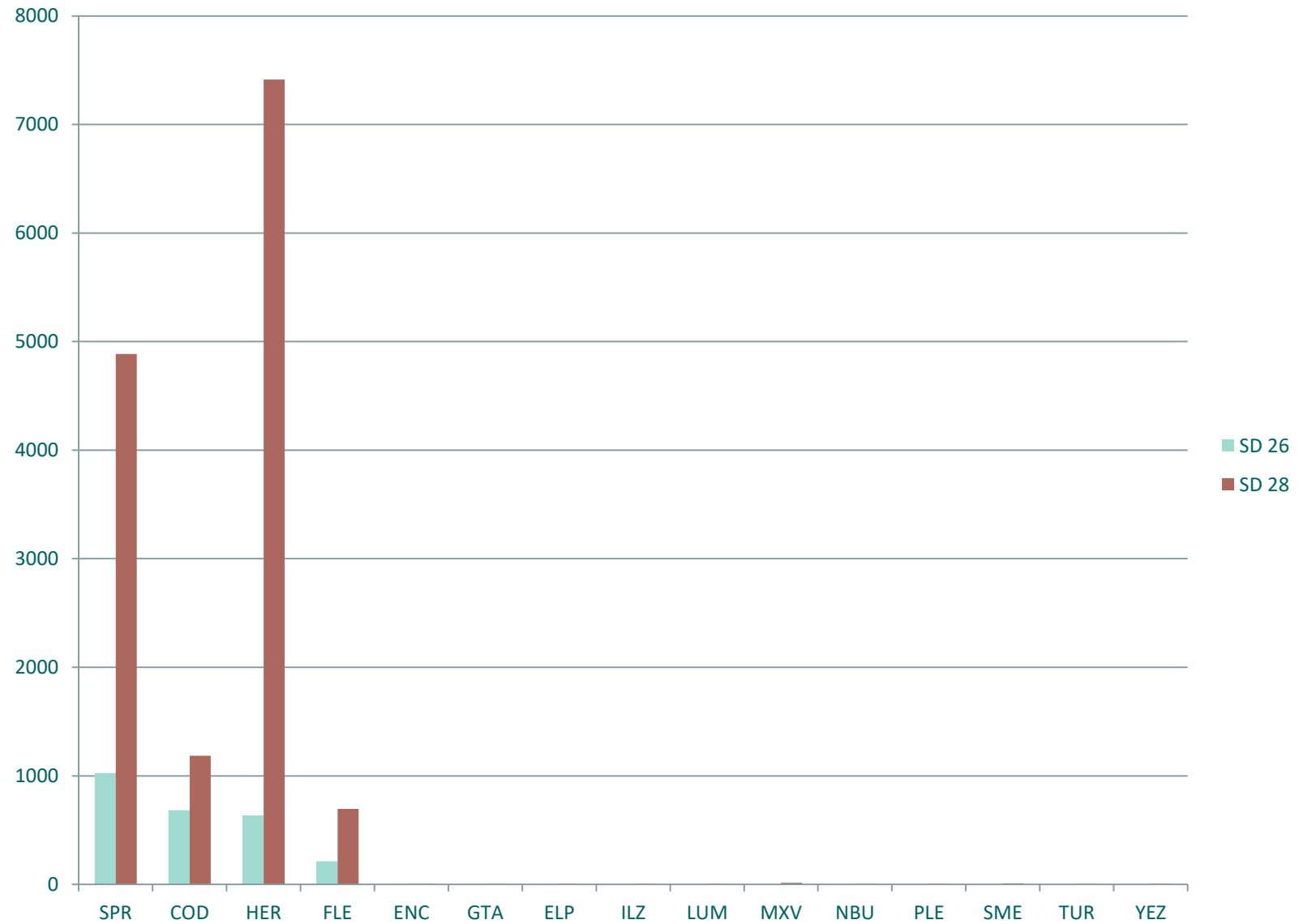


NUMBERS OF FISH BIOLOGICALLY ANALYSED DURING THE BITS-1Q SURVEY (OVERALL, 15 FISH SPECIES)

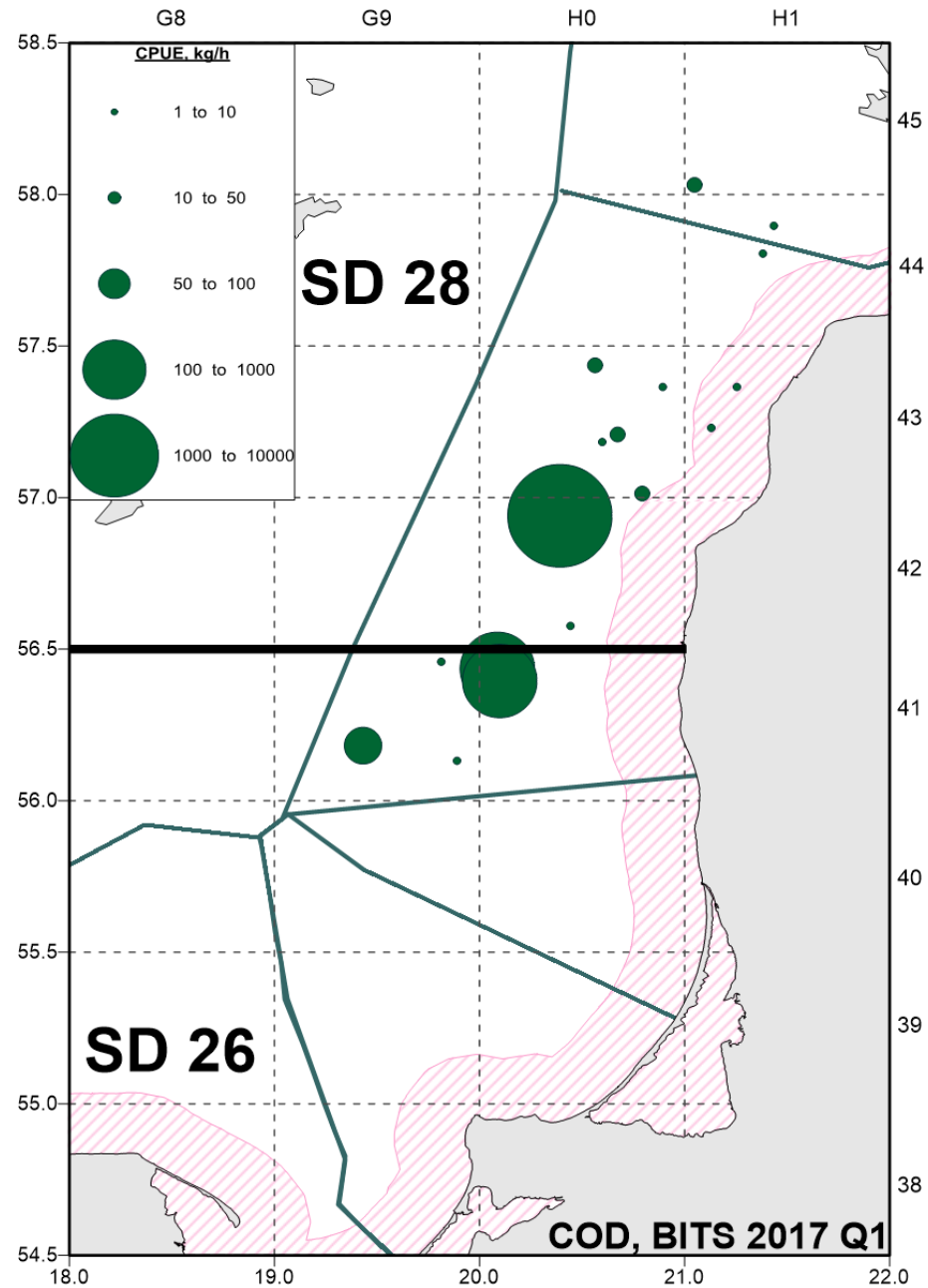
Species	Number of samples			Number of fish								
	SD 26	SD 28	Total	measured			analyzed			Stomach samples		
				SD 26	SD 28	Total	SD 26	SD 28	Total	SD 26	SD 28	Total
Cod	5	13	18	154	590	744	302	294	596	206	233	439
Flounder	4	22	26	67	1234	1301	206	333	539			
Herring	5	22	27	506	2289	2795						
Sprat	5	21	26	454	1896	2350						
Four bearded rockling	1	1	2	10	7	17						
Round goby		5	5		11	11						
Turbot		1	1		3	3						
Greater sandeel		1	1		1	1						
Plaice		1	1		1	1						
Eelpout		6	6		16	16						
Smelt		10	10		100	100						
Three-spined stickleback	1	6	7	1	13	14						
Lumpfish		2	2		2	2						
Snake blenny		1	1		1	1						
Sea scorpion		11	11		41	41						
Total	21	123	144	1192	6205	7397	508	627	1135	206	233	439

FISHES DOMINATED BY MASS KG PER 1 HOUR TRAWLING IN SD 26 AND 28

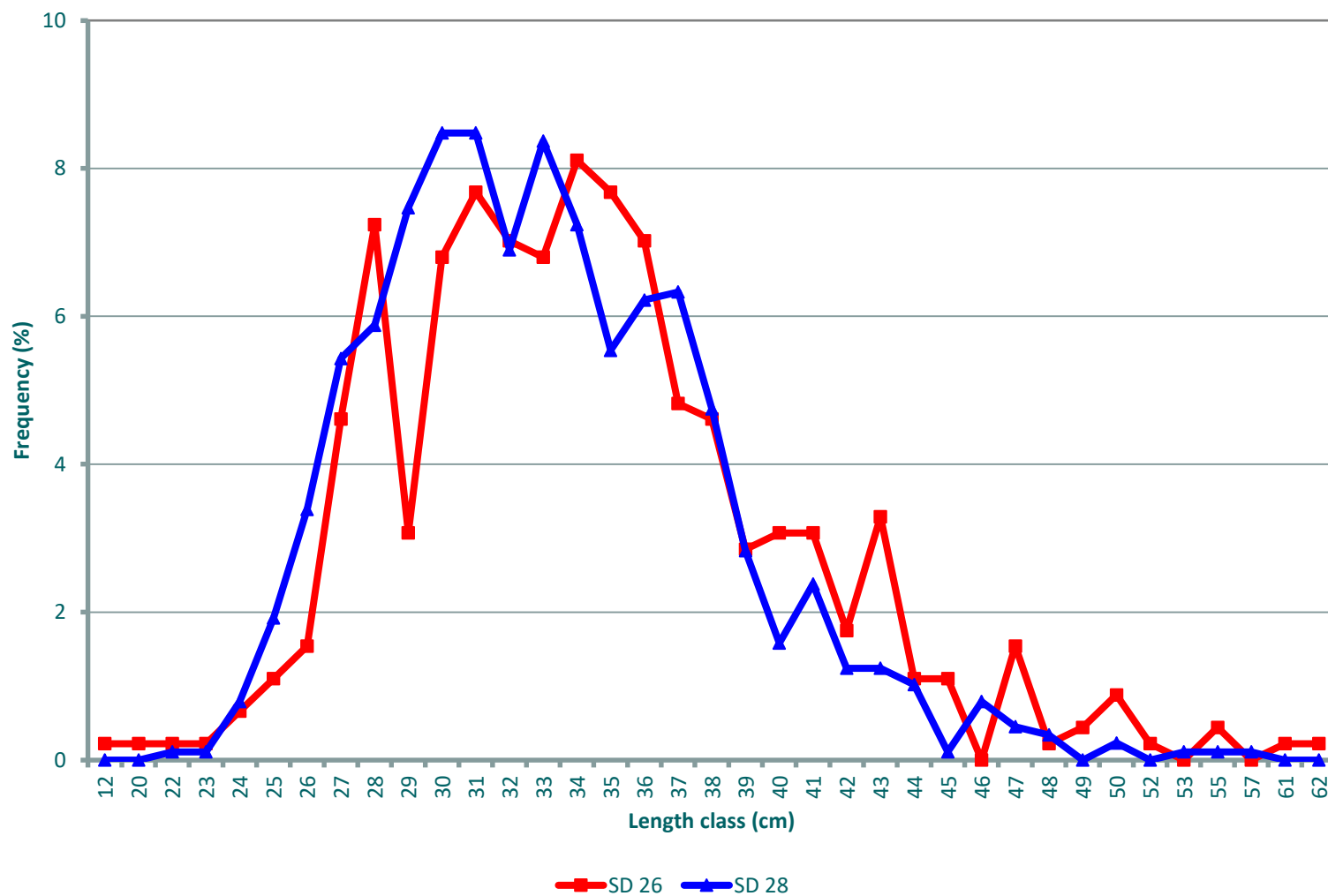
512



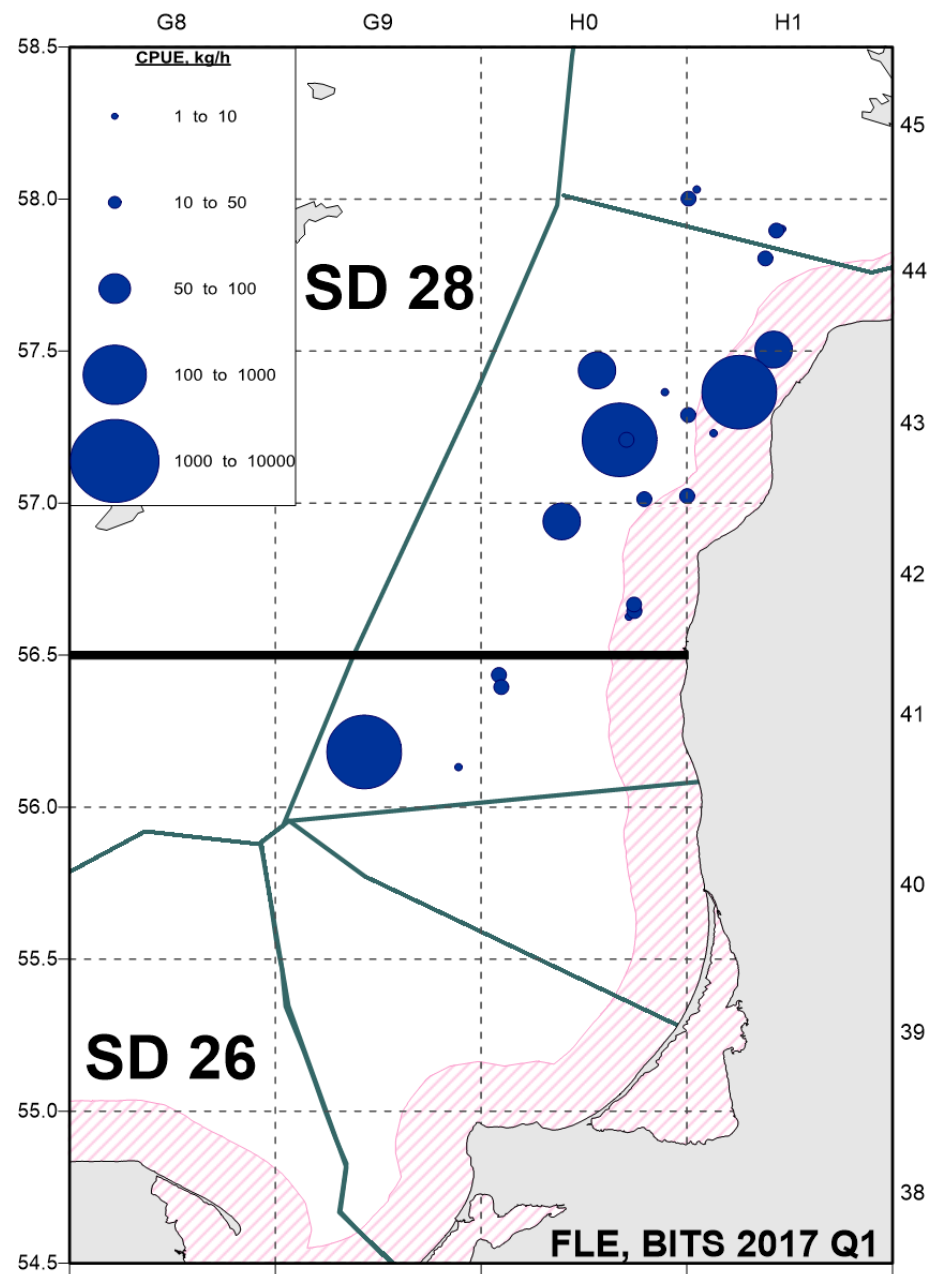
DISTRIBUTION OF COD DURING THE BITS 2017 Q1 SURVEY



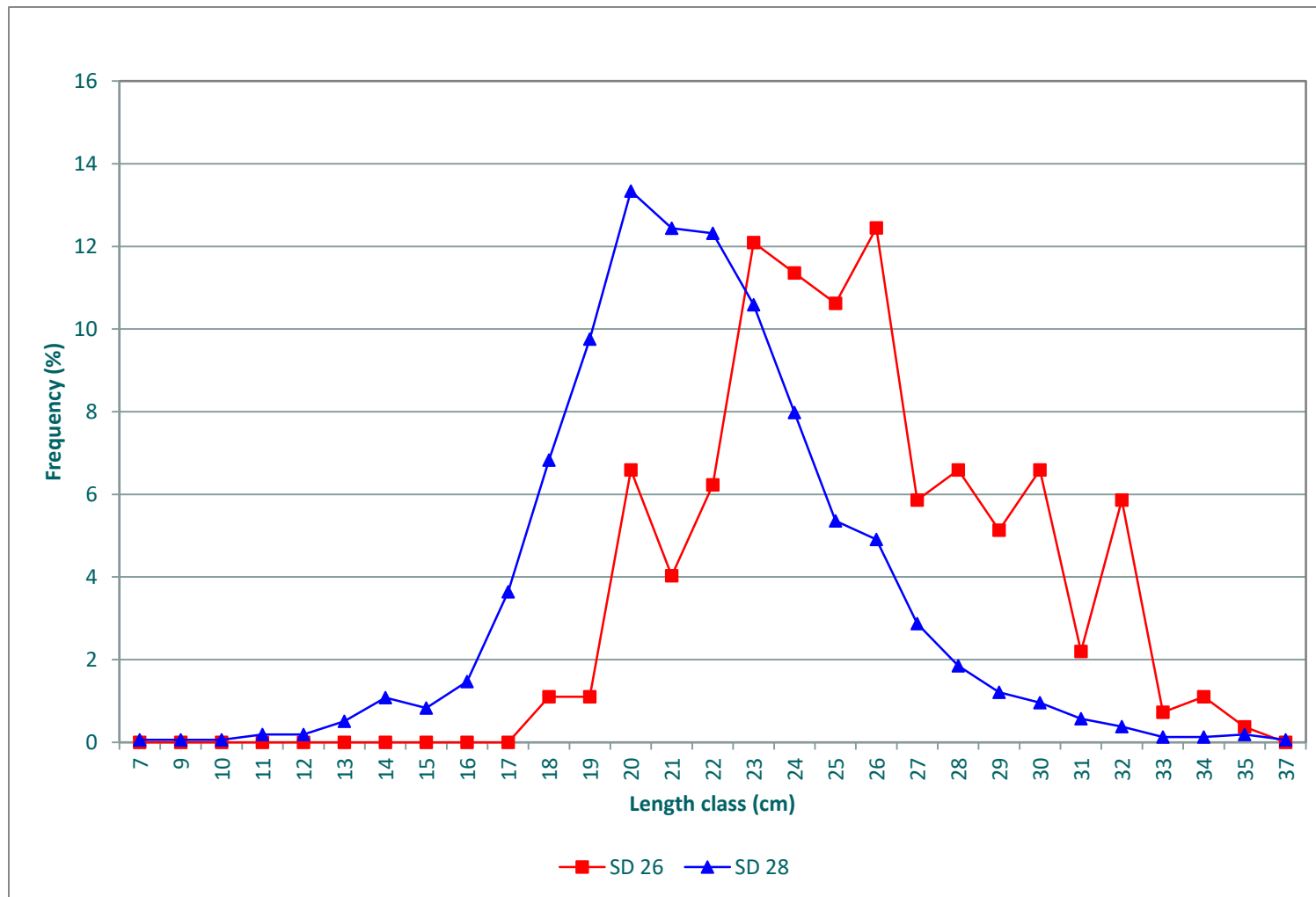
LENGTH FREQUENCY OF COD FROM SUB-DIVISIONS 26 AND 28 IN THE CONTROL CATCHES DURING THE R/V "BALTICA" BITS SURVEY, 11-19 MARCH 2017



DISTRIBUTION OF FLOUNDER DURING THE BITS 2017 Q1 SURVEY



LENGTH FREQUENCY OF FLOUNDER FROM SUB-DIVISIONS 26 AND 28 IN THE CONTROL CATCHES DURING THE R/V "BALTICA" BITS SURVEY, 11-19 MARCH 2017



Thank you for your attention!

www.bior.lv

Daugavgrīvas ielā 8, Rīga, Latvija, LV-1048



BIOR

PĀRTIKAS DROŠĪBAS, DZĪVNIEKU VESELĪBAS
UN VIDES ZINĀTNISKAIS INSTITŪTS

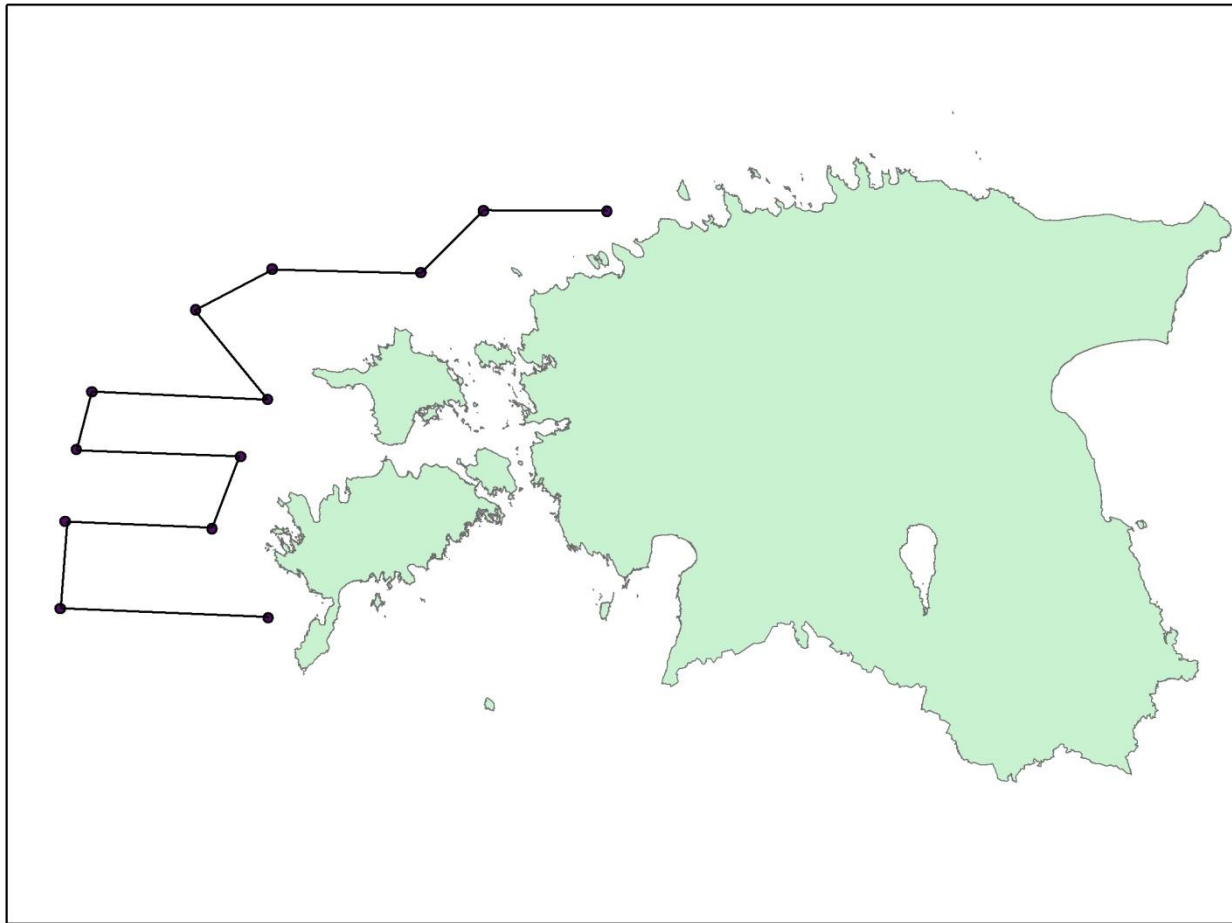
Estonian BASS, BIAS 2016 BITS 2016 4qt.

Elor Sepp, Tiit Raid
Estonian Marine Institute

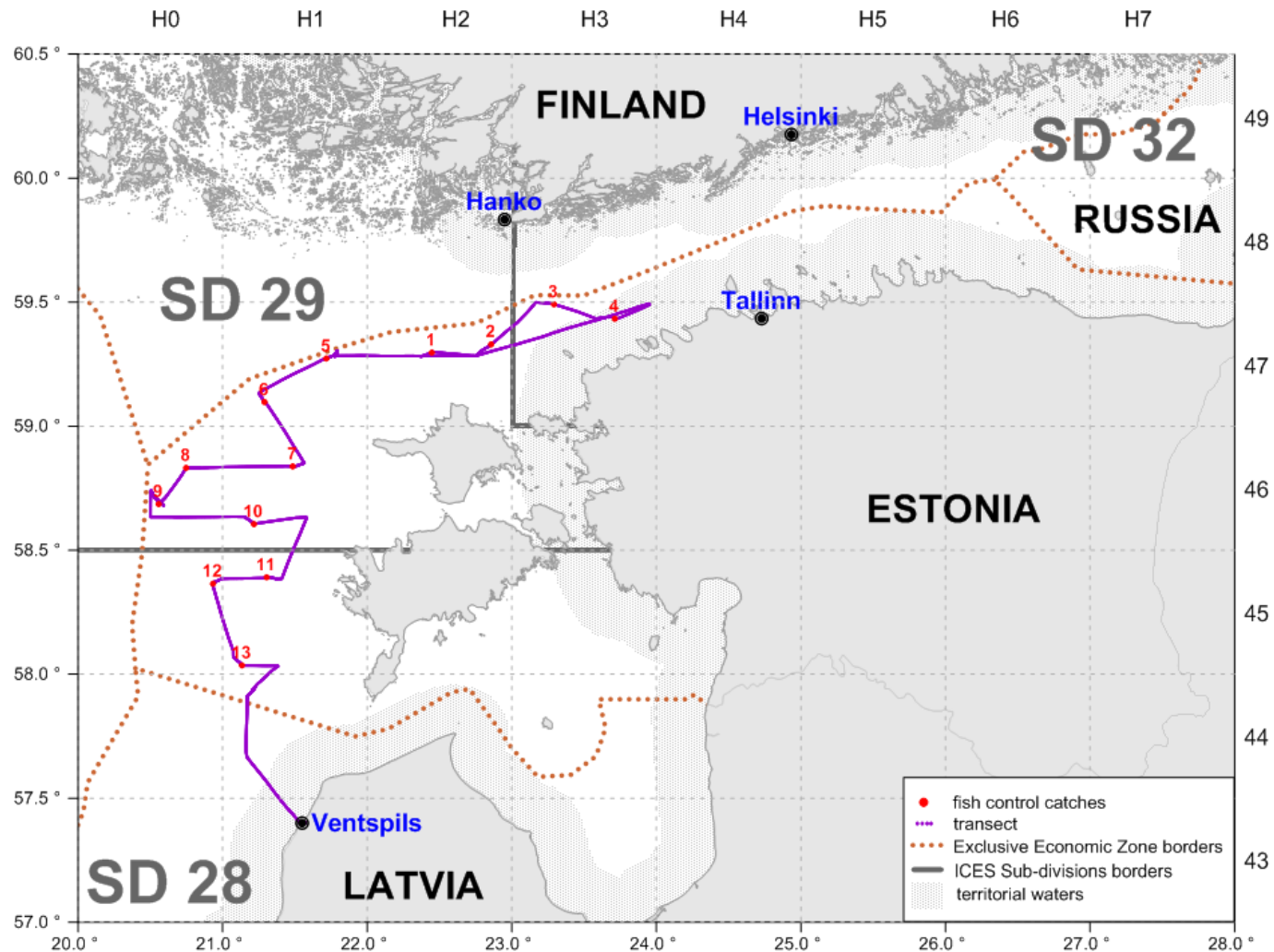
BASS/BIAS 2016



BASS Design 2016



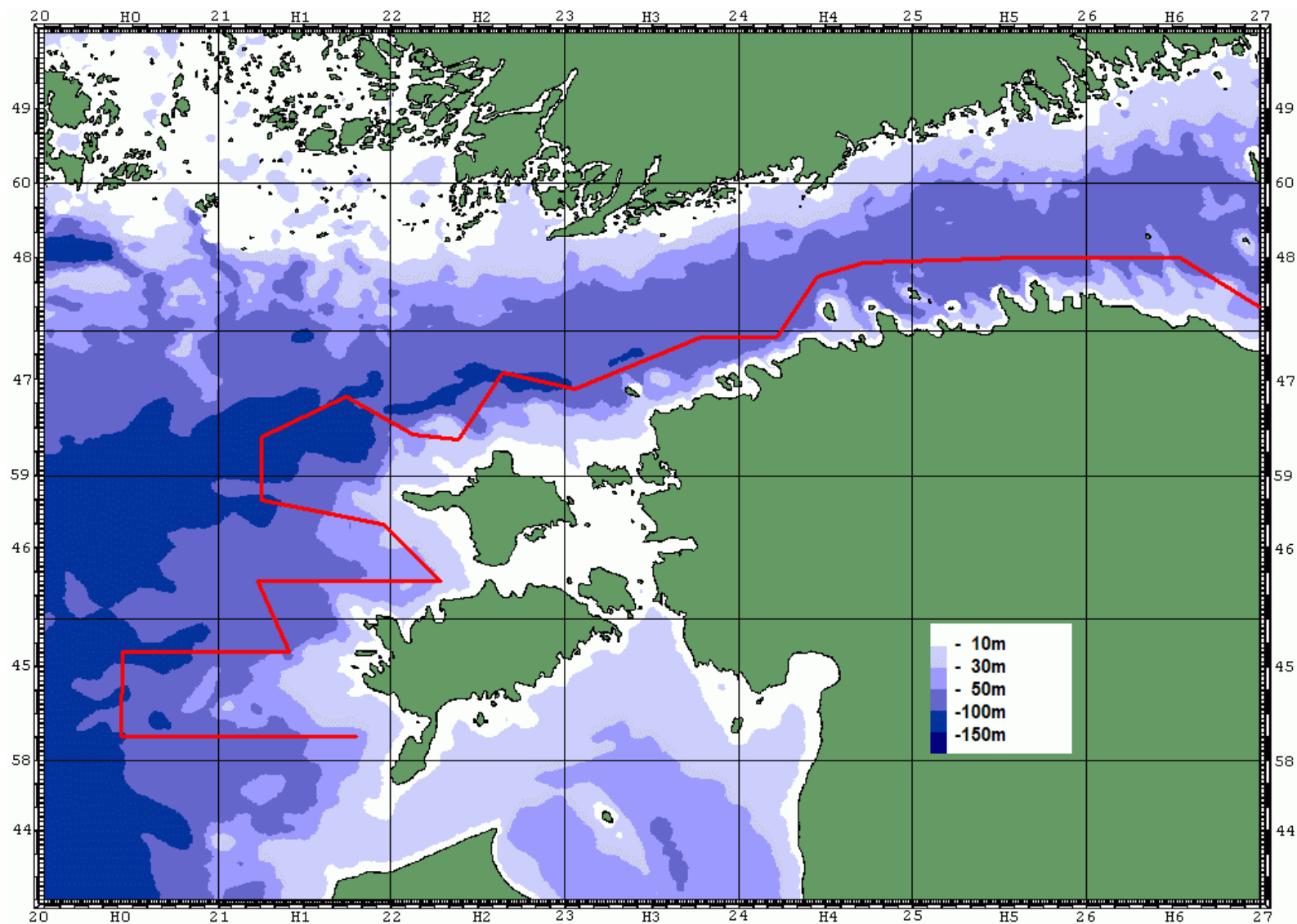
BASS realization



Results

- According to survey plan
- 251 NM
- 13 trawl hauls
- Abundances were higher (sprat +10%, herring +50%)
- Mean weights were lower
- Too little time!

BIAS Design



Realization



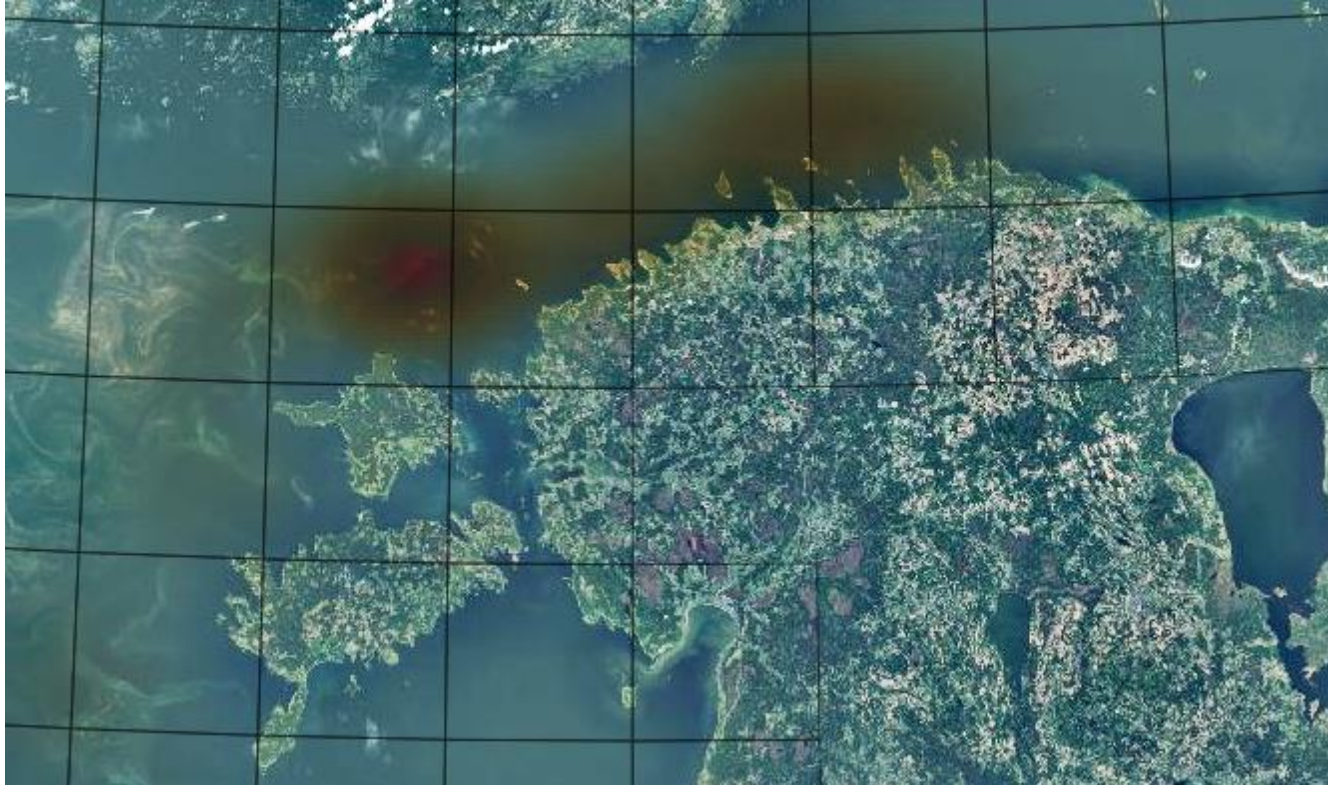
Haul realization



BIAS Realization

- Only 9 hauls (plus some data from Latvia and Finland).
- 444 nm of integration
- Problems with weather and „Baltica“
- After help from colleagues, we still got acceptable results

Main results



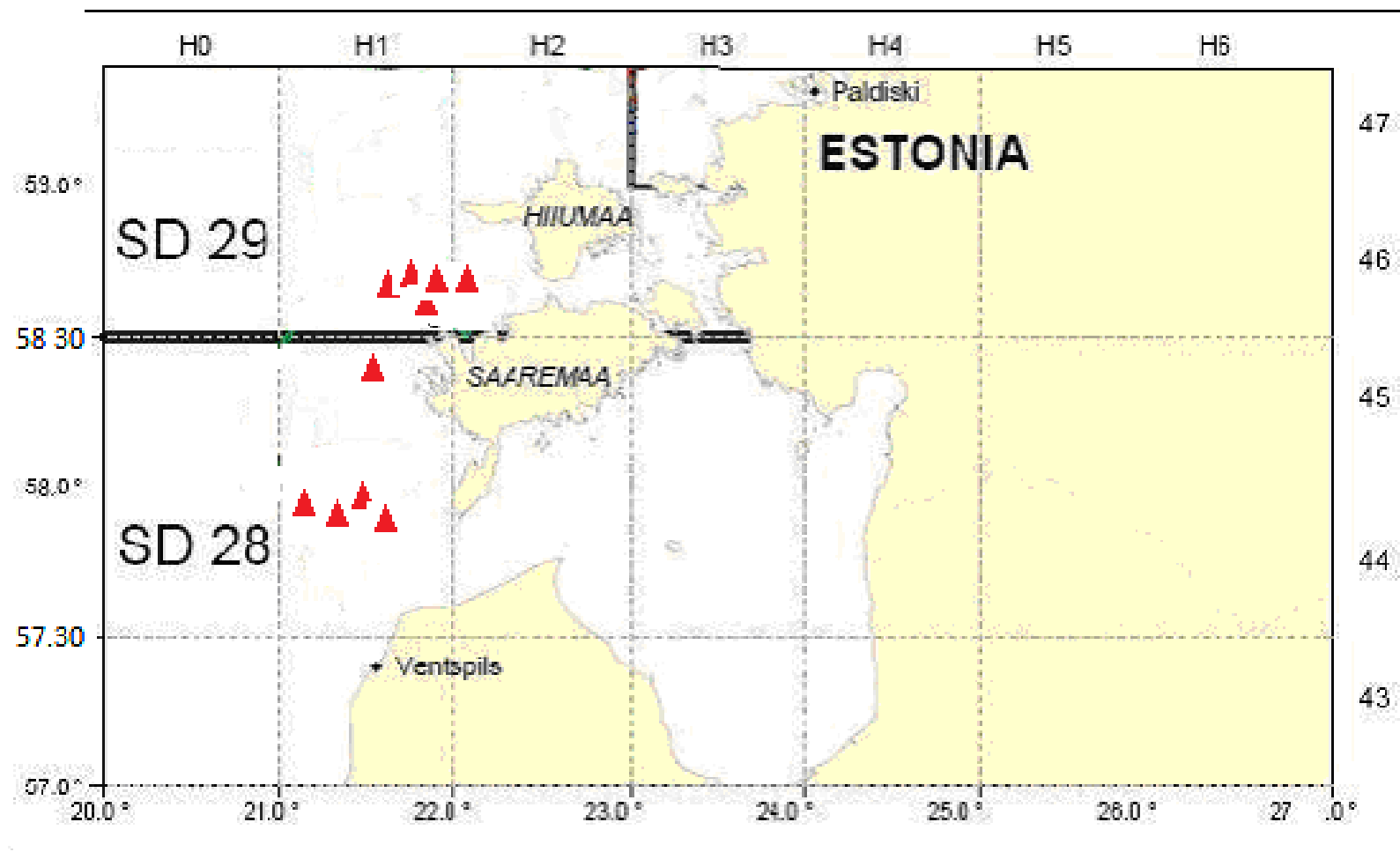
- Herring estimates were 25% higher.
- Sprat estimates were similar.
- Average weight of both species was higher.

Plans for next survey

- Similar dates
- Same design
- Better weather!

BITS EST 2016 4 QRT

13-14. November 2016



Distribution of hauls by depth

EST BITS 4 QRT 2016				Catch composition, kg per 30´ haul							
	1	2	3	4	5	6	7	8	9	10	
Haul ID.	28091	28030	28059	28192	28061	2901	2902	2903	2904	2905	
Sd	28	28	28	28	28	29	29	29	29	29	
Depth, m	42	50	65	61	68	45	75	46	38	34	
Date	14.11.2016	14.11.2016	14.11.2016	14.11.2016	14.11.2016	14.11.2016	14.11.2016	14.11.2016	14.11.2016	14.11.2016	
Coordinates	5756_2138	5755_2133	5754_2127	5759_2115	5828_2139	5835_2151	5837_2133	5837_2150	2835_2152	5833_2200	Total
<i>Clupea harengus</i>	1,1032	7,1104	5,8939	6,1526	2,3227	0,1167	0,8141	0,4127	0,8012	1,9487	26,6762
<i>Sprattus sprattus</i>	0,115	1,754	3,022	0,645	0,206	0,137	1,857	0,361	0,03	0,09	8,217
<i>Platichthys flesus</i>	11,201	36,334	12,463	5,696	7,558	0,181	0,279	4,337	6,7205	12,587	97,356
<i>Gadus morhua</i>	0,0019	0,0024	0,0017	0,0022	0	0	0	0	0	0	0,0081
<i>Osmerus eperlanus</i>	1,26	1,95	0,37	0,25	0,53	0,04	0,03	2,20	4,16	3,49	14,2818
<i>Scophthalmus maximus</i>	0	0	0,2105	0	0	0	0	0	0	0	0,2105
<i>Neogobius melanostomus</i>	1,3229	1,8285	0,6729	0	0,0519	0	0	0	0	0	3,8762
<i>Gobius sp.</i>	0,2945	0,0787	0,0009	0,0013	0	0	0	0,039	0,129	0,1565	0,7001
<i>Gasterosteus aculeatus</i>	0,0019	0,0051	0,0016	0	0,0023	0,0036	0	0,047	0,032	0,0297	0,1226
<i>Pungitius pungitius</i>	0	0	0	0	0	0	0	0,002	0,002	0	0,0038
<i>Myoxocephalus scorpius</i>	0,2472	1,4393	0,9466	0	0	0	0	0,440	0,866	1,0674	5,0067
<i>Zoarces viviparus</i>	0,0612	0,0625	0	0	0	0	0	0,035	0,162	0,0344	0,3543
<i>Cyclopterus lumpus</i>	0,1906	0	0	0	0	0	0	0	0	0	0,1906
<i>Myxocephalys quadricornis</i>	0,2528	0	0	0	0	0	0	0	0,687	0,605	1,5448
<i>Taurulus bubalis</i>	0	0	0	0	0	0	0	0	0,0323	0	0,0323
<i>Lumpenus lampretaeformis</i>	0	0,0218	0	0	0	0	0	0	0	0	0,0218
<i>Enchelyopus cimbrius</i>	0	0	0	0	0,076	0	0	0	0	0	0,0755
Total	16.05	50.59	23.37	12.74	10.7479	0.48	2.9842	7.8721	13.6228	20.0068	158.68

EST_BITS 4 QRT 2015

Number of fish analysed

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):				
SPECIES	AGE	LENGTH		
Gadus morhua	58	58		
Sprattus sprattus	200	701		
Clupea harengus	200	1554		
Platichthys flesus	391	1554		



**BALTIC INTERNATIONAL ACOUSTIC SURVEYS (BASS, BIAS)
IN THE LITHUANIAN ESPECIAL ECONOMIC ZONE OF THE BALTIC SEA**



WGBIFS, 2017

Baltic Acoustic Sprat Survey

WGBIFS REPORT 2017



R/V "DARIUS"

03-04.05.2016

Survey area:

ICES SD.26,

40H0 rect.: 1012,1 nm²

40G9 rect.: 1013,0 nm²

Hauls (+CTD casts):

40H0 - 4 (4)

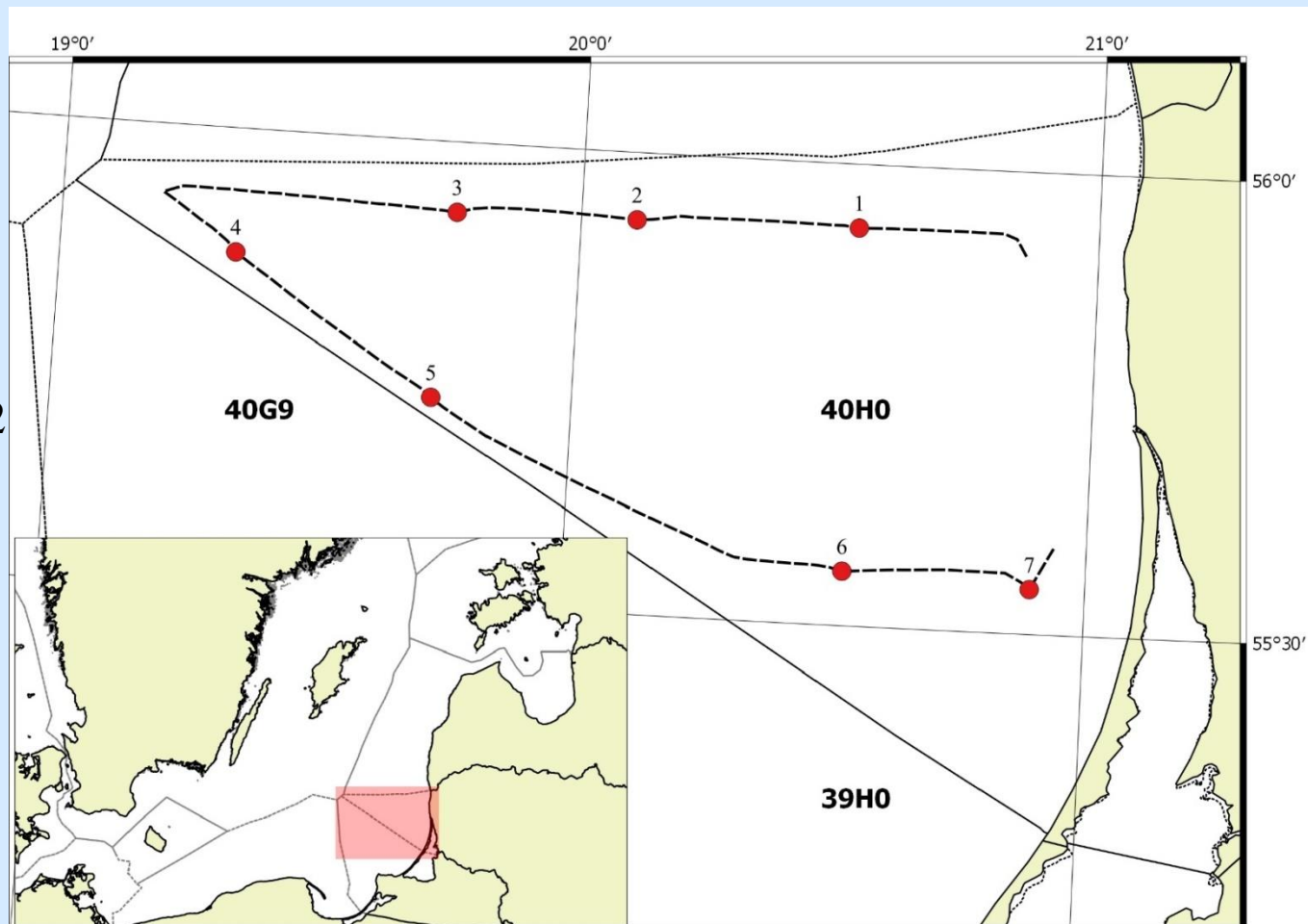
40G9 - 3 (3)

