

# Annual Report on the Danish National Data Collection Programmes for 2014

---

**National Institute for Aquatic Resources  
Danish AgriFish Agency  
Department of Food and Resource Economics  
Statistics Denmark**

# Contents

I. General framework.....	5
II. National Data Collection Organisation .....	5
II.A National correspondent and participating institutes .....	5
II.B Regional and International coordination .....	8
II.B 1 Attendance of International meetings .....	8
II.B 2 Follow-up of regional and international recommendations.....	8
III. Module of the evaluation of the fishing sector .....	8
III.A General description of the fishing sector .....	8
III.B Economic variables .....	10
III.B.1 Achievements: Results and deviation from NP proposal.....	10
III.B.2 Data quality: Results and deviation from NP proposal.....	10
III.B.3 Follow-up on Regional and international recommendations .....	10
III.B.4 Actions to avoid shortfalls .....	11
III.C Metier-related variables .....	11
Baltic Sea (ICES areas III b-d).....	12
III.C.1 Achievements: Results and deviation from NP proposal.....	12
III.C.2 Data quality: results and deviation from NP proposal .....	13
III.C.3 Follow-up of regional and international recommendations .....	13
III.C.4 Actions to avoid shortfalls .....	13
North Sea (ICES areas IIIa, IV and VIIId) .....	14
III.C.1 Achievements: Results and deviation from NP proposal.....	14
III.C.2 Data quality: results and deviation from NP proposal .....	17
III.C.3 Follow-up of regional and international recommendations .....	17
III.C.4 Actions to avoid shortfalls .....	17
North Atlantic (ICES areas V-XIV and NAFO areas) .....	18
III.C.1 Achievements: Results and deviation from NP proposal.....	18
III.C.2 Data quality: results and deviation from NP proposal .....	18
III.C.3 Follow-up of regional and international recommendations .....	18
III.C.4 Actions to avoid shortfalls .....	18
III.D Biological - Recreational fisheries.....	18
The Baltic Sea and the North Sea and Eastern Arctic .....	19

III.D.1 Achievements: results and deviation from NP proposal.....	19
III.D.2 Data quality: results and deviation from NP proposal .....	20
III.D.3 Follow-up of regional and international recommendations .....	21
III.D.4 Actions to avoid shortfalls .....	21
III.E Biological - stock-related variables.....	21
The Baltic Sea (ICES areas IIIb-d).....	21
III.E.1 Achievements: results and deviation from NP proposal .....	21
III.E.3 Follow-up of regional and international recommendations .....	23
III.E.4 Actions to avoid shortfalls .....	23
The North Sea and Eastern Arctic (ICES areas IIIa, IV and VIIId) .....	23
III.E.1 Achievements: results and deviation from NP proposal .....	23
III.E.2 Data quality: results and deviation from NP proposal .....	26
III.E.3 Follow-up of regional and international recommendations .....	26
III.E.4 Actions to avoid shortfalls .....	26
The North Atlantic (ICES areas V-XIV and NAFO areas) .....	26
III.E.1 Achievements: results and deviation from NP proposal .....	26
III.E.2 Data quality: results and deviation from NP proposal .....	26
III.E.3 Follow-up of regional and international recommendations .....	26
III.E.4 Actions to avoid shortfalls .....	27
III.F Transversal variables.....	27
III.F.1 Capacity .....	27
III.F.2 Effort .....	27
III.F.3 Landings .....	28
III G Research surveys at sea .....	28
III G 1 Achievements: results and deviation from NP proposal.....	28
III G 2 Data quality: results and deviation from NP proposal .....	47
III G 3 Follow-up of Regional and international recommendations.....	47
III G 4 Action taken to avoid shortfalls .....	47
IV. Module of the evaluation of the economic situation of the aquaculture and processing industry.....	47
IV.A Collection of data concerning the aquaculture .....	47
IV.A.1 Achievements: Results and deviation from NP proposal .....	47
IV.A.2 Data quality: Results and deviation from NP proposal .....	48

IV.A.3 Follow-up of regional and international recommendations.....	48
IV.A.4 Action to avoid shortfalls .....	49
IV.B Collection of data concerning the processing industry .....	49
IV.B.1 Achievements: Results and deviation from NP proposal .....	49
IV.B.2 Data quality: Results and deviation from NP proposal.....	50
IV.B.3 Follow-up of regional and international recommendations .....	50
IV.B.4 Action to avoid shortfalls.....	51
V. Module of evaluation of the effects of the fishing sector on the marine ecosystem.....	51
V. 1 Achievements: results and deviation from NP proposal .....	51
V. 2 Actions to avoid shortfalls .....	51
VI. Module for management and use of the data.....	52
VI. 1 Achievements: results and deviation from NP proposal .....	52
VI. 2 Actions to avoid shortfalls .....	53
VII. Follow-up of STECF recommendations.....	53
VIII. List of acronyms and abbreviations.....	54
IX. Comments, suggestions and reflections.....	56

## **I. General framework**

This document presents the Annual Report (AR) on the work carried according to the Danish National Programme (NP) for data collection in the fisheries sector for the year 2014. The programme has been carried out in accordance with the rules laid down in the “*Commission Regulation (665/2008) and Commission Decision (2010/93/EC) adopting a multi annual Community programme pursuant to Council Regulation (EC) No 199/2008 establishing a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy*”, hereafter referred to as “DCF” in this AR.

The format of this report is structured following the most recent guidelines from the Commission<sup>1</sup>. The AR is structured in a number of modules. In the following chapters a description is given of the activities related to the DCF that have been carried out by Denmark.

Denmark has in 2010 initiated a work to improve the sampling design of the metier based sampling following the outcomes of ICES WKACCU and WKPRECISE. This outcome has led to a change in the sampling frame from 2011 to a more statistically sound sampling program and since 2012 a full implementation of a statistical sound sampling schemes for the collection fisheries data. The achievements of sampling in 2014 were at a similar level compared to 2013, however the sampling design has improved.

The list of derogations applied for and whether these have been approved or rejected is given in table 1.A.1

Denmark has for years made agreement on collection of biological sampling of landings or bilateral cooperation with a number of MS such as Sweden, Belgium, Germany, Ireland and the Netherlands. This bilateral coordination has been continued in 2014. These agreements are listed in table 1.A.2.

In general the Danish national data collection programme has been carried out in 2014 as in the previous years. No major changes to the 2011 and 2012 NP and the 2014 AR has been made accordingly.

## **II. National Data Collection Organisation**

### **II.A National correspondent and participating institutes**

Denmark has assigned Senior Fisheries Advisor Jørgen Dalskov, Secretariat for Public Sector Consultancy at DTU Aqua as the National Correspondent.

Jørgen Dalskov

Senior Fisheries Advisor  
Secretariat for Public Sector Consultancy

---

<sup>1</sup> Guidance for the submission of Annual Report on the National Data Collection Programmes under Council Regulation (EC) 199/2008, Commission Regulation (EC) 665/2008 and Commission Decision 2010/93/EC, Version 2 (26.2.2015)

National Institute of Aquatic Resources  
Charlottenlund Slot  
DK-2920 Charlottenlund  
Phone: +45 35 88 33 80  
Fax: +45 35 88 33 33  
E-mail: [jd@aqua.dtu.dk](mailto:jd@aqua.dtu.dk)

In Denmark four institutes or organisations have been involved in carrying out the collection of, the management of and the use of data within the fisheries, aquaculture and the fish processing sectors:

**1. National institute of Aquatic Resources (DTU Aqua)** is an institute under the Technical University of Denmark. The institute carries out research, monitoring and provides advice concerning sustainable exploitation of live marine and fresh water resources. Furthermore, the institute is responsible for providing data for ICES stock assessment work and participates in various ICES assessment working groups, planning and expert groups as well as in the ACOM work. The institute is having a public sector consultancy contract with the Danish Ministry for Agriculture, Fisheries and Food.

National Institute of Aquatic Resources  
Charlottenlund Slot  
DK-2920 Charlottenlund  
Denmark  
Phone: +45 35 88 33 00  
Fax: +45 35 88 33 33  
[www.aqua.dtu.dk](http://www.aqua.dtu.dk)

**2. The Danish AgriFish Agency (NAER)** is an agency under the Ministry of Food, Agriculture and Fisheries. The staff of the Danish AgriFish Agency, a total of approximately 1,200, strives countrywide to create the optimal conditions for sustainable growth and green transformation in the fields of:

- Agriculture
- Fisheries and aquaculture
- Plants and horticulture

The aim of the agency is to secure an efficient and professional administration and reap the most benefits from working across our respective areas.

In addition, one of the tasks of the agency are to provide service to the Minister and the political level, assist in law proposals and contribute to international negotiations. Furthermore, NAER is responsible for making rules and regulations in the Danish fisheries as well as administer the Danish fishing, to inspect and control fishing activities and finally to make primary statistics on fisheries.

Danish AgriFish Agency  
Nyropsgade 30  
DK- 1780 København V  
Denmark  
Phone: +45 72 18 56 00  
Fax: +45 33 45 58 00  
[www.agrifish.dk](http://www.agrifish.dk)

**3. Department of Food and Resource Economics (IFRO)** is an institute under KU Life, a faculty of life science a part of the University of Copenhagen. The Researchers and academic staff of the Institute have backgrounds and experience in economics, agricultural and resource economics, agronomy, as well as a wide range of statistical methods and applied research tools.

Danish Food and Resource Economics Institute (IFRO)

Rolighedsvej 25  
DK-1958 Frederiksberg C  
Denmark  
Phone: +45 35 28 68 00  
[www.ifro.ku.dk](http://www.ifro.ku.dk)

**4. Statistics Denmark (DST)** The aim of the institution is to collect, process and publish statistical information on social and economic conditions. Additional DST contributes to the international statistical cooperation. Furthermore, DST is also actively involved in the statistical activities in the UN, OECD, IMF and in the Nordic countries, etc. DST is also carrying out statistical tasks for private and public customers.

Statistics Denmark  
Sejrøgade 11  
DK-2100 Copenhagen Ø  
Denmark  
Phone: +45 39 17 39 17  
[www.dst.dk](http://www.dst.dk)

A Steering Group has been established with members from all four involved Institutes. The main objective of the Steering Group is to coordinate the work to be carried out according to the DCF.

Once or twice a year representatives from the involved institutes meet for discussing the coming year or present years programme. Usually these meetings take 1-2 hours. Main topics to discuss are the production and the content of the DFAD data base (see section VI.1 for details) and participation in various expert working group meetings. As it is very clear which of the partners are responsible for the various tasks it is only necessary to make sure deadlines for providing data to each other are agreed.

The daily cooperation can be made by using e-mails or phone calls. The representatives from the involved institutes have been working together for a number of years and therefore, no major disagreements or other issues are troublesome.

The national DCF website is up running.

## **II.B Regional and International coordination**

### **II.B 1 Attendance of International meetings**

Most of the planned meetings have been attended by Danish representation in 2014. Denmark attended the DCF coordination meetings for the Baltic region and for the North Sea and Eastern Arctic region. The meeting attendance is listed in table II.B.1.

All surveys are coordinated internationally by ICES planning groups. The survey planning groups, which were relevant to Denmark the BIFSWG, IBTSWG, WGIPS were in 2014 attended by representatives from Denmark.

Denmark is a member of a large number of ICES WG, WK or PG groups. Those groups which have a major interest for Denmark one or more DTU Aqua staff members participate at the meeting. The ICES or other international meetings attended by Denmark is listed in table II.B.1. Some other ICES group meeting have minor interest and DTU staff members only participate at correspondence level and all Danish data is provided to the group.

### **II.B 2 Follow-up of regional and international recommendations**

General recommendations made by RCM Baltic, the RCM NS &EA and the RCM NA dealt with by the Liaison group in 2013 and actions taken by Denmark are listed in table II.B.2.

## **III. Module of the evaluation of the fishing sector**

### **III.A General description of the fishing sector**

The number of vessels registered for Denmark in the Community Fishing Fleet Register on the 1<sup>st</sup> of January 2013 was 2,740, of which 1,131 had no activity in 2013. The 1,609 vessels which were active during 2013 had landings of fish to a total value of EUR 365 million or 93.1 per cent of the total value of the Danish fishery in 2013. The remaining 6.9 per cent of the value of the Danish fishery in 2013, totalling EUR 27 million, were landed from vessels entering the register after the beginning of the year (cf. table 1).

**Table 1. Active registered vessels in the Danish Fishery 2013.**

	Vessels registered the whole year	Exits register during year	Enters and stay in register during year	Enters and exits during year	Active fishermen with no vessels	Total active register units
Vessel length groups	----- Active registered vessels -----					
<10 m	1,051	37	52	6	23	1,169
10 - <12 m	116	8	5	2	-	131
12 - <18 m	223	23	24	11	-	281
18 - <24 m	75	9	7	2	-	93
24 - <40 m	34	4	4	3	-	45
40 m and above	24	5	5	1	-	35
All length groups	1,523	86	97	25	23	1,754
Total value of landings in 1000 EUR	317,118	48,239	23,398	3,637	95	392,486
Per cent share of value of landings	80.80%	12.29%	0.93%	0.93%	0.02%	100.0%

During the year 2013 an additional 268 vessels were registered of which 122 vessels became active. So the total number of Danish vessels with landings of fish in 2013 was 1,731. Many of these vessels are small boats used part time by fishermen, who have more than a single vessel at hand, and shift between one and the other dinghy depending on the work to be done (setting out poles for nets and/or traps, emptying gear, fishing for bait etc.). Also the fishery regulation system has for many years linked the right to fish a certain amount of fish to the vessel. So some fishermen have additional vessels, which are not used as separate production units, in order to keep the right to fish and ensure their income. Though all quotas today no longer are stuck to the physical vessel there are still a number of “additional or secondary” vessels registered, and some of the landings of fish are registered on those vessels. Also 23 fishermen with no vessels had (small) landings of fish.

In order to calculate the production for each fisherman and fishing firm it is necessary to identify the production unit that has been in use for the year. In most cases that is a single vessel, which has been owned and used by the same fisherman the whole year. Another situation exists when a fisherman sometime during the year shifts vessel and carry on fishery with his crew from the other vessel, or if he some months uses two vessels simultaneously like fishermen using fixed nets and traps sometimes does. In those cases the production and other economic data for each part time of the year must be added up to form a complete operating year.

The Danish programme for collection of economic data covers all fishing activity for the year and includes both vessels that are registered from the start of the year as well as vessels that become registered during the year and

commences fishery in the year. The population of fishing units (vessels) covers therefore the whole production in the fishing sector.

### **III.B Economic variables**

#### **Supra Region: Baltic Sea, North Sea and Eastern Arctic, and North Arctic.**

The total volume of the Danish fishery in 2013 was 663,935 tonnes to a value of 392 million EUR. The main part of the fishery takes place in the North Sea, Skagerak/Kattegat, and the Baltic Sea, but some vessels are also fishing in the Norwegian Sea and the waters west of Ireland and Scotland. In the Danish fishery gears as trawls, Danish seines, purse seines, beam trawls, gillnets and hooks, trap nets are used.

#### **III.B.1 Achievements: Results and deviation from NP proposal**

The system for measuring capital value of the quotas has been improved. Instead of enumerating the value of the fishing rights based on the estimated values from the sampled accounts, it was decided to calculate the value for each individual owner of fishing rights by using registered data on quota transactions. All individually held quota rights are registered on the administrative database in the Danish Agrifish Agency. The registration covers initial relative shares and quantities on each quota stock for all individual quota owners, plus all subsequent transactions in shares and quantities during the year.

The estimated value of fishing rights for each quota owner is accommodated into the account for the production unit for that owner. That goes both for sampled and simulated (see below) accounts.

#### **III.B.2 Data quality: Results and deviation from NP proposal**

In Denmark we use a harmonized balanced accounting form to collect the economic data. In 2013 the sample included 285 accounts, 46 per cent, of the 616 unit frame population.

A new system for calculating the statistical variables from the sampled accounting data has been taken into use. We now simulate individual accounts for every unit in the population that is not in the sample. These simulations are done by selection of one to three of the sampled accounts that are valued to be best possible replacement for the simulated unit, and calibrate the average of the 1 to 3 matching units to equal the registered revenue and of that unit.

