Danmarks Tekniske Universitet
Danmarks Fiskeriundersøgelser

DTU

# Technical Report
# on the
# Danish National Programme for
# collection of fisheries data in 2006

**by**

**Danish Directorate of Fisheries**
**Danish Institute for Fisheries Research**
**Danish Research Institute of Food Economics**

**Copenhagen 31. May 2007**

# Table of contents

# 1. Introduction

In accordance with the Council Regulation (EC) N$^o$ 1543/2000 and in the framework of Commission Regulation (EC) N$^o$ 1639/2001 (DCR) establishing the Minimum and Extended Community Programmes for the collection of data in the fisheries sector, as amended by Commission Regulation (EC) N$^o$ 1581/2004, this report details the results of the Danish sampling for 2006 as proposed in "Danish National Programme for collection of fisheries data for 2006".

This report gives a technical report of activity of the work carried out in 2006 with reference to the aims described in the proposal and the requirements listed in the DCR.

# 2. Participating institutes

## 2.1 National correspondent

Denmark has assigned the Danish Institute for Fisheries Research as the National Correspondent. Contact person has for 2006 been Fishery Adviser Jørgen Dalskov.

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## 2.2 Participating institutes

The work in Denmark was carried out by 3 partners:

1. Danish Institute for Fisheries Research (DIFRES) is a Public Research Institution which carries out research, investigations and provides advice concerning sustainable exploitation of live marine and fresh water resources. Moreover, processing and improvement of fish products as well as quality assurance in the fish industry are important parts of the research areas of the institution.

Danish Institute for Fisheries Research (DIFRES)
Jægersborgvej 64-66
DK-2800 Kgs. Lyngby
Denmark
Phone: +45 33 96 33 00
Fax: +45 33 96 33 49
www.difres.dk

2. Danish Directorate of Fisheries (FD) performs control and authority exercises at the commercial fisheries and the recreational and game fisheries.

Danish Directorate of Fisheries (FD)
Nyropsgade 30
DK-1780 København V
Denmark
Phone: +45 33 96 30 00
Fax: +45 33 96 39 03
www.fd.dk

3. The Danish Food and Resource Economics Institute (FOI) is a Public Research Institute. The Researchers and academic staff of the Institute have backgrounds and experience in economics, agricultural and resource economics, agronomy, as well as a wide range of statistical methods and applied research tools.

Danish Food and Resource Economics Institute (FOI)
Rolighedsvej 25
DK-1958 Frederiksberg C
Denmark
Phone: +45 35 28 68 00
www.foi.dk

# 3. Precision levels

## 3.1 Required and achieved precision levels

In table 3.1 an overview is given of the required and achieved precision levels for each Module of the DCR.

## 3.2 Methods used to calculate precision levels

The information on landings by species, catch areas, fishing effort and fishing capacity is given on level 3. All information concerning landing figures (tonnes by species) is given as census data, with 100% coverage as all landings or all fish sold in Denmark is reported to FD. Data on capacity and effort can be given for all Danish fishing vessels. DIFRES plans to use the common tool COST for calculating precision levels. Some temporary solutions have been developed for calculating precision until the COST tool can be used.

**Module H**
DIFRES has calculated precision on the age sampling using the analytical method described in Vigneau, J. and Mahévas S. (2004). This gives a CV per age group. As suggested in WKSDFD 2005 the precision reported are for the age groups that represent 90% of the stock.

**Module I**
**Growth at age**
The precision of the growth curve is calculated by estimating the Von Bertallanffy curve for each stock. SAS PROC NLIN is used to make the non-linear regression, and the CV of the parameters describing the growth curve K, $l_\infty$ and $t_0$ (King, 1995) is found from the output of this regression. In table 11.2 the precision level of these three parameters ($K,l_\infty,t_0$) is listed for each stock.

**Sex ratios at age**
The precision of sex ratios at age is calculated by finding the standard deviation of the sex ratios for each stock using SAS. The precision levels reported in table 11.2 are the ones corresponding to 95% of the landings.

**Maturity at length**
The precision of maturity at length has been calculated from the maturity ogive. The length interval corresponding to 20% to 90% of mature fish was extracted, and using SAS PROC LOGISTIC a logistic regression has been made. The precision level of the intercept and the slope is reported as the precision of the stock in table 11.3.

The precision of maturity at length for nephrops is not calculated because it is only registered if they are ovigorous or not. No maturity index is used for males. Maturity can be inferred from the ovigorous data but a precision estimate would be questionable. For example some longer females do not carry eggs, so they would be classified as juvenile.

# 4. Data transmission

## 4.1 Data transmitted

In table 4.1 an overview is given of the data that were transmitted to ICES working groups. All data requested by STECF, STECF sub-groups and Regional Coordination Meetings (RCM's) have been delivered

## 4.2 Reasons for non-transmission of data

All data requested by the working groups have been transmitted if data have been collected according to the DCR.

# 5. Module C – Fishing capacities

## 5.1 MP – Required and achieved sampling

The Danish Directorate of Fisheries operates a complete register of Danish vessels, containing all dimensional information from all fishing vessels flying the Danish flag (including vessels less than 10 m (loa). This database contains, among others, data about:

- Vessel name, vessel number
- Vessel type
- Age of the hull
- Dimensions of the vessel; GT, length, width, draught
- Engine power

The database allows extracting the information required on fishing capacity as specified in Annex III of the DCR.

## 5.2 MP – Deviations from aim

There are no deviations from aim

## 5.3 EP – Required and achieved sampling

Denmark did not apply for an extended programme.

# 6. Module D – Fishing effort

## 6.1 MP – Required and achieved sampling

The required data in Denmark have been collected through the EU logbook system and comprise the information for all vessels and all activities. The data are available in the Danish Directorate of Fisheries logbook database.

