Technical University of Denmark
National Institute for Aquatic Resources

Technical Report on the Danish National Data Collection Programmes for 2010

by

National Institute for Aquatic Resources
Danish Directorate of Fisheries
Danish Research Institute of Food Economics
Statistics Denmark

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Contents

I. General framework

This document presents the Technical Report (TR) on the work carried according to the Danish National Programme (NP) for data collection in the fisheries sector for the year 2010. 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 TR.

The format of this report is structured following the most recent guidelines from the Commission[1].The TR 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.

Furthermore, the EC has established provisions to facilitate the cooperation between MS with the regard to the collection of data. These are Regional Coordination Meetings (RCM), formal (bilateral) agreements with other MS and in the future regional databases. As far as the conclusions and agreements of the meetings are relevant for the regional data collection and for Denmark they have been taken into account in this TR.

In addition to this TR a financial report for the 2010 programme has been made. The financial report of the costs is presented in separate spreadsheets in the FinForms formats as provided by the Commission.

II. Organization of the National Programme

II.A National organization and co-ordination

Denmark has assigned the National institute of Aquatic Resources (DTU Aqua), Technical University of Denmark as the coordinating institute in Denmark. Jørgen Dalskov, Head of section Public Sector Consultancy, DTU Aqua has been assigned as the National Correspondent.

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[1] Guidelines for the submission of Technical Report on the National Data Collection Programmes under Council Regulation (EC) 199/2008, Commission Regulation (EC) 665/2008 and Commission Decision 2008/93/EC, Version 2009

The work in Denmark has been carried out by 4 partners:

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 varies 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.

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2. **Danish Directorate of Fisheries (FD)** works for commercial fisheries to be balanced and economically healthy, for sustainable fishing and to maintain recreational fishing. The Directorate is part of The Ministry of Food, Agriculture and Fisheries; it was established in its present form in 1995.

The main tasks of the Directorate are to provide service to the Minister and the political level, assist in law proposals and contribute to international negotiations. Furthermore, FD are 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.

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3. **The Danish Food and Resource Economics Institute (FOI)** 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.

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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.

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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.

National coordination between the involved partners has been undertaken through electronic communication techniques regularly.

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 2010. 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. A Danish-Swedish intercalibration age-reading of plaice meeting was planned but not undertaken during 2010. All surveys are coordinated internationally by ICES planning groups. The survey planning groups, which were relevant to Denmark the BIFSWG, IBTSWG, WGIPS, WGNAPES were in 2010 attended by representatives from Denmark.

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, the Netherlands and Scotland. This bilateral coordination has been continued in 2010.

In the economic field FOI constitutes the Danish representative in the project economic Assessment of European Fisheries organized under the Concerted Actions and Thematic Networks which is committed to develop a common method or standard for evaluation of the economic situation in the Community fisheries.

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

General recommendations made by RCM Baltic and RCM NS &EA from 2007 to 2010 and endorsed at the Liason meeting and actions taken by Denmark are listed below.

Source	Recommendation	Action
RCM Baltic (2009)	In order to make analyses of the data collected within DCF and to optimize the coordination work, the developed regional database FishFrame 5.0 should be used within the RCM Baltic.	Denmark has uploaded most of the data for 2009 and will upload all data for 2007 and onwards for all species and all metiers at level 6.
RCM Baltic (2008)	In order to use the time of the RCM more efficient, the pre-processing of the exchange data tables, namely the merging of the data on fisheries statistics and planned sampling NP proposal tables in the NPs, for the harmonization of the NPs, including the quality checks, should be carried out before the next RCM.	Denmark actively participated in the work for the 2009 and 2010 before and at the RCMs.
RCM Baltic (2007)	The RCM Baltic recommends that all MS submit data in the agreed format when requested. The compiled regional data should be distributed to the members of RCM Baltic well before the meeting	Denmark compiled the data to the meeting in 2007 and has prepared requested data for future meeting in order to gain cooperation between MS in the RCM.
RCM Baltic (2007)	The RCM Baltic recommends that all MS upload data (effort, landings-all species, sea-sampling, sampling of landings) for the trawl fisheries targeting cod in the Baltic in order to allow analysis of the fisheries facilitating future task sharing of discard sampling	Denmark has done that.
RCM Baltic (2007)	The RCM Baltic recommends the description of the source of the information and when applying a sampling procedure a description of method and strategy has to be clearly described in the national programme to give useful information on quality of the obtained data. In the technical report there should then be a qualitative quality report containing a thorough description of the methods and strategies used and the characteristics of the gathered data. The RCM Baltic recommends to not use the precision level as an indicator of heterogeneity but to rather use the mean value and standard deviation.	Denmark has described sampling method and strategy in NP for 2009-10.

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 1st of January 2009 was 2,495, of which 938 had no activity in 2009. The 1,557 vessels which were active during 2009 had landings of fish to a total value of EUR 275 million or 92.5 per cent of the total value of the Danish fishery in 2009. The remaining 7.5 per cent of the value of the Danish fishery in 2009, totalling EUR 22.3 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 2009.

	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 segments	---------- Active registered vessels ----------					
Dredgers: < 12 m	27	4	1	-	-	32
Demersal trawl and seine: < 12 m	16	4	3	-	-	23
Using polyvalent passive gears: < 12m	958	31	41	-	37	1,067
Using active and passive gears: < 12m	116	4	14	2	-	136
Dredgers: 12-18 m	26	5	3	-	-	34
Demersal trawl and seine: 12-18 m	158	8	10	1	-	177
Polyvalent passive gears: 12-18 m	50	4	3	-	-	57
Active and passive gears: 12-18 m	40	2	4	-	-	46
Beam trawlers (Shrimp): 12-18 m	11	3	-	-	-	14
Demersal trawl and seine: 18-24 m	62	8	7	-	-	77
Active and passive gears: 18-24 m	13	1	1	-	-	15
Beam trawlers (Shrimp): 18-24 m	13	-	-	-	-	13
Pelagic trawl and seine: 24-40 m	39	6	1	-	-	46
Pelagic trawl and seine: > 40 m	28	4	1	-	-	33
All segments	1,557	84	89	3	37	1,770
Total value of landings in 1000 EUR	275,342	14,205	7,884	121	134	297,686
Per cent share of value of landings	92.5%	4.8%	2.6%	0.04%	0.04%	100.0%

During the year 2009 an additional 255 vessels were registered of which 176 vessels became active. So the total number of Danish vessels with landings of fish in 2009 was 1,733. 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 37 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 2009 was 777,733 tonnes to a value of 297.7 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 account for fishery has been restructured for the collection of data for 2009. For the first time we have included an estimated value of the new individual fishing rights (the vessel quota shares). The capital value of the quotas was calculated using the live weight quantities of fish equalling the quota share for the year for each fishing firm multiplied with shadow prices for every quota species. The results for 2009 are preliminary as we expect to use both data for 2009 and 2010 to investigate which model should be used for estimation of the rights value in the years to come.

The methods used for collecting data and estimating the parameters correspond with the approach in the program.

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

The accuracy indicator shows a high variation for the income from direct subsidies. That is not a problem from the sample selection or the statistical calculations, but comes from the fact that direct subsidies are close to not existing. The only type of subsidy has been contribution given to a few fishermen based on having their homeport on islands without connection to land by bridge or regular ferry.

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

No recommendations to be followed up..

III.B.4 Actions to avoid shortfalls

Number of fishing enterprises has now been calculated and was delivered first time in September 2010.

Data on landings are specified at FAO level 3, which equals ICES sub-area. We made a complementary deliverance of landings and effort data (2008-2010) specified at FAO level 4 (Baltic) for the 2011 data call.

Number of engaged crew is not recorded in Denmark and has not been reported. We have collected total number of working days at sea and total number of vessel days at sea, which can be used to calculate engaged crew.

FTE national was reported with unit 2000 working hours, which is equal to FTE harmonized. Therefore FTE harmonized = FTE national.

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 VIId) and Eastern Arctic (ICES areas I and II) and North Atlantic (ICES areas V-XIV and NAFO areas).

DTU Aqua has used the FD 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 2008/93/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 2010 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 2010 were in general improved compared to 2009. A main overall reason for deviations from what was planned is that it sometimes can be difficult to predict fishing pattern by metier for the sampling year at the time of compilation of the National Programme. Furthermore the Danish sampling program has used “days-at-sea”by métier as the primary sampling and not trips by métier. This conversion factors between days at sea and trips have caused some difference between applied numbers of trips and conducted numbers of trips. 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 in 2011 to a more statistically sound sampling program were trips are the primary sampling unit. Deviations in 2010 from aim on a metier basis are expressed below.

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

Stationary uncovered pound nets targeting ell (FPN_CAT_ALL_0_0), sub 22-24
Denmark has in 2009 restarted a sampling program for ell. Ells from pond nets are fished alive and often kept in pounds until buyers are ready to get them. As cost of eel is very high and very difficult to measure alive DTU Aqua has made an agreement with some local fishermen in order to measure ells when the fishermen are ready to slaughter a batch of eels. However, the ell fishery was limited in 2010 as was the case in 2009. Some of the fishermen that have agreed to cooperate with DTU Aqua had cancel the appointment on ell measurement to carried out several times due to limited catches of eels. These arrangements are still under development and therefore only 75% of the planned trips in 2010 were carried out a little better than the achievement in 2009 (67%).

Bottom otter trawl targeting demersal fish (OTB_DEF >=105 1 110), sub 22-24
Between 2009 and 2010 the sampling at sea from this métier was upgraded in the NP application from 30 trips a year to 50 trips a year (67% increase). This increase was not caused by an increase in numbers of trips conducted by the fishery (between 2009 and 2010 there were a 9% decrease in the numbers of trips) but to achieve a higher degree of precision in the estimate. However, this large increase was overestimated compared to the available staff and although we achieved 50 days at sea we only managed to increase the sampling level to 37 trips. This is however still an increase in effort compared to 2009 with 23%. To compensate for the 26% under sampling in the at-sea observer program an extra effort was inserted to increase the sampling level at market for this métier. In the market sampling 49 samples were collected instead of the 16 samples applied for (an increase of more than 200%). This indicates that the métier is very well covered in the Danish sampling program in 2010.

Set gillnet fisheries targeting demersal fish (GNS_DEF_110-156_0_0), sub 25-32 and 22-24
In 2010 Denmark sampled 83% of the planned trips for this métier in subdivision 25-32. The main part of these landings takes place on the Island Bornholm and it can be difficult to plan in advance when the samples are landed. However, in order to compensated for the sampling below the planned sampling in subdivision 25-32 the sampling in subdivision 22-24 has been increased significantly helped by an easier logistics for this area (158%).

Bottom pair trawl targeting small pelagic (PTB_SPF_16-31_0_0), sub 25-32 and sub 22-24.
Between 2009 and 2010 Denmark has increased the sampling level from 8 samples a year to 100 samples a year in sub 25-32. This very large numbers of sprat samples are mainly due to the large numbers of landings from other EU members, were Denmark is obliged to collect samples. This large increase in sampling level was much closed to be achieved with 92% of the samples conducted. However, in order to compensated for the sampling below the planned sampling program in subdivision 25-32 the sampling in subdivision 22-24 has been increased by 35% ending up with a total on 119 of 120 planned samples – achieving 99% of the planned samples for both areas.

Bottom pair trawl targeting small pelagic (PTB_SPF_>=32_0_0), sub 22-24.

The numbers of achieved samples in the western Baltic herring fishery was the same as the planned.

