

ICES WGBIFS REPORT 2006

ICES LIVING RESOURCES COMMITTEE

ICES CM 2006/LRC:07

Ref. ACFM, BCC, RMC

REPORT OF THE BALTIC INTERNATIONAL FISH SURVEY WORKING GROUP (WGBIFS)

3-7 APRIL 2006

ICES HEADQUARTERS, COPENHAGEN



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Conseil International pour l'Exploration de la Mer

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Recommended format for purposes of citation:

ICES. 2006. Report of the Baltic International Fish Survey Working Group (WGBIFS), 3-7 April 2006, ICES Headquarters, Copenhagen. ICES CM 2006/LRC:07. 575 pp.
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Contents

1	Executive summary	1
2	Introduction	2
2.1	Participation.....	2
2.2	Terms of Reference.....	2
2.3	Overview of WGBIFS activities in 2000–2005	3
3	Take immediate action to resolve the known problems in the data processing, archiving and extraction associated with BITS database. This will be carried out in cooperation with ICES secretariat. Action on this ToR should be taken immediately	4
3.1	Activities related to reworking of the DATRAS database	4
3.2	Meeting of Subgroup in Gdynia in January 2006.....	5
3.3	Current status of reworking and further activities.....	6
3.4	Recent status of reworking of the DATRAS database.....	6
3.5	Planned activities to improve the agreement of maturity determination	6
4	Combine and analyse the results of the 2005 acoustic surveys and experiments and report to Baltic Fisheries Assessment Working Group (WGBFAS)	7
4.1	Combined results of the Baltic International Acoustic Surveys (BIAS)	7
4.1.1	Area under investigation and overlapping areas	7
4.1.2	Total results.....	8
4.1.3	Area corrected data	8
4.1.4	Tuning fleets for WGBFAS.....	8
4.1.5	Recommendation to WGBFAS.....	9
4.2	Results of the 2005 acoustic spring surveys.....	9
4.2.1	General	9
4.2.2	Area under investigation and overlapping areas	10
5	Update of the hydro-acoustic database BAD1 and BAD2 for the years 1991 – 2005	24
5.1	Status of the BAD1 database	24
5.2	Status of the BAD2 database	24
5.3	Data policy of FishFrame.....	26
6	Plan and decide on acoustic surveys and experiments to be conducted in 2006 and 2007.....	26
6.1	Planned acoustic survey activities	26

6.2	An extended acoustic survey in the Gulf of Bothnia.....	28
6.3	New design of acoustic surveys (proposed in 2005)	28
7	Examine and report on the results from the bits surveys performed in autumn 2005 and spring 2006.....	31
7.1	Trawl survey in autumn 2005.....	31
7.2	Trawl survey in spring 2006	41
8	Plan and decide on bottom trawls surveys and experiments to be conducted in autumn 2006 and spring 2007	48
9	Update and correct the Tow Database.....	52
9.1	Reworking of the Tow Database	52
9.2	Feedback of the BITS.....	53
10	Produce a workplan for improving the quality assurance for data stored in the BITS/DATRAS database and establish QC protocols for this in collaboration with ICES secretariat.....	56
10.1	Current data flow	56
10.2	Proposed quality check protocols.....	56
11	Review and update the Baltic International Trawl Survey Manual (BITS).....	57
12	Review and update the Baltic International Acoustic Survey Manual (BIAS)	57
12.1	Presentations during the meeting.....	57
12.2	Planned activities	58
13	Report on vertical distribution of fish during the BITS survey in a situation with oxygen deficiency close to the bottom, and make appropriate recommendations.....	60
13.1	Studies related to the vertical distribution of cod	60
13.2	Acoustic measurements during the BITS in November 2006	60
13.3	Image-files of echograms.....	61
14	Recommendations.....	62
14.1	Acoustic surveys.....	63
14.2	Trawl surveys.....	64
14.3	Next meeting in 2007	64
14.4	Terms of Reference.....	64
	Annex 1: List of participants.....	66
	Annex 2: Draft 2007 Resolution (Category 2).....	68
	Annex 3: Plans of surveys international co-ordinated by ICES Baltic International Fish Surveys Working Group	70

Annex 4: Working documents presented during the meeting	80
Annex 5: Cruise Reports of Acoustic Surveys carried out in the Baltic Sea in October 2005	163
Annex 6: Cruise Reports of Acoustic Surveys carried out in the Baltic Sea in May/June 2005	268
Annex 7: Cruise Reports of Bottom Trawl Surveys carried out in the Baltic Sea in November 2005 and spring 2006	331
Addendum 1: Report of the Baltic International Fish Survey Working Group (WGBIFS)	429
Addendum 2: Report of the WGBIFS Workshop on BITS Data Quality Assurance	499

1 Executive summary

The Baltic International Fish Survey Working Group (WGBIFS) meeting in Copenhagen, Denmark, considered research on eleven terms of reference. Two terms were related to the quality of trawl survey data which are stored in the DATRAS database. Preliminary checks had shown that the quality of data was bad due to missing data, preliminary versions of data, unreliable data etc. New tools for screening CA dataset which contain single fish parameter were intercessional developed and discussed. Furthermore, activities were started to improve the quality of data from 1991 to 2005. A Workshop was held in Gdynia, Poland in January 2006 to discuss open problems and to agree upon screening tools. During this meeting, a workplan was discussed on how to guarantee the future high quality of the data.

Results of the acoustic surveys in May and October 2005 and of the trawl surveys in November 2005 and spring 2006 were discussed. It was recommended that the results of the trawl surveys can be used for the stock assessment without any restrictions because the planned and realized hauls corresponded well. Changes of the position were only necessary in a small number of stations due to wrecks, rocky bottom, gill nets etc. The feedback from the trawl surveys was used to improve the Tow database. Additionally stations were presented by some countries to improve the coverage of the Baltic Sea. Furthermore, the next trawl surveys and special investigations during the trawl survey in November 2006 were planned. The aim of the special acoustic measurements during the trawl survey is the quantification of cod in the pelagic water above the used trawl in area where oxygen depletion is observed. Depending on the results it must be decided whether combined trawl and acoustic survey must be realized in the Basins of the Baltic Sea.

The results of the acoustic surveys have shown that, the new design of the surveys where each rectangle is mandatory covered by one country improve the quality of indices. It was recommended that the indices which are based on the acoustic survey in October 2005 can be used for the assessment without any restrictions. On the other hand that Baltic Sea was not totally covered during the acoustic Survey in May 2005 because of technical problems of one vessel. Therefore, the results of this survey can only used with restrictions. Two subgroups were established which will work intersessionally to discuss methodical problems of the acoustic surveys and the restricted quality of the data of the acoustic survey in May. The results will be presented and discussed during next meeting.

The next meeting of the WGBIFS will take place in Rostock, Germany, from 26–30 March 2007.

2 Introduction

2.1 Participation

A complete list of participants can be found in Annex 1 of this report.

2.2 Terms of Reference

According to Council Resolution the Baltic International Fish Survey Working Group [WGBIFS] (Chair: R. Oeberst, Germany) will meet at ICES Headquarters, Copenhagen, from 3–7 April 2006 to undertake the tasks as specified in (C.Res 2005/2LRC05):

- a) take immediate action to resolve the known problems in the data processing, archiving and extraction associated with the BITS database. This will be carried out in cooperation with ICES secretariat. This ToR should be carried out immediately;
- b) combine and analyse the results of the 2005 acoustic surveys and experiments and report to WGBFAS;
- c) update the hydro-acoustic databases BAD1 and BAD2 for the years 1991 to 2005;
- d) plan and decide on acoustic surveys and experiments to be conducted in 2006 and 2007;
- e) examine and report on the results from the BITS surveys performed in autumn 2005 and spring 2006;
- f) plan and decide on demersal trawl surveys and experiments to be conducted in autumn 2006 and spring 2007;
- g) update and correct the Tow database;
- h) produce a workplan for improving the quality assurance for data stored in the BITS/DATRAS database and establish QC protocols for this in collaboration with ICES Secretariat;
- i) review and update the Baltic International Trawl Survey (BITS) manual;
- j) review and update the Baltic International Acoustic Survey (BIAS) manual;
- k) report on the vertical distribution of the cod during the BITS survey in a situation with oxygen deficiency close to the bottom, and make appropriate recommendations.

WGBIFS will report by 30 April 2006 for the attention of the Living Resources, the Baltic, and the Resource Management Committees.

The **work of the Group** is essential to the development of internationally coordinated trawl surveys and research on medium- and long-term changes of population structure of Baltic cod, herring and sprat stocks. These stocks are key elements of the Baltic ecosystems.

The above **Terms of Reference** are set up to provide ACFM with information required to respond to requests for advice/information from the International Baltic Sea Fishery Commission and Science Committees.

The **main objective of WGBIFS** is to coordinate and standardise national research surveys in the Baltic for the benefit of accurate resource assessment of Baltic fish stocks. From 1996 to 2004 attention has been put on evaluations of traditional surveys, introduction of survey manuals and consideration of sampling design and standard gears as well as coordinated data exchange format. In recent years activities have been devoted to coordinate international coordinated demersal trawl surveys using the new standard gear TV3 and to continue the analyses of the conversion factors between the new and old survey trawls.

The most important future activities are to combine and analyze acoustic survey data for the Baltic Fisheries Assessment Working Group, develop a disaggregated hydroacoustic database, plan and decide on acoustic surveys and experiments to be conducted. The quality assurance of ICES will require achievements towards a fully agreed calibration of processes and internationally agreed standards.

The first ToR for this group is based on recently identified problems in the implementation and populating of the DATRAS/BITS database. This requires immediate attention and should be assigned a high priority. [Action Numbers a): 1.2.1, 1.2.2 b): 1.2.2, 1.13.3 c): 1.11 d): 1.2.1, 1.2.2 e): 1.11, f): 1.11, g): 1.11, h): 1.13.4, 1.11 i): 1.13.4 j): 1.13.4

Activity is related to the maintenance and strengthening of partnerships with national science institutes and to the elaboration and development of our knowledge of the stock structure, dynamics, and trophic relationships.

2.3 Overview of WGBIFS activities in 2000–2005

The meeting of WGBIFS in 2000 (ICES CM 2000/H:2) updated protocols on fishing methods, sampling, report formats, etc. for trawl surveys and both manuals (BITS, BIAS) and data exchange formats for the international acoustic survey database (BAD2). WGBIFS also recommended some routines to be used in the future for demersal trawl survey design. The results of inter-calibration experiments between the national gears and the new standard bottom gears TV3#930 and TV3#520 were studied and preliminary conversion factors were estimated during the next meeting of WG BIFS (ICES CM 2001/H:2). Furthermore, the Clear Tow Database (CTD) was presented which is used for planning the trawl surveys. The establishment of the CTD was supported by the EU study project ISDBITS (Anon. 2001a). The coordination of the acoustic surveys and the analyses of their results, as well as the update of the manuals (BIAS, Anon. 2001b, BITS Anon. 2001c) were carried out by the Working Group.

The seventh meeting of WGBIFS (ICES CM 2002/G:05 Ref. H) coordinated the planned international surveys. Furthermore, analyses were presented and discussed which estimate the conversion factors between the national gears and the new standard gears based on new inter-calibration experiments. It was agreed that new inter-calibration experiments are necessary. The results of the acoustic and trawl surveys carried out in autumn 2002 and spring 2003 were studied and the subsequent surveys to be conducted in autumn 2003 and spring 2004 were planned. Based on the analyses it was recommended that the estimated indices can be used by WG BFAS without any restrictions (ICES CM 2003/G:05 Ref. D, H). Proposed algorithm for selecting hauls from the Clear Tow Database which takes into account the spatial heterogeneity of available stations was discussed. Based on the feedback from the trawl surveys concerning the selected stations was used for updating the Clear Tow Database. The methods for estimating the conversion factors were discussed and new versions of conversion factors were estimated based on the total number of realized inter-calibration experiments.

The main areas of discussion during the meeting in 2004 (ICES CM 2004/G:08 Ref. D, H) were besides the planning of the next surveys the improvement of the analyses of the available survey data. Based on the current hydrographical situation in the Baltic Sea which is characterized by large areas with oxygen deficiency close to the bottom available data of acoustic surveys were used to carry out first studies concerning the vertical distribution of cod in the pelagic waters during the trawl surveys. The group agreed and planned special experiments in November 2004.

Following intersessional main activities were initiated during the Meeting in 2005 (ICES CM 2005/G:08 Ref. D, H) besides the analysing of the data and the planning of new surveys. Preliminary studies of the data which are stored in the DATRAS database have shown that reworking of the database is necessary. Therefore, subgroup meeting were planned and

realized to define additional criteria for checking the data. The reworking of the data of the period from 1991 to 2005 need a lot of time and is not finalized until now. Furthermore, experiments were planned to estimate the distribution of cod above the used standard gears during the BITS, and studies related to the uncertainties of the survey results were initiated.

3 Take immediate action to resolve the known problems in the data processing, archiving and extraction associated with BITS database. This will be carried out in cooperation with ICES secretariat. Action on this ToR should be taken immediately

3.1 Activities related to reworking of the DATRAS database

Preliminary checks have shown that validity codes of the trawl stations were partly used in the wrong way. A validity code classifies the haul data and information (HH) stored in the databases in order to distinguish trawl hauls suitable for estimation of stock abundance from invalid hauls or hauls with alternative purposes. The validity code thus allows storing information about hauls that can not be used for the stock assessment, but are needed for e.g. analyses of inter-calibration hauls. On the other hand the checks of data on individual fish stored as CA (age, length, sex, maturity, weight) records have shown that improvement of the DATRAS database is necessary.

About 65% of all cod, caught by one country during a spring survey showed age zero. Such values are obviously wrong, as the surveys are conducted in February-March and spawning of cod in the Baltic Sea start at earliest in February in the more western located area and later in the Eastern Baltic. The error is likely due to that age of the fish is not determined. Outliers appear e.g. in the relation between length and weight of the cod stored in the CA records. Further checks also have shown that some data routinely sampled during surveys, are not included in the database, e.g. weight were missing in CA data form one country. Such kinds of errors are not detected by the screening procedures which are implemented in the DATRAS system

These preliminary results were discussed during the meeting of WG BIFS in April 2005 and leaded to the conclusion that reworking of the data by all countries are necessary and that additional tools for screening the CA data must be developed and established. Furthermore, workshop was proposed to check the data, to discuss different possible screening tools and to estimate stock parameters based on the reworked database. This workshop was planed for January 2006.

Intensive checks of the data which are stored in the DATRAS database were realized in summer 2005 to detect all kind of errors and unreliable datasets. Overview tables were produced to inform the different countries concerning missing data. These data could be used by the countries to compare the data which are available in the institutes and which are available in the database. Furthermore, preliminary tools for screening the CA data were developed and were made available for all countries. These tools were used to start the checking of the data from 1991 to 2005 by all countries. During the ASC in Aberdeen in September 2005 the detected problems were discussed in the committees BCC and LRC as well as with members of the ICES data centre to get as much as possible support. Furthermore, closed contact with the ICES data centre has been held since the beginning of the data checking.

Different proposal for improving the possibilities of data checking were presented. It was suggested that as many as possible additional screening tools should be incorporated in the DATRAS system.

The proposed Workshop was held in Gdynia, Poland, in January 2006. This workshop was used to discuss and to agree tools for screening CA data, to clarify the different problems of the countries and to organize next working steps.

3.2 Meeting of Subgroup in Gdynia in January 2006

The Workshop which was related to BITS/DATRAS data quality assurance was opened by Co-Chairs: Jonna Tomkiewicz (Denmark) and Rainer Oeberst (Germany), and Włodzimierz Grygiel (Poland) who kindly hosted the meeting at the Sea Fisheries Institute in Gdynia. The workshop was attended by 16 scientists and research assistants representing all countries presently conducting the Baltic International Trawl Surveys (BITS), i.e. Denmark, Estonia, Germany, Latvia, Lithuania, Poland, Russia and Sweden as well as ICES (Appendix 1). The participants partly were members of the ICES Working Group Baltic International Fish Surveys (WGBIFS) and partly colleagues from national fisheries institutes collecting or working with BIFS data.

The BIFS workshop was established and conducted with the purpose to evaluate and improve the quality of the BIFS survey data stored in the DATRAS database. The suggested workshop was approved by ICES with the following term of reference:

- ascertain the BIFS data quality in DATRAS by species, area and record type,
- improve the database coverage in time and space and,
- perform initial analysis of cod maturity ogives and weight at age (WEST) for use in the assessment WGs.

In addition, the potential for utilisation of BIFS data to establish maturity ogives and weight at age for other species (flatfishes and clupeids) might be evaluated.

At the WGBIFS meeting in 2005, a revision of the national data and resubmission to the database was decided, and the workshop was planned to follow up the progress. In order to further improve the data quality, additional screening procedures and tools have been developed and used to check data before uploading the data to DATRAS. This includes identification of outliers in the length-weight relationship of cod and size limits for maturation. At the workshop each country presented their progress regarding the revision of national data. Highest priorities had the haul information (HH) and biological parameters on cod (CA) for BITS surveys in Subdivisions 22-29 for the period 1991-2005. All countries had made substantial efforts to revise data. In some cases, the work is still ongoing although the extraction and resubmission of the cod biological data on individual level to obtain the single fish weight can be time consuming. The revision of data from the above mentioned surveys and period is expected finalized in August-September 2006. A revision of other species in the database is intended.

An overview over existing data in DATRAS was elaborated during the meeting. Different tables were produced so that scientists working in different national laboratories can avail themselves with the information and check whether e.g. all hauls or biological parameters are included in the database. In most cases the revised data have not been resubmitted and the DATRAS overview largely represents the starting point of the revision. All countries were found to use the species recording code correctly. However, not all species are reported as recommended in the BITS manual, some surveys were not included and specific hauls were lacking for some surveys. In some cases only preliminary version of data were sent to ICES during several years. An overview over available maturity and age records was made, where as the weight were deleted from the database and awaits resubmission at individual level. Consequently a large number of records in the CA database will be replaced.

Finally, an overview over existing national survey and commercial data on flounder was explored. The information shows that substantial data exist on flounder in different areas of

the Baltic. At present, only flounder in Subdivision 24-25 is assessed, but the potential likely exist to provide survey based biological information for additional areas, if assessment should be extended. Available information for other flatfish species was too limited in DATRAS at present to provide material for an analysis.

Furthermore, tables were prepared which summarized the usability of stock indices which can be estimated based on the acoustic and trawl surveys. The tables clearly show that not all data which were sampled during the surveys can be used for estimating unbiased year class indices, the maturity ogive and the weight at age. These restrictions on the use of survey data must be taken into account.

3.3 Current status of reworking and further activities

Since last summer the reworking of the DATRAS database has been continued. The progress of this process is different by countries due to different reasons. Data are stored in national database in some countries. In other cases the data were stored with changed data structures which need more time to transfer the data in standard formats or the data are only available in the protocols. On the other hand preliminary data were sent to the ICES data centre as it was possible. However, the countries did not update the data with final versions as it was required and described in the BITS/DATRAS manual.

The recent status of reworking the database is presented in the following table to support the assessment working group with information which allow an assessment of the quality of the stored data.

3.4 Recent status of reworking of the DATRAS database

The table below present an overview of species and periods which are reworked until now.

COUNTRY	PERIOD OF ALREADY REWORKED DATRAS DATABASE	
Denmark		
Estonia		
Germany	1991–2005	(all species)
Lithuania	2004–2005	(all species)
Latvia	1991; 1993–2005	(cod)
Poland	2000–2006	(cod)
Russia	2004–2005	(all species)
Sweden	1991–2005	(cod)

It was agreed by the Working Group that reworking of cod data for the period from 1991 to 2005 will be finished by September 2006. Furthermore, it was proposed that the reworking of the flatfish data will be finished by June 2007.

3.5 Planned activities to improve the agreement of maturity determination

Maturity determination of cod and other species is made according to national scales and afterwards these data are converted into the BITS maturity scale in different ways. In order to improve the maturity staging of the 4 BIFS target species a sampling program and two related workshops are suggested. Sampling of cod, sprat, herring and flounder should be performed during autumn and spring BITS survey and herring and sprat in addition during the acoustic surveys in May-June. The gonads should be photographed with a size indication and the gonads should be preserved in histo-buffered formalin or Bouin's fluid for histological examination in the different laboratory. Institutes that do not perform histological studies will send their samples to Denmark, Russia and Sweden for analyses. A workshop in August/September 2007 would be held to compare staging, pictures and histological results.

The tissue analysis will serve as evidence of correct staging as this method is very precise. This way a comparison between the stage determinations on national scales can be realized and transformation into the BITS scales can be made more consistent. The BITS scales may also be revised by the workshop. A second workshop is suggested in spring 2008, in order to stage fish in practice. The workshop should be held at an institute with access to fresh catches of the species e.g. from a chartered fishing vessel. Accuracy in staging and the possible support of light microscopy would be applied.

In order to improve the agreement of maturity staging of the 4 BIFS target species a sampling program and two related workshops were suggested. Sampling of cod, sprat, herring and flounder could be performed during autumn and spring BITS survey and herring and sprat in addition during the acoustic surveys in May-June. The gonads should be photographed with a size indication and the gonads preserved in histo-buffered formalin or Bouin's fluid for histological examination in the laboratory. Institutes that do not perform histological studies will send their samples to Denmark, Russia and Sweden for analysis. A workshop in August/September 2007 would be held to compare staging, pictures and histological results. The tissue analysis will serve as evidence of correct staging as this method is very precise. This way a comparison between the stage determinations made on national scales can be converted into the BITS scales in a consistent way. The BITS scales may also be revised by the workshop. A second workshop is suggested in spring 2008, in order to stage fish in practice. The workshop should be held at an institute with access to fresh catches of the species e.g. from a chartered fishing vessel. Accuracy in staging and the possible support of light microscopy would be applied.

4 Combine and analyse the results of the 2005 acoustic surveys and experiments and report to Baltic Fisheries Assessment Working Group (WGBFAS)

4.1 Combined results of the Baltic International Acoustic Surveys (BIAS)

In 2005 the following acoustic surveys were conducted between September and November:

VESSEL	COUNTRY	AREA
ARGOS	Sweden	27 and parts of 25, 28, 29
ATLANTNIRO	Russia	26, 28
BALTICA	Poland	25,2 6 (part 24)
BALTICA	Latvia/Poland	26 (part), 28
SOLEA	Germany, Denmark	21, 22, 23, 24
EMMA	Estonia	28, 29, 32 (part)

Stock indices of herring and sprat by age groups of the different cruises are stored in the database BAD1. The cruise reports are presented in Annex 5 using the suggested standard format (ICES CM 2002/G:05 Ref. H, Annex 5)

4.1.1 Area under investigation and overlapping areas

Each statistical rectangle of the area under investigation was allocated to one country during the planning of the acoustic surveys in October 2005 which was mandatory responsible for the rectangle. This means that area was investigated by about 60 miles and at least two control hauls. However, it is allowed for all nations to cover also other areas. Twelve rectangles were investigated by more than one vessel (Figure 4.1) during the international acoustic survey in October 2005. The figure illustrates that the planned coverage of the Baltic Sea during the acoustic survey in October was realized.