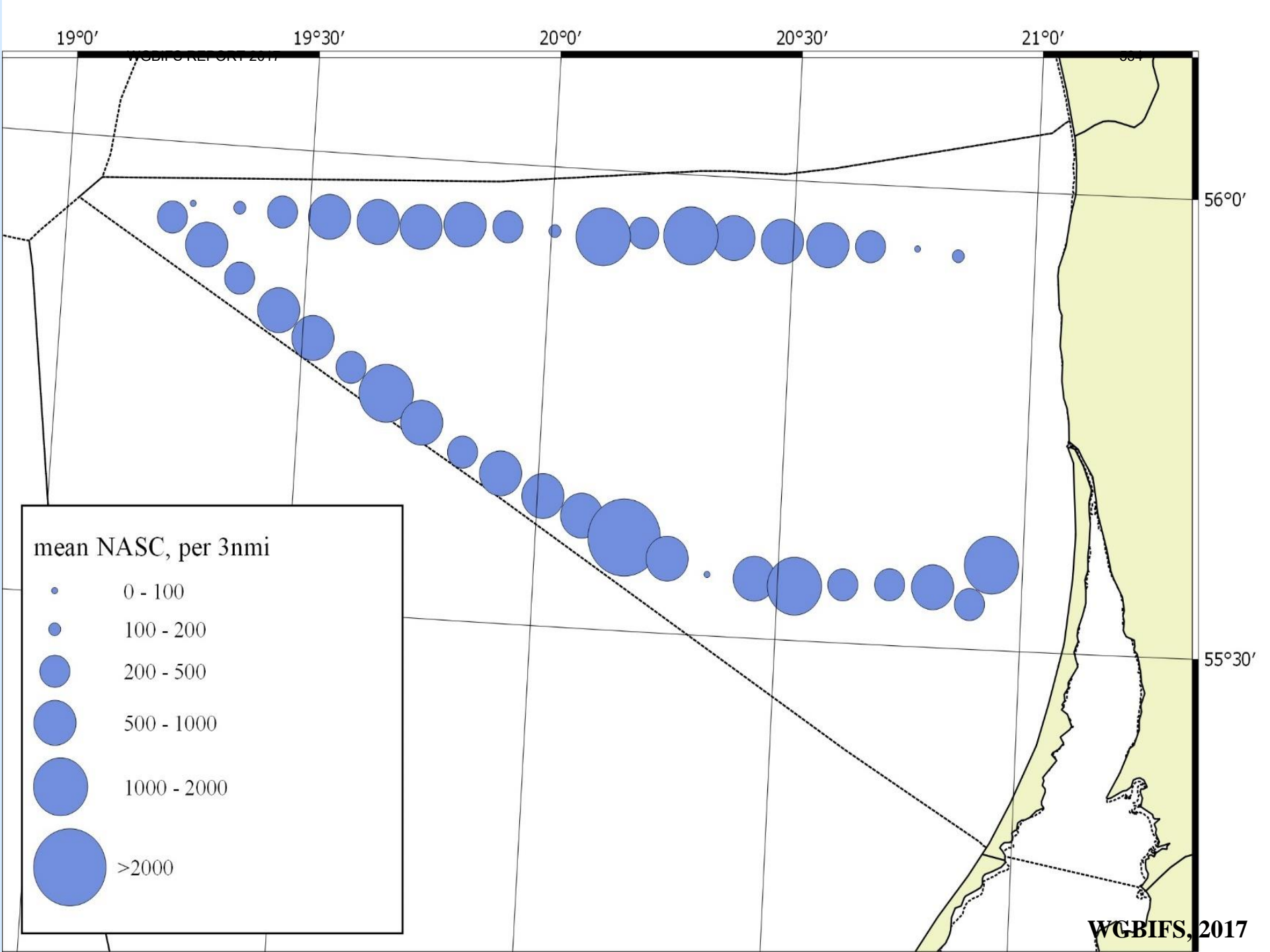
Total: 7 (7)

Personnel:

M. Špegys – cruise leader and acoustics;

J. Fedotova – scientific leader and fish sampling; D. Tarvydiene- fish sampling





BASS RESULTS:

Fish catches and biological data

- CPUE (kg/1hour)**

Haul No	1	2	3	4	5	6	7
Date	2015.05.21	2015.05.21	2015.05.21	2015.05.21	2015.05.22	2015.05.22	2015.05.22
Validity	Valid	Valid	Valid	Valid	Valid	Valid	Valid
Species/ICES rectangle	40H0	40H0	40G9	40G9	40G9	40H0	40H0
Mean trawling depth	18	32	43	50	51	51	21
<i>Clupea harengus</i>		0.45	0.42	0.17	85.6	15.96	
<i>Sprattus sprattus</i>	60.00	660.00	240.00	100.00	154.40	224.04	500.00
<i>Gadus morhua</i>		1.02		0.88			
Total	60.00	661.47	240.42	101.05	240.00	240.00	500.00

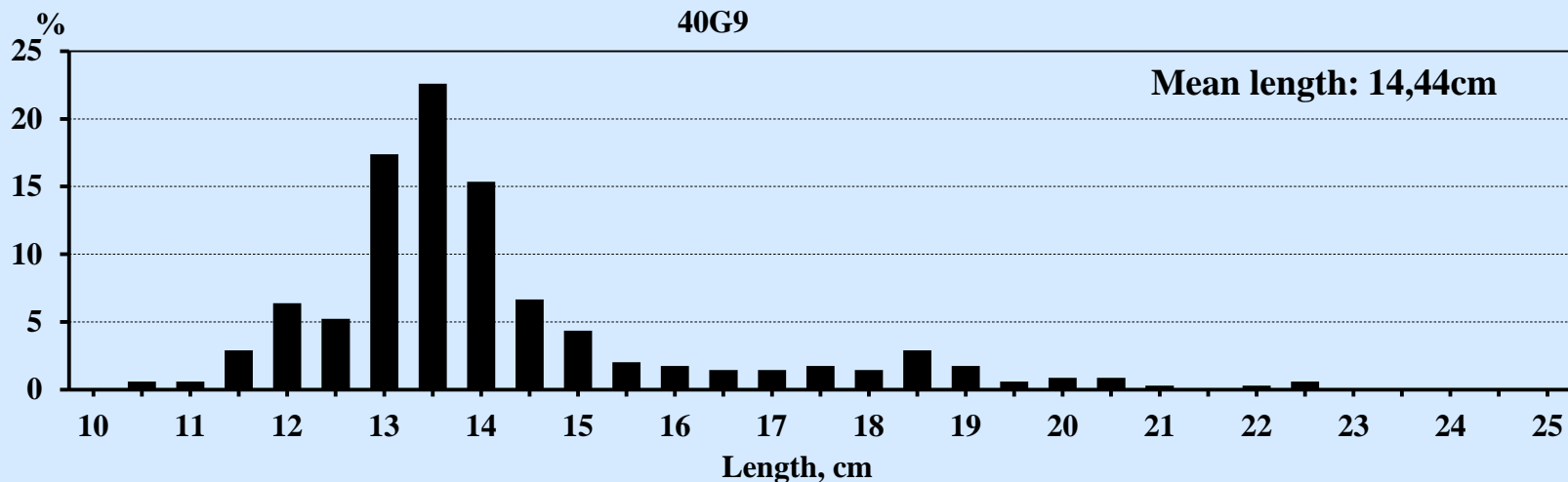
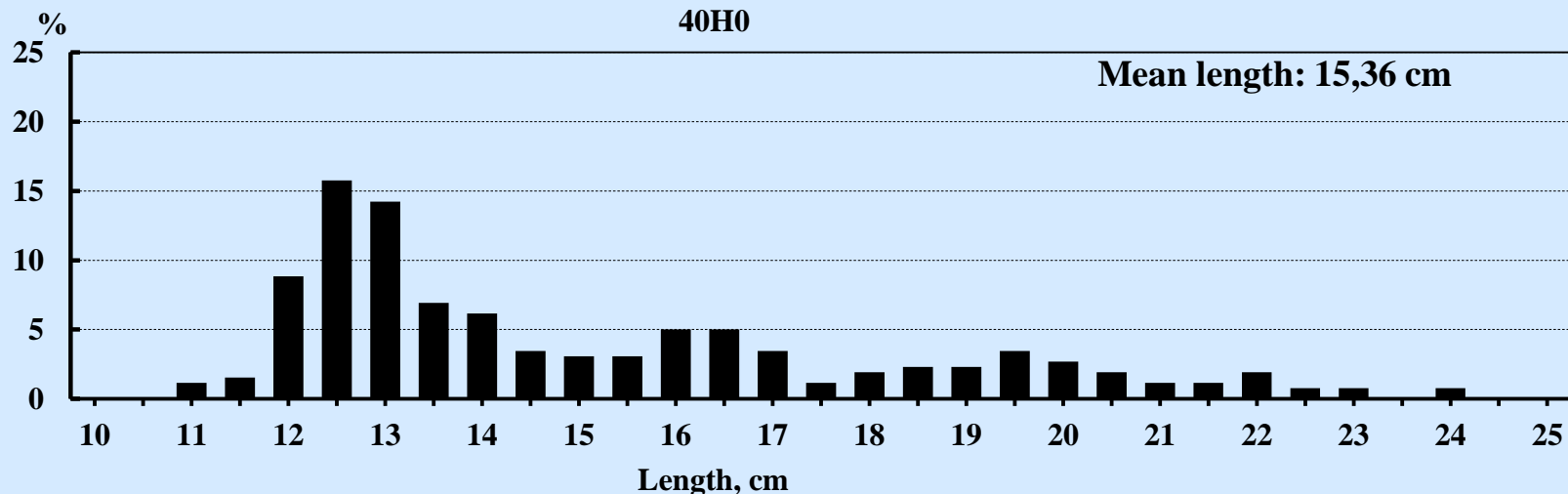


94,88%



5,02%

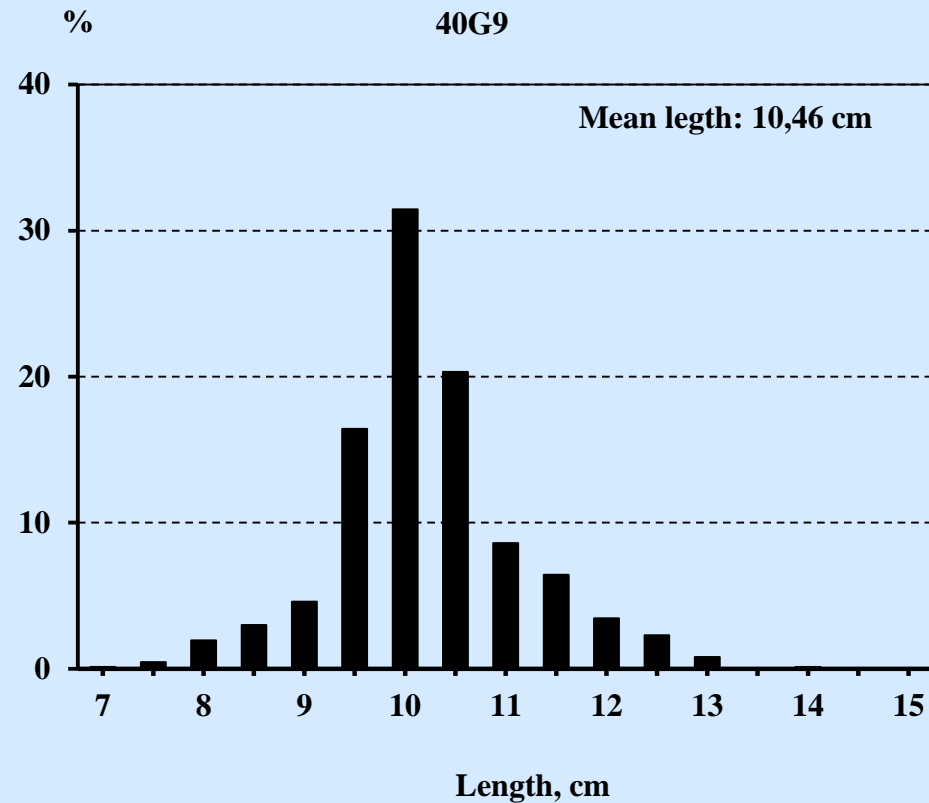
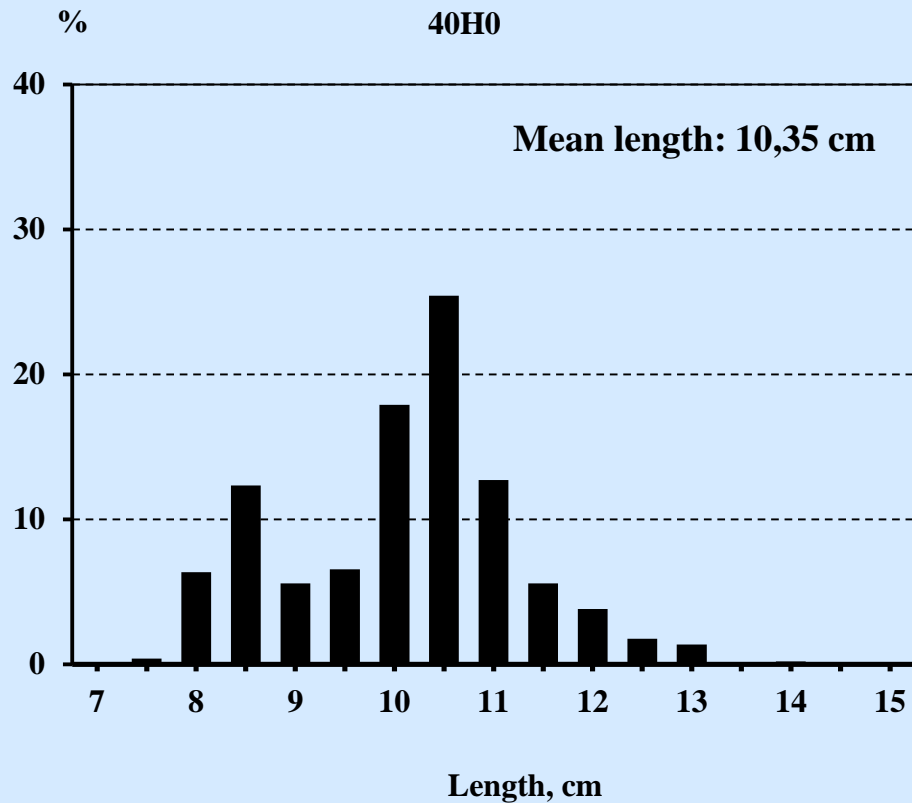
Herring length frequency distribution according to the 40H0 and 40G9 rectangles



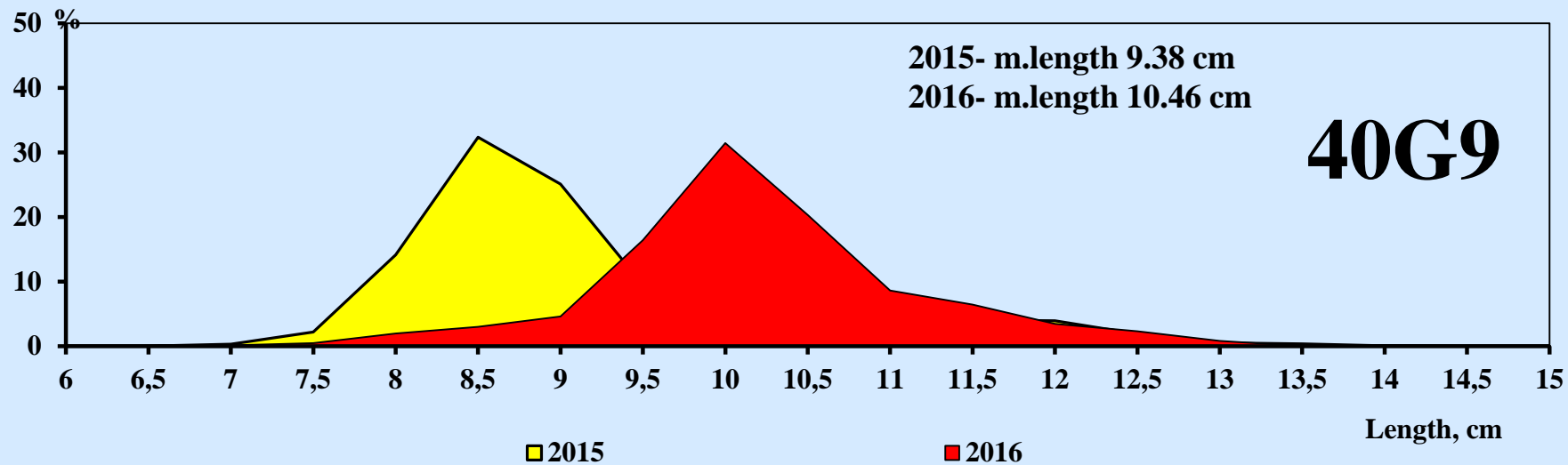
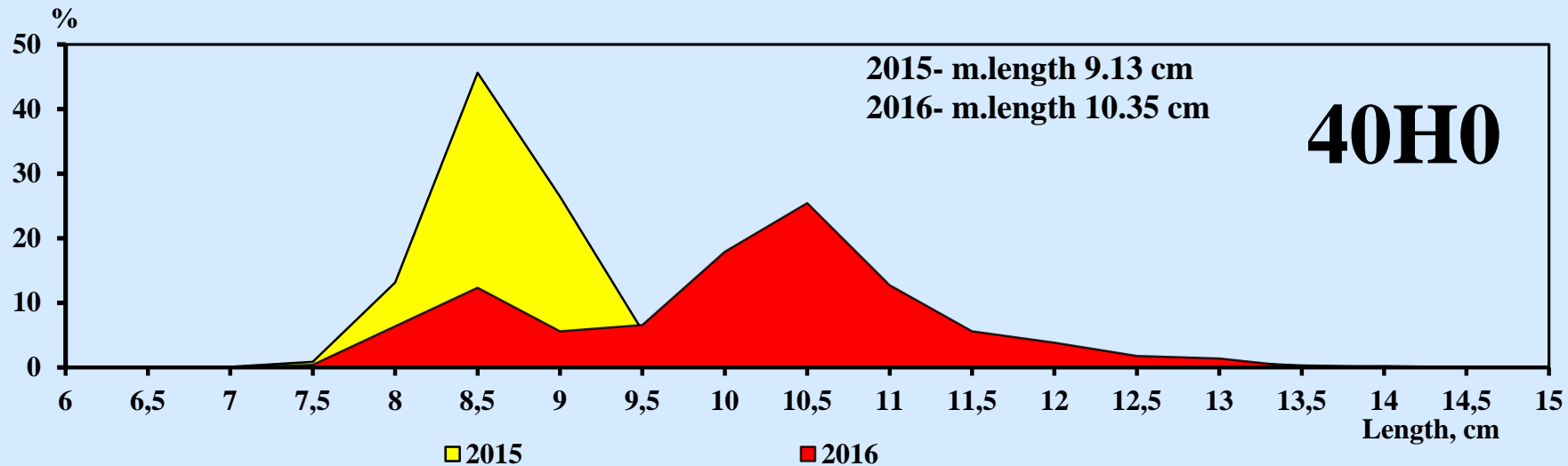
Sprat length frequency distribution by BASS results in the ICES rectangles 40H0 and 40G9

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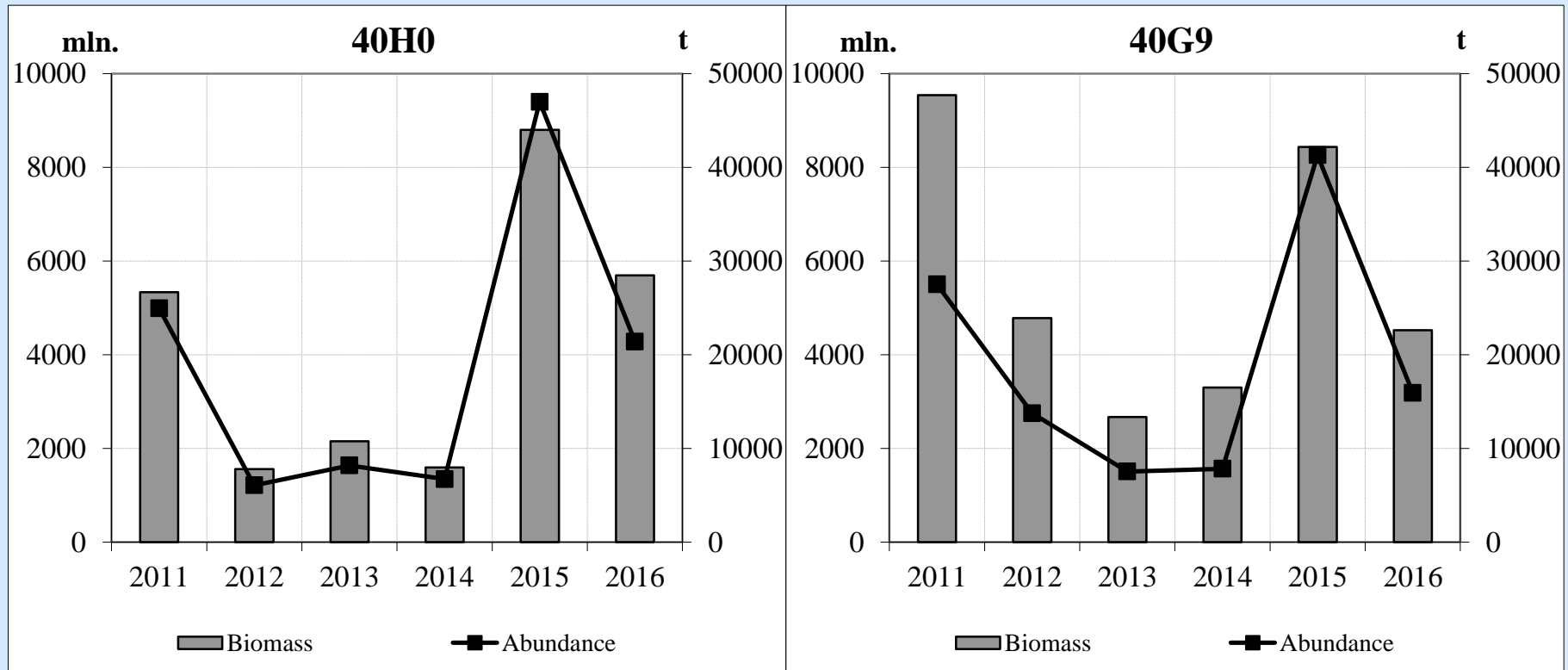
Sprat length frequency distribution in the ICES rectangles 40H0 and 40G9 in 2015-2016



Sprat abundance and biomass by BASS results

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in rectangles 40H0 and 40G9 in 2011-2016



TOTAL	Abundance	Biomass
2011	10488,9	74367
2012	3969,6	31703
2013	3146,2	24140
2014	2914,2	33010
2015	17655,6	86157
2016	7464,9	46568

	Abundance	Biomass
2015-2016	-57,7%	-40,7%

Baltic International Acoustic Survey

R/V "DARIUS"

13-14.10.2016

Survey area:

ICES SD.26,

40H0 rect.: 1012,1 nm²

40G9 rect.: 1013,0 nm²

Hauls (CTD casts):

40H0 - 3 (3)

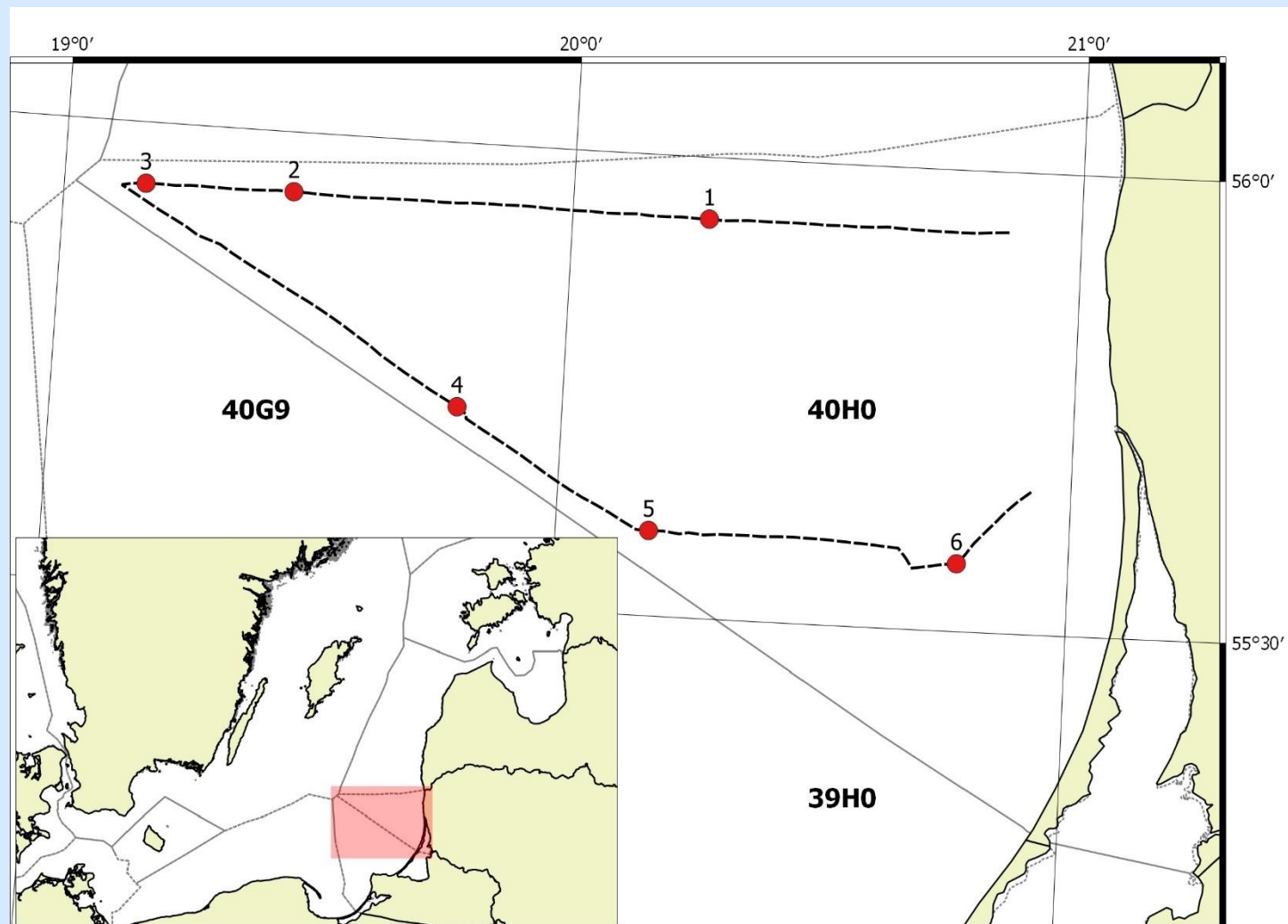
40G9 - 3 (3)

Total: 6 (6)

Personnel:

M. Špegys – cruise leader and acoustics;

J. Fedotova – scientific leader and fish sampling; **G. Macernis**- fish sampling



19°0'

19°30'

20°0'

20°30'

21°0'

21°30'

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541

56°0'

55°30'

mean NASC, per 3nmi

<100



100 - 200



200 - 500



500 - 1000



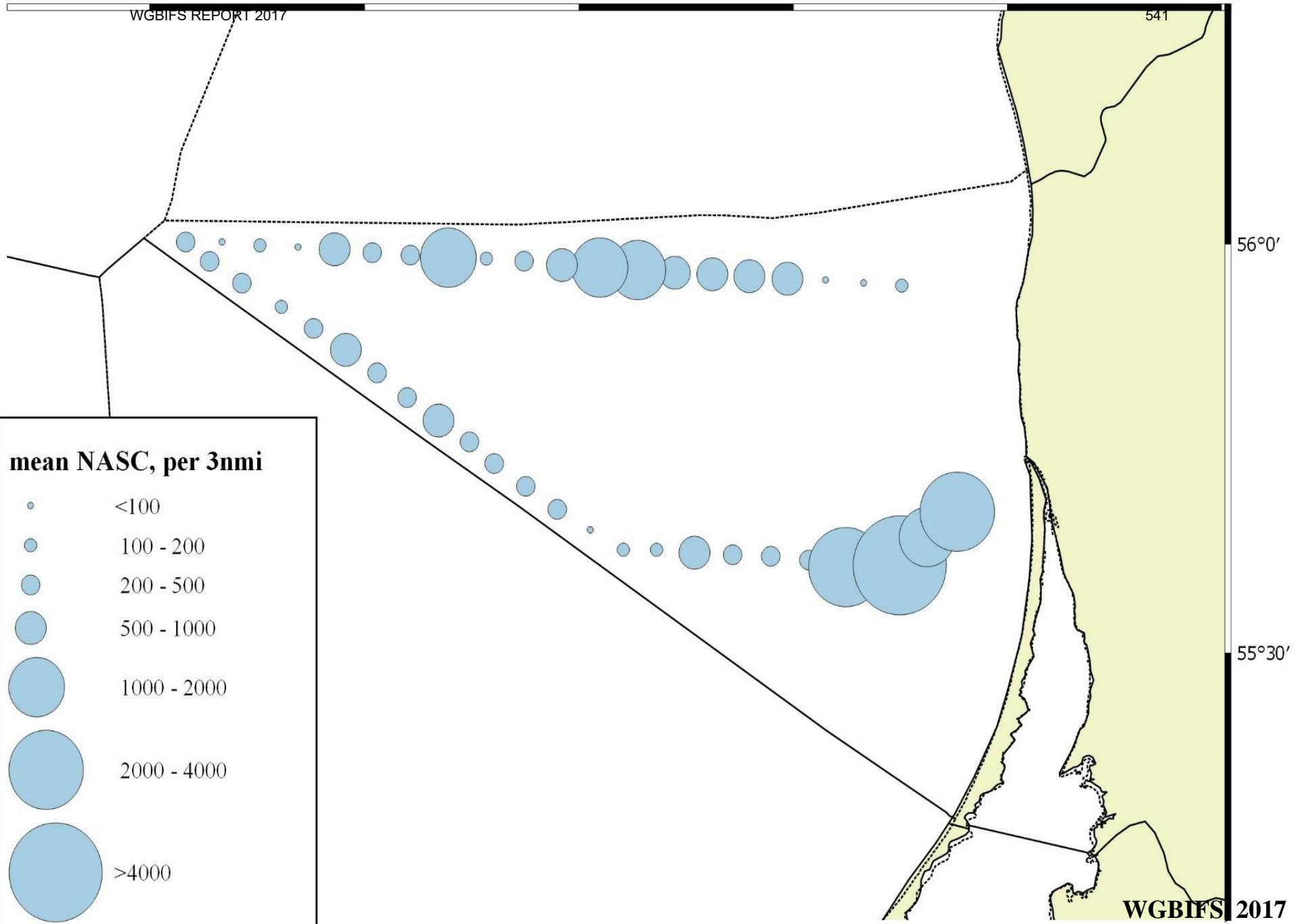
1000 - 2000



2000 - 4000



>4000

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BIAS RESULTS: Fish catches and biological data⁴²

- CPUE (kg/ 1hour)

Haul No	1	2	3	4	5	6
Date	13.10.2016	13.10.2016	13.10.2013	14.10.2016	14.10.2016	14.10.2016
Validity	Valid	Valid	Valid	Valid	Valid	Valid
Species/ICES rectangle	40H0	40H0	40G9	40G9	40G9	40H0
Mean trawling depth	27	30	66	57	56	31
<i>Clupea harengus</i>		1.75	31.944	77.3	180.00	191.056
<i>Sprattus sprattus</i>	2.0	30.0	9.5	342.7		5,808.94
<i>Gadus morhua</i>				0.96		2.688
<i>Osmerus eperlanus</i>	0.024					
Total	2.496	31.75	41.444	420.96	180	6002.688

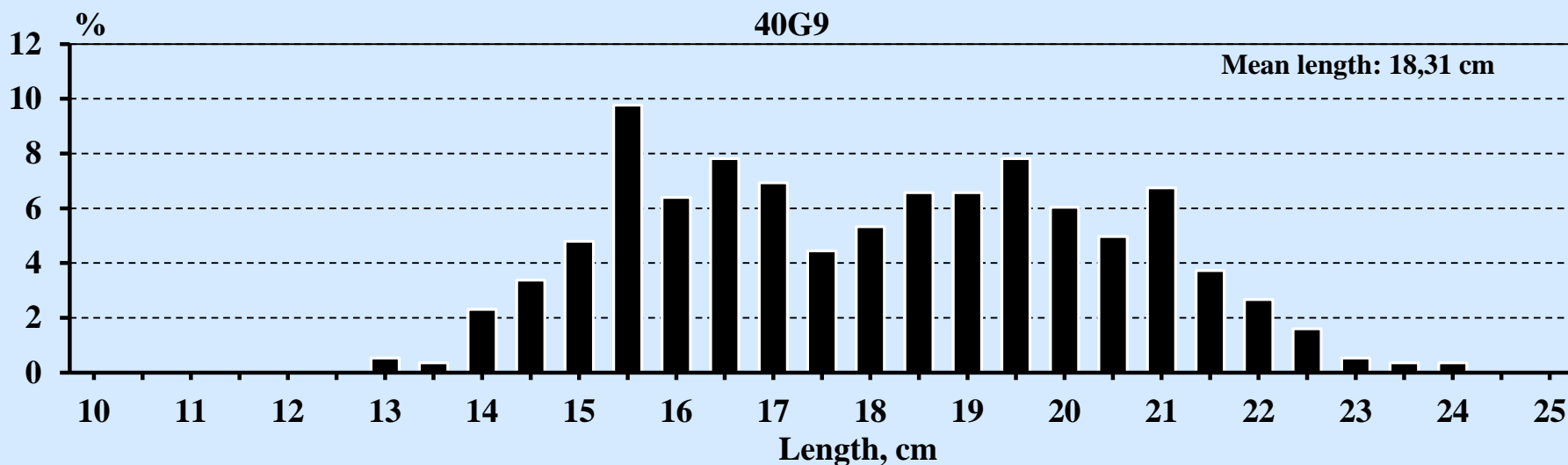
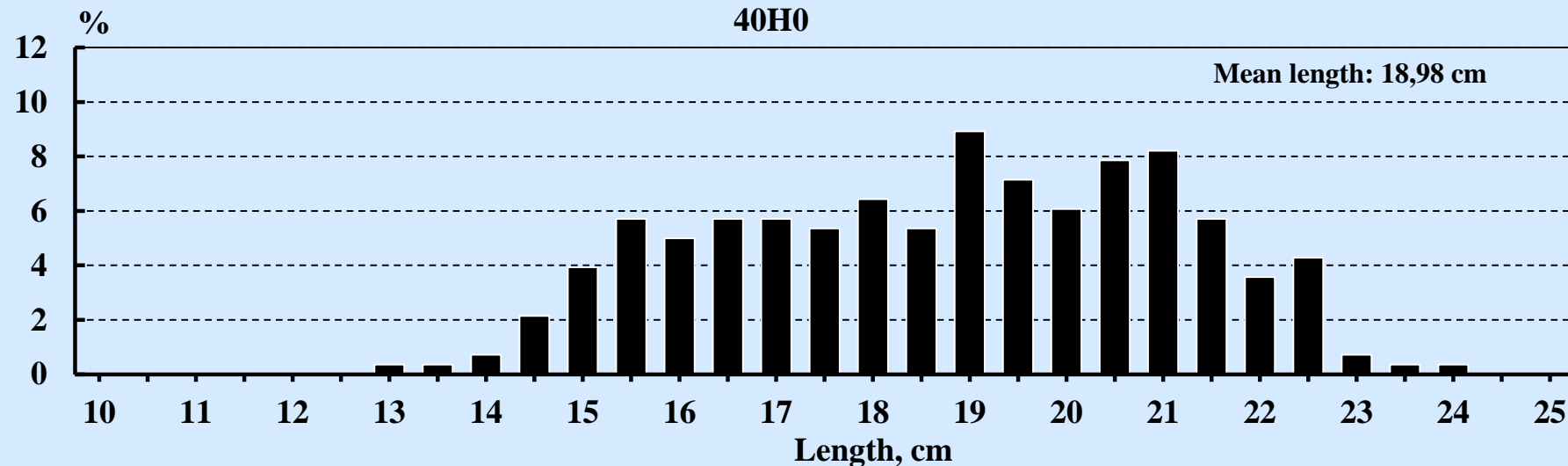


92,77%

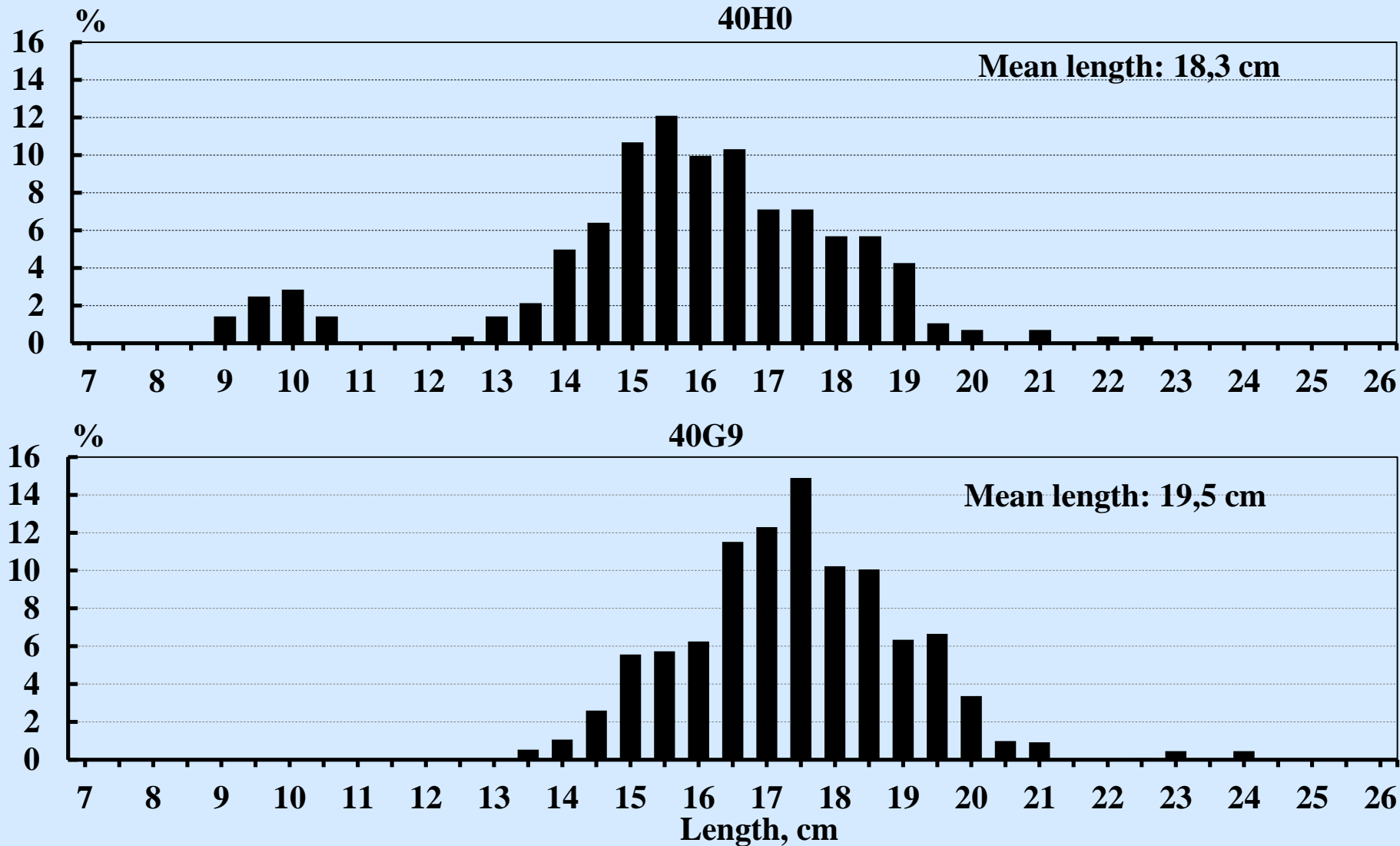


7,22%

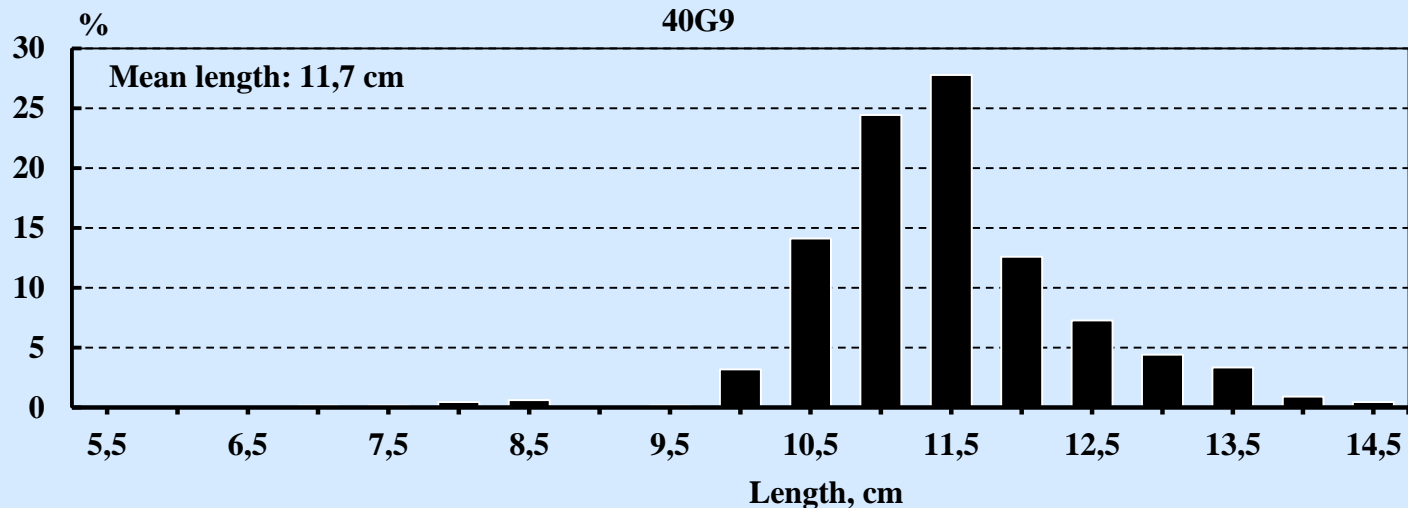
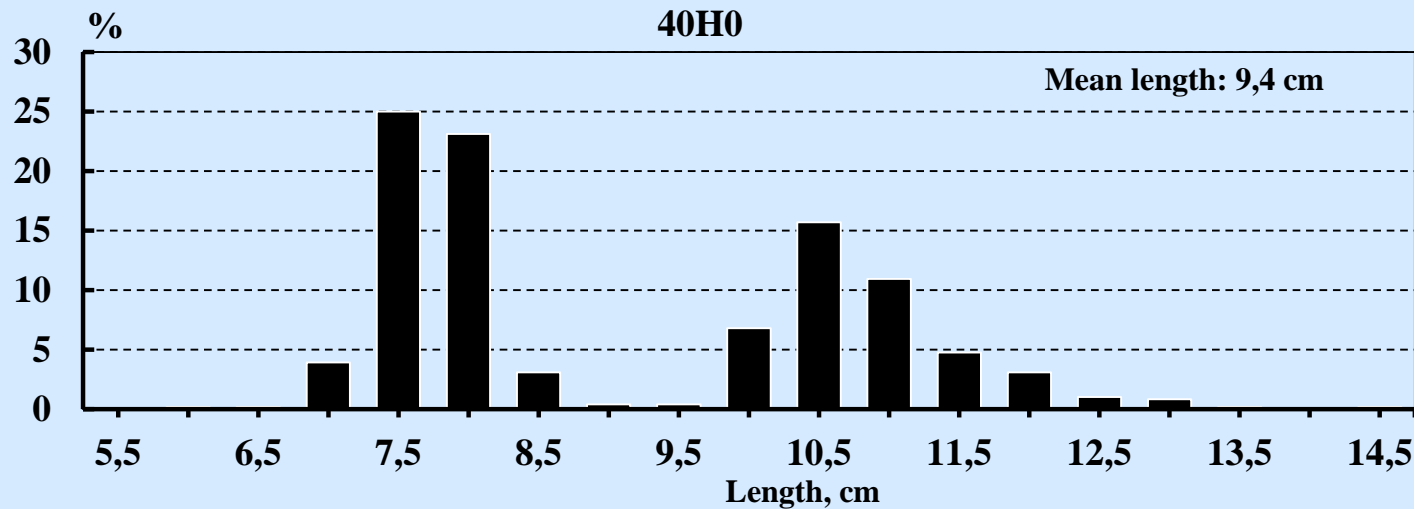
Herring length frequency distribution according to the 40H0 and 40G9 rectangles