The simulations are performed using a BANFF MASSIMPUTATION model in SAS. Donors are matched according to known registered data for catches on selected species, crew size, engine power and days at sea in Ices III and Ices IV.

Statistics Denmark are in the process of implementing the ESS Quality and Performance Indicators (QPI) outlined by Eurostat (ESTAT/B1/AB D (2012)) and will include these indicators in the New Quality Declarations which will be produced for all statistics. That is scheduled to be completed in 2015. Hereafter we can include the Quality Declaration in the AR.

#### **III.B.3 Follow-up on Regional and international recommendations**

No action is needed.

### **III.B.4 Actions to avoid shortfalls**

We are in the process of reconstructing the system to build the database for the account statistics from the administrative databases in the Directorate.

One important issue for the new system is to ensure homogeneous identification of production units and thereby segmentation of economic data and logbook data (landings and effort specified at FAO level 4). As it is now, the production unit for logbook data is based on the vessel identification number with no control on whether the ownership of the vessel shifts over the year, whereas the production unit for economic data is based on vessel versions, which is a vessel in a period with the same owner.

Another improvement will be, that the production from the fishery accounts, both quantity and value (income from sales of fish), in future reports will be data from the same source (the administrative registers) for all production units. As it is now, both total income and total cost are calculated based on a sample of accounts. In the new system all registered data from catch, landings and sale of fish will be combined on each active production unit (vessel), thus only cost and financial data should be calculated from the sample of fishery accounts.

### **III.C Metier-related variables**

The Danish NP concern sampling schemes for three areas the Baltic Sea (ICES areas III b-d), the North Sea (ICES areas IIIa, IV and VIIId) and Eastern Arctic (ICES areas I and II) and North Atlantic (ICES areas V-XIV and NAFO areas).

DTU Aqua has used the AgriFish Agency databases and combined logbook data with the sales slip data and vessel register data and created a database; the DFAD. Here total annual commercial landings by métier can be provided by all species and areas, according to level 2, level 3, level 4, level 5 and level 6, of geographical disaggregation according to Appendix II of Commission Decision 2010/93/EC. The figures are based on all recorded landings stored in this database. The recorded landings in this database are census data.

Results of the sampling in 2014 in relation to what was planned are presented in tables III.C.3, III.C.4, III.C.5 and III.C.6. The achievements of sampling in 2014 were at a similar level compared to 2013, however the sampling design has in 2014 improved in the harbour sampling. In 2014 a statistical random sampling was also introduced in the harbour sampling program. A main overall reason for deviations from what was planned is that the sampling design is conducted on harbours and fisheries and not on metiers and therefore the sampling schemes the sampling by metier is a post evaluation of the outcome in the sampling. Also, to have a statistically sound sampling design, random sampling is one of the most important items, indicating that if sampling is 100% random it is not always possible to target all events. When sampling is conducted at shore; in harbours or at markets, all information on the metiers is selected. However, the sampling frame is not conducted by metier but by species and sorting groups. Therefore we cannot always assure that all metiers have been sampled although the numbers of fish measured and aged are in accordance with the program. Denmark has since 2010 initiated work to improve the sampling design of the metier based sampling following the outcomes of ICES WKACCU and WKPRECISE. This outcome has led to a change in the sampling frame from 2011 to a more statistically sound sampling program in the observer programme where trips/vessel are the primary sampling unit. As the

vessels are randomly selected in a database, based on the home harbour and fishery from the year before, large changes in fishing pattern between years can affect the sampling. As the new system is selecting the vessels randomly, the logistics have become a bigger challenge as we have to travel more to Islands and enter the vessels from rather small ports. The numbers of different vessels selected for the observer program has increased with 30% by this system. However, it has at least in the first year been at the expense of numbers of trips conducted. The main part of the deviations in 2014 from the aim is caused by the logistic more challenging system and is expressed below on a metier basis and that we now are not “hunting” the fish but are having harbour and week as our PSU.

## **Baltic Sea (ICES areas III b-d)**

### **III.C.1 Achievements: Results and deviation from NP proposal**

Deviation from sampling on shore and at sea. The Danish sampling program is targeting vessels/ trips as the primary sampling unit this indicate that metier is not selected for in this system and we can therefore not guaranty that we will be able reach the planned numbers of trips proposed. However, the total numbers of conducted trips should be similar to the proposed number.

#### ***Bottom otter trawl targeting demersal fish (OTB\_DEF >=105 1 120), sub 22-24 and 25-32***

In the western Baltic 129 % (45) of the planed observer trips at sea and 75% (41 samples) of the planned harbour sampling were conducted for this area. This métier had a decreased in effort between 2014 and the reference year (30%). For 25-32 the Eastern Baltic 46% (13) of the planed observer trips at sea and 50% (20) of the planned harbour sampling were conducted for this area. As stated in the IIIC we do not target metiers in the harbour sampling but species and sorting size groups indicating we cannot guaranty that we will achieve the planned number of samples. For both the western and especially the eastern Baltic the cod quota was not utilized, were 91% of the western quota was utilized and only 37% of the Eastern cod quota. Indicating that although there has not been a large decrease in the effort, there has been a large decrease in the landings.

#### ***Bottom otter trawl targeting demersal fish (OTB\_DEF\_90-104\_0\_0), sub 22-24***

For this metier OTB\_DEF\_90-104\_0\_0 the numbers of commercial trips conducts decreased with more than 30% from the reference years to 2014 and the numbers of harbour trips conducted were also only 25% of the planned numbers of trips. But again, DTU Aqua do not sample directly for metiers in the harbour but for stocks and size categories.

#### ***Set gillnet fisheries targeting demersal fish (GNS\_DEF\_110-156\_0\_0), sub 25-32 and 22-24***

In 2014 Denmark sampled a total of 47 (100%) trips in this metier in the Baltic, however none of the trips for this metier were sampled in subdivision 25-32 and 100% of the trips are conducted in 22-24. The main reason of the under sampling is duo to the fact that the grey seal population has increased in later years making gillnet fishery very challenging in the Island of Bornholm. The effort in this metier has also decreased by more than 80% in 2014 compared to the reference year.

***Bottom pair trawl targeting small pelagic (PTM\_SPF\_16-31\_0\_0 and PTM\_SPF\_16-104\_0\_0), sub 25-32 and sub 22-24.***

Denmark had in 2014 had a large decrease (close to 55%) in fishing effort for sprat in the Eastern Baltic compared to the reference years. Denmark has sign a bilateral agreement with Poland, were Poland is conducting their sampling on board Polish vessels. Furthermore there is a typing mistake (was also in the report last year and not corrected) in the planned numbers of samples in the Baltic, were we in the last updated annual report increased the number of samples from 16 to 135. This is off course a mistake and the correct number should have been 50. In total 29 samples were taking for this metier, Danish landing from this stock is 29 000 t.

***Bottom pair trawl targeting small pelagic (PTM\_SPF\_32\_89\_0\_0), sub 22-24.***

In the western Baltic Sea for the herring fishery in 2014 10 trips were planned and 9 conducted (90%).

***Longline fisheries targeting demersal fish (LLS\_DEF\_ALL\_0\_0), Sub 25-32***

In 2014, 100% of the planned trips were conducted from this metier 6 trips out of 6 planned.

***Longline fisheries targeting demersal fish (LLS\_ANA\_0\_0), Sub 25-32***

In 2014, only 1 out of 4 trips were conducted from this metier. As with all other harbour sampling we do not target a metier but a stock and can therefore not guaranty that all metiers will be sampled.

### **III.C.2 Data quality: results and deviation from NP proposal**

Denmark has estimated CV's with the method described in Appendix 1.

Denmark implemented in 2011 a new design of the metier at sea sampling programmes on the basis of the outcome of the ICES workshops WKACCU, WKPRECISE and PGCCDBS. The work includes identification of proper sampling frames and probability based ways to select primary sampling units. The new design has been used since and has improved the possibilities to evaluate possible bias and thereby also accuracy. Furthermore, refusal rates are now recorded for all sampled metiers from the on board sampling programme. In 2014 the Danish harbour sampling program also had implemented a new design which is also probability based. The harbour sampling design is based on the 80% most landings/ values/ landing events and logistic costs by stocks, and the harbours have to be visited in a given timeframe.

### **III.C.3 Follow-up of regional and international recommendations**

Recommendations relevant to this chapter are listed in in table II.B.2.

### **III.C.4 Actions to avoid shortfalls**

In 2010-2011 a proper statistically sound sampling frame was developed and implemented in the observer program. This has reduced some of the problems mentioned in ICES WKACCU and WKPRECISE and latest

WKPICS in 2012 as to avoid shortfalls. However, the new sampling program has in practice been more difficult to implement than expected mainly, due to the increased logistics problems that arise when vessels are randomly selected from a database (vessels with homeports on small islands, skippers that we do not normally have contact with ect.). However, some of the obvious pitfalls are avoided, such as only selecting a well-known part of the fleet, to have a clear procedure on how to follow up on refusal and to collect this information. Furthermore Denmark is now weighing the possibility of selecting a vessel equally although vessels below 10 meters have been excluded. The main reasons to exclude these vessels are the lack of logbooks and thereby it is very difficult to make sure that they are targeting a fishery we would like to monitor. The largest advances with the system are the increased number of vessels included in the sampling as well as a documentation of the refusals. The numbers of vessels have increased by 30% and as it has been shown in other studies that the main part of the uncertainties is between vessels, it makes good sense to increase the number of ships to be sampled. Another reason for inconsistencies between planned no of trips and achieved number is the dynamic in the fishery making it difficult to predict spatial and temporal fishing patterns for some métiers at the time of planning the NP. However, with the new system we try to follow the fishery by calling the selected fisherman and if he is going on a trip, we are obliged to sample according to the DCF, we will conduct the trip although it is conducted in another area and with another métier. The improved Danish sampling program, in place since 2011, has incorporated refusal rates from the random selected fishermen giving a much better overview of the bias in the sampling program in connection to the sampling population and the coverage of this. In 2012 and 2013 some smaller improvements have been incorporated in the designs to make it more operational and user-friendly. The design has also been presented in international working groups (WKPICS I and II and SGPIDS III) where standardization towards other MS designs has been incorporated.

In 2014 Denmark implemented a new harbour sampling program also probability based. The harbour sampling design is based on the 80% most landings/ values/ landing events and logistic costs by stocks, and the harbours have to be visited within a given timeframe. Primary sampling unit is harbour and time.

## **North Sea (ICES areas IIIa, IV and VIId)**

### **III.C.1 Achievements: Results and deviation from NP proposal**

Deviation from sampling on shore and at sea

#### ***Beam trawl targeting crustaceans (TBB CRU 16-34 0 0), sub IV+VIIId***

150% (12 trips) of the planned Crangon fishery was covered. In this fishery the landed part of the catch is sampled on board and brought back to the institute for analysis on sex and maturity. For this reason the numbers of trips on shore is identically to the numbers of trips at sea. Effort in the métier has been increased slightly since the reference year however, the discard of especially flatfish species is very large on therefore an increased effort has been allocated to this métier.

#### ***Bottom otter trawl targeting demersal fish (OTB\_DEF<16 0 0), sub IV+III+VIIId***

The sand eel fishery has always been covered very detailed in especially the North Sea were the main part of the fishery is conducted but also in IIIa, by Denmark as we are the main fishing nation on this species. Close to half

of the samples are normally fishermen “self-sampling” and therefore the level of samples can be very variable. A large effort has been put to optimise the sandeels sampling program and a minimum of 30 samples by month and sandell area is collected (presently 6 areas). Both self-sampling and control samples are used in the program. The self-sampling samples have a higher quality due to the extra information on position and the samples are frozen right away but to assure the correctness of the samples the results are compared with the control samples. In 2014, 72% (173 samples) of the planned level was conducted. In 2014 the fishery was conducted in a relatively small area. Therefore the number of samples worked up was decreased as the extra information gathered if all are fishing within the same square at the same time is limited. In IIIa 82% (148 samples) of the planned sample level was achieved. 4 samples from IIIaS were also sampled, although this sand eel fishery is a very limited fishery compared to the North Sea it has been increasing in later years.

***Pair and midwater trawl targeting small pelagic (PTM\_SPF\_16-31\_0\_0) and OTM\_SPF\_16-31\_0\_0, sub IV+VIId and IIIa***

This metier is mainly a sprat fishery and has in 2014 been sampled by 262% (157 samples) in IV and 250% (55 samples) in IIIa. Last year the sampling effort was below the planned sampled numbers and an effort has been done to increase the self-sampling program. A self-sampling program among fishermen started up in 2011 as the quality of the “fishermen samples” were much better (more precise information and the samples are freshly frozen), this sampling system gives us good quality data if there is a fishery as indicated in the North Sea. This new sampling system has improved the spatial sampling and is very cost effective. The samples from the control authorities are still used as reference and to make sure that samples are always available.

***Bottom otter trawl targeting crustaceans (OTB\_MSD\_>=120), sub IV+VIId***

The at-sea sampling program oversampled with 238% (19 trips compared to the planned 8 trips). The metier is also very well covered at the harbour sampling were 70 samples (175%) were conducted (There was a mistake in the programme where harbour samples between OTB\_MCD 70-99 and >120 was swapped were 4 samples were planned for larger metier and 40 samples for the small metier in the NP).

***Bottom otter trawl targeting crustaceans (OTB\_MCD\_70-99 0 0), sub IV+VIId***

This metier is a limited fishery and has decreased even more compared to the reference year. Only 25% of the planned at harbour was covered in this metier. The trip level from this metier is presently so low, that the random selection will only very seldom select the metier.

***Bottom otter trawl targeting small pelagic (OTB\_DEF\_16-31\_0\_0) sub IV+VIId***

The Norway-pout fishery in the North Sea was relatively small in 2014. Denmark had a relative large quota however, only 25% (26 000 t) of the quota was utilized. 21 samples were collected and although this is only 40% of the planned it is indicating that at landing levels the sampling level was appropriate.

***Anchored seine targeting demersal fish (SDN\_DEF\_90-119\_0\_0), sub IV***

In the North Sea 50% (2 of 4) of planned trips at sea has been conducted at sea however, in harbour the metier has been oversampled with 21 trips compared to the planned 15.

***Bottom otter trawl targeting Crustaceans (OTB\_CRU\_32-69\_0\_0), sub IV and IIIa***

This shrimp fishery in the North Sea was not sampled. And the effort in this area has decreased to only 27 trips in 2014. However, the fishery in the Skagerrak where the main part of this fishery (95%) is conducted the fishery is adequately sampled (7 trips conducted and 5 planned).

***Bottom pair trawl targeting small pelagic (OTB\_SPF\_32-69\_0\_0), sub IIIaN and sub IV+VIId***

The fishing effort in Skagerrak has for all pelagic fisheries been at a very low level in 2014 (23 trips) and only 38% of the quota was utilized. The planned level of samples (40) is therefore unrealistically high. 9 samples were collected in 2014 for Skagerrak. In the North Sea (IV) the effort increased in contrast to Skagerrak, with 80% and the sampling effort also increased by 54% (77 samples).

***Bottom otter trawl targeting crustaceans (OTB\_MCD\_90-119\_0\_0), sub IIIaN and IIIaS***

The at sea sampling program was conducted with an oversampling of 47 trips compared to the planned level of 12 trips. At the same time 85 of the planned 70 harbour trips were fulfilled in 2014 in IIIaN. The same pattern is evident in Kattegat (IIIaS) where 56 at sea trips were conducted compared to 42 trips planned. 18 harbour samples (of 40 applied) were conducted in land. The reason for the oversampling at sea is our sampling design where a trip is the primary sampling unit – given a higher weight in areas where a lot of 1 day trips are conducted compared to longer trips. Both Kattegat and Skagerrak have nearly only 1 day trips.

***Set gillnet fisheries targeting demersal fish (GNS\_DEF\_120-219\_0\_0 and GNS\_DEF\_100-119\_0\_0), sub IIIaN***

The “at sea monitoring” was over sampled by 110%. This is mainly due to a very well-functioning and cost effective self-sampling program for gillnetters in IIIaN, 20 trips were planned for and 22 achieved. The harbour samples were also very well sampled with 40 achieved samples where only 15 samples were planned for. For the metier with smaller mesh sizes 100-119, 6 samples were achieved instead of the planned 2 samples.