Bottom otter trawl targeting demersal fish (OTB_DEF >=105 1 110), sub 25-32.
As was the case in sub 22-24 sampling level at sea of this métier was upgraded from 20 to 35 trips between 2009 and 2010 (75%) in the NP. For this métier the increased sampling level was close to be fulfilled with 88% of the planned sampling conducted. To compensate for the 11% below the planned sampling level in the at-sea observer program an extra effort was inserted to increase the sampling level at market for this métier – In the market sampling 35 samples were collected instead of the 16 samples applied for (an increase of 118%). This indicates that the métier is very well covered in the Danish sampling program in 2010.

Longline fisheries targeting demersal fish (LLD_ANA_ALL_0_0), Sub_25-32
In 2010, 40% of the planned trips were conducted from this métier. Again the main landings are on the Island of Bornholm and it can be difficult to plan in advance when the samples are landed. The amount of landed fish is very limited (120 t) and only fished in a short period of time which complicate the sampling and in 2010 a large part of the fish was transported to Sweden before it was possible to get samples.

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

During 2010 Denmark has put a lot of effort in working with the COST tool. Results obtained so far are presented in table III.C.5. Denmark has only calculated the CV's for the length distribution in the landings. The CV's have been calculated according to our sampling strategy for landings – quarter and commercial size category. Denmark calculates the volume of discard for all species by raising with total landings. This method has not been developed in COST, so the CV's for discard volume and length distribution in the discard have not been calculated.

Denmark has during 2010 initiated a work to improve the designs of the metier sampling programmes on the basis of the outcome of the two ICES workshops WKACCU and WKPRECISE. The work includes identification of proper sampling frames and probability based ways to select primary sampling units. The new designs will improve the possibilities to evaluate possible bias and thereby also accuracy.

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

Source	Recommendation	Action
RCM Baltic (2010)	To ensure the wide implementation of for several agreed/recommended tasks, the RCM Baltic recommends that a Fish frame 5.0 workshop should be arranged in early 2011.	Denmark has made agreement with ICES that ICES will host the FishFrame regional database from 1st January 2012 and that ICES will arrange workshop in the use of FishFrame.
RCM	In order to optimise the strategies for age reading of eel and try to come up with	WGEEL has not

Baltic (2010)	proper task sharing of age reading on a regional scale, the WGEEL need to inform RCM Baltic on how / if age disaggregated data on eel will be used in the assessment.	reported back to MS.
RCM Baltic (2010)	For institutes collecting small volumes of otoliths for certain species and when new species are to be sampled, task sharing of age reading is necessary in order to optimise the use of age reading expertise. The RCM Baltic recommends that the NC´s starts to discuss, decide and agree on which MS should be responsible for age reading of species rarely caught in BITS survey (brill, plaice, turbot, dab, sole). An agreement of task sharing for aging eel should also be established.	Denmark has worked actively for task sharing and has signed several bilateral agreements with other MS. Still improvements should be made.
RCM Baltic (2010)	In order to be able to analyse the current sampling level of sprat in the Baltic and suggest optimal sampling levels for future regional coordinated sampling, the data must be available in an agreed format and checked for errors. Data has to be uploaded in Fishframe	Denmark has uploaded all 2009 and 2010 data.
RCM Baltic (2010)	For the purposes of regional understanding of sampling activities, national information on sampling should be compiled regionally in advance of the next meeting (2011).	Denmark has uploaded all 2009 and 2010 data.
RCM Baltic (2010)	Development of a report in FishFrame which calculate the top 90% ranking of metiers for each MS as well as on regional level. The data should be based on data from the two previous years.	Denmark has developed this report.
RCM Baltic (2010)	To ensure the wide implementation of COST, the RCM Baltic recommends that after the trial period lasting until May 2011 the working experience of member states will be reassessed and a training workshop should be organized in the first half of 2012.	Denmark has worked intensively with the COST and still a number of issues need to be tackled at a workshop or relation to a revision of the COST tool.
RCM Baltic (2010)	To avoid inconsistencies and errors in the tables filled in by MS in their NP proposals, the list of “stocks” established and used in FishFrame should be used as a standard.	Denmark is awaiting the revision of the guidelines.
RCM Baltic (2010)	To avoid inconsistencies and errors in the tables filled in by MS in their NP proposals, the following are recommended: Table III.E.1: • Species list in a fixed format (e.g. drop down menu) • Area/Stock definition in a fixed format (e.g. drop down menu) , following the list established by FishFrame, see recommendation below. • MS should follow the guidelines and put in absolute figures for landings even if landings are below 200 tonnes. • MS should follow the guidelines and put in absolute figures for percentage even if percentage is below 10%.	Denmark is awaiting the revision of the guidelines.

	Table III.E.3: • Species list in a fixed format (e.g. drop down menu) • Area/Stock definition in a fixed format (e.g. drop down menu) following the list established by FishFrame, see recommendation below. data sources in a fixed list (survey, sea sampling, market sampling etc).	
RCM Baltic (2009)	For the purposes of ranking métiers to sample, National data on effort, landings and value by métier and fishing ground should be compiled regionally in advance of the next meeting. To enable this, participants from MS should strictly respect the agreed naming conventions of fishing ground, métiers and units of the variables as well as the deadline for submission of the national data.	Denmark uses the agreed naming and respects the deadline.
RCM Baltic (2009)	For the purposes of regional understanding of sampling activities, National information on sampling should be compiled regionally in advance of the next meeting. To enable this, participants from MS should strictly respect the agreed naming conventions of fishing ground and métiers as well as the deadline for submission of the data.	Denmark uses the agreed naming and respects the deadline.
RCM Baltic (2009)	For the purposes of understanding the heterogeneity of métiers and the consequences for task sharing and discard sampling, national descriptions of the regionally ranked métiers should be compiled using the format in annex 3. To enable this, participants from the MS should strictly respect the agreed naming conventions of fishing ground and métiers as well as the deadline for submission of the information. Appointed persons are responsible for requesting the data and compiling it on a regional level.	Denmark will produce the descriptions of the metiers using the format in annex 3 Before the RCM's 2010.
RCM Baltic (2008)	In the NP proposals, a short description of all métiers selected by the 90% ranking procedure should be provided. Such a table would enable RCM to identify whether a métier with the same name covers the same or different fisheries in different NPs.	Denmark has included a short description of all metiers in programme for 2011-2013 and for the RCM 2010
RCM Baltic (2007)	Regional sampling 4.1 Until robust international guidelines for analysis of logbook data is available RCM Baltic made a few recommendations how to deal with allocation rules.	Denmark has complied with interim allocation rules made up in the RCM

III.C.4 Actions to avoid shortfalls

A proper statistically sound sampling frame will hopefully reduce the problem and this is planned to be developed and implemented in the Danish sampling program during 2010-2011. However, this has in practice been more difficult to achieve than expected and more focus on the regional sampling level and sampling frame could solve some of the problem. 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. Furthermore, DTU Aqua has got online access to the VMS data and it is

expected that online information of the fishing fleet behavior in time and place can facilitate easier planning of the sampling to be carried out. The improved Danish sampling program in 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.

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+VIId
75% of the planned Crangon fishery was covered. The numbers of trips has decreased by 11% between reference year and 2010. This fishery is a relatively new fishery in the observers program (since 2009) and contact to the industry has to be building up. In this fishery a lot of hauls are taken every day, and the trips are relatively long (3.7 days in average) giving a large numbers of samples. 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.

Bottom otter trawl targeting demersal fish (OTB_DEF<16 0 0), sub IV+VIId
The sandeel fishery has always been covered very detailed in the North Sea by Denmark as we are the main nation fishing on this species. In 2010 the numbers of trips increased by 21%. For this reason the level of samples level were increased by 21% from 200 to 242 samples.

Bottom pair trawl targeting small pelagic (PTB_SPF_16-31_0_0), sub IV+VIId
The applied sampling level in the NP for the sprat fishery was between 2009 and 2010 increased from 20 to 65 annually samples (225% increase in sampling level). However in 2010 the numbers of trips decreased by 30% and 75% of the applied sampling level in the NP was conducted (49 samples).

Bottom pair trawl targeting small pelagic (PTB_SPF_32-69_0_0), sub IV+VIId
The mixed herring (67%) and mackerel fishery (33%) was in 2010 oversampled with 72% compared to the applied sampling level in the NP. Numbers of trips between the reference year and 2010 was increased with 22%.

Bottom otter trawl targeting crustaceans (OTB_CRU_90-119 0 0), sub IV+VIId
The at-sea sampling program was covered as planned in the NP. 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.

Bottom otter trawl targeting crustaceans (OTB_CRU_70-89 0 0), sub IV+VIId
Only 50% of the planned at sea monitoring was covered in this metier. The number of trips between the reference year and 2010 decreased by 30%.

Set gillnet fisheries targeting demersal fish (GNS_DEF_120-219_0_0), sub IV+VIId
In the NP for 2010 this métier was set to be sampled in the at sea observer program but not at land in harbors. This is off course a mistake in the application. The métier is also covered by the harbor sampling. The “at sea monitoring” only achieved to sample 25% of the planned trips. One reason for this under sampling is caused by fishermen deciding rather late on the trips if the wants to fish in sub IV or sub IIIaN. The trips in sub IIIaN is for

the same reason oversampled by 85%. Another reason for the under sampling is a decrease in numbers of trips between reference year and 2010 by 20%. To compensate for the under sampling in the at sea program for gillnets in the North Sea the harbor samples were increased by 250% (14 samples) compared to the level applied in 2009.

Bottom otter trawl targeting small pelagic (OTB_DEF_16-31_0_0) sub IV+VIId
The Norway-pout fishery in the North Sea was oversampled by 200 % compared to the applied sampling level. However this is caused by a very large year-class increasing the landings in 2010 compared to 2009 with 170% increase in numbers of trips.

Bottom otter trawl targeting demersal fish (OTB_DEF_90-119_0_0), sub IV+VIId
This métier was covered in the at-sea sampling program as planned however over sampled in harbor samples by 280%.

Anchored seine targeting demersal fish (SDN_DEF_>=120_0_0), sub IV+VIId
50% of the planned trips were conducted; however with many samples as the trips were unusually long (average of 6.5 days a trip). To compensate for the under sampling at sea, the on shore sampling were increased and oversampled compared to the applied number of samples by 83%. Numbers of trips has between reference year and 2010 increased by 80%.

Bottom otter trawl targeting Crustaceans (OTB_CRU_35-69_0_0), sub IIIaN
This metier was covered as planned in the NP for 2010.

Bottom pair trawl targeting small pelagic (OTB_SPF_32-69_0_0), sub IIIaN
In 2010 was this métier mainly fishing herring were oversampled by 260% or with 36 samples compared to the 10 samples applied for in the NP. This area is a mixing area for 3 different herring stocks and the over sampling is due to the fact the herring assessment working groups needs a very large sampling cover to be able to make stock identification.

Bottom otter trawl targeting demersal fish (OTB_DEF<16 0 0), sub IIIaN
The Danish sandeel fishery has always been covered very detailed in Skagerrak as well as in the North Sea by Denmark as we are the main nation fishing on this species. The sampling level applied for in the NP was very much an underestimation as samples from Skagerrak are considered very important in the stock assessment for this speices. For this reason the level of samples level were increased from 20 to 186 samples.

Bottom otter trawl targeting crustaceans (OTB_CRU_90-119 0 0), sub IIIaN
The at sea sampling program was conducted as planned with 7% increase in sampled effort compared to the applied sampling level. 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.

Bottom otter trawl targeting demersal fish (OTB_DEF_90-119_0_0), sub IIIaN
This métier was covered in the at-sea sampling program as planned however over sampled in harbor samples with 66 samples compared to the 8 samples applied for in the NP.