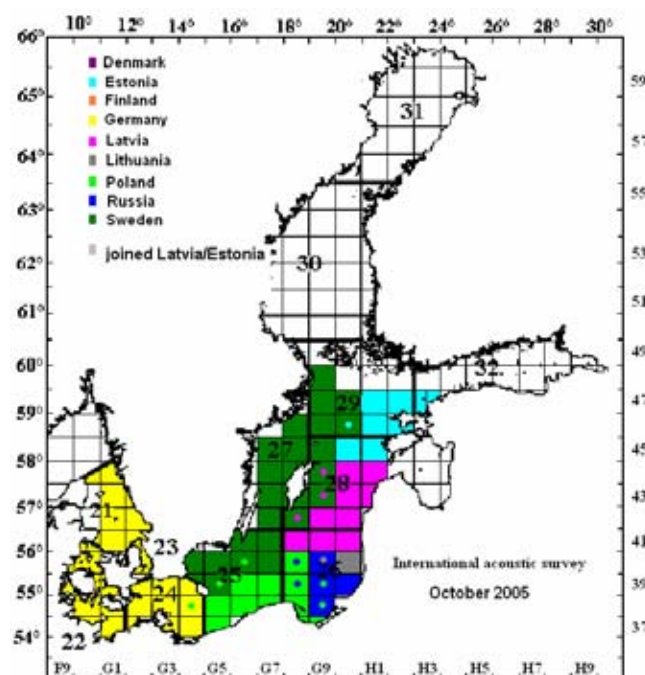


Figure 4.1: Map of surveys conducted in October 2005. Colours indicate the countries, which covered specific ICES-rectangles and delivered data to BAD1-database. The base colour indicates the country, which was responsible for this rectangle. Coloured dots within a rectangle explain additional data in BAD1 from other countries, whereby sometimes not the whole ICES rectangle was covered.

4.1.2 Total results

The stock indices which are based on the international acoustic survey in October 2005 are summarized in Tables 4.1.1 to 4.1.2. The overlapping areas were treated as described in Section 4.1.1. Tables 4.1.3 and 4.1.4 present the abundance estimates for herring and sprat per subdivision and age group. The corresponding biomass estimates of herring and sprat are given in the Tables 4.1.5 and 4.1.6, respectively.

4.1.3 Area corrected data

During the last WGBIFS meeting possible improvement of the results from acoustic surveys was discussed, and correction factor for each subdivision and year was introduced because of the coverage of the investigated area differed in the years. This factor is the proportion between the total area of the subdivision (see BIAS manual) and the area of rectangles which was covered during the survey. In the following time some disagreements appeared about the appropriate value of the correction factors. The main disagreement was the total area of SD28. Now it was agreed that the Bay of Riga must be excluded from the total area of SD 28. All other correction factors were not changed. The calculated factors for 2005 are given in Table 4.1.7 by subdivision. The area corrected abundance estimates for herring and sprat per subdivision are summarised in Tables 4.1.8 and 4.1.9, respectively.

4.1.4 Tuning fleets for WGBFAS

4.1.4.1 Sprat in subdivisions 22-32

The following tuning fleets are used in the sprat assessment:

- 1) acoustic in subdivisions 22–29

2) acoustic in subdivisions 26 and 28

The results of both tuning fleets in 2005 are shown in Table 4.1.10 and 4.1.11 (including the results for the period 1991–2004). In this tables the above explained correction factor is included (see 4.1.3).

4.1.4.2 Herring in Subdivisions 25-29+32 (excluding Gulf of Riga)

Only one tuning fleet is applied from the October acoustic survey for the herring assessment of the Stock in Central Baltic. The area corrected combined results of Subdivisions 25–29 are presented in Table 4.1.12

4.1.5 Recommendation to WGBFAS

WGBIFS recommends that the area corrected data from 2005 can be used in the assessment of the herring and sprat stocks in the Baltic Sea without any restrictions.

4.2 Results of the 2005 acoustic spring surveys

4.2.1 General

Since 2001 international Survey has been carried out in May/June for estimating abundance indices of sprat. In 2005 the following acoustic surveys were conducted during May - June:

VESSEL	COUNTRY	AREA
Walther Herwig III	Germany	24, 25, and part of 26
AtlantNIRO	Russia	26
Baltica	Latvia-Poland	28 and part of 26
Darius	Lithuania	part 26

The results from the different cruises are stored in the database BASS (Baltic acoustic spring survey). Detailed information is presented in the cruise reports (Annex 6) using the standard format (ICES CM 2002/G:5, Ref. H. Annex 5)

The area which was covered during the acoustic spring survey in May-June 2005 is presented in Figure 4.2. In general, the planned coverage was almost realized. Nevertheless, due to technical problems with the hydroacoustic equipment (see Annex 6, cruise-report “Walther Herwig”), SD27 and two rectangles in SD25 were not covered by Germany in May 2005.

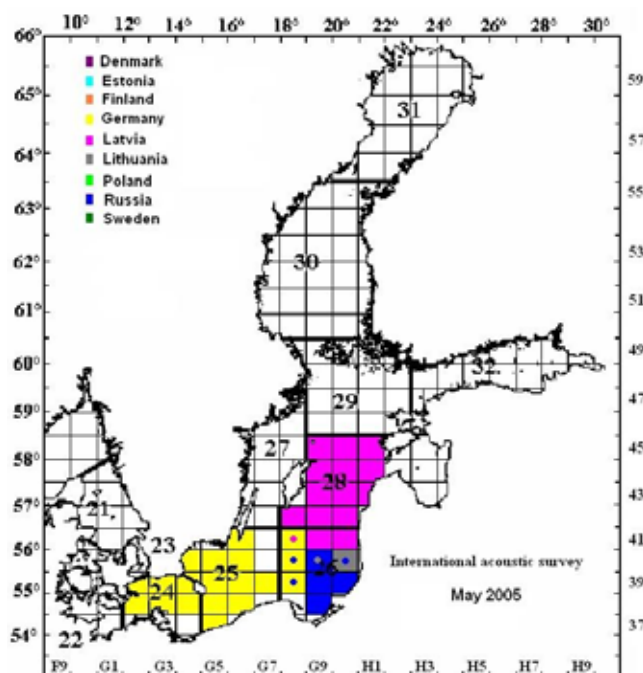


Figure 4.2: Map of surveys conducted in May/June 2005. Colours indicate the countries, which covered specific ICES-rectangles and delivered data to BAD1-database. The base colour indicates the country, which was responsible for this rectangle. Coloured dots within a rectangle explain additional data in BAD1 from other countries, whereby sometimes not the whole ICES rectangle was covered.

4.2.2 Area under investigation and overlapping areas

During the international acoustic spring survey 2005 five rectangles were investigated by more than one vessel. However, the results of the overlapping areas were not compared, because it was decided it was agreed which country was responsible for which rectangle. The results of the overlapped areas were used for studies which are related to different aspects of uncertainty of estimates (see ToR k).

Because of technical problems onboard RV “Walther Herwig III”, the survey time was reduced and therefore the planned coverage of 3 rectangles in SD 27 and 2 rectangles in SD 25 was not possible. The following table summarizes the activities in the rectangles which were covered by more than one vessel.

ICES SD	ICES RECT.	VESSEL A	NUMBER OF HAULS	VESSEL B	NUMBER OF HAULS
26	39G8	ATL05	2	WAH05	2
26	40G8	ATL05	2	WAH05	2
26	40G9	ATL05	4	DAR05	3
26	40H0	ATL05	4	DAR05	3
26	41G8	BAL05	3	WAH05	1

4.2.2.1 Combined results of the acoustic survey in the Baltic Sea in spring 2005

The results of spring surveys are present in Tables 4.2.1 – 4.2.4. Abundance estimates of sprat in millions and estimates of biomass in tonnes are given in Table 4.2.1 and 4.2.2 by rectangle. The same estimates by subdivision are given in Table 4.2.3 and 4.2.4.

4.2.2.2 Quality of estimates based on the acoustic spring survey for the stock assessment.

The group discussed the usefulness of the acoustic survey in spring to provide the assessment working group with unbiased stock indices of sprat and concluded that reliable indices can be assessed when the total distribution area of sprat is covered because

- Sprat is distributed in schools and scattered layers and mostly outside of the national territorial waters located while herring is distributed in the coastal and shallow waters at the spawning ground. These different distribution patterns of clupeids in the Baltic in spring give a good possibility to get additional unbiased fisheries independent stock estimates.
- Due to possible high rate of natural mortality the offspring from the late sprat spawning in some years with the severe winters (e.g. ice coverage) the perception of the abundance for some year classes recruited to the stock can be changed after the May survey.
- Comparisons the results of the acoustic surveys in May and October give the possibility to investigate the development of year classes.
- The whether conditions in May are more suitable for acoustic survey than in October.

Taking into account the gaps in the spatial coverage of the that distribution area of sprat during the May surveys conducted in 2001-2005 and having in mind to explore the possibilities for use the results of May acoustic survey as additional tuning fleet of sprat stock assessment the group agreed to fulfil the following analyses:

- To investigate possible correlations between the stock indices of different statistical rectangles, Subdivisions and whole survey areas to explore the possibilities whether estimates of smaller areas (rectangles, combination of rectangles, etc.) can be used to estimate the indices of the uncovered or total area with sufficient accuracy (E. Goetze, F. Svetsov, V. Feldman)
- To trace the cohorts from the numbers at age distributions by years in comparison with October survey results (V. Feldman, F. Svetsov).
- Quantification of meso-scale (between statistical rectangles and depth strata) and inter-annual large-scale (between subdivisions and basins) changes in distribution pattern of Baltic sprat in relation to stock size, structure and depth-specific hydrography (V. Feldman, F. Svetsov)

The results of these analyses should be presented during the next WGBIFS meeting.

The group also considered the necessity of the continuation the spring survey to cover at least the life span of Baltic sprat year class (7– years).

Table 4.1.1: Estimated numbers (millions) of herring October 2005 by rectangle.

SD	RECT	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE8+
21	41G0	10.5	5.4	2.5	2.1	0.4	0.1				
21	41G1	201.1	102.6	48.6	40.3	8.2	1.4				
21	41G2	8.3	6.8	1.4	0.1	0.0					
21	42G1	34.6	21.8	11.0	1.5	0.3					
21	42G2	20.3	9.3	4.9	5.1	1.0					
21	43G1	339.9	312.8	26.4	0.5	0.2					
21	43G2	23.3	10.7	5.6	5.8	1.2					
21	44G0	15.2	13.8	1.4							
21	44G1	212.6	204.3	7.9	0.3	0.1					
21 Total		865.7	687.3	109.8	55.7	11.4	1.5	0.0	0.0	0.0	0.0
22	37G0	131.7	121.7	7.7	1.8	0.2	0.2	0.1			
22	37G1	362.6	269.6	73.0	14.0	3.9	0.8	1.3			
22	38G0	163.3	150.5	11.3	1.4	0.1	0.1	0.0			
22	38G1	87.0	86.4	0.3	0.3		0.1				
22	39F9	1.8	1.7	0.1							
22	39G0	7.1	7.1								
22	39G1	1.3	1.3								
22	40F9	0.0									
22	40G0	2.3	0.8	0.7	0.6		0.1				
22	40G1	3.4	1.1		1.9		0.4				
22	41G0	5.1	3.1	1.3	0.1	0.3	0.3				
22 Total		765.6	643.2	94.3	20.1	4.6	2.1	1.4	0.0	0.0	0.0
23	40G2	616.0	1.4	59.2	207.9	133.8	84.4	52.0	47.2	18.8	11.4
23	41G2	289.5	253.6	15.4	12.8	3.9	1.8	1.1	0.5	0.2	0.0
23 Total		905.4	255.0	74.6	220.7	137.8	86.1	53.2	47.8	18.9	11.4
24	37G2	102.9	89.7	9.1	1.4	2.0	0.7	0.1	0.1		
24	37G3	225.5	222.9	1.2	0.8	0.5	0.1	0.1	0.0		
24	37G4	226.1	202.7	14.0	4.3	3.7	0.7	0.5	0.2		
24	38G2	581.4	287.7	178.2	52.9	37.6	16.9	5.4	2.5		0.1
24	38G3	1451.5	1098.0	122.5	104.0	71.6	27.0	15.1	11.3	1.2	0.8
24	38G4	153.5	136.1	10.1	3.2	2.8	0.6	0.4	0.2	0.2	
24	38G4	702.0	46.3	60.8	54.2	204.3	135.6	142.5	47.4	5.2	5.8
24	39G2	163.2	100.7	31.8	15.3	9.3	3.4	1.7	0.8		0.1
24	39G3	595.9	200.6	127.5	120.7	77.3	32.4	17.1	14.4	3.2	2.8
24	39G4	212.1	84.3	23.3	34.3	35.4	15.2	8.0	9.5	1.3	0.9
24 Total		4414.1	2469.1	578.4	391.2	444.3	232.5	190.8	86.3	11.0	10.5
25	37G5	418.0	39.7	36.5	38.1	142.4	71.7	58.0	24.5	4.6	2.6
25	38G5	587.0	29.3	49.7	53.8	193.7	110.1	83.5	43.7	12.0	11.3
25	38G6	812.0	71.0	76.8	74.4	261.0	141.5	108.9	57.2	12.8	8.4
25	38G7	444.0	183.1	26.1	29.3	83.6	45.3	38.0	26.3	7.5	4.9
25	39G4	36.7	8.1	7.8	7.1	8.6	3.1	1.2	0.6	0.0	0.2
25	39G5	153.9	3.6	21.7	28.3	51.3	26.0	14.1	8.2	0.0	0.7
25	39G5	248.0	16.6	18.3	24.3	71.6	41.6	36.5	25.9	7.3	5.9
25	39G6	431.0	38.3	35.8	40.6	125.9	72.3	57.2	40.2	12.7	7.9
25	39G7	756.0	145.9	71.5	64.2	207.1	106.2	83.8	49.5	14.0	13.7
25	40G4	221.6	81.4	39.1	32.8	45.0	11.2	8.3	2.0	1.6	0.2

SD	RECT	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE8+
25	40G5	121.7	41.4	16.1	16.2	20.7	11.7	7.3	5.6	1.2	1.5
25	40G6	175.3	8.9	25.0	30.8	81.0	8.7	16.5	1.4	3.0	0.0
25	40G7	321.0	0.5	4.5	15.9	53.3	56.8	77.3	40.5	27.7	44.4
25	40G7	217.0	2.6	12.1	26.4	59.9	34.6	32.8	31.4	11.1	6.2
25	41G6	939.2	17.9	49.9	159.4	375.4	91.2	142.7	68.9	26.0	7.7
25	41G7	199.4	2.4	3.3	32.3	72.0	23.3	34.8	21.2	6.5	3.7
25 Total		6081.7	690.8	494.2	674.0	1852.4	855.1	800.9	446.9	148.0	119.4
26	37G8	123.0	78.4	15.4	4.8	10.8	4.8	4.2	1.9	1.1	1.6
26	37G9	233.0	127.4	21.4	10.6	26.0	15.8	14.8	7.0	3.8	6.3
26	38G8	785.0	226.8	134.4	55.3	125.2	70.0	69.0	43.2	22.7	38.5
26	38G9	1100.0	210.1	70.2	77.2	163.6	137.9	155.1	120.7	60.5	104.8
26	38G9	637.2	11.3	54.2	55.4	103.0	117.0	117.7	76.8	60.3	41.4
26	39G8	756.0	0.0	42.7	67.0	145.2	127.9	142.2	100.5	48.5	82.2
26	39G8	303.0	14.0	38.6	37.6	68.6	51.0	43.3	23.0	12.2	14.8
26	39G9	580.0	0.0	31.2	50.6	109.3	96.3	109.4	78.1	39.8	65.4
26	39G9	336.5	1.8	13.0	27.8	50.7	60.3	60.8	43.5	36.8	41.7
26	39H0	690.9	90.7	34.1	36.8	50.6	65.5	155.6	84.6	62.3	110.8
26	40G8	463.0	1.0	68.9	42.3	125.7	80.5	79.2	28.9	15.8	20.8
26	40G8	213.6	3.8	10.8	12.6	52.5	38.9	43.7	20.7	10.2	20.4
26	40G9	264.8	0.0	2.2	21.9	29.5	41.4	76.3	40.3	16.4	36.7
26	40G9	430.5	6.3	32.0	22.1	84.9	72.1	92.3	75.1	24.8	20.9
26	40H0	92.3	18.0	3.9	2.9	5.9	6.3	16.6	9.7	10.9	18.1
26	41G8	300.4	0.0	5.9	23.8	62.6	40.7	79.6	49.8	16.8	21.2
26	41G9	125.5	0.8	2.7	17.0	28.7	16.2	28.8	15.9	4.6	10.8
26	41H0	543.1	5.5	5.4	71.1	125.9	71.4	119.8	56.6	5.0	82.4
26 Total		7977.8	796.0	586.9	636.5	1368.7	1113.9	1408.6	876.3	452.3	738.7
27	42G7	346.6	3.5	32.9	93.7	165.6	23.3	16.3	5.9	1.9	3.6
27	43G7	666.6	2.8	56.5	236.6	278.6	43.7	25.8	19.6	0.0	2.9
27	44G7	2227.8	10.8	60.0	420.2	1175.3	370.8	80.8	81.4	20.0	8.4
27	44G8	1009.7	127.8	44.4	424.9	346.8	45.5	12.5	3.9	0.0	3.9
27	45G7	79.6	2.1	1.4	23.2	34.9	14.3	3.8	0.0	0.0	0.0
27	45G8	935.5	20.3	45.8	351.3	426.4	71.1	15.9	2.1	2.5	0.0
27	46G8	260.4	0.0	22.0	64.9	136.0	25.2	9.2	0.0	3.1	0.0
27 Total		5526.3	167.4	263.0	1614.8	2563.8	593.8	164.4	112.9	27.5	18.8
28	42G8	698.5	1.8	0.0	17.7	293.1	83.4	188.0	88.4	17.5	8.6
28	42G8	362.7	0.0	0.0	6.9	109.3	77.6	71.7	38.7	28.1	30.3
28	42G9	41.1	0.0	0.0	0.8	12.4	8.8	8.1	4.4	3.2	3.4
28	42H0	149.0	1.4	0.0	14.2	32.6	20.9	35.2	16.1	0.3	28.3
28	43G8	1415.4	0.0	0.0	26.0	113.4	221.4	366.6	294.4	194.7	198.8
28	43G9	3201.3	22.0	94.3	118.0	1244.6	525.8	500.5	436.5	102.5	157.2
28	43G9	333.1	0.0	11.3	36.0	152.7	69.0	35.6	17.3	7.3	4.0
28	43H0	169.2	0.0	6.3	13.7	77.9	34.0	20.8	9.8	4.3	2.4
28	43H1	382.7	121.4	0.0	6.6	36.7	54.8	94.8	29.9	23.6	14.9
28	44G9	1313.7	0.0	17.1	354.9	618.8	222.4	57.0	35.6	0.0	7.9
28	44G9	504.9	0.0	8.4	83.3	169.7	115.1	78.6	33.9	11.0	5.0
28	44H0	71.3	14.9	0.3	4.1	10.6	14.1	15.8	5.4	3.8	2.4
28	44H1	633.0	198.0	0.2	12.3	62.8	91.3	155.9	49.4	38.7	24.4
28	45G9	770.1	106.3	24.7	169.5	267.4	119.6	39.4	26.3	15.0	1.9
28	45H0	1133.7	0.0	0.0	94.1	413.3	433.6	125.7	56.5	10.5	0.0
28	45H1	443.4	0.0	0.0	35.7	145.1	180.2	60.7	17.4	4.3	0.0

SD	RECT	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE8+
28 Total		11623.2	465.8	162.5	993.8	3760.5	2271.8	1854.3	1160.0	464.8	489.7
29	46G9	1618.1	1239.4	26.7	118.7	167.9	52.3	7.0	2.6	3.5	0.0
29	46H0	732.4	0.0	0.0	68.7	258.8	332.4	44.0	20.2	8.3	0.0
29	46H0	734.8	283.2	26.7	169.9	152.7	43.1	41.8	17.4	0.0	0.0
29	46H1	401.2	2.2	2.2	32.8	116.4	176.3	35.0	16.0	20.3	0.0
29	46H2	2.3	0.0	0.0	0.1	0.6	1.0	0.2	0.1	0.1	0.0
29	47G9	3563.7	812.1	28.5	990.6	1259.7	319.5	104.7	11.9	35.9	0.8
29	47H0	1587.1	159.5	4.7	740.8	466.9	126.1	47.8	23.4	12.2	5.6
29	47H1	1121.8	18.2	9.1	116.6	380.2	508.6	50.5	27.3	11.3	0.0
29	47H2	1700.3	72.0	13.4	339.9	695.8	495.8	38.4	18.4	11.5	15.2
29	48G9	2516.5	24.6	266.6	534.0	1057.7	277.6	193.6	110.9	43.1	8.3
29 Total		13978.2	2611.3	378.0	3112.3	4556.6	2332.7	562.9	248.3	146.2	29.9
32	47H3	1537.9	101.6	15.6	191.8	571.4	562.1	60.6	31.5	0.0	3.3
32Total		1537.9	101.6	15.6	191.8	571.4	562.1	60.6	31.5	0.0	3.3
Grand Total		53675.9	8887.5	2757.3	7910.8	15271.4	8051.5	5097.0	3010.0	1268.7	1421.7

Table 4.1.2: Estimated numbers (millions) of sprat October 2005 by rectangle.