***Set gillnet fisheries targeting demersal fish (GNS\_DEF>220, GNS\_DEF\_120-219\_0\_0 and GNS\_DEF\_100-119\_0\_0), sub IV***

The “at sea monitoring” was over sampled with 12 trips compared to the 4 trips applied for. This is mainly due to a very well-functioning and cost effective self-sampling program for gillnetters in IV. The harbour samples were also oversampled with 39 trips compared to the applied 24 achieved at the planned level. Again the harbour sampling program does not target metiers but stocks.

***Anchored seine targeting demersal fish (SDN\_DEF\_90-119\_0\_0), sub IIIaS and IIIaN***

This metier has vanished in Kattegat in 2013 and in 2014 0 trips were conducted in Kattegat and has therefore not been sampled. In Skagerrak 100% of planned trips at sea has been conducted and in harbour the metier has been oversampled with 31 trips compared to the planned 4.

### ***Midwater otter trawl targeting small pelagic fish (OTM SPF 32-69 0 0), sub I and II***

In last years updated NP the sampling level for this metier were changed from 8 planned samples to 25. This was probably an overestimation of the sampling level and 3 samples were archived. Also the effort has decreased by 50% between the reference years and 2014 and is now only conducting 18 trips. The metier is a herring and partly mackerel fishery.

#### **III.C.2 Data quality: results and deviation from NP proposal**

Denmark implemented in 2011 a new design of the metier at sea sampling programmes on the basis of the outcome of the ICES workshops WKACCU, WKPRECISE and PGCCDBS. The work includes identification of proper sampling frames and probability based ways to select primary sampling units. The new design has been used since and has improved the possibilities to evaluate possible bias and thereby also accuracy. Furthermore, refusal rates are now recorded for all sampled metiers from the on board sampling programme. In 2014 the Danish harbour sampling program also had implemented a new design which is also probability based. The harbour sampling design is based on the 80% most landings/ values/ landing events and logistic costs by stocks, and the harbours have to be visited in a given timeframe.

#### **III.C.3 Follow-up of regional and international recommendations**

Recommendations relevant to this chapter are listed in in table II.B.2.

#### **III.C.4 Actions to avoid shortfalls**

In 2010-2011 a proper statistically sound sampling frame was developed and implemented in the observer program. This has reduced some of the problems mentioned in ICES WKACCU and WKPRECISE and latest WKPICS in 2012 as to avoid shortfalls. However, the new sampling program has in practice been more difficult to implement than expected mainly, due to the increased logistics problems that arise when vessels are randomly selected from a database (vessels with homeports on small islands, skippers that we do not normally have contact with ect.). However, some of the obvious pitfalls are avoided, such as only selecting a well-known part of the fleet, to have a clear procedure on how to follow up on refusal and to collect this information. Furthermore Denmark is now weighing the possibility of selecting a vessel equally although vessels below 10 meters have been excluded. The main reasons to exclude these vessels are the lack of logbooks and thereby it is very difficult to make sure that they are targeting a fishery we would like to monitor. The largest advances with the system are the increased number of vessels included in the sampling as well as a documentations of the refusals. The numbers of vessels have increased by 30% and as it has been shown in other studies that the main part of the uncertainties is between vessels, it makes good sense to increase the number of ships to be sampled. Another reason for inconsistencies between planned no of trips and achieved number is the dynamic in the fishery making it difficult to predict spatial and temporal fishing patterns for some metiers at the time of planning the NP. However, with the new system we try to follow the fishery by calling the selected fisherman and if he is going on a trip, we are obliged to sample according to the DCF, we will conduct the trip although it is conducted in another area and with another metier. The improved Danish sampling program, in place since 2011, has incorporated refusal rates from the random selected fishermen giving a much better overview of the bias in the sampling program in connection to the sampling population and the coverage of this. In 2012 and 2013 some smaller improvements have been incorporated in the designs to make it more operational and user-friendly. The

design has also been presented in international working groups (WKPICS I and II and SGPIDS III) where standardization towards other MS designs has been incorporated.

In 2014 Denmark implemented a new harbour sampling program also probability based. The harbour sampling design is based on the 80% most landings/ values/ landing events and logistic costs by stocks, and the harbours have to be visited within a given timeframe. Primary sampling unit is harbour and time.

## **North Atlantic (ICES areas V-XIV and NAFO areas)**

### **III.C.1 Achievements: Results and deviation from NP proposal**

#### **Midwater otter trawl targeting small pelagic fish (OTM SPF 32-69 0 0), sub VII and VIII**

The metier has earlier been targeting blue whiting fishery and has not been conducted in 2010 and 2011. However, a new Danish fishery on Boarfish started in 2009 and this fishery has since then been sampled for providing data for carrying out stock assessment analyses on this species. The fishery has been very fluctuating between years but in 2014, 43 trips were conducted (24 samples instead of the planned 30).

### **III.C.2 Data quality: results and deviation from NP proposal**

See Baltic section

### **III.C.3 Follow-up of regional and international recommendations**

Recommendations relevant to this chapter are listed in in table II.B.2.

### **III.C.4 Actions to avoid shortfalls**

See under Baltic Sea

## **III.D Biological - Recreational fisheries**

In order to estimate the yearly cod, eel and sea trout harvest (fish caught and kept) in the Danish recreational fishing an interview survey has since 2009 been conducted by DTU Aqua in cooperation with Statistic Denmark. To estimate 2014 data two interview surveys were conducted in July 2014 and January 2015.

Denmark and DTU Aqua developed a concept for a combined telephone and internet survey for the Danish recreational fishery. To estimate the seasonal and annual fluctuations in the catches the survey is intended to be conducted on a biannually basis during the next years.

For 2014 two surveys were conducted resulting in a recall period on 6 months. None of the surveys included catches of Baltic salmon, since it was considered a fishery not suited for the sampling approach used in present survey. This is simply because the fraction of anglers practicing this fishery is believed to be very low. The surveys have since 2012 also included the catches of sea trout in marine waters.

The interview survey presented in this report was separated into two different phases with their own questionnaires and group of respondents: 1) The Omnibus and 2) License holders. The omnibus was conducted

four times in 2009 and 2010 with similar results. It is assumed that the results from this interview are unlikely to change much from year to year. The license list survey was conducted twice covering the period from January to June and July to December.

Anglers - domestic as well as tourists - between 18 and 65 years of age have to purchase a license for a year, week or day. All passive gear fishers have to have an annual license and you are not allowed to fish before the age of 12. The license is personal and non-transferable.

For further information see under Baltic Sea and later this year a report will be published (“Eel ,cod and sea-trout catches in Danish recreational fishing - 2014”). The results will also be presented in the ICES group for recreational fishery WGRFS were data will be published.

## **The Baltic Sea and the North Sea and Eastern Arctic**

### **III.D.1 Achievements: results and deviation from NP proposal**

For the Baltic Sea, salmon, shark, eel and cod are to be reported and for the North Sea only cod, shark and eel. The recreational fishery in the North Sea is limited with cod being the major target species. Denmark has provided a report with the landings estimated for 2014 that has been delivered to the relevant ICES working groups (WGBFAS, WGNSSK and WGBAST) for them to include in the assessments. However, as the survey has only been conducted for 4 years it has not yet been possible for the WG to use the data directly in assessment. It has however been suggested to include the cod data in the WGBFAS in 2016, when a longer time series has been compiled.

Salmon has not been included in the telephone survey as it was considered that this fishery was not suited for this kind of investigation. The marine recreational salmon fishery is limited to the Baltic Sea and involving relatively few people. An alternative way of receiving more detailed information from the Salmon fishery is being developed.

The majority of recreational fishers in Denmark are occasional anglers using private boats or fishing from piers or using waders along the Danish coasts. A survey conducted by Bohn & Roth (1997) showed that around 1/3 of all recreational fishers were members of an association. In Denmark there are several associations for recreational fishers, with three dominant associations active in advisory committees to the government. These are the Denmark’s Sport Fishing Association, the Danish Amateur Fishers’ Association and the Danish Recreational Fishers’ Organization.

### **Salmon in the Baltic**

The Danish recreational fishery for salmon is increasing in popularity, as catches have been increasing in recent years and the activity is further promoted by popular fishing contests. It is especially popular around the island Bornholm, but fishing also takes place further to the west in the Baltic Sea. The recreational fishery is primarily carried out by trolling from small boats and vessels. Some small harbours on the north and east of the island of Bornholm have specialized on servicing the trolling fishery.

The fishing season starts in September and ends in May. Both Danish nationals and foreign anglers attend the fishery, either for regular private fishing trips or as participants in angling competitions. In addition to angling, a

traditional non-commercial long-line fishery with only a few hooks is carried out by locals part of the year around the island Bornholm.

**Trolling:** The official number of recreational caught salmon by trolling boats is 3000 per year (ICES, 2014). This information is based on data collected from larger trolling fishing competitions in the spring period and information on effort in the western part of the Baltic. More than 75 % of the total catches taken by the Danish trolling fishers were registered in three competitions. Though these competitions are very popular the 3000 salmon which is estimated to be caught yearly by trolling fishers seems to be a serious underestimate. A new survey aiming to estimate the yearly salmon catch in the trolling fishery for salmon is being launched in 2015.

**Recreational long-line fishing:** The yearly catch is estimated to be 500 salmon which should also be taken with some caution as no catches are reported at all.

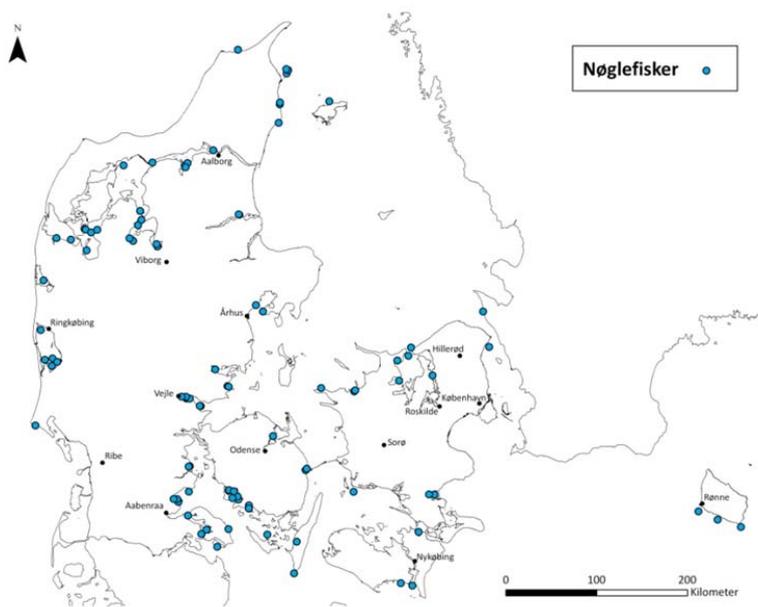


Fig. 1. Maps showing distribution of fishermen during 2012. A total of 91 fishermen participated, 76 with gillnet and 68 with trap-net.

### III.D.2 Data quality: results and deviation from NP proposal

The result has not been included in this report as the data will be quality insured during the ICES group for recreational fishery WGRFS in June 2015. However all data have been for 2014 has been collected at present time.

### **III.D.3 Follow-up of regional and international recommendations**

Recommendations relevant to this chapter are listed in in table II.B.2.

### **III.D.4 Actions to avoid shortfalls**

Since 2009 Denmark has initiated a survey and sampling on the recreational fishery and it has been conducted twice a year since then. In 2010 the survey was expanded to sea trout. However, the same level of knowledge has not been achieved for Salmon and a proper way to sample this fishery has to be developed. In 2015 interview survey will include sharks.

### **III.E Biological - stock-related variables**

To get catch-in-numbers (CANUM) and weight-in-catch (WECA) by age group, sampling of the landings and discards is undertaken. For pelagic stocks simple random sampling is undertaken in land. Here an unsorted sample is taken by the control sent to DTU-Aqua and analysed at the institute. This sampling strategy is the case for sprat, sandell, herring, boarfish, and Norway pout. For sand-ell, sprat and Norway pout the sampling is supplemented by a self-sampling program sampling haul by haul and frozen directly. For all species landed by sorting groups another strategy is applied; A fixed number of fish boxes are sampled randomly within market size category (if sorted) /unit (unit =area, quarter and gear). All individuals in a sample are analyzed according to length, weight and age. Sampling strategy on surveys and onboard fishing vessels differs from market sampling and was performed as follows: all individuals (or a sub sample) were length measured by species and a fixed number per length class was sampled for age and weight. For stocks sampled on surveys and onboard fishing vessels, the length can be given an age by using an Age-Length-Key. Maturity data is only estimated on scientific surveys to achieve a higher expertise, the correct time of year and to be able to get non gutted fish.

International survey manuals give guidelines on number of individuals / length class to be sampled for age, sex and maturity. These were followed and the actual sampled number is therefore dependent on the amount of catch.

### **The Baltic Sea (ICES areas IIIb-d)**

#### **III.E.1 Achievements: results and deviation from NP proposal**

All stocks sampled during 2014 for biological variables, age, length, weight, sex and sexual maturity are listed in table III.E.3. The variables are collected from different sources like survey, market or sea sampling and sampling strategy differs. For most stocks the sampling sources are listed and the results presented in separate rows. In table III.E.3 in the NP most consume species have listed survey and harbour sampling as data sources however for most of the consume species sea sampling should also have been listed as data source.

#### ***Cod in sub. 22-24 and 25-32***

Cod in the western Baltic (22-24) has been slightly undersampled for all parameters but is very close to the planned values (between 87-94%). For the Eastern Baltic, there has been a slightly lower sampling level, for

weight, length and age 89% of the planned level, however for maturity and sex 174% of the applied level was sampled.

#### ***Sole in sub. 22-24***

In 2014 sole were oversampled at 384% for sex and maturity. For weight and age we oversampled by 132% with 397 specimens were sampled of 300 planned in the NP. The Baltic assessment working group (WGBFAS) recommended last year increased sampling levels and Denmark has also re-introduced the sole survey were sole can be estimated for maturity.

#### ***Herring in sub. IIIa and 22***

This herring stock was over sampled at 231% in 2014. It was planned to sample 2000 specimen and 4617 were actually sampled. There has been a statement from the herring working group that they would like more Danish samples and this we have tried to accomplice. This stock is now split by otoliths in different spawning segments, this is one of the reasons for the increased sampling intensity. For maturity and sex the species was oversampled between 374%.

#### ***Sprat in sub. 22-32***

Sprat was in 2014 sampled below the planned level with 72% of the weights and age and only 48% for the sex and maturity. Again all sex and maturity data are from surveys. The main reason for the decrease in sampling level is the new bilateral agreement with Poland were they are sampling their own landings.

#### ***Dab in sub. 22-24***

Dab is sampled some above the planned level for weight and age (142% or 851 specimen). We did not catch any dab in our 1 quarter survey and therefore we did not manage to get any sex or maturity for this stock in 2014. However, sex and maturity is not presently used in the stock assessment for this stock .

#### ***Flounder in sub. 22-32***

Flounders weight and length were sampled according to the planned level ~2000– and for sex and maturity 635 and 1186 were sampled, more than the 500 planned for. Samples on sex and maturity are conducted at surveys and the guidelines from WGBIFS are followed.

#### ***Plaice in sub 22-32***

The sampling level for plaice were for weight and length spot on the applied level 3002 specimen. There were a 271 % for age by sex and maturity, respectively. The oversampling is partly due to the benchmark in 2015 for the plaice in the Baltic. Samples on sex and maturity are conducted at surveys and the guidelines from WGBIFS are followed.

#### ***Turbot and brill 22-32***

Denmark have very low levels of catches of turbot and brill (116t and 25t, respectively) and are therefore not obliged to sample these species, 33 for sex and maturity. Very similar numbers were seen for brill were 52 were aged, length and weight measured and 47 were sexed and maturity measured.

#### ***Salmon in sub. 22-31***

Salmon was sampled very close to the applied level in the NP (95%). In the NP there were 2 different numbers for the length and weights to be sampled, this number should of course be similar and is the reason for the 189% oversampling by weight.