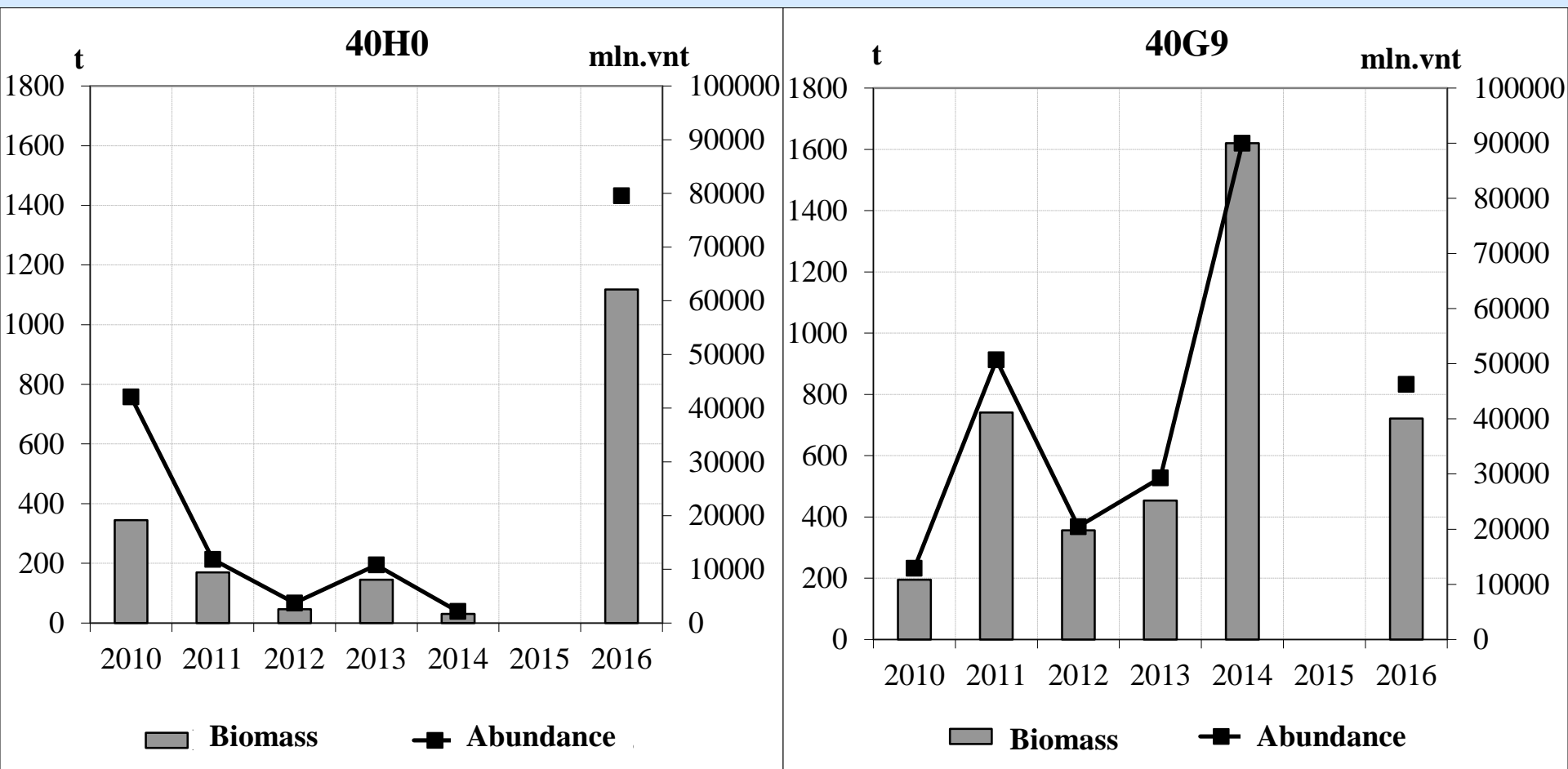
Herring length frequency distribution according to the 40H0 and 40G9 rectangles



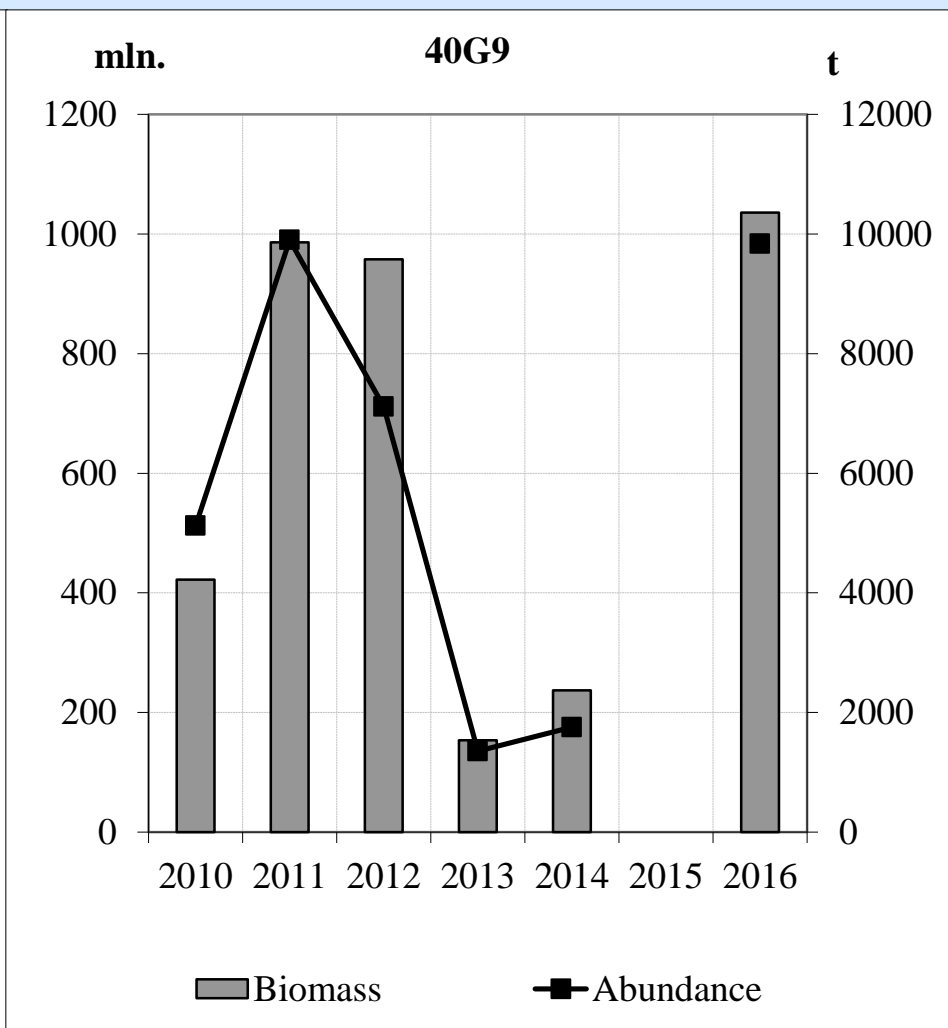
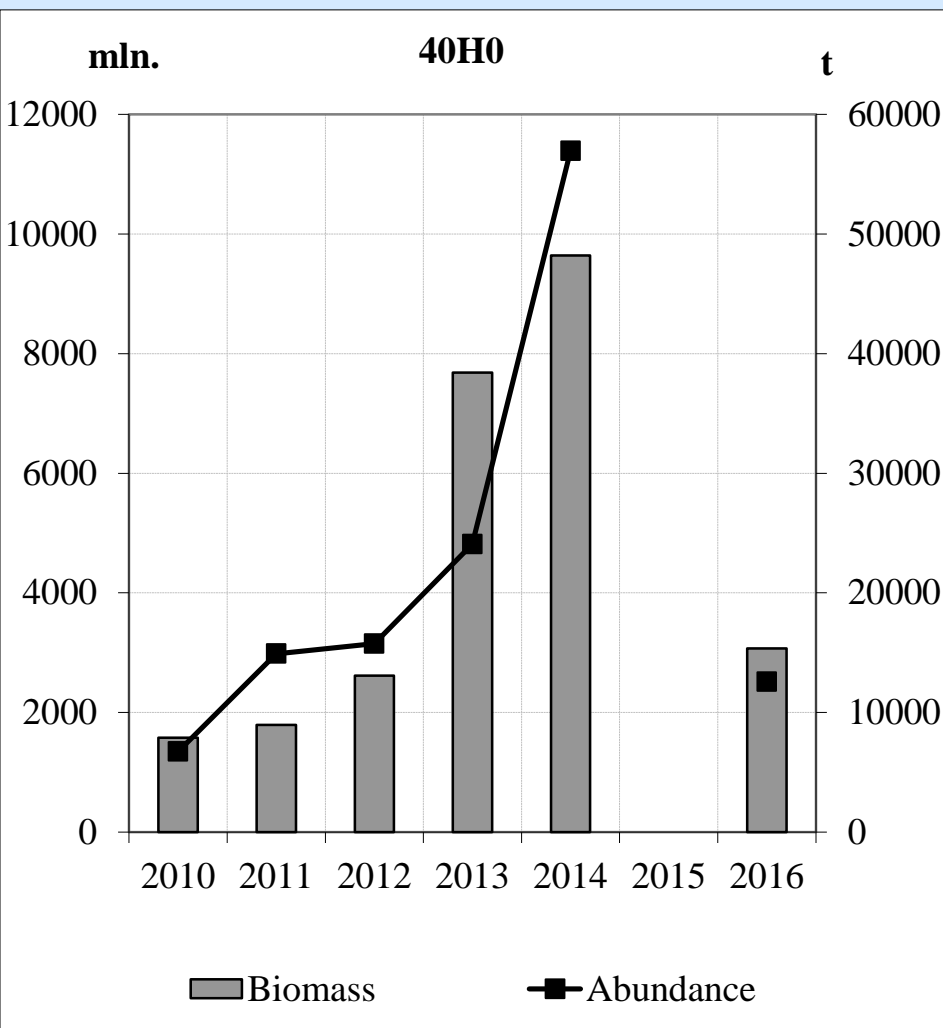
Sprat length frequency distribution by BIAS results in the ICES rectangles 40H0 and 40G9



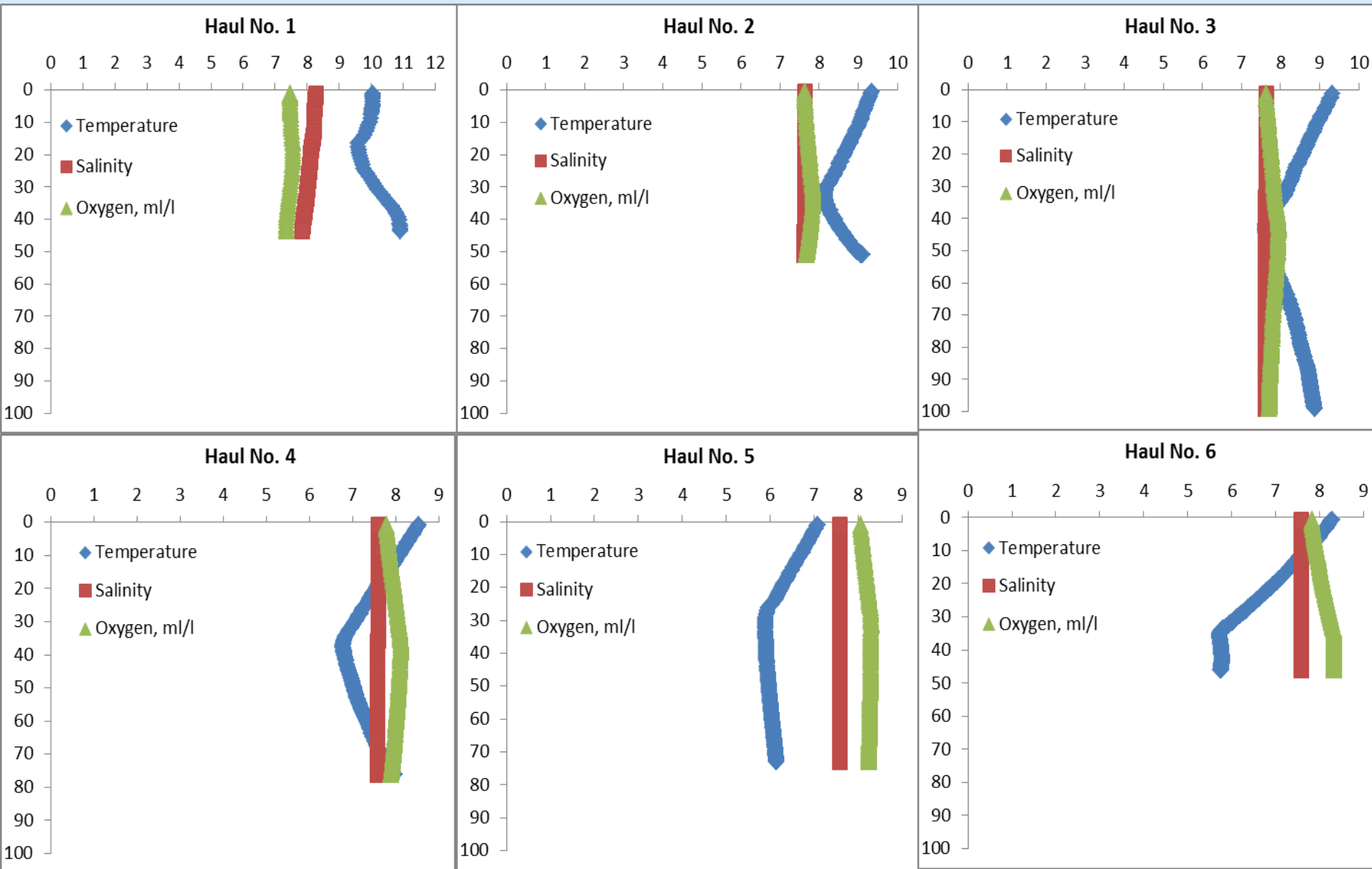
Herring biomass and abundance by BIAS results in ICES rectangles 40H0 and 40G9 from 2010 to 2016



Sprat biomass and abundance by BIAS results in ICES rectangles 40H0 and 40G9 from 2010 to 2016



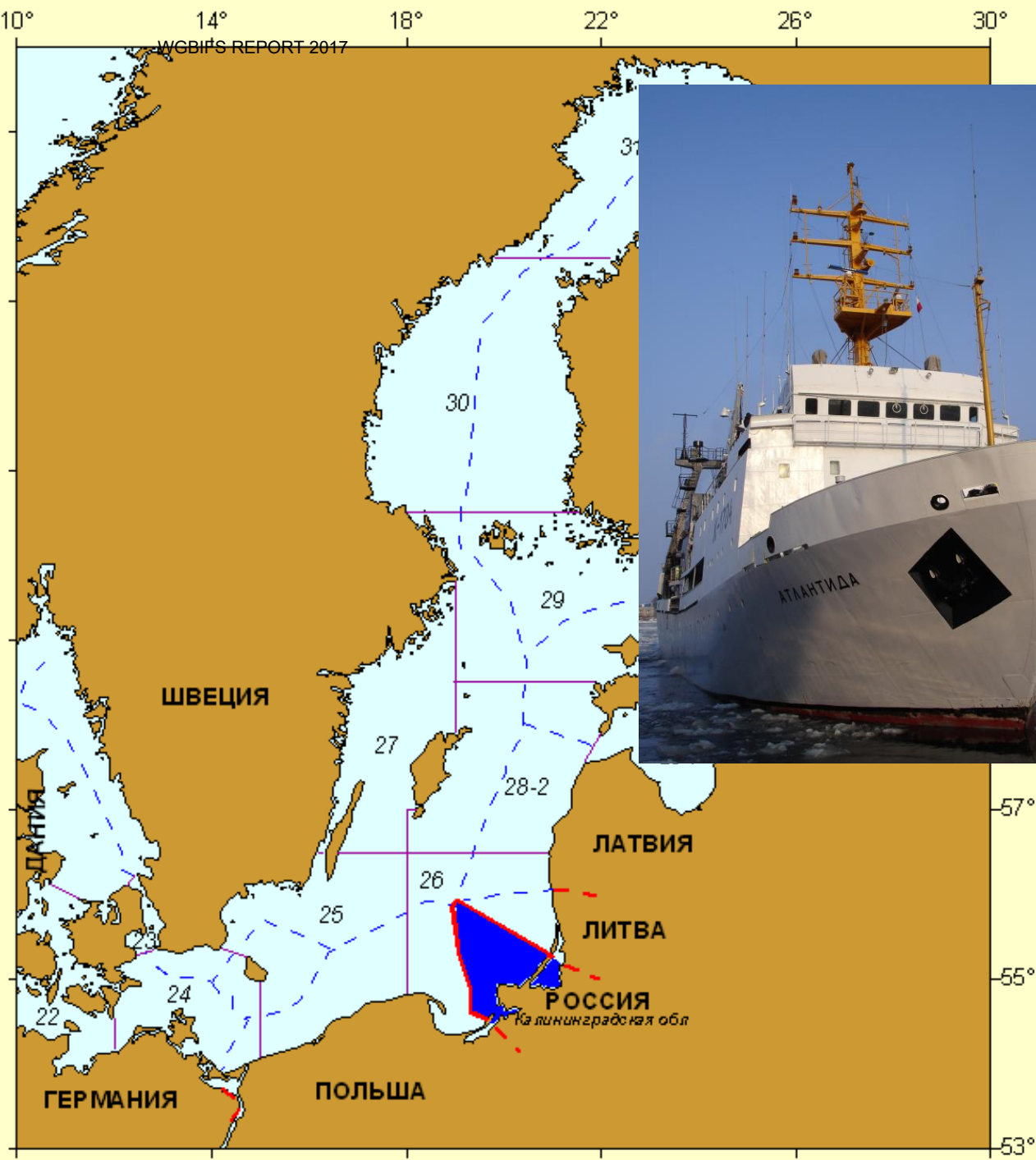
Hydrology





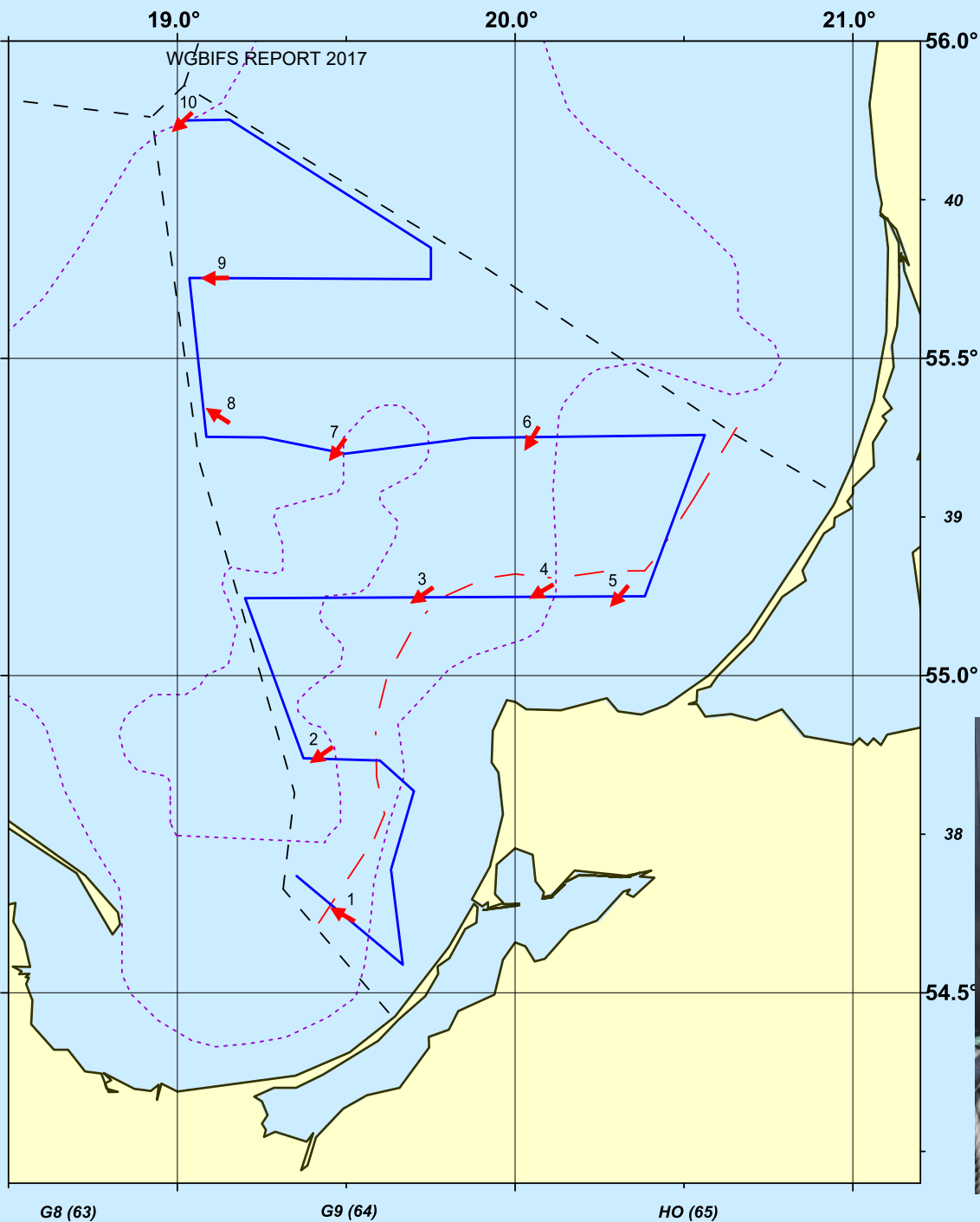
Survey Report for RV "ATLANTNIRO"
02-10.10.2016

Atlantic Scientific Research Institute of Marine Fisheries and Oceanography
(AtlantNIRO), Kaliningrad, Russia



A. Zezera – *cruise leader*
A. Karpushevskaya⁵⁵⁰ – *scientific leader*

A. Malishko – *acoustic*
M. Sokolov – *acoustic*
S. Alekseev – *hydrologist*
I. Truphanova – *engineer*
N. Kalinina – *engineer*
S. Ivanov – *engineer*
N. Dyushkov – *engineer*



**Figure 1. The scheme of
cruise track and trawl stations
for Russian part of survey
(RV "ATLANTNIRO",
02-10.10.2016)**

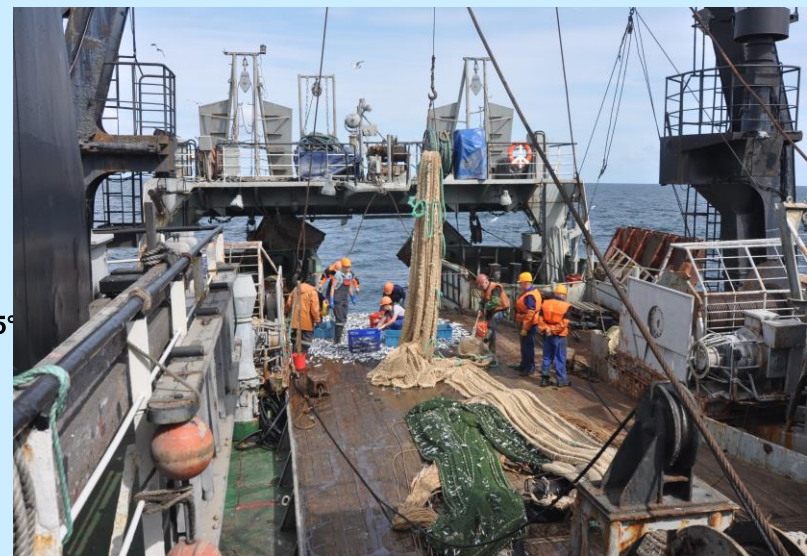


Table 1. Fish control-catch results in the Baltic Sea ICES SD 26 from Russian BIAS survey (RV “ATLANTNIRO”, 02–10.10.2016)

Haul number	Date	ICES rect.	ICES SD	Mean bottom depth [m]	Head-rope depth [m]	Hor. open [m]	Ver. open [m]	Trawl. speed [knt]	Trawl. direct [°]	Geographical position				Time Start	Haul dur. [min]	Total catch [kg]
										Start		End				
										Latitude 00° 00.0'N	Longitude 00° 00.0'E	Latitude 00° 00.0'N	Longitude 00° 00.0'E			
1	02.10.2016	38G9	26	80	20	97	26	4,0	300	54 37.1	19 30.1	54 37.7	19 28.2	18:08	20	345,5
2	04.10.2016	38G9	26	105	52	92	26	4,0	230	54 53.3	19 27.7	54 52.0	19 24.3	7:40	30	353,5
3	06.10.2016	39G9	26	76	37	98	28	4,1	237	55 08.2	19 45.1	55 07.0	19 42.0	12:31	30	219,5
4	07.10.2016	39HO	26	56	13	98	29	4,1	241	55 08.6	20 06.6	55 07.5	20 03.1	7:31	30	336,1
5	07.10.2016	39HO	26	43	10	91	31	4,0	220	55 08.4	20 19.8	55 06.7	20 17.3	14:42	30	149,5
6	08.10.2016	39HO	26	59	17	90	25	4,0	213	55 23.7	20 04.4	55 21.8	20 02.5	10:04	30	99,8
7	08.10.2016	39G9	26	96	43	89	28	4,0	221	55 22.3	19 29.9	55 20.5	19 27.2	15:18	30	237,1
8	09.10.2016	39G9	26	81	34	90	28	4,0	300	55 23.8	19 09.3	55 25.1	19 05.6	9:05	30	63,3
9	09.10.2016	40G9	26	87	55	95	29	3,9	270	55 37.5	19 09.0	55 37.5	19 05.3	13:39	30	419,2
10	10.10.2016	40G9	26	104	50	97	26	3,9	224	55 53.3	19 02.5	55 51.6	18 59.6	11:32	30	207,0
SD26				79	33	94	28	4,0	246							2430







ICES_subdivision	26	26	26	26	26
<small>WGBIFS REPORT 2017</small> Haul_No	1	2	3	4	<small>553</small> 5
Date	02.10.2016	04.10.2016	06.10.2016	07.10.2016	07.10.2016
Validity	Valid	Valid	Valid	Valid	Valid
Species/ICES rectangle	38G9(64)	38G9(64)	39G9(64)	39HO(65)	39HO(65)
<i>CLUPEA HARENGUS</i> 	282,9	523,2	386,6	8,0	1,4
<i>SPRATTUS SPRATTUS</i> 	732,9	160,6	50,1	660,0	295,2
<i>GADUS MORHUA</i> 	6,0	18,5	1,4	2,3	0,0
ANOTHER	14,7	4,7	0,9	1,9	2,3
Total	1036,5	707,0	439,0	672,1	298,9
ICES_subdivision	26	26	26	26	26
Haul_No	6	7	8	9	10
Date	08.10.2016	08.10.2016	09.10.2016	09.10.2016	10.10.2016
Validity	Valid	Valid	Valid	Valid	Valid
Species/ICES rectangle	39HO(65)	39G9(64)	39G9(64)	40G9(64)	40G9(64)
<i>CLUPEA HARENGUS</i> 	11,9	431,8	119,6	803,0	385,0
<i>SPRATTUS SPRATTUS</i> 	186,8	33,6	6,8	32,6	28,4
<i>GADUS MORHUA</i> 	0,8	8,1	0,0	2,8	0,5
ANOTHER	0,2	0,7	0,2	0,0	0,0
Total	199,7	474,3	126,6	838,4	413,9

Table 2. Catch composition (kg/1hour) per haul by ICES Subdivision and ICES rectangles (RV “ATLANTNIRO”, 02–10.10.2016)

Length composition on sprat in SD 26 (Russian part)

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% of N



Length class (sm)

7,5 8,0 8,5 9,0 9,5 10,0 10,5 11,0 11,5 12,0 12,5 13,0 13,5 14,0 14,5 15,0 15,5

Length composition on herring in SD 26 (Russian part)

% of N



Length class (sm)

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29



**The cod catches were
extremely small**

39 ind.

**Figure 2. Length composition of sprat and herring (%)
(RV "ATLANTNIRO", 02–10.10.2016)**

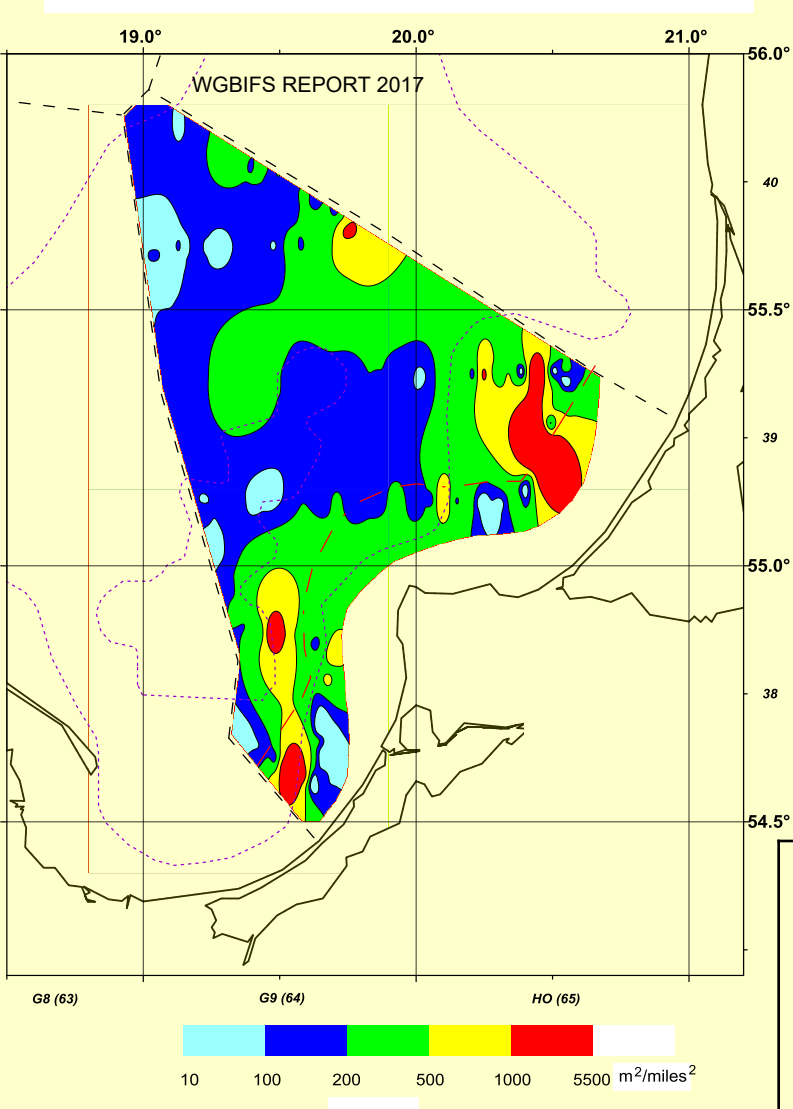


Figure 3. The map of NASC values distribution on the Russian area of international acoustic survey (RV “ATLANTNIRO”, 02-10.10.2016)

Table 3. Survey statistics (RV “ATLANTNIRO”, 02–10.10.2016)

ICES SD	ICES Rect.	Area nm ²	SA m ² /nm ²	$\sigma \cdot 10^4$ m ²	N total mln	Species composition (%)	
						herring	sprat
26	40G9	1013,0	229,3	3,12	745,4	85,78	14,22
26	39H0	881,6	630,8	1,33	4182,6	0,49	99,51
26	39G9	1026,0	154,2	2,97	533,1	74,07	25,93
26	38G9	918,2	378,3	1,95	1780,4	22,52	77,48

Table 4. Characteristics of the stock of sprat and herring acoustic survey data
 (RV “ATLANTNIRO”, 02–10.10.2016)

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ICES	ICES	Area	p	Quantity, mln			Biomass, tonn		
SD	Rect.	nm ²	mln/nm ²	N sum	N her	N spr	W sum	W her	W spr
26	40G9	1013,0	0,74	745,4	639,4	106,0	26316,9	25031,6	1285,3
26	39H0	881,6	4,74	4182,6	20,5	4162,1	43786,6	799,7	42986,8
26	39G9	1026,0	0,52	533,1	394,9	138,3	17948,3	16368,6	1579,7
26	38G9	918,2	1,94	1780,4	400,9	1379,4	33058,3	17289,4	15768,9
SD26		3 838,8		7 241	1 456	5 786	121 110	59 489	61 621

Table 5. Summary acoustic survey of sprat and herring
 (RV “ATLANTNIRO”, 02–10.10.2016)

ICES	ICES	No	HERRING			SPRAT			SA	TS CALC.
SD	Rect.	trawl	L, cm	W, g	Numb.,%	L, cm	W, g	Numb.,%	M ² /NM ²	DB
26	40G9	9,10	18,69	39,15	85,78	12,65	12,13	14,22	229,3	-46,1
26	39H0	4,5,6	18,53	39,06	0,49	11,74	10,33	99,51	630,8	-49,8
26	39G9	3,7,8	19,01	41,45	74,07	12,29	11,43	25,93	154,2	-46,3
26	38G9	1,2	19,30	43,12	22,52	12,39	11,43	77,48	378,3	-48,1

Table 6. Estimated number (millions) of sprat (RV “ATLANTNIRO”, 02–10.10.2016)

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SD	RECT	NSTOT	1	2	3	4	5	6	7	8+
26	40G9	105,99	0,29	4,98	39,33	15,38	26,76	12,91	1,73	1,75
26	39H0	4162,10	145,48	410,62	2735,36	439,54	370,11	49,18	5,91	2,95
26	39G9	138,26	0,65	7,95	68,59	20,54	26,89	7,97	1,39	1,21
26	38G9	1379,45	0,00	24,27	634,76	263,78	290,47	113,89	13,88	0,00
Sum		5785,79	146,42	447,82	3478,05	739,23	714,22	183,95	22,91	5,91

Table 7. Estimated mean weights (g) of sprat (RV “ATLANTNIRO”, 02–10.10.2016)

SD	RECT	WSTOT	1	2	3	4	5	6	7	8+
26	40G9	12,13	3,93	8,99	10,79	11,93	13,20	14,13	16,70	15,21
26	39H0	10,33	3,90	9,04	10,32	11,58	12,14	14,36	17,24	16,79
26	39G9	11,43	4,54	8,66	10,54	12,16	12,68	14,27	16,22	12,61
26	38G9	11,43	0,00	8,02	10,39	12,36	12,19	13,61	12,90	0,00

Table 8. Estimated biomass (in tonnes) of sprat (RV “ATLANTNIRO”, 02–10.10.2016)

SD	RECT	WSTOT	1	2	3	4	5	6	7	8+
26	40G9	1285,29	1,13	44,72	424,24	183,45	353,07	182,49	28,96	26,65
26	39H0	42986,84	567,49	3712,45	28223,08	5090,96	4492,47	706,15	101,84	49,59
26	39G9	1579,69	2,97	68,89	723,03	249,85	340,82	113,73	22,55	15,24
26	38G9	15768,87	0,00	194,67	6596,11	3261,34	3541,31	1550,19	178,95	0,00
Sum		61620,70	571,59	4020,73	35966,46	8785,60	8727,67	2552,56	332,30	91,48

Table 9. Estimated number (millions) of herring (RV “ATLANTNIRO”, 02–10.10.2016)

SD	RECT	NHTOT	0	1	2	3	4	5	6	7	8+
26	40G9	639,40	0,63	37,67	129,21	118,85	146,48	63,17	46,29	45,46	51,63
26	39HO	20,48	1,05	0,35	3,39	4,12	6,40	1,37	0,95	0,98	1,86
26	39G9	394,85	0,54	9,19	65,37	51,33	103,07	33,51	42,11	35,03	54,70
26	38G9	400,93	0,38	27,26	50,61	59,86	124,19	60,55	31,67	8,75	37,65
Sum		1455,66	2,61	74,48	248,58	234,16	380,14	158,60	121,01	90,23	145,85

Table 10. Estimated mean weights (g) of herring (RV “ATLANTNIRO”, 02–10.10.2016)

SD	RECT	WHTOT	0	1	2	3	4	5	6	7	8+
26	40G9	39,15	12,05	28,76	30,89	35,29	37,35	47,14	46,52	47,72	57,76
26	39HO	39,06	11,18	18,96	30,92	33,31	38,26	43,12	61,77	46,69	70,37
26	39G9	41,45	13,96	29,16	29,65	31,86	39,19	43,74	45,74	52,24	59,57
26	38G9	43,12	9,85	26,21	29,30	42,10	41,21	45,51	53,53	60,70	65,56

Table 11. Estimated biomass (in tonnes) of herring (RV “ATLANTNIRO”, 02–10.10.2016)

SD	RECT	WHTOT	0	1	2	3	4	5	6	7	8+
26	40G9	25031,62	7,620206	1083,381	3991,107	4194,366	5471,059	2978,299	2153,536	2169,751	2982,498
26	39HO	799,7359	11,78513	6,727076	104,8264	137,3403	244,6947	59,0191	58,41273	45,84818	131,0823
26	39G9	16368,62	7,587676	267,8705	1938,146	1635,283	4039,425	1465,752	1925,884	1829,931	3258,742
26	38G9	17289,41	3,709085	714,4161	1483,027	2519,931	5117,677	2755,268	1695,348	531,3136	2468,716
Sum		59489,38	30,7021	2072,394	7517,107	8486,92	14872,86	7258,338	5833,18	4576,844	8841,039

A large-scale photograph of an offshore oil rig at sunset. The rig's complex structure, including its legs, cross-arms, and various platforms, is silhouetted against a sky transitioning from deep blue at the top to a bright orange glow near the horizon. The ocean is visible in the lower portion of the frame. The text "THANK YOU!" is centered in a large, bold, black serif font.

THANK YOU!



Polish BIAS 2016 survey

by Grzegorz Kruk – gkruk@mir.gdynia.pl

National Marine Fisheries Research Institute in Gdynia (Poland)

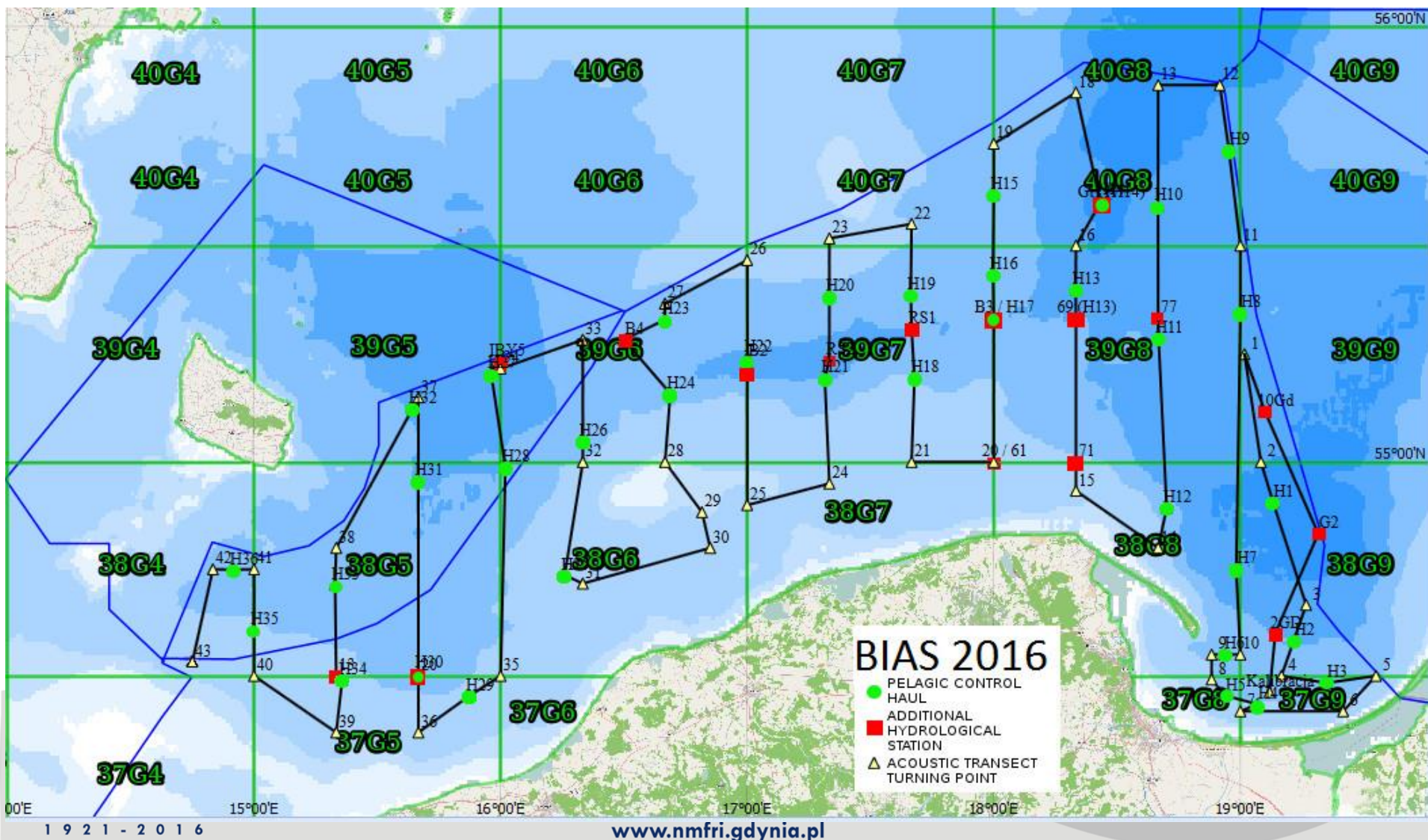
The aim of presentation:

- Brief summary of the acoustic survey (type BIAS) realisation.
- Showing acoustic, biotic and hydrological data .



*Based on „Research report from the Polish part of the Baltic International Acoustic Survey (BIAS) onboard of the r.v. Baltica”
by G.Kruk, M. Wyszynski,
B. Witalis*

The 2016 Polish BIAS survey was conducted on board of the R/V „Baltica” in the period from 13th to 30th of September within the Polish EEZ.



The R/V „Baltica” realised :
876 NM echo-integration transect

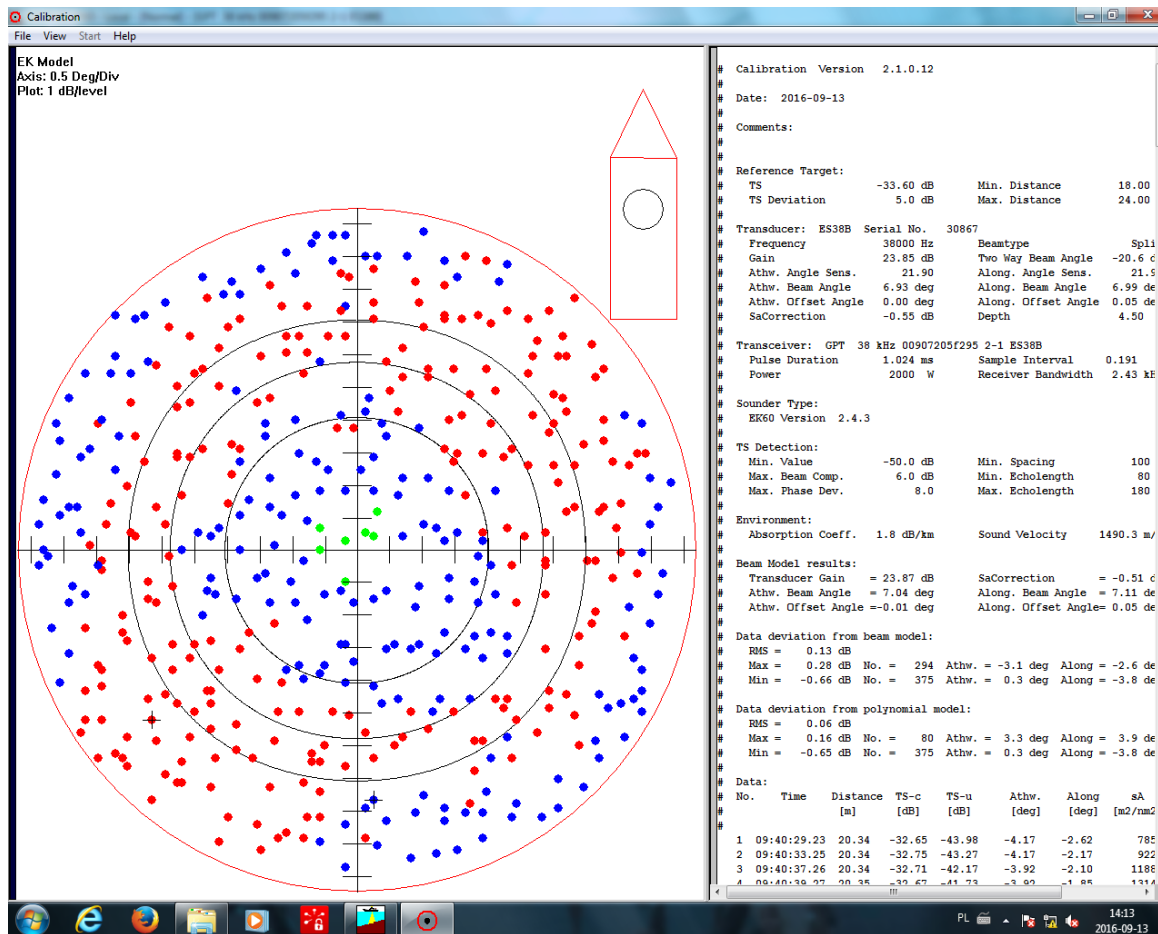
covering ICES rectangles :

- partly 38G4, 38G5, 39G5, 39G6, 40G7, 40G8, 38G9, 39G9
- fully 37G5, 38G6, 38G7, 39G7, 37G8, 38G8 ,39G8, 37G9

36 valid fish control hauls during the daylight with the WP 53/64x4 small meshed herring pelagic trawl applied

48 hydrological stations (36 after each haul and 12 additional)

Calibration of the EK-60 SIMRAD scientific split beam echosounder, with the frequencies of 38 and 120 kHz



- Performed on 13.09.2016
- Lat. 54° 27.6' N
- Lon. 19° 07.1' E
- Calibration Accuracy Estimate for 38 kHz: 0.13 dB (RMS) – very good

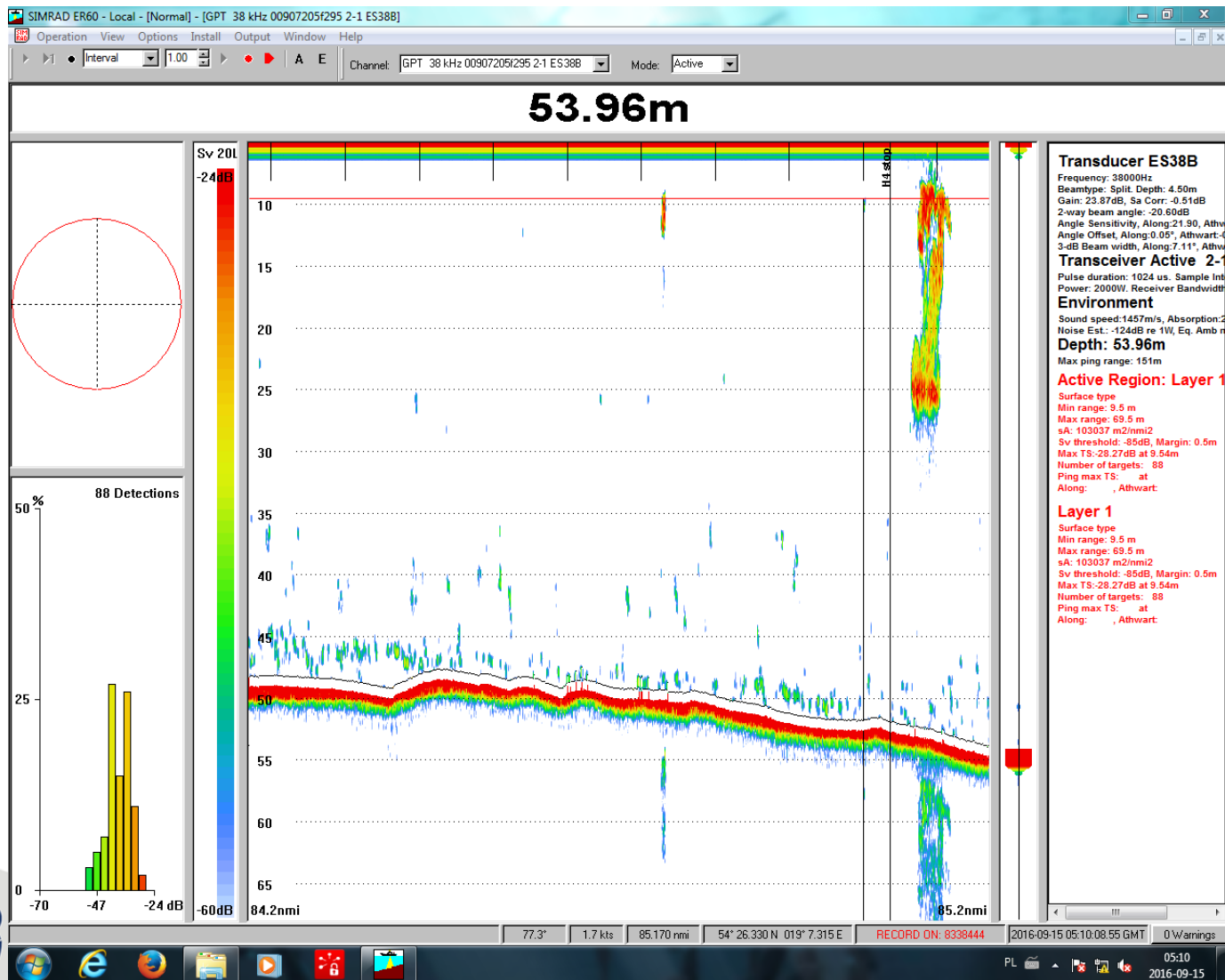
Average NASC

SD	Average NASC 2016	Average NASC 2015
24	89,2	96,9
25	160,0	226,4
26	556,8	926,8

SD	ICES Rectangle	Surface Nm ²	Average NASC 2016	Average NASC 2015
26	37G8	86,0	767,5	2894,6
26	37G9	151,6	2739,7	914,1

Interesting that the largest values of the NASC appear every year at the mouth of the Vistula river.