Set gillnet fisheries targeting demersal fish (GNS_DEF_120-219_0_0), sub IIIaN

In the application in the NP for 2010 this métier was set to be sampled in the at sea observer program but not at land in harbors. This is off course a mistake in the application. The métier is also covered by the harbor sampling. The "at sea monitoring" was over sampled by 85%. For explanation see GNS_DEF_120-219_0_0), sub IV. The harbor samples were increased by 125% (9 samples) compared to the applied sampling level in 2009.

Bottom otter trawl targeting small pelagic (OTB_SPF_16-31_0_0) sub IIIaS

The sprat fishery in Kattegat has been sampled very close to the applied level in the NP (+10%).

Bottom pair trawl targeting small pelagic (PTB_SPF_32-69_0_0), sub IIIaS

This métier has been sampled 10% below the applied level in the NP, however the numbers of trips has decreased between 2009 and 2010 with 10%.

Bottom otter trawl targeting Crustaceans (OTB_CRU_90-119_0_0), sub IIIaS

This métier is mainly targeting *Nephrops* although it is a mixed fishery. The sampling strategy has been changed and we are now conducting a concurrent sampling on more vessels at sea where the whole catch is measured. This was a recommendation from the scientist in Denmark as they could not use the information from the harbor sampling on *Nephrops* and this sampling strategy has been conducted since 2009. Sampling level was 20% below the applied level in the NP.

Bottom otter trawl targeting demersal fish (OTB_DEF_90-119_0_0), sub IIIaS

In the NP for 2010 this métier was set to be sampled in the at sea observer program but not at land in harbors. This is off course a mistake in the application. The métier is also covered by the harbor sampling. The fishery in this area has in 2010 been hampered by the closure of a large area which was implemented in order to protect the cod stock in the Kattegat (IIIaS). This has affected the cooperation with the fishermen and it has complicated the execution of the sampling programme. A dialog between the fishermens organization has been established to improve the sampling for this métier. Furthermore, there has been a decrease in the numbers of trips by 37% between 2009 and 2010. It has been compensated for by increasing the numbers of samples from shore which has increased by 800%.

Set gillnet fisheries targeting demersal fish (GNS_DEF_120-219_0_0), sub IIIaS

This fishery is a new fishery in the observers program and contact to the industry has to be build up. In 2010 67% of the applied at sea trips were conducted and 75% of the harbor samples.

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

The fishery for blue whiting has not been conducted in 2009 and no sampling has therefore been conducted. The midtwater otter trawl fishery in 2009, were targeting other species in this area.

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

In 2010 Denmark has been working with the COST tool. Results obtained so far are presented in table III.C.5. Denmark has only calculated the CV's for the length distribution in the landings. The CV's have been calculated according to our sampling strategy for landings – quarter and commercial size category. Denmark calculates the volume of discard for all species by raising with total landings. This method has not been developed in COST, so the CV's for discard volume and length distribution in the discard have not been calculated.

Denmark has during 2010 initiated a work to improve the designs of the metier sampling programmes on the basis of the outcome of the two ICES workshops WKACCU and WKPRECISE. The work includes identification of proper sampling frames and probability based ways to select primary sampling units. The new designs will improve the possibilities to evaluate possible bias and thereby also accuracy.

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

Source	Recommendation	Action
RCM NS & EA (2010)	The RCM NS&EA recommends that a case study for deriving regional stock based age-length keys be carried out for cod in IV. This information is required to evaluate if it is appropriate to introduce task sharing, at stock level, with regard to sampling for ageing of fish.	Denmark has uploaded all data into the FishFrame have started the work to be provided to the RCM NS&EA in 2011.
RCM NS & EA (2010)	RCM NS&EA to identify a list of species which should be sampled for maturity data during the quarter 3 IBTS.	Denmark follows this recommendation.
RCM NS & EA (2010)	The RCM NS&EA recommends that relevant countries investigate the distribution of their landings from the named stocks in Table IV-4 in relation to the overall distribution across the stock area. Where they have no sampling plans for catches, they should consider if their component of the stock is adequately sampled, spatially and temporally by other MS.	Denmark revised the NP for 2011 accordingly.
RCM NS & EA (2009)	RCM NS&EA recommends Sweden and Denmark to explore whether the discrepancy identified between the Swedish and Danish métier definition of vessels operating in Div. IIIa have any effect on the raising of the input data during HAWG and to provide a definition of the métier exploiting the herring stock in IIIa.	The work has been carried out and dealt with by the ICRE HAWG
RCM NS & EA (2009)	For the purposes of ranking métiers to sample, National data on effort, landings and value by métier and fishing ground should be compiled regionally in advance of the next meeting. To enable this, participants from MS should strictly respect the agreed naming conventions of fishing ground, métiers and units of the variables as well as the deadline for submission of the national data.	Denmark will use the agreed naming of fishing grounds, metiers and units of the variables as well as respect deadlines.
RCM NS & EA (2009)	For the purposes of regional understanding of sampling activities, National information on sampling should be compiled regionally in advance of the next meeting. To enable this, participants from MS should strictly respect the agreed naming conventions of fishing ground and métiers as well as the deadline for submission of the data.	see above
RCM NS	For the purposes of understanding the heterogeneity of métiers	Denmark will produce the

& EA (2009)	and the consequences for task sharing and discard sampling, national descriptions of the regionally ranked métiers should be compiled using the format in annex 9. To enable this, participants from the MS should strictly respect the agreed naming conventions of fishing ground and métiers as well as the deadline for submission of the information. Appointed persons are responsible for requesting the data and compiling it on a regional level	description of the metiers using the format in annex 3 Done before the RCM 2010.
RCM NS & EA (2009)	MS to use the average landing figures over the years 2007-2008 as the basis for ranking métiers within the NP 2011-2013	done
RCM NS & EA (2008)	In the NP proposals, a short description of all métiers selected by the 90% ranking procedure should be provided. Such a table would enable RCM to identify whether a métier with the same name covers the same or different fisheries in different NPs.	Denmark has already included a short description of all metiers in programme for 2011-2013.
RCM North Sea & East Arctic (2007)	The RCM NS&EA recommends that, at a trip level, or at a fishing operation level when possible, the retained part of the catch should be classified by target assemblage (crustaceans, cephalopods, demersal,…) and sorted by weight (by total value in the case of valuable crustacean species, e.g. Nephrops). The target assemblage that comes up at the first position should be considered as the target assemblage to report in the matrix. The RCM NS&EA understands that this way of doing does not allocate any information to the métiers targeting mixed target assemblages.	Denmark will report fishing activity data in the fleet-fishery matrix according to the recommendations made.
RCM North Sea & East Arctic (2007)	The RCM NS&EA recommends that in general if an area is covered by one dedicated trip per year only, the effort put into this single trip could better be allocated to other fleet segments ensuring better coverage of these segments. The RCM further recommends updating the list of onboard observer trips by fishing activity on level 6 before the next meeting.	Denmark will contribute with this information.

III.C.4 Actions to avoid shortfalls

A proper statistically sound sampling frame will hopefully reduce the problem and this is planned to be developed and implemented in the Danish sampling program during 2010-2011. However, this has in practice been more difficult to achieve than expected and more focus on the regional sampling level and sampling frame could solve some of the problem. 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. Furthermore, DTU Aqua has got online access to the VMS data and it is expected that online information of the fishing fleet behavior in time and place can facilitate easier planning of

the sampling to be carried out. The improved Danish sampling program in 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.

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 bck
The fishery for blue whiting has not been conducted in 2010 and no sampling has therefore been conducted.

Midwater otter traw targeting small pelagic (OTM_SPF_32-69_0_0), Sub_VIIfghj
This fishery was not planned to be sampled in 2010 however a new fishery on Boar fish has been initiated and Denmark has sampled 30 samples from this metier in 2010.

III.C.2 Data quality: results and deviation from NP proposal
See Baltic section

III.C.3 Follow-up of regional and international recommendations
No action to be taken into account for Denmark.

III.C.4 Actions to avoid shortfalls
See under Baltic Sea

III.D Biological - Recreational fisheries
In order to estimate cod, trout and eel catches in the Danish recreational fishery an interview survey has since 2009 been conducted by DTU Aqua in cooperation with Statistic Denmark. Recreational fishing was separated into anglers (with rod and reel) and passive gear fishing (fyke – and gillnets). In 2010 a total of 153,000 anglers and 34,000 passive gear fishermen had issued the compulsory license. In September 2009 Statistic 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 are intended to be conducted on a quarterly basis during the next years.
In 2010 two surveys was conducted resulting in a recall period between 3 and 6 months. None of the surveys included catches of Baltic salmon, since it was judged to be 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 covering the 2010 catches did also include the catches of sea running trout.
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 only conducted once in 2010 as the results from this interview are not likely to change much since 2009 were 3 surveys were conducted. 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 early license and you are not allowed to fish before the age of 12. The license is personal and non-transferable.

See further information under Baltic Sea and the total report in annex ("Eel and cod catches in Danish recreational fishing, Survey design and 2010 catches")

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, trout, ell and cod are to be reported and for the North Sea only cod, trout and ell. Denmark has provided a report with the landings estimated for 2010 that has been delivered to the relevant ICES working groups (WGBFAS, WGNSSK and WGBAST) for them to include in the assessments. However, as this is the first year of the survey it has not been possible for the WG to use the data directly in assessment.
Salmon has not been included in the telephone survey as it was judged that this fishery was not suited for this kind of investigation. The salmon fishery is in a very short time frame and involving few people. An alternative way of receiving more detailed information from the Salmon fishery has to be further developed.

The majority of recreational fishermen 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 13 of all recreational fishermen were members of an association. In Denmark there are several associations for recreational fishermen, with three dominant associations active in advisory committees to the government. These are the Sports Fishermen's Association, the Danish Amateur Fishermen's Association and the Danish Recreational Fishermen's Organization.

Results from the survey of recreational fishery from the Omnibus investigation:

Survey	Number	Gear	Do you fish?	Do you have a license?				
			Yes	Yes	No	No-legal	No-illegal	% illegal
Oct 2009	958	Angling	119	59	60	34	26	21.8
		Passive gear	14	8	6	3	3	21.4
Nov 2009	957	Angling	132	69	63	33	30	22.7
		Passive gear	17	8	9	2	7	41.2
Dec 2009	968	Angling	116	58	58	30	28	24.1
		Passive gear	9	7	2	0	2	22.2
Jan 2010	985	Angling	134	89	45	23	22	16.4
		Passive gear	21	11	10	3	7	44.3

Results from the second part of the survey were only fishermen holding a license have been interviewed:

Cod

A total of 1630 t cod were caught in the Danish recreational fishery in 2010. Cod were caught in all gears but with the main contribution (89%) from the angling fishery, 9% of the catches derived from the gillnet fishery and only 3% came from fykenets.

The angling catches of cod are quiet evenly distributed in the first three quarters of the year but in the last quarter only 13% of the catches were taken. The most important area for cod catches were the Sound were 27% of the total cod catches were taken followed by the Belt Sea with 25% and Skagerrak with 19%.

Eel

A total of 116 t eel was caught with fykenet in Danish recreational fishing in 2010. The majority (61 %) was taken during the third quarter. The most important area was the Belt Sea which alone accounted for 43 % of the total eel catches.

Trout

Sea ruining trout was not only caught in marine waters and it was estimated that 14 % of the total catches was taken in freshwater in 2010. Trout was primarily caught angling which accounted for 89 % of the total catches. The fykenet catches was 1 % and the gillnet catches was 10 %. In total 562 t was harvested quite evenly distributed between the fresh water, Kattegat, the Belt Sea, the Sound and the Arkona Sea. Co

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 fishery is primarily carried out by trolling. The area to the north, east and south of the island Bornholm is very popular and some small harbors on the north of the island have specialized on servicing the trolling fishery.