#### ***Eel in sub. 22-31***

Eels were sampled closed to the applied level (151%). Eel is presently not aged in Denmark as there are no consensus in ICES on how to age eel properly.

### **III.E.3 Follow-up of regional and international recommendations**

Recommendations relevant to this chapter are listed in in table II.B.2.

### **III.E.4 Actions to avoid shortfalls**

Compared to last year nearly all under sampled stocks are now sampled at the correct at a higher level. It is still challenging to archive the correct level for sex and maturity. This is partly due to the fact that maturity is only measured at surveys (and often only in the 1<sup>st</sup> quarter survey – spawning time) and it can be challenging to plan exactly how many fish are caught during the survey.

Denmark has according to the guidelines outlined in the WGPICS1-3, SGPIDS1-3 and PGCCDBS developed and improved our sampling strategy in the national programs to be a random statistical sound sampling. This indicate that all vessels selected for commercial sampling are selected in a random way and that the responses are registered. For our harbour sampling program the statistically random sampling program have first been developed recently.

## **The North Sea and Eastern Arctic (ICES areas IIIa, IV and VIId)**

### **III.E.1 Achievements: results and deviation from NP proposal**

All stocks sampled during 2014 for biological variables, age, length, weight, sex and sexual maturity are listed in table III.E.3. The variables are collected from different sources like survey, market or sea sampling and sampling strategy differs. For most stocks the sampling sources are listed and the results presented in separate rows.

In the North Sea following species were not sampled as stated in the NP:

#### ***Thornback ray and Requiem sharks, spotted ray, Starry ray picked dogfish and Cuckoo ray in sub. IV and IIIa***

None of the shark or ray species have been planned for in the NP as they are not commercial species, however as they are listed in the appendix IV it has been recorded on surveys for sex and maturity. Here 3022 Starry rays were measured on either discard trips or at surveys in IV and 482 were measured in IIIa, 140 thornback ray were length and weight measured in IIIa and 43 in sub. IV. Only 18 requiem sharks have been caught in survey and measured and sexed. For the Cuckoo ray 2 specimen, 56 spotted ray and 27 picked dogfish have been sex and weighted in IV in 2014.

#### ***Sandeel in sub. IV and IIIa***

Sandell weight, age and length have been sampled at 120% and 171% in the North Sea and IIIa, respectively. Maturity at age has been oversampled by 189 % in the North Sea and 194% in IIIa. This data are available from the November sandeel survey in the North Sea.

***Herring in sub. IIIa, IV-VIId and I-II***

Herring was in the North Sea under sampled with 89% or 533 specimen, however in all other areas herring were oversampled between 213-231% for all parameters (4616 and 6400 specimens)

***Cod in IIIaN, IIIaS, IV- VIId***

Cod has been sampled slightly belowed the planned level for weight@age, length@age in IV-VIId with 92%. For maturity and sex@age we have undersampled with 43% and 124% respectively. In IIIaN and S were slightly under sampled at 87% and 84% respectively of the planned level was achieved. Also sex@age and maturity@age were slightly under sampled in IIIaS and IIIaN.

***Anglerfish in sub. IV- VIId***

159% of the planned sample level for weight@age or length@age were collected, it is however still at a relatively low level 259 individuals. Maturity and sex data is only collected in the 1 quarter survey (IBTS) in the North Sea and is therefore very depended on the amount of fish caught in the survey and only 2 specimen were caught and matured here.

***Whiting in sub. IV- VIId and IIIa***

Sampling was slightly oversampled for all parameters (between 119 – 246% of the planned level).

***Haddock IV and IIIa***

In the national program maturity and sex was not planned for in IV (but weight and age) and opposite in IIIa were sex and maturity were planned for but not weight and age. This is off course a mistake and all parameters in both waters have been sampled. In both area close to the planned 1500 specimen (or 96% and 101% for the North Sea and IIIa, respectively). In the North sea the maturity and sex were sampled with 105% and 363% of the planned level. However in IIIa only 21% of the planned levels were collected, the survey in IIIa does not catch many haddocks.

***Plaice in IIIa and IV***

Age were in both areas slightly oversampled in IIIa sampled at 135% - 4738 individuals and in IV with 62% corresponding to 3116 individuals) Maturity and sex were slightly oversampled for both stocks.

***Dab in IIIa and IV***

Dab was not planned for in IIIa but in the North Sea. However, in 2014 the landings of dab were larger in III than in the North Sea and therefore dab from this area were collected although not planned for. 1609 specimen were weighted and aged in total (200 were planned for) but only 3, were sexed.

***Turbot in IIIa and IV***

Sampling of turbot was only planned for in IV and not in IIIa in the NP – this is incorrect and the species has been sampled for all parameters in both areas close to the applied level (160%). However, the levels in IIIa are at a very low level.

***Brill in IIIa***

Sampling of brill was close was not applied for in the NP this is incorrect and the stock has been sampled for all parameters.

***Sole in IIIa and IV***

Sampling of sole was only planned for in IIIa and not in IV in the NP – this is incorrect and the species has been sampled for all parameters in both areas. There has been a higher sampling intensity in IIIa than in IV. However the earlier high level of sampling has not been reached as both quota and the survey has been downscaled since 2012.

***Lemon Sole in IV***

Lemon Sole were for maturity and sex sampled at the applied level, but slightly undersampled for weight and age (65%).

***Saithe in IV, IIIa, VI***

Length@age and weight@age data were sampled at 122% of the applied, very little sex or maturity data were obtained as this is only conducted on the IBTS 1 quarter and few saithe (11 individuals) were caught.

***Hake in IIIa, IV, VI and VIIab***

The achievement of collected maturity data was only 24%, as very few specimen (12) were caught during the survey. Length, age and weight were collected from 138% (1383) of the planned samples.

***Mackerel in North Sea***

In 2014 Denmark managed to sample close to the planned level 94 % (1415 individuals) for weight, length and age. For maturity and sex-ratio and extra effort was enforced and this increase sampling level and the mackerel is oversampled compared to the planned level for the parameters in 2014.

***Sprat in IV and IIIa***

Sprat was sampled at 68% of the planned level in sub IIIa and 243% in sub IV. Maturity and sex@age was close to the planned level in both areas

***Witch flounder in IV and IIIa***

Witch flounder were sampled at the planned level for weight and age (137%) but below the planned level for sex and maturity, as this is sampled at the 1 quarter survey the amount of specimen caught is difficult to predict beforehand. In SD IV only sampling on sex and maturity was planned for in the NP for 2014, but not weight and age. This is off course a mistake and 67 specimen were sampled.

***Ling IIIaN and IV***

Ling is a new species to be sampled by Demark and is only sampled in very small quantities in 2014, 192 individuals however above the planned level (192%). No ling was caught in the survey and therefore no maturity or sex at age data has been sampled.

***Deep water shrimp IV, IIIa***

Shrimps are caught in Skagerrak and sometimes in the border to the North Sea. The species were sampled for sex, length and weight (however not for age) and was oversampled for these parameters around 169%. For one

of the parameters it was stated the planned sampling level should be 400 as all shrimps that are weighted and length measured are also sexed, the correct value is 4000 this will be corrected in the updated version of the NP.

#### ***Nephrops in IIIa and IV***

Length, weight, maturity and sex are sampled in very large numbers for this species. Samples are mainly deriving from the Nephrops survey and from discard trips. As Nephrops cannot be aged all samples are by length.

#### ***Brown shrimp in IV***

Cragon was oversampled with 157% and 265% for sex and weight respectively but some lesser for maturity 39% corresponding to 1573, 7960 and 391 individuals.

### **III.E.2 Data quality: results and deviation from NP proposal**

A coordination scheme has been set up at the RCM North Sea to improve and ease the task sharing of age reading. This will be of great help as every country do not have to work up the expertise for age readings in all species but can set up a bilateral agreement with the MS with the best expertise, as the numbers of species to be read has increased in later years.

### **III.E.3 Follow-up of regional and international recommendations**

Recommendations relevant to this chapter are listed in in table II.B.2.

### **III.E.4 Actions to avoid shortfalls**

See section III.E.4. Baltic

## **The North Atlantic (ICES areas V-XIV and NAFO areas)**

### **III.E.1 Achievements: results and deviation from NP proposal**

#### ***Blue whiting***

Denmark has 15% of the EU quota of blue whiting in the North Atlantic. The TAC increased in 2013. Therefore Denmark oversampled this species by 483% however still only 965 individuals.

#### ***Boar fish***

Denmark initiated a fishery on a new species the Boarfish in the North Atlantic. This species has been sampled very intensely since 2010 although not planned according to the NP. However, as the species is new DTU Aqua estimated that it would be of great value to get increased knowledge. In 2014 887 specimen were aged and weighted and 324 were sexed.

### **III.E.2 Data quality: results and deviation from NP proposal**

### **III.E.3 Follow-up of regional and international recommendations**

None of the recommendations are relevant to Denmark, as Denmark has only had a fishery for boar fish and blue whiting.

#### **III.E.4 Actions to avoid shortfalls**

None.

### **III.F Transversal variables**

#### **III.F.1 Capacity**

##### ***III.F.1.1 Achievements: results and deviation from NP proposal***

No shortfalls and/or deviations exist in relation to what was stated in the national programme.

##### ***III.F.1.2 Data quality: results and deviation from NP proposal***

As the information in the Vessels Register is registered according to Regulation (EC) N° 2930/1986, N° 2090/1998 and N° 26/2004 and is updated daily data on fishing capacity is assumed to be correct

Therefore, no deviations exist in relation to what was stated in the national programme.

##### ***III.F.1.3 Actions to avoid shortfalls***

No action is needed.

#### **III.F.2 Effort**

##### ***III.F.2.1 Achievements: results and deviation from NP proposal***

If a vessel less than 10 m (or less than 8 m in the Baltic) is having at least one sales note at a calendar day, a fishing day is assumed and counted as one fishing day.

According to the Danish NP the following derogations have been asked:

‘Hours fished’: It is not possible to estimate ‘Hours fished’ since this is not recorded in the Danish logbooks and according to the EU logbook regulation it is not mandatory to record that. Therefore, Denmark request for derogation for recording and submitting “Hours fished”.

The variables concerning numbers of gear (‘Number of rigs’, ‘Number of fishing operations’, ‘Number of nets, length’, ‘Number of hook, number of lines’, ‘Number of pots, traps’) and ‘Soaking time’ are not recorded in the Danish logbooks. According to the EU logbook regulation it is not mandatory to record this detailed information. Therefore, Denmark request for derogation for recording and submitting this information

As the Danish NP has been approved the above derogation has been granted.

Therefore, no deviations in relation to what was stated in the national programme exist.

##### ***III.F.2.2 Data quality: results and deviation from NP proposal***

All logbook data is recorded in accordance with the provisions in the Control Regulation (Commission Regulation (EC) N° 404/2011). Even though effort from the national authorities is put into the improvement of the fishers logbook recordings errors might occur. The obligation to use e-logbook for all vessels above 12 meter in length will most likely improve the quality of the data. Still improvements can be made, but this needs a revision of the Control Regulation (Commission Regulation (EC) N° 404/2011).

#### ***III.F.2.3 Follow-up of regional and international recommendations***

No relevant recommendations have been made about the collection of effort data.

#### ***III.F.2.4 Actions to avoid shortfalls***

According to the Danish NP no shortfalls have occurred.

### **III.F.3 Landings**

#### ***III.F.3.1 Achievements: results and deviation from NP proposal***

In Denmark first hand fish buyer has to report to the authorities the amount of fish in kilo and value, the size grade, the quality, the area of origin, from whom the fish is bought from as well as other information. The volume of fish landed in Denmark has always been recorded using sales slips as sales slips information is 100% accurate. Logbook data is only used to determine which métier and statistical rectangle the amount in weight and value according to the individual sales slip should be related to. There have been no deviations in relation to what was stated in the national programme.

#### ***III.F.3.2 Data quality: results and deviation from NP proposal***

All fish landed in Denmark is recorded, therefore census data. No deviations in relation to what was stated in the national programme exist.

#### ***III.F.3.3 Follow-up of regional and international recommendations***

No related recommendations have been made about the collection of landings data.

#### ***III.F.3.4 Actions to avoid shortfalls***

As no shortfalls have happened no actions have to be made.

## **III G Research surveys at sea**

### **III G 1 Achievements: results and deviation from NP proposal**

In table III.G.1 an overview is given of the planned and achieved numbers of days at sea and the number of fishing hauls, transect length with acoustic data integration (Echo NM) or number of stations.

The biological data from surveys are stored in the national biological database “Fiskeline”. The BITS and IBTS survey data have been submitted to ICES and are stored in the ICES DATRAS database.

The acoustic data are stored in a national acoustic database for later submission to a data base at ICES which is currently under development.

MIK data are stored in a national database for later and have been submitted to the international coordinator.

CTD and other hydrographical and meteorological information are stored in national databases and the CTD profiles from the BITS, IBTS, Norwegian Sea and NS-Acoustic surveys and have been submitted to the ICES oceanographic database.

Information on marine litter for the BITS and IBTS surveys is stored nationally for later submission to ICES once a corresponding database has become available.

### **Baltic International Trawl Survey (BITS)**

The survey is carried out in both the first and fourth quarters with participation of the research vessel R/V DANA and the smaller research vessel R/V HAVFISKEN. The primary purpose of the part undertaken by R/V DANA is to estimate abundance indices for recruitment and stock abundance of the Baltic cod stocks. The second part undertaken by R/V HAVFISKEN provides in addition to cod also abundance indices for flatfish. The BITS survey is coordinated by the ICES Baltic International Fish Survey Working Group.

Types of data collected:

- Species composition
- Length and age measurements
- Samples of cod for estimating age composition, stomach content, sex ratios, maturity and growth parameters
- Information about litter
- Plankton and fish larval CPUE
- Acoustic information
- CTD: temperature, salinity and dissolved oxygen content

Achievements in 2014:

R/V Dana was not available for the 1<sup>st</sup> quarter BITS this year, and the survey was conducted with R/V Solea.

In the summary table below the number of planned and achieved days at sea and the number of valid fish hauls on R/V Solea, R/V DANA and R/V HAVFISKEN are listed (Number of stations not fished due to bottom oxygen < 1.5 ml/l given in brackets).

Survey	Vessel	Planned days at sea	Achieved days at sea	Planned fish hauls	Achieved fish hauls
BITS 1 <sup>st</sup> quarter	Solea	18	18	50	46 (0)
BITS 1 <sup>st</sup> quarter	Havfisken	20	19	49	49

(KASU I)					
BITS 4 <sup>th</sup> quarter	Dana	18	16	50	44 (5)
BITS 4 <sup>th</sup> quarter (KASU II)	Havfisken	20	19	49	48

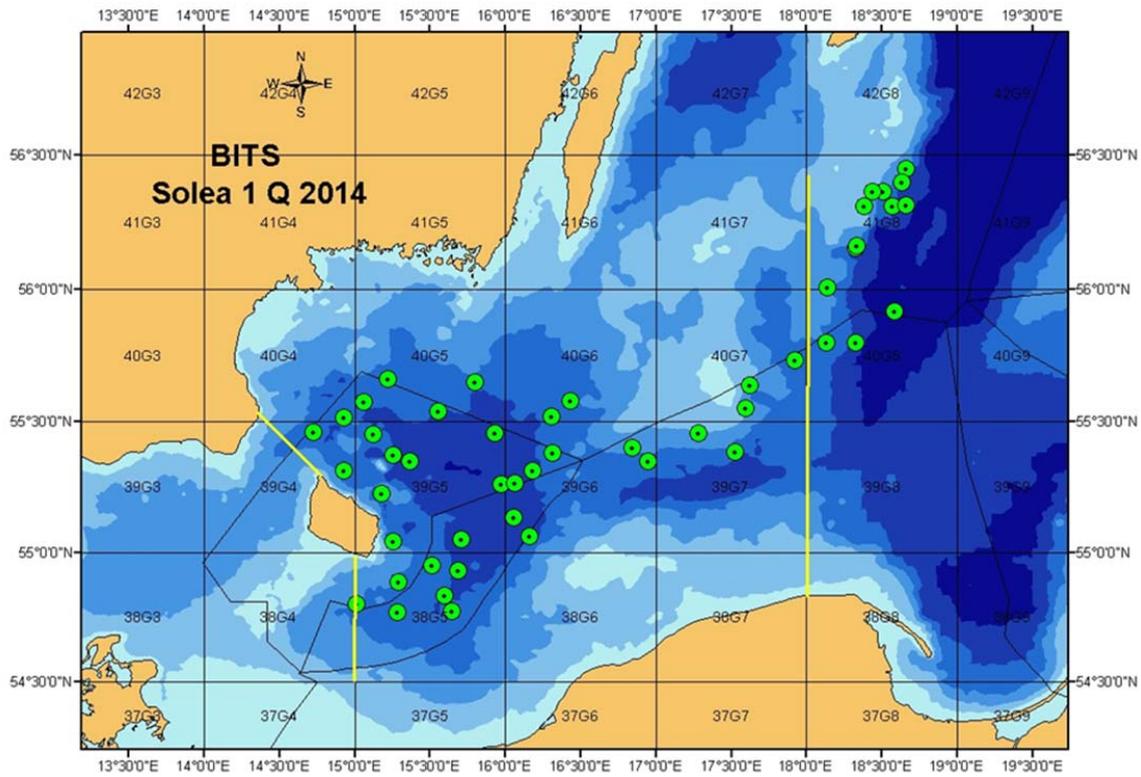


Figure III.G.1 Map showing BITS 1<sup>st</sup> quarter 2014 RV Solea achieved bottom trawl and CTD positions.