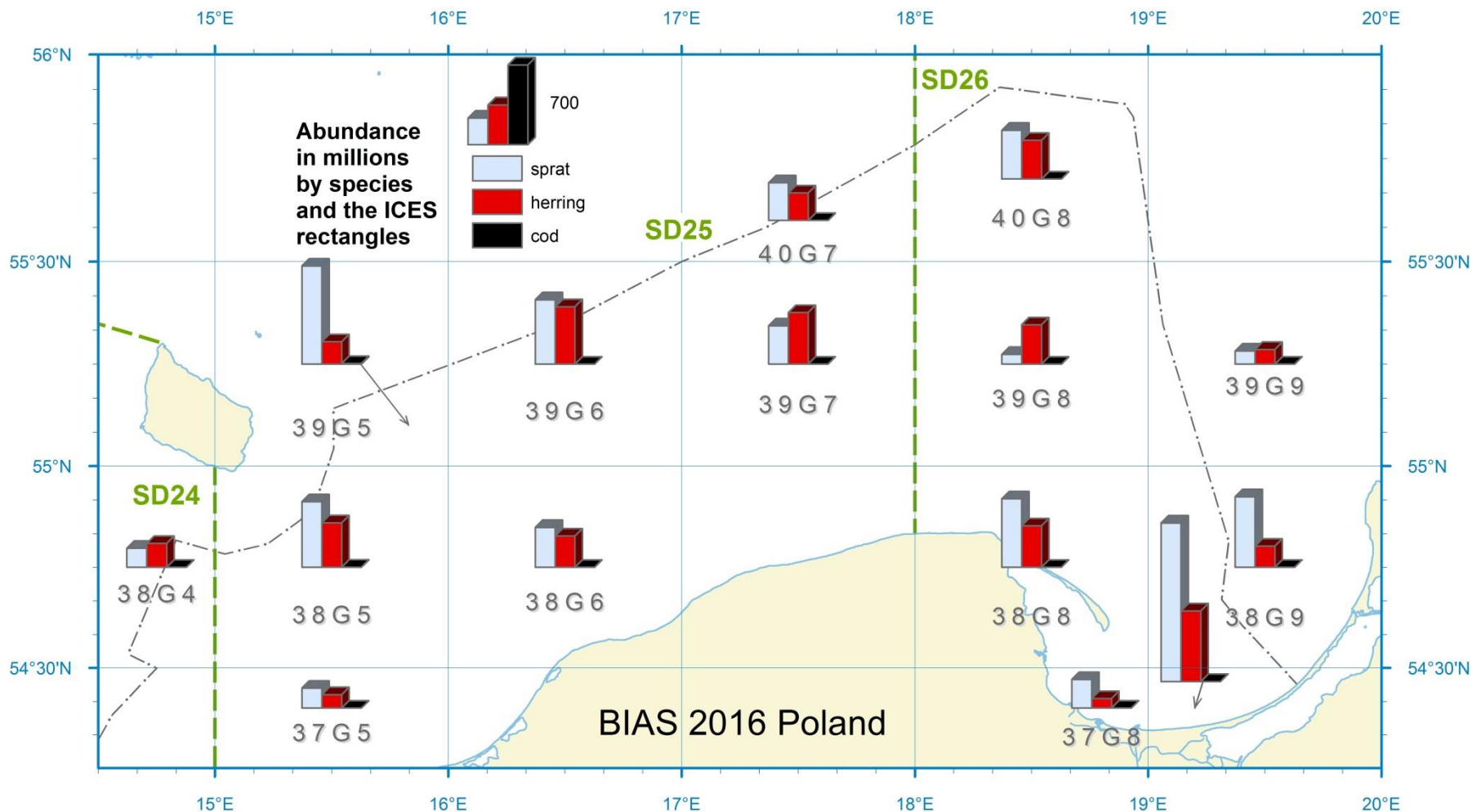
Huge concentration of clupeids at the mouth of the Vistula river in the 37G9 ICES rectangle - a screenshot from the Simrad EK60 software during hydroacoustic integration.



Results

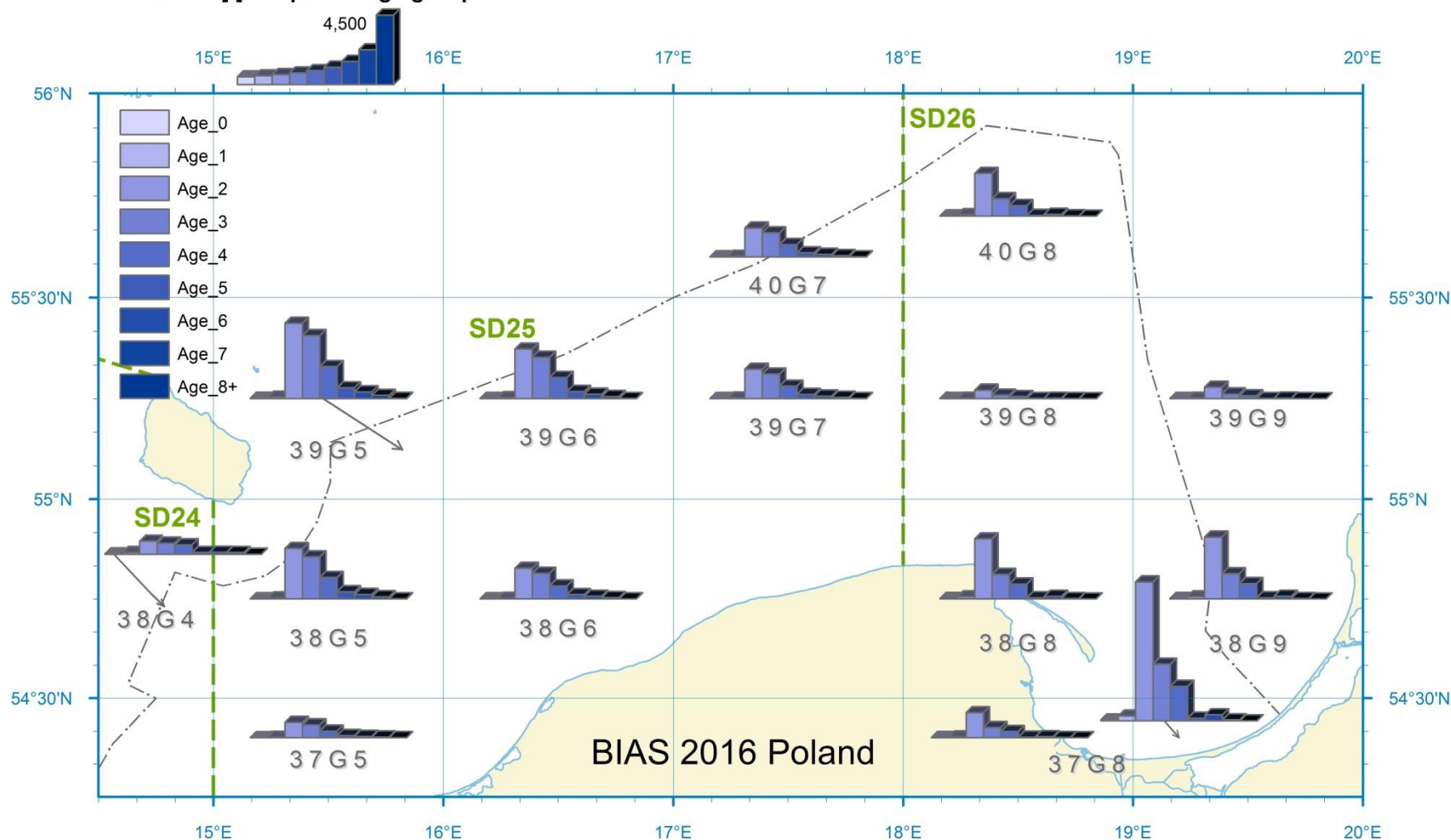
Cruise statistics

(the black bar's size in a legend represents $700 \cdot 10^6$ of indiv.)



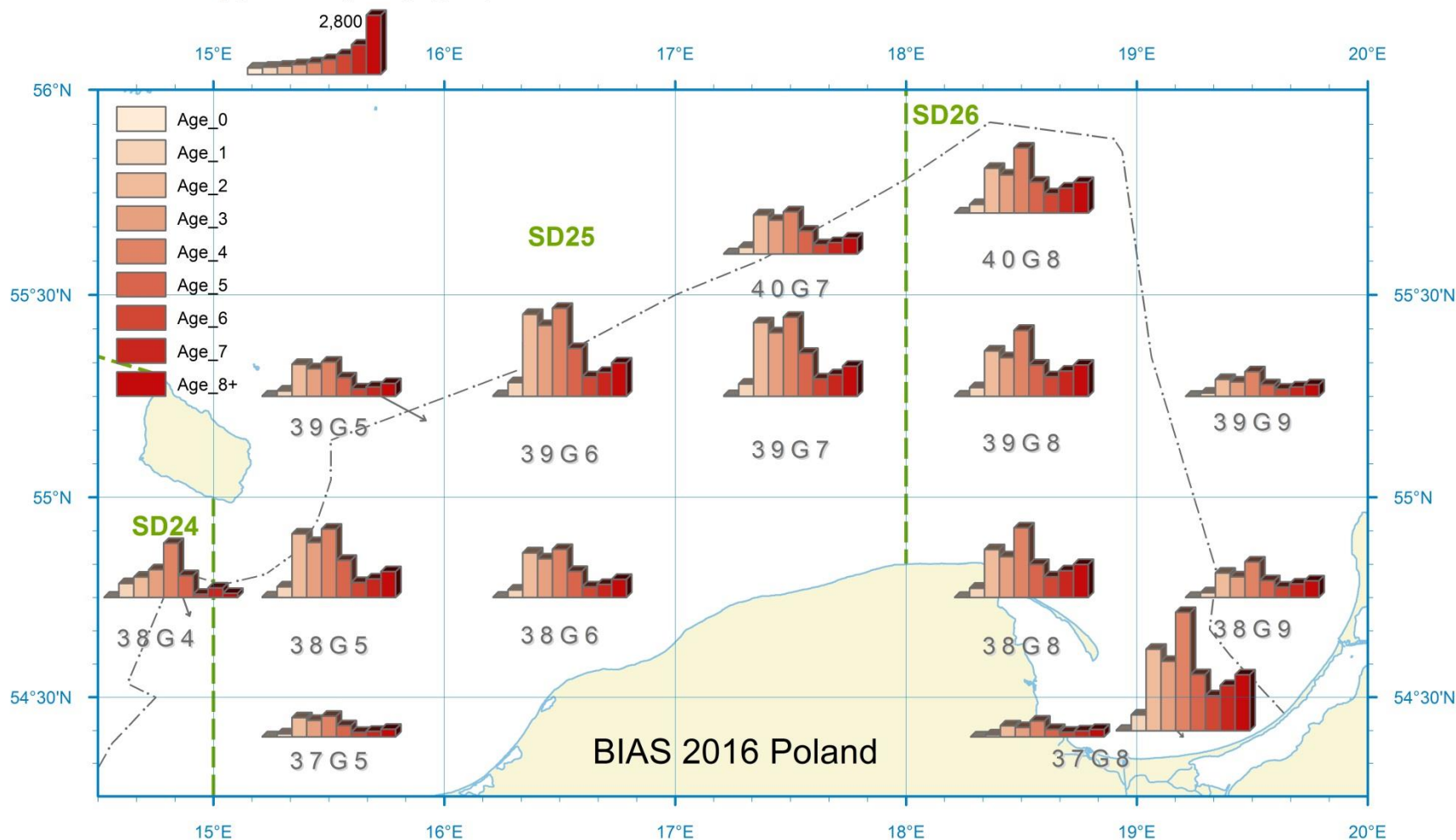
Sprat biomass estimated using acoustic method
(the largest blue bar's size in a legend represents 4500 t of sprat)

Biomass [t] of sprat in age groups



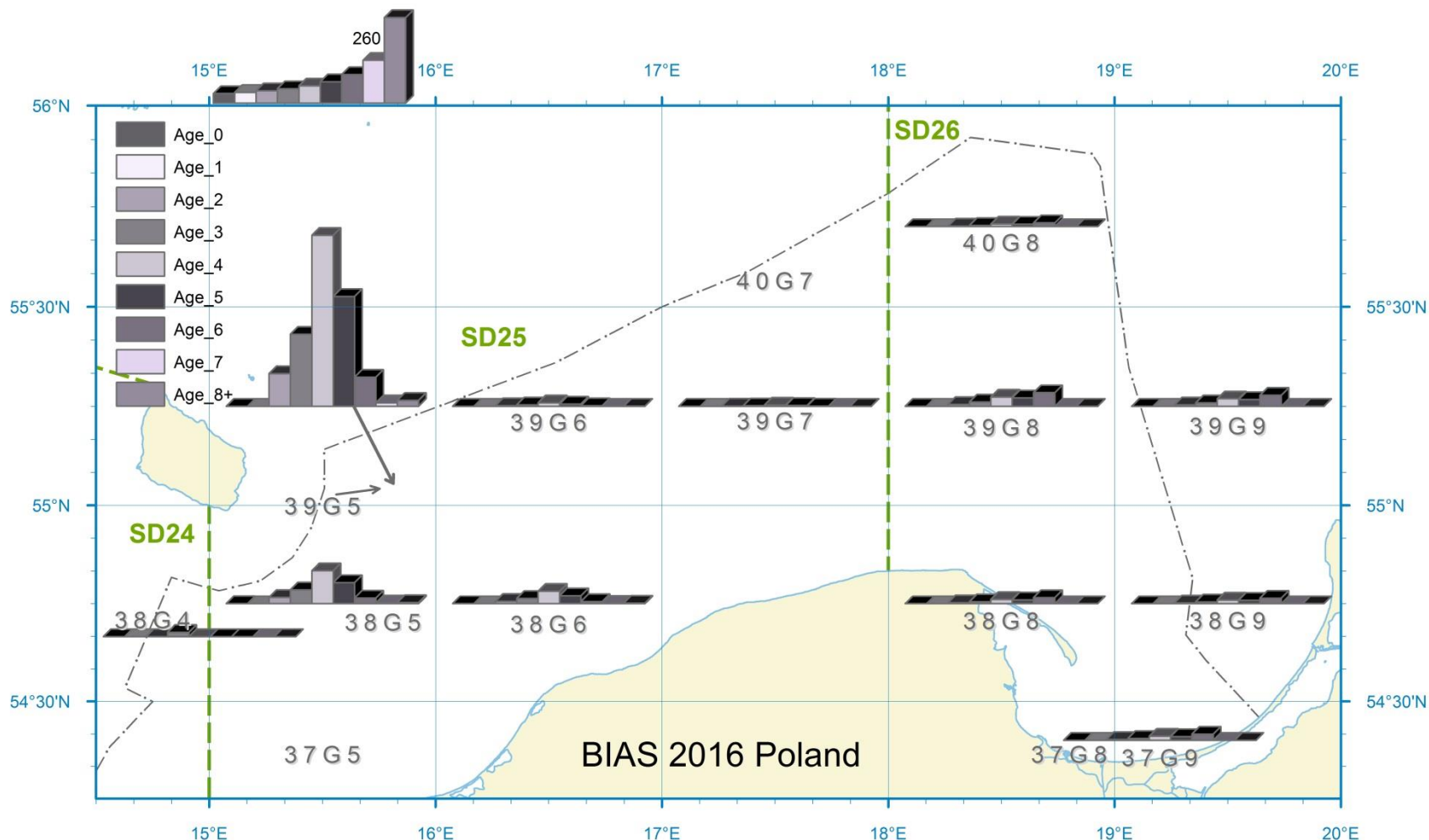
Herring biomass estimated using acoustic method
(the largest red bar's size in a legend represents 2800 t of herring)

Biomass [t] of herring in age groups

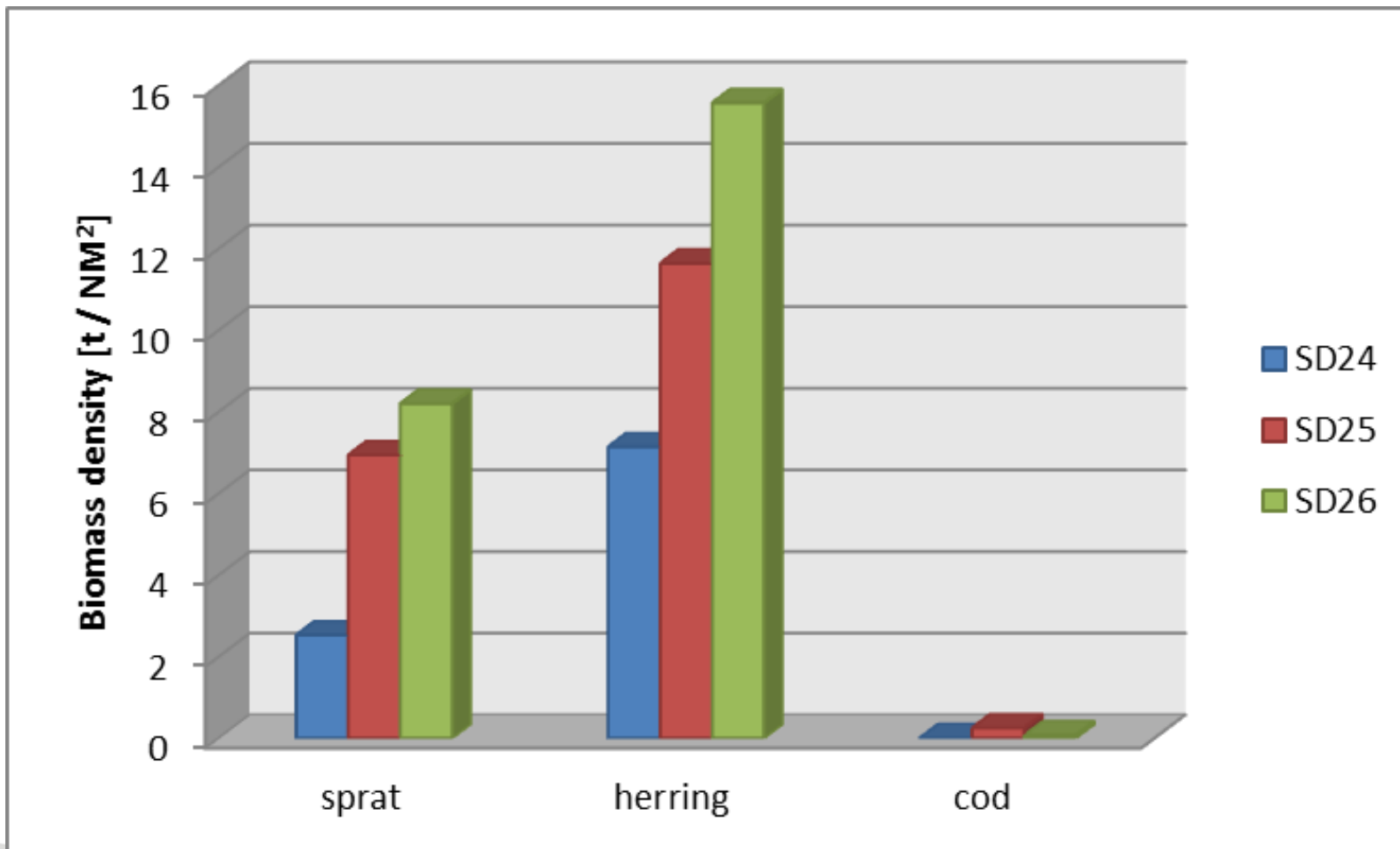


Cod biomass estimated using acoustic method (the largest grey bar's size in a legend represents 260 t of cod)

Biomass [t] of cod in age groups



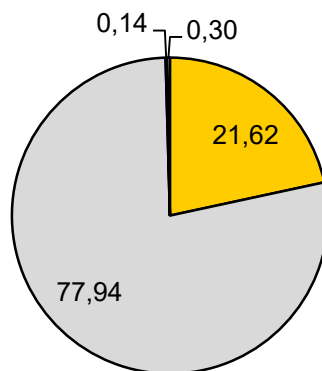
Total biomass density in the ICES Subdivisions for the three major species



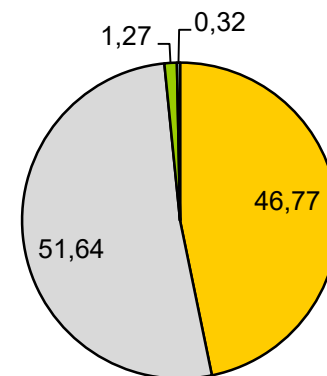
Results

Mean share (%)
of sprat, herring, cod
in the mass of
total catches
per the ICES SDs

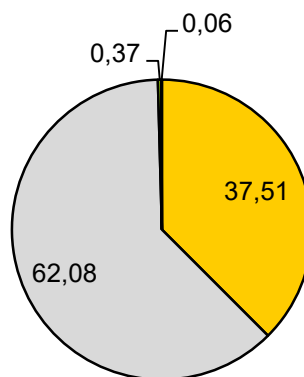
SD 24



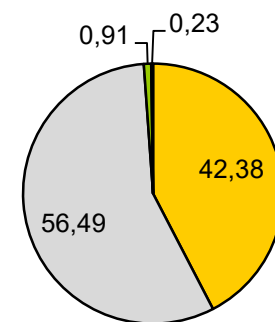
SD 25



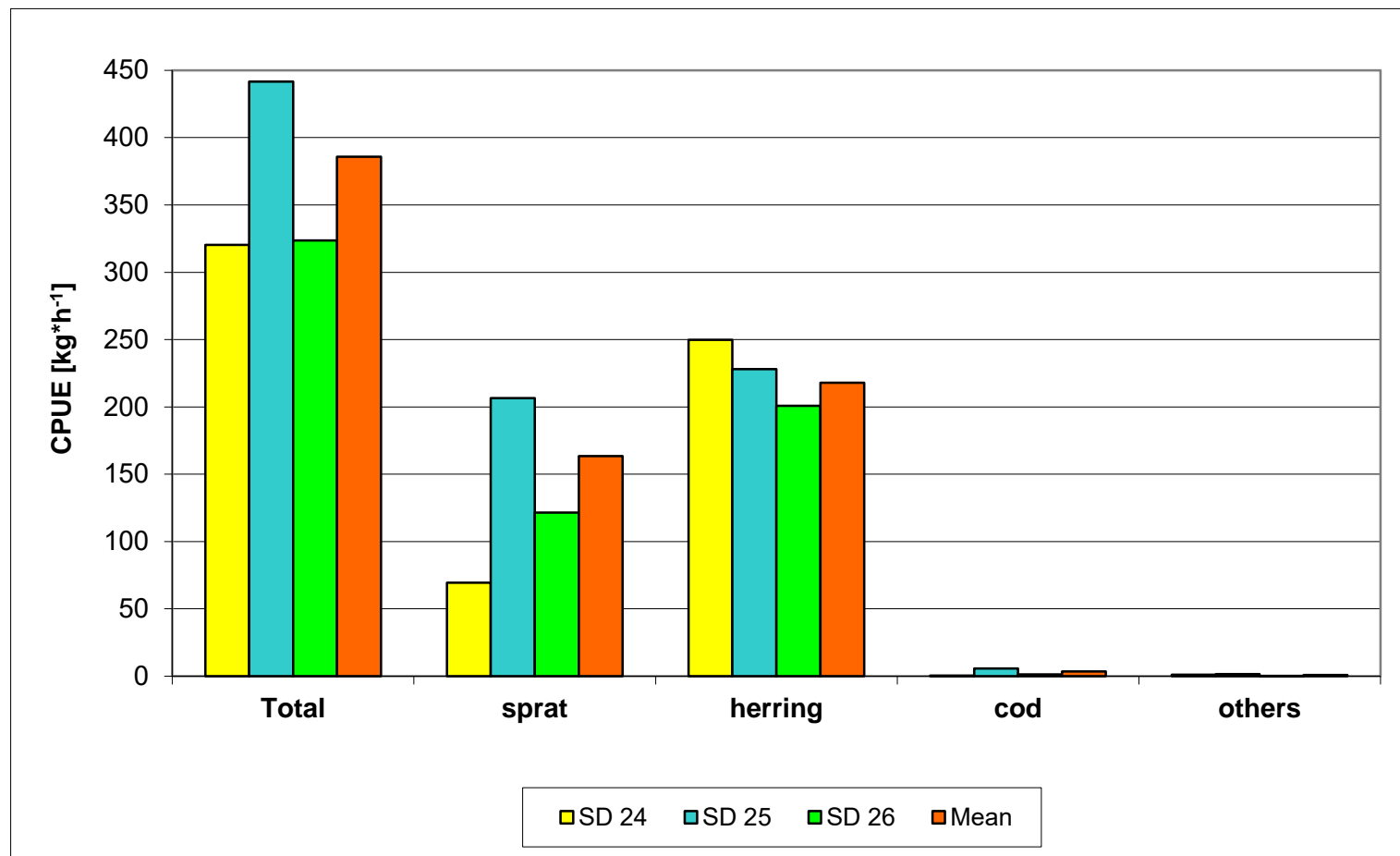
SD 26



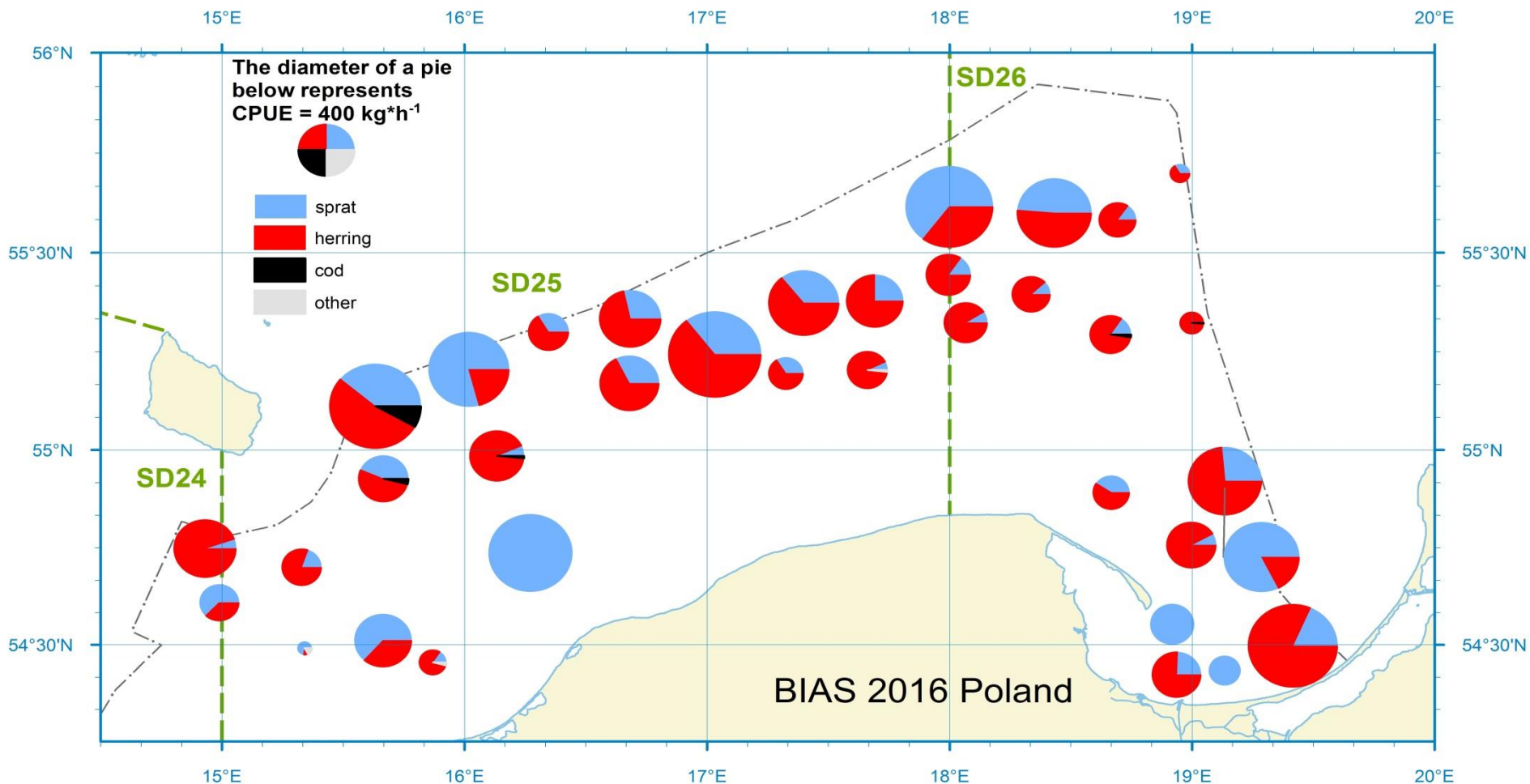
Mean



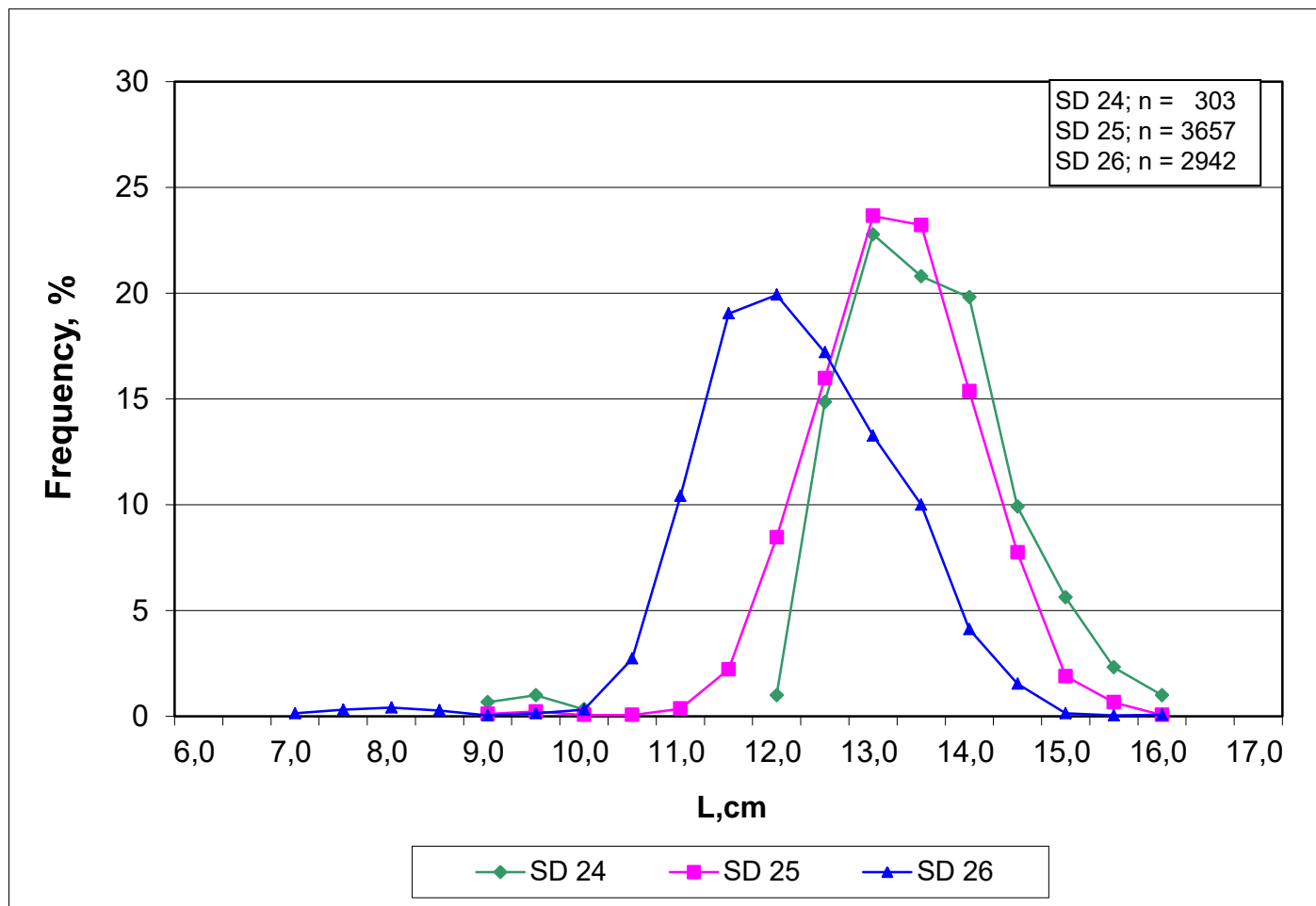
■ sprat ■ herring ■ cod ■ others

Mean CPUE [kg h^{-1}] per species and the ICES SDs

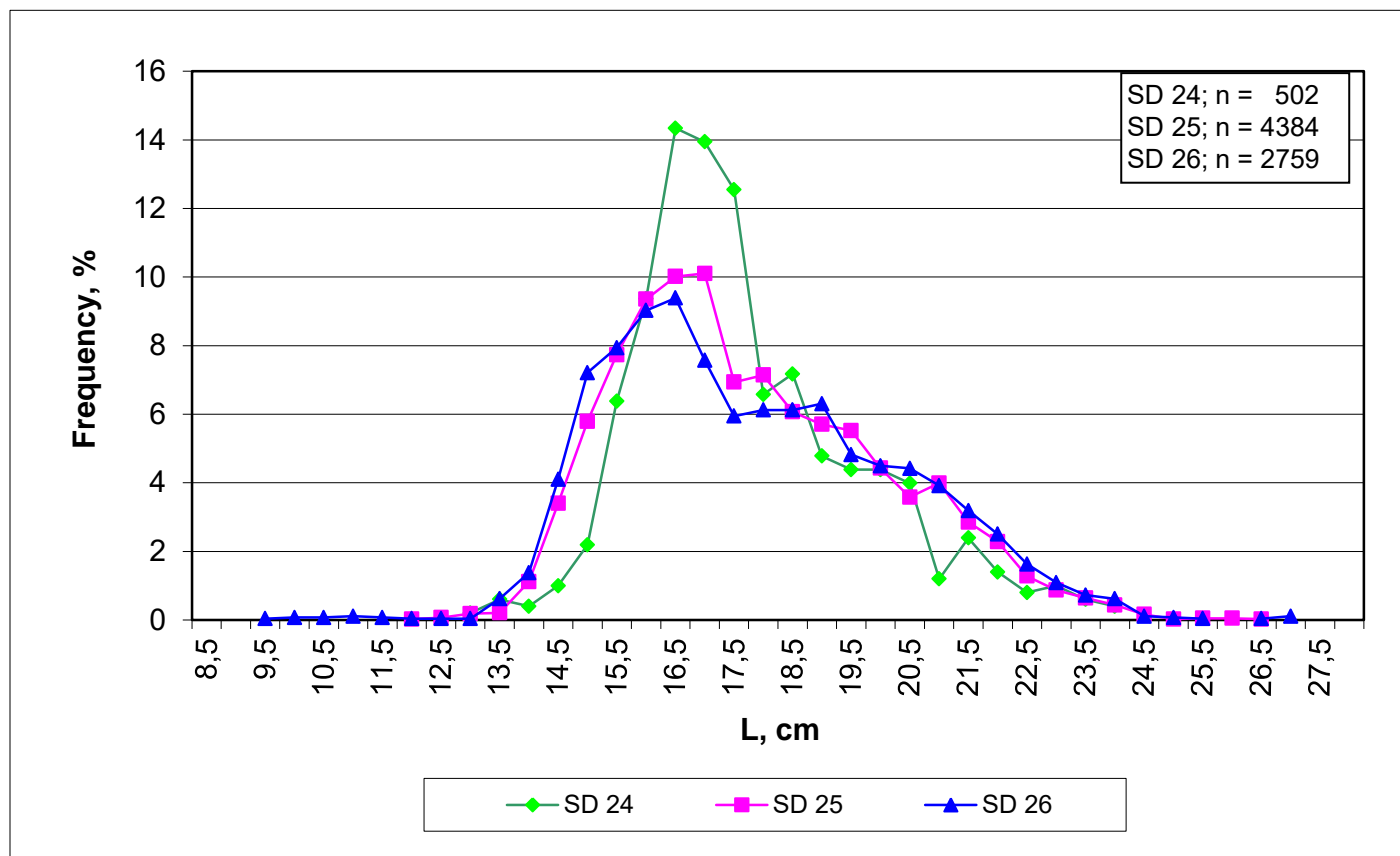
Mean CPUE [kg h^{-1}] per species in Polish EEZ per single pelagic haul



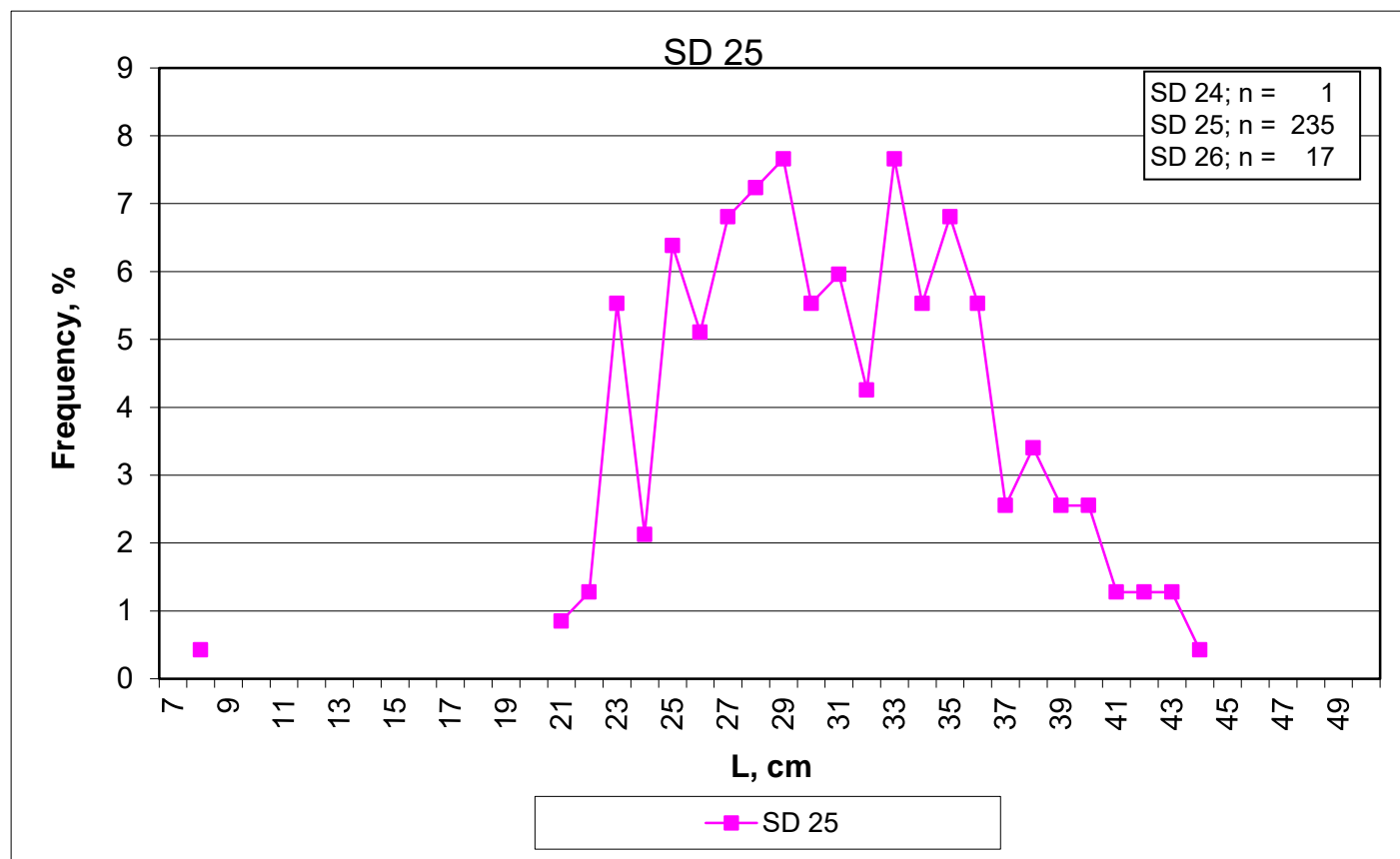
Length distributions of sprat in samples taken from the control catches



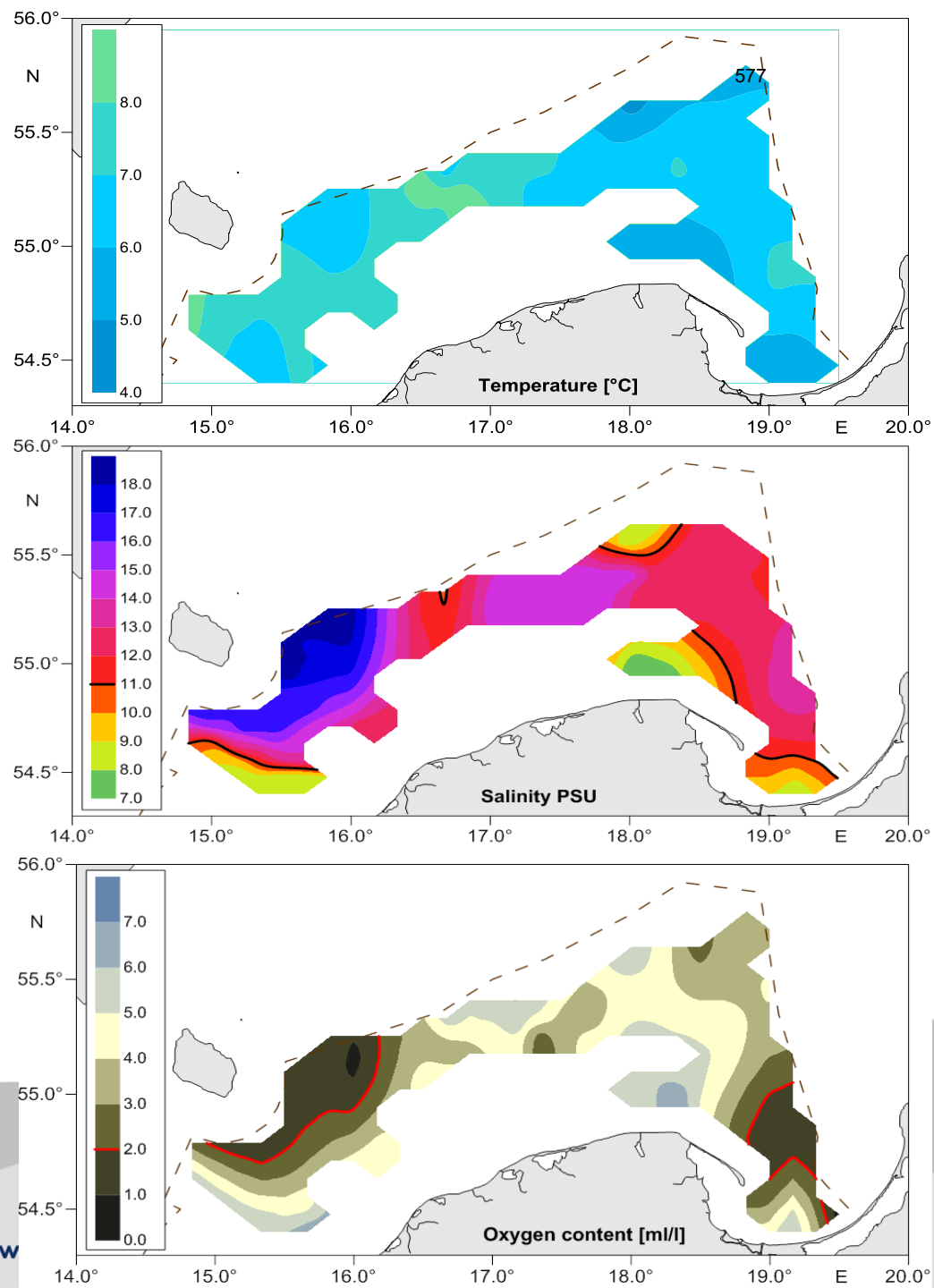
Length distributions of herring in samples taken from the control catches



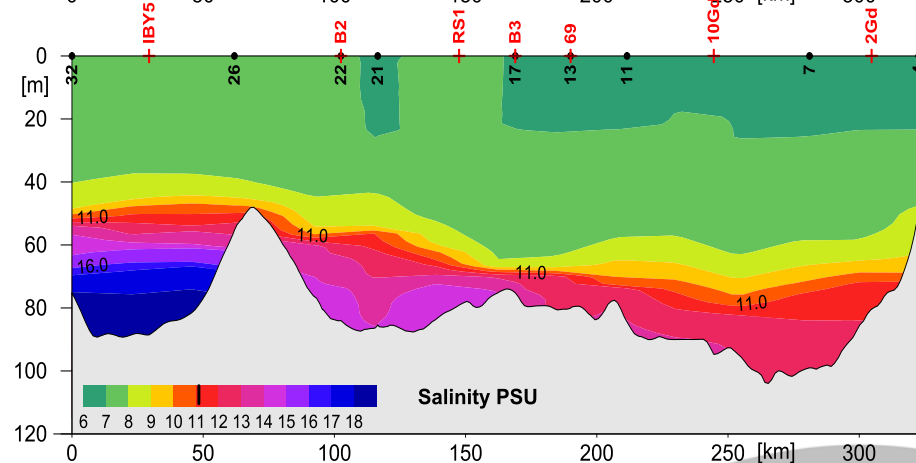
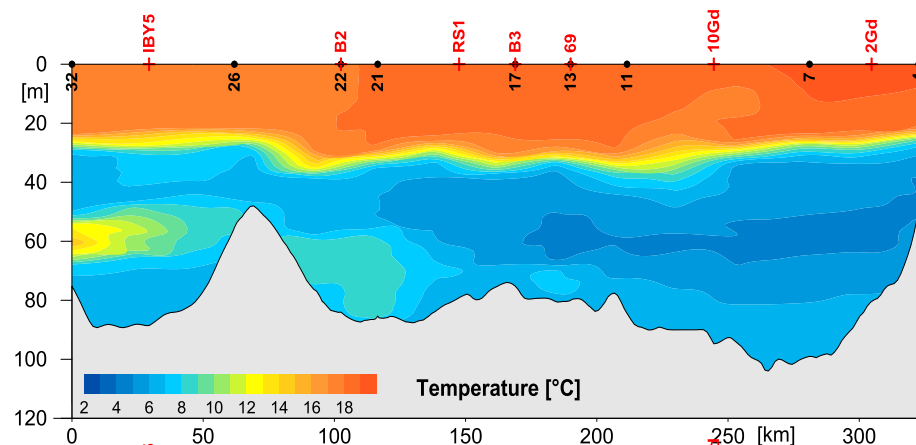
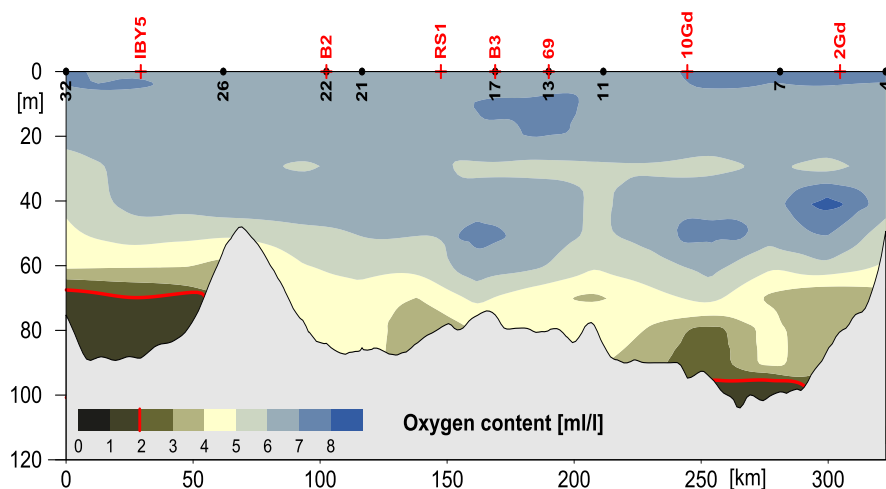
Length distribution of cod in samples taken from the control catches. The amount of fish in SD 24 and SD 26 was not representative to be shown on the plot.