The fishing season starts in September and ends in May. Both Danish nationals and visitors from abroad attend the fishery, either for short fishing trips or as participants in angling competitions. In addition to trolling, a number of fixed hook lines with only a few hooks is operated part of the year by local inhabitants around the island Bornholm.

In the North Sea there is no recreational fishery for salmon.

The total Danish recreational catch of Salmon in the Baltic Sea in 2010 was estimated to be on the same level as in previous years, i.e. approx. 3000 salmon. These catches were corresponding to less than 5% of the total Danish quota in 2010 and 11% of the commercial catch of Salmon as the quota was not utilized.

Trolling: The official number of salmon caught by the sport fishery (trolling boats) is 615. This information is based on data collected from 2 larger trolling fishing competitions in the spring period. A 3.rd competition covering the rest of the fishing season shows from November to mid March a catch of 289 salmon. A large part of the total catches taken by the Danish trolling fishermen are registered in these 3 competitions, and our guestimate of the total catches (including non reported catches made by tourist at Bornholm) is 1000 Salmon.

Long-lining made by non-professionals: From the coast guard, from the trolling boats, and from other sources we know that this fishery takes place, but the catches are quite uncertain as no catches are reported at all. It is

known that a few smaller boats are fishing from time to time. Some of these boats are drifting together with the lines, and others leave the lines with buoys for 24 hours. Our guestimate is that the total catches in this fishery are from 1000 to 2000 salmon per year.

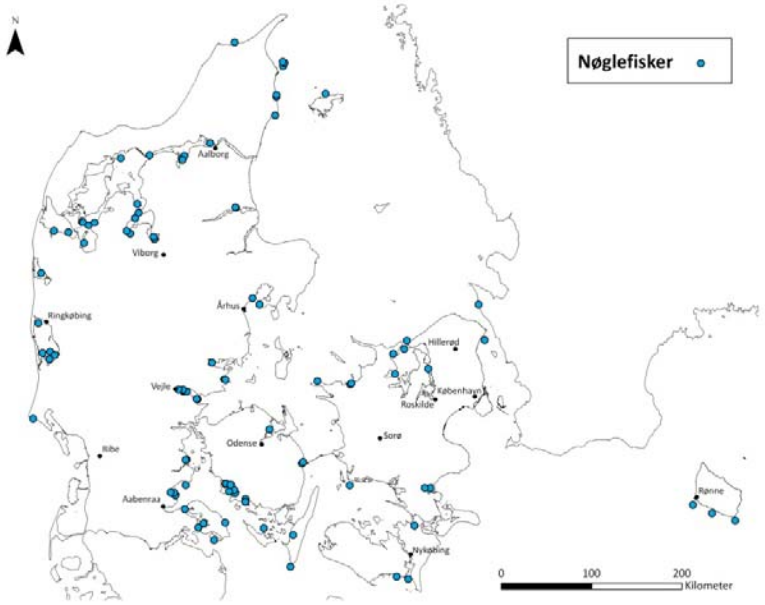

Fig.1. Maps showing distribution of fishermen during 2010. A total of 91 fishermen participated, 76 with gillenet and 68 with trap-net

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

The result is given in the attached annex. There is no deviation from the NP for 2010.

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

Source	Recommendation	Action
RCM Baltic (2010)	o Investigate the potential to coordinate recreational fisheries cod catches in SD 22-24 between Denmark, Germany and Sweden o Discuss the possibility to include recreational fisheries data into FishFrame o Compile 1-page status report of ongoing recreational fisheries surveys o Provide guidance how often recreational fisheries surveys need to be conducted RCM Baltic endorses to use annual weight estimates	Coordination between Denmark, Germany and Sweden has taken place in 2010 and exchange of experiences gained has been made.

RCM Baltic (2008)	The RCM Baltic recommends that MS follow the request for preparation of the WKSMRF (Workshop on Sampling Methods for Recreational Fisheries), given in the ICES resolution (see http://www.ices.dk/iceswork/recs/2008recs.asp).	Denmark participated in WK and actions was taken as recommended
RCM NS & EA (2009)	RCM NS&EA recommends MS to provide an overview of their inland sampling of the recreational fishery on eel.	Denmark is still working on this overview and it the plan to have it ready for the ICES WGEEL.

III.D.4 Actions to avoid shortfalls

Since 2009 Denmark has initiated a survey and sampling on the recreational fishery and it is planned that this survey will continue twice a year in the future. 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.

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 a non sorted 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 the sampling is supplemented by a self-sampling program sampling haul by haul For all species landed by sorting groups another strategy is applied; a fixed number of individuals 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

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 2010 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. ICES has in 2010 put more focus in the flatfish species in the Baltic and for this reason 2 more species have been sampled although not applied for in the NP (dab and flounders).

Deviation from NP proposal

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

Cod in sub. 22-24 and 25-32
By mistake different numbers of planned sampled maturity@age and sex@age than length@age and weight@age data was given in the Danish National Programme for 2010. The 4 values should off course had been the similar value for 2010. Therefore the length@age and weight@age has been sampled at 224-277% and maturity@age and sex@age sampled at 54-75% compared to the NP. The total number of the sampled maturity and sex-ratio data seems however to be efficient sampled.

Sole in sub. 22-24.
104% of the length, weight and age data and 46% sex-ratio were sampled as planned. Soles are landed in very small quantities per lot in this area, and therefore difficulties in reaching the 100% were experienced.

Eel in sub. 22-32
122% of the length and weight data were achieved for ell in the Baltic, however, age data were sampled at a very low level with only 7% of the planned The main reason for the very low number of age readings are the uncertainties in the age readings.

Herring in sub. 22-24
In the Danish National Program for 2010, herring samples were only applied for sub. 22-24.This is incorrect as the fishery is conducted in the entire Baltic 22-32. Therfor sampling has also been done for the entire area. When the 2 stocks are combined the length@age and weight@age are sampled at close to 500% and the maturity@age and sex@age at 68 and 81% of the applied level respectively.

Sprat in sub. 22-24
By mistake higher numbers of planned sampled maturity and sex-ratio data was given in the Danish National Program for 2010 compared to length and weight samples. This is off course incorrect. The sampled numbers of maturity and sex-ratio data is ok.

Dab in sub. 22-24
1088 dab has been length, weighted and aged in 2010 although they were not in the NP for 2010 (see IIIE1 start of section), close to 140 pieces has been matured and sexed.

Flounder in sub. 22-24
1392 flounders has been length, weighted and aged in 2010 although they were not in the NP for 2010 (see IIIE1 start of section), close to 220 pieces has been matured and sexed.

Plaice, turbot and brill 22-32
Plaice, turbot and brill were all sampled above the applied level in the NP between 161 and 318%, however at a relative low sample number.

Salmon in sub. 22-31

Salmon was sampled at 80% of the level applied in the NP.

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

All precision estimates have to be achieved at a regional, but there is still missing some coordination work between countries, so all the CV's represented in table III.E.3 are estimated at a national level. Denmark has taken the lead in 2010 to conduct regional precision analysis on the North Sea cod stock were involved countries will upload there data to a regional database (FishFrame). This exercise will highlight the need for sampling coordination between countries.

Denmark has used COST to calculate the CV for the variables in table III.E.3. The CV's for age and weight are based solely on data from harbour samplings, since this is the only Danish sampling strategy covered by the methods in COST. Denmark calculates the volume of discard for all species by raising with total landings. This method has not been developed in COST, so the CV's for age and weight in the discard have not been calculated. CV's for maturity and Sex have not been calculated, since the data only are used at a regional level and therefore it makes no sense to calculate the CV's at a national level.

The precisions obtained for age and weight are considerable high than in previous years. Previous all data obtained for a species regarding data source and sampling strategy were used to calculate the CV.

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

Source	Recommendation	Action
RCM Baltic (2009)	In order to use the time of the RCM more efficient and for the harmonisation of the NPs, including the quality checks, the exchange data tables from all NPs, namely planned number of individuals to be sampled for age, length, weight, sex and maturity should be compiled before the next RCM.	Done
RCM Baltic (2009)	MS to use the average landing figures over the years 2007-2008 as the basis for ranking métiers within the NP 2011-2013	Done
RCM Baltic (2008)	Member states are recommended to seek for task sharing when starting ageing new species.	Denmark has seek and agreed for task sharing in these cases

III.E.4 Actions to avoid shortfalls

Most of the deviations from the proposal are caused by incorrect numbers of planned sampled maturity and sex-ratio data given in the Danish National Programme for 2010. This is partly due to the fact that juvenile fish are matured but have not been given a sex. After finishing the Technical Report, DTU Aqua will make an effort to give better prognoses for collection of these data in the future.

<u>Eel in sub. 22-32</u>

To achieve planned number of samples age a better age estimating methods has to be introduced.

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 2010 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.

Deviation from proposal

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

Sandeel in sub. IV and IIIa

Sand ell has been sampled at 200% and 79% in the North Sea and Kattegat, respectively. Maturity and sex at age data has not been applied for in sub IV however this data are available from the November sandeel survey in the North Sea.

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

Herring was sampled between 136-428% of the level applied for in the NP 2010. The Danish data is used for stock separation in the assessment and therefore a high level of samples is collected.

Cod in IIIaN, IIIaS, IV- VIId.

Cod has been sampled above the applied level between 131-282%.

Anglerfish in sub. IV- VIId.

No samples in weight@age or length@age were applied for in the NP although sampling in maturity and sex was applied for. This is incorrect in the application, the species is off course both weighted and length measured however. 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.

Whiting in sub. IV- VIId.

Sampling of whiting was not applied for in the NP – this is incorrect and the species has been sampled for all parameters.

Haddock IV and IIIa

Haddock was sampled in both IV and IIIa and not only in IIIa as stated in the NP.

Plaice in IIIa

Maturity and sex data is only collected in the 1st quarter survey (BITS) in Kattegat and is therefore very depended on the amount of fish caught. As a supplement to the lack of maturity and sex data, we have collected length, age and weight distributions from 228% of the planned samples.

Hake in IIIa, IV, VI and VIIab

The achievement of collected maturity data was 21%.. 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. As a supplement to the lack of data, we have collected length, age and weight distributions from 396% of the planned samples.

Mackerel in North Sea

The achievement of the sampled maturity and sex-ratio data was at 52%. As a supplement to the small lack of data, we have collected length, age and weight distributions from 379% of the planned samples.

Sprat in IIIa

Sprat was sampled at 73% of the applied level in sub IIIa and 128% in sub. IV. Maturity and sex@age was incorrectly not applied for in sub IIIa, this has been sampled.

Blue Whiting in IV

Landings of blue whiting was in 2010 decreased to 133 tonnes, and the stock is at a very low level indicating that the catches in the survey also has been at historic low level. For this reason it has been impossible for Denmark to fulfil the applied sampling level in 2010.

Deep water shrimp IV, IIIa

Shrimps are caught in Skagerrak and sometimes in the border to the North Sea. The fishery is very similar in the two areas. In the national program for 2010 it was planned to receive 500 individuals for each area however all the samples we received in 2010 was from Skagerrak and this area is therefore oversampled and the North Sea under sampled.

Brown shrimp

Individual measurements were not applied for crangon in the NP 2010. However, this was incorrect and 1267 specimens have been measured.

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

A coordination scheme has been set up n 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.