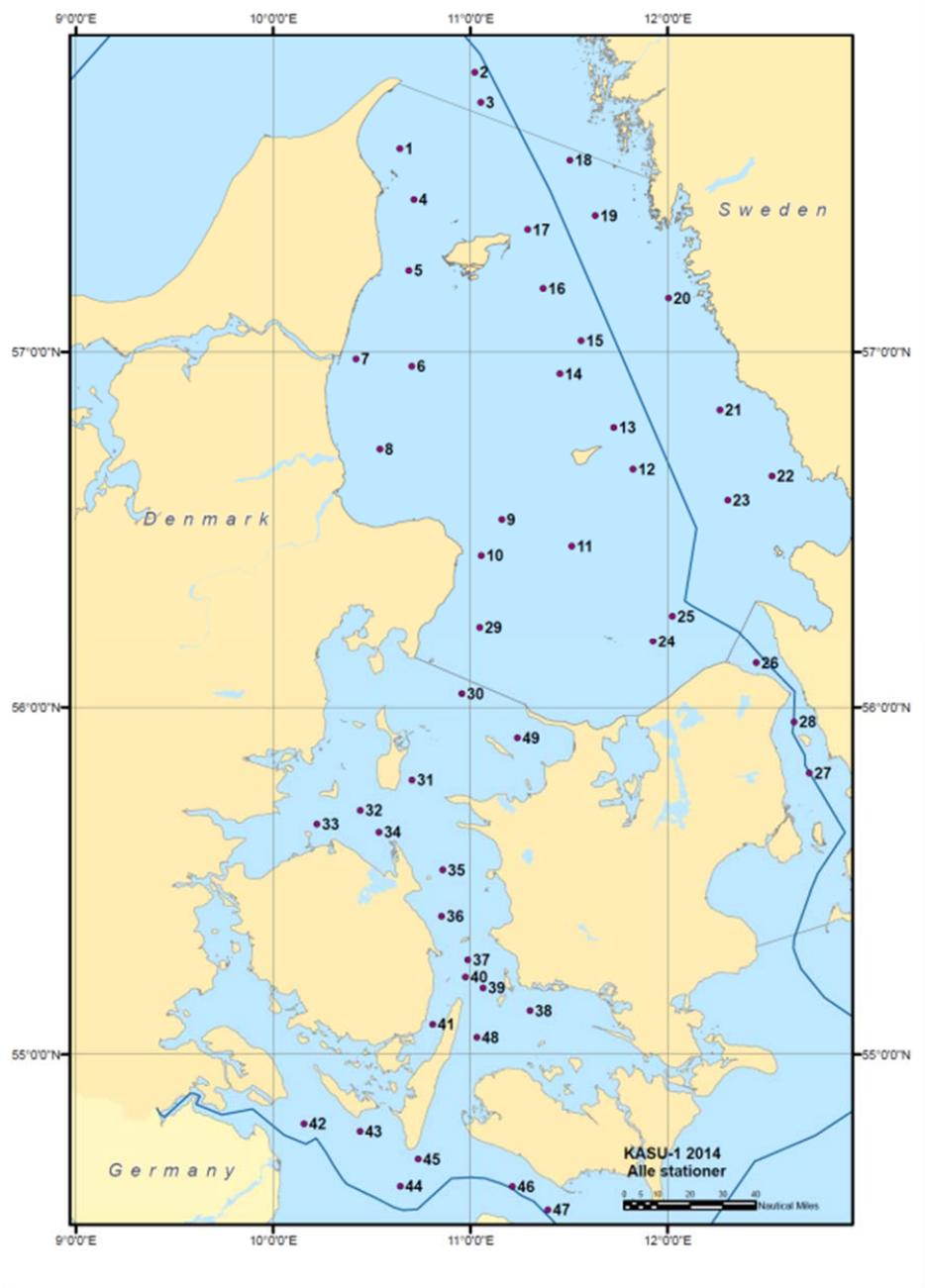


Figure III.G.2 Map showing BITS 1<sup>st</sup> quarter 2014 RV Havfisen achieved sampling positions (Bottom trawl and CTD).

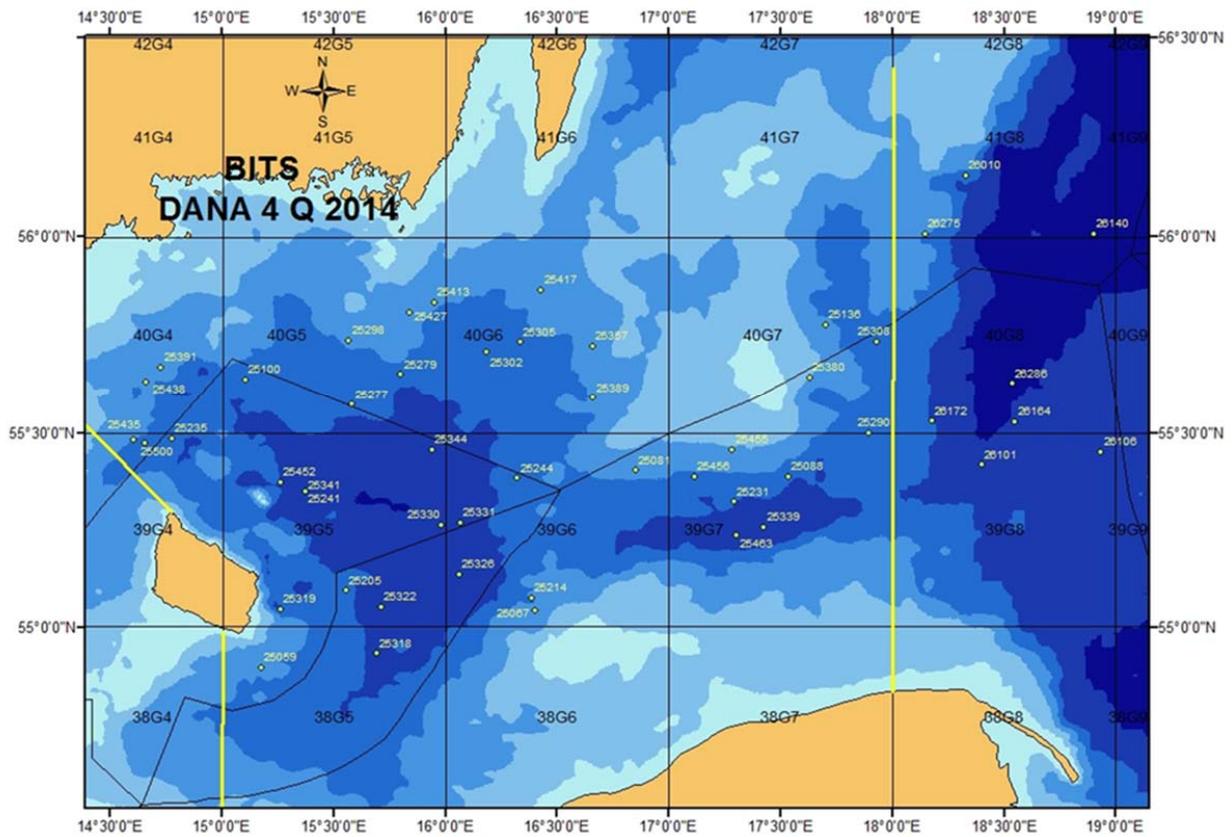


Figure III.G.3 Map showing BITS 4<sup>th</sup> quarter 2014 RV Dana achieved bottom trawl and CTD positions.



Figure III.G.4 Map showing BITS 4<sup>th</sup> quarter 2014 RV Havfisken achieved sampling positions (Bottom trawl and CTD).

### International Bottom Trawl Survey (IBTS)

The purpose of the survey is to estimate abundance of commercial (cod, haddock, whiting, Norway pout, saithe, herring, sprat, and mackerel) and non-commercial fish species by means of bottom trawling and to collect otoliths of commercial species to assess abundance by age, in particular for the recruiting year classes in the North Sea, Skagerrak and Kattegat. It is a trawl survey using GOV-trawl. The IBTS survey is coordinated by the ICES International Bottom Trawl Survey Working Group.

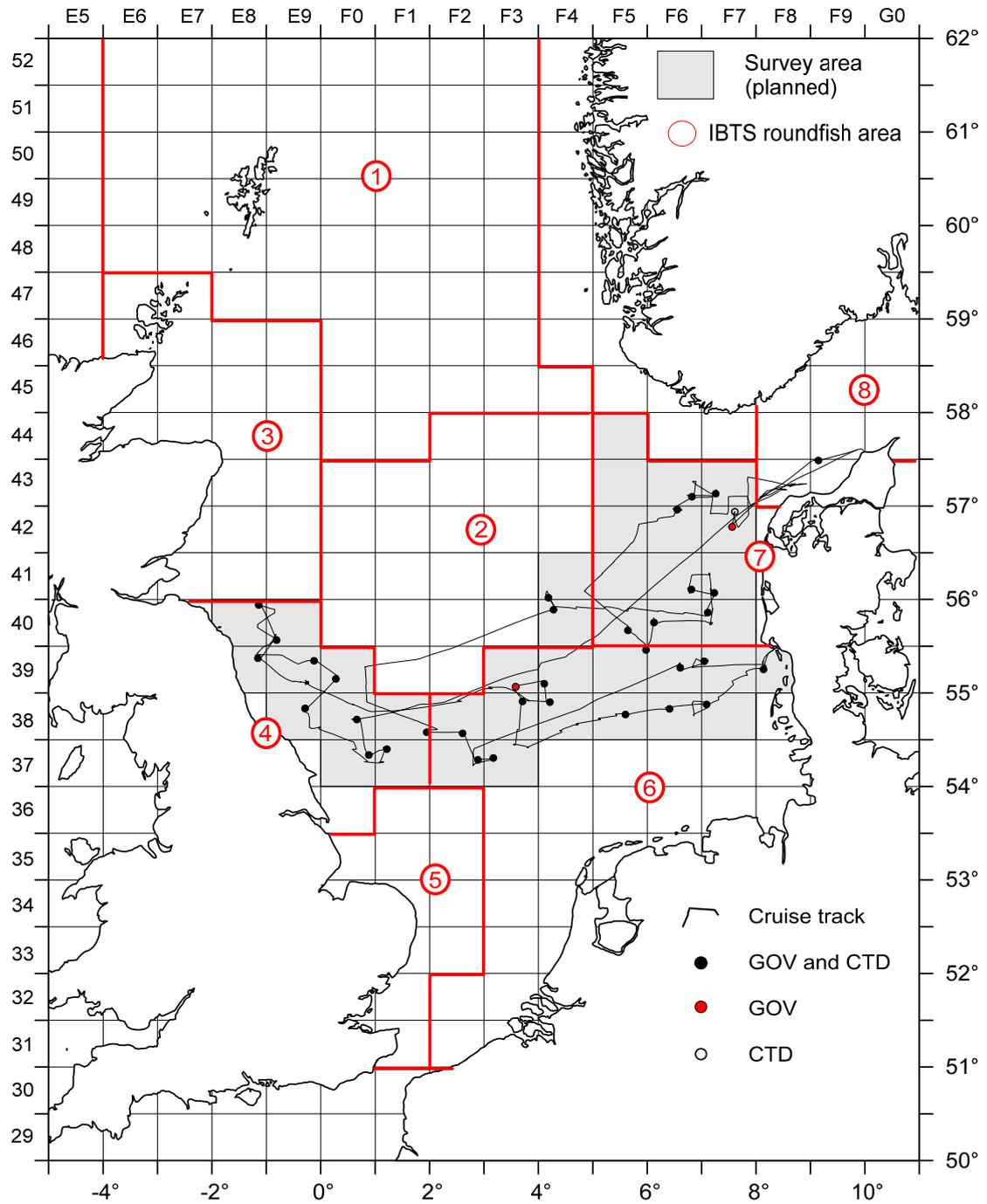
Types of data collected:

- Species composition
- Length and age measurements
- MIK: plankton, fish larvae (only first quarter)
- CTD: temperature and salinity at fishing stations

RV Dana covered the area allocated to Denmark by the coordinator as planned in the 1<sup>st</sup> and 3<sup>rd</sup> quarter 2014 (Figs. III.G.5 and III.G.6). The 1<sup>st</sup> quarter survey however, was affected by extremely bad weather in particularly during the second half of the cruise so that no all of the planned activities were achieved.

Achievements in 2014 (number of days at sea and number of valid trawl stations):

Survey	Vessel	Planned days at sea	Achieved days at sea	Planned fish hauls	Achieved fish hauls
IBTS 1 <sup>st</sup> quarter	Dana	18	17	39	36
IBTS 3 <sup>rd</sup> quarter	Dana	18	18	50	50



**Figure III.G.5 Map showing IBTS 1<sup>st</sup> quarter 2014 RV Dana survey area, cruise track, valid GOV bottom trawl haul and CTD positions.**

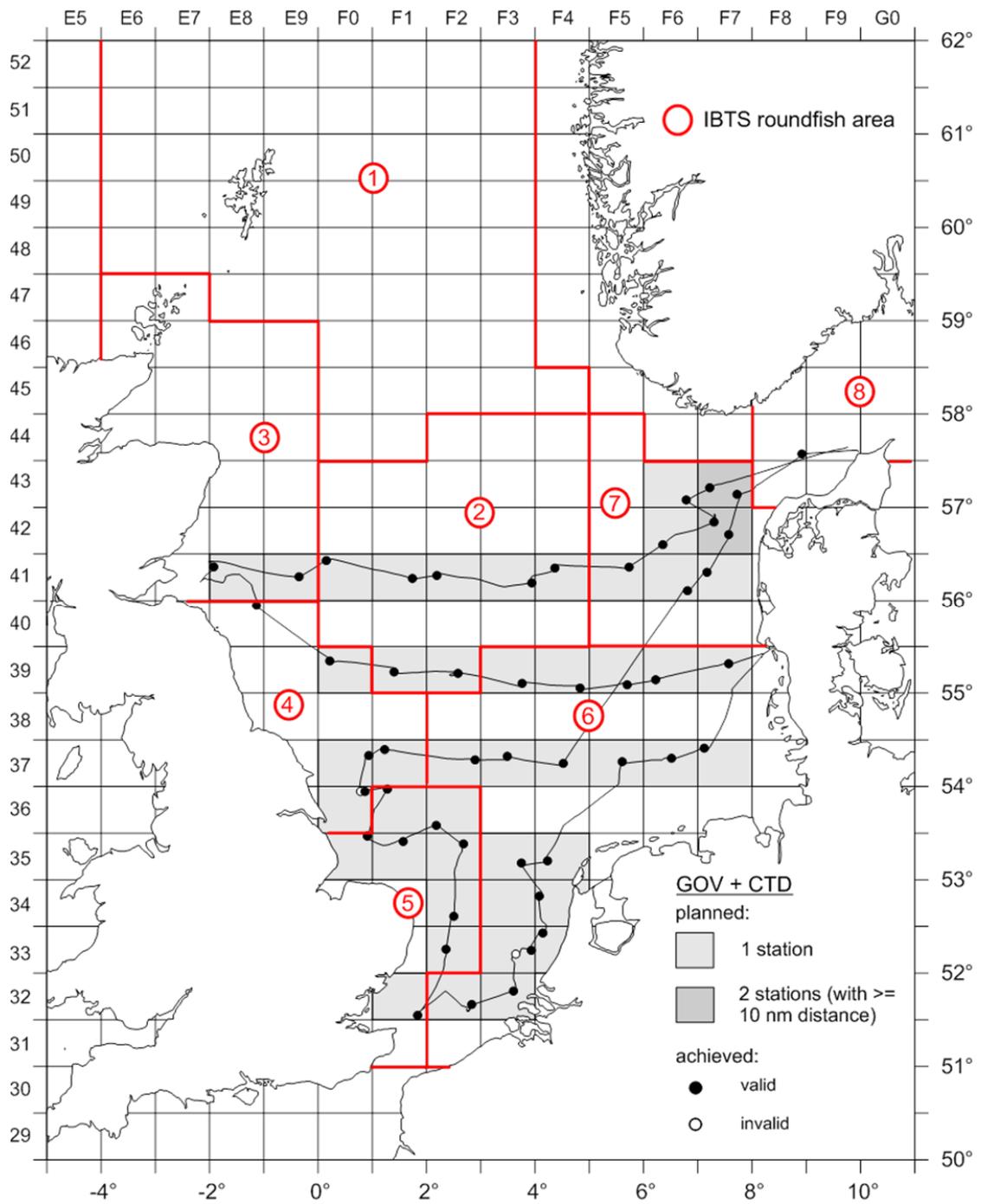


Figure III.G.6 Map showing IBTS 3<sup>rd</sup> quarter 2014 RV Dana survey area, cruise track, GOV bottom trawl haul and CTD positions.