SD	RECT	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE8+
21	41G0	14.4	0.1	11.4	2.4	0.4	0.1	0.1			
21	41G1	276.6	2.4	218.1	46.7	7.4	0.9	1.0	0.1		
21	41G2	419.2		330.5	73.4	11.4	1.9	1.8	0.2		
21	42G1	141.0	0.3	80.1	40.3	14.1	3.9	2.2	0.1		
21	42G2	319.0	1.9	271.0	40.7	4.8	0.6	0.1			
21	43G1	22.0		11.8	7.3	2.2	0.5	0.2			
21	43G2	12.8	0.1	8.9	2.9	0.8	0.2	0.1			
21	44G0	485.0	1.9	427.9	50.0	4.5	0.6	0.2			
21	44G1	195.0	6.3	174.3	13.5	0.7	0.2	0.1			
21 Total		1885.1	12.9	1533.9	277.1	46.3	8.8	5.7	0.5	0.0	0.0
22	37G0	164.5	50.0	4.5	67.6	42.1	0.4				
22	37G1	1058.4	375.2	14.9	407.7	253.4	7.2				
22	38G0	151.8	57.6	3.5	55.7	34.7	0.4				
22	38G1	0.4	0.4								
22	39F9	279.7	279.6	0.1							
22	39G0	5.7	4.2	0.1	0.7	0.7					
22	39G1	190.5	189.2	0.4	0.6	0.4					
22	40F9	11.8	11.8	0.0							
22	40G0	95.5	50.7	2.2	29.6	12.8	0.2				
22	40G1	9.1	0.6	0.4	5.6	2.4	0.0				
22	41G0	2.0		0.2	1.3	0.6					
22 Total		1969.4	1019.1	26.1	568.7	347.2	8.3	0.0	0.0	0.0	0.0
23	40G2	166.6	0.9	36.5	86.8	30.1	6.6	4.4		1.3	
23	41G2	25.9	16.3	6.3	2.5	0.7	0.1	0.1			
23 Total		192.5	17.2	42.9	89.3	30.8	6.7	4.4	0.0	1.3	0.0
24	37G2	104.5	51.9	7.2	29.9	8.7	5.0	1.1			0.7
24	37G3	1940.2	1867.6	40.7	30.2	1.6					
24	37G4	875.0	511.8	71.8	216.2	45.1	19.1	6.9			4.1

SD	RECT	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE8+
24	38G2	212.1	148.0	6.9	39.8	10.9	4.4	1.3			0,9
24	38G3	1331.2	467.9	77.2	540.6	137.9	70.9	19.8			16,9
24	38G4	593.3	190.9	74.7	242.2	51.8	21.0	8.3			4,5
24	38G4										
24	39G2	210.2	58.0	9.3	98.4	23.6	13.8	3.3			3,8
24	39G3	101.7	4.7	9.4	59.9	15.3	8.5	2.1			2,0
24	39G4	77.2	0.0	6.1	46.4	14.4	7.6	1.2			1,5
24 Total		5445.4	3300.8	303.4	1303.5	309.1	150.4	43.9	0.0	0.0	34,4
25	37G5	18.0	6.2	0.3	7.2	3.0	0.8	0.3	0.2	0.0	0,0
25	38G5	60.0	10.6	1.6	29.6	12.2	3.6	1.5	0.9	0.1	0,1
25	38G6	79.0	11.0	2.4	37.5	14.8	7.0	3.3	2.6	0.2	0,2
25	38G7	165.0	40.7	9.8	80.1	28.5	3.9	1.3	0.7		
25	39G4	354.0	0.0	6.7	256.1	64.8	24.7	0.0	1.7	0.0	0,0
25	39G5	6.1	0.1	0.2	2.4	1.4	1.1	0.3	0.5	0.0	0,1
25	39G5	524.0	1.2	19.4	315.6	124.5	39.6	13.3	9.5	0.5	0,5
25	39G6	232.0	2.1	6.3	136.4	57.8	17.3	7.3	4.4	0.2	0,2
25	39G7	402.0	43.5	19.9	220.7	83.4	20.9	8.1	5.2	0.2	0,2
25	40G4	939.2	7.6	7.6	488.1	268.7	80.1	37.4	15.7	5.1	29,0
25	40G5	520.1	0.0	38.2	218.9	135.7	66.7	50.0	10.5	0.0	0,0
25	40G6	112.8	0.0	0.0	33.8	21.3	13.6	21.7	2.9	13.7	5,9
25	40G7	10.3	0.0	0.0	4.7	1.0	0.7	1.5	1.1	0.2	1,0
25	40G7	30.0	5.1	1.9	15.9	5.6	0.9	0.4	0.2	0.0	0,0
25	41G6	894.7	0.4	5.3	349.6	157.5	110.2	128.9	62.1	41.6	39,1
25	41G7	156.9	0.2	1.6	72.5	23.5	20.8	19.2	12.6	1.8	4,8
25 Total		4504.2	128.6	121.3	2269.0	1003.9	411.9	294.4	130.8	63.4	80,9
26	37G8	1036.0	11.0	187.1	633.2	141.1	43.9	12.3	7.5	0.0	0,0
26	37G9	804.0	198.9	119.6	371.2	80.2	23.2	7.1	3.8	0.0	0,0
26	38G8	1205.0	76.2	204.1	691.3	159.9	51.0	13.6	9.0	0.0	0,0
26	38G9	812.0	371.1	110.1	264.2	51.3	11.5	2.7	1.1	0.0	0,0
26	38G9	791.1	26.4	16.4	408.5	247.1	69.1	4.6	16.3	0.2	2,5
26	39G8	75.0	0.2	4.2	44.2	13.6	6.9	3.4	2.4	0.1	0,0
26	39G8	163.3	12.0	0.3	12.4	60.3	47.1	4.0	18.6	3.1	5,4
26	39G9	81.0	0.4	4.4	48.6	14.5	7.3	3.3	2.4	0.2	0,0
26	39G9	839.0	17.8	23.7	444.3	229.0	89.7	4.9	20.4	3.8	5,4
26	39H0	6444.3	1693.3	394.0	2756.6	1240.1	326.7	11.7	21.0	0.0	1,0
26	40G8	85.0	0.3	5.8	50.0	14.8	7.9	3.4	2.6	0.2	0,0
26	40G8	112.8	2.9	3.2	38.0	49.0	16.0	0.9	2.5	0.3	0,0
26	40G9	178.3	3.0	1.1	54.7	39.6	29.8	13.9	9.1	13.1	14,1
26	40G9	39.2	0.4	0.9	20.4	11.7	2.8	0.3	1.8	0.1	0,8
26	40H0	1947.1	875.2	96.4	421.5	271.7	197.8	67.6	5.6	5.6	5,6
26	41G8	595.6	5.6	0.0	106.1	165.7	117.1	54.7	54.0	51.2	41,2
26	41G9	2903.8	989.1	51.2	762.5	575.8	357.9	105.7	20.7	21.7	19,2
26	41H0	9525.1	3185.5	187.8	2681.4	1859.4	1098.6	432.2	12.1	44.2	24,1
26 Total		27637.6	7469.3	1410.3	9809.1	5224.6	2504.2	746.4	210.7	143.8	119,2
27	42G7	2520.0	0.0	0.0	642.2	723.6	325.8	136.2	320.7	206.7	164,7
27	43G7	7940.6	0.0	41.2	4687.3	2108.5	315.2	282.4	166.0	116.0	224,0
27	44G7	4145.5	84.2	189.0	2907.5	569.3	27.9	92.7	145.2	36.5	93,1
27	44G8	4050.7	342.3	83.3	2140.0	781.2	319.8	98.5	78.8	54.1	152,7
27	45G7	3676.3	0.0	0.0	2859.8	565.1	46.9	110.6	43.6	16.8	33,6
27	45G8	3913.6	47.2	60.9	2193.1	821.1	283.3	200.2	118.2	59.0	130,7

SD	RECT	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE8+
27	46G8	12620.8	39.9	0.0	7002.6	4975.1	208.9	88.5	0.0	88.5	217,3
27 Total		38867.3	513.6	374.4	22432.5	10544.0	1527.8	1009.0	872.4	577.6	1016,0
28	42G8	1045.3	9.5	0.0	429.5	335.5	148.7	82.6	22.1	0.0	17,3
28	42G8	4257.8	1598.7	34.3	810.2	1133.8	455.7	0.0	44.6	96.8	83,7
28	42G9	863.1	344.0	21.3	197.5	199.0	58.5	8.7	11.9	11.0	11,3
28	42H0	2244.0	928.5	59.5	611.1	415.6	108.7	38.7	27.6	42.6	11,6
28	43G8	770.3	39.2	12.2	387.5	183.5	37.3	33.7	28.7	3.6	44,5
28	43G9	2407.3	40.2	30.2	1215.3	760.6	107.5	62.9	131.7	28.4	30,5
28	43G9	1684.9	58.8	7.8	520.1	536.5	99.9	284.4	27.2	58.9	91,4
28	43H0	4936.7	2309.5	157.5	1290.8	822.5	90.9	139.3	19.8	80.0	26,2
28	43H1	4940.1	787.7	413.0	2077.3	1149.0	392.8	28.4	7.1	63.5	21,2
28	44G9	8079.5	17.2	0.0	6204.0	630.8	348.2	647.7	192.9	0.0	38,7
28	44G9	1266.7	39.4	28.3	510.8	313.6	73.1	181.3	30.6	34.6	55,0
28	44H0	6308.2	2918.8	153.6	1675.5	1247.7	76.0	120.2	36.1	65.2	15,0
28	44H1	10302.3	2875.3	713.0	3874.8	2055.5	612.8	34.6	16.1	85.4	34,6
28	45G9	2814.2	860.7	35.8	1039.1	381.4	217.6	122.0	106.2	13.2	38,1
28	45H0	3634.8	0.0	168.2	2469.7	565.4	185.8	45.7	66.6	56.1	77,1
28	45H1	3457.9	17.6	213.5	2724.1	412.4	34.1	9.3	18.4	12.7	15,7
28 Total		59012.9	12845.2	2048.3	26037.3	11142.7	3047.8	1839.5	787.8	652.1	612,2
29	46G9	15218.8	3272.5	383.8	7683.2	3176.2	199.4	168.6	189.0	72.0	73,9
29	46H0	1858.0	0.0	47.1	954.6	405.8	170.3	75.2	29.2	68.5	107,3
29	46H0	14401.2	6118.6	5.1	4433.5	3183.7	300.8	50.6	57.6	50.6	200,6
29	46H1	3650.5	7.8	124.1	2524.3	676.4	111.6	67.4	16.7	53.7	68,4
29	46H2	1371.3	92.7	113.4	1033.6	108.3	8.9	6.3	0.1	3.6	4,5
29	47G9	6742.5	1132.8	807.6	3404.6	839.9	161.2	101.6	53.1	159.8	81,9
29	47H0	22627.2	2483.2	0.0	14339.4	3856.2	772.1	411.4	217.9	217.7	329,4
29	47H1	3441.4	0.0	101.6	2001.3	697.7	229.6	110.5	45.6	100.3	154,8
29	47H2	8045.7	95.2	442.7	6262.7	1006.8	87.5	60.2	13.9	35.0	41,7
29	48G9	1094.1	10.5	60.2	489.1	363.8	48.7	5.3	49.7	0.0	66,8
29 Total		78450.5	13213.2	2085.6	43126.4	14314.8	2090.1	1057.0	672.8	761.4	1129,2
32	47H3	4246.3	79.5	394.1	2910.7	777.0	43.5	25.4	0.0	0.0	16,1
32Total		4246.3	79.5	394.1	2910.7	777.0	43.5	25.4	0.0	0.0	16,1
Grand Total		222211.1	38599.3	8340.2	108823.5	43740.3	9799.4	5025.8	2675.0	2199.6	3007.9

Table 4.1.3: Estimated numbers (millions) of herring October 2005.

SD	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+
21	866	687	110	56	11	2	0	0	0	0
22	766	643	94	20	5	2	1	0	0	0
23	905	255	75	221	138	86	53	48	19	11
24	4414	2469	578	391	444	232	191	86	11	11
25	6082	691	494	674	1852	855	801	447	148	119
26	7978	796	587	636	1369	1114	1409	876	452	739
27	5526	167	263	1615	2564	594	164	113	28	19
28	11623	466	162	994	3761	2272	1854	1160	465	490
29	13978	2611	378	3112	4557	2333	563	248	146	30
32	1538	102	16	192	571	562	61	31	0	3
total	53676	8888	2757	7911	15271	8052	5097	3010	1269	1422

Table 4.1.4: Estimated numbers (millions) of sprat October 2005.

.SD	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+
21	1885	13	1534	277	46	9	6	0	0	0
22	1969	1019	26	569	347	8	0	0	0	0
23	192	17	43	89	31	7	4	0	1	0
24	5445	3301	303	1303	309	150	44	0	0	34
25	4504	129	121	2269	1004	412	294	131	63	81
26	27638	7469	1410	9809	5225	2504	746	211	144	119
27	38867	514	374	22432	10544	1528	1009	872	578	1016
28	59013	12845	2048	26037	11143	3048	1840	788	652	612
29	78451	13213	2086	43126	14315	2090	1057	673	761	1129
32	4246	80	394	2911	777	43	25	0	0	16
total	222211	38599	8340	108823	43740	9799	5026	2675	2200	3008

Table 4.1.5: Estimated biomass (in tonnes) of herring October 2005.

SD	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+
21	22716	13348	4604	3820	750	195	0	0	0	0
22	12400	7635	3155	1097	307	125	82	0	0	0
23	85922	3343	4781	21683	17008	13724	9413	9233	4000	2732
24	99356	22907	18853	21295	17186	8050	4566	4771	1003	731
25	213249	7975	15305	23155	61823	33500	33119	21046	7545	7423
26	223843	5060	11669	15025	32151	31458	45976	31777	17969	32720
27	123193	846	3887	28294	57721	17002	5065	4442	1027	1673
28	320177	2508	3316	16998	83141	55830	61629	47653	19949	24851
29	207795	9591	4766	46395	76179	41296	12624	6624	4602	1198
32	20029	368	144	1983	7223	8061	1297	804	0	150
total	1328679	73581	70480	179745	353489	209240	173772	126350	56094	71477

Table 4.1.6: Estimated biomass (in tonnes) of sprat October 2005.

SD	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+
21	25309	69	19816	4238	852	185	133	13	0	0
22	20496	5435	350	8971	5590	155	0	0	0	0
23	3382	82	646	1681	680	156	100	0	35	0
24	48745	16380	3732	19850	4980	2554	677	0	0	578
25	53922	587	1165	25816	11927	5582	4560	1971	993	1214
26	232835	31784	11093	93457	54087	28092	8778	2376	1707	1453
27	344445	1699	2319	176945	86807	17149	11934	9861	6858	12392
28	421080	46163	14589	206243	86493	26411	16377	8258	5332	4675
29	563998	38396	14455	324932	118060	20156	10503	7089	7771	11076
32	30812	236	2608	21095	5960	471	264	0	0	179
total	1745024	140831	70772	883228	375437	100912	53326	29569	22696	31566

Table 4.1.7: Calculated correction factor for 2005 per Subdivision.

SD	MAX. AREA	AREA COVERED	CORR. FACTOR
21	4604	4605	1.000
22	3459	3390	1.020
23	367	236	1.553
24	5665	5665	1.000
25	12277	11889	1.033
26	10829	10705	1.012
27	7784	6127	1.271
28	11061	11024	1.003
29	10154	7331	1.385
32	7497	536	13.982

Table 4.1.8: Corrected numbers (millions) of herring October 2005.

SD	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+
21	866	687	110	56	11	2	0	0	0	0
22	781	656	96	20	5	2	1	0	0	0
23	1406	396	116	343	214	134	83	74	29	18
24	4414	2469	578	391	444	232	191	86	11	11
25	6280	713	510	696	1913	883	827	462	153	123
26	8070	805	594	644	1384	1127	1425	886	458	747
27	7021	213	334	2052	3257	754	209	143	35	24
28	11662	467	163	997	3773	2279	1860	1164	466	491
29	19362	3617	524	4311	6312	3231	780	344	203	41
32	21503	1421	218	2682	7990	7859	847	440	0	46
total	81366	11446	3243	12191	25304	16503	6223	3600	1355	1502

Table 4.1.9: Corrected numbers (millions) of sprat October 2005.

SD	TOTAL	AGE 0	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+
21	1885	13	1534	277	46	9	6	0	0	0
22	2010	1040	27	580	354	8	0	0	0	0
23	299	27	67	139	48	10	7	0	2	0
24	5446	3301	303	1304	309	150	44	0	0	34
25	4651	133	125	2343	1037	425	304	135	65	84
26	27957	7555	1427	9922	5285	2533	755	213	145	121
27	49382	653	476	28501	13396	1941	1282	1108	734	1291
28	59211	12888	2055	26125	11180	3058	1846	790	654	614
29	108666	18302	2889	59737	19828	2895	1464	932	1055	1564
32	59370	1112	5510	40697	10864	608	355	0	0	225
total	318877	45024	14412	169624	62348	11639	6062	3180	2656	3933

Table 4.1.10: Tuning fleet results for sprat (22–29).

YEAR	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+	TOTAL
1991	45804	39734	44324	3152	8857	2019	1944	2958	204984
1992	44309	31419	27078	10898	2207	3129	757	759	171656
1993	47033	67557	30226	24919	10416	2324	3028	1561	194111
1994	21011	60888	48563	19396	13346	5816	1035	1631	240162
1995	158397	17638	45989	24981	12957	5973	2329	1540	321359
1996	82298	158131	24987	30569	16173	8032	4575	1535	330612
1997	24681	97716	78960	14134	10084	3095	2629	1223	305748
1998	112155	24373	62469	39864	8747	5016	1680	1163	258588
1999	5951	96075	16669	36568	39142	5342	3361	1816	236815
2000	65256	3547	54088	6027	14556	16014	1604	2858	170653
2001	13107	38715	9343	37473	5567	13435	9248	4249	141295
2002	41508	17964	44393	7545	22231	2945	6067	5358	243356
2003	121293	41533	30502	25937	9685	14807	6157	10107	436714
2004	193053	75061	23643	14851	10080	4816	4806	6960	341268
2005	7368	128651	51438	11022	5702	3179	2656	3708	213722

Table 4.1.11: Tuning fleet results for sprat (26 + 28)

YEAR	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+	TOTAL
1991	33320	17331	14153	369	2878	344	248	666	105331
1992	37946	23839	19543	7753	1253	2103	199	478	139783
1993	29932	29719	15050	12330	4523	967	1433	1161	99813
1994	19541	48259	21794	8680	4654	1739	106	535	146473
1995	106726	11388	31041	14912	7189	4651	1724	958	208563
1996	59104	96174	15794	16036	6692	2921	2259	645	201977
1997	5631	52389	47279	5032	6012	2106	1596	411	166234
1998	85272	10766	29671	19713	4181	2785	1049	1132	155332
1999	4395	52089	7045	12775	10648	1770	1652	1223	114968
2000	52970	2502	40460	2715	8480	7128	1016	1885	122085
2001	8711	24519	4276	23050	2522	6147	4120	1429	81642
2002	33369	9201	30643	3681	15163	760	3791	2431	140328
2003	64882	23090	9774	16500	3675	8720	1471	5333	208093
2004	61841	22586	7722	2933	3590	660	1625	1816	105031
2005	3482	36047	16465	5591	2601	1004	800	735	66724

Table 4.1.12: Tuning fleet results for herring (25 – 29).

YEAR	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+	TOTAL
2004	5544	14730	7101	4934	2599	1169	638	706	39178
2005	2125	8700	16639	8275	5101	2999	1314	1427	46580

Table 4.2.1: Estimated numbers (millions) of sprat May/June 2005 by rectangle.

ICES SD	RECT	AGE 1	AGE2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+	TOTAL
24	38G4	4.0	41.9	13.3	2.8	0.8	1.6		0.2	64.6
24	38G3	98.4	509.6	190.7	71.3	22.4	29.9		8.9	931.1
24	39G2	31.3	162.0	60.6	22.7	7.1	9.5		2.8	296.1
24	39G3	24.5	127.1	47.6	17.8	5.6	7.5		2.2	232.3
24	39G4	110.9	430.4	147.1	35.7	12.7	14.9		3.0	754.5
24	38G2	16.6	85.9	32.2	12.0	3.8	5.1		1.5	157.0
24 Total		285.7	1356.9	491.5	162.3	52.4	68.5	0.0	18.6	2435.6
25	39G6	111.7	1678.5	1056.3	441.1	187.3	139.3	111.7	63.8	3789.7
25	39G4	23.1	280.5	173.8	108.9	93.2	47.1	25.6	22.1	774.2
25	38G6	4.6	93.9	62.7	28.9	14.3	11.0	8.0	4.4	227.8
25	38G5	12.0	315.2	230.8	157.7	118.3	67.6	36.1	32.8	970.5
25	41G6	628.3	5572.7	2069.1	465.9	53.1	64.4	81.4	23.8	8958.7
25	40G6	260.7	2285.0	1089.0	319.4	93.8	73.9	64.3	33.7	4219.6
25	40G4	8.6	203.8	149.9	82.8	41.9	28.7	22.8	13.7	552.2
25	39G7	148.1	1007.7	419.0	105.4	26.0	19.1	17.6	9.7	1752.5
25	37G5	1.2	25.8	19.2	11.6	9.3	5.3	2.9	2.3	77.6
25	40G5	234.2	1826.6	878.6	358.1	208.6	121.1	71.4	60.6	3759.2
25	39G5	451.9	4867.7	2881.7	1117.9	564.6	377.9	275.1	171.2	10707.9
25 Total		1884.4	18157.4	9030.1	3197.7	1410.4	955.4	716.9	438.1	35789.9
26	38G9	69.4	3499.4	980.2	196.0	17.7	37.4	9.0	40.1	4849.2
26	40H0	41.5	2261.2	596.8	103.4	2.1	17.7		16.5	3039.2
26	40G9	37.3	1851.5	1282.3	237.3	51.9	119.7	10.5	63.9	3654.4
26	40G8	39.9	1450.1	908.9	424.3	62.4	166.0	12.1	130.0	3193.8
26	39H0	312.5	653.3	183.9	25.0	3.6	18.5	2.2		1199.0
26	39G9	127.3	3074.3	639.2	248.1	7.5	51.1	9.8	21.6	4179.0
26	39G8	44.3	2898.5	855.4	340.5	8.3	87.2		31.0	4265.2
26	41H0	8.3	1271.5	139.8	28.1	58.1	31.4	35.7	48.2	1621.0
26	41G9	3.0	425.5	67.4	55.3	30.8	36.2	20.1	63.8	702.1
26	41G8	36.5	1775.7	357.4	111.2	40.2	29.0	40.6	77.0	2467.5
26	40G9	60.0	1347.1	1464.3	438.9	167.7	295.5	224.8	111.4	4109.7
26	40H0	809.9	2366.8	815.2	267.0	61.9	76.1	36.5	16.5	4449.8
26	39G8	38.0	2244.5	557.3	988.0	410.1	132.7	218.1	24.6	4613.3
26	41G8	34.7	3513.9	687.9	749.6	243.4	91.3	26.8	10.3	5357.8
26	40G8	17.4	3985.7	772.7	1017.0	378.0	140.1	124.7	25.2	6460.8
26 Total		1680.0	32619.1	10308.7	5229.8	1543.7	1329.8	770.7	679.9	54161.6
28	42H0	12.4	2646.7	375.2	86.6	132.4	76.7	53.8	71.8	3455.6
28	45H0	64.3	4109.0	376.2	57.8	87.4	18.6	63.2	110.3	4886.7
28	45G9	93.7	6135.2	327.8	31.2	124.9	31.2	62.4	187.3	6993.8
28	44H1	0.0	3224.5	276.7	37.7	131.8	37.7	56.5	56.5	3821.3
28	44H0	50.0	3742.2	302.3	4.6	126.0	23.1	21.3	76.0	4345.5
28	44G9	161.2	5010.3	344.9	96.7	85.8	86.0	86.0	86.4	5957.3
28	43H1	145.8	930.1	44.6	17.2	11.4	0.0	0.0	17.2	1166.2
28	43G9	44.6	3973.0	668.4	171.5	169.9	150.9	78.2	71.0	5327.4
28	42G9	54.5	3752.9	589.2	230.8	157.0	75.1	81.2	94.3	5034.9
28	42G8	17.4	2343.4	619.8	38.3	90.5	184.6	163.7	198.5	3656.2
28	45H1	0.0	1243.6	106.7	14.5	50.8	14.5	21.8	21.8	1473.7
28	43H0	69.3	3533.8	321.8	108.3	79.0	63.0	23.4	71.5	4270.1
28 Total		713.1	40644.6	4353.5	895.3	1246.9	761.4	711.4	1062.4	50388.6

Table 4.2.2: Estimated biomass of sprat in tonnes May/June 2005 by rectangle.