All precision estimates have to be achieved at a regional, but there is still missing some coordination work between countries, so all the CV's represented in table III.E.3 are estimated at a national level. Denmark has taken the lead in 2010 to conduct regional precision analysis on the North Sea cod stock were involved countries will upload there data to a regional database (FishFrame). This exercise will highlight the need for sampling coordination between countries.

Denmark has used COST to calculate the CV for the variables in table III.E.3. The CV's for age and weight are based solely on data from harbour samplings, since this is the only Danish sampling strategy covered by the methods in COST. Denmark calculates the volume of discard for all species by raising with total landings. This method has not been developed in COST, so the CV's for age and weight in the discard have not been calculated. CV's for maturity and Sex have not been calculated, since the data only are used at a regional level and therefore it makes no sense to calculate the CV's at a national level.

The precisions obtained for age and weight are considerable high than in previous years. Previous all data obtained for a species regarding data source and sampling strategy were used to calculate the CV.

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

Source	Recommendation	Action
RCM NS & EA (2009)	In order to use the time of the RCM more efficient and for the harmonisation of the NPs, including the quality checks, the exchange data tables from all NPs, namely planned number of individuals to be sampled for age, length, weight, sex and maturity should be compiled before the next RCM.	Done
RCM NS & EA (2008)	Stock variables: Minimum required taxonomical levels for identification	After approval by STECF, Denmark has adopted the changes.
RCM NS & EA (2008)	Stock variables: Group 3 on a higher taxonomical level	After approval by STECF, Denmark has adopted the changes.
RCM NS & EA (2008)	Stock variables: Recommended changes in G-status	After approval by STECF, Denmark has adopted the changes.
RCM North Sea & East Arctic (2007)	The RCM NS&EA recommends that all MS take part in the case study on spatial aspects on growth patterns for North Sea cod by submitting data to France using the template in Annex 6.	No data has been sent.

III.E.4 Actions to avoid shortfalls

Most of the deviations from the proposal are caused by incorrect numbers of planned sampled maturity and sex-ratio data given in the Danish National Program for 2010. This is partly due to the fact that juvenile fish are matured but have not been given a sex. After finishing the Technical Report, DTU Aqua will make an effort to give better prognoses for collection of these data in the future.

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

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

No landings from fisheries in this area have been made in Denmark. It should also be mentioned very few fishing trip in that area have been made.

Deviation from proposal

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

Boar fish; Denmark has initiated a fishery on a new species the Boarfish in the North Atlantic. This species has been sampled very intensely in 2010 although not applied for in the NP for 2010. However, as the species is new DTU Aqua estimated that it would be of great value to get knowledge on the age structure (1200 fish), length(6000 fish) and weight (6000 fish) and it is therefore included in the program and TR for 2010.

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

All precision estimates have to be achieved at a regional, but there is still missing some coordination work between MS, so all the CV's represented in table III.E.3 are estimated at a national level. Denmark has taken the lead in 2010 to conduct regional precision analysis on the North Sea cod stock were involved countries will upload there data to a regional database (FishFrame). This exercise will highlight the need for sampling coordination between countries.

Denmark has used COST to calculate the CV for the variables in table III.E.3. The CV's for age and weight are based solely on data from harbour samplings, since this is the only Danish sampling strategy covered by the methods in COST. Denmark calculates the volume of discard for all species by raising with total landings. This method has not been developed in COST, so the CV's for age and weight in the discard have not been calculated. CV's for maturity and Sex have not been calculated, since the data only are used at a regional level and therefore it makes no sense to calculate the CV's at a national level.

The precisions obtained for age and weight are considerable high than in previous years. Previous all data obtained for a species regarding data source and sampling strategy were used to calculate the CV.

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

None

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

III.F.2 Effort

III.F.2.1 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.2.2 Data quality: results and deviation from NP proposal
No shortfalls and/or deviations exist in relation to what was stated in the national programme.

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.3 Landings

III.F.3.1 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.3.2 Data quality: results and deviation from NP proposal
No shortfalls and/or deviations exist in relation to what was stated in the national programme.

III.F.3.3 Follow-up of regional and international recommendations
No related recommendations have been made about the collection of landings data.

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/echo nm.

The biological data from surveys are stored in the national biological database “Babelfisk” (see section 14.1). The acoustic data are stored in a national acoustic database. MIK data are stored in a national MIK database. CTD data are stored in a national CTD database.

The BITS and IBTS survey data have been submitted to ICES and are stored in the ICES DATRAS database.

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, sex ratios, maturity and growth parameters
- CTD: temperature, salinity and oxygen level

Achievements in 2010:
In the summary table below the planned and achieved days at sea and fish hauls on R/V DANA and on R/V HAVFISKEN are listed.

Survey	Vessel	Planned days at sea	Achieved days at sea	Planned fish hauls	Achieved fish hauls
BITS 1st quarter	Dana	18	18	50	45
BITS 1st quarter (KASU)	Havfisken	19	18	48	44
BITS 4th quarter	Dana	18	18	50	43
BITS 4th quarter (KASU)	Havfisken	19	19	48	47

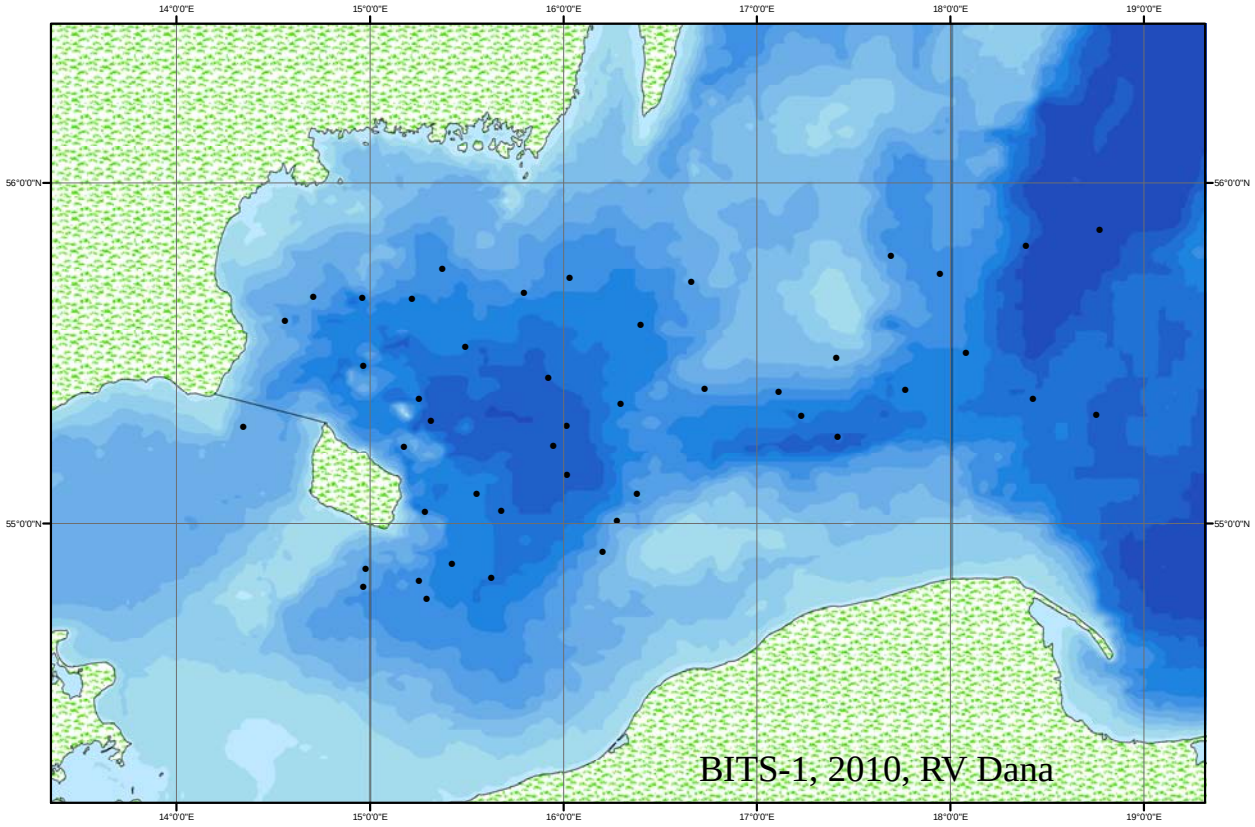

Figure III.G.1 Map showing BITS 1st quarter 2010 RV Dana conducted trawl positions.

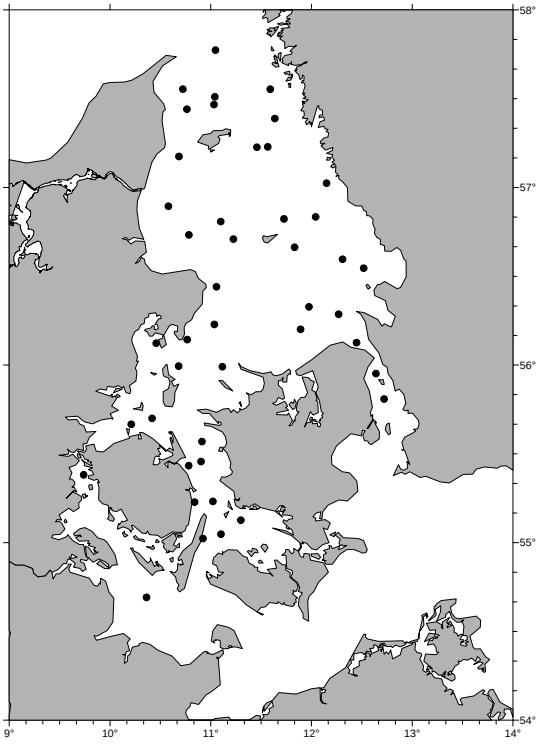

Figure III.G.2 Map showing BITS 1st quarter 2010 RV Havfisken sampling positions (Bottom trawl and CTD).

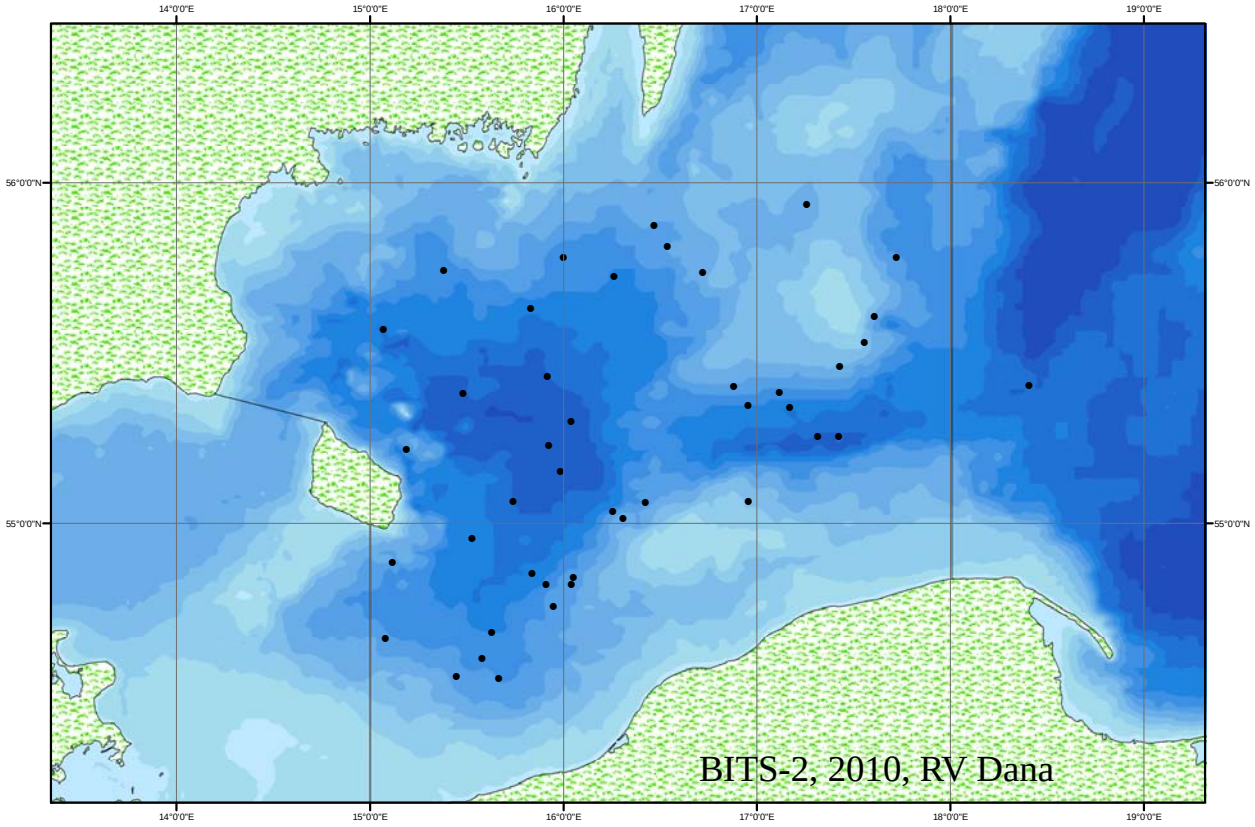

Figure III.G.3 Map showing BITS 4th quarter 2009 RV Dana sampling positions / cruise track.