## **International Ecosystem Survey in the Nordic Seas (IESNS, previously ASH)**

This survey is carried out in order to investigate distribution and migrations of the Atlanto-Scandian herring, blue whiting and other pelagic fish and to produce a biomass index for herring and a recruitment index for blue whiting for the Working Group on Widely Distributed stocks (WGWIDE). Furthermore, hydrographic conditions and plankton abundance in the Norwegian Sea and adjacent waters are monitored in order to investigate distribution and migration of herring and other pelagic fishes are influenced by environmental conditions.

The survey was coordinated with Norway as an international survey with participation of Norway, Iceland, Faroe Islands and EU, where the Danish R/V Dana conducted the EU survey part. The survey is coordinated by the ICES Working Group of International Pelagic Surveys, WGIPS, (previously WG on North East Atlantic Pelagic Ecosystem Surveys, WGNAPES). The survey is carried out as a joint EU survey with participation of UK, Ireland, Netherlands, Germany, Sweden and Denmark.

Types of data collected:

- Acoustic data
- Biological data: species composition, length measurements
- For herring and blue whiting samples following parameters was measured on 50 individuals from each haul: length, weight, sex, maturity and age (from scales of herring and otoliths of blue whiting)
- Zooplankton using a WP2 net
- CTD: hydrographical data

Achievements in 2014:

- 30 days at sea (as planned incl. calibration; 19 effective survey days in the working area)
- 32 pelagic trawl hauls
- 36 CTD stations
- 36 WP2 stations
- 3159 Nm acoustic integration

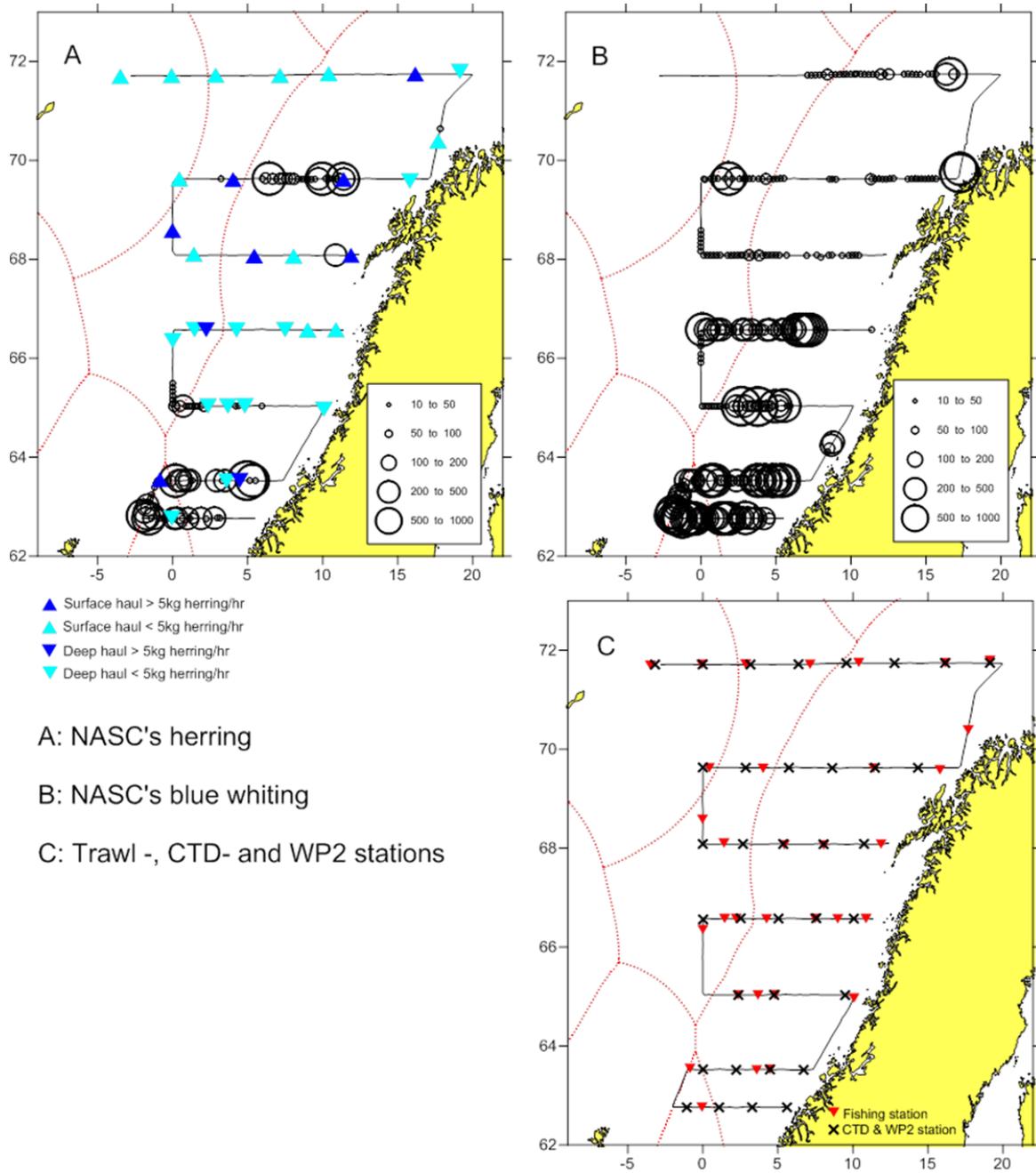


Figure III.G.7 Map showing the RV Dana IESNS 2014 survey track, pelagic trawl, CTD and WP2 stations.

### International herring larvae survey (IHLS)

The sampling for the International herring larvae survey was done during the 1<sup>st</sup> quarter IBTS. Due to adverse weather conditions not all planned stations were achieved, i.e. 68 valid tows out of 78 planned MIK (2 m ringnet) stations were covered in 2014 (Fig. III.G.8).

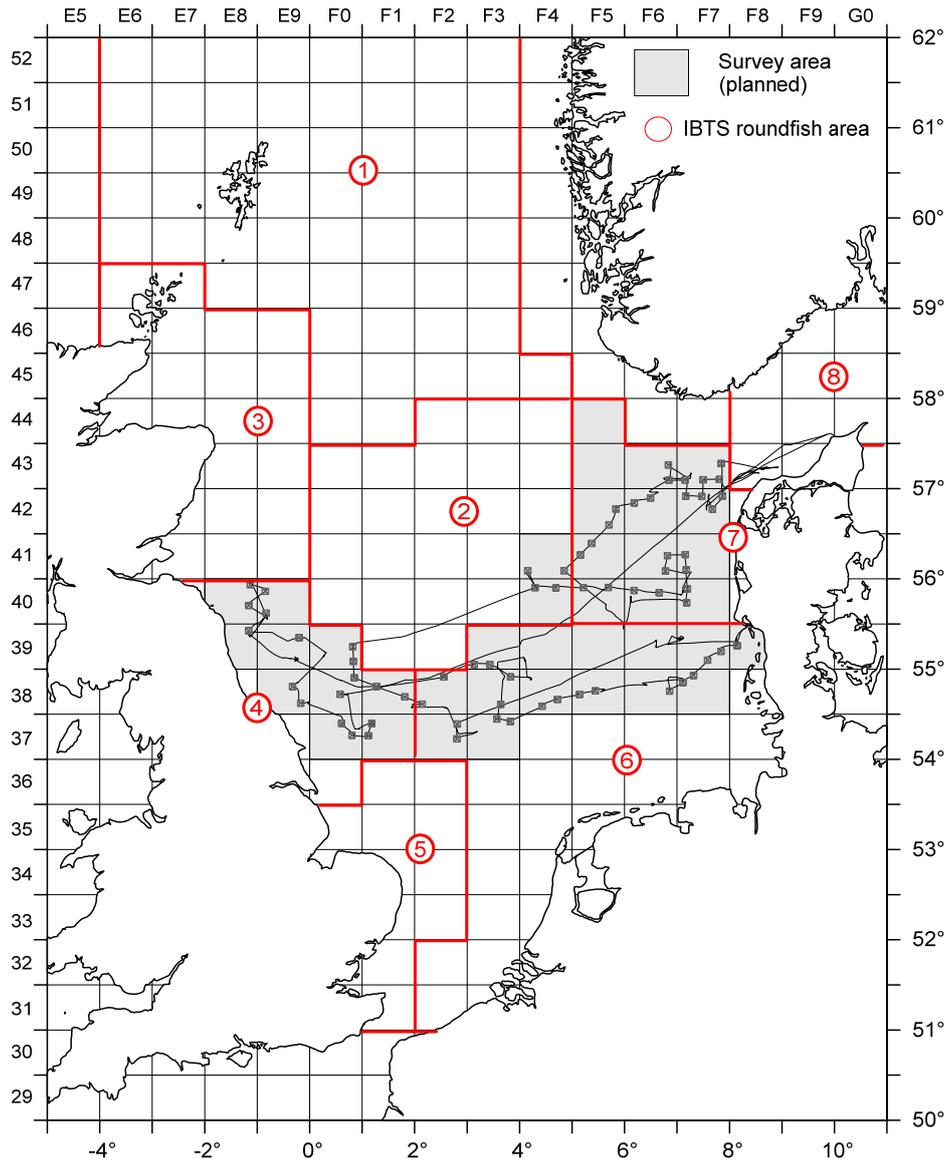


Figure III.G.8 Map showing IBTS first quarter 2014 RV Dana survey area, cruise track and MIK haul positions.

### **NS Herring Acoustic Survey (NHAS)**

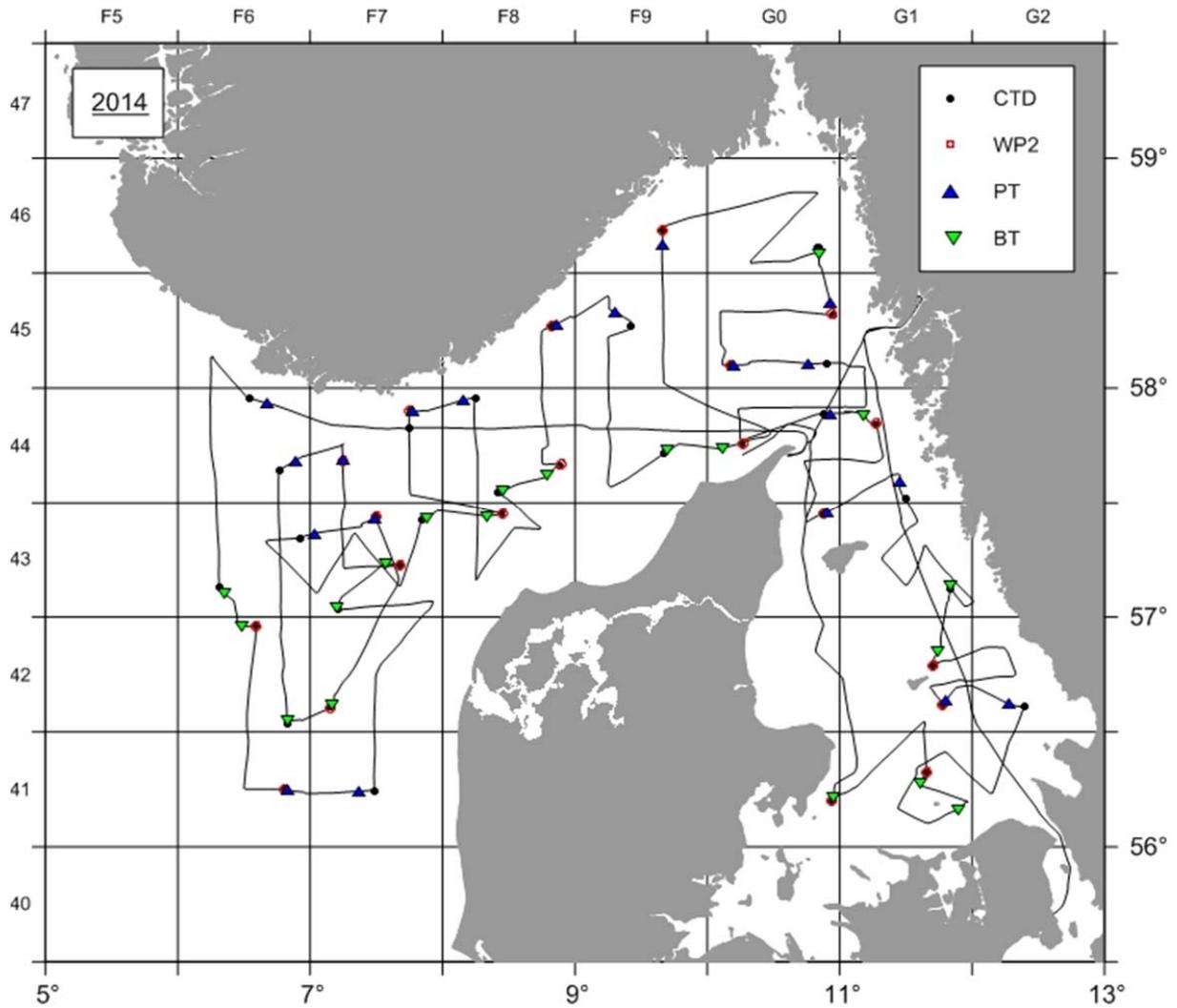
The purpose is to provide acoustic abundance estimates of herring and sprat in the North Sea (eastern part), Skagerrak and Kattegat. The survey is coordinated by the ICES Working Group for International Pelagic Surveys, WGIPS, and is a part of the international acoustic survey of the North Sea and adjacent areas.

Types of data collected:

- Acoustic data
- Biological data: species composition, length measurements, and for herring, sprat and mackerel: age and maturity measurements
- Hydrographical data using CTD
- Plankton samples using WP2 net

Achievements in 2014:

- 14 days at sea (as planned)
- 39 trawl hauls
- 40 CTD stations
- 20 WP2 stations
- 1763 Nm acoustic integration



**Figure III.G.9 Map showing the RV Dana NHAS 2014 survey track, trawl locations (blue triangles: pelagic trawl, green triangles: bottom trawl) and CTD as well as plankton (WP2) sample positions.**

**Baltic International Acoustic Survey (BIAS)**

Denmark has participated with one scientific staff member on the German R/V Solea in 2014.