Horizontal distribution of seawater temperature, salinity and oxygen content - near seabed



Vertical distribution of seawater temperature, salinity and oxygen content on the research profile of the southern Baltic



SUMMARY

Our plans for 2017 surveys:

Polish BASS: 02 May - 13 May

Polish BIAS: 13 September – 30 September

LAT-POL BASS: 18 May – 25 May

EST-POL BASS: 26 May – 31 May

LAT-POL BIAS: 11 October – 20 October

EST-POL BIAS: 21 October – 31 October

ACKNOWLEDGEMENTS

I would like to thank very much our colleagues for help in collecting and elaborating of biotic as well as acoustic data and for helping me with first steps of preparing data for reports, also this presentation, especially:

Włodzimierz Grygiel, Mirosław Wyszyński, Krzysztof Radtke, Jakub Słembarski, Faustus Svecovs, Elor Sepp, Lena Szymanek, Wojciech Deluga, Ireneusz Wybierała, Bartosz Witalis, Joanna Pawlak, Zuzanna Celmer and Beata Schmidt.

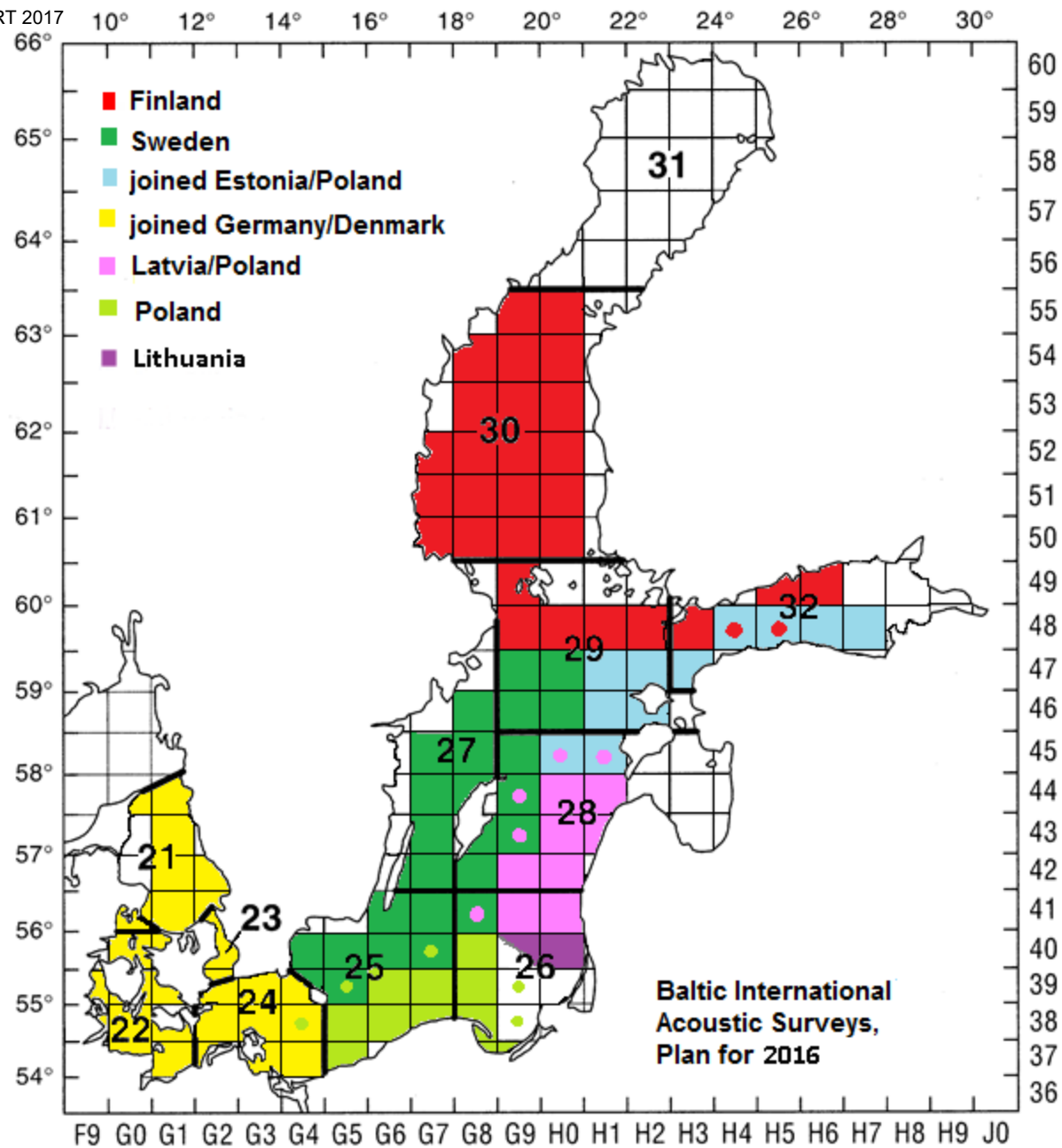
Finnish Baltic International Acoustic Survey in 2016 R/V Aranda

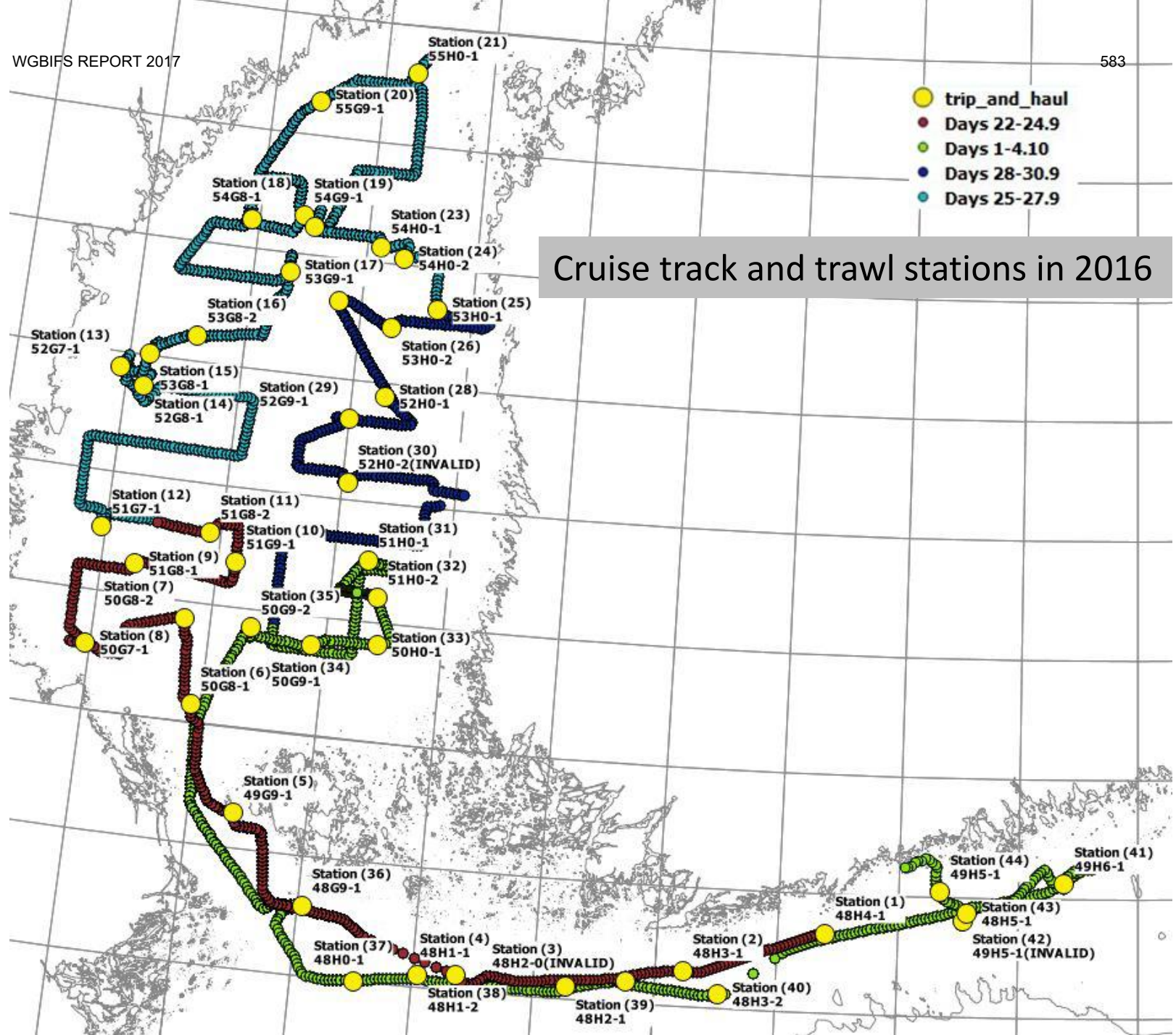


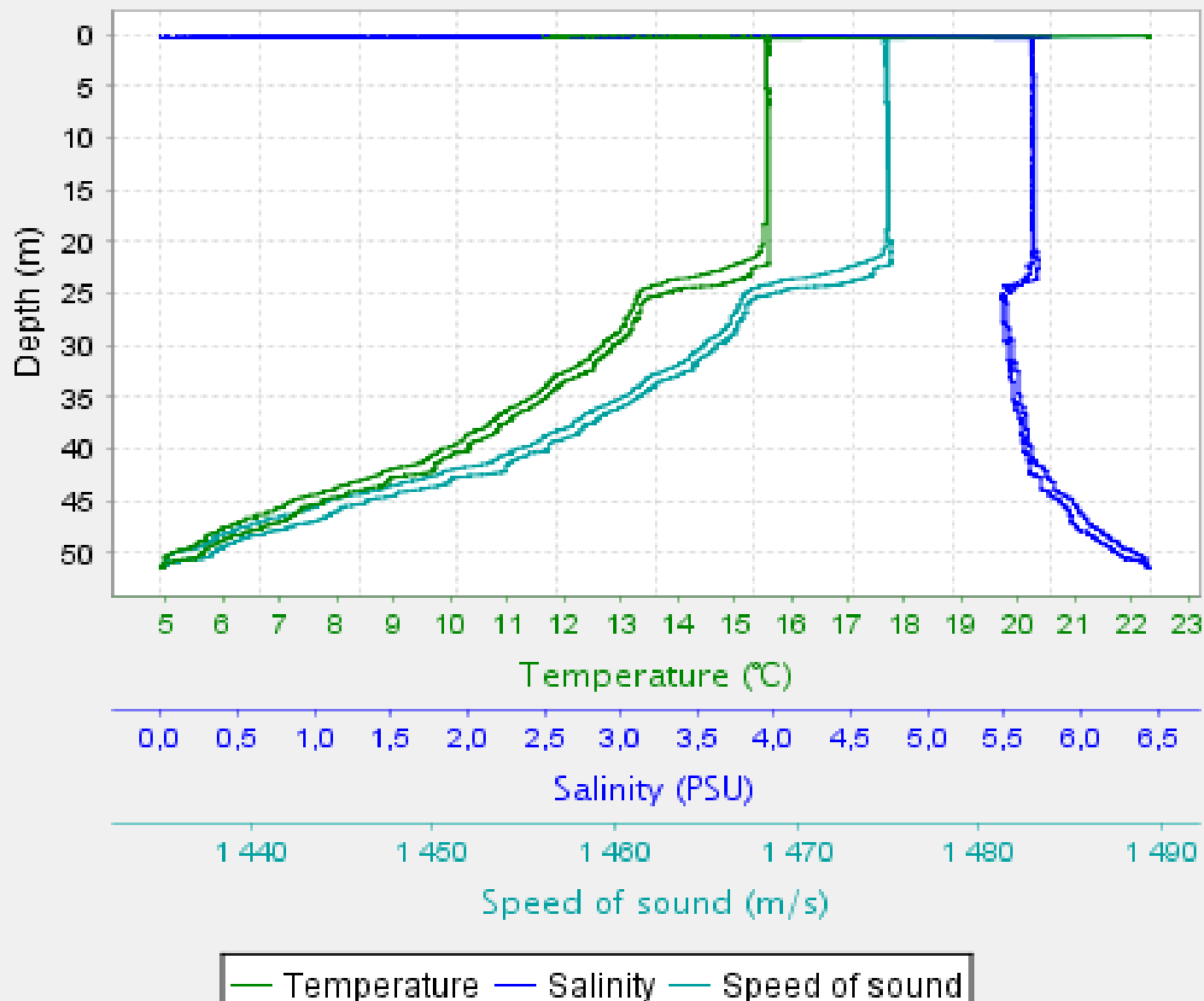
Cruise 17/2016
ICES_BIAS2016
22th September – 4th October 2016

PERSONNEL

Juha Lilja	Luke	Cruise Leader, Acoustics
Ari Leskelä	Luke	Fishing
Jukka Pönni	Luke	Fish sampling
Tero Saari	Luke	Fish sampling
Hannu Harjunpää	Luke	Fish sampling
Timo Myllylä	Luke	Fish sampling
Markku Vaajala	Luke	Fish sampling
Esa Lehtonen	Luke	Fishing
Arto Koskinen	Luke	Fish sampling
Jari Raitaniemi	Luke	Fish sampling
Erkki Jaala	Luke	Acoustics
Mikko Leminen	Luke	Acoustics
Katja Ikonen	Luke	Fish sampling
Perttu Rantanen	Luke	Database maintenance
Otto Kiukkonen	Pro fisherman	Fishing
Peter Koskinen	Pro fisherman	Fishing
Jari Johansson	Pro fisherman	Fishing
Markku Gavrilov	Luke	Fishing
Sami Vesala	Luke	Fishing/ Fish sampling
Yvette Heimbrand	SLU	Fish sampling
Anne Odelström	SLU	Fish sampling
Harri Vehviläinen	Luke	Fish sampling
Anu Lastumäki	SYKE	Fish sampling
Tanja Kinnunen	SYKE	Fish sampling







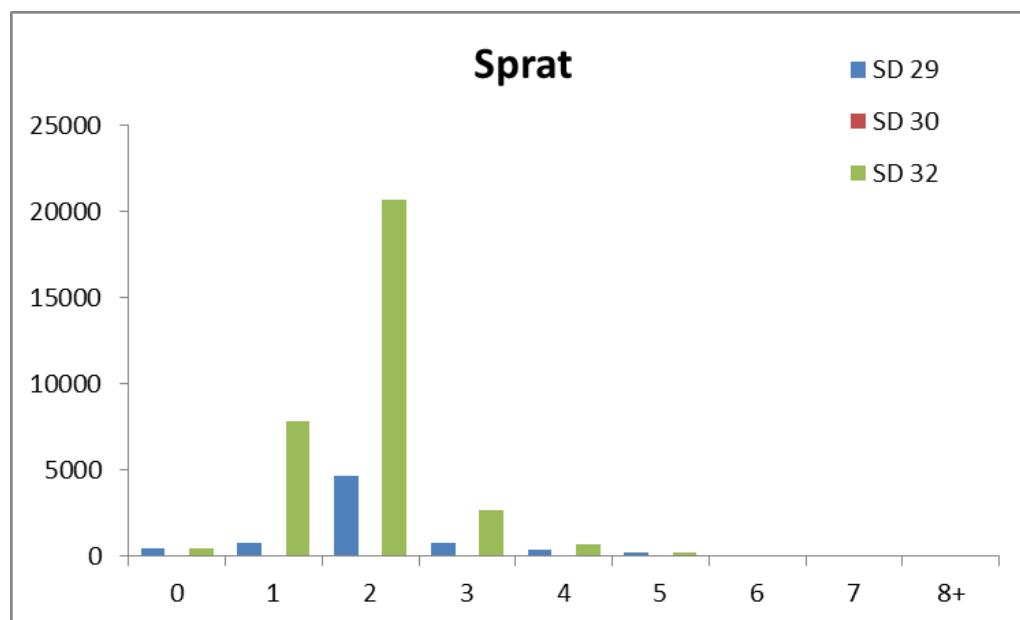
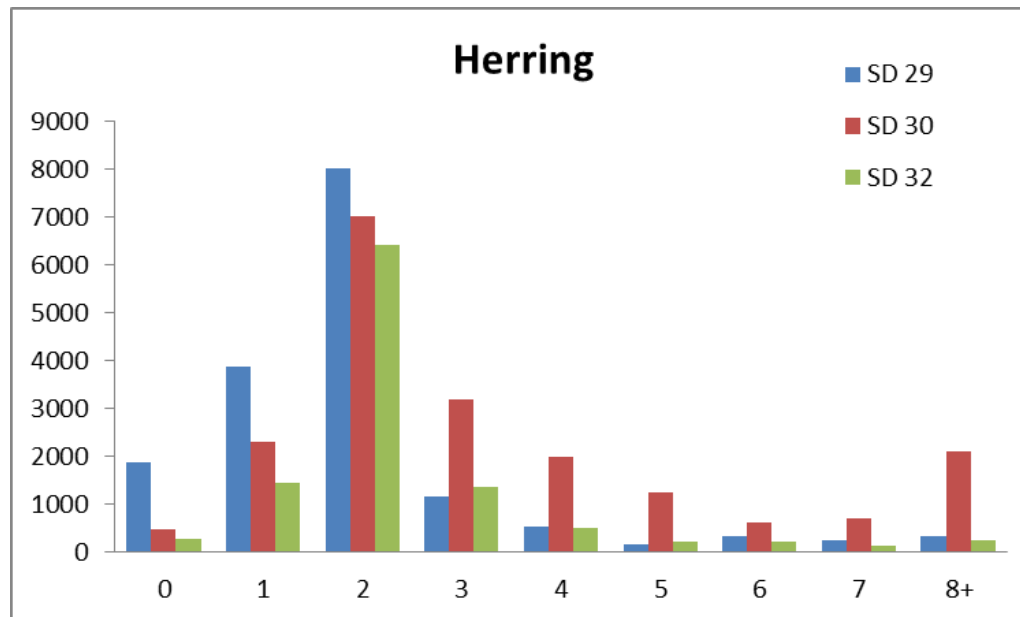


WGBIFS REPORT 2017																
Haul nro	Haul name	Date	ICES SD	Start latitude	Start longitude	End latitude	End longitude	Haul duaration (min)	Haul speed (knot)	Haul distance (nmi)	Catch (kg)	Sample weight (kg)	Headrope depth (m)	Bottom depth (m)	Doors spread (m)	Trawl height (m)
1	48H4-1	22.09.2016	32	594993N	0242245E	595010N	0242375E	16	2.7	0.72	695	68.8	20	53	62.5	16
2	48H3-1	23.09.2016	32	593889N	0231304E	593895N	0231386E	10	2.5	0.42	80	26.4	25	56	62	16
3	48H2-0(INVALID)	23.09.2016	29	593520N	0224326E	593560N	0224570E	30	3	1.5	36		22	62	65	16
4	48H1-1	23.09.2016	29	593265N	0212500E	593399N	0212138E	90	2.5	3.75	70	20.75	12	120	58	16
5	49G9-1	23.09.2016	29	600630N	0192466E	600882N	0192327E	58	2.8	2.71	111.5	41.89	17	170	66.1	17
6	50G8-1	24.09.2016	30	603181N	0185593E	603461N	0185518E	62	2.6	2.69	216	39.5	17	90	64.9	17
7	50G8-2	24.09.2016	30	605193N	0184735E	605580N	0184660E	85	2.8	3.97	68	31	16	75	64.4	16
8	50G7-1	24.09.2016	30	604640N	0175180E	604648N	0175774E	75	2.4	3	528	66.6	25	55	66.2	20
9	51G8-1	24.09.2016	30	610662N	0181999E	610778N	0181738E	30	2.8	1.4	449	10.97	14	68	65.4	20
10	51G9-1	24.09.2016	30	610987N	0190919E	611131N	0190962E	30	2.9	1.45	68.5	32.16	15	70	64.2	20
11	51G8-2	25.09.2016	30	612001N	0185788E	611794N	0185447E	60	2.5	2.5	173	34.44	16	68	63.3	20
12	51G7-1	25.09.2016	30	611871N	0175889E	611581N	0175790E	69	2.8	3.22	108	31.12	15	70	66.2	20
13	52G7-1	25.09.2016	30	615911N	0175921E	615612N	0175600E	73	2.8	3.41	93	37.35	17	80	64.1	20
14	52G8-1	26.09.2016	30	615500N	0181234E	615220N	0180985E	65	2.9	3.14	196	51.64	13	85	63.2	20
15	53G8-1	26.09.2016	30	620284N	0181348E	620053N	0181031E	60	2.8	2.8	230	39.38	13	83	64.6	20
16	53G8-2	26.09.2016	30	620615N	0182969E	620647N	0183440E	49	2.8	2.29	78	35.94	13	90	65	20
17	53G9-1	26.09.2016	30	622887N	0191939E	622522N	0191988E	90	2.4	3.6	84	35.34	80	140	86.6	20
18	54G8-1	26.09.2016	30	624069N	0185473E	623719N	0185566E	93	2.3	3.57	61	61	90	210	90	17
19	54G9-1	26.09.2016	30	623680N	0192070E	623962N	0192355E	68	2.8	3.17	115	35.9	13	125	64.7	17
20	55G9-1	27.09.2016	30	630592N	0191760E	630848N	0192538E	100	2.8	4.67	152	42.94	15	185	64.3	20
21	55H0-1	27.09.2016	30	632101N	0202091E	631868N	0201742E	72	2.4	2.88	164	40.08	68	100	89.6	20
22	54G9-2	27.09.2016	30	624059N	0193205E	623698N	0192984E	90	2.4	3.6	108	48.93	80	135	98.9	20
23	54H0-1	27.09.2016	30	623543N	0200688E	623403N	0200715E	31	2.9	1.5	257	48.67	8	90	63.6	20
24	54H0-2	28.09.2016	30	623300N	0302093E	623173N	0202034E	29	2.8	1.35	136	49.24	10	70	65.2	20
25	53H0-1	28.09.2016	30	622167N	0203981E	621980N	0204128E	47	2.5	1.96	93	35.32	14	65	67	20
26	53H0-2	28.09.2016	30	621556N	0201988E	621403N	0201743E	40	2.7	1.8	106	38.32	19	120	64.7	20
27	53G9-2(INVALID)	29.09.2016	30	621944N	0195121E	621941N	0194761E	37	2.8	1.73	38.32		17	110	66.8	20
28	52H0-1	29.09.2016	30	615517N	0202220E	615673N	0201774E	60	2.7	2.7	316	65.44	15	110	62.1	20
29	52G9-1	29.09.2016	30	615018N	0195442E	615017N	0195999E	60	2.6	2.6	194	194	40	100	75	20
30	52H0-2(INVALID)	29.09.2016	30	613562N	0200027E	613441N	0200003E	32	2.4	1.28			85	120	85	20
31	51H0-1	01.10.2016	30	611487N	0202350E	611548N	0201806E	70	2.5	2.92	51	51	35	120	90	20
32	51H0-2	01.10.2016	30	610736N	0200421E	610635N	0202464E	48	2.5	2	172	47.32	17	103	62.2	24
33	50H0-1	02.10.2016	30	605528N	0203207E	605458N	0202675E	62	2.6	2.69	205	52.44	16	70	62	20
34	50G9-1	02.10.2016	30	605413N	0195804E	605278N	0195310E	68	2.4	2.72	195	46.91	22	93	62.6	22
35	50G9-2	02.10.2016	30	605351N	0192088E	605545N	0192124E	47	2.5	1.96	150	150	20	108	62.8	20
36	48G9-1	02.10.2016	29	594751N	0195515E	594756N	0200249E	87	2.6	3.77	310	59.16	37	190	95.4	20
37	48H0-1	02.10.2016	29	593000N	0203001E	592986N	0203175E	21	2.8	0.98	301	60.54	12	90	66.3	20
38	48H1-2	03.10.2016	29	593246N	0210210E	593310N	0210293E	17	2.8	0.79	512	69.54	12	105	65	20
39	48H2-1	03.10.2016	29	593340N	0221711E	593312N	0221632E	13	2.4	0.52	213	39.8	24	66	62.1	20
40	48H3-2	03.10.2016	32	593328N	0233027E	593354N	0233189E	20	2.5	0.83	353	54.58	30	84	77	20
41	49H6-1	03.10.2016	32	600319N	0262278E	600389N	0262297E	17	2.6	0.74	178	48.91	19	75	64.2	20
42	49H5-1(INVALID)	04.10.2016	32	595380N	0253169E	595426N	0253222E	12	2.6	0.52	41		21	73	66.1	20
43	48H5-1	04.10.2016	32	595539N	0253359E	595606N	0253450E	20	2.5	0.83	330	50.06	21	68	61.3	20
44	49H5-1	04.10.2016	32	600051N	0252093E	600138N	0252069E	22	2.4	0.88	573	46.6	23	60	61.2	20

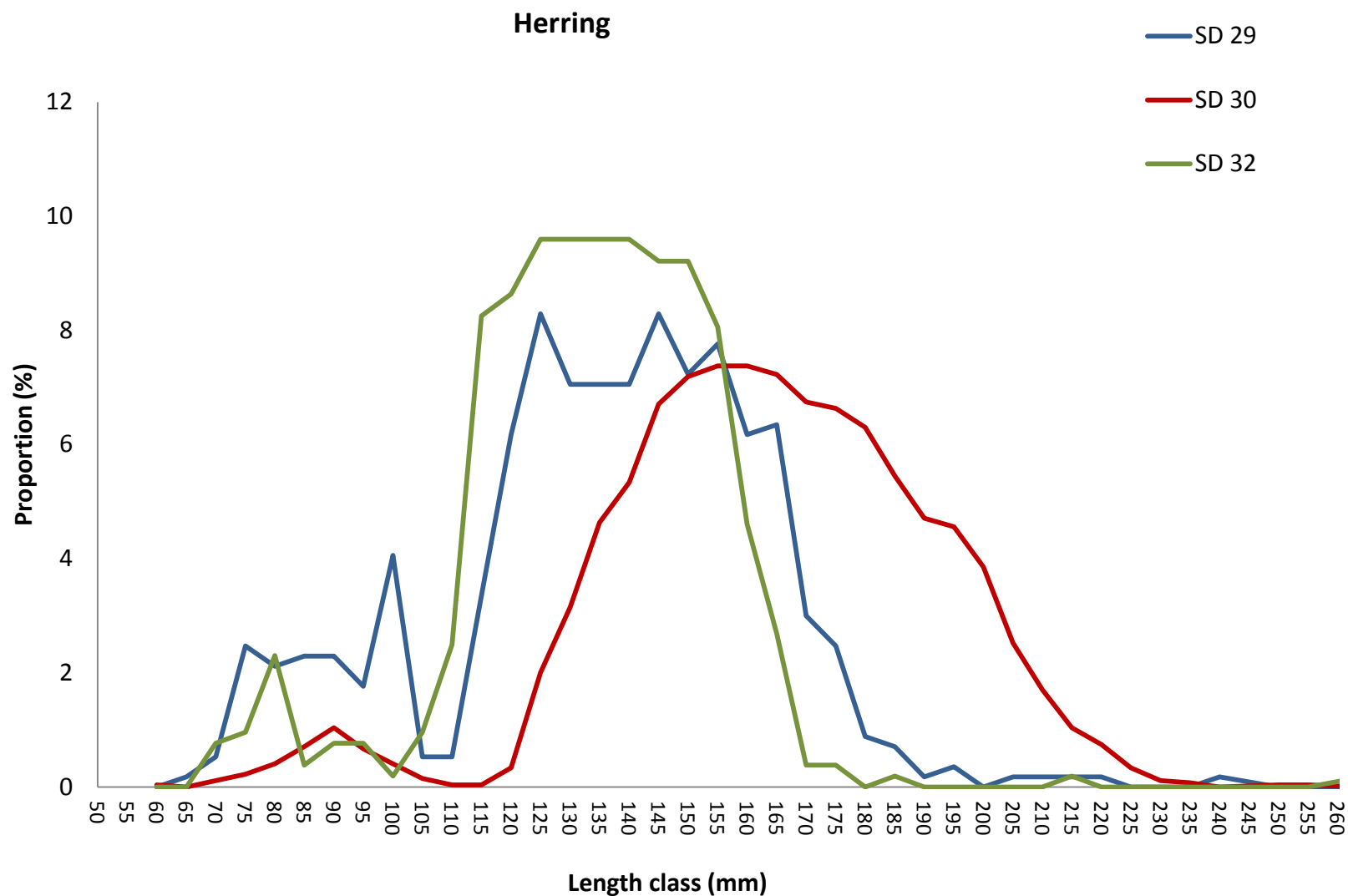
WGBIFS REPORT 2017																				"Waste"	Total (kg)
Haul nro	Haul name	ICES SD	Aurelia aurita	Clupea harengus	Cyclopterus lumpus	Gasterosteus aculeatus	Hyperoplus lanceolatus	Lampetra fluviatilis	Liparis liparis	Nerophis ophidion	Osmerus eperlanus	Platichthys flesus	Pomatoschistus microps	Pomatoschistus minutus	Pungitius pungitius	Saduria entomon	Salmo salar	Sprattus sprattus	Zoarces viviparus		
1	48H4-1	32		24.80		4.32					9.94			0.81	0.04			654.29		0.81	654.3
2	48H3-1	32		18.48		2.82					0.38				0.06	0.00		53.30		4.96	53.3
4	48H1-1	29	0.91	3.63		2.12					0.15				0.03	0.00		61.51		1.65	61.5
5	49G9-1	29		81.00		10.87	0.12							0.00	0.02			15.62		3.88	81.0
6	50G8-1	30		186.45		20.31	0.01								0.01	0.01		3.04		6.13	186.4
7	50G8-2	30		39.80		26.28									0.00	0.01		0.13		1.78	39.8
8	50G7-1	30		508.94		7.20	0.02								0.00	0.00		8.16		3.68	508.9
9	51G8-1	30		1.24		419.25	0.08								0.04		0.34	1.16		26.89	419.2
10	51G9-1	30		54.17		14.02									0.00			0.15		0.15	54.2
11	51G8-2	30		138.94		34.05										0.01					138.9
12	51G7-1	30		77.48		30.26	0.01									0.00				0.25	77.5
13	52G7-1	30		85.88		4.45	0.01								0.01					2.65	85.9
14	52G8-1	30		180.98		13.95				0.00						0.08		0.61		0.38	181.0
15	53G8-1	30		217.74		11.72			0.01						0.03	0.14		0.08		0.29	217.7
16	53G8-2	30		67.84		10.10									0.02	0.02				0.04	67.8
17	53G9-1	30		76.60		6.08	0.01		0.37						0.01	0.04					76.6
18	54G8-1	30		57.15		0.52	0.03		0.32					0.00	0.00	0.01				2.12	57.2
19	54G9-1	30		107.22		5.52	0.15		0.05						0.01	0.02		0.81		1.22	107.2
20	55G9-1	30		127.17		8.27	0.01			0.00	0.05			0.00		0.04		9.95		6.49	127.2
21	55H0-1	30		158.56		0.69	0.00		0.11		1.10		0.00		0.00	0.04	0.28	2.04	0.02	1.15	158.6
22	54G9-2	30		105.25		0.13			0.24	0.00	0.37					0.05				1.96	105.2
23	54H0-1	30		235.24		19.27	0.02			0.02					0.06	0.03		0.08		2.28	235.2
24	54H0-2	30		109.17		20.80		0.04			0.57				0.01	0.01		0.22		5.18	109.2
25	53H0-1	30		71.53		18.95				0.00	0.07					0.00		0.89		1.56	71.5
26	53H0-2	30		78.98		21.79	0.00		0.03									0.24		4.96	79.0
28	52H0-1	30		311.78		2.45	0.00			0.00					0.02			0.29		1.45	311.8
29	52G9-1	30		10.55		182.78	0.01			0.00								0.32		182.8	
31	51H0-1	30		27.47		18.42				0.00					0.03	0.00		0.02	0.04	1.02	27.5
32	51H0-2	30		71.24		100.14									0.01			0.18		0.43	100.1
33	50H0-1	30		109.93		85.49	0.00			0.00					0.00		0.41	6.78	0.02	2.37	109.9
34	50G9-1	30		140.93		41.23										0.01		11.58		1.25	140.9
35	50G9-2	30		20.08		129.30				0.00	0.00					0.00		0.44		0.17	129.3
36	48G9-1	29		159.04		13.53	0.03				0.22				0.01			136.01		1.17	159.0
37	48H0-1	29		248.11		12.74									0.01			25.58		14.55	248.1
38	48H1-2	29	3.48	397.47	0.06	9.25												94.28		7.45	397.5
39	48H2-1	29	3.09	93.91		1.10	0.02				0.09				0.02	0.02		105.52	0.04	9.19	105.5
40	48H3-2	32	0.06	2.35		0.15				2.35					0.01			346.07		1.99	346.1
41	49H6-1	32		100.97		0.97				0.00	4.76				0.01			63.38		7.91	101.0
43	48H5-1	32		165.43		3.07				0.00	1.80	0.14			0.04			159.52			165.4
44	49H5-1	32		460.46		1.13					1.91				0.01	0.00		108.17		1.32	460.5
Total			7.55	5133.98	0.06	1315.45	0.53	0.04	1.13	2.39	21.43	0.14	0.00	0.81	0.53	0.54	1.03	1870.40	0.13	130.72	6939.8

Results

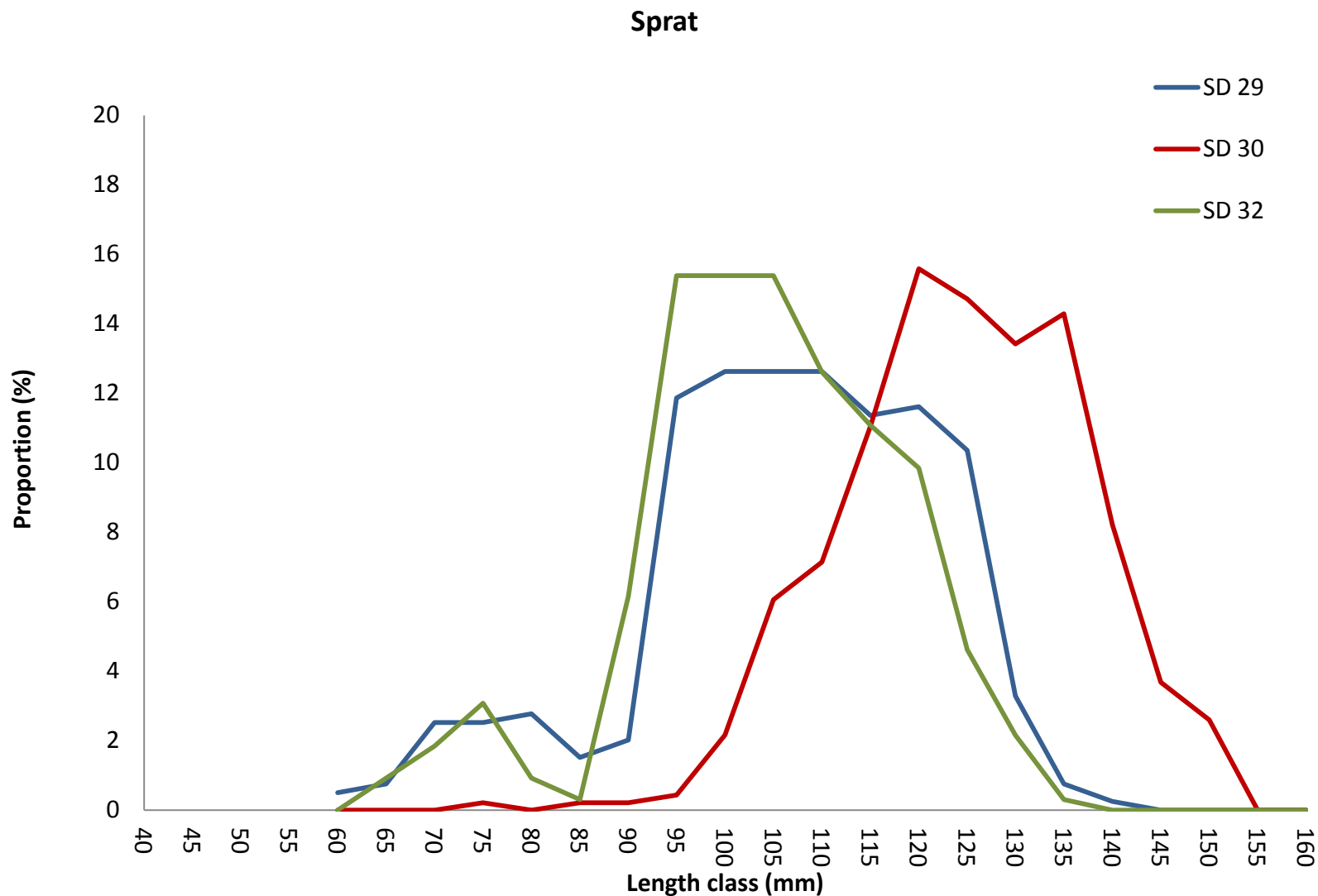
ICES SD	ICES Rect.	NM	N (million/nm ²)	Area (nm ²)	Sa (m ² /nm ²)	σ (cm ²)	N total (million)	Herring (%)	Sprat (%)	Cod (%)
29	48G9	65	7.551482	772.8	789	1.045365	5836	58.9	30.0	0
29	48H0	61	5.550355	730.3	952	1.714755	4053	74.0	6.8	0
29	48H1	57	11.258670	544	1491	1.324108	6125	64.5	25.2	0
29	48H2	71	14.014105	597	1944	1.387496	8366	53.7	42.6	0
32	48H3	55	25.449869	615.7	2572	1.010686	15669	6.8	86.3	0
32	48H4	44	18.391186	835.1	1813	0.985664	15358	5.0	86.9	0
32	48H5	60	12.667041	767.2	1776	1.401875	9718	51.4	42.1	0
29	49G9	76	5.050568	564.2	706	1.397885	2850	59.8	10.1	0
32	49H5	19	5.190208	306.9	864	1.665052	1593	79.4	19.2	0
32	49H6	53	7.792386	586.5	1186	1.521502	4570	60.8	34.5	0
30	50G7	27	2.550247	403.1	522	2.046998	1028	93.8	1.1	0
30	50G8	61	3.104480	833.4	383	1.232636	2587	56.3	0.7	0
30	50G9	72	5.478775	879.5	381	0.695841	4819	14.2	1.1	0
30	50H0	37	3.818359	795.1	277	0.724586	3036	26.8	1.0	0
30	51G7	36	3.485320	614.5	309	0.887547	2142	23.6	0.0	0
30	51G8	61	5.656325	863.7	741	1.310854	4885	41.1	0.0	0
30	51G9	57	3.544268	865.8	483	1.361671	3069	45.6	0.1	0
30	51H0	113	4.214350	865.7	312	0.740196	3648	17.1	0.0	0
30	52G7	29	1.220099	482.6	305	2.496667	589	78.2	0.0	0
30	52G8	80	2.784527	852	553	1.986211	2372	66.3	0.2	0
30	52G9	60	1.702613	852	261	1.534196	1451	25.4	0.0	0
30	52H0	77	1.023037	852	271	2.653370	872	95.8	0.1	0
30	53G8	61	2.325741	838.1	475	2.043236	1949	74.2	0.0	0
30	53G9	61	1.129408	838.1	251	2.220022	947	73.4	0.0	0
30	53H0	62	5.492220	838.1	558	1.016509	4603	29.0	0.2	0
30	53H1	9	6.593151	126.6	621	0.942162	835	27.4	0.3	0
30	54G8	33	1.241488	642.2	381	3.071477	797	94.4	0.0	0
30	54G9	91	0.855443	824.2	220	2.569571	705	85.7	0.3	0
30	54H0	47	3.564550	727.9	722	2.024741	2595	64.8	0.0	0
30	55G9	29	1.023572	625.6	175	1.710784	640	70.5	4.9	0
30	55H0	39	1.195182	688.6	294	2.463472	823	96.6	0.9	0



Length distributions of measured herring in three different Sub-Division.