SD	RECT	WSTOT	WS0	WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8
24	38G2	2071.6	0.0	106.2	1099.5	476.6	202.8	73.7	84.2	0.0	28.7
24	38G3	12277.9	0.0	629.8	6522.9	2822.4	1205.0	434.6	493.4	0.0	170.0
24	38G4	794.2	0.0	28.0	502.8	178.2	42.3	15.0	24.3	0.0	3.6
24	39G2	3902.4	0.0	200.3	2073.6	896.9	383.6	137.7	156.8	0.0	53.5
24	39G3	3063.4	0.0	156.8	1626.9	704.5	300.8	108.6	123.8	0.0	42.0
24	39G4	8969.8	0.0	743.0	5121.8	2030.0	553.4	240.0	228.0	0.0	53.7
24 Total		31079.4	0.0	1864.2	16947.4	7108.5	2687.9	1009.7	1110.3	0.0	351.4
25	37G5	894.4	0.0	8.0	265.7	207.4	141.5	133.9	71.0	34.8	32.0
25	38G5	11249.3	0.0	78.0	3309.6	2492.6	1908.2	1679.9	899.1	426.0	455.9
25	38G6	2364.1	0.0	33.6	882.7	627.0	329.5	198.8	141.9	90.4	60.3
25	39G4	8629.6	0.0	138.6	2636.7	1842.3	1350.4	1379.4	650.0	325.1	307.2
25	39G5	103823.6	0.0	3027.7	42835.8	27376.2	12520.5	7847.9	4799.3	3053.6	2362.6
25	39G6	37529.3	0.0	826.6	15106.5	10246.1	4896.2	2584.7	1755.2	1239.9	874.1
25	39G7	14096.9	0.0	933.0	7658.5	3561.5	1043.5	353.6	227.3	186.6	132.9
25	40G4	5973.5	0.0	60.2	2017.6	1544.0	960.5	586.6	361.6	255.4	187.7
25	40G5	34725.4	0.0	1405.2	14978.1	8171.0	4046.5	2920.4	1562.2	799.7	842.3
25	40G6	36218.1	0.0	1746.7	18051.5	9692.1	3321.8	1303.8	923.8	720.2	458.3
25	41G6	68833.4	0.0	4335.3	40680.7	16966.6	4239.7	700.9	734.2	854.7	321.3
25 Total		324337.4	0.0	12592.9	148423.4	82726.7	34758.1	19689.9	12125.5	7986.2	6034.5
26	38G9	36318.2	0.0	284.7	24145.9	8429.3	2097.4	245.9	449.0	129.0	536.9
26	39G8	37072.5	0.0	181.8	23188.2	8125.8	3984.2	105.4	1028.8	0.0	458.2
26	39G8	39254.9	0.0	133.0	16160.4	4569.9	9583.6	4511.1	1393.4	2551.8	351.8
26	39G9	31530.9	0.0	623.6	21520.1	5561.4	2729.3	104.1	587.5	167.2	237.7
26	39H0	8309.3	0.0	1143.9	4860.3	1710.6	289.0	54.7	216.1	34.8	0.0
26	40G8	27570.7	0.0	181.5	10687.3	7944.0	4451.0	833.8	1866.9	167.9	1438.2
26	40G8	50571.9	0.0	57.4	27501.3	6104.3	9458.1	4082.4	1499.1	1508.9	360.4
26	40G9	31817.9	0.0	176.2	14034.1	11592.3	2937.5	716.2	1437.8	149.2	774.5
26	40G9	37241.1	0.0	282.0	10103.6	12885.6	4169.6	1877.9	3989.0	2652.6	1280.8
26	40H0	24040.2	0.0	217.2	17049.6	5204.3	1128.1	27.8	225.7	0.0	187.5
26	40H0	28300.8	0.0	3077.5	14674.3	6195.5	2296.1	599.9	798.9	437.9	220.6
26	41G8	17132.0	0.0	159.2	11240.1	2848.2	990.3	384.2	312.9	433.6	763.5
26	41G8	39816.4	0.0	131.9	23894.5	5228.0	6671.4	2507.0	903.9	332.3	147.3
26	41G9	5339.9	0.0	14.2	2795.8	526.5	475.7	305.3	357.6	212.2	652.6
26	41H0	11522.1	0.0	30.2	8086.5	1195.0	280.0	587.5	414.5	355.2	573.1
26 Total		425838.6	0.0	6694.3	229942.1	88120.6	51541.5	16943.2	15481.2	9132.6	7983.1
28	42G8	28192.7	0.0	59.2	15419.8	5032.9	374.2	996.7	1972.8	1808.4	2528.6
28	42G9	35880.3	0.0	251.0	23830.6	4866.4	2246.0	1737.8	828.0	912.9	1207.6
28	42H0	24304.7	0.0	44.7	16700.7	3121.2	874.8	1356.8	869.2	526.3	811.0
28	43G9	36849.5	0.0	170.7	24513.4	5354.1	1766.3	1695.6	1683.5	921.0	744.9
28	43H0	29143.4	0.0	249.6	22050.8	2822.1	1196.1	912.8	844.2	273.8	794.0
28	43H1	6333.4	0.0	495.7	5031.9	320.6	168.2	124.2	0.0	0.0	192.8
28	44G9	35582.5	0.0	485.1	27957.3	2745.2	854.0	842.1	840.4	900.6	957.8
28	44H0	27642.0	0.0	150.1	22266.0	2421.6	43.3	1388.3	227.5	201.1	944.1
28	44H1	23442.1	0.0	0.0	18250.9	2053.2	362.6	1283.4	375.0	549.5	567.5
28	45G9	39666.7	0.0	240.7	32577.8	2465.3	278.5	1263.9	390.3	556.3	1893.9
28	45H0	28526.2	0.0	185.7	22229.7	2851.4	510.1	859.8	214.1	590.5	1085.0
28	45H1	9040.5	0.0	0.0	7038.5	791.8	139.8	495.0	144.6	211.9	218.9

SD	RECT	WSTOT	WS0	WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8
28 Total		324603.9	0.0	2332.4	237867.5	34845.7	8813.9	12956.5	8389.6	7452.2	11946.0

Table 4.2.3: Estimated numbers (millions) of sprat May/June 2005 by Subdivisions.

ICES SD	AGE 1	AGE2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8+	TOTAL
24	285.7	1356.9	491.5	162.3	52.4	68.5	0.0	18.6	2435.6
25	1884.4	18157.4	9030.1	3197.7	1410.4	955.4	716.9	438.1	35789.9
26	1680.0	32619.1	10308.7	5229.8	1543.7	1329.8	770.7	679.9	54161.6
28	713.1	40644.6	4353.5	895.3	1246.9	761.4	711.4	1062.4	50388.6
Total	4563.2	92778.0	24183.8	9485.1	4253.5	3115.0	2199.0	2199.0	142775.7

Table 4.2.4: Estimated biomass in tonnes of sprat May/June 2005 by Subdivisions.

24 TOTAL	31079.4	0.0	1864.2	16947.4	7108.5	2687.9	1009.7	1110.3	0.0	351.4
25 total	324337.4	0.0	12592.9	148423.4	82726.7	34758.1	19689.9	12125.5	7986.2	6034.5
26 total	425838.6	0.0	6694.3	229942.1	88120.6	51541.5	16943.2	15481.2	9132.6	7983.1
28 total	324603.9	0.0	2332.4	237867.5	34845.7	8813.9	12956.5	8389.6	7452.2	11946.0
total	1105859.2	0.0	23483.8	633180.4	212801.5	97801.4	50599.4	37106.6	24571.1	26315.0

5 Update of the hydro-acoustic database BAD1 and BAD2 for the years 1991 – 2005

5.1 Status of the BAD1 database

The 2004 version of the database was updated by the results of the year 2005. Because of some inconsistencies the table AS was exchanged. A crosscheck of the tables has shown some additional problems. All data owners are requested to examine the own datasets and send the corrected datasets until **September 2006** to Rainer Oeberst and Eberhard Götze. The BAD1 revision 9 contains now the results of the hydroacoustic surveys from the years 1991 to 2005. In 2005 the coverage of the investigation area was comparable to the last years. The coverage of the northern Baltic is still insufficient. The participation and covering of all vessels by subdivision in the surveys 1991 to 2005 is depicted in Table 5.1.1.

The Working Group recommends that the database BAD1 should be inserted in the **FishFrame** system.

5.2 Status of the BAD2 database

History and status

At PGHERS 2004 and 2005 it was decided to initiate the development of a full system to store and process the data from the acoustic survey. The input data level should be scrutinized NASC values and complete information from trawl hauls. The output level should be global stock estimates. The system was regarded as consisting of three conceptual stages (Figure 5.1):

- Stage I: Basic, disaggregated fisheries and acoustics data (as in the current HERSUR/BADII database).
- Stage II: Data manipulation and aggregation tools.
- Stage III: Aggregated database and tools to derive global estimates from national, aggregated data.

A stepwise development and implementation approach was chosen.

The first step was to:

- Evaluate current HerSur/BADII software and complete the dataset on that level.
- Develop and test stage III.

Second step was to:

- Upgrade stage I (HerSur/BADII) to FishFrame technology.
- Develop and test stage II.
- Add the hydrographic data.

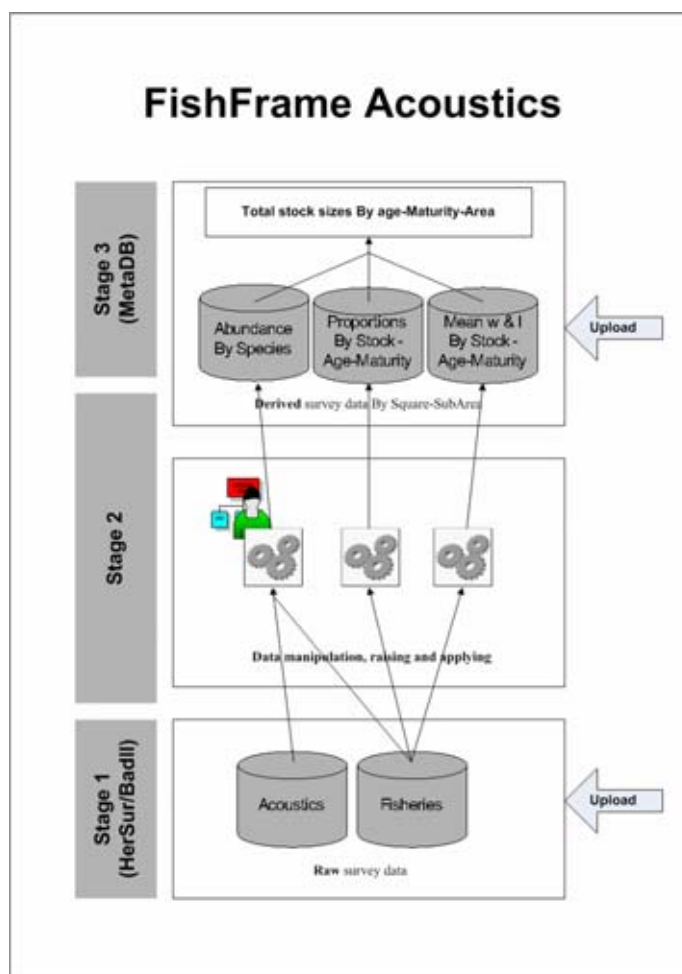


Figure 5.1: Planned structure of the FishFrame system.

The first step is now nearly complete. The stage III software has been released and tested. The testing and evaluation during PGHERS 2006 meeting resulted in a small list of development tasks that will be done fixed in the June release of FishFrame v.4.2.

On 13-14 June a PGHERS subgroup meeting will take place in Copenhagen. The purpose of the meeting is to review and compare the methodology used by each country to calculate the aggregate stage III data from the stage I data. This should lead to a common methodology written as a specification document for the stage II development.

In September and December two new releases (v.4.3 and v.4.4) will complete the system. Test and evaluation will take place partly by Eric Armstrong (FRS) and partly by the PGHERS group during the 2007 meeting.

The Baltic situation

The BIAS survey is in the same situation as the North Sea survey. A lot of effort has been put into uploading data to BADII, but very limited value has come back except for having an international back-up of the survey data.

Since the exact same FishFrame software is available for the Baltic Sea as for the North Sea, it is a clear and present opportunity for the WGBIFS to decide to use it for the BIAS data.

WGBIFS discussion outcome (recommendations)

It was decided to go for a full implementation of FishFrame for the BIAS data.

Following action will be taken:

- 1) The countries that have not completed their upload to BADII would do this with the aid of users from Germany, Latvia and Sweden.
At least the data for 2000 – 2005 should be uploaded until September 2006.
- 2) The data in BADII will be migrated into FishFrame, so that it does not have to be uploaded twice.
- 3) The group will be represented on the Copenhagen meeting in June by Eberhard Goetze and the BIAS methodology description will be mailed to the other participant via the Chair (Teunis Jansen).

All historic data will be kept on the stage III level as well as the stage I level, in order to make the full index retrospectively correct. This will be coordinated and uploaded by Eberhard Götze

5.3 Data policy of FishFrame

The national data in FishFrame is owned by the national institutes. Each national institute updates their own data when changes are made in the data source (the national database containing the raw data). FishFrame is a data warehouse that only contains copies / derived outputs from the national databases.

Access to viewing and analysing other countries data in FishFrame does not entail permission to download, copy or publish dis-aggregated not-own-country data outside FishFrame. Such permissions can only be granted by each national institute. The request can be put forward by using the form in appendix I, giving detailed descriptions of the data needs and the use of data. Data can normally only be used by the scientific community for scientific purposes. Only national "editors" and "administrators" can do such download.

While most of the data are visible for all users in FishFrame, some are confidential. The confidential data are masked by "****" for users from other countries. Data considered confidential in FishFrame are:

- Longitude and latitude of stations of commercial samples (sea sampling).
- Length frequency data from commercial data. The exact number at length and catch weight is masked, rest is visible.
- Unallocated and area-misreported landing statistics.

Jansen, T and H. Degel. 2006. FishFrame v.4.1 User Manual. <http://www.FishFrame.org>.

6 Plan and decide on acoustic surveys and experiments to be conducted in 2006 and 2007

6.1 Planned acoustic survey activities

All the Baltic Sea countries intend to take part in acoustic surveys and experiments in 2006. The list of participating research vessels and periods are given in the following table:

VESSEL	COUNTRY	AREA OF INVESTIGATION (ICES SUBDIVISIONS)	(PRELIMINARY) PERIOD OF INVESTIGATIONS	DURATION (DAYS)
WALTHER HERWIG III	Germany	24, 25, 26 (part), 27 (part)	16.05.-06.06.	21
BALTICA	Latvia, Poland	26 (part), 28	14.-23.05.	10
DARIUS	Lithuania	26 (Lithuanian EEZ)	May	2
ATLANTIDA	Russia	26(part)	20.05.-5.06.	15
BALTICA	Poland	24(N), 25, 26	18.09. – 8.10.	21
ARGOS	Sweden	25(N), 27, 28 (W), 29 (W)	02.-20.10.	19
SOLEA	Germany, Denmark	21, 22, 23, 24	05.-24.10.	20
BALTICA	Latvia, Poland	26(N), 28	12.–21.10.	10
BALTICA	Estonia, Finland, Poland	28(part), 29 (N), 32(W)	22.-31.10	10
ATLANTNIRO/ATLANTIDA	Russia	26	October	20
DARIUS	Lithuania	26 (Lithuanian EEZ)	October	2-3
CHARTER	Latvia, Estonia	28 (Gulf of Riga)	25.07.-02.08.	10

The preliminary plan for acoustic surveys and experiments in 2007 for majority of institutes is presented in the text table below. However, the final outline of plans will be available after verification of budgets.

VESSEL	COUNTRY	AREA OF INVESTIGATION (ICES SUBDIVISIONS)	(PRELIMINARY) PERIOD OF INVESTIGATIONS	DURATION (DAYS)
BALTICA	Latvia/Poland ??	26 (W), 28	May	10
Walther Herwig III	Germany	24, 25, 26 (part), 27 (part)	May	19
DARIUS	Lithuania	26 (Lithuanian EEZ)	May	2
ATLANTIDA/ ATLANTNIRO	Russia	26	May	15
BALTICA	Poland	24 (part), 25, 26	September-October	21
BALTICA	Latvia, Estonia, Finland, Poland	SD26 (W), 28, 29 (N), 32 (W)	October, November	20
ARGOS	Sweden	25(N), 27, 28 (W), 29 (W)	September-October	19
ARGOS	Sweden, Finland	30, 31	September-October	14

SOLEA	Germany/Denmark	21, 22, 23, 24	October	21
DARIUS	Lithuania	26 (Lithuanian EEZ)	October	2-3
ATLANTIDA/ ATLANTNIRO	Russia	26	October	17
CHARTER	Latvia, Estonia	28 (Gulf of Riga)	25.07.-02.08.2007	10

6.2 An extended acoustic survey in the Gulf of Bothnia

Sweden and Finland are planning a joint acoustic survey in SD 30 and SD 31 to be started in the autumn of 2007. The objective of a new acoustic survey is to obtain fishery independent data and spatial distribution on the herring population in the Gulf of Bothnia. An additional aim is also to get fishery independent data and spatial distribution on the sprat population which seem to expand into the Gulf of Bothnia the last years. The survey will be conducted according to the BIAS manual (anon 2005). In the autumn 2006 Sweden is planning a limited (only covering a part of SD 30) to determine if the clupeids are countable during this time of year. This survey will also aid the planning of the new survey in 2007.

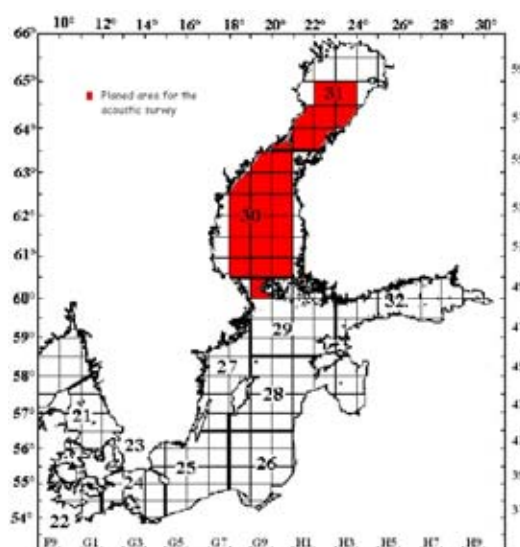


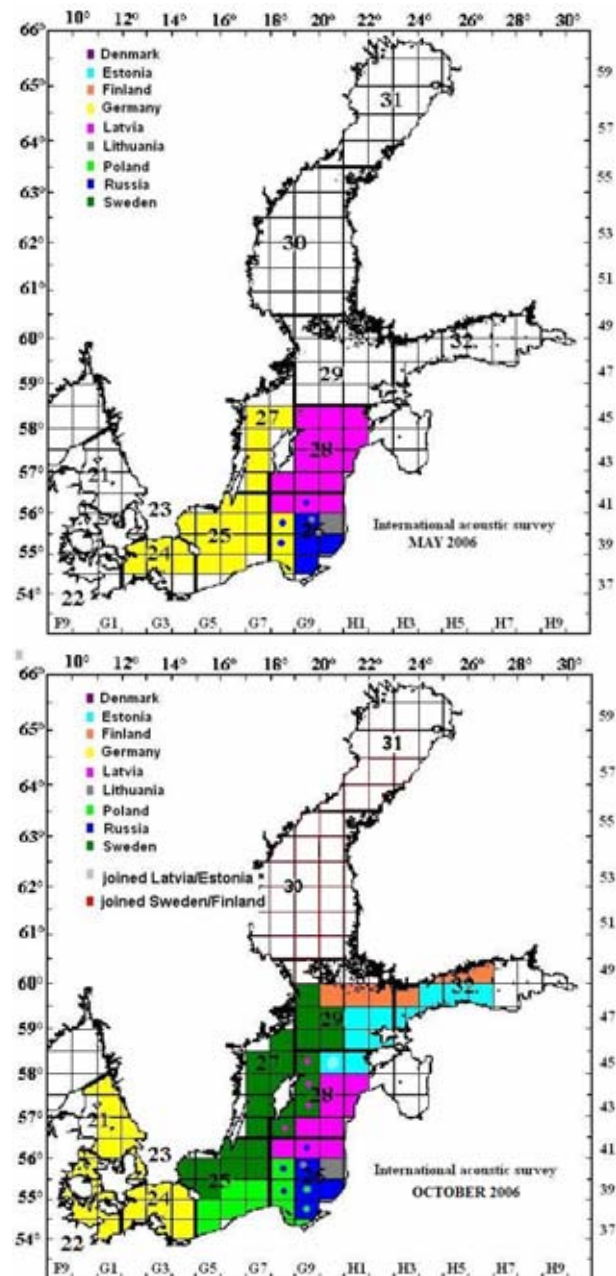
Figure 6.2.1: The planned area coverage of the joint acoustic survey in SD 30 and SD 31 to be started in the autumn of 2007.

6.3 New design of acoustic surveys (proposed in 2005)

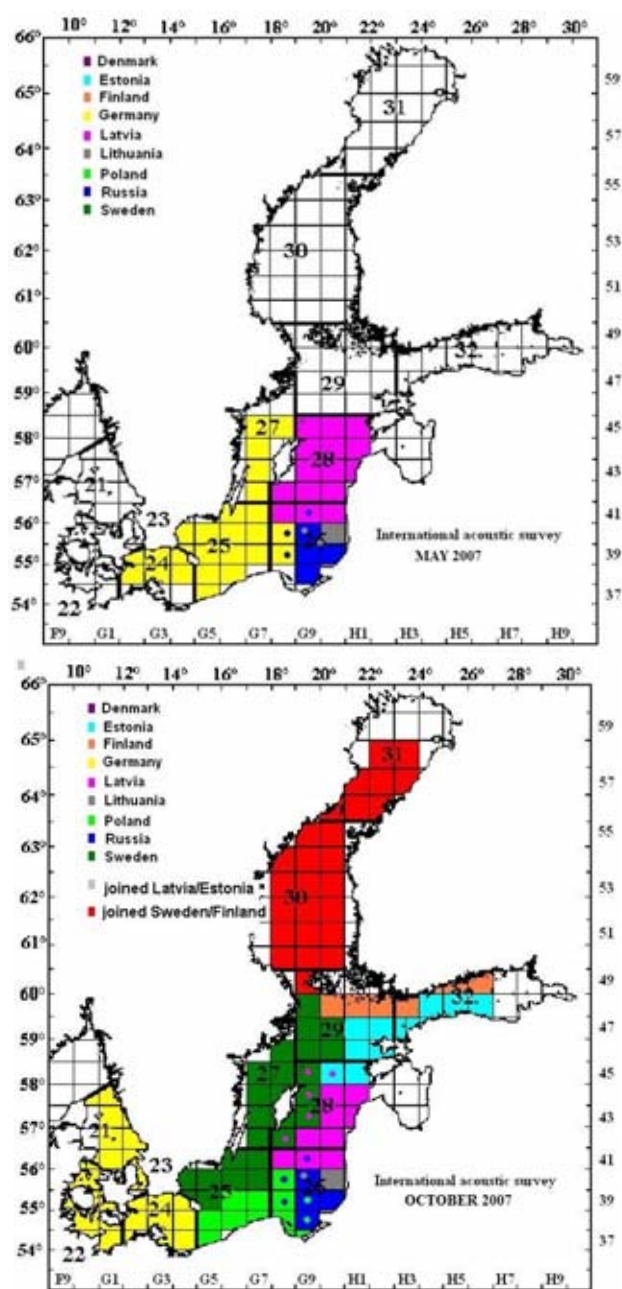
During the WGBIFS-Meeting in 2005, the working group discussed and agreed a new surveys design of acoustic surveys (see WGBIFS-report 2005).

The basic idea is that each ICES-Rectangle is assigned to one nation. That means that the mandatory nation carried out about 60 miles of acoustic measurements covering the complete rectangle and at least 2 control hauls. The data of the nation which is responsible for the rectangle are used for estimating the stock indices. However, it is allowed for all nations to cover also other areas (rectangles, part of rectangles, ..)

The proposed mandatory rectangles assignment of the nations to rectangles) of the acoustic surveys in 2006 are presented in Figures 6.3.1 and 6.3.2. The planned coverage of the Baltic Sea and the assignment of nations to the rectangles during the acoustic surveys in 2007 are presented in Figures 6.3.3 and 6.3.4.



Figures 6.3.1–6.3.2: Proposed partitioning (assignment of the nations to rectangles) for the May and the October surveys in 2006 (from left to right). Base colours of rectangles indicate the country, which is responsible for this ICES-rectangle. Coloured dots indicate overlapping coverage by other countries (sometime only parts of rectangle are covered)



Figures 6.3.3–6.3.4: Proposed preliminary partitioning (assignment of the nations to rectangles) for the May and the October surveys in 2007 (from left to right). Base colours of rectangles indicate the country, which is responsible for this ICES-rectangle. Coloured dots indicate overlapping coverage by other countries (sometime only parts of rectangle are covered)

Furthermore, the ICES-rectangles presented in the table below have to be additionally covered by more than one nation for inter-calibration purposes.

Following table defines these rectangles for the May survey in 2006 and 2007:

COUNTRY	RECTANGLE	MANDATORY/OPTIONAL
Russia	39G8; 40G8, 41G9	mandatory
Russia	41G8	Optional

Following table defines these rectangles for the October survey in 2006 and 2007:

COUNTRY	RECTANGLE	MANDATORY/OPTIONAL
Russia	39G8; 40G8, 41G9	mandatory
Russia	41G8	optional
Latvia	45G9	mandatory

The main results of both acoustic surveys in May/June and October 2006 should be summarized and reported in standard report format (ICES CM 2002/G:05 Ref. H, Annex 5) and in BAD1 format to the acoustic surveys coordinator (**Niklas Larson, niklas.larson@fiskeriverket.se**) and the BAD1 manager (**Eberhard Götze, eberhard.goetze@ifh.bfa-fisch.de**) not later than one month before the ICES WGBIFS meeting of the next year. These results are intended for the information of the ICES Assessment Working Groups.

7 Examine and report on the results from the bits surveys performed in autumn 2005 and spring 2006

Trawl surveys in November 2005 and spring 2006 were planned by WG BIFS during last meeting. Number of hauls by subdivision and depth layer were allocated based on total number of planned hauls and agreed procedures. Haul positions of the surveys were selected from the Tow Database at least six month before the surveys started.