### **International blue whiting spawning stock survey (IBWSS) in areas VI and VII**

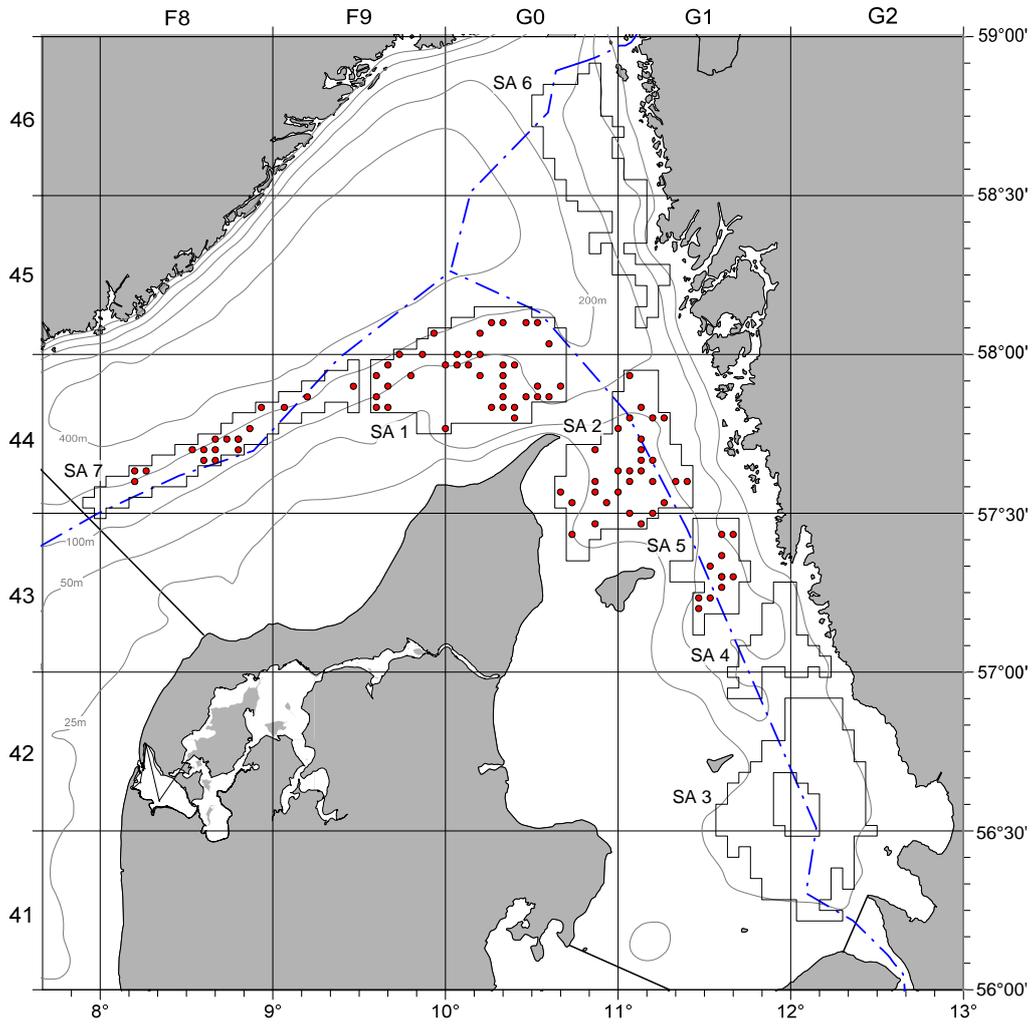
Denmark has participated with one scientific staff member on the Dutch R/V Tridens and the Irish R/V Celtic Explorer in 2014.

### **Nephrops UWTV survey in functional unit 3 and 4**

The purpose of the survey is to estimate the abundance of *Nephrops* in Skagerrak and Kattegat. An underwater video technique is used and later the video footage is analysed in laboratory to estimate the *Nephrops* abundance in selected subareas. The subareas cover the main *Nephrops* fishing grounds in the Skagerrak and the Kattegat and station allocation follows a random design. Survey and data analysis is conducted in close cooperation with Sweden and coordinated by ICES WGNEPS since 2012. The Danish 2014 survey was conducted with R/V Havfisken in August/September. The survey area was extended into the western Skagerrak and the higher time demand for steaming resulted in a reduction of stations taken compared to previous years.

Achievements in 2014:

- 15 days at sea (planned: 15)
- 97 stations (planned: 117).



**Figure III.G.10 Map showing the achieved and sampling locations in the 2014 Nephrops UWTV survey (SA: subarea; subareas 3, 4 and 6 covered by Sweden).**

### North Sea sandeel survey

The purpose of the sand eel dredge survey is to collect sand eels buried in the seabed and compare catches (number and age composition) with the previous year's collections to assess year class strength of the lesser sand eel (*Ammodytes marinus*) in the different areas adopted by ICES in 2009. Data from the dredge survey is the basis for calculating a 0-group index, which is used in stock assessment. The 2014 survey was conducted with the commercial fishing vessel Salling.

Achievements in 2014:

- 23 days at sea (planned: 24)
- 248 dredge hauls and 57 sediment grab samples distributed over 82 sample positions (planned: 68).

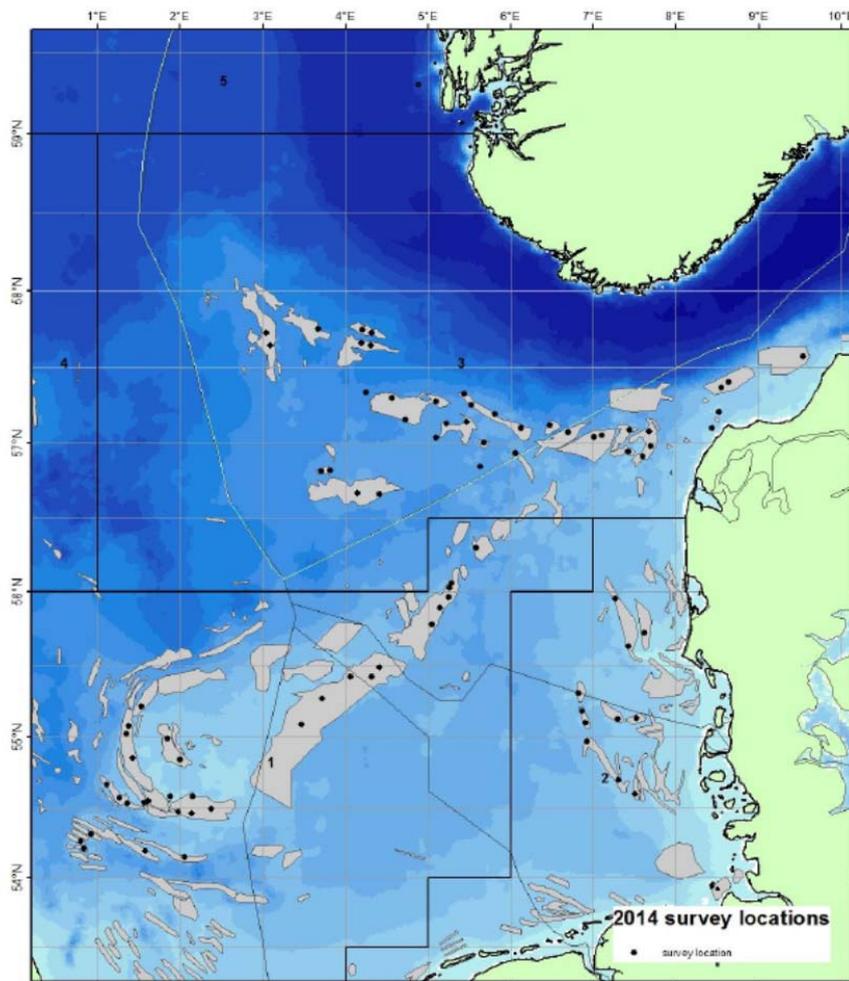


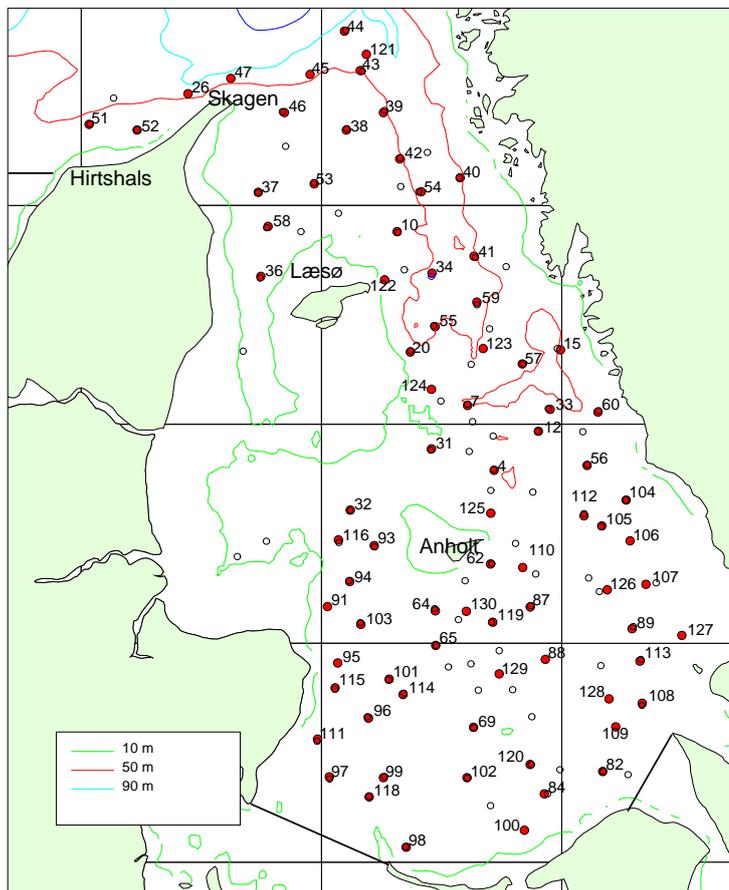
Figure III.G.11 Map showing the sampling locations in the 2014 sandeel survey with the commercial fishing vessel Salling (black circles).

## Sole survey

A survey series targeting sole in Kattegat and Skagerrak was initiated in 2004 in order to establish a time series of catch and effort data independent of the commercial fishery. The survey is conducted at night where sole are active. The survey is the main input to the Kattegat –Skagerrak sole assessment. The number of stations was reduced from 116 to 80 in 2011 but this did not change the overall trends for the most common commercial species. There were no surveys conducted in 2012 and 2013. The surveys were resumed in 2014.

Achievements in 2014:

- 12 \*2 days at sea (planned: 24)
- 77 hauls were conducted (planned: 80).



**Figure III.G.12** Distribution of stations in 2014 with excluded stations (stations are fixed). Survey was conducted with 2 commercial vessels.

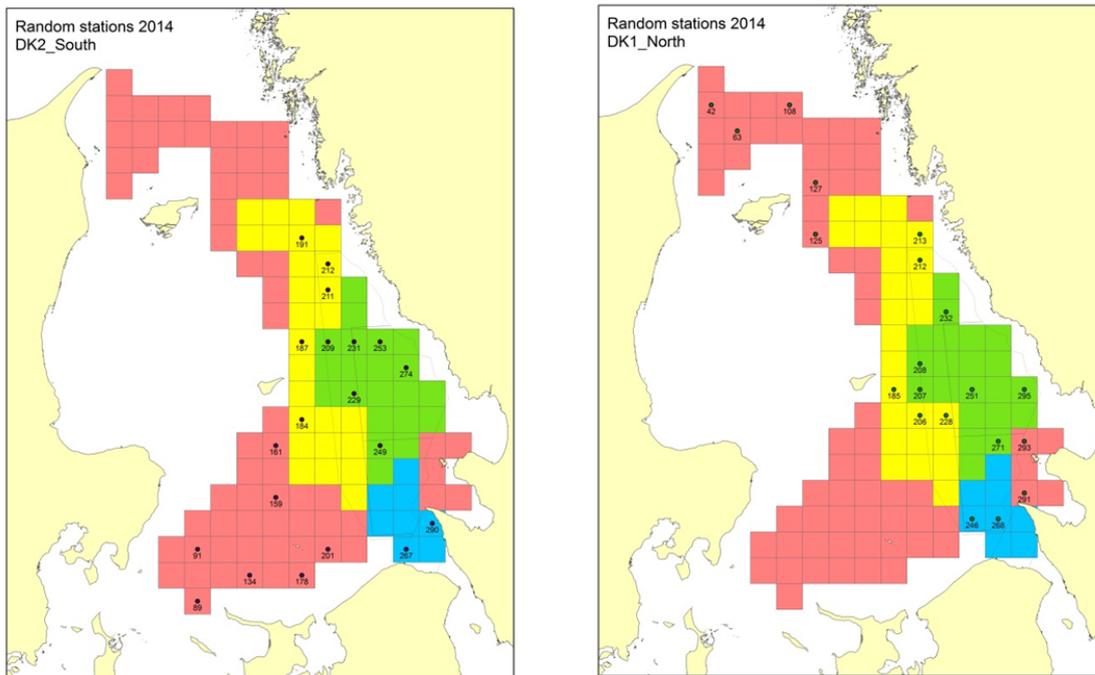
## Cod survey

The survey is a combined Danish- Swedish fisherman-scientist survey. The goal of the Kattegat cod survey is to estimate the abundance, biomass and distribution of cod and to establish a fisheries independent time series of catch and effort series. Furthermore, a recruitment index is established. The results has for the first time in 2015 been used, together with commercial catch and effort data, to strengthen the scientific advice on the cod stock in Kattegat. The 4 commercial trawlers (2 Swedish and 2 Danish) participating in the survey conduct the survey without any restrictions in the vessels quota, days at sea regulation and with dispensation from all by-catch regulations. Each vessel is planned to conduct 20 stations

High density	Medium density	Low density (South)	Low density (North)	Closed area	Total
6	5	7		2	20
6	5		7	2	20

### Achievements in 2014:

- 6 \*2 days at sea (planned: 12) (by nations)
- 39 hauls were conducted (planned: 40).



**Figure III.G.13** Distribution of stations in 2014 conducted with the 2 Danish commercial vessels. Stations are randomly selected.

### **III G 2 Data quality: results and deviation from NP proposal**

No serious data quality problems or deviations from the NP occurred in 2014.

### **III G 3 Follow-up of Regional and international recommendations**

All surveys were conducted according to international or national manuals and guidelines.

### **III G 4 Action taken to avoid shortfalls**

No major shortfalls.

## **IV. Module of the evaluation of the economic situation of the aquaculture and processing industry**

### **IV.A Collection of data concerning the aquaculture**

#### **IV.A.1 Achievements: Results and deviation from NP proposal**

##### **Definition of the population**

The Danish aquaculture sector is defined by the Business Register. In the Business Register the aquaculture sector is defined by the European NACE code 03.2. (European NACE rev. 2). There are no deviations from definition given by the DCF.

##### **Segmentation**

Data is segmented into 4 groups according to their main farming technique, determined on the basis of production value, corresponding to Appendix XI of Commission Decision 2008/949/EC.

##### **Land based farming**

The land based fish farming is dominated by pond farms producing Rainbow Trout and recirculation systems producing European eel. New farm types producing rainbow trout by the use recirculation technology has been in production since 2006.

Traditional pond farms in Denmark produce almost exclusively Rainbow Trout. In 2013 there were 157 farms distributed on 85 companies. The production volume was 17,908 tonnes and the value was 54.3 million EUR. Companies producing more than one species of trout, can for most part be clearly allocated to this segment, because their main income comes from production of Rainbow Trout. Most of the companies have an integrated production from hatchery to portion size fish. There are both small and large producers but otherwise the segment is very homogenous.

Recirculation systems producing rainbow trout in 2013 consisted of 33 farms distributed on 20 companies. The production volume was 14,046 tonnes and the value was 36.6 million EUR. Most of the companies have an

integrated production from hatchery to portion size fish. It is expected that this segment will grow in the coming years, because the environmental impact from these recirculation farms is considered less than from the traditional pond farms.