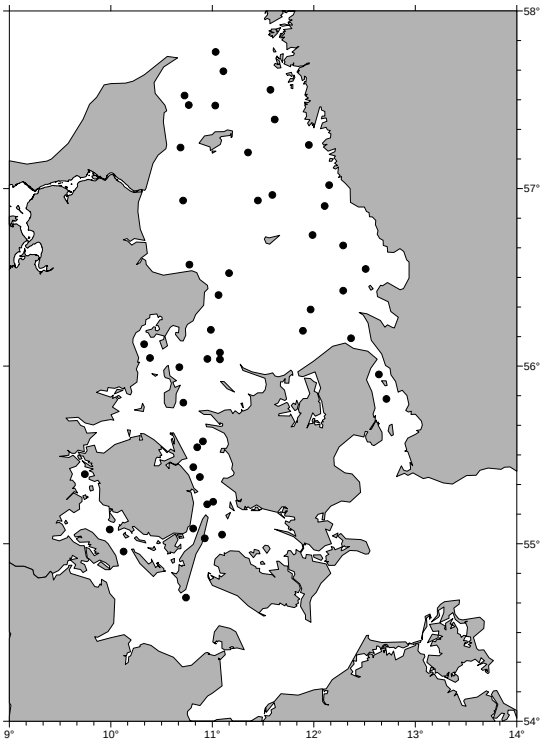

Figure III.G.4 Map showing BITS 4th quarter 2010 RV Havfisken sampling positions (Bottom trawl and CTD).

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 first quarter 2010 (Fig. III.G.1) but could not fully complete the survey in the third quarter 2010 (Fig. III.G.2) due to technical reasons.

Achievements 1st quarter 2010:

- 18 days at sea (as planned)
- 44 GOV trawl hauls (40 valid hauls with standard gear configuration, as planned)
- 43 CTD profiles
- 80 MIK hauls (see International Herring Larvae Survey)

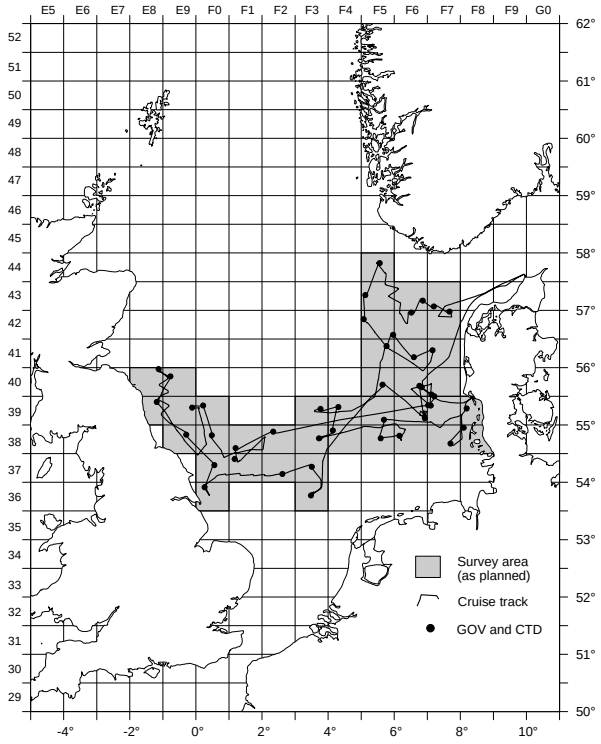

Figure III.G.5 Map showing IBTS first quarter 2010 RV Dana survey area, cruise track GOV haul and CTD positions.

Achievements 3rd quarter 2010:

- 17 days at sea (planned: 18 days)
- 41 GOV trawl hauls (40 valid hauls with standard gear configuration, planned: 46)
- 45 CTD profiles

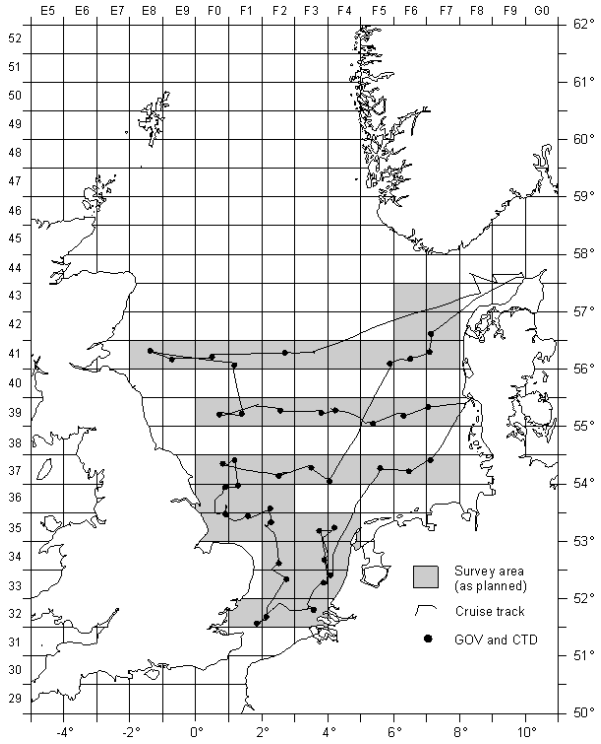

Figure III.G.6 Map showing IBTS third quarter 2010 RV Dana survey area, cruise track, GOV haul and CTD positions.

International Ecosystem in the Nordic Sea (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 Planning Group on North East Atlantic Pelagic Ecosystem Surveys, PGNAPES. 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 2010:

- 29 days at sea (as planned)
- 21 trawl hauls
- 47 CTD stations
- 52 WP2 casts
- 3745 Nm acoustic integration

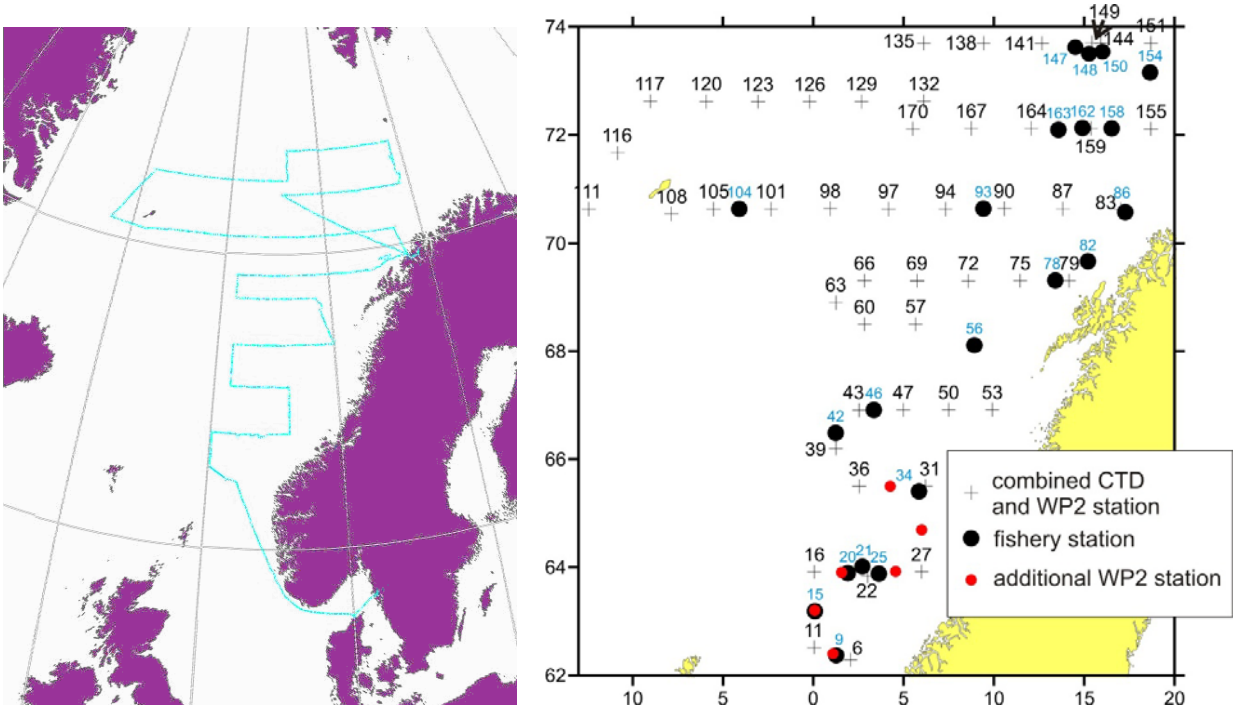

Figure III.G.7 Maps showing the RV Dana ASH 2010 survey track and sampling locations.

Hering larvae survey (IHLS)

The sampling for this survey was done during the 1st quarter IBTS and all 80 MIK (Method Isaac Kidd trawl) stations were covered in 2009 as planned (Fig. III.G.8).

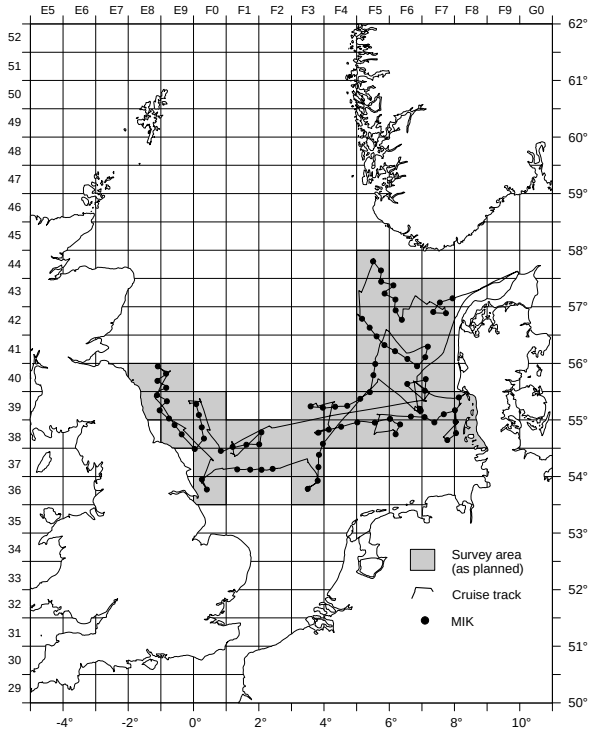

Figure III.G.8 Map showing IBTS first quarter 2010 RV Dana survey area, cruise track and MIK haul positions.