7.1 Trawl survey in autumn 2005

Following figures present the planned station of the survey in November 2005. Hauls are marked by colour to show the responsibility of the different countries.

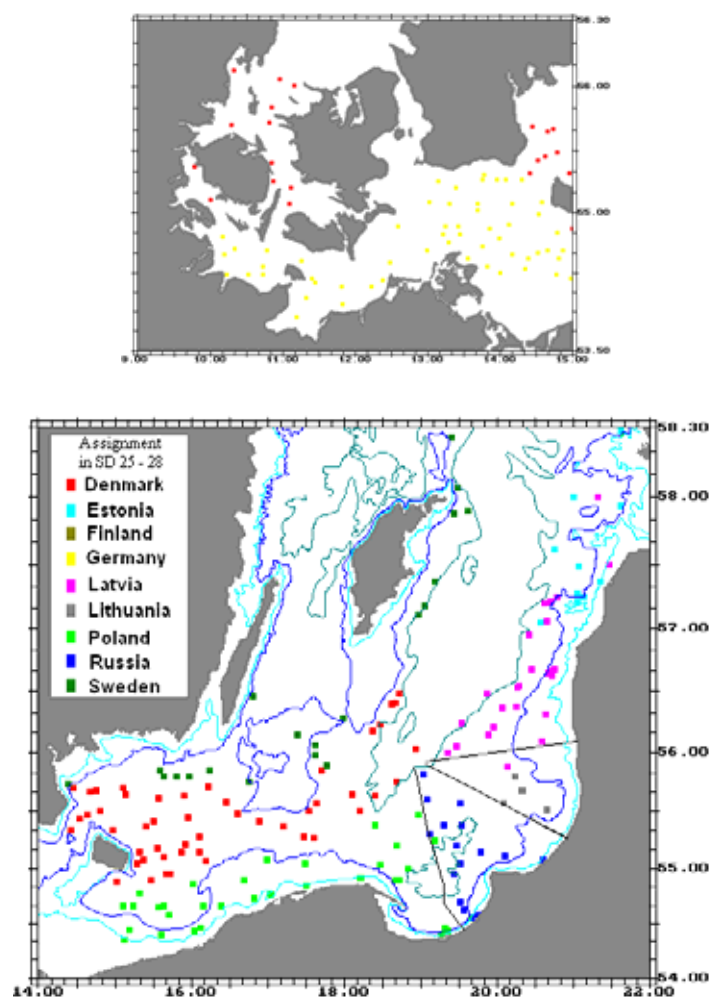


Figure 7.1: Positions of planned stations during BITS in November 2005 by country

Only small changes between the planned and realized haul positions were necessary in some cases due to wrecks, rocky bottom etc. In some cases additional hauls were realized. The feedbacks from the hauls were used to improve the Tow Database. Overviews of the national parts of the BITS in November 2005 are summarized in the following tables.

NATION:	LATVIA	VESSEL:	LATVIA CV "PRIEDAINĒ"
Survey:	2	Dates:	6 November – 20 November 2005

CRUISE	
Gear details:	The small 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.):	In the time of survey 1 trawl was destroyed. Information about this trawl is not included in database. Some changes in survey design were made due to bad weather conditions

ICES SUBDIVISIONS	GEAR (TVL,TVS)	DEPTH STRATA (1-6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACE-MENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
26	TVS	2-3, 5	25 (for survey)	8	0	0	0	0	
28	TVS	1-4		22	0	0	0	0	

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>			
<i>Gadus morhua</i>	504		
<i>Pleuronectes platessa</i>	113		
<i>Solea solea</i>			

NATION:	LITHUANIA	VESSEL:	DARIUS
Survey:	BITS	Dates:	9 December – 10 December 2005

CRUISE	
Gear details:	The small (#520) standard TV3 trawl was used. No rockhoppers were used. The construction of the trawl was not checked before survey.
Notes from survey (e.g. problems, additional work etc.):	No problems were experienced during the survey. One station was impossible to realize, because of rocky bottom, so it was moved a bit. No acoustic logging were performed, no zero-catch hauls were encountered. Total 6 hauls were performed.
Additional comments:	Overall, 5 species of fish were recorded during the survey.

ICES SUBDIVISIONS	GEAR (TVL,TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCKHOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
26	TVS	2		3	0	0	0	0	100
26	TVS	3		2	0	0	0	0	100
26	TVS	4		1	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	144		
<i>Gadus morhua</i>	402		
<i>Platyctys flesus</i>	60		

NATION:	DENMARK	VESSEL:	DANA II
Survey:		Dates:	

CRUISE	
Gear details:	The large (930) standard TV3 trawl is used. Following the recommendations in the TOW database stations are fished either with or without rock-hoppers. The construction of the trawl follows the specifications in the manual.
Notes from survey (e.g. problems, additional work etc.):	No problems were encountered during the survey. Acoustic logging was performed as routine during all hauls and in connection with assumed zero-catch hauls.

ICES SUB-DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	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	2	2	2			1	1	100
25	TVL	3	9	6		2	1	2	100
25	TVL	4	21	12		5	1	1	
25	TVL	5	10	1		9			100
26	TVL	4	5	4		1			100
26	TVL	5	3	3					100
26	TVL	6	1	1					100

NATION:	DENMARK	VESSEL:	HAVFISKEN
Survey:		Dates:	

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.):	No problems were encountered during the survey.

ICES SUBDIV ISIONS	GEAR (TVL,T VS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING “STANDAR D” GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO- CATCH HAULS	NUMBER OF REPLACE MENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
22	TVS	2 - 3	12	12	0	0	0	0	

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>			
<i>Gadus morhua</i>			
<i>Pleuronectes platessa</i>			
<i>Solea solea</i>			

NATION:	RUSSIA	VESSEL:	ATLANTIDA
Survey:	39	Dates:	16 October – 22 October 2005

CRUISE	
Gear details:	The large standard TV3 trawl is used. Following the recommendations in the TOW database stations are fished either without rockhoppers. The construction of the trawl follows the specifications in the manual.
Notes from survey (e.g. problems, additional work etc.):	No problems were experienced during the survey. Damage of a trawl on trawling station 26041.01 from Tow Database.
Additional comments:	It is necessary to exclude trawling station 26041.01 from Tow Database. Two new demersal trawl positions are found.

ICES SUBDIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1-6)	NUMBER OF HAULS PLANNED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
26	TVL	1	4	4	0	0	0	0	100
26	TVL	2	4	4	0	0	0	0	100
26	TVL	3	6	6	0	0	0	1	100
26	TVL	4	8	8	0	0	0	0	100
26	TVL	5	1	1	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	?		
<i>Gadus morhua</i>	?		
<i>Platichthys flesus</i>	?		
<i>Solea solea</i>			
<i>Sprattus sprattus</i>	?		

NATION:	ESTONIA	VESSEL:	CEV (CHARTER)
Survey:	Autumn 2005	Dates:	07 – 09 December 2005

CRUISE	
Gear details:	Small version of the TV3 trawl was used. Rockhopper equipment was not used.
Notes from survey (e.g. problems, additional work etc.):	Oxygen content was not measured.

ICES SUB-DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1-6)	NUMBER OF HAULS PLANNED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCKHOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
28	TVS	2 – 3	6	6	0	0	0	0	100
29	TVS	2 - 3	4	4	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	237		
<i>Gadus morhua</i>	22		
<i>Platichthys flesus</i>	323		
<i>Psetta maxima</i>	21		
<i>Sprattus sprattus</i>	96		

NATION:	GERMANY	VESSEL:	SOLEA
Survey:	Autumn 2005	Dates:	28 October – 14 November 2005

CRUISE	
Gear details:	Small version of the TV3 trawl was used. Rockhopper equipment was not used.
Notes from survey (e.g. problems, additional work etc.):	Information related to the realized hauls was made available for reworking the tow database. Oxygen content did not influence the distribution of cod and flatfish.

ICES SUB DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
22	TVS	1	1	1	0	0	0	0	100
22	TVS	2	17	17	0	0	0	0	100
24	TVS	1	11	11	0	0	0	0	100
24	TVS	2	13	13	0	0	0	0	100
24	TVS	3	22	22	0	0	0	0	100
24	TVS	4	1	1	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	0		
<i>Gadus morhua</i>	1090		
<i>Pleuronectes platessa</i>	328		
<i>Platichthys flesus</i>	514		
<i>Psetta maxima</i>	97		
<i>Sprattus sprattus</i>	0		

NATION:	POLAND	VESSEL:	BALTICA
Survey:	16/2005/MIR	Dates:	17-30 November 2005

CRUISE	BITS 4Q 2005
Gear details:	Trawling was done with the standard rigging ground trawl type TV-3#930 (large version of trawl without bobbins and additional chains connected with footrope), with 10 mm bar length in the codend. A standard vertical sounder monitored the trawling depth. Usually a 5÷7 m vertical net opening was achieved.
Notes from survey (e.g. problems, additional work etc.):	<p>The pre-selected location of following catch stations were modified during survey:</p> <ul style="list-style-type: none"> • of hauls No. 26186, 25011 and 25394 – because on the primary selected catch position proposed trawling depth not occur or the depth was lower than in the TD, • of hauls No. 26086, 25207 and 25179 – due to very low or close to zero oxygen content near bottom, • of haul No. 26163 – due to the gill-nets appearance on the primary selected positions, • of haul No. 26047 – due to a wreck occur on the bottom, • of haul No. 26095 – due to appearance of a heavy bottom with rocks on the primary selected position. <p>The primary selected position of haul No. 25042 should be eliminated from the ICES TD because of considerably destroyed the TV-3 net at this location. The applied net was also partly damaged on the position of haul No. 25025; however the catch station can be eventually kept on the TD list.</p> <p>Due to relatively strong wind activities in the period of 21, 22 and 26 November 2005, the short-time stoppages in work on vessel appeared. Moreover, due to two-time damaged the TV-3 net the short-time breaks in catching occurred.</p>
Additional comments:	At each hauling position, a CTD profile was taken. Eight additional hauls location were applied.

ICES SUB DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACE MENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
25	TVL	1	12	13	0	0	0	1	100
		2	5	5	0	0	1	1	100
		3	4	7	0	1	0	0	>100
26	TVL	1	3	3	0	0	0	0	100
		2	2	3	0	0	1	0	>100
		3	3	4	0	0	0	0	>100
		4	5	5	0	0	3	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	700		
<i>Gadus morhua</i>	521		
<i>Pleuronectes platessa</i>	152		
<i>Platichthys flesus</i>	226		
<i>Psetta maxima</i>	78		
<i>Sprattus sprattus</i>	486		

NATION:	SWEDEN	VESSEL:	RV ARGOS
Survey:	Spring autumn 2005	Dates:	21 November-1 December

CRUISE	THE Q1 BITS SURVEY AIMS TO COLLECT DATA ON THE DISTRIBUTION AND RELATIVE ABUNDANCE, AND BIOLOGICAL INFORMATION OF COMMERCIAL FISH IN THE BALTIC (SD 22-32. THE PRIMARY SPECIES ARE COD, BUT ALSO FLOUNDER, AND HERRING AND SPRAT
Gear details:	Sweden uses the standard TV-3#930 trawl. No tows are done with the rockhopper ground gear on harder ground stations. The trawl construction is according to the specifications in the BIFS manual.
Notes from survey (e.g. problems, additional work etc.):	No problems were experienced during the survey. Acoustic logging was not performed routinely during hauls.

ICES SUB DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
25	TVL	2	4	4			3		100
		3	10	10			1		100
		4	6	6					100
26	TVL	2	1	1			1		100
		3	2	2					100
		4	2	2					100
		5	0	0					100
		6	1	1					100
27	TVL	3	2	2					100
		4	5	5					100
		5	1					1	
		6	2	2		2			100
28	TVL	3	2	2					100
		4	4	4					100
		5	3	3					100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	5623		
<i>Gadus morhua</i>	767		
<i>Sprattus sprattus</i>	2190		
<i>Flounder</i>	1787		

General conclusions

The planned and realized coverage of the Baltic Sea corresponded well during the trawl survey in November 2005. Only low number of hauls was not realized in the deepest parts of the basins due to oxygen depletion. Zero catches were assumed in these regions and datasets with validity code “N” were added to the DATRAS database when it was shown before by at least two hauls that catch was really zero at station with oxygen content of smaller than 1.5 ml/l. Following table summarizes the total numbers of realized station by ICES Subdivision

	SUBDIVISION								
	21	22	23	24	25	26	27	28	29
Number	23	30	3	46	82	64	7	41	4

As the survey was conducted with only insignificant deviations from the plan the WGBIFS recommends that the result from the fourth quarter BITS survey in 2005 can be used without any restrictions by the WGBFAS.

7.2 Trawl survey in spring 2006

About 40 additional hauls were planned in SD 25–28 in spring 2006 in relation to the survey in the autumn before and the same number of stations in SD 22–24. Therefore, the spatial coverage of the Baltic Sea was nearly the same in spring as it is presented in Figure 7.2. Hauls are again marked by colour to show the responsibility of the different countries.

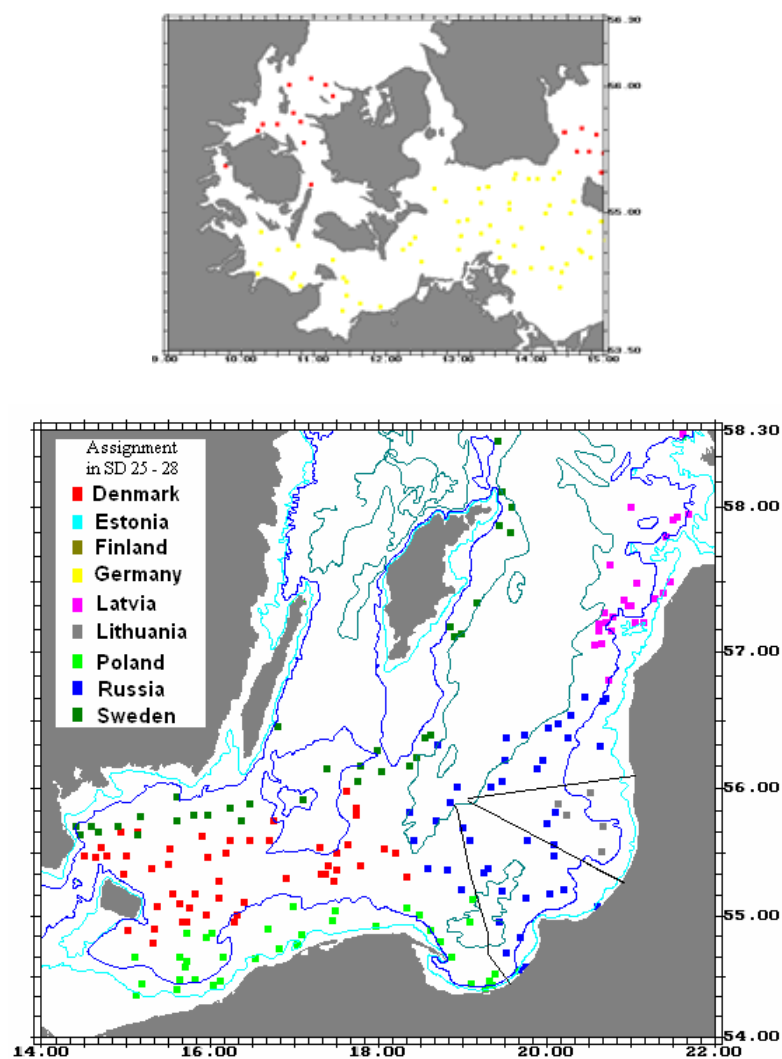


Figure 7.2: Positions of planned stations during BITS in spring 2006 by country.

Only small changes between the planned and realized haul positions were necessary in some cases due to wrecks, rocky bottom etc. and small number of additional hauls were realized. The feedbacks from the hauls were used to improve the Tow Database. Overviews of the national parts of the BITS in November 2005 are summarized in the following tables.

NATION:	LATVIA	VESSEL:	Rv "BALTICA"
Survey:	1	Dates:	5 March – 13 March 2006

CRUISE	
Gear details:	The large standard TV3 trawl is used. Following the recommendations in the TOW database stations are fished either with or without rock hoppers. The construction of the trawl follows the specifications in the manual.
Notes from survey (e.g. problems, additional work etc.):	In the time of survey 1 trawl was destroyed. Some changes in survey design were made due to problems with ice in northern part in SD 28. In SD 26 one additional track was made in depth 142 m.

ICES 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 ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
26	TVL	1-4	25 (for survey)	7	7	0	0	1	
28	TVL	1-4		21	11	3	0	0	

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>			
<i>Gadus morhua</i>	521		
<i>Pleuronectes platessa</i>	276		
<i>Solea solea</i>			

NATION:	DENMARK	VESSEL:	DANA II
Survey:		Dates:	

CRUISE	
Gear details:	The large (#930) standard TV3 trawl was used. Following the recommendations in the TOW database stations are fished either with or without rock-hoppers. The construction of the trawl follows the specifications in the manual.
Notes from survey (e.g. problems, additional work etc.):	No problems were encountered during the survey. Acoustic logging was performed as routine during all hauls and in connection with assumed zero-catch hauls.

ICES SUB DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	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	1	1	1	0	1			100
	TVL	2	3	3	0			1	100
	TVL	3	12	12	0				100
	TVL	4	20	15	0	4	2	2	>100
	TVL	5	11	8	0	5			>100
26	TVL	4	3	2	0		1	1	100

NATION:	DENMARK	VESSEL:	HAVFISKEN
Survey:		Dates:	

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.):	No problems were encountered during the survey.

ICES SUB -DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
22	TVS	3	13	13	0	1	1	0	

NATION:	RUSSIA	VESSEL:	ATLANTIDA
Survey:	40	Dates:	03 March – 20 March 2006

CRUISE	
Gear details:	The large standard TV3 trawl is used. Following the recommendations in the TOW database stations are fished either without rockhoppers. The construction of the trawl follows the specifications in the manual.
Notes from survey (e.g. problems, additional work etc.):	No problems were experienced during the survey.
Additional comments:	Three new demersal trawl positions are found and reported to the database.

ICES SUB DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
26	TVL	1	3	3	0	0	0	0	100
26	TVL	2	3	3	0	0	0	0	100
26	TVL	3	7	7	0	0	0	0	100
26	TVL	4	19	19	0	0	0	0	100
26	TVL	5	5	5	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	1661		
<i>Gadus morhua</i>	610		
<i>Platichthys flesus</i>	418		
<i>Solea solea</i>			
<i>Sprattus sprattus</i>	720		

NATION:	LITHUANIA	VESSEL:	DARIUS
Survey:	19/05	Dates:	8 March – 9 March 2006

CRUISE	
Gear details:	The small (#520) standard TV3 trawl was used. No rock hoppers were used. The construction of the trawl was not checked before survey.
Notes from survey (e.g. problems, additional work etc.):	No problems were experienced during the survey. One station was impossible to realize, because of rocky bottom, so it was moved a bit. No acoustic logging were performed, no zero-catch hauls were encountered. Total 5 hauls were performed.
Additional comments:	Overall, 7 species of fish were recorded during the survey.

ICES SUB -DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
26	TVS	2	2	2	0	0	0	0	100
26	TVS	3	3	3	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	?		
<i>Gadus morhua</i>	?		
<i>Platycthtys flesus</i>	?		
<i>Sprattus sprattus</i>	?		

NATION:	GERMAY	VESSEL:	SOLEA
Survey:	Spring 2006	Dates:	16 February – 6 March 2006

CRUISE	
Gear details:	Small version of the TV3 trawl was used. Rockhopper equipment was not used.
Notes from survey (e.g. problems, additional work etc.):	Large stones were captured at some stations. This information was made available for reworking the tow database. Oxygen content did not influence the distribution of cod and flatfish.

ICES SUB DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
22	TVS	1	4	4	0	0	0	0	100
22	TVS	2	9	9	0	0	0	0	100
22	TVS	1	9	9	0	0	0	0	100
24	TVS	2	13	12	0	0	0	1	100
22	TVS	3	22	21	0	0	0	1	100
24	TVS	4	1	1	0	0	0	0	100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	0		
<i>Gadus morhua</i>	1355		
<i>Pleuronectes platessa</i>	340		
<i>Platichthys flesus</i>	519		
<i>Psetta maxima</i>	68		
<i>Sprattus sprattus</i>	0		

NATION:	SWEDEN	VESSEL:	RV ARGOS
Survey:	Spring survey 2006	Dates:	6 - 23 Mars

CRUISE	THE Q1 BITS SURVEY AIMS TO COLLECT DATA ON THE DISTRIBUTION AND RELATIVE ABUNDANCE, AND BIOLOGICAL INFORMATION OF COMMERCIAL FISH IN THE BALTIC (SD 22-32. THE PRIMARY SPECIES ARE COD, BUT ALSO FLOUNDER, AND HERRING AND SPRAT
Gear details:	Sweden uses the standard TV-3#930 trawl. No tows are done with the rock hopper ground gear on harder ground stations. The trawl construction is according to the specifications in the BIFS manual.
Notes from survey (e.g. problems, additional work etc.):	No problems were experienced during the survey. Acoustic logging was not performed routinely during hauls.

ICES SUB-DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1-6)	NUMBER OF HAULS PLANNED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK-HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
25	TVL	2	4	4			3		100
		3	10	10			1		100
		4	6	6					100
26	TVL	2	1	1			1		100
		3	2	2					100
		4	2	2					100
		5	0	0					100
		6	1	1					100
27	TVL	3	2	2					100
		4	5	5					100
		5	1					1	40
		6	2	2		2			100
28	TVL	3	2	2					100
		4	4	4					100
		5	3	3					100

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	*		
<i>Gadus morhua</i>	1218		
<i>Sprattus sprattus</i>	*		
<i>Flounder</i>	*		

* Information not available

NATION:	POLAND	VESSEL:	BALTICA
Survey:	2/2006/MIR	Dates:	13.02 - 01.03.2006

CRUISE	BITS 1Q 2006
Gear details:	Trawling was done with the standard rigging ground trawl type TV-3#930 (large version of trawl without bobbins and additional chains connected with footrope), with 10 mm bar length in the codend. A standard vertical sounder monitored the trawling depth. Usually a 5-7 m vertical net opening was achieved.
Notes from survey (e.g. problems, additional work etc.):	The pre-selected location of following catch stations were modified during survey: <ul style="list-style-type: none"> of hauls No. 26007, 25001, 25006, 25171, 25055, 25008, 26177, 26131, 26001 – depths were differed in relation to primary determined, of hauls No. 25060, 25014, 25016, 25018, 25022 – positions of hauls were corrected according to primary determined depth of trawling, of hauls No. 25011, 25010 25042, 25048, 25175 – positions of trawling were changed due to gill-nets appearance on the primary selected locations.
Additional comments:	At each hauling position, a CTD profile was taken. Seven additional hauls location were applied.

ICES SUB-DIVISIONS	GEAR (TVL, TVS)	DEPTH STRATA (1 -6)	NUMBER OF HAULS PLANNED	NUMBER OF VALID HAULS REALISED USING "STANDARD" GROUND GEAR	NUMBER OF VALID HAULS REALISED USING ROCK HOPPERS	NUMBER OF ASSUMED ZERO-CATCH HAULS	NUMBER OF REPLACEMENT HAULS	NUMBER OF INVALID HAULS	% STATIONS FISHED
25	TVL	1	14	14	0	0	6	0	100
		2	7	8	0	0	3	0	>100
		3	4	7	0	0	1	0	>100
26	TVL	1	3	4	0	0	0	0	>100
		2	3	4	0	0	0	0	>100
		3	5	6	0	0	0	0	>100
		4	1	1	0	0	0	0	25
		5	1	1	0	0	0	0	20

NUMBER OF BIOLOGICAL SAMPLES (MATURITY AND AGE MATERIAL, *MATURITY ONLY):			
Species	Age	Species	Age
<i>Clupea harengus</i>	639		
<i>Gadus morhua</i>	498		
<i>Pleuronectes platessa</i>	158		
<i>Platichthys flesus</i>	280		
<i>Psetta maxima</i>	6		
<i>Sprattus sprattus</i>	504		

General conclusions

The planned and realized coverage of the Baltic Sea corresponded well during the trawl survey in November 2005. Only low number of hauls was not realized in the deepest parts of the basins due to oxygen depletion. Zero catches were assumed in these regions and datasets with validity code "N" were added to the DATRAS database when it was shown before by at least two hauls that catch was really zero at station with oxygen content of smaller than 1.5 ml/l. Following table summarizes the total numbers of realized station by ICES Subdivision

	SUBDIVISION								
	21	22	23	24	25	26	27	28	29
Number	21	24	3	45	96	74	10	30	

As the survey was conducted with only insignificant deviations from the plan the WGBIFS recommends that the result from the first quarter BITS survey in 2006 can be used without any restrictions by the WGBFAS.