Length distributions of measured sprat in three different Sub-Division



**THE JOINT LATVIAN-POLISH
BALTIC ACOUSTIC SPRING SURVEY – BASS 2016
ON THE R/V “BALTICA”
IN THE ICES SUBDIVISIONS 26N AND 28.2 OF THE BALTIC SEA
(12 – 21 MAY 2016)**



Equipment:

Echosounder – SIMRAD EK-60 38 & 120 kHz

Trawl – WP53/64×4:

- Vertical opening – 20 m
- Horizontal opening – 70 m
- Mesh size at codend – 6 mm (bar)

IDRONAUT CTD & bathometer rosette sampler

Automatic meteorological station – “Milosz”

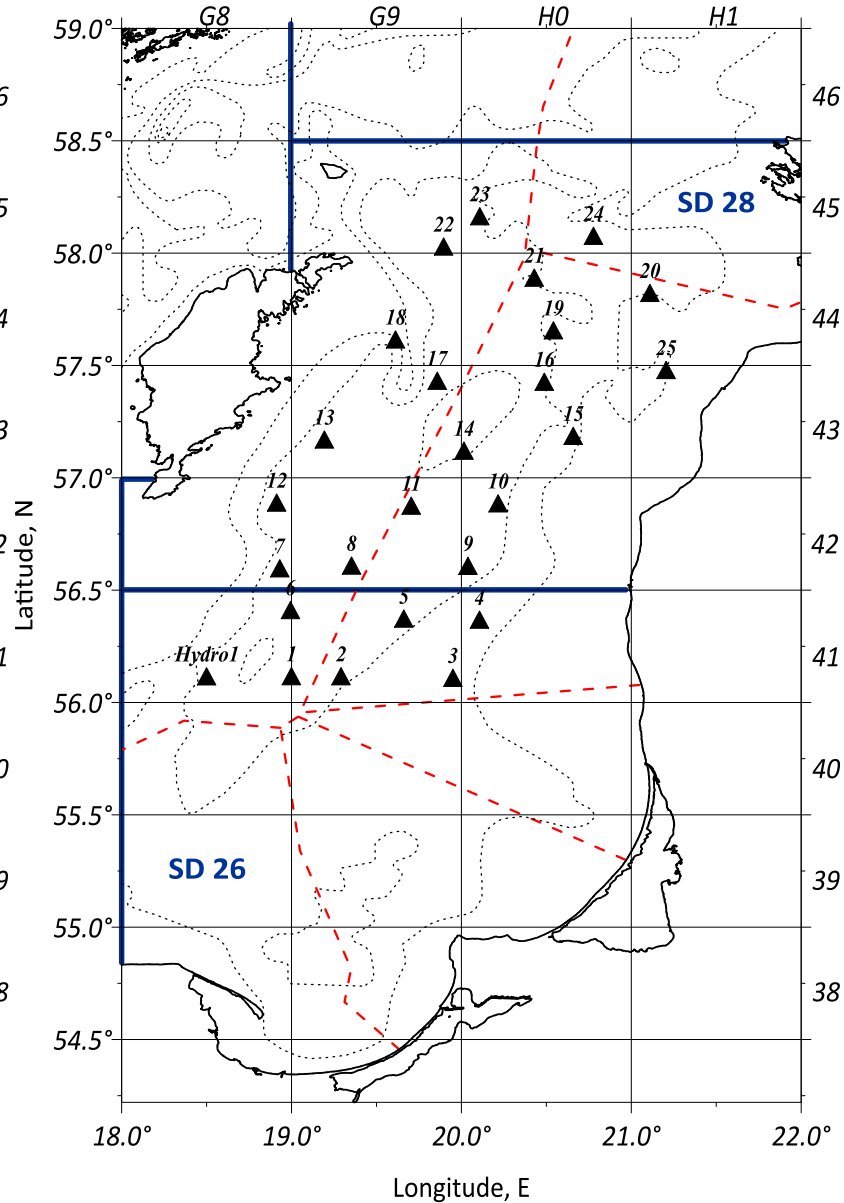
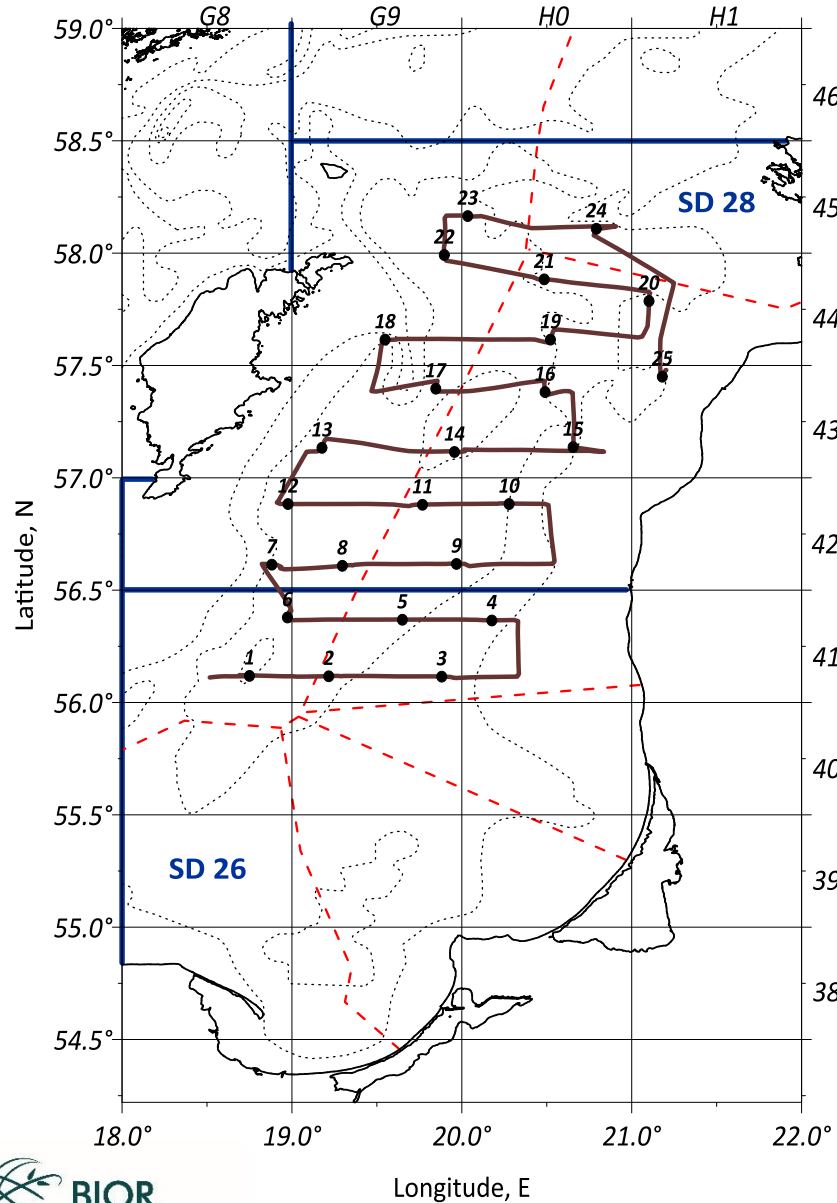
Judday net 160 µm mesh, 0.1 m² mouth opening

IKS-80 net 500 µm mesh , 0.5 m² mouth opening

Scope of work

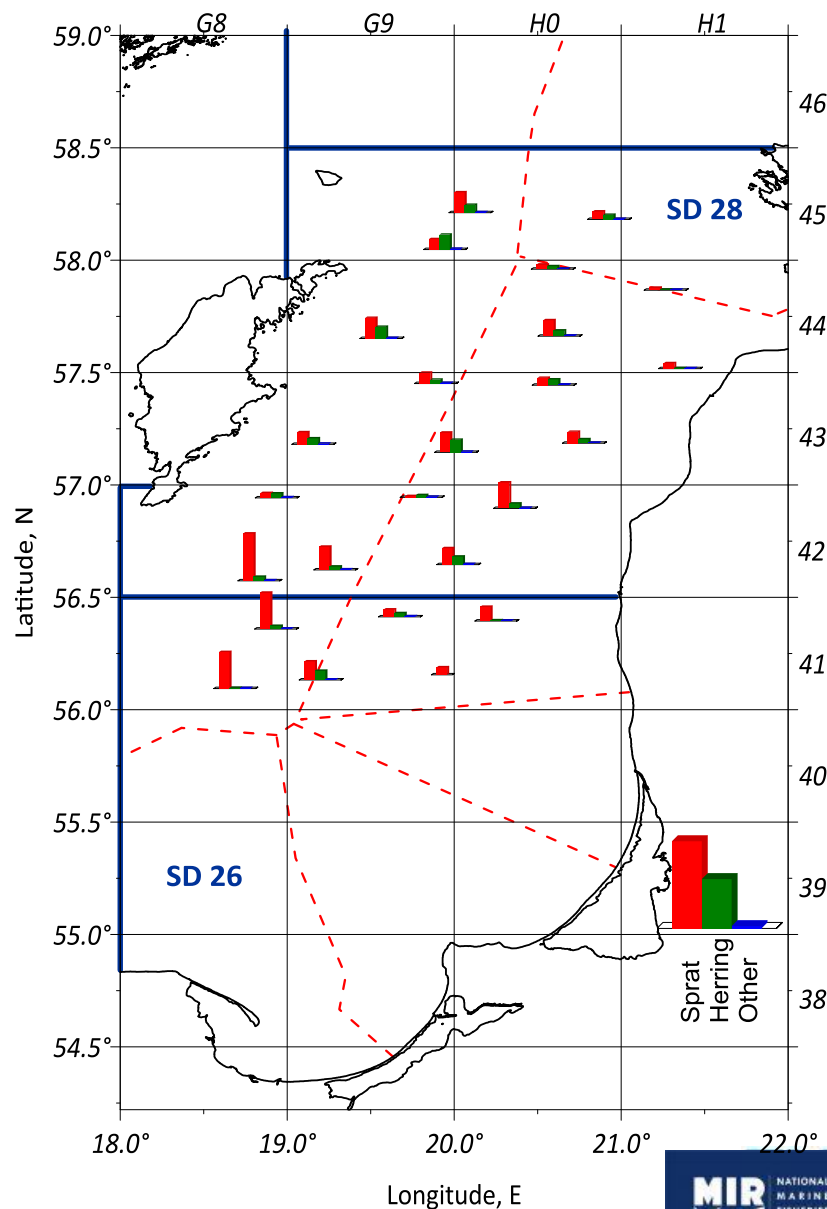
- **Days at sea – 10**
- **Survey tracks – 645 nm**
- **Control trawlings - 25**
- **Hydrological and hydrobiological stations - 26**
- **Ichthyoplankton samples – 52**
- **Zooplankton samples - 41**

Survey tracks and stations



Catch, kg

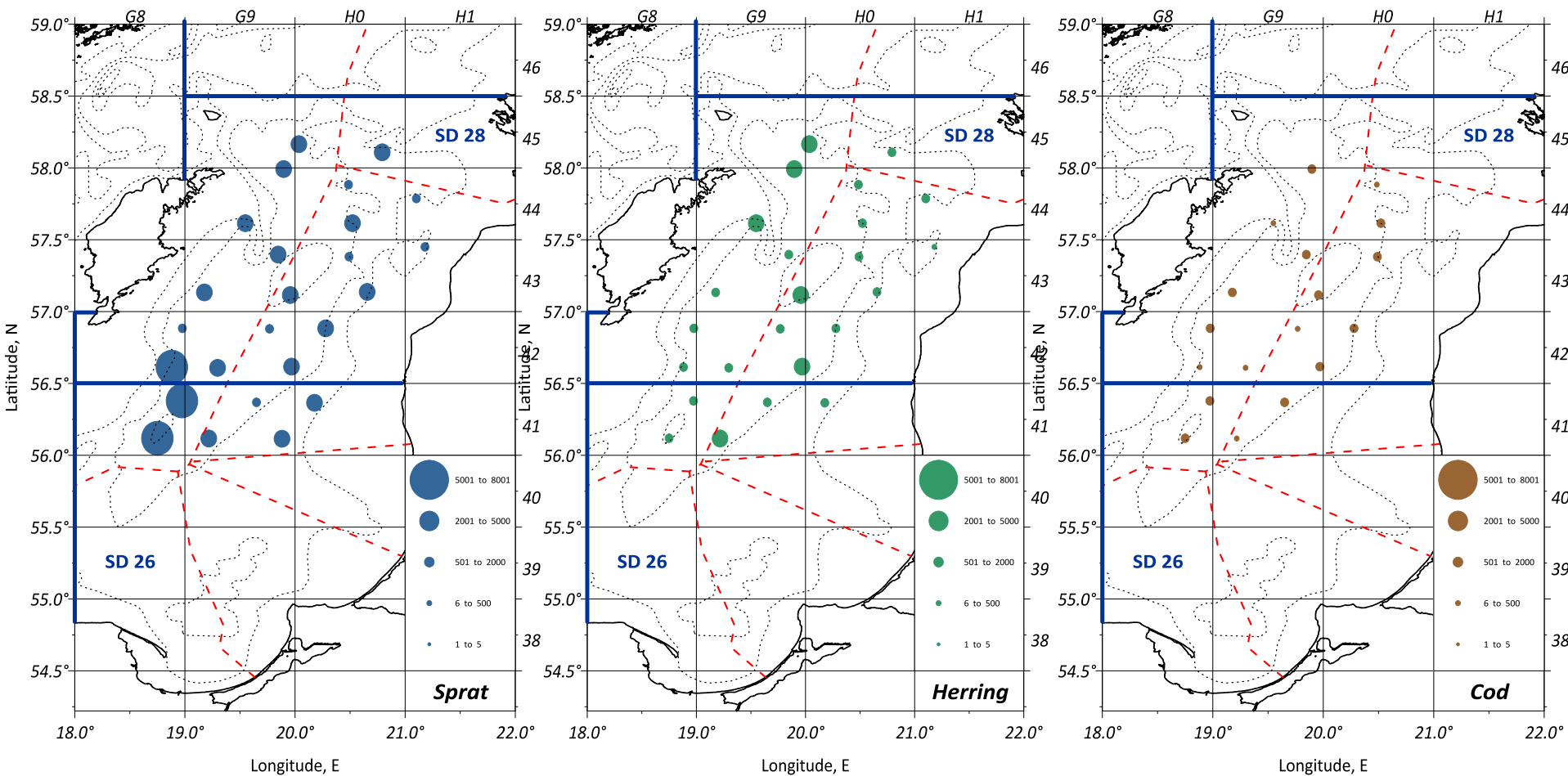
Species	SD26	SD28	SD26+28
Sprat	4183.672	9219.826	13403.500
Herring	538.138	3520.972	4059.110
Cod	15.067	62.241	77.308
Flounder	1.792	10.902	12.694
Lumpfish	0.250		0.250
Threespine stickleback		5.729	5.729
Ninespine stickleback		0.002	0.002
Total	4738.919	12819.670	17558.590



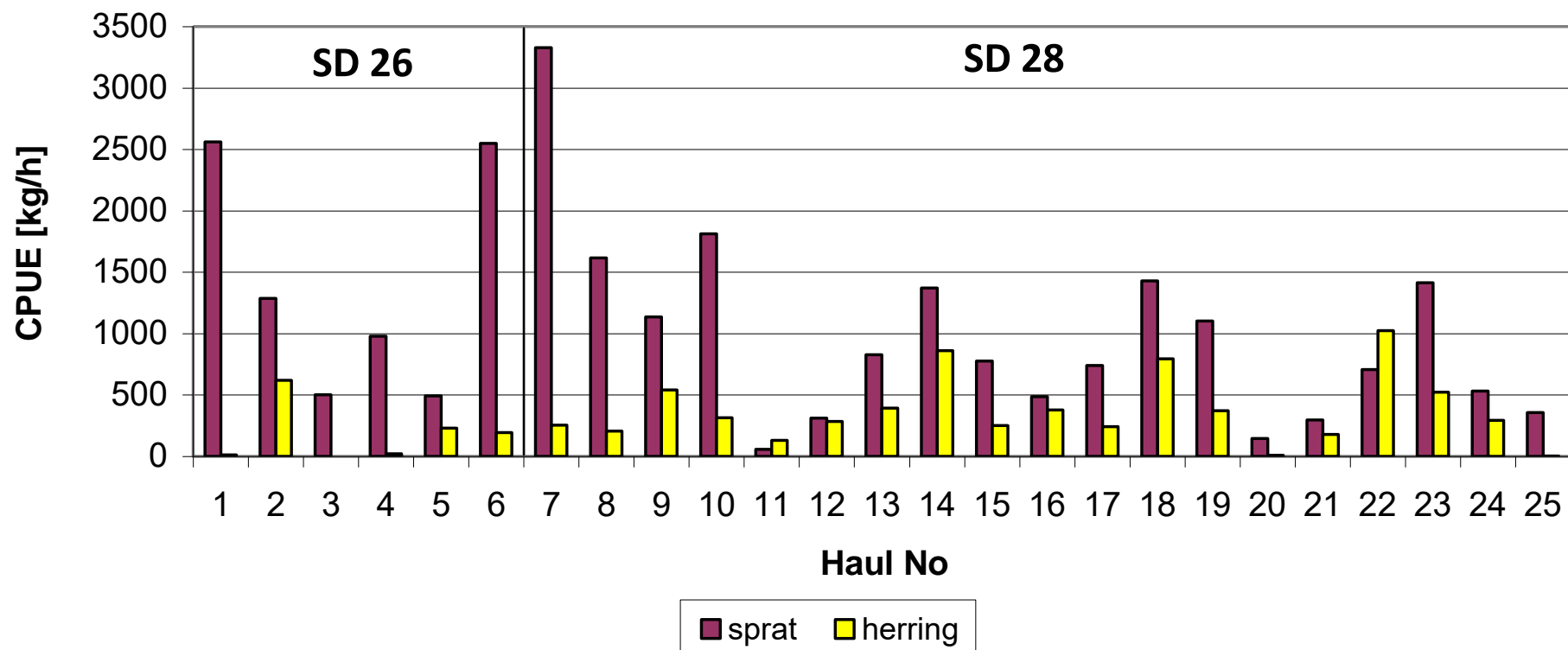
Measured and analyzed fish

Fish species	Number of measured individuals			Number of aged individuals		
	SD 26	SD 28	SD 26+28	SD 26	SD 28	SD 26+28
Sprat (Total)	1220	3852	5072	594	1904	2498
Sprat (Age 1)	126	447	573	83	262	345
Herring (Total)	717	3366	4083	287	1700	1987
Open sea herring	632	3024	3656	252	1527	1779
Gulf herring	15	293	308	6	144	150
Southern Baltic herring	70	49	119	29	29	58
Cod	52	220	272			
Flounder	13	76	89			
Lumpfish	1		1			
Stickleback, threespine		122	122			
Stickleback, ninespine		1	1			
Total	2003	5322	9640	881	3604	4485

CPUE, kg/h

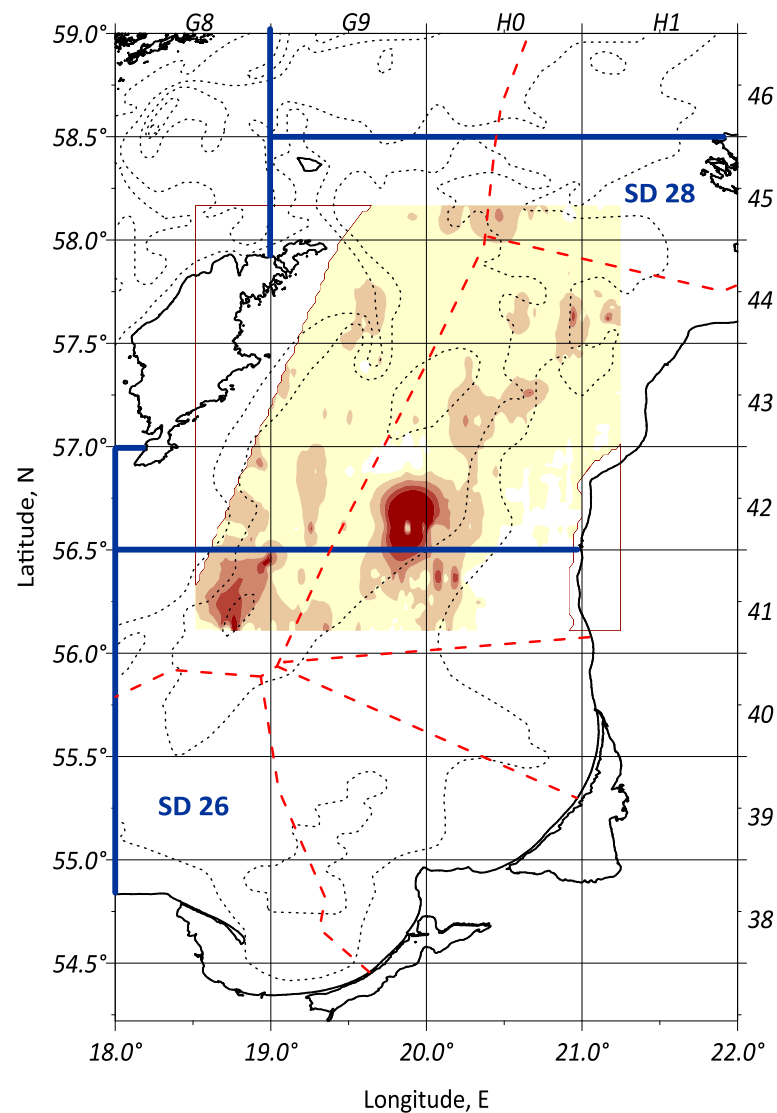


CPUE, kg/h



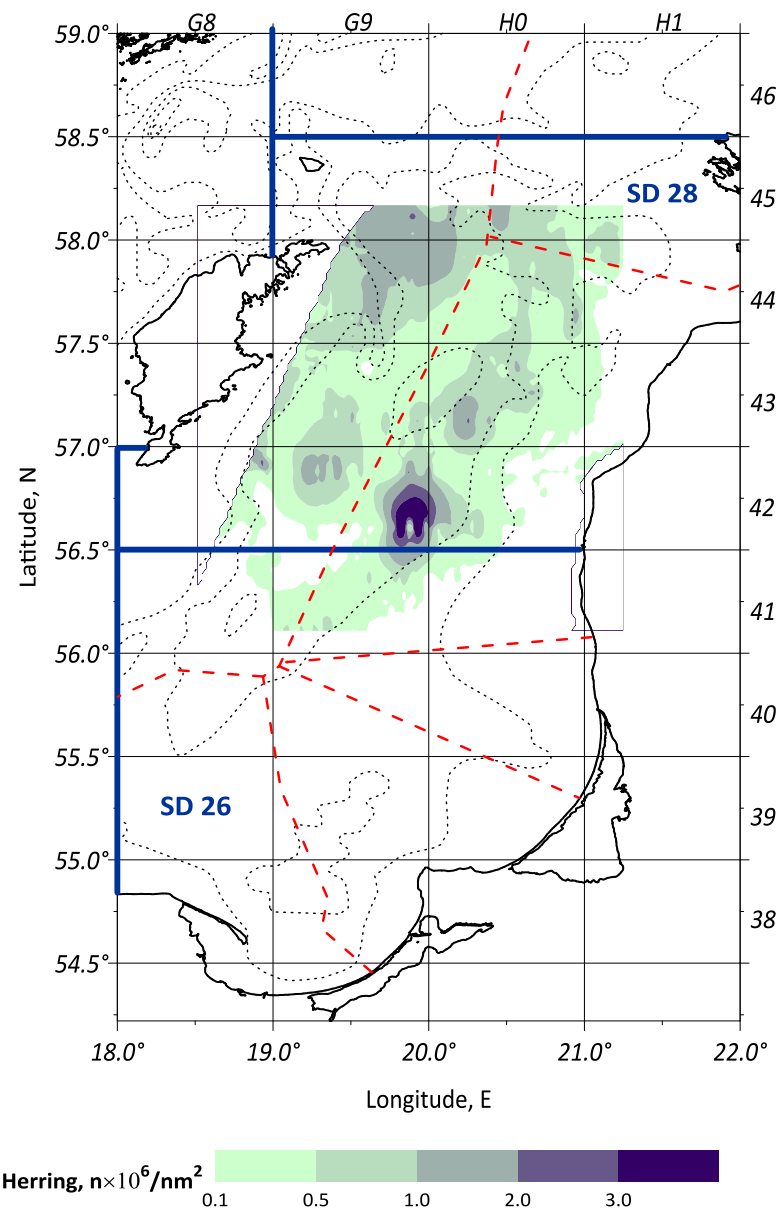
Sprat in May 2016

ICES SD	Abundance [n×10 ⁶]	Biomass [kg×10 ³]
26	17140.01	117382.99
28	43592.14	275190.86
Σ	60732.16	392573.85



Herring in May 2016

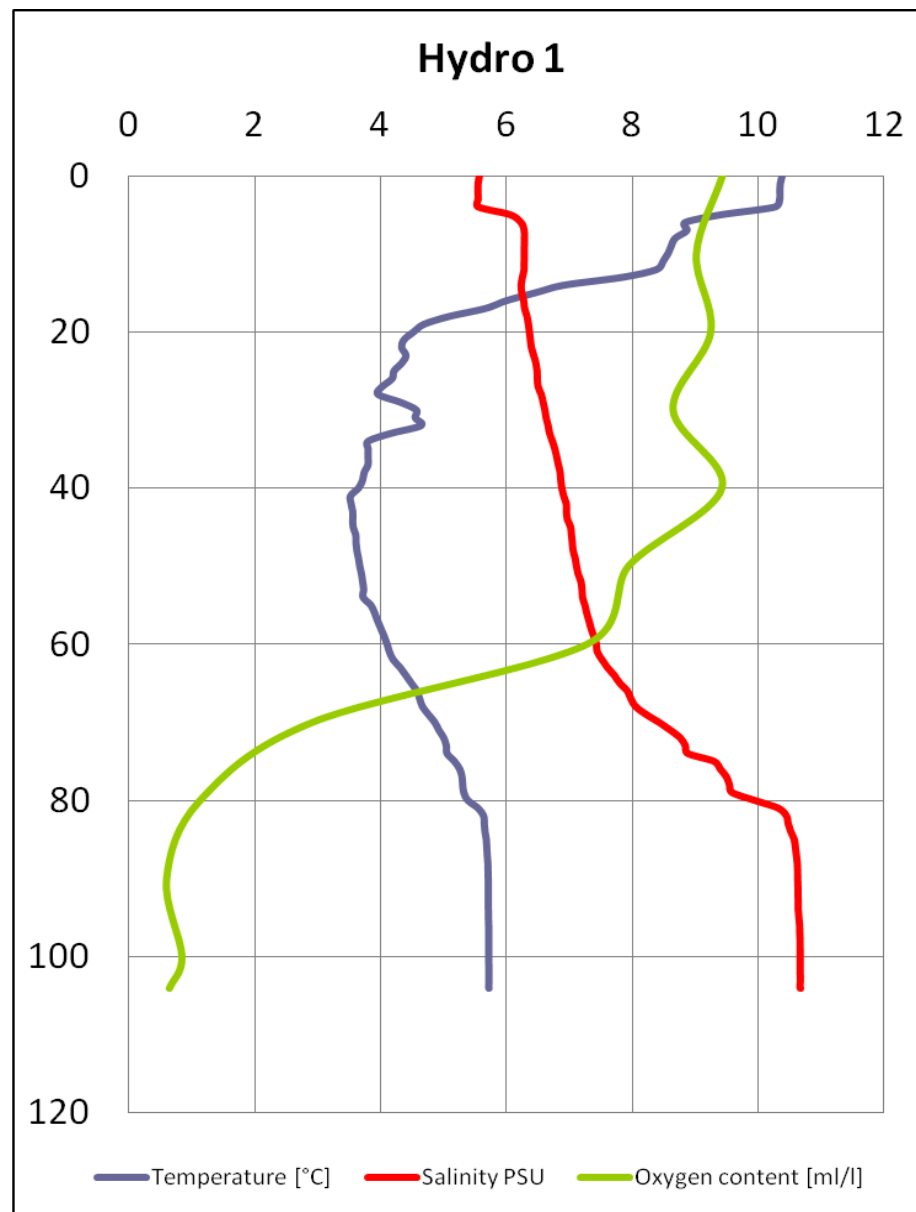
ICES SD	Abundance [n×10 ⁶]	Biomass [kg×10 ³]
26	233.49	9491.61
28	4416.38	105740.50
Σ	4649.87	115232.11



Zooplankton in May 2016

Species or group	Whole aquatory All stations (26) [0-100 layer]		Stations (13) with depth more than 100m [0-50 layer]		Stations (19) with depth more than 100m [0-100 layer]		Stations (7) with depth less than 100m [0-bottom layer]	
	n\m ³	mg\m ³	n\m ³	mg\m ³	n\m ³	mg\m ³	n\m ³	mg\m ³
Acartia spp.	2870	33.43	3524	35.78	3014	35.17	2331	26.95
Eurytemora affinis	3	0.09	5	0.13	1	0.05	7	0.24
Temora longicornis	1330	24.69	1314	16.25	1391	26.10	1100	19.43
Centropages hamatus	1658	14.46	2071	15.09	1811	15.59	1088	10.26
Pseudocalanus sp.	2843	26.27	2459	14.05	3354	31.72	937	5.96
Oithona sp.	3	0.02			4	0.02		
Bosmina spp.	3	0.02	5	0.05	3	0.02	3	0.02
Evadne spp.	663	19.59	731	20.68	659	19.21	678	20.98
Podon spp.	47	0.47	69	0.62	44	0.43	58	0.62
Synchaeta spp.	4377	26.26	6028	36.17	3817	22.90	6466	38.80
Polychaeta sp.	99	2.96	28	0.84	94	2.82	116	3.48
Bivalvia larvae	96	0.10	113	0.11	88	0.09	126	0.13
Fritillaria borealis	1619	16.19	1518	15.18	1562	15.62	1831	18.31
Copepoda	8705	98.96	9374	81.29	9576	108.65	5463	62.85
Cladocera	713	20.08	805	21.34	706	19.67	739	21.61
Rotatoria	4377	26.26	6028	36.17	3817	22.90	6466	38.80
Varia	1813	19.25	1659	16.13	1744	18.53	2073	21.91
Total	15609	164.55	17866	154.93	15842	169.75	14741	145.17

Hydrology in May 2016



**THE JOINT LATVIAN-POLISH
BALTIC INTERNATIONAL ACOUSTIC SURVEY – BIAS 2016
ON THE R/V “BALTICA”
IN THE ICES SUBDIVISIONS 26N AND 28.2 OF THE BALTIC SEA
(11-20 October 2016)**



Equipment:

Echosounder – SIMRAD EK-60 38 & 120 kHz

Trawl – WP53/64×4:

- Vertical opening – 20 m
- Horizontal opening – 70 m
- Mesh size at codend – 6 mm (bar)

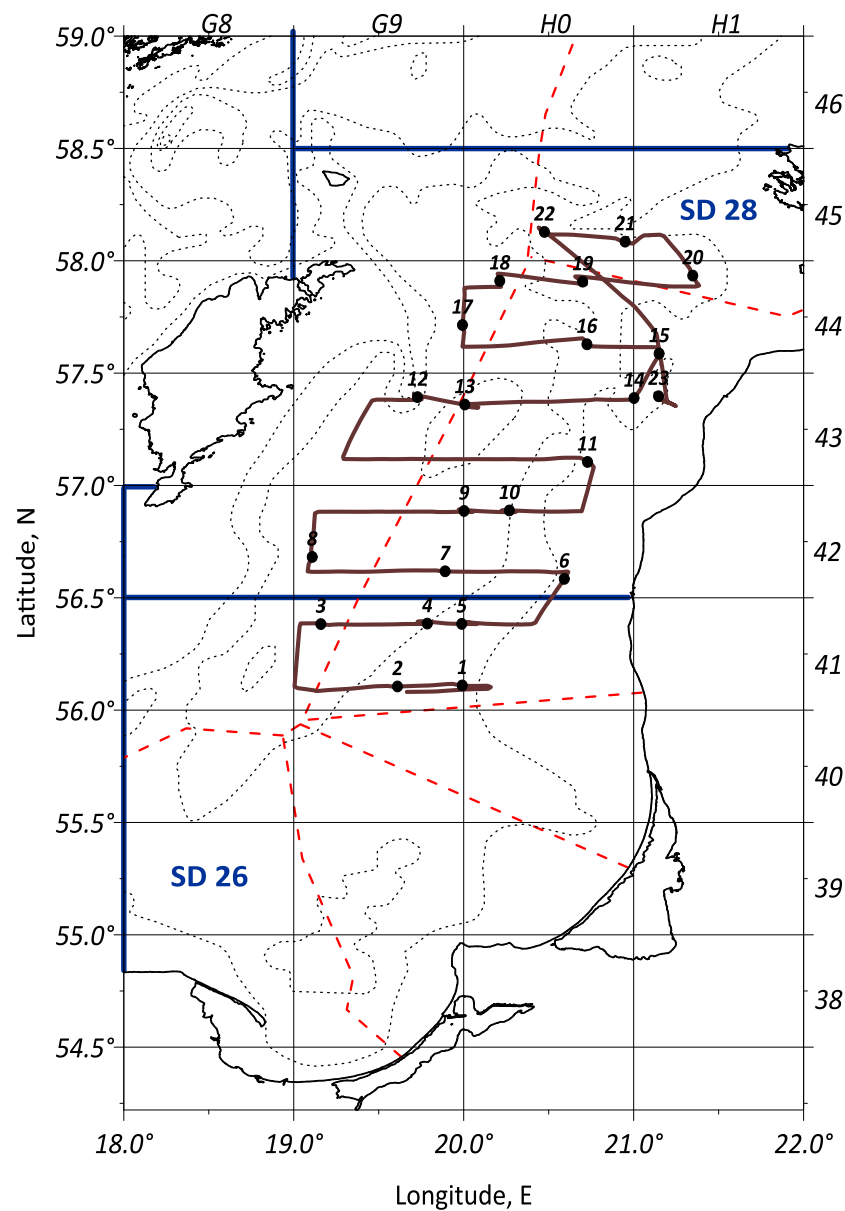
IDRONAUT CTD & bathometer rosette sampler

Automatic meteorological station – “Milosz”

Scope of work

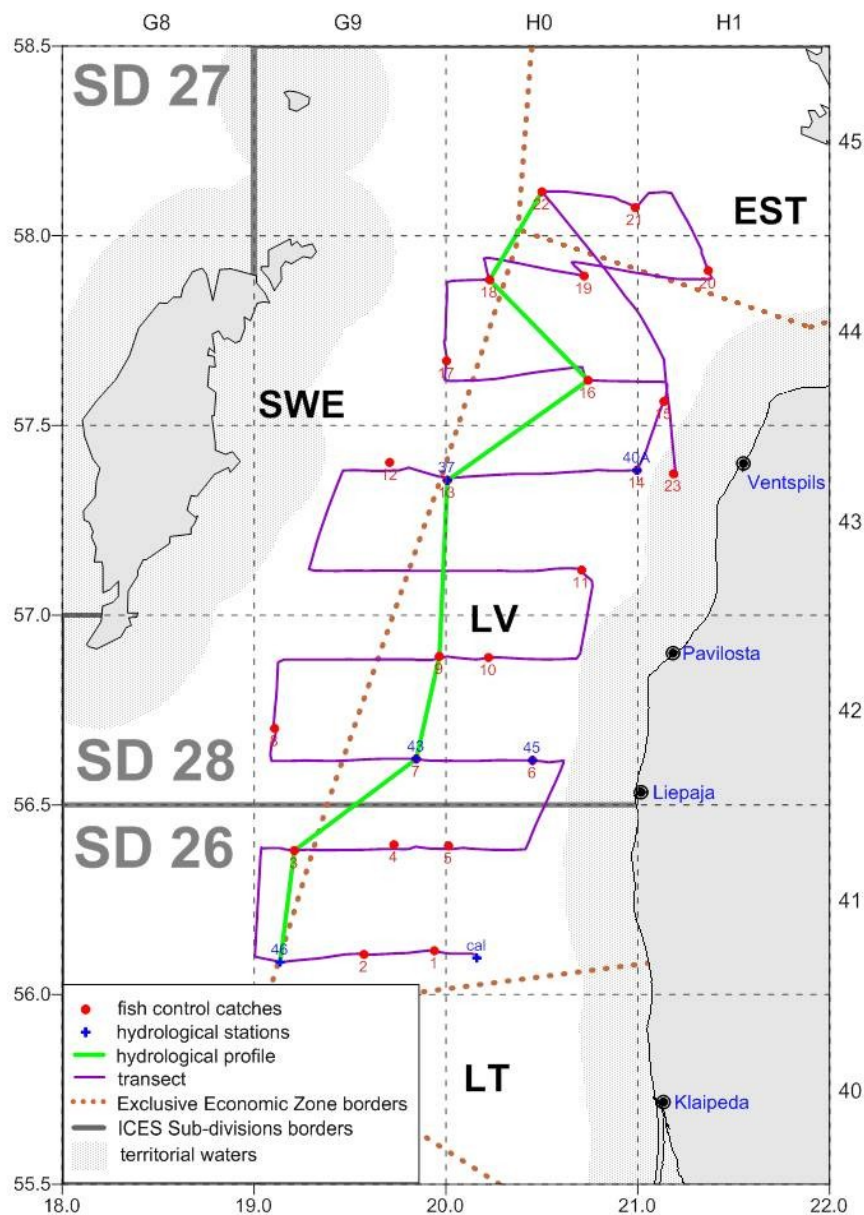
- **Days at sea – 10**
- **Survey tracks – 628 nm**
- **Control trawlings - 23**
- **Hydrological stations – 25**

Survey tracks and control trawl positions





Survey stations and hydrological profile



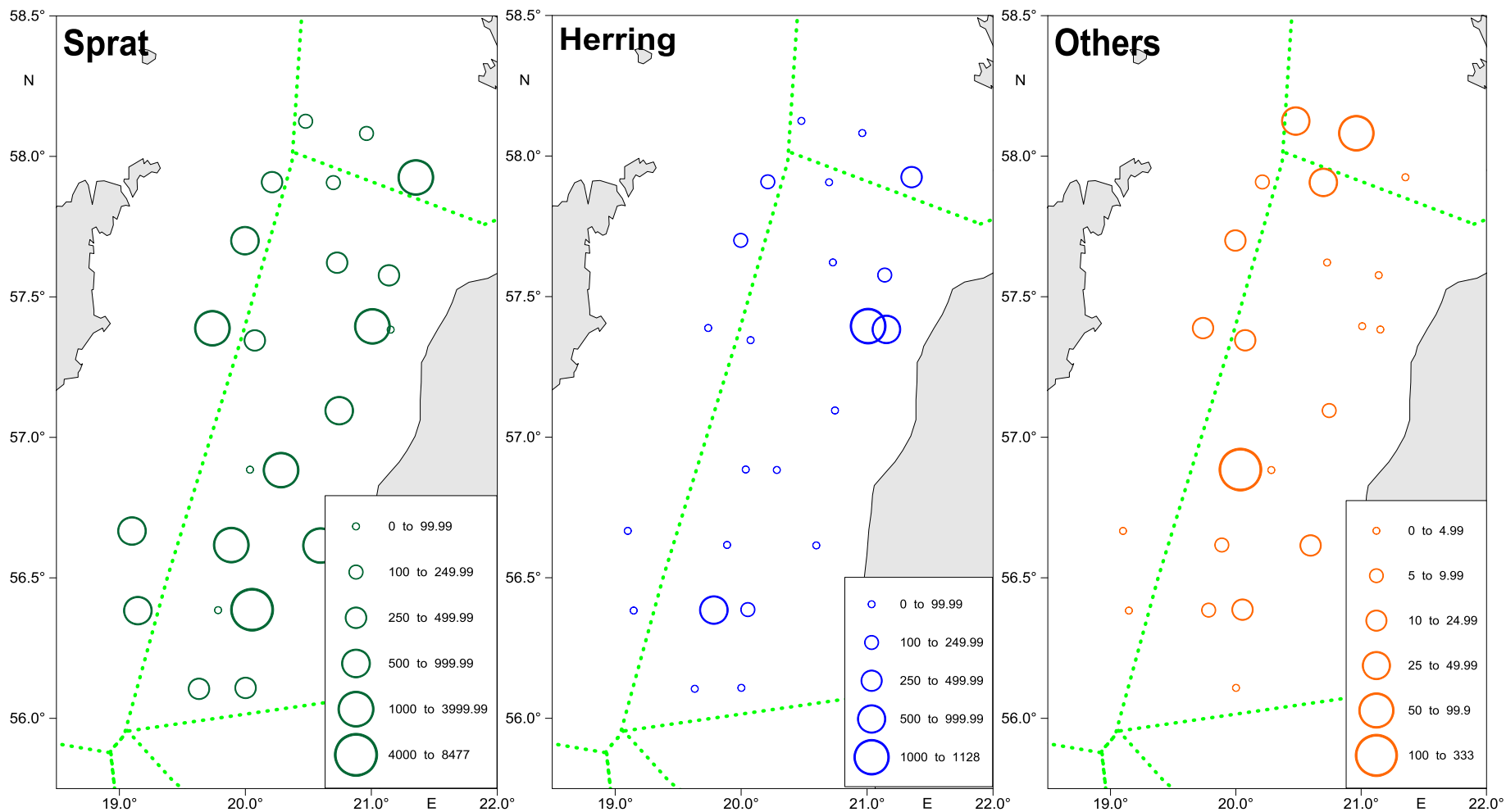
Catch, kg

Species	SD26	SD28	SD26+28
Sprat	9607.591	6634.588	9607.591
Herring	1468.692	1123.954	1468.692
Cod	4.567	2.750	7.317
Flounder		0.495	0.495
Shorthorn sculpin	0.165		0.165
Lumpfish	0.397		0.397
Threespine stickleback	0.439	267.339	267.778
Ninespine stickleback		0.360	0.360
Salmon	3.515	3.065	6.580
Total	3326.824	8032.551	11359.375

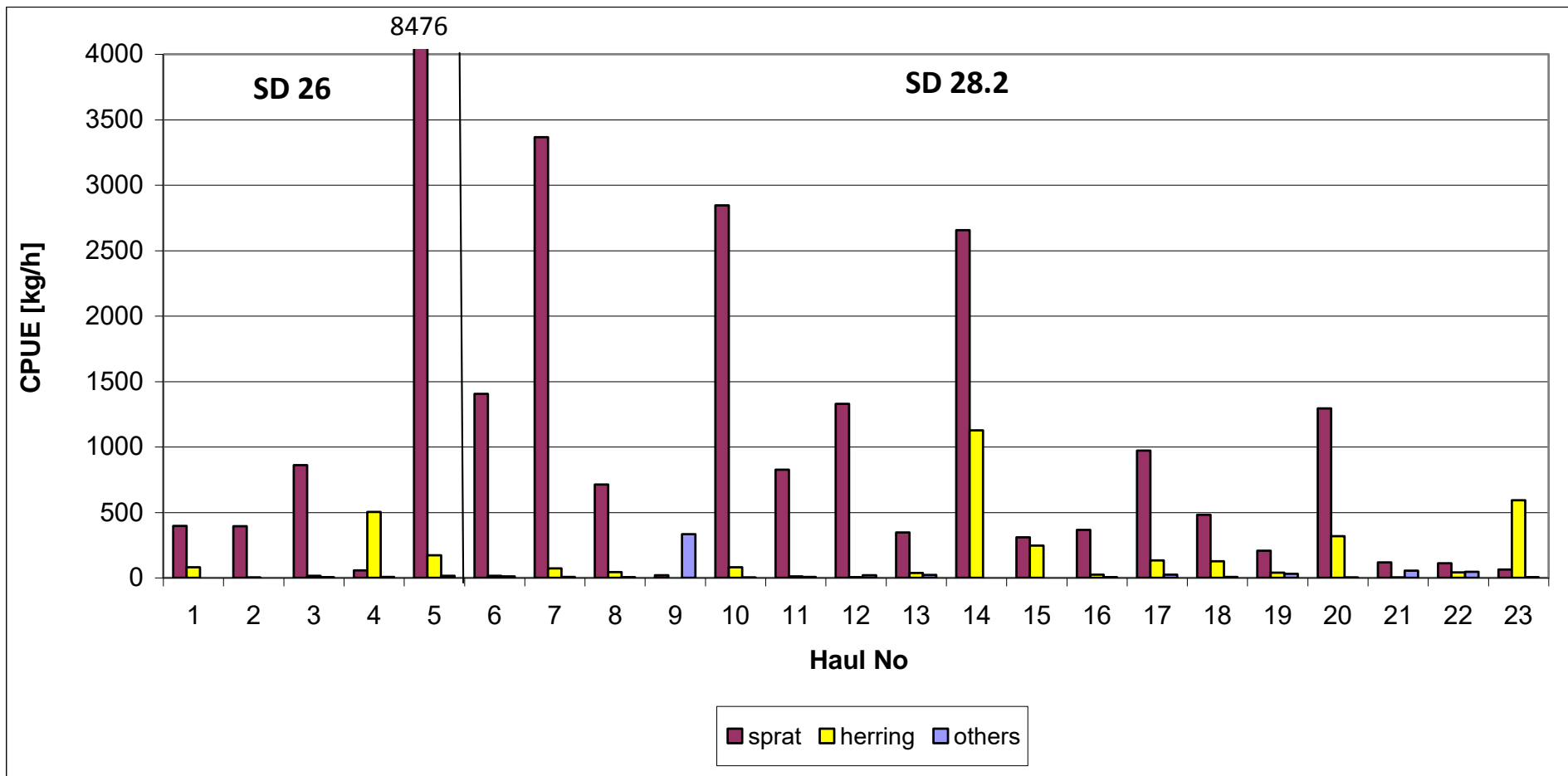
Measured and analyzed fish

Fish species	Number of measured individuals			Number of aged individuals		
	SD 26	SD 28	SD 26+28	SD 26	SD 28	SD 26+28
Sprat (all)	1014	3576	4590	466	1695	2161
Sprat (yearclass 0)	43	381	424	43	201	244
Herring (all)	421	1850	2271	200	1048	1248
Open sea herring	359	1460	1819	169	824	993
Spring spawners	359	1459	1818	169	823	992
Autumn spawners		1	1		1	1
Gulf herring	4	381	385	2	219	221
Southern Baltic herring	58	9	67	29	5	34
Cod	11	8	19			
Flounder		4	4			
Lumpfish	2		2			
Salmon	1	1	2			
Stickleback, threespine	15	668	683			
Stickleback, ninespine		46	46			
Shorthorn sculpin	1		1			
Total	1465	6153	7618	666	2743	3409

CPUE, kg/h

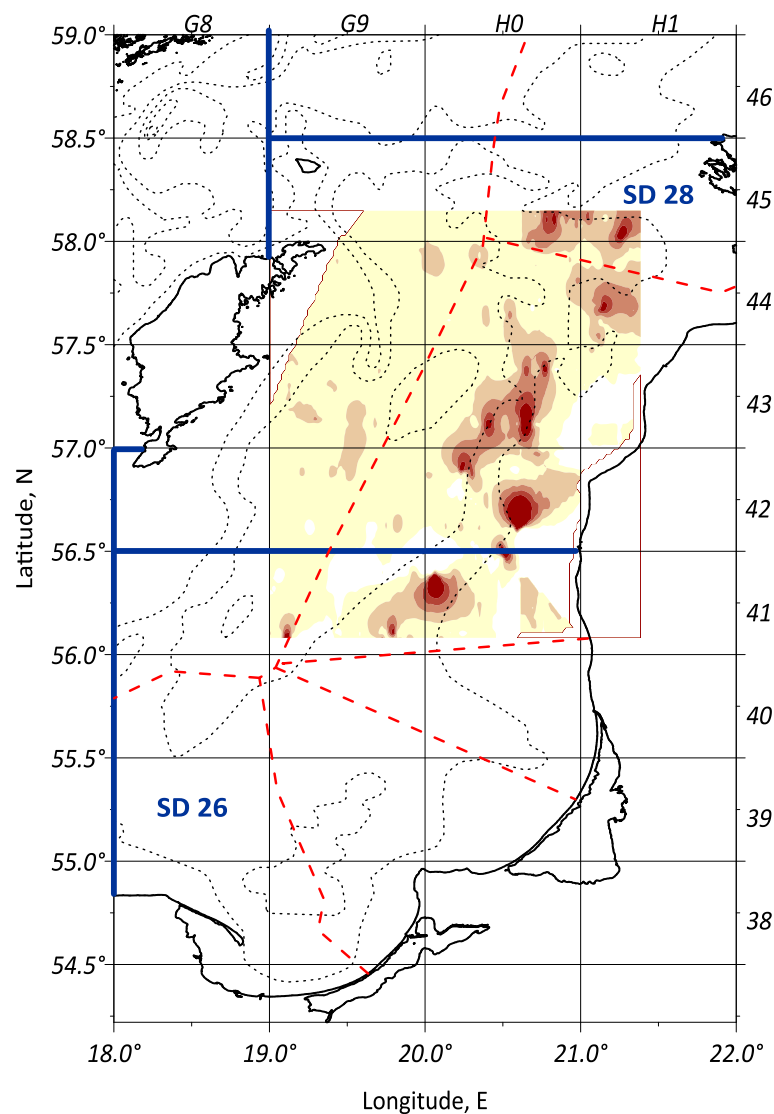


CPUE, kg/h



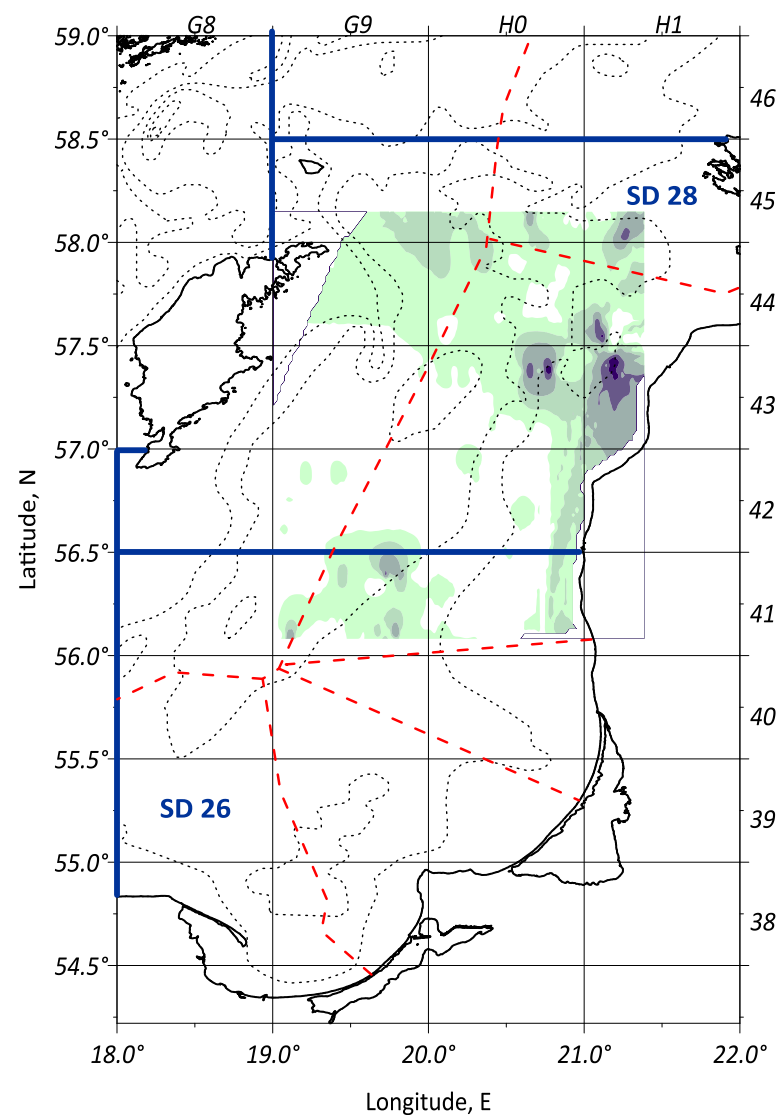
Sprat in October 2016

ICES SD	Abundance [n×10 ⁶]	Biomass [kg×10 ³]
26	16123	130609
28	5330	44216
Σ	21453	174825