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 Planning Group for International Pelagic Surveys, PGIPS (previously: ICES Planning Group for Herring Surveys, PGHERSUR).

Types of data collected:

- Acoustic data
- Biological data: species composition, length measurements
- For herring age and maturity measurements
- Hydrographical data using CTD

Achievements in 2010:

- 14 days at sea (as planned)
- 38 trawl hauls
- 38 CTD stations
- 1578 Nm acoustic integration

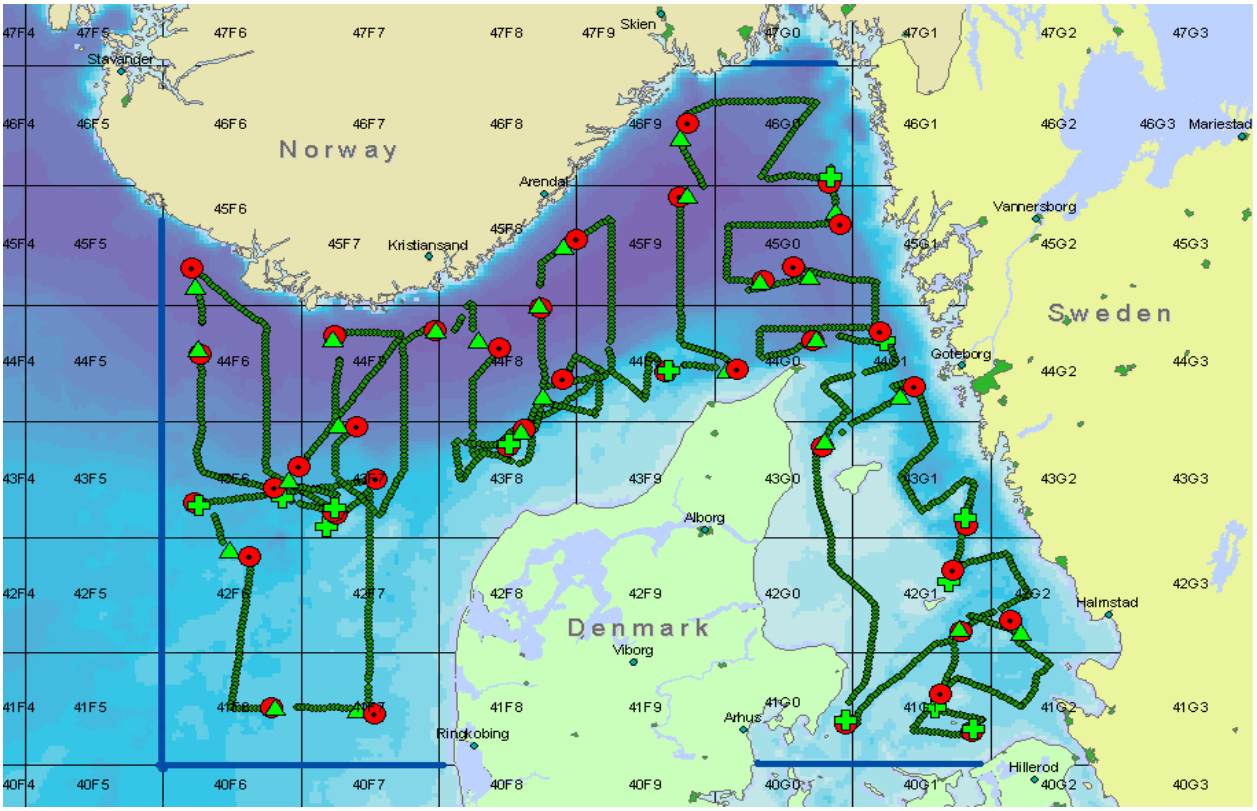

Figure III.G.9 Map showing the RV Dana NHAS 2010 survey track and sampling locations (triangles: pelagic trawl, cross: bottom trawl, circles: CTD.

Baltic International Acoustic Survey (BIAS)

Denmark has participated with one scientific staff member on the German R/V Solea in 2010.

Blue Whiting Survey in area VI and VII

Denmark has participated with one scientific staff members on the Dutch R/V Tridens and one on the Irish R/V Celtic Explorer in 2010.

Nephrops UTV survey in functional unit IIIa

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 survey areas. The 2010 surveys were conducted with R/V Havfisken, but only a part of the planned days at sea were achieved due to bad weather conditions. This survey covers the main *Nephrops* fishing grounds in Skagerrak (area1) and Kattegat (area2), respectively.

Achievements in 2010:

- 10 days at sea (planned: 15)
- 78 stations (planned: 101).

Figure III.G.10 Map showing the achieved and valid (left) and planned (right) sampling locations in the 2010 Nephrops UTV survey.

North Sea sandeel survey

The 2010 survey was conducted with the commercial fishing vessel Pernille Kim L151 and Inger Kathrine L610.

Achievements in 2010:

- 18 days at sea (planned: 15)
- 72 stations (planned: 80)

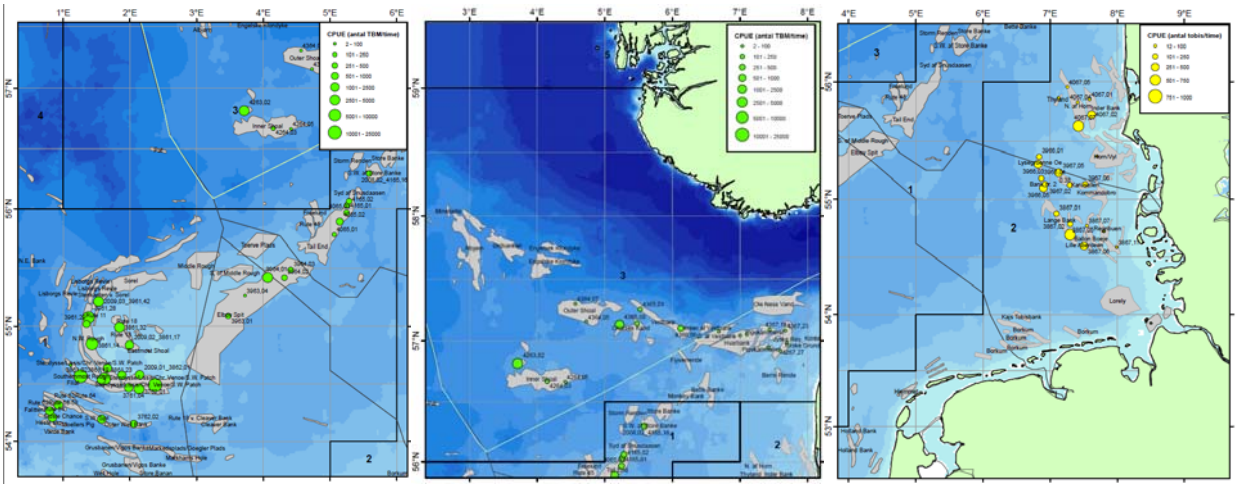

Figure III.G.11 Map showing the sampling locations in the 2010 sandeel survey with Pernille Kim L151 in the area 1 and 3 and with Inger Kathrine L610 in area 2.

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

No serious data quality problems or deviations from the NP occurred in 2010.

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. Se section III.G.1.

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.

Part of the population is further segmented according to economic size based on turnover. Only the segment of traditional pond farms is large enough to allow for this segmentation.

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 2009 there were 189 farms distributed on 110 companies. The production volume was 22,980 tonnes and the value was 64.0 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 2009 consisted of 25 farms distributed on 16 companies. The production volume was 8,198 tonnes and the value was 18.5 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 system producing European eel in 2009 consisted of 9 farms distributed on 9 companies. The production volume was 1,376 tonnes and the value was 11.5 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.

Other recirculation system farms are producing turbot, pike perch, pollan, perch, barramundi and a few other species in very small scale. In 2009 this segment consisted of 2 farms from 2 companies The on-growing technique is very similar in this segment, but the species produced are very different. The segment is not presented separately.

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 2009 there were 20 farms distributed on 6 companies. The production volume was 10,282 tonnes and the value was 42.7 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 13.1 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 2009 there were 21 farms distributed on 15 companies. The production volume was 2,534 tonnes and the value was 1.7 million EUR. The production methods in the segment are very homogeneous.

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

The data collected for the aquaculture sector give a complete coverage of all enterprises covered by NACE 03.2. In order to ensure an adequate data quality DST is collecting the economic data from the enterprises professional accountants. Furthermore there are several steps taken to achieve the best possible measures for the economic data.

- A full balanced accounting form to ensure, that the data on the individual level is delivered correctly in a uniform format.
- A beforehand obtained consent from the enterprise to allow their accountants to report all necessary data to avoid participation from a biased population of agents.
- Co-operation from professional accountants to achieve the best possible harmonized data.
- For every unit in the population actual production volume, production value and product type are gathered from FD registers thereby avoiding vaporous estimates.

The coherent structure of economic data makes it possible to validate all variables for each individual economic agent both in detail and consistently combined with other variables. The best way to do that is by setting up a balanced account. Therefore DST has constructed a harmonized accounting form for aquaculture, which ensures that the data is broken down to meet the requirements of the Account Statistic for Aquaculture as well as the specifications in DCR.

For every unit in the population actual production volume, production value and product type are gathered from FD registers. Hence, there are no deviations from the NP proposal.

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

DST expects to participate in the Regional Coordination Meetings when none foreseen items concerning the collection and use of economic data for the aquaculture sector are on the agenda.

In Appendix XI of Commission Decision 2008/949/EC it is suggested that the segmentation of the aquaculture sector should be according to the number of persons employed (SBS 16 11 0) in each enterprise. The Danish aquaculture sector only contains very few enterprises with more than 5 persons employed. Hence, for reasons of discretion the suggested segmentation is not carried out.

IV.A.4 Action to avoid shortfalls

There are no shortfalls in the data collection program for the aquaculture sector in Denmark.

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 2009 about 98 % 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 7 non NACE-10-20 enterprises with fish processing in 2009, and the total turnover from fish products for those enterprises was EUR 20,649,000.

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 FOI 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.

FOI has examined the composition of commodities from each enterprise in the processing industry for the years 2000 until 2008. 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.

Furthermore, the calculation of imputed value of labour is only relevant for small scale enterprises where the owner and his family are the main source of labour input, like in fisheries and agriculture production. The fish processing industry is not a small scale business in Denmark where the main labour input is based on the owner and his family. The value of imputed labour in Denmark is therefore non existing or insignificant. It is suggested that this parameter “Imputed value of unpaid labour” is left out of the data collection for the processing industry.

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

FOI 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.

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

SG-ECA 10-04: Fish processing sector, 11th October 2010 – 15th October 2010.

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 and 3 listed in Commission Decision 2008/949/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 will consist of area IV in the first and third quarters and in area IIId in the first and fourth quarters 2009.

VMS data has been used for indicators 4-7 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. (FD)
- Logbook database. Data on origin of catches and on effort. (FD)
- Sales notes database. Data on quantities landed and prices. (FD)
- Species composition database. Data on species composition in landings for industrial purposes. (FD)
- 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 database ("Babelfisk") 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.

Regional database development and data management

"FishFrame"

The "FishFrame" is a web based database and warehouse application that can be accessed on www.FishFrame.org.