8 Plan and decide on bottom trawls surveys and experiments to be conducted in autumn 2006 and spring 2007

The procedure which is used for allocating stations to the ICES Subdivisions and depth layers is described in Annex 3 "Method used for planning the Baltic international trawl survey" of the WGBIFS report in 2004. The DATRAS Database (version from March 2006) was used to estimate the running means of distribution pattern of both cod stocks by depth layer and ICES Subdivision.

Tables 8.1 and 8.2 present the basic data for allocating the planned total number of hauls by ICES Subdivision and by depth layers. The running means of the BITS indices of age group

1+ of cod from 2001 - 2005 in spring were used based on the current used version of conversion factors which are stored in the DATRAS system.

The most institutes plan the same numbers of hauls during BITS surveys in autumn 2006 and spring 2007 as in the years before. However, a small decrease of total number of stations was necessary by Denmark, Poland, Russia and Sweden during the November survey because special experiment were agreed to estimate the vertical distribution of cod in the pelagic (see ToR k). It is planned that these experiments will be realized during the regular BITS.

The total number of available stations was used in the combination with the results of Tables 8.1 and 8.2 to allocate the number of stations by the ICES Subdivision and depth layer for the different surveys. Tables 8.4 and 8.5 present the allocation of hauls by the ICES Subdivision and the depth layer for the autumn survey in 2006. Furthermore, the number of hauls to be carried out by countries in the different Subdivisions is given. Tables 8.6 and 8.7 show the corresponding data for the survey in spring 2007.

The allocation of station by country and the ICES Subdivision is preliminary. It is possible that the number of stations can be slightly changed to minimize the total distance between the assigned hauls by country. Furthermore, it is required that the coast line (at least 12 nm) will be covered by the nation of the territorial waters to reduce problems with national permissions.

Russia will only cover the Russian zone during the autumn survey 2006.

Table 8.1: Basic data for allocating the hauls of the survey by the ICES Subdivision.

ICES	TOTAL AREA OF THE DEPTH LAYER 10-120 M	PROPORTION OF THE SD (WEIGHT=0.6)	RUNNING MEAN OF THE CPUE VALUE OF AGE GROUPS 1+ (2001 – 2005)	PROPORTION OF THE INDEX VALUES (WEIGHT=0.4)	PROPORTION OF THE STATIONS	SPECIAL DECISIONS (ADDITIONAL STATIONS)
SUBDIV.	[NM ²]	[%]		[%]	[%]	
22	3673	39	310	20	31	
23	0	0	0	0	0	3
24	5724	61	1252	80	69	
Total	9397	100	1563	100	100	
25	13762	43	2665	47	44	
26	9879	31	2065	33	32	
27	0	0	0	0	0	10
28	8516	26	1233	20	24	
Total	32156	100	6184	100	100	

Table 8.2: Basic data for allocating the hauls according to the depth layer for the survey by the ICES Subdivision.

ICES SUB-DIV.	DEPTH LAYER	TOTAL AREA OF THE DEPTH LAYER	PROPORTION OF THE DEPTH LAYER (0.6)	RUNNING MEAN OF THE CPUE VALUE OF AGE GROUP 1+ (2001 – 2005)	PROPORTION OF THE DEPTH LAYER (0.4)	PROPORTION OF THE DEPTH LAYER
	[M]	[NM²]	[%]		[%]	[%]
24	10 – 39	4174	73	229	9	47
	40 – 59	1550	27	893	35	30
	60 – 79	29	0.50	1405	56	23
	Total	5724	100	2527	100	100
25	10 – 39	4532	37	56	3	23
	40 – 59	3254	26	678	39	31
	60 – 79	3037	25	742	42	32
	80 –	1461	12	279	16	12
	Total	12284	100	1754	100	100
26	10 – 39	2379	23	15	1	14
	40 – 59	1519	15	187	14	14
	60 – 79	1911	19	590	43	29
	80 – 100	2872	28	316	23	26
	100 – 120	1504	15	258	19	16
	Total	10185	101	1366	100	100
27	10 – 39	1642	31	0	0	18
	40 – 59	1101	21	0	0	12
	60 – 79	996	19	49	19	19
	80 –	1596	30	213	81	50
	Total	5335	100	262	100	100
28	10 – 39	2589	39	5	1	24
	40 – 59	1598	24	34	9	18
	60 – 79	1101	16	29	56	32
	80 – 100	1389	21	12	33	26
	Total	6677	100	371	100	100

Table 8.3: Total number of the stations which are planned by country during BITS in autumn 2006 and spring 2007

COUNTRY	VESSEL	NUMBER OF PLANNED STATIONS IN AUTUMN 2006	NUMBER OF PLANNED STATIONS IN SPRING 2006
Germany	Solea	60	57
Denmark	Havfisker	13	15
	Total 22 + 24	73	72
Denmark	Dana	42	45
Estonia	Commercial vessel	10	
Finland			
Latvia	Chartered vessel	25	25
Lithuania	Darius	8	8
Poland	Baltica	27	38
Russia	Atlantniro	10	37
Sweden	Argos	20	50
	Total 25 - 28	157	188

Table 8.4: Allocation of the planned stations by country and the ICES Subdivision in autumn 2006.

		ICES SUBDIVISION						
COUNTRY	TOTAL	22	23	24	25	26	27	28
Denmark	55	12	3		35	5		
Estonia	10							10
Finland	0							
Germany	60	13		47				
Latvia	25					13		12
Lithuania	8					8		
Poland	27				22	8		
Russia	10					10		
Sweden	20				1		10	9
Total	215	25	3	47	58	41	10	31

Table 8.5: Allocation of the planned stations by ICES Subdivision and depth layer in autumn 2006.

ICES SUBDIV.	22	23	24	25	26	27	28
DEPTH LAYER [M]							
10 – 39	24	3	22	14	6	3	7
40 – 59			15	19	6	2	6
60 – 79			11	19	12	2	10
80 – 100				8	11	3	8
100 – 120					7		
Total	24	3	48	59	42	10	31

Table 8.6: Allocation of the planned stations by country and ICES Subdivision in spring 2007.

SUBDIVISION								
COUNTRY	TOTAL	22	23	24	25	26	27	28
Denmark	60	12	3		35	10		
Estonia								
Finland								
Germany	57	10		47				
Latvia	25							25
Lithuania	8					8		
Poland	38				24	14		
Russia	37					29		8
Sweden	50				27		10	13
Total	276	23	3	47	86	61	10	46

Table 8.7: Allocation of the planned stations by ICES Subdivision and depth layer in spring 2007.

ICES SUBDIV.	22	23	24	25	26*	27	28
DEPTH LAYER [M]							
10 – 39	23	3	21	28	9	3	11
40 – 59			14	28	9	2	8
60 – 79			12	27	17	2	15
80 – 100				12	16	3	12
100 – 120					10		
Total	23	3	47	86	61	10	46

9 Update and correct the Tow Database

9.1 Reworking of the Tow Database

Checks of the haul positions which were proposed by Sweden have shown that a total reworking of these stations was necessary. Sweden realized the evaluation and correction of the stations between the meetings. The old data were deleted and the corrected version of the data was uploaded in summer 2005.

Feedback of the last two surveys have shown that the structure of the Tow Database use suitable for the routine use now. Therefore, changes of the structure were not proposed and discussed. The current used structure was described in the report of the WG BIFS meeting in 2005.

The feedbacks of the surveys in November 2005 and in spring 2006 were used to improve the quality of the Tow Database. Some stations were deleted (stones, wrecks, area with munitions ...) or were corrected dependent on the information of the different countries. Positions of new hauls were presented by different countries. These data were added to the Tow database.

Table presents overview of the numbers of hauls which are stored in the Tow Database version TD_2006V1.XLS and the numbers of hauls which were not used during last 5 surveys by subdivision.

The proportions of haul which were successful used varied from area to area depending on the different spatial distribution and density of the available positions.

SUBDIVISION	NUMBER OF STATIONS	NUMBER OF STATIONS WHICH WERE NOT USED UNTIL NOW
22	105	57
24	110	24
25	244	107
26	158	21
27	24	13
28	94	37

The new version of the Tow database was presented and was available during the meeting.

9.2 Feedback of the BITS

Structure of feedback of the BITS was agreed two year ago. This structure should be used for reporting the information from the realized hauls. The aim of the structure is to make it easy as possible to rework the Tow Database. The experiences of the last years made it necessary to explain some codes more detailed.

The following information of all realized stations of BITS should be submitted to Germany.

- New version of haul number for the Tow Database
- ICES Subdivision
- Start position (latitude, longitude)
- Mean depth
- Depth range
- TV3 version 1 – TV3#520, 2 – TV3#930
- Used ground rope 1 – standard ground rope, 2 – rock hopper ground rope
- Code of the haul
- Reason for deleting the haul

Set of codes (see table below) for characterizing the different type of realization of hauls was defined.

CODE		CASE
a		The position and the mean depth are suitable. Small changes in the positions are possible due to weather conditions, gillnets, Data of the Tow database must not be changed in these cases.
b	1	The position is suitable, depth must be corrected. Small differences of the water depth which not significantly influence the assignment of the haul to the depth layer and which probably are determined by the variability of the surface layer must not be marked by this code.
b	2	Depth is ok; position must be corrected (reason). This code must be used when the position must be permanent changed due to reasons which will not be changed in the future
b	3	The required depth is not stable, new position is proposed with flat bottom
c		The position is not suitable and it should be deleted (reason)
d		New haul for the database

Recommendations:

It was agreed that:

- The feedback from the realized surveys should be submitted to Germany using the proposed standard format not later than **20 December** (autumn survey) **and immediately after the spring survey**.
- It is not allowed to use the rock hopper ground rope in the following areas:
 - southern part of ICES Subdivision 24
 - ICES Subdivision 25

- south western part of ICES Subdivision 26
- The standard ground rope must be used when the station was successfully carried out during earlier surveys with this gear (see the columns TV3 and ground rope in the TD).
- New haul positions should be submitted to Germany as soon as possible. Especially, hauls in the "white areas" are necessary to cover the total distribution area of the target species. It was proposed that time should be used during surveys to allocate new haul positions in the "white areas".

Figure 9.1 presents the unit with size of 15'N x 20'E which are used for selecting stations of the BITS and the position of hauls which are available in the Tow Database in the eastern Baltic Sea. Figure 9.2 shows the information for the western Baltic Sea. Haul positions are not available for the dark grey marked units – "white areas". Especially for these units additional haul positions are required to improve the total coverage.

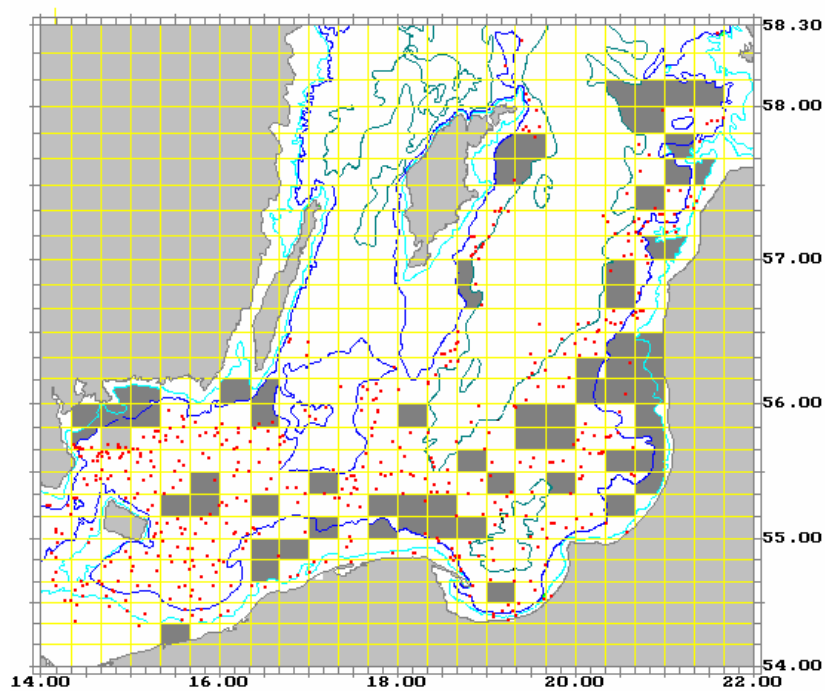


Figure 9.1: Eastern Baltic Sea with units of 10'N x 20'E and marked white areas where haul positions are not available in the Tow Database (dark grey).

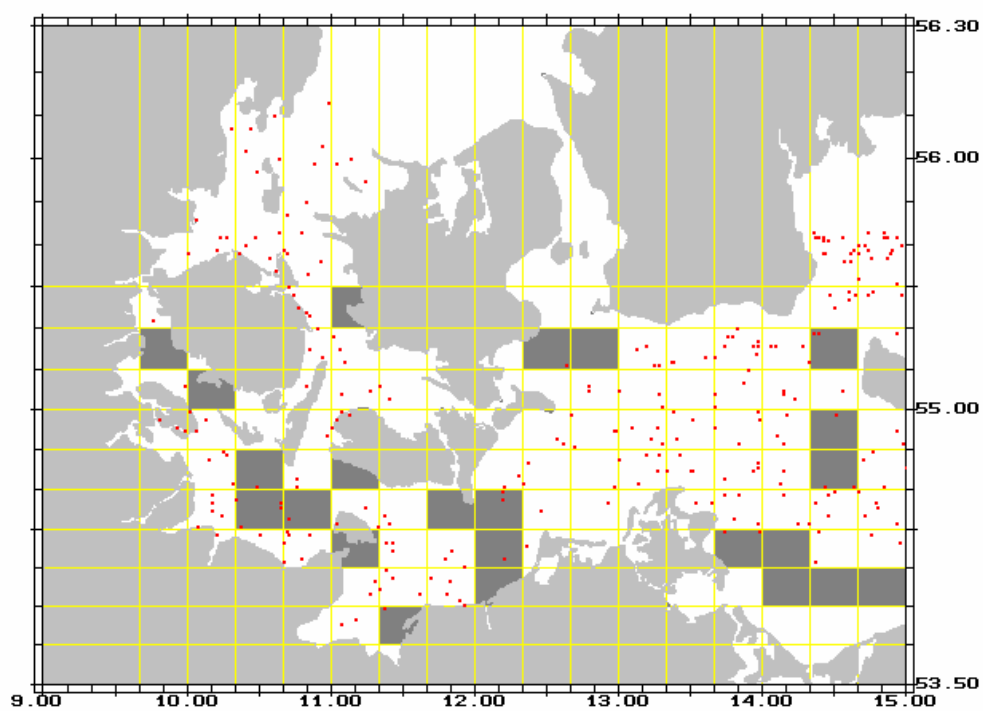


Figure 9.2: Western Baltic Sea with units of 10'N x 20'E and marked white areas where haul positions are not available in the Tow Database (dark grey).

10 Produce a workplan for improving the quality assurance for data stored in the BITS/DATRAS database and establish QC protocols for this in collaboration with ICES secretariat

10.1 Current data flow

Preliminary analyses of the data which are stored in the DATRAS database have shown that additional screening tools are necessary to improve data quality. Problems with the data quality can be detected using the relations of the different parameters of the single fish. It is possible that preliminary data of the BITS can be sent to the ICES. This option was accepted because the trawl surveys in spring finish some day before the assessment working group (WGBFAS) starts. The assessment working group uses the estimates based on the survey in spring of the same year as fisheries independent stock indices. However, deadlines for sending the final versions of the data of the trawl surveys in spring and November were agreed and described in the BITS manual, which was agreed and described in the BITS manual. The preliminary analysis of the database has shown that final versions of the data were not sent to the ICES in many cases.

In a very small number of surveys data of one country were not stored in the database. The absence of the CA records were detected due to that no cross check between the number of realized hauls and the number of datasets which are stored in the DATRAS had been performed

These detected problems can be explained by the flow of information. WGBIFS is responsible for planning the surveys. The haul positions of planned surveys are selected from the Tow database according to an agreed algorithm (see previous reports). After the trawl surveys the countries send the feedback to the person which is responsible for updating the Tow database. Furthermore, the data of the surveys are sent to the ICES. Cross checks between the feedback of the realized stations and the data which were sent to the ICES were not established until now. Furthermore, the countries did not inform the ICES concerning the status of the submitted data. That means that checks whether the final version of the data is available in the DATRAS system can not be realized by ICES.

10.2 Proposed quality check protocols

Tools for screening the CA data were discussed and agreed during the workshop in Gdynia in January 2006 (see ToR A). These screening tools are to be used by all countries to check the data of the surveys in November 2005 and spring 2006 and are also used for reworking the data from 1991 to 2005. It was proposed by the working group that these tools for screening CA data must be implemented in DATRAS system. Furthermore, WGBIFS is responsible for developing new tools and based on the agreement of the group these tools also must be implemented in the system.

It was agreed that the countries have clearly to define whether the data which are sent to ICES presents a preliminary or the final version. Preliminary data must be flagged in the DATRAS database. ICES will contact the countries when the final data are not available after the deadline.

It was agreed that the WGBIFS provide ICES with overview tables with the number of planned stations by survey and country. These data will be used by ICES to realize cross checks between the number of planned stations and the number reported stations. Furthermore, the overview tables which will be prepared by ICES can be used to realize additional cross checks.

11 Review and update the Baltic International Trawl Survey Manual (BITS)

Discussions related to the BITS manual have shown that updates are necessary (e.g. adding of codes of new vessels used and TSN codes for species). Furthermore, in the WGBIFS report of 2005 it was pointed out that description of the DATRAS format should be incorporated in the manual because this database structure has been used since November 2004. However the WGBIFS was not able to incorporate the DATRAS structure at that time. During its 2006 meeting the WGBIFS incorporated the DATRAS data formats to the BITS manual. Also, the species list was updated with TSN codes.

The group adopted the new BITS manual (as Version of April 2006). At the same time effect of the old version of the manual from April 2002 (Addendum to ICES CM 2002/G:05) was ceased.

The updated version of the BITS manual (Version April 2006) is available as an Annex to the WGBIFS 2006 report.

12 Review and update the Baltic International Acoustic Survey Manual (BIAS)

12.1 Presentations during the meeting

BIAS manual were not updated in the last years, because different analyses have shown that some methodical problems could not be solved which were described in the last reports. Therefore, new analyses were initiated during the last meeting to solve the open problems. Different analyses were presented during this meeting which were related to the procedures which are used by the acoustic surveys.

New model for combining the results of control hauls were presented during the last meeting. This model was used to analyse the data of the acoustic survey in the Bornholm Sea in May 2003 and 2004. The use method and the detailed result are presented in the working document “Combination of trawl results during acoustic surveys - CASE STUDY” which is presented in Annex 4. The proposed model uses the Sa-values of the different species during control hauls to analyse the relations between the Sa-values of the species in the total area. Dependent on the results of this analysis the stock indices of the different species will be estimated. The study has shown that the indices of all species significantly differed in both years and that these differences can not be neglected.

Algorithms for pooling trawl data was presented in the working document “Improvement of the BIAS surveys procedure for estimating species and length compositions from trawls data”. The proposed algorithms use the total catches as weighting factors for combining the data of the control hauls. Results of control hauls in different rectangles of in the Subdivision 26 were used for the analyses. It was highlighted that depending on the methods used for pooling trawl data, different estimates of abundance indices by age groups are obtained from the same survey. The differences are determined by the different weighting of the herring catches. The working document recommends revising the Manual of BIAS surveys.

Data which were sampled by different vessels in the same rectangles, overlapping areas, were analyzed to investigate the main sources of uncertainty in BIAS survey. The results are presented in the working document “Improvements of the BIAS survey data utilization in relation to overlapping areas”. Different methods were used to combine the data of the different vessels. New method was proposed which uses the inverse variances of indices of each vessel as weighting factors. The variances were estimated based on simulated methods. The studies have shown that different survey designs and trawl constructions which are used

by national vessels are main sources of uncertainty of BIAS survey results, especially when the spatial heterogeneity of fish distributions it is taken into account. The studies have further shown that the data of overlapping areas can be used to compare the estimated which are based on different vessels.

Preliminary estimates of TS-length regression parameters of Baltic sprat and herring were presented in “The preliminary results of target strength estimates for Baltic sprat and herring”. Acoustic data were sampled during the Russian surveys in spring and 2005 and were analyzed using SonarData Echoview software. The estimates differed from the recent used data, but, additional experiments are necessary.

Different Sources of uncertainty of stock estimates which are based on acoustic methods like spatial variability of Sa index, errors in target strength parameter, variability of species and length compositions were investigated in the working document “Estimating uncertainty in biomass and abundance assessments from results of the acoustic surveys”. In this work uncertainties of abundance and biomass are estimated as a function of considered sources and are shown for individual rectangles and all studied area.

Geostatistical methods were used in the working document “Preliminary results of geostatistical methods utilization for processing the data of international acoustic surveys in the Baltic Sea” to analyze the spatial variability of Sa-values. This method analyses the autocorrelation of subsequent datasets and use these additional information for the estimating mean values, variances, coefficient of variation, confidence intervals. The preliminary studies used the data of Russian acoustic surveys in 26 and 28 subdivisions in 2005. Mean value of Sa in rectangle which were characterized by standard errors using the proposed method were two times smaller than the estimated based on the recent used methods. The studies have shown that additional analyses are necessary which incorporate larger areas.

Different studies were presented during the meeting which analyzed different aspect of the acoustic surveys in the Baltic Sea like the combination of control hauls, the comparison of data from different vessels in the same are, reasons of uncertainty of the stock indices and new methods for estimating stock indices. The presentations have shown that additional and expanded analyses are necessary because preliminary result were presented. It was agreed that additional analyses of the data based on larger areas and more years are necessary to detect the main sources of uncertainty which can change from year to year and to describe the most appropriate methods. Therefore, it was agreed to establish a subgroup which realize the different working steps intercessional.

12.2 Planned activities

Presentations during the meeting used different methods to estimate stock indices and to analyse reasons of uncertainty of the estimates. Discussions of the different results lead to the conclusions that additional analyses are necessary based on larger areas and extended periods.

Furthermore, better descriptions of the used method must be prepared to improve the understanding of the different results. Therefore, sub group was established which realizes different analyses between the meetings. The preliminary results will be made available for the group by mail for reviewing processes. Aims of the work of the sub group are the support of the working group with extended analyses and descriptions of appropriate methods which were already discussed before the next meeting starts. Following member of WG BIFS will work in the sub group.

Pavel Gasyukov, Svetlana Kasatkina, Vladimir Severin (Russia), Fausts Svecovs (Latvia), Niklas Larson (Sweden) and Eberhard Götze, Daniel Stepputtis, Rainer Oeberst (Germany).

Following analyses are suggested:

The Working Group discussed some approaches to improve methods used to process observational data from Baltic International acoustic survey. These approaches were presented during the meeting of WGBIFS-2006. Following studies were suggested:

- Comparison of the stock indices based on different methods (standard, proposed new model, geostatistic methods, ...).
- Investigation of the uncertainty of stock indices based on differed levels of stratification
- Comparison of the basic assumptions of the different models for combining the Sa-values and the control trawls.
- Revision of the pooling trawl data procedure that is used for estimating fish species and length compositions from several hauls taken within the ICES statistical rectangles during BIAS ;
- Determination of the statistical characteristics of main estimates from BIAS: total abundance of fish, herring and sprat abundance, including mean value, their variance and standard errors, coefficient of variations and confidence intervals. The latter will be in compliance with the up-to-date recommendations being developed by ICES WGFAST.