Recirculation systems producing European Eel in 2013 consisted of 8 farms distributed on 7 companies. The production volume was 971 tonnes and the value was 8.9 million EUR. The segment is very homogeneous; all farms are very intensive and re-circulate more than 95% of the water. All companies have the same kind of production from glass eel to the final product.

Nurseries and hatcheries are for most part an integrated part of the production process inside each company. Only a few companies have specialised in production of eyed eggs or fingerling. This segment is not presented separately.

#### **Sea based farming**

Sea cage farms in Denmark produce Rainbow Trout in cages. In 2013 there were 18 farms distributed on 6 companies. The production volume was 14,505 tonnes and the value was 68.8 million EUR. The production in each farm is quite homogeneous even though there are both small and large producers. The difference in volume and value is caused mainly by the production of trout eggs, roe, which estimated at 14.8 million EUR is the most valuable product from the Danish sea farms.

Shellfish farms producing Blue Mussels on long lines began production activity in 2004 and are still at a low production level. In 2013 there were 11 farms distributed on 9 companies. The production volume was 851 tonnes and the value was 0.9 million EUR. The production methods in the segment are very homogeneous.

#### **IV.A.2 Data quality: Results and deviation from NP proposal**

As described in the National Programme Proposal, for some segments only a small number of companies are expected to participate in the account data survey. Hence, for discretionary reasons only main sums regarding production and account data may be presented for these segments.

Farms in the Danish segment *Other farms* are producing Turbot, Pike Perch, Pollan/Powan, European Perch, Barramundi and a few other species in very small scale. In 2013 this segment consisted of 5 farms from 3 companies. Both the species produced, and the techniques used are very different in this segment.

#### **IV.A.3 Follow-up of regional and international recommendations**

DST expects to participate in the Regional Coordination Meetings when unforeseen items concerning the collection and use of economic data for the aquaculture sector are on the agenda.

DST experts have participated in the following meetings under the Scientific, Technical and Economic Committee for Fisheries (STECF):

Expert working group on the economic performance of the EU aquaculture sector (ewg 14-10) Ispra, Italy, 8-12 September 2014

#### **IV.A.4 Action to avoid shortfalls**

DST has launched an annual recruitment campaign in collaboration with the sector organisation Danish Aquaculture to avoid shortfalls. Each year Danish Aquaculture contacts its members in order to recruit new participants to the account data survey.

### **IV.B Collection of data concerning the processing industry**

#### **IV.B.1 Achievements: Results and deviation from NP proposal**

##### **Definition of population**

The Danish fish processing industry is defined by the Business Register. In the Business Register the fish processing industry is defined by the NACE code 10.20. (European NACE rev. 2), which includes:

NACE 10.20.10 – Fish processing and preservation.

NACE 10.20.20 – Smoking, curing and salting of fish etc.

NACE 10.20.30 – Fish meal factories.

For enterprises that carry out fish processing, but not as a main activity, it is mandatory to collect the following data, in the first year of each period:

- a) Number of enterprise and
- b) Turnover attributed to fish processing.

The number of enterprises and the turnover attributed to fish processing can be extracted from Statistics Denmark Industrial Commodity Statistics and Account Statistics. The “purity” of the processing industry is very high. In 2012 about 97 % of the commodities, which contain fish or fish products, were produced in the branches defined by the European NACE code 10.20. There were only 5 non NACE-10-20 enterprises with fish processing in 2012. Due to the limited numbers of enterprises and rules of confidentiality the total turnover from enterprises carrying out fish processing not as a main activity cannot be shown. The reason is that one enterprise constitutes more than 80% of the total turnover from this group of enterprises, and from the general rules of securing confidentiality the sum for all enterprises carrying out fish processing not as a main activity cannot be shown.

The Danish data collection for the processing industry covers the whole population defined by the Business Register NACE 10.20, which corresponds to a 100% response rate. The data collection is based on the Danish Account Statistics collected by Statistics Denmark covering the whole population defined by the Business Register NACE 10.20. Data for the Account Statistics is collected from different sources and combined in such a way that a complete set of accounting items is computed for each business enterprise.

The industrial commodity statistics describe manufacturers' sales of commodities measured in volume and value. This statistics is used for classification of firms into subgroups by species and product form.

### **Planned sampling**

The type of data collection is census (A).

The Danish data collection is based on data from the Account Statistics collected by Statistics Denmark. The Account Statistics covers all enterprises in the Danish fish processing industry. In collaboration with Statistics Denmark data from the Industrial Commodity- and Account Statistics are combined to comply with the variables listed in Appendix XII of Commission Decision 2008/949/EC.

The data is collected and processed by Statistics Denmark. The final segmentation and validation of data concerning the processing industry is done in cooperation between IFRO and Statistics Denmark.

### **Segmentation**

In the national proposal the processing industry was divided into 13 sub branches. Due to the limited numbers of enterprises and rules of confidentiality, the 13 sub branches are merged to 6 sub branches.

IFRO has examined the composition of commodities from each enterprise in the processing industry for the years 2000 until 2012. This investigation has provided the background for dividing the enterprises into 6 sub branches on the basis of the enterprise's commodity production. The first criteria for the division of the sub branches is the species that the enterprise processes and secondly the degree of processing. The 6 sub branches also reflect the most important species in the Danish primary sector, and if there is a change in the supply of raw material, it will probably reflect on these groups. The 6 sub branches will probably also reflect the social and economic impact, on the processing industry of measures taken on behalf of the common fisheries policy.

Data can also be segmented into 4 groups based on the number of employed calculated as Full-time equivalents according to Appendix XII of Commission Decision 2008/949/EC.

### **IV.B.2 Data quality: Results and deviation from NP proposal**

All requested indicators listed in Appendix XII of Commission Decision 2008/949/EC are collected in the Danish data collection program for the fish processing industry.

In the data collection program it is suggested that the segmentation of the fish processing industry should be according to the number of persons employed (SBS 16 11 0) in each enterprise (SGECA 08 01 Lisbon). Using the number of persons employed is not the common methodology used by the statistical offices in Europe, including Eurostat. It is, therefore, suggested that the segmentation should instead be according to the number of FTE employed in the enterprise (SBS 16 14 0). The Danish segmentation is based on the segmentation in Statistics Denmark, which is based on the number of FTE employed in the enterprise.

### **IV.B.3 Follow-up of regional and international recommendations**

IFRO expects to participate in the Regional Coordination Meetings when items concerning the collection and use of economic data for the fish processing industry are on the agenda.

IFRO experts have participated in the following meetings under the Scientific, Technical and Economic Committee for Fisheries (STECF):

Annual Economic Report of the EU Fish Processing sector 2013, 20-24 of October 2014.

Follow-up of recommendations from the STECF: Report on the Evaluation of Data Collection Related to the Fish Processing Sector (SGECA 09 03). STECF observes that the working group report presents possible deeper economic analysis based on data collected under the old and new data regulations. The possibilities presented here are ambitious, and are not feasible if economic data are provided on a national level only, as requested by the DCR/DCF. In order to be able to conduct the analyses proposed here, STECF recommends that at the national institutes, data should be disaggregated by either type of commodity or by company size.

Data for the Danish processing industry can be disaggregated by both type of species/commodity or by company size as recommended by the STECF.

#### **IV.B.4 Action to avoid shortfalls**

There are no shortfalls in the data collection program for the processing industry in Denmark.

## **V. Module of evaluation of the effects of the fishing sector on the marine ecosystem**

### **V.1 Achievements: results and deviation from NP proposal**

The indicators 1, 2, 3 and 4 listed in Commission Decision 2010/93/EC Appendix XIII of the Commission Decision require data on species abundance and length distribution by species from fishery independent research surveys. These data has been collected through the annual surveys carried out by DTU Aqua. The spatial and temporal coverage of data collection for the evaluation of effects of the fishing sector consists of area IV in the first and third quarters and in area IIIId in the first and fourth quarters 2014.

VMS data has been used for indicators 5-7 require. VMS data has been made available for DTU Aqua for research purpose under certain conditions such as safeguarding the confidentiality of the identity of individual the vessels. The data are available on a resolution of one record every 1 hour. As described below in section VI A "Management and the use of the data" logbooks, selling slips and VMS data are available. Therefore, it has been possible to link VMS, Logbook and sales slips data.

Indicator 8 can be calculated by using the collected at sea observer data.

Indicator 9. The economic data collection carried out by DST includes data on fuel consumption. It is therefore possible to estimate fuel costs per quarter and métier for some segments.

There has been no deviation from the NP.

### **V.2 Actions to avoid shortfalls**

No action is needed.

## **VI. Module for management and use of the data**

### **VI.1 Achievements: results and deviation from NP proposal**

Primary data collected under the Danish programme has been as planned stored in the following computerised databases:

- Vessel register. Data on fishing capacity. (AgriFish Agency)
- Logbook database. Data on origin of catches and on effort. (AgriFish Agency)
- Sales notes database. Data on quantities landed and prices. (AgriFish Agency)
- Species composition database. Data on species composition in landings for industrial purposes. (AgriFish Agency)
- Biological database. Data on discards and biological parameters. (DTU Aqua)
- Economic data. (DST)

In order, for the three involved institutes, to use the same primary data on capacity, effort, and geographical distribution of the origin of the landings a common database has been produced every year, the Danish Fisheries Analyses Database (DFAD). This database is a database where data from the register on Danish fishing vessels, data from the Danish logbooks and the catch area declarations database together with data from the Danish sales notes database are merged. It is therefore possible to categorise each landing in one fleet segment, in one fishery etc. This database contains most of the information requested in research projects and in relation to fisheries management. The DFAD is quarterly and yearly updated. The design and development of the database is made in a co-operation between the three above mentioned institutes.

The collected biological data has been stored in a new database (“Fiskeline”) managed by DTU Aqua. These primary data are surrounded by confidentiality and will not be passed on to other persons or authorities without permission.

Economic data has been collected by DST and stored in a database managed by the institute. These primary data are surrounded by strict confidentiality and will not in any circumstance be passed on to other persons or authorities. Each year DST produces an analytic file on the individual level, which includes relevant data for stratification and grouping for statistical purposes. Based on the analytic file a number of statistical files has been produced and are made available for external users.

All primary data collected under the programme are dealt with in confidence. Accesses to the data are limited to authorised staff members from the three institutes and no one outside the institutes has access to the data without permission.

The regional database RDB “FishFRame” developed by DTU Aqua was in 2012 transferred to ICES and has been running further developed since. During the RCM meeting for the Baltic, the NS&EA and the NA the RDB data was used for the analysis of the status of the data collection and for the planning of the data collection in 2013.

Denmark has provided sets of data to support scientific analysis needed to advice fisheries management. It includes parameters for assessment purposes or other scientific analysis such as number-at-age, weight-at-age and maturity-at-age which have routinely been submitted to relevant ICES governed assessment groups and to relevant STECF expert groups.

Furthermore, Denmark has provided data to other end user if requested.

## **VI. 2 Actions to avoid shortfalls**

No action is needed.

## **VII. Follow-up of STECF recommendations**

STECF recommendations relevant to this chapter are listed in in table II.B.2.

Denmark has taken the recommendations made by the Expert Working group (Evaluation of the 2009, 2010, 2011, 2012 and 2013 Annual report and the evaluation of 2012-13 National Programme) under consideration while writing the Annual report for 2014.

For the 2013 and 2014 STECF plenary meeting reports no DCF relevant recommendations were found.

## VIII. List of acronyms and abbreviations

Acronym/Abbreviation	Description
DCCA	Danish Commerce and Companies Agency
DCF	Data Collection Regulation (EC) No 199/2008
DST	Statistics Denmark
DTU Aqua	National Institute for Aquatic Resources
AgriFish Agency	AgriFish Agency
IFRO	Danish Food and Resource Economics Institute, Denmark
FTE	Full Time Equivalent
ICES	International Council for the Exploration of the Sea
IQ/ITQ	Individual quota / Individual transferable quota
WKBALPEL	Workshop on data for Baltic Pelagics
WKADS	Workshop on Age Determination of Salmon
WKBENCH	Benchmark Workshop on Saithe, Haddock, Herring and Horse Mackerel Stocks
WGBYC	Working Group on Bycatch of Protected Species
WKCOD	North Sea cod benchmark
PGCCDBS	Planning Group on Commercial Catches, Discards and Biological Sampling
ADGSANDEEL	Sandeel Advice Drafting Group
WKARGH	Workshop on Age Reading of Greenland Halibut
WKARAS	Workshop on Age reading of European Atlantic Sardine
WCSANDEEL	ACOM WebEx to finalise sandeel advice
WGMME	Working Group on Marine Mammal Ecology
WKROUNDMP	Joint ICES-STEFCF Workshop on management plan evaluations for roundfish stocks

WGDEEP	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources
HAWG	Herring Assessment Working Group for the Area South of 62°N
WKAREA-2	Workshop on Age Reading of European and American Eel
WGNAS	Working Group on North Atlantic Salmon
WGBAST	Baltic Salmon and Trout Assessment Working Group
WKCPUEFFORT	Workshop on the utility of commercial CPUE and VMS data in assessments
WCDSS	ACOM WebEx to finalize advice on deep sea surveys
WGBFAS	Baltic Fisheries Assessment Working Group
WGECO	Working Group on the Ecosystem Effects of Fishing Activities
NWWG	North-Western Working Group
AFWG	Arctic Fisheries Working Group
PGRFS	Planning Group on Recreational Fisheries Surveys
WGNSSK	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
WGHMM	Working Group on Hake, Monk and Megrin
WGCSE	Working Group for the Celtic Seas Ecoregion
WKSHARK	Workshop on splitting of deep water shark historical catch data WKSHARK
WKMSHS	Workshop on Sexual Maturity Staging of Herring and Sprat
WGEF	Working Group on Elasmobranch Fishes
WGANSA	Working Group on Anchovy and Sardine
SGPIDS	Study Group on Practical Implementation of Discard Sampling Plans
WGHARP	Working Group on Harp and Hooded Seals
WGWIDE	Working Group on Widely Distributed Stocks

WGMIXFISH	Working Group on Mixed Fisheries Advice for the North Sea
WKNARC	Workshop of National Age Readings Coordinators
WGEEL	Joint EIFAC/ICES Working Group on Eels
SGRF	Study Group on Recruitment Forecasting
WKPCS1	Workshop on practical implementation of statistical sound catch sampling programmes
WKMSREGH	Workshop on Sexual Maturity Staging of Redfish and Greenland Halibut
WGRS	Working Group on Redfish Surveys
NIPAG	Joint NAFO/ICES Pandalus Assessment Working Group
SGBALANST	Study Group on Data Requirements and Assessments Needs for Baltic Sea Trout
SIMWG	Stock Identification Methods Working Group
WGNEW	The Working Group on Assessment of New MoU Species
WKMERGE	Joint ICES/STECF Workshop on Methods for Merging Fleet Metiers for Fishery based Sampling
WKPRECISE	Workshop on Methods to evaluate and estimate the precision of fisheries data used for assessment
SCV	Standard Catch Value = landings per species multiplied by 3-year average prices.

## IX. Comments, suggestions and reflections

None

## X. References

ICES, 2012a. Report of the Workshop on Eel and Salmon DCF Data (WKESDCF), 3 – 6 July 2012, ICES HQ, Copenhagen, Denmark. ICES CM / ACOM:62. 67 pp.

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

RCM NS&EA 2014: Report of the Regional Co-ordination Meeting for the North Sea and Eastern Arctic 2014.

RCM NS&EA 2013: Report of the Regional Co-ordination Meeting for the North Sea and Eastern Arctic 2013.

RCM Baltic 2013: Report of the Regional Co-ordination Meeting for the Baltic 2013.

RCM Baltic 2014: Report of the Regional Co-ordination Meeting for the Baltic 2014.

LM 2013: Report from the 10th Liaison Meeting 2013.

LM 2014: Report from the 11th Liaison Meeting 2014.

ICES, 2013c. Manual for the Baltic International Trawl Surveys. ADDENDUM 1:

WGBIFS BITS MANUAL 2013.

ICES. 2015. Report of the International Bottom Trawl Survey Working Group (IBTSWG), 23-27 March 2015, Bergen, Norway.

## **Annex 1**

See attached file.

## **Annex 2**

See attached files.

For the bilateral agreements that has not been renewed in written signed documents it has been just to prolong the agreements.