The main objectives of "FishFrame" are:

- To provide consistent centrally calculated biological data input across countries to assessment models (CANUM, WECA etc.) on dynamic aggregation level.
- To establish a logbook which describes the historical details of the raising procedure?
- To facilitate easy access to basic analysis of biological information on dynamic aggregation level.
- To provide the data background for additional analysis on un-aggregated data.
- To provide an easy overview of the sampling status on national and international level.
- To be the data portal for end users

“FishFrame” contains all fisheries assessment relevant data except data for establishing commercial tunings fleets. The assessment relevant data include:

- Biological information of the landings obtained by sampling from market.
- Biological information of the catch (discard as well as retained part compiled separately) obtained by observers participating in regular fishery.
- Biological information of the catch (discard as well as retained part compiled separately) collected by the fishermen themselves.
- Official landings statistics by two different aggregation levels.
- Effort statistics by two different aggregation levels.
- Scientific survey data on exchange format.

The “FishFrame” data warehouse is under continuous development and the number of available predefined dynamic reports and analysis are growing as a consequence of the increasing demands for functionality from various Assessment Working Groups Study Groups and STECF expert groups. Furthermore, the general request from managers for high quality and more transparency in data makes “FishFrame” a central tool in the process. The “FishFrame” has the potential to be a very important tool for the regional coordination of sampling schemes and have already proved its value in the Baltic area as a very useful and convenient tool for analyzing of data. Both the Baltic and the North Sea & Eastern Arctic Regional Coordinating Meeting (RCM) have expressed their support to the “FishFrame”.

In 2009 DTU Aqua has released a new version FishFrame v. 5 based.

The FishFrame v.5 is able to hold the following DCF required data:

- “Biological metier related variables” data,
- “Biological recreational fisheries” data,
- “Biological stock-related variable” data,
- “Transversal variables” Landings and Effort data and
- BITS and IBTS survey data.

This summarizes to all the relevant for the scientific advisory process in ICES and relevant STECF expert groups. The FishFrame v. 5 can now be used as a data portal for all end users.

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

Denmark has taken the recommendations made by SGRN (Evaluation of the 2009 Technical report and the evaluation of 2009-2010 National Programme) under consideration while writing the Technical report for 2010.

As the 2010 NP was evaluated in connection with the NP for 2009. SGRN and the Commission had a number of comments and request to be taken into account by Denmark for the 2010 NP. Action has been taken as explained in the revised NP for 2010 that was submitted and evaluated by STECF and presented in the report "Evaluation of Revised National Programs for 2010 under the Data Collection Framework and Review of Surveys". The letter to Denmark from Veronika Veits of 11th March 2010 (D 03003) confirms the given explanations and revisions.

Below is given the Danish reply to the comments made by the Commission and the STECF on the Danish Technical Report for 2009 and which Denmark has taken into account when conducting the 2010 NP.

II.A. National correspondent and participating institutes.

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. 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.

This year only one issue has to be discussed in details as the Commission did not accept that Statistics Denmark could be partner and sub-contractor at the same time. Agreement on who should what and who to pay for the collection of data concerning the recreational fishery. An agreement was made and the Commission has been informed.

II.B.1 Attendance of international meetings

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. 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.

III B Economic Variables

Table III.B.1

Two misprints:

Fleet segment "[DRB] [VL1224] Dredges: 12-18 m" should be "[DRB] [VL12**18**] Dredges: 12-18 m".

Fleet segment "[TBB] [VL1218] Beam trawlers: 18-24 m (Shrimp trawlers)" should be" [TBB] [VL**1824**] Beam trawlers: 18-24 m (Shrimp trawlers)".

A segment for inactive vessels is missing!
A segment with 968 inactive vessels has now been added.

Table III.B.2
To clarify why there are segments with more than one vessel? According to DCF provisions each segment should include 10 or more vessels. The table entries for mussel dredges and shrimp trawlers should be deleted, as they are only clustered in the Danish national statistics and not in the DCF report.

No clustering of mussel dredges segments:

"[DRB] [VL1012] Dredges: 10-12 m": consists of 29 vessels of length 10.00 to 11.99 metres, and 1 vessel with the length 8.58 metres.

"[DRB] [VL1218] Dredges: 12-18 m": consists of 30 vessels of length 12.00 to 17.99 metres, plus two vessels of length 19.98 to 19.99, and one vessel with overall length 32.00 metres.

No clustering of shrimp trawler segments:

The shrimp trawlers are grouped into two segments: "[TBB] [VL1218] Beam trawlers: 12-18 m" and " [TBB] [VL1824] Beam trawlers: 18-24 m".

"C" is not a correct option: The table entries only show the Danish national segments which has been clustered for the DCF report. According to the DCF provisions there are no clustering, whereas these entries also can be deleted. In that case Table III.B.2 would become empty.

Table III.B.3
Does "all segments" include inactive vessels? No it does not. "All segments" in table III.B.3 includes only active vessels.
To clarify which data source has been used (inconsistence with NP): Corrections has been made in the table (marked with red).

Consistence of information on "type of data collection scheme": Some segments in table III.B.1 are fully sampled (census= type A) and so are some of the variables in table III.B.3.

"Type of error" and "accuracy indicator": Changes in table marked red, but may also be deleted.

III B 2 Achievements: Results and deviation from NP proposal
The figures for the planned sample numbers provided in the AR do not correspond to those provided in the NP: At the time the NP is written, we do not have full knowledge of the population. Therefore the final planned sample is first calculated at the beginning of March in the reference year. For the year 2008 the planned sample in the NP was set at 400 vessels (to give a more comprehensive analysis after the structural changes in the fleet due to the new management system with individual quotas to each vessel). But it has not been possible to finance an extended sampling, so the final sample size became 250.

III.C Biological metier-related variables – Baltic Sea
III.C.1 Achievements: Results and deviation from the NP proposal

Detailed explanation can be found in the text of the attached Danish National Technical Report for 2009 page 12-13.

III.C.2 Data quality: Results and deviation from NP proposal

During 2010 Denmark started working with the provided COST tool. Results obtained so far are presented in table III.C.5. The CV's for the volume of discard are calculated for the metiers selected for concurrent sampling at sea combined per year. Denmark normally calculates the discard rate for a given species in relation to the landings of all species. This is not possible to do in COST and so far Denmark has primarily worked with the method where the discard volume of a given species is calculated in relation to the landing of that species. The drawback of this method is that it only works when the species is landed in the selected metiers. This is not the case for all the species, se notes in table.

III.C Biological metier-related variables – North Sea and Eastern Arctic

Detailed explanation for all deviations encountered can be found in the text of the attached Danish National Technical Report for 2009 page 14-16.

During 2010 Denmark started working with the provided COST tool. Results obtained so far are presented in table III.C.5. The CV's for the volume of discard are calculated for the metiers selected for concurrent sampling at sea combined per year. Denmark normally calculates the discard rate for a given species in relation to the landings of all species. This is not possible to do in COST and so far Denmark has primarily worked with the method where the discard volume of a given species is calculated in relation to the landing of that species. The drawback of this method is that it only works when the species is landed in the selected metiers. This is not the case for all the species, se notes in table.

III.E Biological stock related variables – Baltic Sea

Detailed explanation for all deviations encountered can be found in the text of the attached Danish National Technical Report for 2009 page 22-23.

When running the R/V surveys there is no extra cost for collecting all the relevant species caught. Therefore, for some species more specimens are analysed than predicted in the NP.

The collection of maturity and sex is coordinated at a regional level, therefore is makes no sense to calculate the CV's at a national level.

III.E Biological stock related variables – North Sea and Eastern Arctic

Detailed explanation for all deviations encountered can be found in the text of the attached Danish National Technical Report for 2009 page 24-25.

When running the R/V surveys there is no extra cost for collecting all the relevant species caught. Therefore, for some species more specimens are analysed than predicted in the NP.

By a mistake the CV's for *Clupea haregus* were not filled in. This has been corrected.

The collection of maturity and sex is coordinated at a regional level, therefore is makes no sense to calculate the CV's at a national level.

III.E Biological stock related variables – North Atlantic
The text has been corrected in the attached revised TR

III.G. Research surveys at sea
Baltic International Trawl Survey, HAVFISKEN, 1st Quarter:
As this survey is very weather dependent is was not possible in 2009 to fulfil the programme and the last day was dropped due to bad weather conditions.

International Bottom Trawl Survey, 1st Quarter:
It was not possible within the number of days available to full fill the programme. Coordination between the participating vessels was done.

International Ecosystem Survey in the Nordic Sea, 2nd Quarter:
An error in the number of nautical miles has occurred. The correct figure is 4,963 nm in total and 3,502 nm has been acoustical examined.

International Ecosystem Survey in the Nordic Sea, 2nd and 3rd Quarter:
Such a survey does not exist and is not listed in the tables or in the text.

IV Module of the evaluation of the economic situation of the aquaculture and the processing industry
IVA Collection of data concerning the aquaculture
To clarify why the variable "Capital value" is missing in table IV.A.3: The variable is included with the name "Total value of assets", that has now been changed to "Capital value" (marked red in the table).

IVB Collection of data concerning the processing industry
To add the variable "Capital value" ton table IV.B.2: The variable is already included with the name "Total value of assets", that has now been changed to "Capital value" (marked red in the table).

To clarify if DCF requirements concerning data collections for non NACE-10-20 enterprises have been fulfilled: 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 2009 about 98 % of the commodities, which contain fish or fish products, were produced in the branches defined by the European NACE code 10.20. (European NACE rev. 2). There were only 7 non NACE-10-20 enterprises with fish processing in 2009, and the total turnover from fish products for those enterprises was EUR 20,649,000.

V. Module of the evaluation of the effect of the fishing sector on the marine ecosystem

Unfortunately there is an error in the Table V.1. Column *"Data collection"*. Instead of the "N" a "Y" should be typed. The table has been updated. All indicators have been sampled.

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
FD	Danish Directorate of Fisheries
FOI	Danish Food and Resource Economics Institute, Denmark
FTE	Full Time Equivalent
IQ/ITQ	Individual quota / Individual transferable quota
ICES HAWG	ICES Herring Assessment Working Group for the Area South of 62° N
ICES SGABC	ICES Study Group on Ageing Issues in Baltic Cod
ICES SGBYSAL	ICES Study Group on the Bycatch of Salmon in Pelagic Trawl Fisheries
ICES SGSIMUW	ICES Study Group on Stock Identity and Management Unit of Whiting
ICES WGBAST	ICES Baltic Salmon and Trout Working Group
ICES WGBFAS	ICES Baltic Fisheries Assessment Working Group
ICES WGDEEP	ICES Working Group on the Biology and Assessment of Deep Sea Fisheries Resources

ICES WGEF	ICES Working Group on Elasmobranch Fishes
ICES WGHMM	ICES Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim
ICES WGMHSA	ICES Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy
ICES WGNEPH	ICES Working Group on Nephrops Stocks
ICES WGNSDS	ICES Working Group on the Assessment of Northern Shelf Demersal Stocks
ICES WGNPBW	ICES Northern Pelagic and Blue Whiting Fisheries Working Group
ICES WGNSSK	ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
ICES WGPAND	ICES Pandalus Assessment Working Group
ICES WGSSDS	ICES Working Group on the Assessment of Southern Shelf Demersal Stocks
ICES WKISCON	Joint STECF/ICES Workshop on Implementation Studies on Concurrent Length Sampling
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
WKSMRF	Workshop on Sampling Methods for Recreational Fisheries
WGWIDE	Working Group on Widely Distributed Stocks
SCV	Standard Catch Value = landings per species multiplied by 3-year average prices.

IX. Comments, suggestions and reflections

None

X. Appendix

Report on the collection of data from the recreational fishery.