Further proposals suggest the implementation of comparative analysis of the acoustic survey results obtained by traditional methods of the data handling applied to each rectangle and modified methods including different stratification of the survey area. As a stratum there can be used:

- The set of statistical rectangles in the Baltic covered by individual research vessel,
- The whole area covered by individual research vessel,
- Statistical subdivisions ICES

as well as the possible subdivision of the whole survey area by several strata based on the analysis the spatial distribution of herring and sprat. The Working Group asks all members of the WG to develop additional suggestion related to possible stratification of the area under investigation taken into account the basic stratification by subdivision.

The subgroup recommended using the data from the spring and autumn survey in 2005 to for the analyses. Such trial calculations should be done during the intercessional period by members of the subgroup, especially from Russia (AtlantNIRO, Kaliningrad). The results should be distributed among the members of the working subgroup for analysis and expertise.

To implement this computational experiment it is necessary that the data of both surveys in 2005 are available in the BAD2 database not later than September 2006. In the case if required data are not stored in the database the Working Group ask the countries to submit the information as soon as possible directly to AtlantNIRO, Kaliningrad (V. Feldman).

The results of the trial calculations should be presented to the Working Group BIFS meeting in 2007.

13 Report on vertical distribution of fish during the BITS survey in a situation with oxygen deficiency close to the bottom, and make appropriate recommendations

13.1 Studies related to the vertical distribution of cod

Preliminary analyses of hydroacoustic data recorded during BITS surveys in October/November 2005 have shown the necessity of incorporating acoustic recordings into BITS (see Annex 4). Evidence of substantial concentrations of cod in regions outside the area which is swept by bottom trawl in SD 25 was presented during the meeting. Distributional patterns along oxygen gradients have been conspicuous indicating that cod was located in well oxygenated midwater in areas where oxygen depleted zones occurred close to the bottom. To study and quantify the abundance cod in the pelagic layer, it was proposed and agreed that data of the acoustic surveys in October from 2001 to 2005 will be used to assess cod indices and their spatial distribution. Furthermore, it was agreed that all countries sample SA values of the total water column during the BITS trawl surveys in autumn. In order to guarantee data consistency, it was proposed that Sonardata's EchoView software will be used to analyse hydroacoustic raw-data. Settings of the acoustic equipment are chosen on a level allowing the identification of single echoes scattered by cod.

13.2 Acoustic measurements during the BITS in November 2006

It was suggested by the Working Group that a manual for the collection of the acoustic data during the BITS survey should be compiled during the next WGBIFS meeting in 2007. Following recommendations were agreed related to the collection of the acoustic data during the BITS surveys in autumn 2006.

Equipment

SIMRAD EK/EY-500 or SIMRAD EK-60 SIMRAD EK/EY-500 or SIMRAD EK-60 is the standard equipment which is used during the acoustic surveys in the Baltic Sea. The same equipment will be used during the BITS surveys.

Instrument settings

The following settings are recommended to use in the transceiver menus during the BITS survey:

MENU	SETTING	VALUE
OPERATION MENU	Ping Interval / Ping Rate	Minimal (0.2 –0.5 second)
TRANSCIVER MENU	Pulse Length	Short (0.3 millisecond or less)
LAYER MENU	Sv Threshold	-60 dB
DISPLAY MENU	TS Colour Min. Sv Colour Min.	-60 dB
PRINTER MENU	TS Colour Min. Sv Colour Min.	-60 dB
TS DETECTION MENU	Min. Value	-60 dB

In the transceiver DISK MENU such settings should be used which provide the maximum number of the telegrams of the raw data. All the other transceiver settings should be used the same as described in the BIAS manual (ICES 2003).

Calibration

A calibration of the transducer should be conducted at least once before or during the survey. The transducer must be calibrated with the same transceiver settings, which are used for the data collection during the BITS survey.

Assessment of vertical cod distribution – pilot studies

To quantify the vertical distribution of cod as a function of oxygen depletion, it was agreed to further explore and collect data on pelagic cod in Subdivisions 25 and 26. In the deeper area of these two subdivisions, areas with oxygen depletion will be identified during the trawl surveys. Areas of about ¼ of an ICES statistical rectangle will be used for the pilot studies. In these areas, additional to the recording of hydroacoustic data, at least three midwater trawls have to be carried out with trawls, which are used during BIAS. In order to overcome technical and time problems evolving from the need of operating with two different trawl nets, the total number of stations of the BITS will be reduced on a scale necessary to provide additional time for the pilot studies. Experiments will be conducted by four countries and these countries will have a reduction in trawl stations (see following Table).

COUNTRY	ADDITIONAL TIME NEEDED (DAYS)	NO. OF BITS STATIONS DELETED
Poland	2	7
Sweden	2	10
Denmark	2	10
Russia	2	8

Experimental setup

Before the experiment starts, CTD stations should be made to determine an area not smaller than 15*15 nm where the oxygen concentration at the bottom is lower than 1 ml/l or less. The experiment will be performed in a 15*15 nm rectangle and be covered by at least 30 nm of acoustic transects and at least three 30 minutes midwater trawl stations. The midwater trawls should cover depth layer, which cannot be covered by the TV3 trawl. That means that the midwater trawl should be at least about 5 m above the bottom during the haul and should cover the concentrations in the pelagic where cod is detected by targets of single species, in the most cases immediately above the oxygen halocline of 1 ml/l. The trawl stations should be randomly realized in the area under investigations where fish concentrations are observed with the acoustic equipment. Acoustic logging of SA values should be made also during the trawling.

13.3 Image-files of echograms

It was agreed that image-files of echograms corresponding to each fishery haul conducted during the cruise should be made available for all interested parties. Echoview features the possibility to plot the position and vertically swept area of the trawl net during these hauls into the echogram. Excerpts from echograms covering the hauls then can be exported as image-files. The images do not provide data for analysis but provide the possibility for a fast subjective visual check of fish echo distribution during fishery hauls of interest without the need of raw-echo-data and special processing software. The possibility to incorporate these image-files into the database is not clear yet. As a first approach, it may be helpful to put all files on a public server. To allow easy allocation of image-files to corresponding hauls, a naming convention described below has to be followed.

The naming of image-files should include information on date, ship, BITS-station- and haul number. For example:

Date of haul: 2005
 Ship: "Solea"
 BITS-station: 22051
 Fishery haul: 14

→ Filename: 2005_SO_22051_14.png

14 Recommendations

The working group recommends that hydrographical data of the 5 meters above the bottom which were realized immediately before or after the trawl stations (spring and autumn) are sent to Rainer Oeberst not later than end of September. It was agreed that the data of 2005 are used for pilot studies. The preferred format of data is the Ocean Data View format, but formats used by the institutes are also accepted, taking into account that the positions of the stations are needed. (Comments concerning Ocean Data View are available in the report of 2004). The database will be submitted to all countries for carrying out special analyses and presentations.

Hydrographical data are collected as a standard during the most acoustic surveys. These data records fit time near the acoustically observed spatial distributions of the examined fish concentrations. The Working Group recommends that the hydrographical data from the acoustic surveys of the last surveys should be collected from all participants and a combined dataset can be composed for the common use in the WG.

The preferred exchange format of data is the Ocean Data View format (see <http://www.awibremmerhaven.de/GEO/ODV>), but other formats used by the institutes are also accepted, taking into account that the positions of the stations are needed.

The data should have the following format:

CRUISE	STATION	DATE	UTC	LON[°E]	LAT[°N]	BOT. DEPTH
	number	mon/day/yr	hh:mm	decimal	decimal	meter
SOL05	10	10/20/2005	18:44	12.34211	54.9965	34

DEPTH	TEMPERATURE	SALINITY	(OXYGEN)OTHER
METER	°C	PSU	ML/L	
12.17	8.675	12.065	6.78	

For each depth step similar rows must be added. The depth steps can be chosen in the range of 10 cm to 1 m to give a sufficient precision in the vertical distribution and on the other hand to hold the file dimension small. The oxygen and other parameters are optional but it would be valuable to have at least some oxygen determinations in discrete depths (e.g. Winkler method).

The Group agreed that the members of the WG should discuss this proposal in the institutes and inform Eberhard Götze about the possibilities to deliver such data until May 2005.

The working group recommends that all BAD1 data owners are requested to examine the own datasets and send the corrected datasets until September 2006 to Rainer Oeberst and Eberhard Götze.

The new data policy of ICES was discussed during the WGBIFS meeting. The new policy is characterized by the fact that all data which are stored in one of the ICES databases are available to the public (all interested persons, institutes and firms). It means that also preliminary version of the data, which are sent immediately after the survey to support the assessment working groups with newest information, will be available to the public. These data can contain errors and not all sampled data will be available in the database. The use of these data can lead to misinterpretations. It was agreed that preliminary data will be updated by the countries within defined periods. Furthermore, screenings of the data and cross checks are necessary to safeguard high quality of the data. The checks require intensive analyses of the data and special knowledge of structure of the data.

Overall it was agreed during the WGBIFS meeting that aggregated data and overview maps can be available to the public, when they are available at ICES. However, it was also agreed that the source data should be protected at least three years before they can be free for all interested persons. It was agreed that all WG members will inform their institutes and national delegates about the proposed changes in ICES data policy immediately after the WGBIFS 2006 meeting in order to formulate the position of member states on the matter, and whether the proposed 3-year data closure should be further expanded.

The working group recommends that trawls should be used with a cod end mesh size of 20 mm of the stretched mesh during the acoustic surveys in October in SD 22, - 24. In SD 25–32 a stretched mesh size of 12 mm is required during the same survey. For the acoustic surveys in May a stretched mesh size of 20 mm in the cod end is required in all subdivision, however, it also possible to use stretched mesh size of 12 mm.

14.1 Acoustic surveys

The following important working items must be considered for the future and the WG BIFS therefore recommends that:

- The coverage of the acoustic survey by different nations in the Baltic Sea should be maintained at the actual high level. Additionally Subdivisions 29N and 32 should be covered during future surveys in October. Additional acoustic investigations should be carried out by Lithuania and Russia in the shallow waters of SD26 in October.
- In order to get a complete picture of herring and sprat distribution in the Western Baltic area (Skagerrak, Kattegat, Subdivisions 22-24) the whole area should be covered at the same time. At present the Western Baltic area is covered by two separate surveys in different time of the year. One is carried out in July (Skagerrak, northern Kattegat) and the other in September/October (southern Kattegat, Subdivisions 22 to 24). The July survey is connected to the North Sea acoustic summer surveys whereas the October survey is linked to the Baltic Sea acoustic surveys.
- The results of the acoustic surveys in May/June and October should be submitted in the BIAS exchange format at least one month before the WGBIFS meeting to Eberhard Götze, Germany and Niklas Larson, Sweden.
- The database BAD1 and BAD2/FishFrames should be updated and the intensive studies of the data from this database should be continued.
- The Working Group recommends, that the acoustic survey of the Gulf of Riga herring, performed by Estonia and Latvia since 1999 should be included to list the surveys handled by the WGBIFS as a separate international survey. Accordingly, a standard survey report should be presented to the next Working Group meeting.
- The WG also recommends that Sweden, during their acoustic survey in the autumn 2006, makes a first pilot survey (only covering a part of SD 30) to

determine if the clupeids in this area are countable. This can also aid the planning of this new survey in 2007.

14.2 Trawl surveys

Following working steps are recommended by the WGBIFS related to the bottom trawl surveys:

- The feedback from the surveys should be submitted to Germany using the above format not later than 20 December (autumn survey) and immediately after the spring survey.
- Additional hauls should be submitted to Germany. Especially hauls in the "white areas" are necessary to cover the total distribution area of the target species. It is proposed to use short periods of the future surveys to detect regions in the "white areas" where hauls are possible.
- All institutes use the agreed tools for screening CA data before the data are sent to ICES. Furthermore, it must be clearly marked whether the data are preliminary or final version.

14.3 Next meeting in 2007

The Working Group discussed its next meeting and recommends that it will meet five days from 26–30 of March 2007 in Rostock, Germany (Chair: Rainer Oeberst), to assist WGBFAS and ACFM.

14.4 Terms of Reference

According to Annual Science Conference Resolution in Maastricht, Netherlands (C.Res.2006/x:xx) the Baltic International Fish Survey Working Group [WGBIFS] (Chair: Rainer Oeberst) will meet in Rostock, Germany from 26 - 30 of March 2007 to:

- a) combine and analyse the results of the 2006 acoustic surveys and experiments and report to WGBFAS;
- b) update the hydro-acoustic databases BAD1 and BAD2 for the years 1991 to 2006;
- c) plan and decide on acoustic surveys and experiments to be conducted in 2007 and 2008;
- d) discuss the results from BITS surveys performed in autumn 2006 and spring 2007;
- e) plan and decide on demersal trawl surveys and experiments to be conducted in autumn 2007 and spring 2008;
- f) update and correct the Tow database;
- g) review and update, the Baltic International Trawl Survey (BITS) manual;
- h) review and update the Baltic International Acoustic Survey (BIAS) manual;
- i) study the vertical distribution of the cod during the BITS survey in a situation with oxygen deficiency close to the bottom;
- j) discuss the extension of the DATRAS data in time and space.

The above Terms of Reference are set up to provide ACFM with information required to respond to requests for advice/information from the International Baltic Sea Fishery Commission and Science Committees. WGBIFS will report to the Living Resources Committee and the Baltic Committee at the 2007 Annual Science Conference in Maastricht.

Justification

The main objective of the WGBIFS is to coordinate and standardise national research surveys in the Baltic for the benefit of accurate resource assessment of fish stocks. From 1996 to 2003 attention has been put on evaluations of traditional surveys, introduction of survey manuals and consideration of sampling design and standard gears as well as coordinated data exchange format. In recent years activities have been devoted to coordinate international coordinated demersal trawl surveys using the new standard gear TV3 and to continue the analyses of the conversion factors between the new and old survey trawls.

The most important future activities are to combine and analyze acoustic survey data for the Baltic Fisheries Assessment Working Group, develop a disaggregated hydro-acoustic database, plan and decide on acoustic surveys and experiments to be conducted. The quality assurance of ICES will require achievements towards a fully agreed calibration of processes and internationally agreed standards. [Action Numbers a): 1.2.1, 1.2.2 b): 1.2.2, 1.13.3 c): 1.11 d): 1.2.1, 1.2.2 e): 1.11, f): 1.11, g): 1.11, h): 1.13.4, 1.11 i): 1.13.4 j): 1.13.4 k): 1.13.4, 1.11]

Activity is related to the maintenance and strengthening of partnership with national science institutes and to the elaboration and development of our knowledge of the stock structure, dynamics and trophic relationships.

Annex 1: List of participants

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Annex 2: Draft 2007 Resolution (Category 2)

The **Working Group on Baltic International Fish Survey** [WGBIFS] (Chair: R. Oeberst, Germany) will meet in Rostock, Germany from 26–30 of March 2007 to:

- a) combine and analyse the results of the 2005 acoustic surveys and experiments and report to WGBFAS;
- b) update the hydro-acoustic databases BAD1 and BAD2 for the years 1991 to 2006;
- c) plan and decide on acoustic surveys and experiments to be conducted in 2007 and 2008;
- d) discuss the results from BITS surveys performed in autumn 2006 and spring 2007;
- e) plan and decide on demersal trawl surveys and experiments to be conducted in autumn 2007 and spring 2008;
- f) update and correct the Tow database
- g) review and update the Baltic International Trawl Survey (BITS) manual;
- h) review and update the Baltic International Acoustic Survey (BIAS) manual.
- i) study the vertical distribution of the cod during the BITS survey in a situation with oxygen deficiency close to the bottom.
- j) discuss the extension of the DATRAS data in time and space

Supporting Information

PRIORITY:	The work of the Group is essential to the development of internationally coordinated trawl surveys and research on medium- and long-term changes of population structure of Baltic cod, herring and sprat stocks. These stocks are key elements of the Baltic Sea ecosystems.
SCIENTIFIC JUSTIFICATION AND RELATION TO ACTION PLAN:	<p>The above Terms of Reference are set up to provide ACFM with information required to respond to requests for advice/information from the Inter-national Baltic Sea Fishery Commission and Science Committees.</p> <p>The main objective of WGBIFS is to coordinate and standardise national research surveys in the Baltic for the benefit of accurate resource assessment of Baltic fish stocks. From 1996 to 2003 attention has been put on evaluations of traditional surveys, introduction of survey manuals and consideration of sampling design and standard gears as well as coordinated data exchange format. In recent years activities have been devoted to co-ordinate international coordinated demersal trawl surveys using the new standard gear TV3 and to continue the analyses of the conversion factors between the new and old survey trawls.</p> <p>The most important future activities are to combine and analyze acoustic survey data for the Baltic Fisheries Assessment Working Group, develop a disaggregated hydroacoustic database, plan and decide on acoustic surveys and experiments to be conducted. The quality assurance of ICES will require achievements towards a fully agreed calibration of processes and internationally agreed standards. [Action Numbers a): 1.2.1, 1.2.2 b): 1.2.2, 1.13.3 c): 1.11 d): 1.2.1, 1.2.2 e): 1.11, f): 1.11, g): 1.11, h): 1.13.4, 1.11 i): 1.13.4 j): 1.13.4 k): 1.13.4, 1.11]</p>
RESOURCE REQUIREMENTS:	No special/additional resources required.
PARTICIPANTS:	Relevant scientists from all institutes that participate in the Baltic International Fish Survey
SECRETARIAT FACILITIES:	Normal Secretariat facilities are necessary for running the meeting.
FINANCIAL:	
LINKAGES TO ADVISORY COMMITTEES:	ACFM: The quality of stock assessments and management advice of Baltic herring, sprat and cod stocks.

LINKAGES TO OTHER COMMIT-TEES OR GROUPS:	WGBFAS, SGMPB, Resource Management Committee, Fisheries Technology Committee/ Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB), Baltic Committee
LINKAGES TO OTHER ORGANISATIONS:	IBSFC
SECRETARIAT MARGINAL COST SHARE:	ICES:80% IBSFC:20%

Annex 3: Plans of surveys international co-ordinated by ICES Baltic International Fish Surveys Working Group

International coordinated acoustic Survey in May/June 2006

Table 1: General description of the Baltic International Acoustic Survey.

AIM OF THE SURVEY:	ESTIMATION OF STOCK INDICES OF SPRAT
Period of the survey:	May/June
Used methods:	Acoustic estimates of total fish density, estimation of the species composition based on control hauls, recording of the hydrographical profiles at positions of control hauls
Covered parts of the Baltic Sea:	ICES Subdivision 24 to 28. Figure 1.1 presents the Baltic Sea with ICES Subdivisions and rectangles. Furthermore, the rectangles are marked in relation to the nation which is in charge for. Additional ICES-rectangles have to be covered for purposes of intercalibration (see Table A1.3)
Coordination of the Survey:	ICES Working Group of "Baltic International Fish Survey" (ICES 2005)

Table 1.2: Planned acoustic survey specified by nations.

COUNTRY	VESSEL	PERIOD	COVERED ICES SUBDIVISIONS	ACOUSTIC EQUIPMENT	USED TRAWL FOR CONTROL HAULS	HYDROGRAPHICAL DATA AND FURTHER INVESTIGATIONS
Germany	WALTHER. HERWIG III	16.05.-06.06.	24, 25, 26 (part), 27 (part)	EK 500	PSN 205	Hydrography
Russia	ATLANTIDA	20.05.-05.06	26 (part)	EK 500	RT/TM 70/300	Hydrography
Lithuania	DARIUS	2 days May	26 (part)	EY 500		
Latvia & Poland	BALTICA	14 - 23.05.	26 (N - part), 28	EY 500	WP53x64x4	Hydrography

Table 1.3: ICES-rectangles which have to be covered additionally for intercalibration purposes.

COUNTRY	RECTANGLE	MANDATORY/OPTIONAL
Russia	39G8; 40G8; 41G9	mandatory
Russia	41G8	Optional

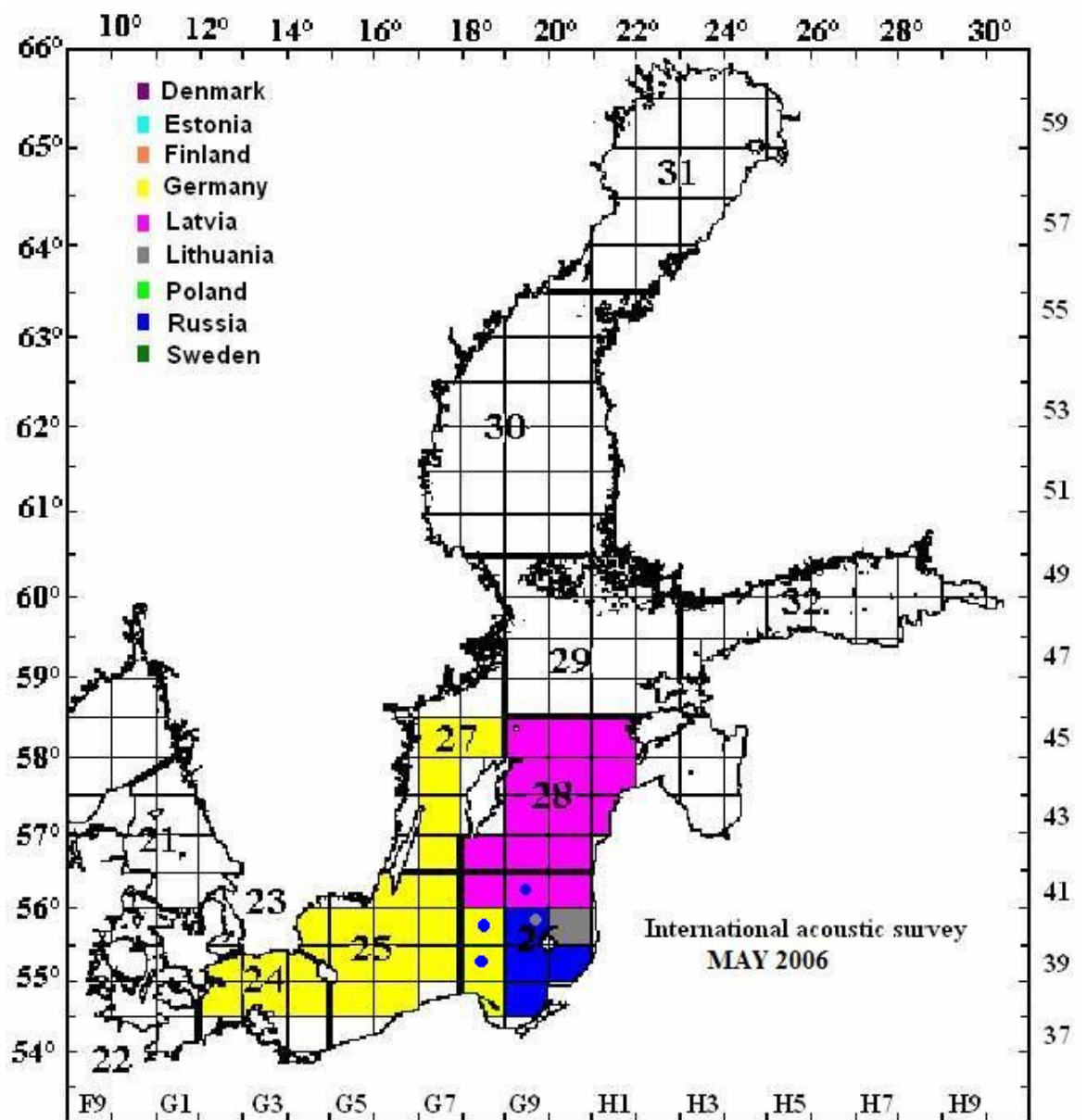


Figure 1.1: Baltic Sea with the ICES Subdivisions and the ICES-rectangles. The rectangles are marked in relation to the nation which is in charge for. Additional ICES-rectangles have to be covered for purposes of intercalibration (see Table 1.3).