Herring in October 2016

ICES SD	Abundance [n×10 ⁶]	Biomass [kg×10 ³]
26	2648	51928
28	215	6014
Σ	2863	57942

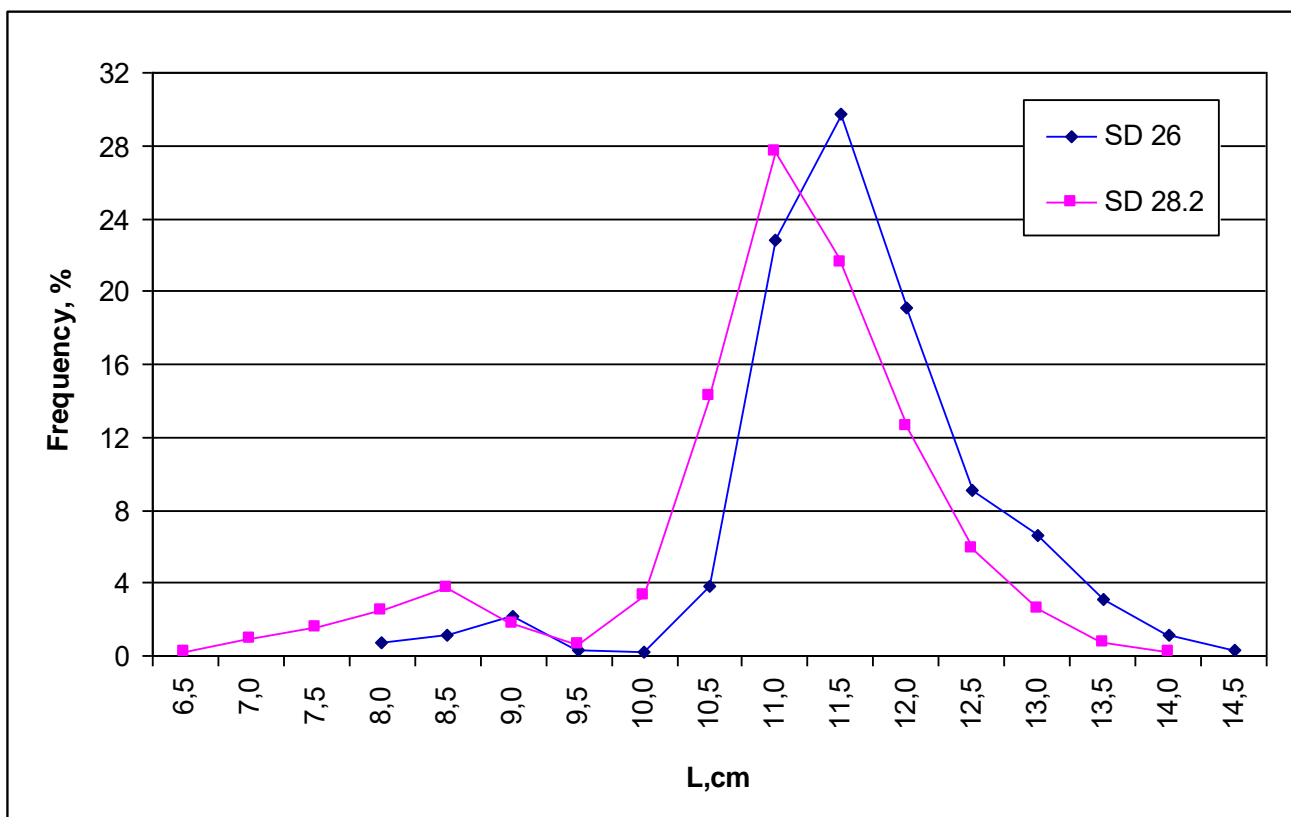


Herring, n×10⁶/nm²

0.1 0.5 1.0 2.0 3.0

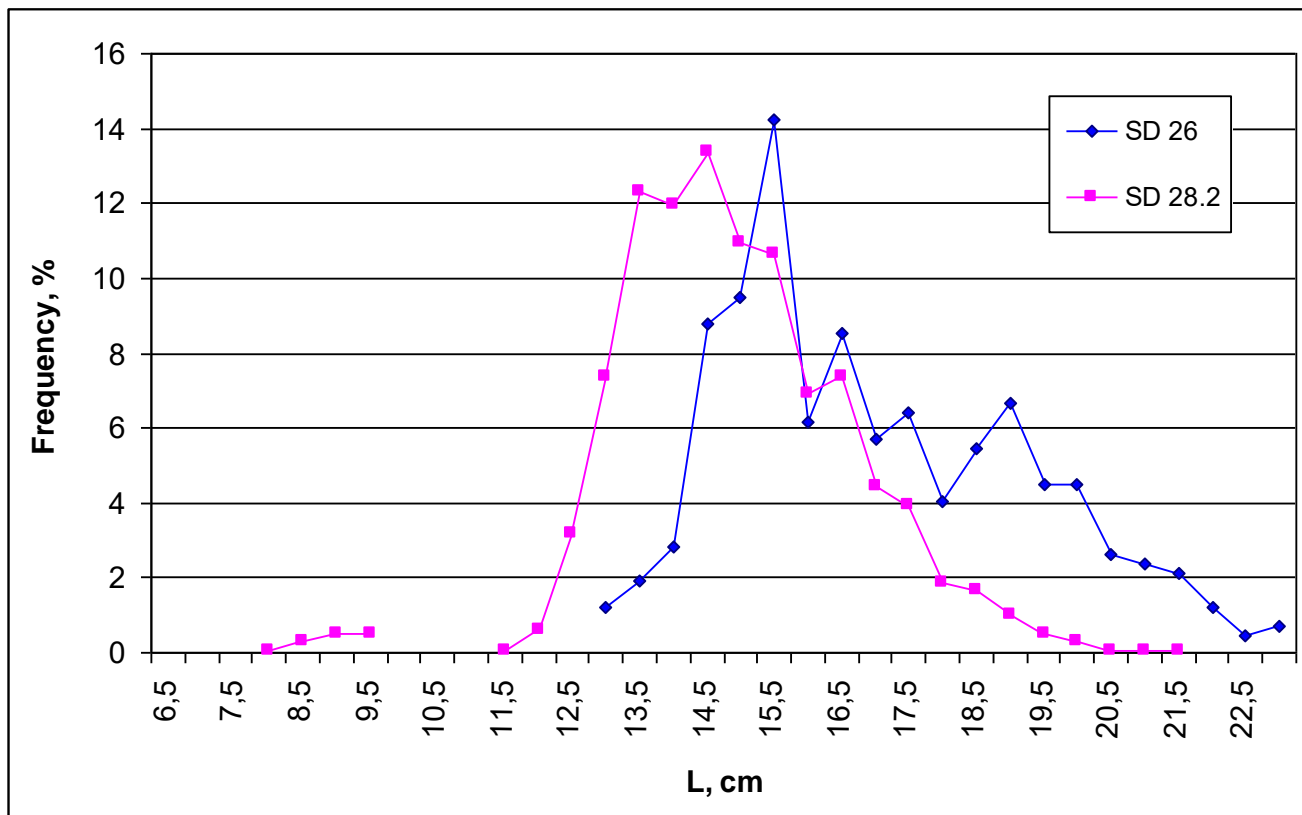
Length distribution

Sprat

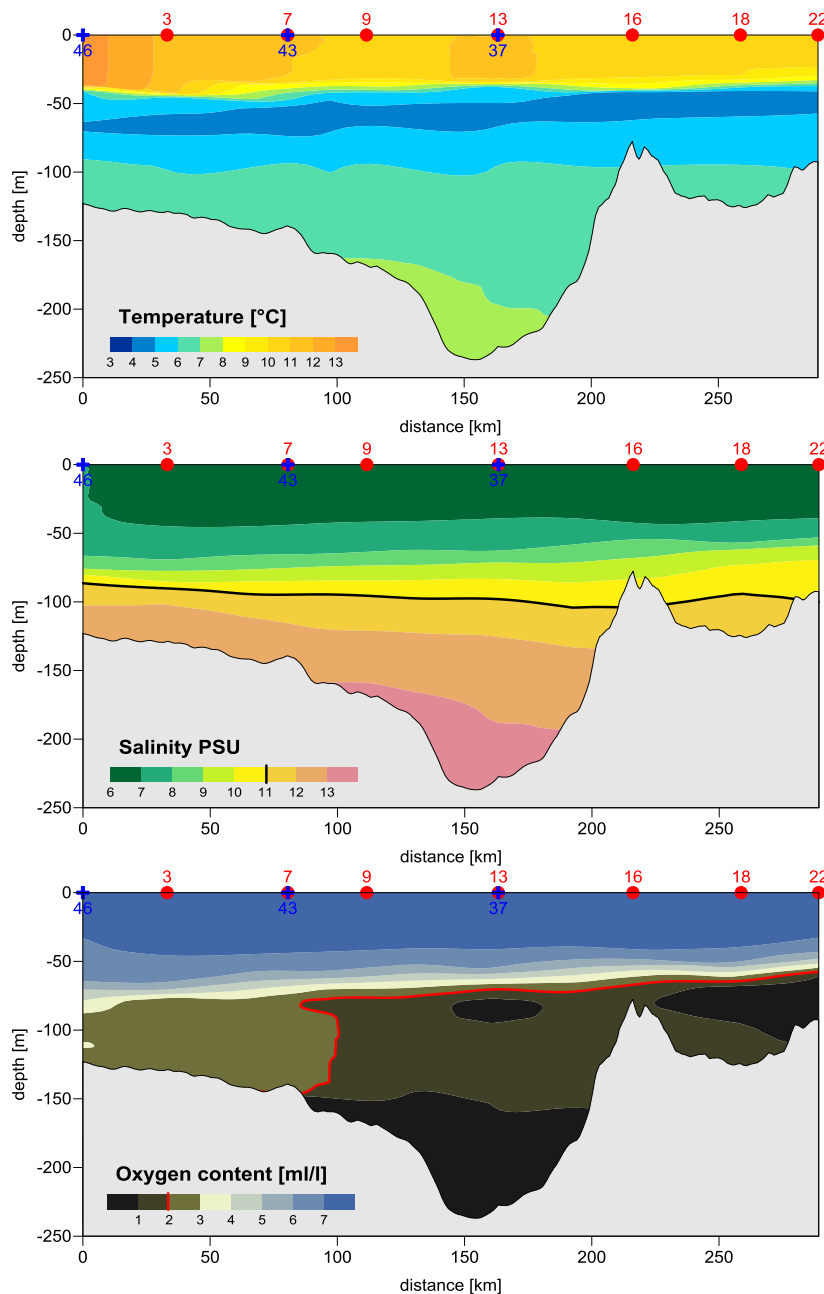


Length distribution

Herring



Hydrology in October 2016



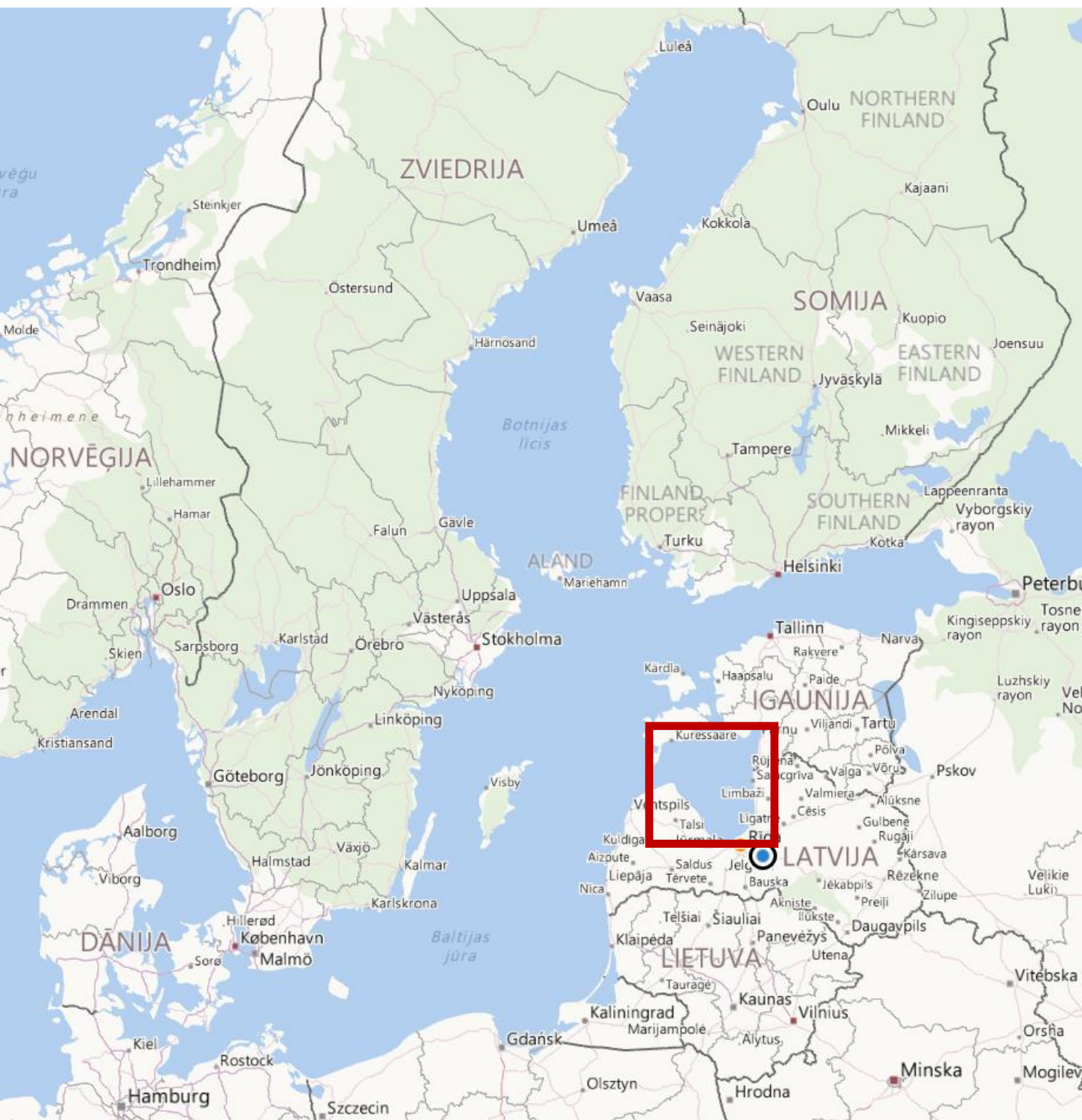
Thank You!



THE JOINT LATVIAN-ESTONIAN HERRING ACOUSTIC SURVEY IN THE GULF OF RIGA ON THE F/V “ULRIKA” (26.07 – 01.08.2016)



Survey area – ICES SD 28.1



Equipment:

BioSonics D-TX echo-sounder **38 kHz**

Trawl:

- Vertical opening – 22 m
- Horizontal opening – 83 m
- Mesh size at codend – 10 mm (bar)

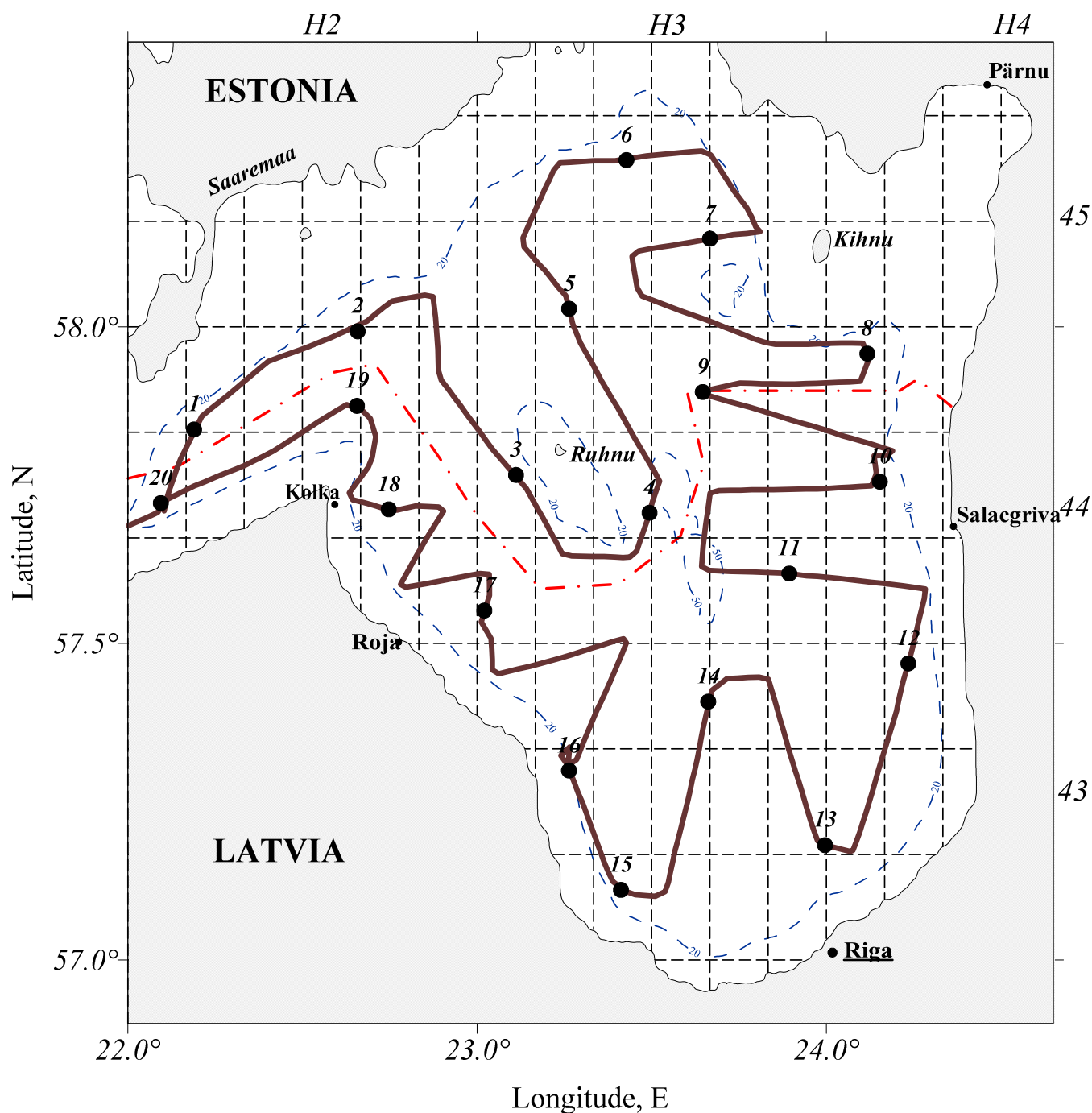
Seabird SBE 19plus

Judday net 100 μ m mesh



Position of trawls and survey tracks of joint Latvian-Estonian hidroacoustic survey in the Gulf of Riga

(Latvian - Estonian hidroacoustic survey, F/V "Ulrika", 26.07. - 01.08.2016)



● Trawls

— Survey tracks

- . - . - . the Latvian - Estonian border

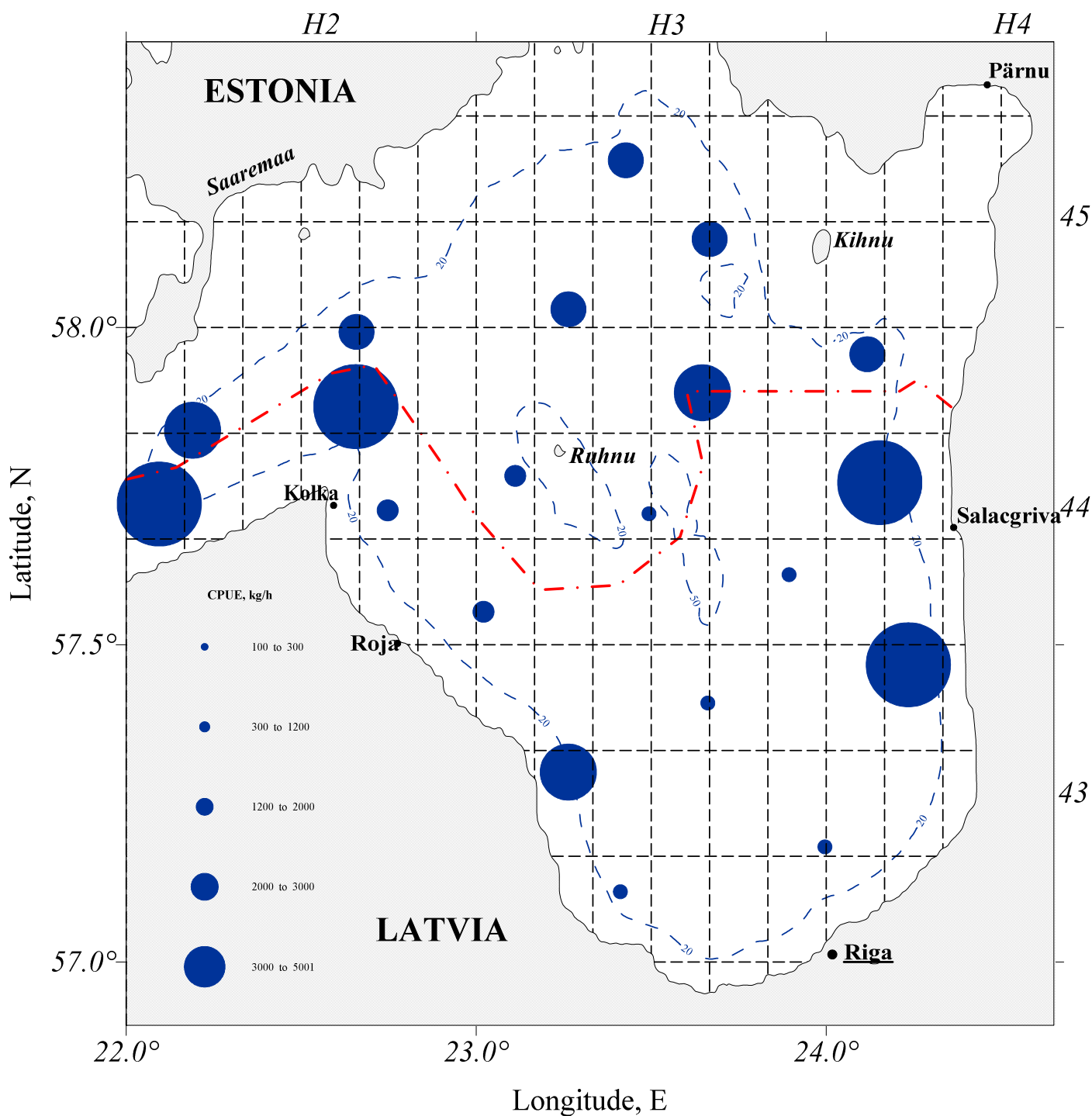
Scope of work:

- **Days at sea – 7**
- **Survey tracks – 453 nm**
 - Latvian EEZ – 253 nm
 - Estonian EEZ – 200 nm
- **Control trawlings – 20**
 - Latvian EEZ – 12
 - Estonian EEZ – 8
- **Hydrological and hydrobiological stations**
- **Zooplankton samples**

Zivju suga	Measured Fish			Analyzed Fish		
	EST	LAT	Σ	EST	LAT	Σ
Herring	1689	2338	4027	797	1084	1881
Sprat	601	206	807			
Threespine stickleback	269	414	683			
Smelt	150	294	444			
Straitnose pipefish	19	84	103			
Flounder	35	29	64			
River lamprey	11	20	31			
Ninespine stickleback	11	1	12			
Sea trout	4	6	10			
Eelpout	3	3	6			
Great sandeel	2	1	3			
Fourhorn sculpin	1	1	2			
Shorthorn sculpin		1	1			
Pearch	1		1			
Whitefish		1	1			
Σn	2796	3399	6195			1881

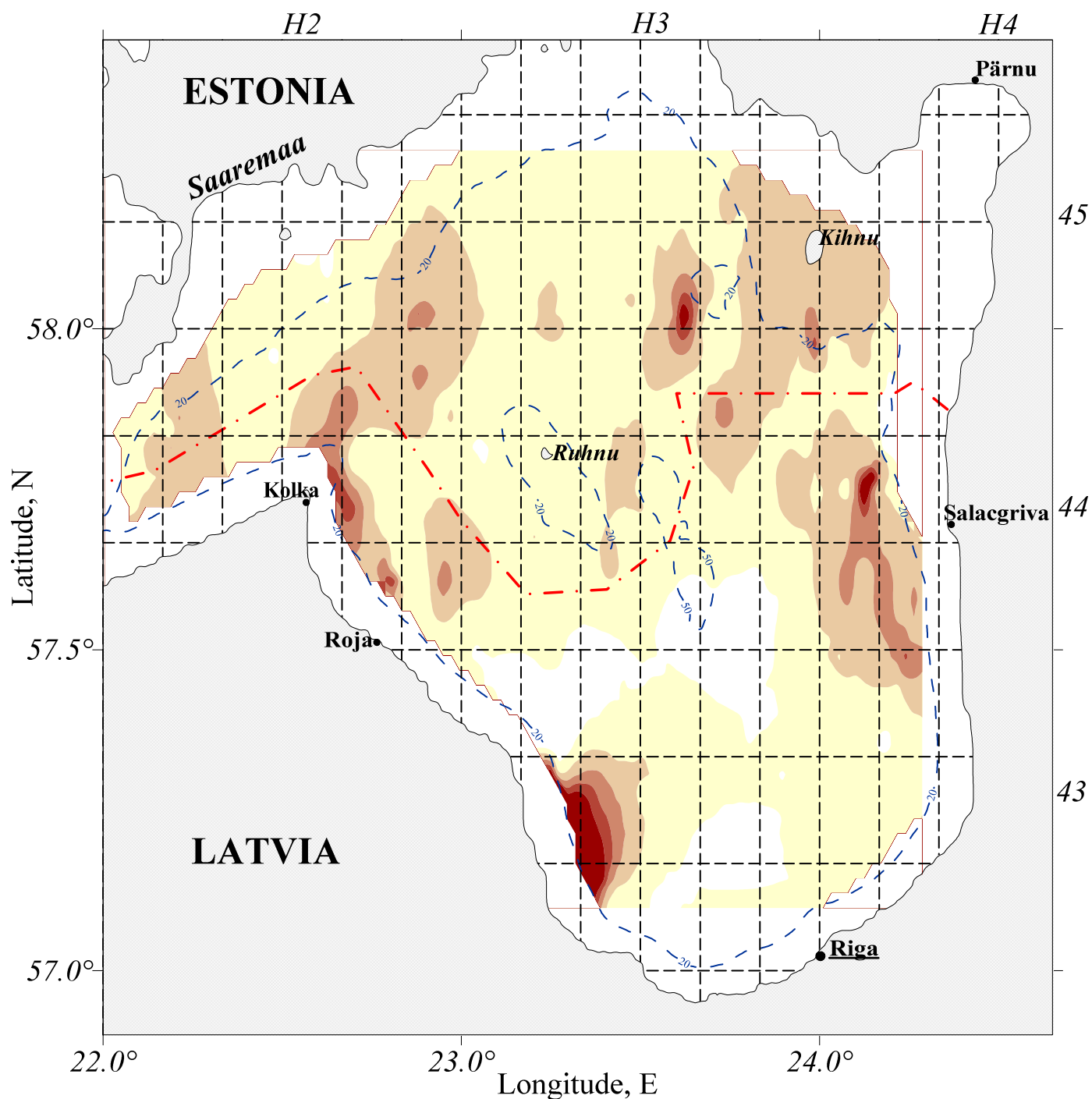
CPUE [kg/h] of hauls during joint Latvian-Estonian hidroacoustic survey in the Gulf of Riga

(Latvian - Estonian hidroacoustic survey, F/V "Ulrika", 26.07. - 01.08.2016)



Distribution of herring densities in the Gulf of Riga

(Latvian - Estonian hydroacoustic survey, F/V "Ulrika", 26.07- 01.08.2016)



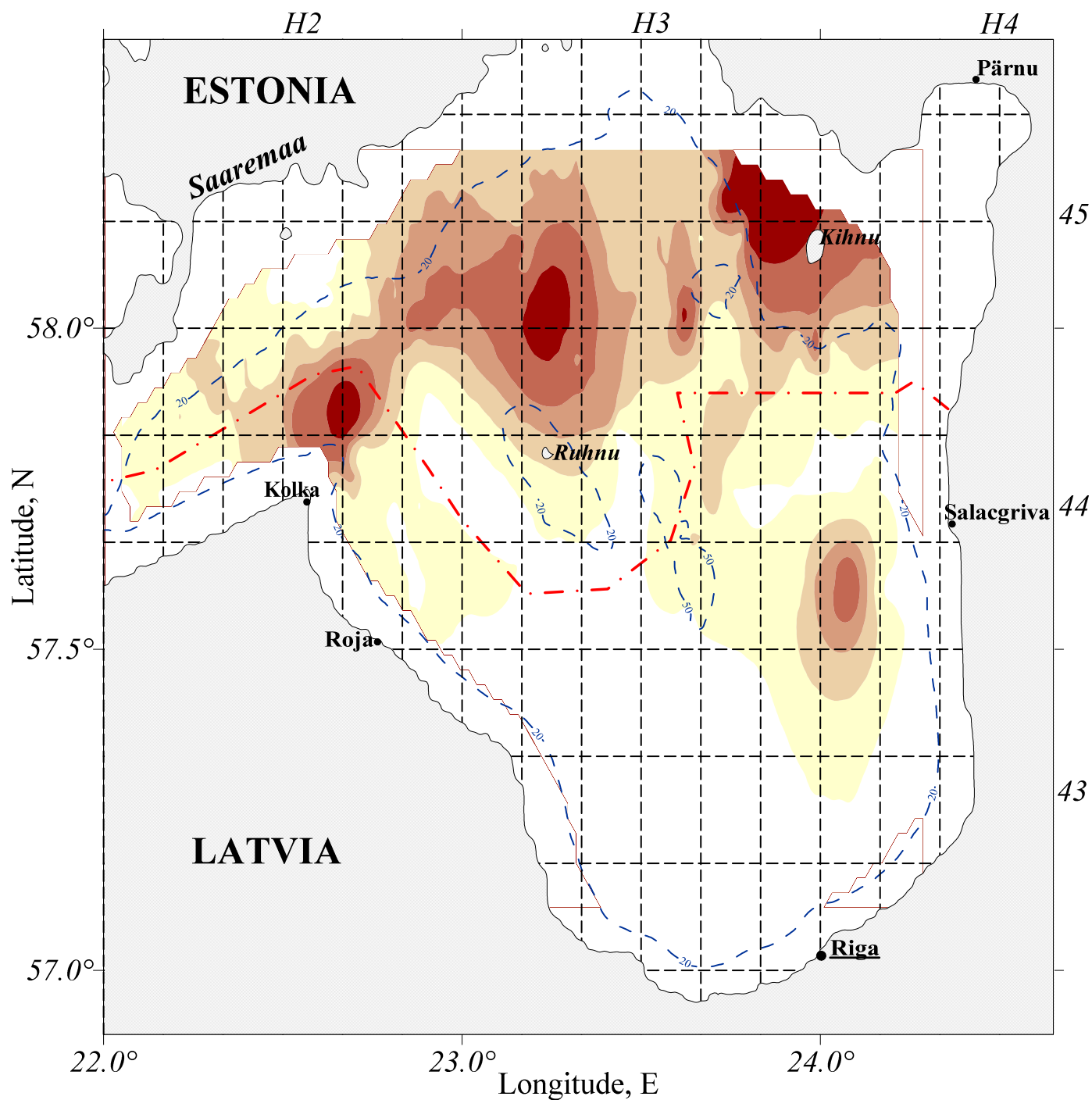
$n \times 10^6 / \text{km}^2$



— · — · — · — the Latvian - Estonian border

Distribution of sprat densities in the Gulf of Riga

(Latvian - Estonian hydroacoustic survey, F/V "Ulrika", 26.07- 01.08.2016)



Thank You!



Intercalibration exercise between the new “Havfisken” and “Solea”

A. Velasco / M Bleil, H. Degel /A. Thaarup, R. Oeberst

Thünen Institute of Baltic Sea Fisheries, Rostock



Riga,
28.03.2017

Intercalibration exercise between new “Havfisker” & “Solea”

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➤ Background

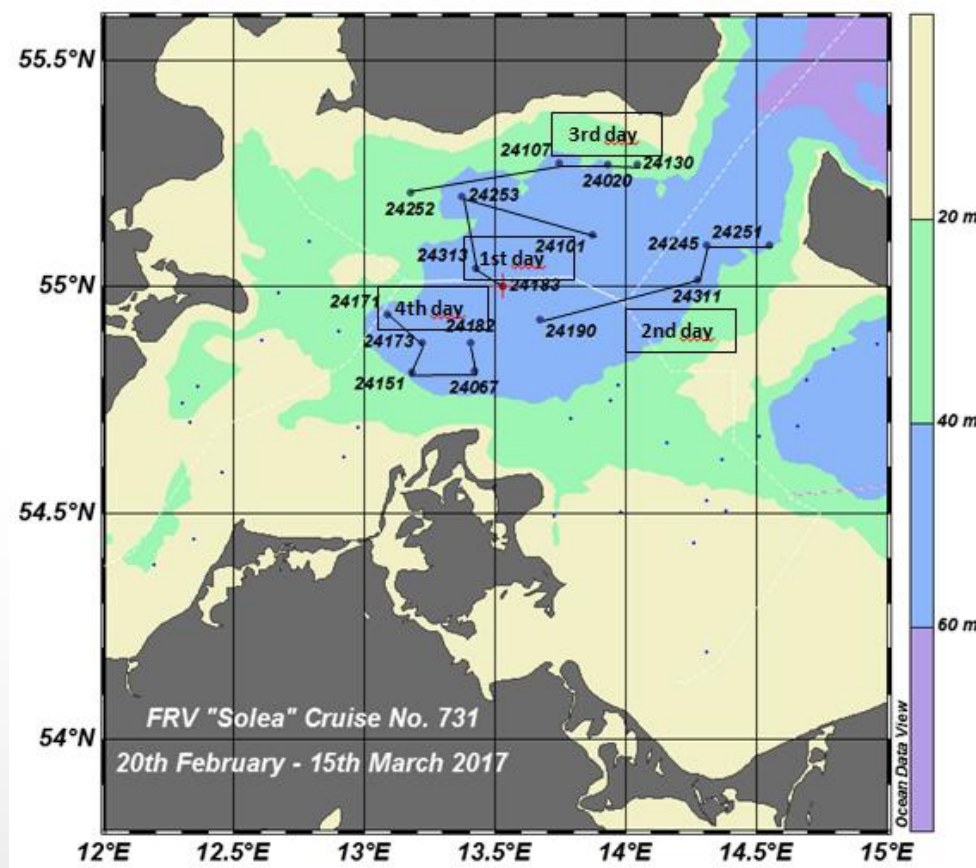
- Intercalibration experiments between old and new Havfisker suggested large differences of catchability of old and new “Havfisker”
- Intercalibration exercise between the new “Havfisker” and “Solea” was done during the BITS to evaluate the results of intercalibration experiment between old and new “Havfisker”
- Thirteen intercalibration hauls were carried out between February 27 and March 1, 2017. One haul was invalid because the fishing gear of “Havfisker” was unclear

Intercalibration exercise between new “Havfisken” & “Solea”

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- new “Havfisken” und “Solea” met in Arkona Sea for three days
- Both vessels realized parallel 12 BITS standard hauls
- Catch of “Havfisken” was not influenced by the gear of “Solea” because the distance between vessels was two times more than maximum door spread of used TVS
- It was assumed that both vessels have fished the same population based on the used design



Intercalibration exercise between new “Havfisken” & “Solea

WGBIFS REPORT 2017

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- The relation between total catch in weight by species of both vessels were described by the linear regression $\text{Catch}(\text{SOL2}) = a + b * \text{Catch}(\text{HAF2})$
- In addition, the regressions $\text{Catch}(\text{SOL2}) = 0 + b * \text{Catch}(\text{HAF2})$ were determined
- It was hypothesized that the intercept of the linear regression does not significantly differ from zero and that the slope did not significantly differ from 1
- The hypothesis was tested with t-test with the kind of first error of $\alpha = 0.05$ (Rasch, 1968)

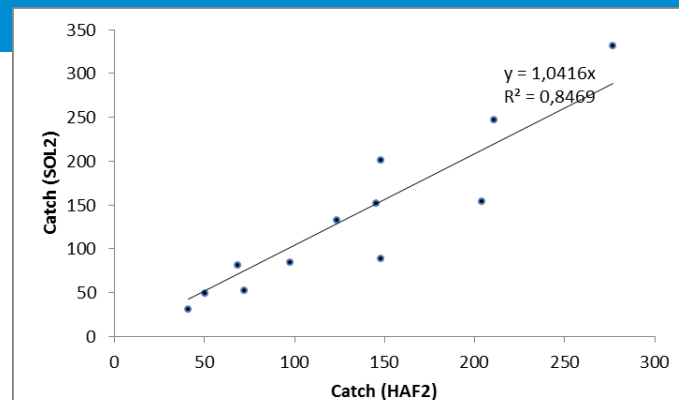
Intercalibration exercise between new “Havfisken” & “Solea

WGBIFS REPORT 2017

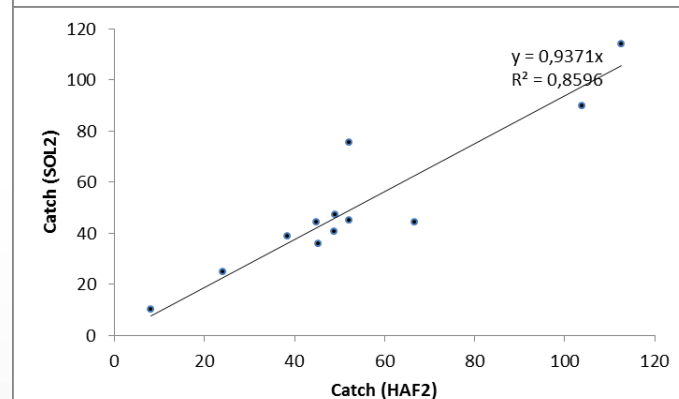
634

- The t-test showed that the intercepts of the regressions did not significantly differ from zero and that the slopes of the regressions did not significantly differ from 1
- The slopes of the regressions $\text{Catch}(\text{SOL2}) = 0 + b * \text{Catch}(\text{HAF2})$ were close to 1 with 1.04, 0.94 and 1.00 for cod, flounder and the combination of plaice, dab and turbot, respectively
- The hypothesis of similar catchability of both vessels can not be rejected based on the statistical test

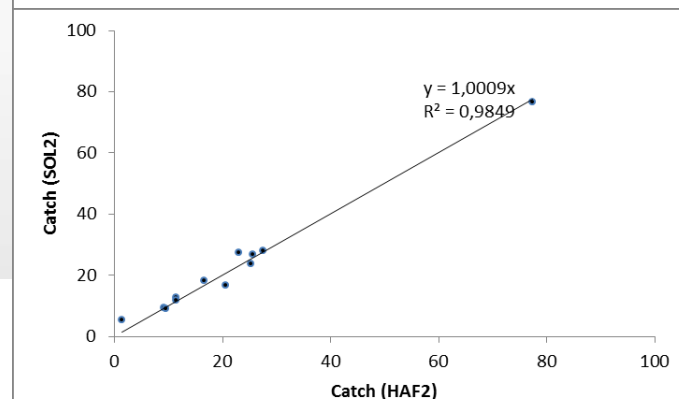
Cod



Flounder



Plaice, Dab and Turbot



Intercalibration exercise between new “Havfisker” & “Solea

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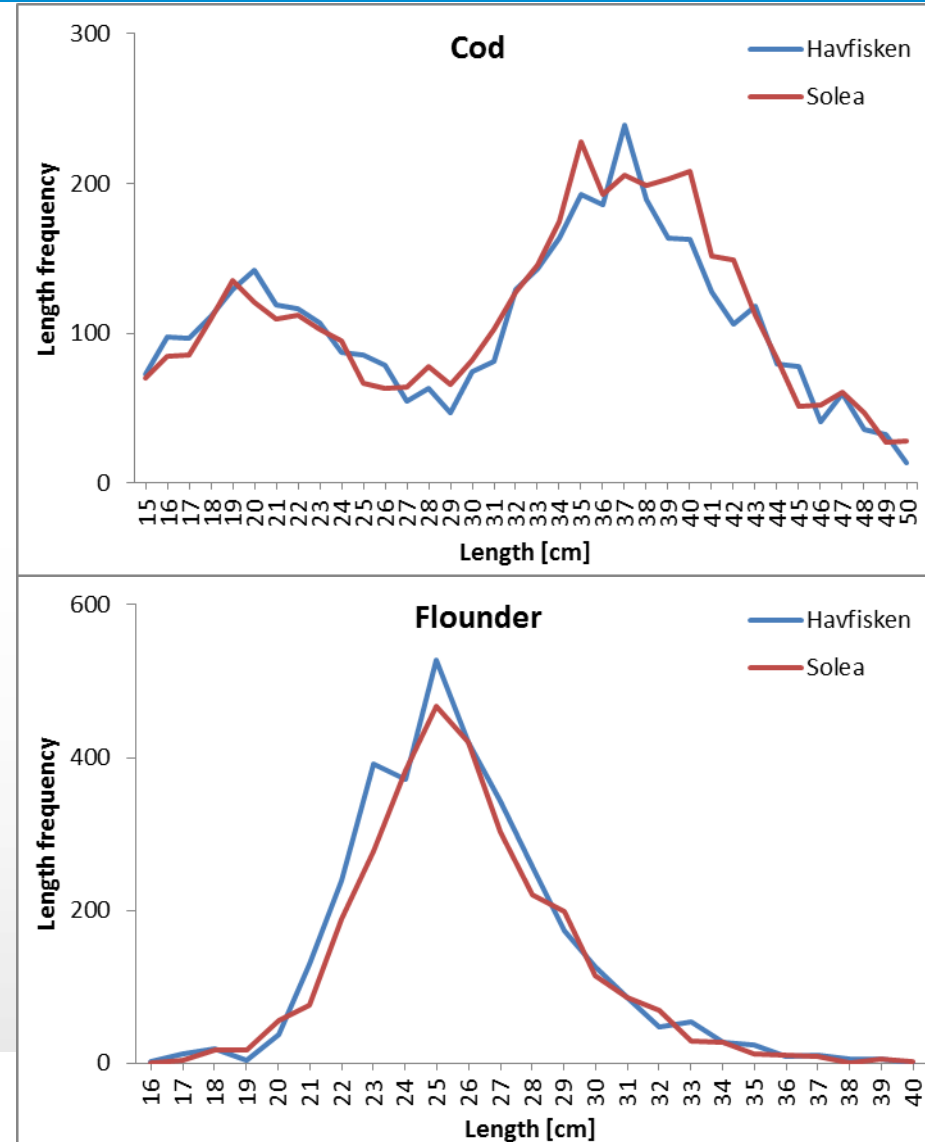
- In addition, it was tested that the length frequencies of 5 cm length intervals of both vessels were taken from the same population by means of the χ^2 -test of homogeneity (Lozan, 1992)
- Length frequencies of 5 cm length intervals of both vessels of each paired hauls were tested
- The hypothesis of similar catchability of both vessels can not be rejected based on the statistical test
- In addition, the sum of the length frequencies over all hauls of both vessels was analysed for cod and flounder

Intercalibration exercise between new “Havfisker” & “Solea”

WGBIFS REPORT 2017

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- The total length frequencies of all catches of cod and flounder for 5 cm length intervals by vessel were close together
- The results of the χ^2 -test of homogeneity did not reject the hypothesis that the samples were taken from the same population because the length frequencies did not significantly differ
- This statement is supported by the comparison of the length frequencies of each paired haul, separately



Intercalibration exercise between new “Havfisker” & “Solea”

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Conclusion

The statistical analyses showed that the hypothesis of same catchability of cod and flatfish by both vessels which use the same gear cannot be rejected

Sunrise/Sunset Calculations

For the special case of sunrise or sunset, the zenith is set to 90.833° (the approximate correction for atmospheric refraction at sunrise and sunset), and the hour angle becomes:

$$ha = \pm \arccos\left(\frac{\cos(90.833)}{\cos(lat)\cos(decl)} - \tan(lat)\tan(decl)\right)$$

where the positive number corresponds to sunrise, negative to sunset.

Then the UTC time of sunrise (or sunset) in minutes is:

$$sunrise = 720 + 4(longitude - ha) - eqtime$$

where longitude and hour angle are in degrees and the equation of time is in minutes.

Solar noon for a given location is found from the longitude (in degrees) and the equation of time (in minutes):

$$snoon = 720 + 4 * longitude - eqtime$$

General Solar Position Calculations

First, the fractional year (γ) is calculated, in radians.

$$\gamma = \frac{2\pi}{365} * (day_of_year - 1 + \frac{hour - 12}{24})$$

From γ , we can estimate the equation of time (in minutes) and the solar declination angle (in radians).

$$eqtime = 229.18 * (0.000075 + 0.001868\cos\gamma - 0.032077\sin\gamma - 0.014615\cos 2\gamma - 0.040849\sin 2\gamma)$$

$$decl = 0.006918 - 0.399912\cos\gamma + 0.070257\sin\gamma - 0.006758\cos 2\gamma + 0.000907\sin 2\gamma - 0.002697\cos 3\gamma + 0.00148\sin 3\gamma$$

Next, the true solar time is calculated in the following two equations. First the time offset is found, in minutes, and then the true solar time, in minutes.

$$time_offset = eqtime - 4 * longitude + 60 * timezone$$

where eqtime is in minutes, longitude is in degrees, timezone is in hours from UTC (Mountain Standard Time = +7 hours).

$$tst = hr * 60 + mn + sc / 60 + time_offset$$

where hr is the hour (0 - 23), mn is the minute (0 - 60), sc is the second (0 - 60).