International coordinated acoustic Survey in October 2006

Table 2.1: General description of the Baltic International Acoustic Survey.

AIM OF THE SURVEY:	ESTIMATION OF STOCK INDICES OF HERRING AND SPRAT
Period of the survey:	October
Used methods:	Acoustic estimates of total fish density, estimation of the species composition based on control hauls, recording of the hydrographical profiles at positions of control hauls
Covered parts of the Baltic Sea:	ICES Subdivision 21 to 28. Figure 2.1 presents the Baltic Sea with ICES Subdivisions and rectangles. Furthermore, the rectangles are marked in relation to the nation which is in charge for. Additional ICES-rectangles have to be covered for purposes of intercalibration (see Table A1.6)
Coordination of the Survey:	ICES Working Group of "Baltic International Fish Survey" (ICES 2005)

Table 2.2: Planned acoustic survey specified by nations.

COUNTRY	VESSEL	PERIOD	COVERED ICES SUBDIVISIONS	ACOUSTIC EQUIPMENT	USED TRAWL FOR CONTROL HAULS	HYDROGRAPHICAL DATA AND FURTHER INVESTIGATIONS
German	SOLEA	05.10.-24.10.	21, 22, 23, 24	EK 500	PSN 388	Hydrography
Russia	ATLANIRO/ ATLANTIDA	October	26	EK 500	RT/TM 70/300	Hydrography, Cod vertical distribution
Sweden	Argos	02.10.-20.10.	25 (N), 27, 28 (W), 29W	EK 60	Fotö, Makro	Hydrography
Poland	BALTICA	18.09 – 08.10.	24(N), 25, 26	EY 500	WP53x64x4	Hydrography
Lithuania	DARIUS	2 – 3 days October	26 (part)	EY 500	Pelagic trawl	
Latvia & Poland	BALTICA	12 - 21.10.	26 (N -part), 28	EY 500	WP53x64x4	Hydrography
Estonia, Finland & Poland	BALTICA	22 - 31.10.	28 (N -part), 29 (N-part) & 32 (W-part)	EY 500	WP53x64x4	Hydrography
Latvia; Estonia	CHARTER	25.07.-02.08.	28 (Gulf of Riga)	EY 500	Pelagic trawl	

Table 2.3: ICES-rectangles which have to be covered additionally for intercalibration purposes.

COUNTRY	RECTANGLE	MANDATORY/OPTIONAL
Russia	39G8; 40G8,41G9	Mandatory
Russia	41G8	Optional
Latvia	45G9;	Mandatory

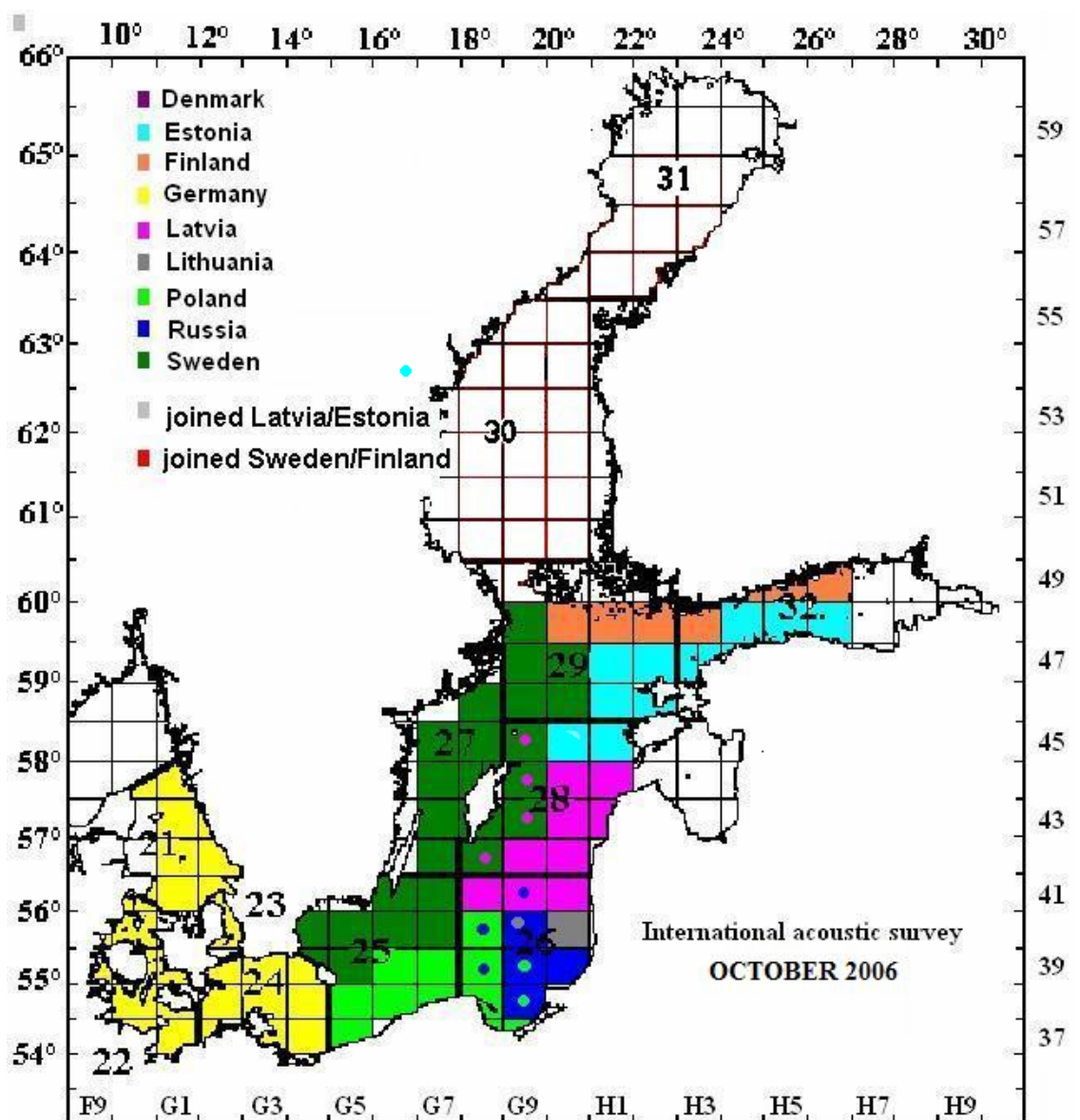


Figure 2.1: Baltic Sea with the ICES Subdivisions and rectangles. The rectangles are marked in relation to the nation which plans the coverage.

International coordinated acoustic Survey in May/June 2007

Table 3.1: General description of the Baltic International Acoustic Survey.

AIM OF THE SURVEY:	ESTIMATION OF STOCK INDICES OF SPRAT
Period of the survey:	May/June
Used methods:	Acoustic estimates of total fish density, estimation of the species composition based on control hauls, recording of the hydrographical profiles at positions of control hauls
Covered parts of the Baltic Sea:	ICES Subdivision 24 to 28. Figure 3.1 presents the Baltic Sea with ICES Subdivisions and rectangles. Furthermore, the rectangles are marked in relation to the nation which is in charge for. Additional ICES-rectangles have to be covered for purposes of intercalibration (see Table 3.3)
Coordination of the Survey:	ICES Working Group of "Baltic International Fish Survey" (ICES 2005)

Table 3.2: Planned acoustic survey specified by nations.

COUNTRY	VESSEL	PERIOD	COVERED ICES SUBDIVISIONS	ACOUSTIC EQUIPMENT	USED TRAWL FOR CONTROL HAULS	HYDROGRAPHICAL DATA AND FURTHER INVESTIGATIONS
Germany	WALTHER. HERWIG III	May	24, 25, 26, 27	EK 500	PSN 205	Hydrography
Russia	ATLANTIDA/ ATLANTNIRO	May	26	EK 500	RT/TM 70/300	Hydrography
Lithuania	DARIUS	May	26 (part)	EY 500	Pel.trawl	
Latvia/ Poland ???	BALTICA	May	26(part), 28	EY 500	WP53x64x4	Hydrography

Table 3.3: ICES-rectangles which have to be covered additionally for intercalibration purposes.

COUNTRY	RECTANGLE	MANDATORY/OPTIONAL
Russia	39G8; 40G8; 41G9	mandatory
Russia	41G8	optional

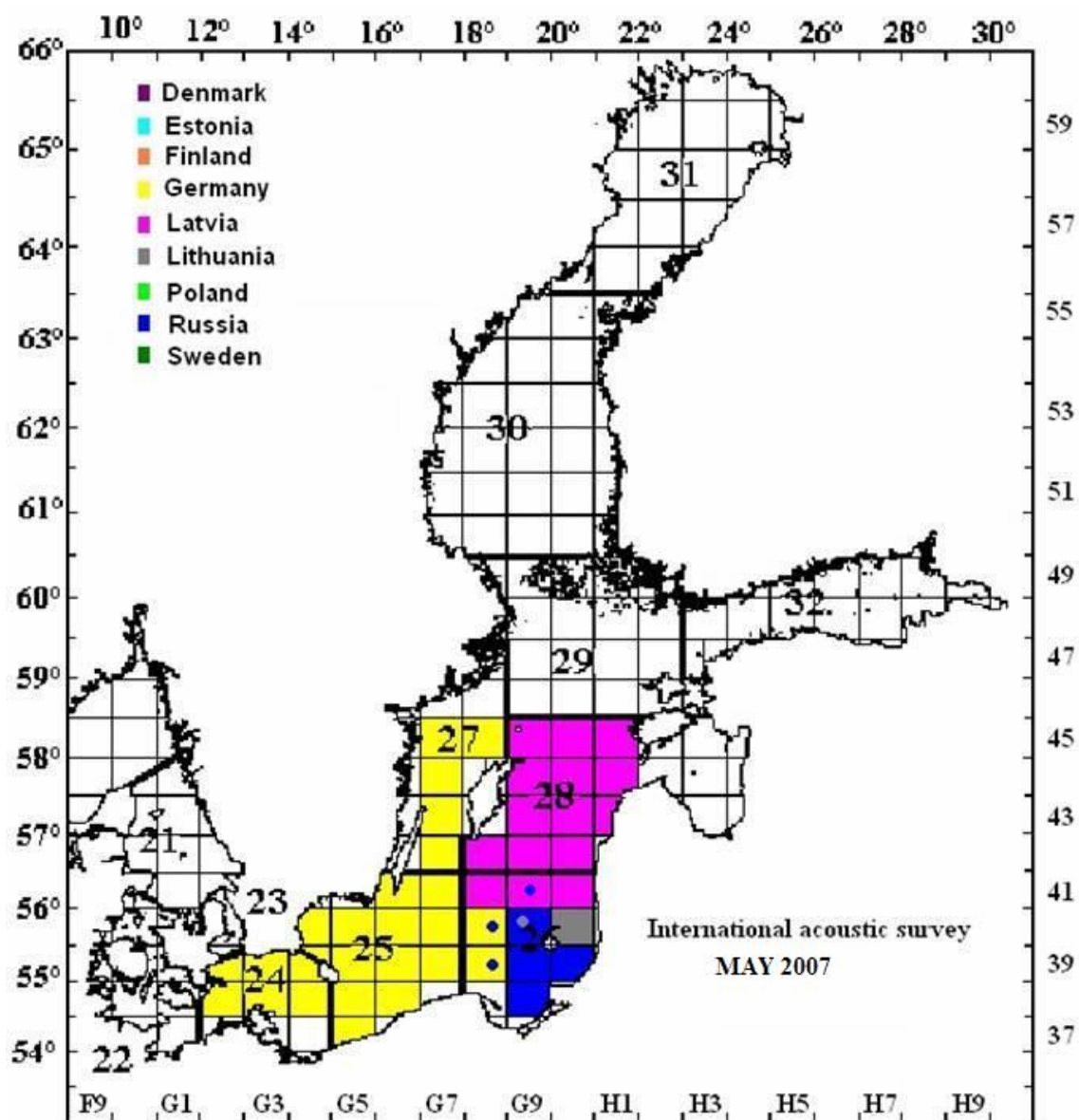


Figure 3.1: Baltic Sea with ICES Subdivisions and ICES-rectangles. The rectangles are marked in relation to the nation which is in charge for. Additional ICES-rectangles have to be covered for purposes of intercalibration (see Table 3.3).

International coordinated bottom trawl survey in autumn 2006

Table 4.1: General description of the Baltic International Bottom Trawl Survey.

AIM OF THE SURVEY:	ESTIMATION OF STOCK INDICES OF COD AND FLAT FISH
Period of the survey:	November
Used methods:	Estimation of the fish density (catch per halve hour) using bottom trawls with standardized gears. The positions of the hauls are randomly selected according to an agreed procedure of the ICES "Baltic International Fish Survey Working Group". Recording of the hydrographical profiles at positions of hauls.
Covered parts of the Baltic Sea:	ICES Subdivisions 22 to 28. Figure 4.1 presents the Baltic Sea with ICES Subdivisions and rectangles. Furthermore, the rectangles are marked in relation to the nation which plan to cover the area.
Coordination of the Survey:	ICES Working Group of "Baltic International Fish Survey" (ICES 2006)

Table 4.2: Planed bottom trawl survey specified by nations.

COUNTRY	VESSEL	PLANNED PERIOD	COVERED ICES SUBDIVISIONS	USED TRAWL	HYDROGRAPHICAL DATA AND FURTHER INVESTIGATIONS
German	RV Solea	30.10 - 17.11.	22, 24	TV3#520	Hydrography
Latvia & Poland	Baltica	29.11. – 08.12.	26 (N – part) & 28	TV3#930	Hydrography
Poland	Baltica	14 – 26.11.	25, 26	TV3#930	Hydrography
Lithuania	Darius	November	26 (rectangle 4065)	TV3#520	No
Estonia	Charter	November	28, 29	TV#520	No
Sweden	Argos	November	25, 26, 27, 28	TV#930	Hydrography
Russia	Atlantniro or Atlantida	November	26 (Russian EZ)	TV#930	Hydrography
Denmark	RV Dana	November	25, 26	TV3#930	Hydrography
Denmark	RV Havfisker	November	21, 22, 23	TV3#520	No

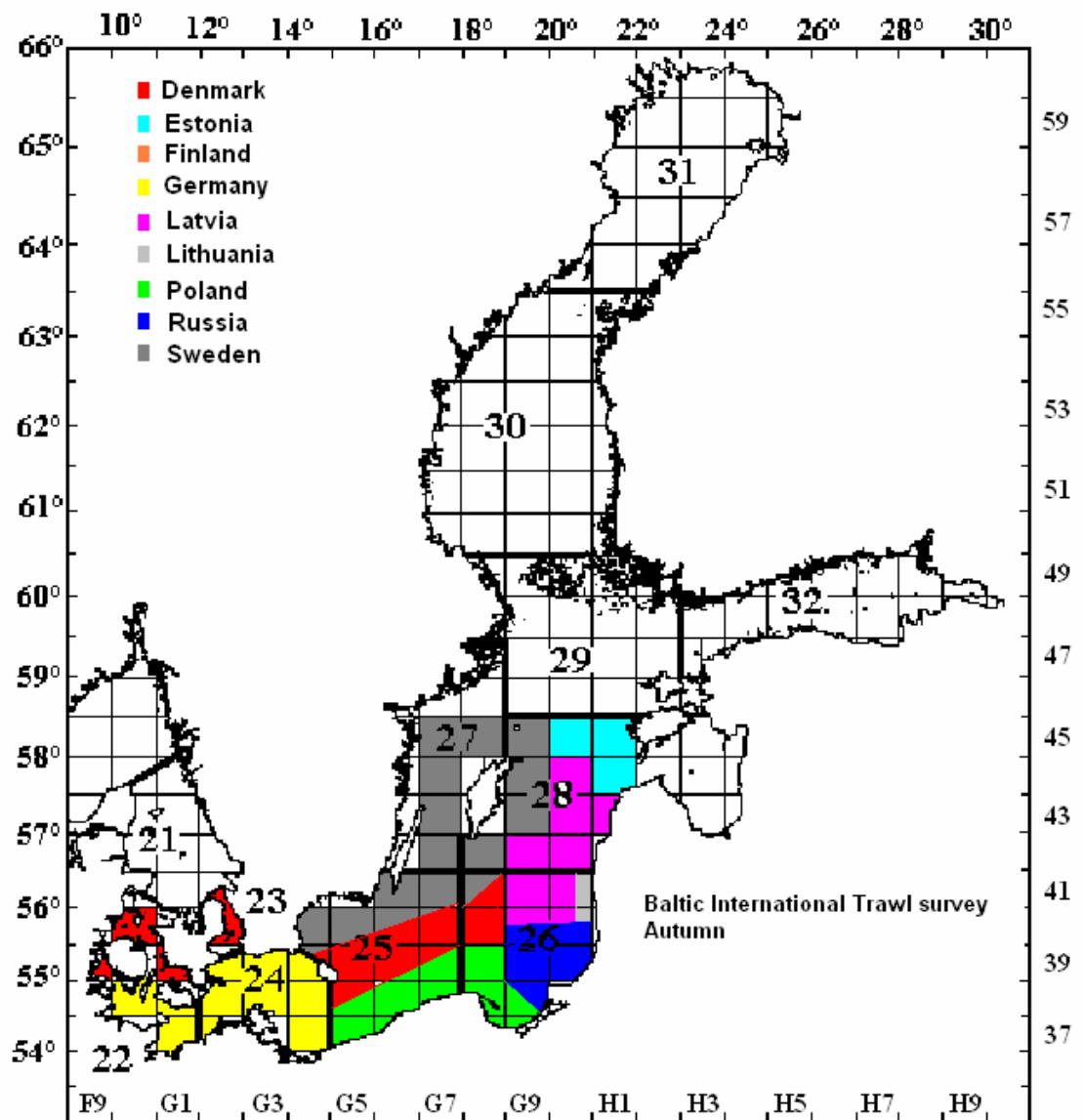


Figure 4.1: Baltic Sea with ICES Subdivisions and rectangles. The rectangles are marked in relation to the nation which plans the coverage. Overlapping of areas are possible and not given here.

International coordinated bottom trawl survey in spring 2007

Table 5.1: General description of the Baltic International Bottom Trawl Survey.

AIM OF THE SURVEY:	ESTIMATION OF STOCK INDICES OF COD AND FLAT FISH
Period of the survey:	Middle of February to end of March
Used methods:	Estimation of the fish density (catch per halve hour) using bottom trawls with standardized gears. The positions of the hauls are randomly selected according to an agreed procedure of the ICES Working Group on "Baltic International Fish Survey". Recording of the hydrographical profiles at positions of hauls.
Covered parts of the Baltic Sea:	ICES Subdivision 22–28 Figure 5.1 presents the Baltic Sea with ICES Subdivisions and rectangles. Furthermore, the rectangles are marked in relation to the nation which plan to cover the area.
Coordination of the Survey:	ICES Working Group of "Baltic International Fish Survey" (ICES 2006)

Table 5.2: Planed bottom trawl survey specified by nations.

COUNTRY	VESSEL	PERIOD	COVERED ICES SUBDIVISIONS	USED TRAWL	HYDROGRAPHICAL DATA AND FURTHER INVERSTIGATIONS
German	RV Solea	14.2 – 5.3.	22, 24	TV3#520	Hydrography
Latvia	Baltica/CLV	Feb -March	26,28	TV3#930/TV3#520	Hydrography/No
Poland	Baltica	???	25, 26	TV3#930	Hydrography
Lithuania	Darius	Feb. - March	26 (rectangle 4065)	TV3#520	No
Sweden	Argos	Feb. - March	25, 26, 27, 28	TV3#930	Hydrography
Russia	Atlantniro or Atlantida	Feb -March	26	TV3#930	Hydrography
Denmark	RV Dana	Feb. - March	25, 26	TV3#930	Hydrography
Denmark	RV Havfisken	Feb. - March	21, 22, 23	TV3#520	No

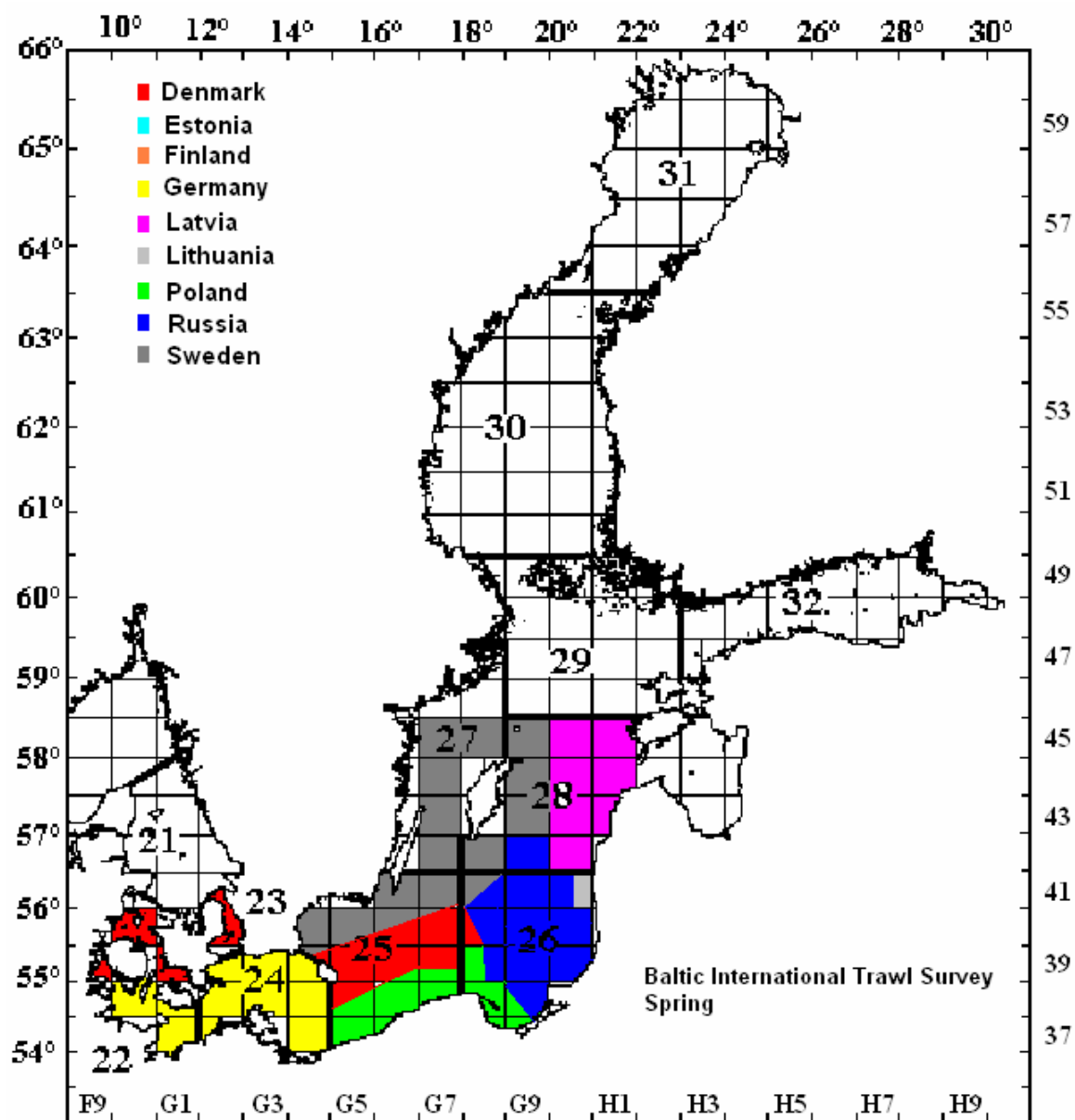


Figure 5.1: Baltic Sea with ICES Subdivisions and rectangles. The rectangles are marked in relation to the nation which plans the coverage. Overlapping of areas are possible and not given here.