The solar hour angle, in degrees, is:

$$ha = (tst / 4) - 180$$

The solar zenith angle (ϕ) can then be found from the following equation:

$$\cos\phi = \sin(lat)\sin(decl) + \cos(lat)\cos(decl)\cos(ha)$$

And the solar azimuth (θ , clockwise from north) is:

$$\cos(180 - \theta) = - \frac{\sin(lat)\cos\phi - \sin(decl)}{\cos(lat)\sin\phi}$$

LFI & MMI Development

Translating fish and bits into ecological indicators



Science for sustainable seas

Why

- Trophic structure linked to fish size
- LFI responds to targeting large fish
- GES, MSFD, OSPAR Intermediate Assessment, ICES Ecosystem Overviews, etc.

Quick background

- LFI:
 - Measures the fish community that is larger than some length threshold (40 cm for the North Sea; Greenstreet et al., 2011), so expresses a well-understood community response to exploitation—the curtailment of age and size structure (Haedrich and Barnes, 1997; Shin et al., 2005)—by quantifying change in the biomass contribution to the community of the larger individuals/species that are typically removed by fishing.
 - Robust to environmental changes
- LFI + Baltic
 - HELCOM reports (2011, 2013):

Plan of action:

- Swept area:
 - Check that BITS >2001 can be expressed as swept area
- Spatially explicit:
 - NS examples show spatial heterogeneity might be high (Sunderlof, 2013)
 - Baltic basins should be unique (HELCOM 2011)
 - Shoot for swept area by statistical rectangle
- Establish reference period:
 - When were most stocks above precautionary spawning-stock biomass reference limit B_{pa} ?

Outcomes of ICES WKBIFS-ACOU

Review the progress of the ICES acoustic-trawl survey database design elaborated under the AtlantOS project...

WKBIFS-ACOU ToRs

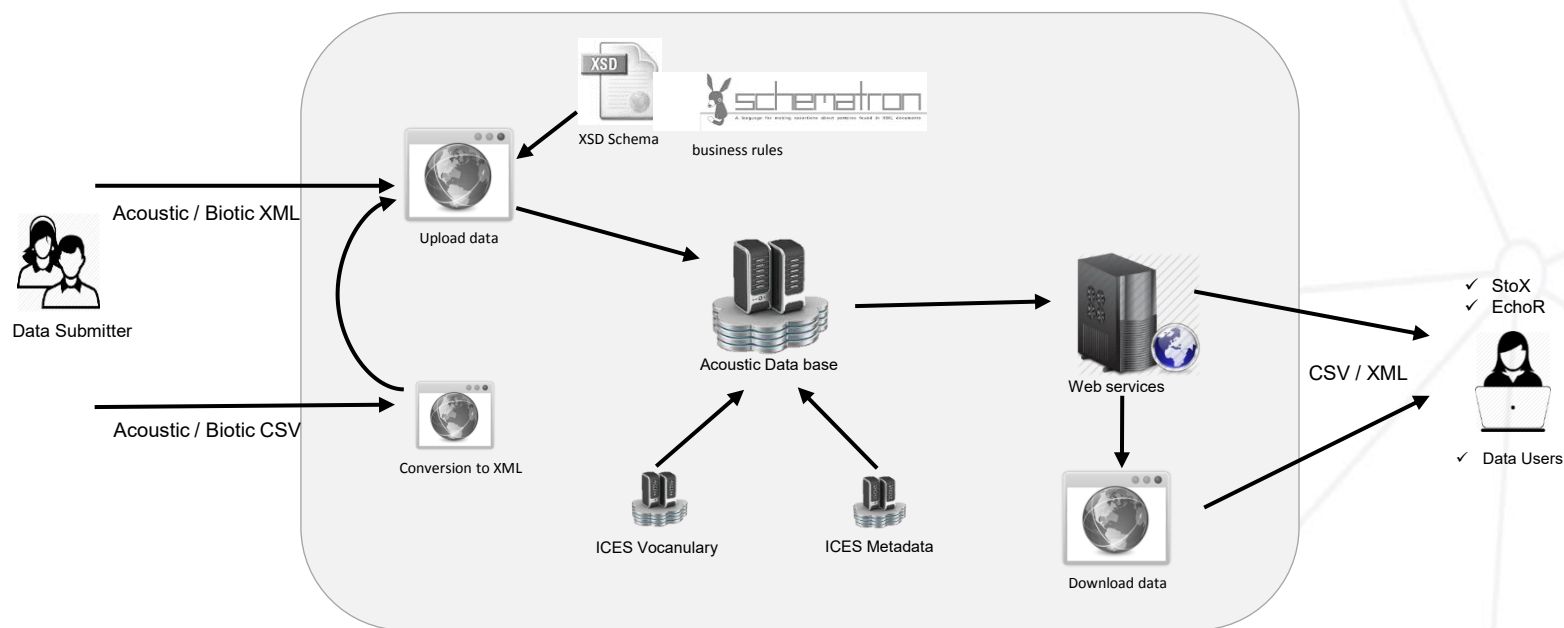
- a) Evaluate the existing national computational tools used for the acoustic abundance estimations of sprat, herring and cod in the Baltic Sea.
- b) Test run StoX estimation software using existing data reported into ICES new acoustic database before the workshop.
- c) Establish baseline parameters within StoX for use during future BIAS/BASS surveys.
- d) Provide feedback to the ICES Data Centre on the new acoustic trawl data format/database.
- e) Provide feedback to StoX developers to address outstanding issues.

AtlantOS WP 2.4

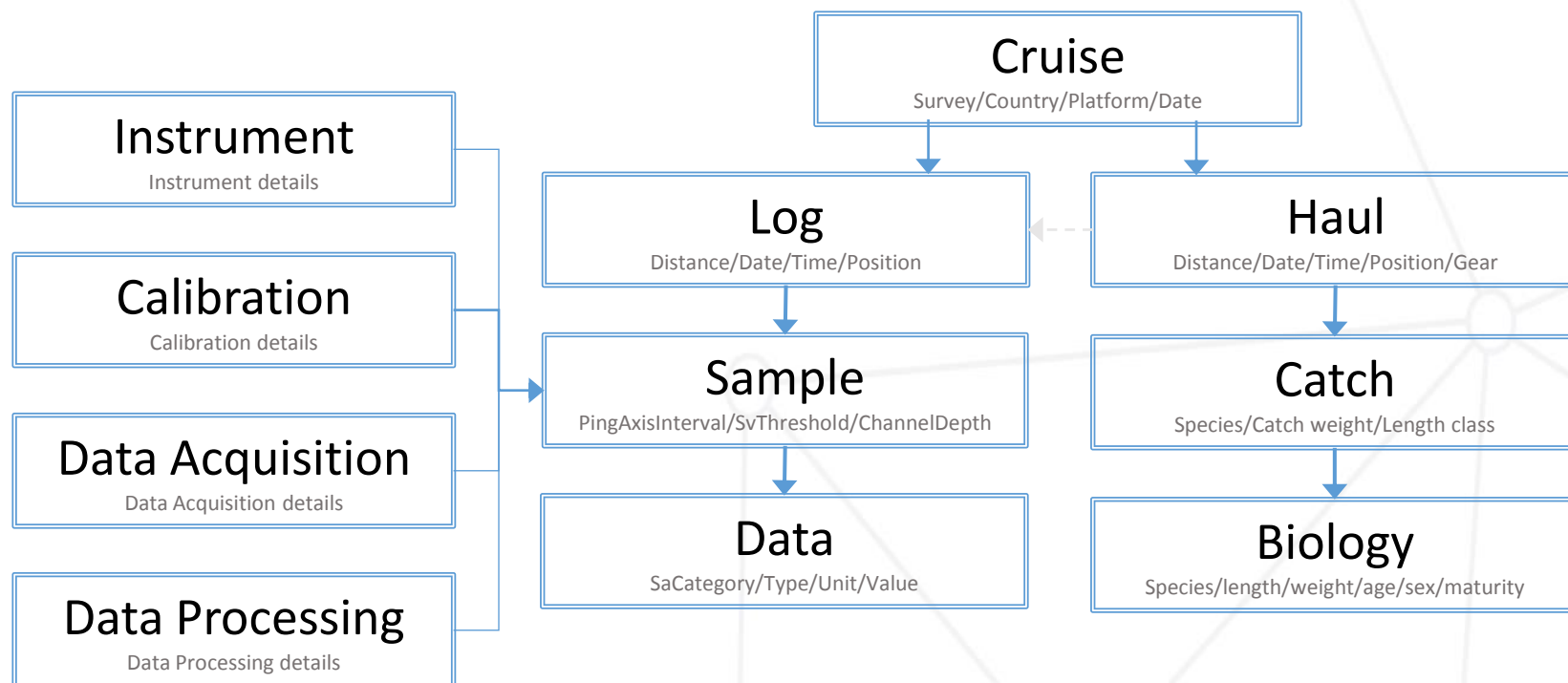
- 1) to improve the fish survey data availability through the ICES data center
- 2) to prepare the ICES data center to host these data in accordance with ICES and international data standards
- 3) to modify current processing and analysis software to fit into the new system.

1. WKEVAL
2. WKIACTDB
3. WGIPS, WGBIFS, WGACEGG and WGIDEEPS

ICES Acoustic Data Portal



Acoustic data model





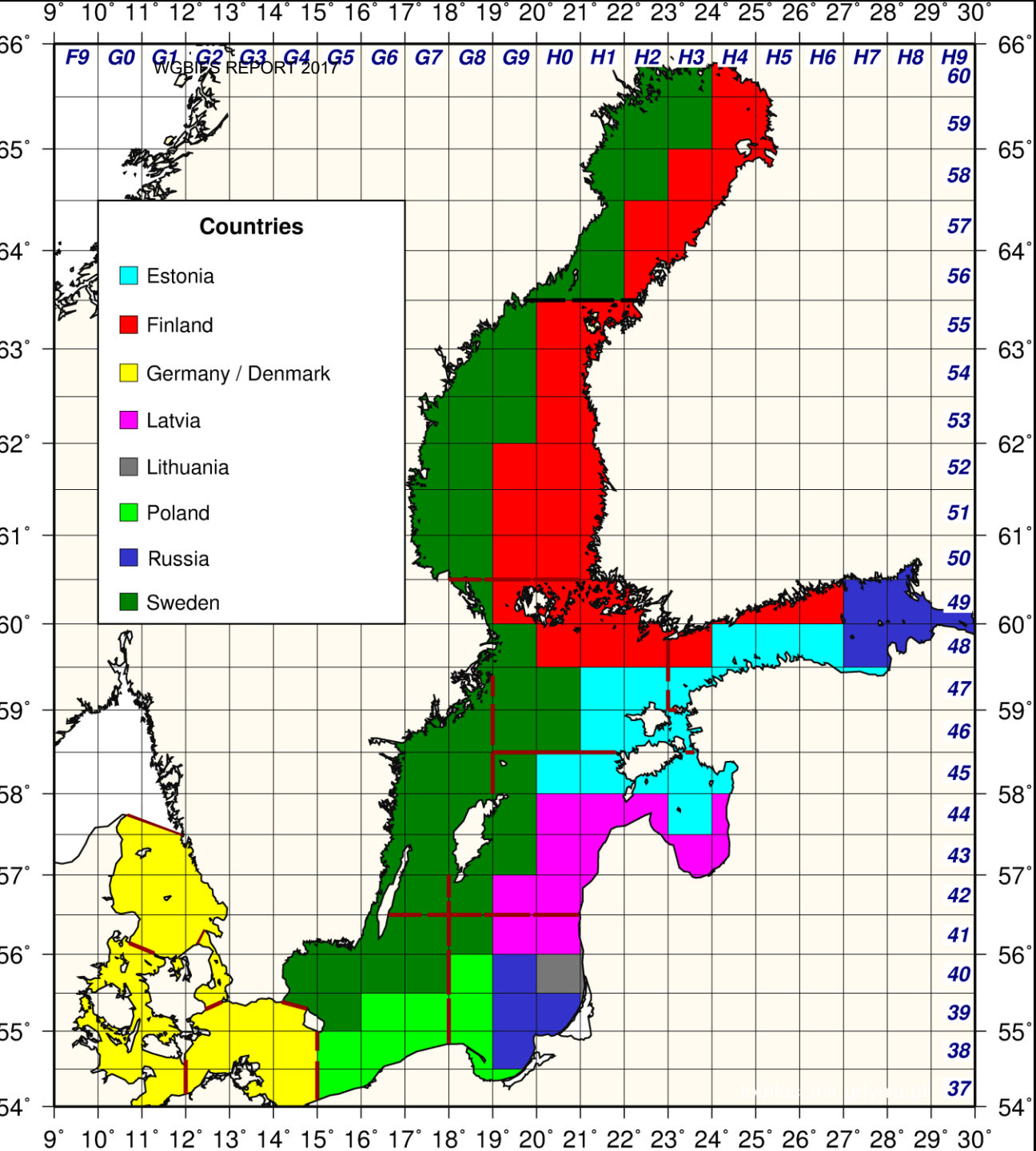
ICES Acoustic data portal - progress

ICES Acoustic data portal at <http://acoustic.ices.dk> is now operational.

1. WGIPS HERAS survey assessment by StoX
2. WGHANSA PELGAS survey by EchoR
3. WGBIFS BIAS / BASS surveys assessment by StoX?

ICES Acoustic data portal - next

1. Implement user management of data within the database.
2. Make additional quality control checks (using schematron) on data uploaded through the portal.
3. Implement map in order for the users to view data within the database in addition to the grid currently shown at the portal.
4. Host supporting information necessary for the different assessment software's like StoX and EchoR in order to being able to reproduce the assessments done.



ICES statistical rectangles are used as strata for IBAS calculations

National
survey
estimates

BIAS/BASS
MS Access
data bases

General assignment scheme of the ICES statistical rectangles (within standard acoustic surveys) to the countries in the Baltic Sea.

National
survey
estimates



BIAS/BASS
MS Access
data bases

SU

Code, Ship, Year

AH/AS (Values per ICES statistical rectangle)

Herring/Sprat Total N, N_0 - N_8

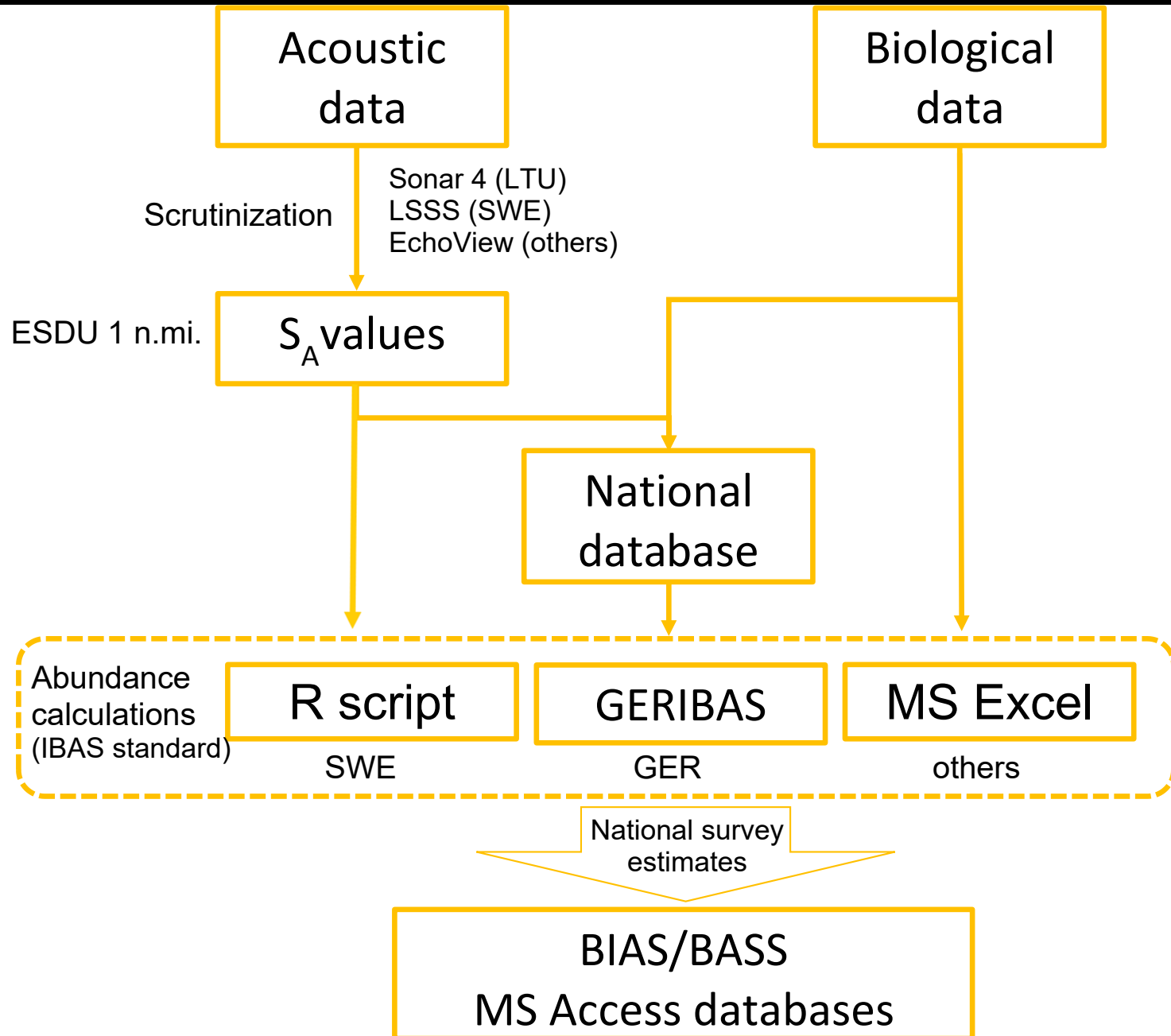
WH/WS (Values per ICES statistical rectangle)

Herring/Sprat Mean W, W_0 - W_8

ST (Values per ICES statistical rectangle)

Area, S_A , Sigma, Total N, % herring, % sprat, % cod

IBAS data flow



Deviations from IBAS standard calculation procedure

Layers are used in abundance calculations.

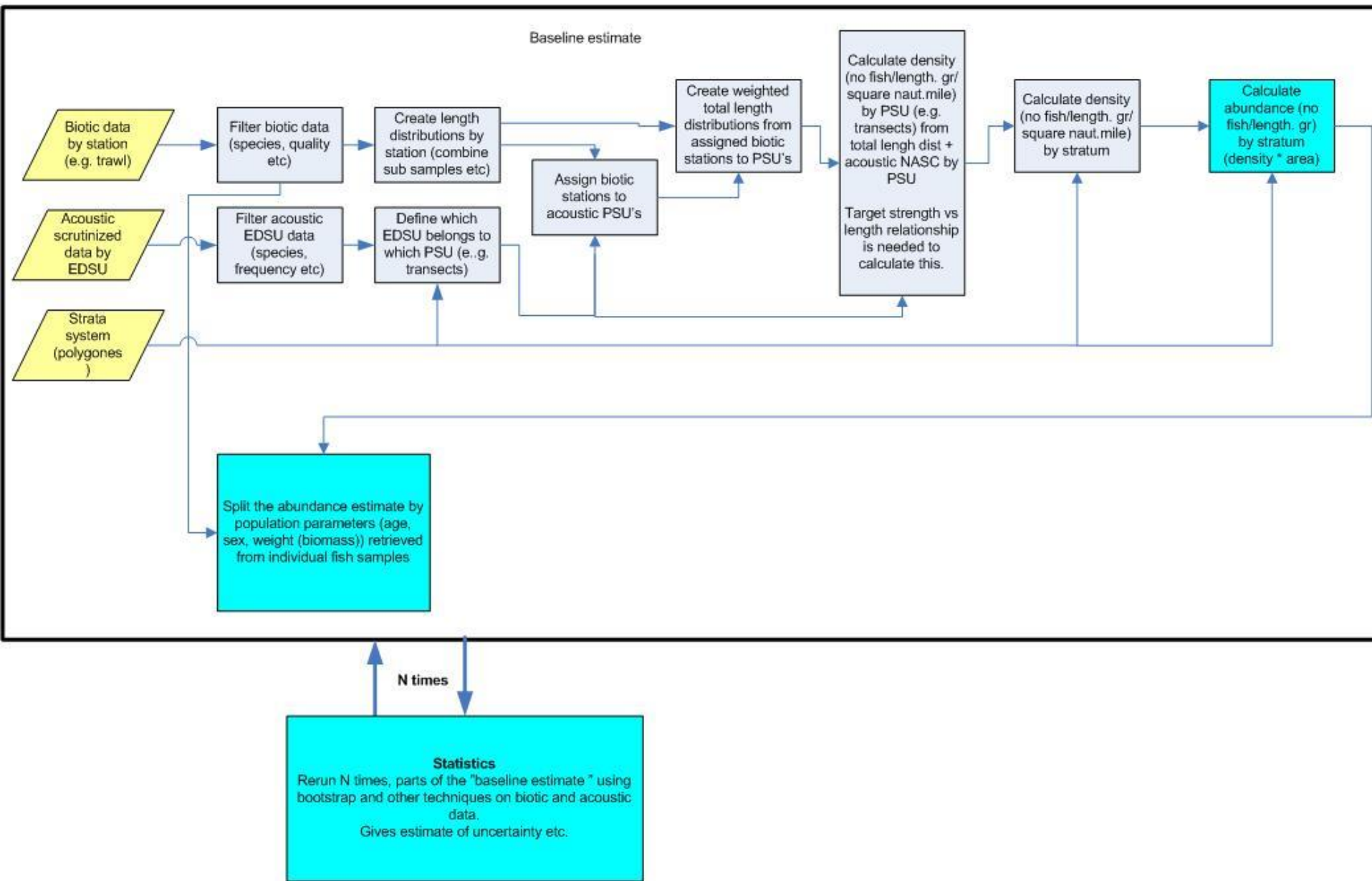
Using weighted average values of species composition and length distribution in abundance calculations.

Nearest haul method is used for combining the S_A values and trawl catches.






Random sampling is used instead of length-stratified random sampling in length and age distribution calculations.

StoX

Simple flow chart of the principals behind acoustic abundance estimation



WKBIFS-ACOU ToRs

-  a) Evaluate the existing national computational tools used for the acoustic abundance estimations of sprat, herring and cod in the Baltic Sea.
-  b) Test run StoX estimation software using existing data reported into ICES new acoustic database before the workshop.
-  c) Establish baseline parameters within StoX for use during future BIAS/BASS surveys.
-  d) Provide feedback to the ICES Data Centre on the new acoustic trawl data format/database.
-  e) Provide feedback to StoX developers to address outstanding issues.

Next steps

A WGBIFS task force group was created during the workshop with Olavi Kaljuste (Sweden) and Juha Lilja (Finland) as contact persons from WGBIFS towards the ICES Data Centre and the StoX team.

- + 1) WGBIFS task force group to produce one working input dataset uploaded to the ICES acoustic data portal and downloadable in StoX format for testing purposes.
- + 2) WGBIFS task force group to provide StoX with list of all log distances, trawl hauls and values for fish target strength-length relationship constants for all species used for the calculation of fish abundances in specific ICES rectangle in order to test StoX split NASC function.
- + 3) WGBIFS task force group should provide StoX developers with short description about the methodology used e.g. average in each rectangle with a minimum of at least two trawl stations or else manual assignment function to increase the flexibility of StoX software.

Next steps

4) Abundance at length calculations for each ICES rectangle in StoX software should be done based on the same trawl hauls as in the split NASC function.

5) Age distributions should be calculated in StoX based on age length keys on the ICES subdivision level.

Action 1-5 to be done before the next WGBIFS meeting on 27–31 March 2017.

6) IMR to document the StoX xml schema on order to make a correct mapping from the ICES acoustic database for both the acoustic and biotic part.

7) IMR to use ICES platform code instead of call sign within the StoX xml files.

Action 6-7 to be done As soon as possible in order to prevent misunderstandings.



Allocation of BITS hauls from TD

Henrik Degel
DTU Aqua

BIFS meeting
27/3 –31/3, 2017
Riga

DTU Aqua
National Institute of Aquatic Resources

$$M2_i = \frac{\sum_j \frac{dR}{dt} N_j \frac{\varphi_{ji}}{\varphi_i}}{N_i \omega_i} \int_a^b \varepsilon \Theta^{\sqrt{17}} + \Omega \int \delta e^{i\pi} = \{2.7182818284\}$$

Additional symbols in the image include: Δ , ∞ , χ^2 , Σ , $!$, $>$, \approx , and \sim .

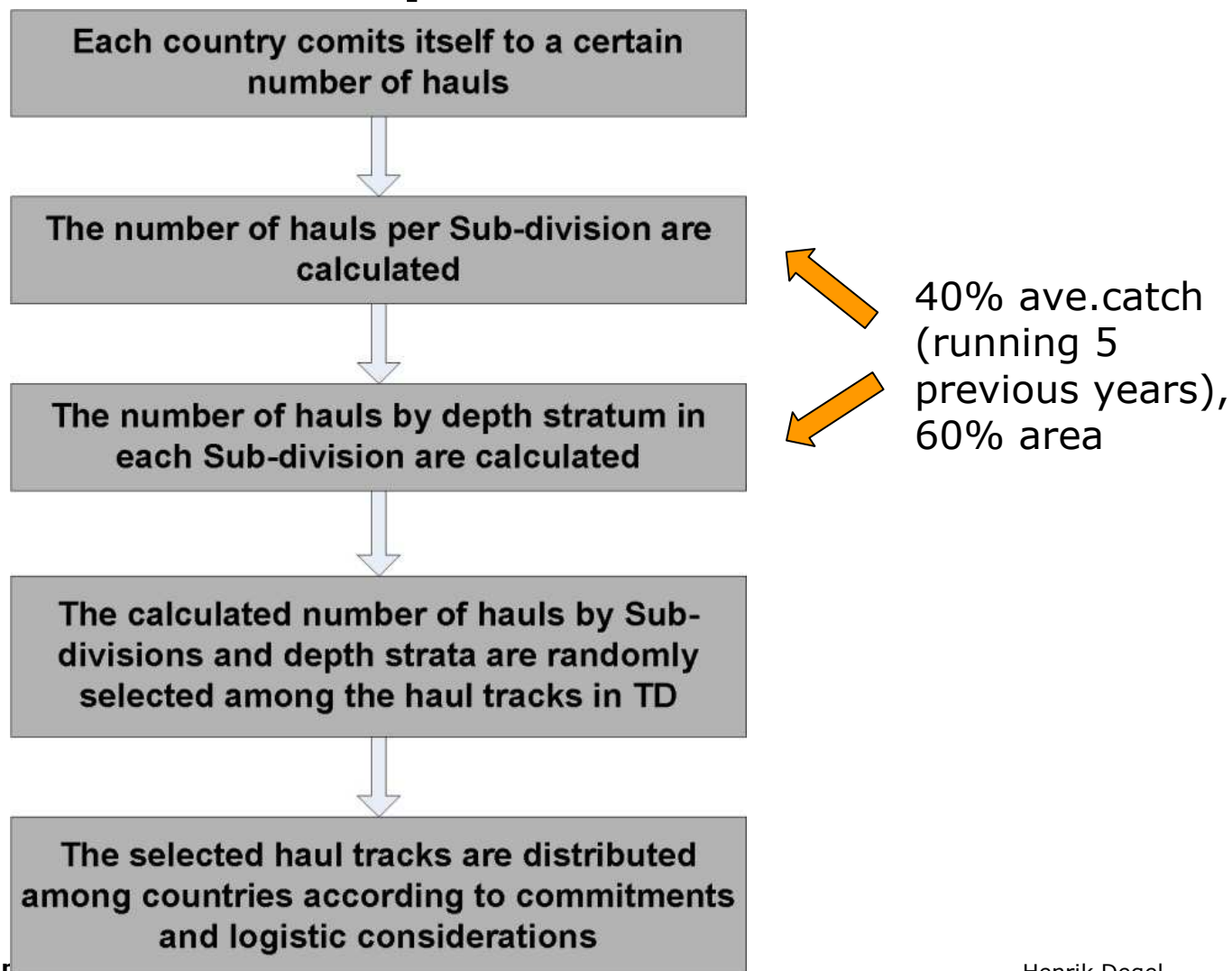


Why re-programming the procedure?

- The old procedure was based on combination of more than one types of software and not very self-explaining.
- It was not sufficient documented
- The procedure could not be externally reviewed



Overview of allocation procedure





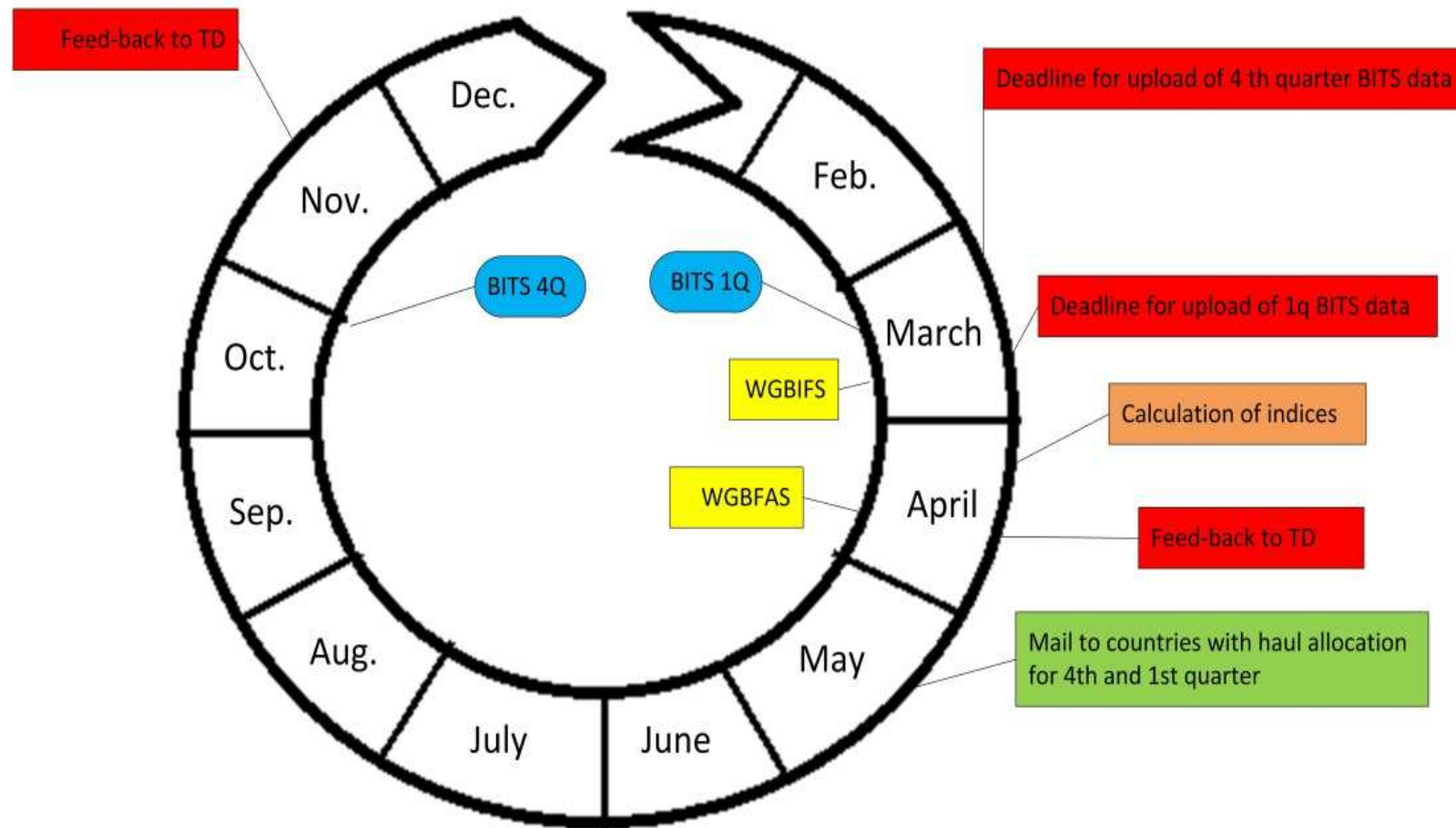
The R program

- Four sections:
 - Calculation of the number of hauls to be allocated to each depth layer in each Sub-division based on the commitment from each country
 - Drawing of the allocated hauls in the Trawl Database
 - Distribution of the drawn hauls between countries and mapping and output files
 - Drawing of extra hauls (to be agreed).

The program is not written in a condensed form and should be readable for persons with only minor experience with R

Many comments in the code and guidance in the log file guide the user through the program and the whole procedure.

Time schedule wheel





Calibration between old and new “Havfisken” and the introduction of calibration factors

Henrik Degel
DTU Aqua

BIFS meeting
27/3 –31/3, 2017
Riga

DTU Aqua
National Institute of Aquatic Resources

$$M2_i = \frac{\sum_j \frac{dR}{dt} N_j \frac{\varphi_{ji}}{\varphi_i}}{N_i \omega_i} \int_a^b \varepsilon \Theta^{\sqrt{17}} + \Omega \int \delta e^{i\pi} = \{2.7182818284\}$$

∞
 χ^2
 Σ
 $!$



Old and new Havfisker



New Havfisker

Traditional stern trawler build in steel

Loa: 17 meter long

BRT: 105 tons



Old Havfisker

Traditional side trawler build in wood

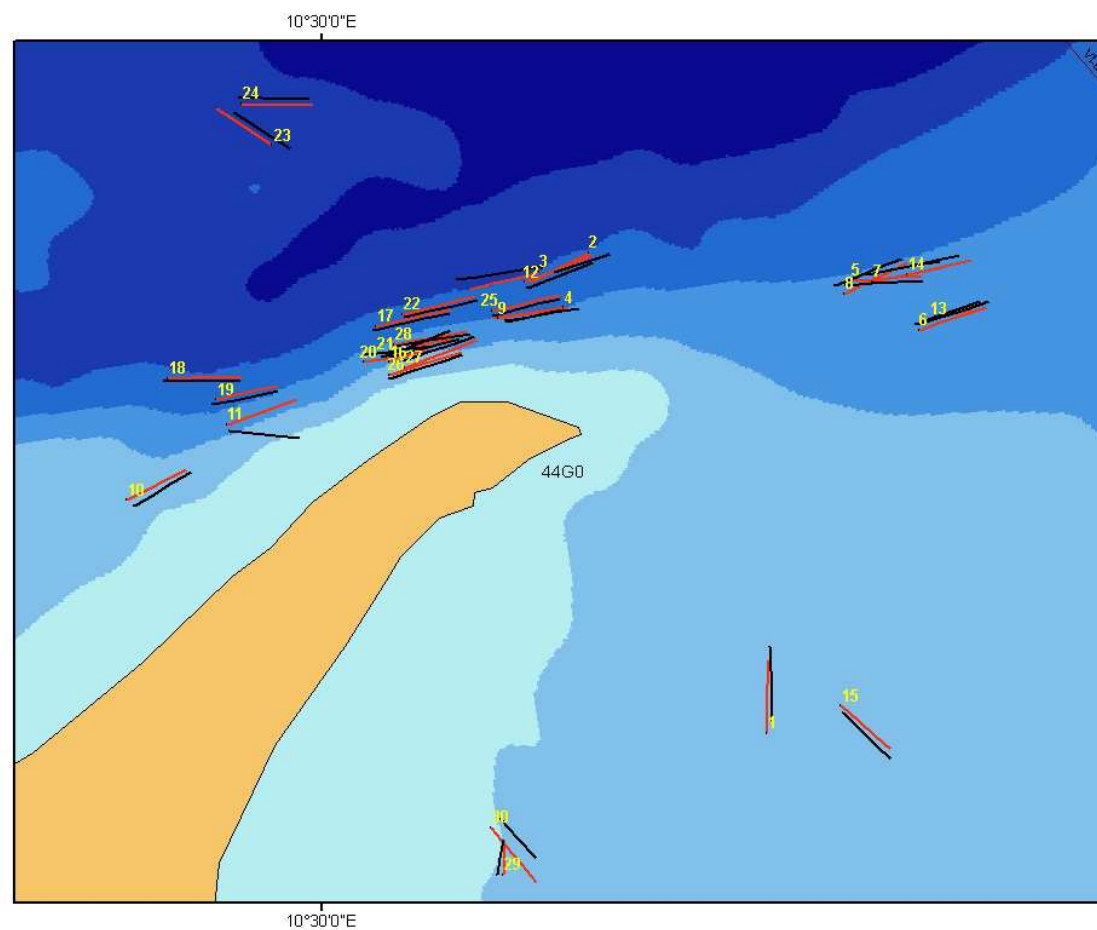
Loa: 13 m long

BRT: 20 tons.



Calibration set-up

- Method: Parallel hauling following normal BITS haul procedure (in daylight, ½ hour)
- Period: 13-19/3 -2016
- Area: Skagerrak and North-western Kattegat
- Criteria
 - Reasonable abundance of cod and flatfish
 - The length range of each species should be as wide as possible
 - The depth range should be comparable to the depth range in Kattegat and Western Baltic.
- Gear: Small TV3 (TV3S, #520)
- 30 successful pair of hauls were made.





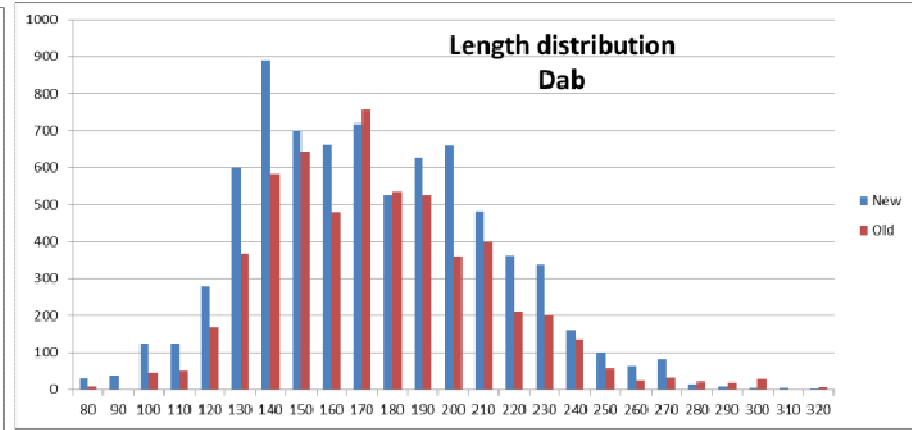
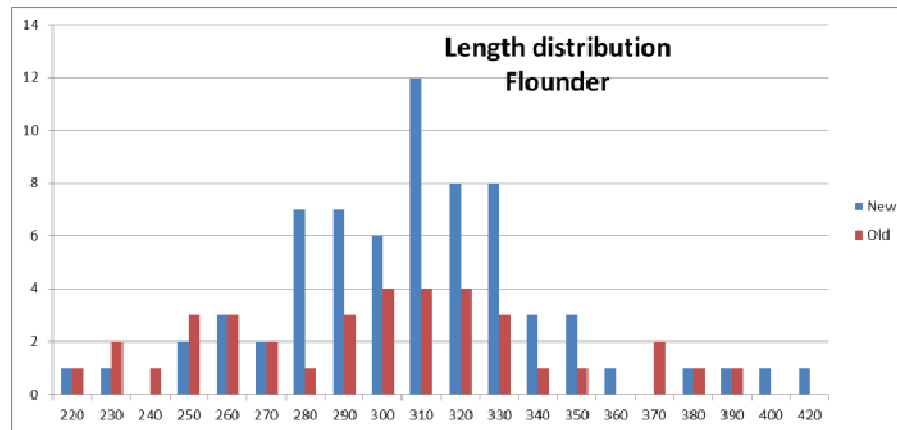
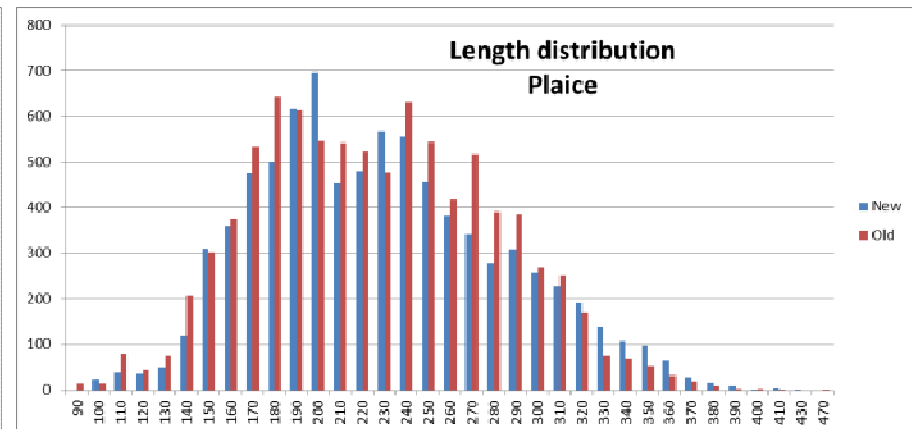
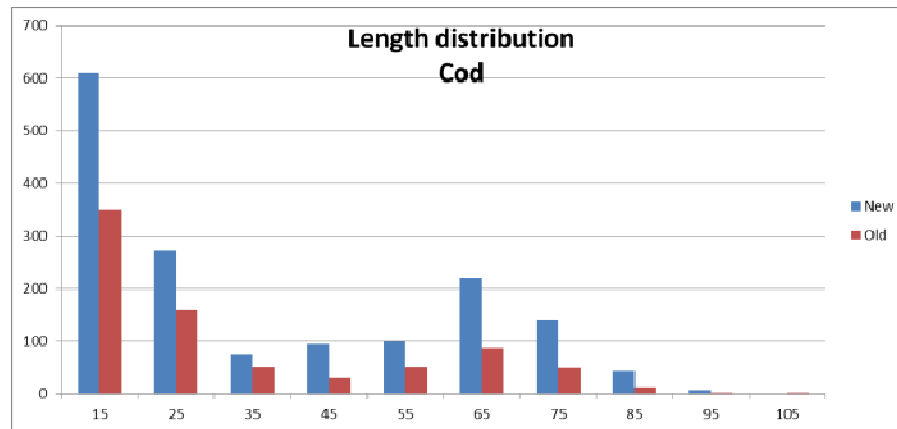
Catches

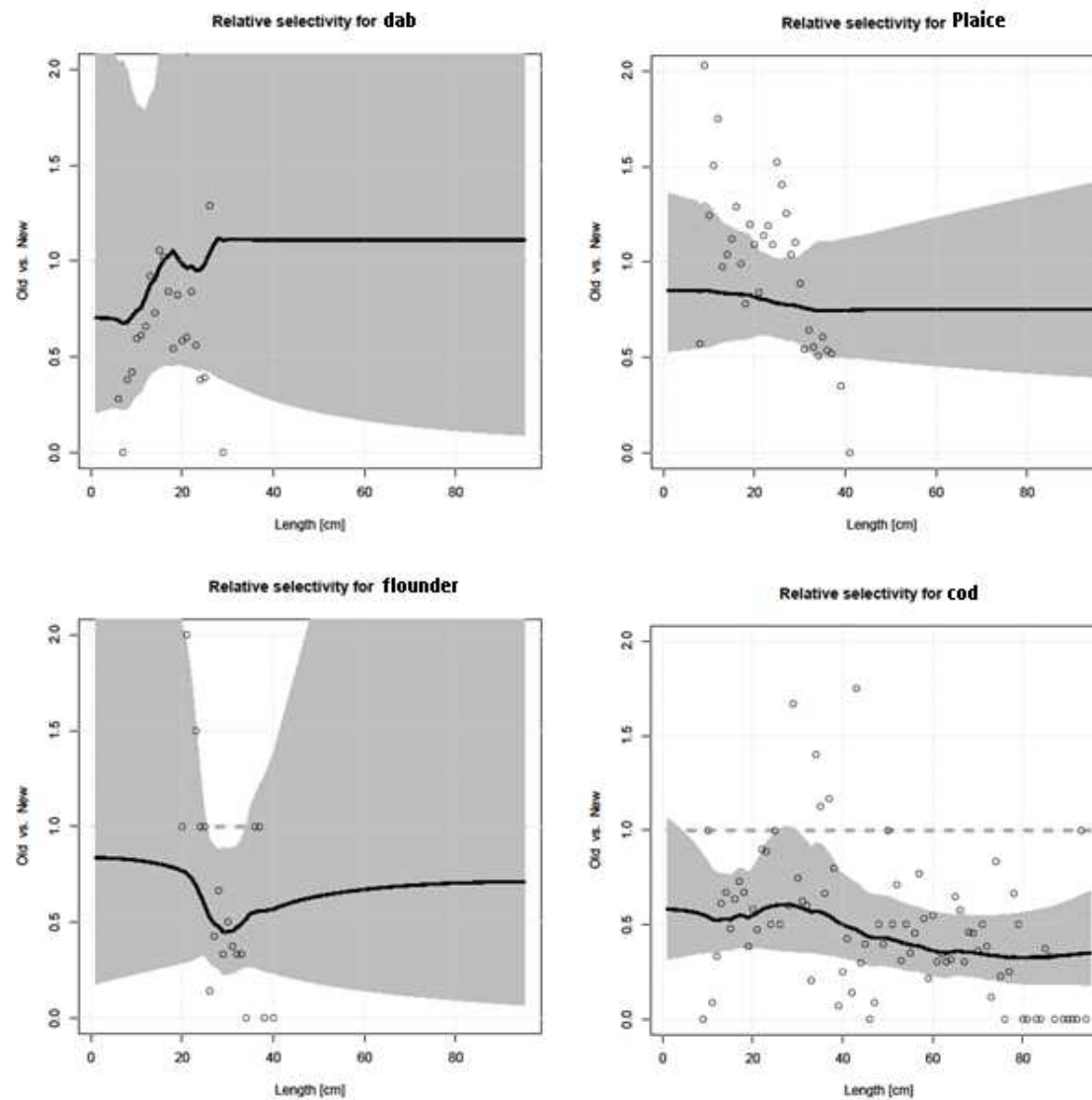
Vessel	Species									
	Long rough dab	Dab	Turbot	Plaice	Lemon sole	Wich flounder	Flounder	Brill	Sole	Cod
New Havfisker	7119	7597	17	8195	2608	7	68	19	11	1561
Old Havfisker	4053	5656	4	8831	1444	9	37	14	32	796
Total	11172	13253	21	17027	4052	16	105	33	43	2357

Catch in numbers of most important species



Length distributions







Preliminary conclusions

- Only conversion factors significant different from 1 were found for only cod and flounders for catches obtains
- Length dependent conversion factors should be applied to these species when data from DATRAS is used for index calculations
- When conversion factors for cod and flounder are applied the existing time series can be regarded as sufficiently undisturbed and can be used as tuning series input for assessment. Other species can be used without any applying of conversion factors.