The database contains data on landings by:
- Species
- Vessel
- Day

- Fishing ground, area and square
- Duration of trips in fishing days
- Gear type employed

At any time, data on fishing effort, aggregated as required in Annex V, VI and VII of the DCR can be provided by FD. Costs for fuel and the cost price are not available in the database. Whenever needed, these data can be estimated based on the economic data provided by the FOI.

It is possible to estimate the fishing effort, defined as fishing days, for vessels less than 10 m (loa) as sales slips for these vessels are recorded. Therefore, if a sales slip is recorded for a vessel less than 10 m (loa) one fishing day can be recorded. This will give a census of effort for all vessels less that 10 m.

Regarding species specific effort, it can be calculated for the species mentioned in annex VI of the DCR, as census data are collected. For vessels less than 10 m it can also be calculated, as data from the vessel register can be combined with data from the sales slip database.

## 6.2 MP – Deviations from aim

No precision level is calculated for fuel consumption (table 3.1).

## 6.3 EP – Required and achieved sampling

Denmark did not apply for an extended programme.


# 7. Module E – Catches and landings

## 7.1 MP – Landings – Required and achieved sampling

From the FD database total annual commercial landings can be provided by all species and area, according to level 2, level 3 or level 4 (depending on species), of geographical disaggregation of Appendix I in the DCR. The figures are based on all recorded landings in this database. The recorded landings in this database are census data.

For stocks mentioned in Appendix XII in the DCR, commercial landings can be disaggregated as indicated in that Appendix. Landings by weight of each segment identified in Appendix III in the regulation can be provided by species and quarter and, as regards the geographical origin of the catches, at the level of geographical disaggregation 2 according to Appendix I in the DCR. The value of the landings is also available in the FD database from the first sales registration. Landings from vessels less than 10 m are included in the sales slips database.

## 7.2 MP – Landings – Deviations from aim

There are no deviations from aim.

## 7.3 EP – Landings – Required and achieved sampling

Denmark did not apply for an extended programme.

## 7.5 MP & EP – Discards – Required and achieved sampling

The discard sampling in 2006 has been performed according to the policy laid down in the contract "Danish National Programme for collection of fisheries data for 2006". Discard is sampled for demersal trawlers and Danish seiners. Based on sampling made from 1995 to 2000 it is verified that the discard rates obtained in the Danish gillnet fishery, the fishery using hooks and the small mesh size fishery are insignificant compared to the demersal trawlers and Danish seiners, and discard is therefore not sampled for these fisheries.

In the sampling protocol all fish species are analyzed.

In table 7.1 an overview is given of the planned and achieved numbers of sea-going observer trips per fleet segment, the achieved number of hauls analysed for discards and the proportions of fishing trips sampled. The number of observer trips is planned but the number of hauls sampled is not planned, as it depends on the fishery, the trip duration and the weather.


## 7.6 MP & EP – Discards – Deviations from aim

The deviations from aim can be seen in table 7.1. There are a number of reasons that the achieved number of trips/hauls is lower than planned in some areas:
- In some periods fishermen resisted taking observers onboard due to their dislike the management of the fisheries.
- A large number of commercial fishing vessels DIFRES has been cooperating with over a longer period have been decommissioned. This has caused that the number of volunteer skippers has declined.
- Due to bad weather in October, November and December there were no sea-going observer trips in this period, and the fishermen did not use their quotas.

No precision levels have been calculated for the discard sampling (table 3.1).

## 7.7 MP – Recreational – Required and achieved sampling

No substantial catches are made in Denmark in recreational fisheries except for salmon. The Danish recreational fishery for salmon is increasing in popularity, as catches have been good 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 done by trolling; i.e. dragging lures at different depths after small vessels. The area to the north, east and south of the island Bornholm is very popular and some small harbours on the north of the island have specialised 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 in the Baltic Sea in 2006 was estimated to be on the same level as in previous years, i.e. approx. 3000 salmon, corresponding to 8.9 % of the total Danish catch in 2006.

The catch by the recreational fishery is not officially registered and the estimate is based on information from

- Boat rental companies,
- Information from local anglers,
- Results from an angling competition with several hundred participants, where catches are registered by the convenors,
- Information from the ferry company servicing Bornholm, on the number of cars with trolling boats visiting the island.

The total number estimated is the same as in previous years. The numbers might be underestimated, because of increased interest in this fishery in recent years and because other

investigations have estimated higher catches. In a report produced by a private consultant for the local community a catch of 6000 salmon was estimated for 2004. The difference is, however, probably related to slight differences in catch rate and in the number of boats. The year 2004 was outstanding with a very high catch-per-unit-effort in the professional fishery, probably as a result from high densities of salmon in the sea around Bornholm.

### 7.8 MP – Recreational – Deviations from aim

In 2006 no data were collected directly from the fishery, but the magnitude of the fishery was estimated to be on the same level as in previous years.

### 7.9 EP – Recreational – Required and achieved sampling

Denmark did not apply for an extended programme.

### 7.11 Action taken to avoid shortfalls

In the future more sea-going observer trips will be placed in the first two quarters of the year in order to avoid the situation where bad weather in the last quarter of the year obstruct the sea-going observer trips.

## 8. Module F – Catches per unit effort

### 8.1 MP – Required and achieved sampling

In table 8.1 the CPUE data series are specified. All CPUE series have been provided as requested by the ICES working groups.

### 8.2 MP – Deviations from aim

There are no deviations from aim.

### 8.3 EP – Required and achieved sampling

Denmark did not apply for an extended programme.

### 8.5 Action taken to avoid shortfalls


## 9. Module G – Scientific evaluation surveys

### 9.1 MP – Required and achieved Priority 1 surveys

In table 9.1 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 IBTS and BITS survey data are stored in the ICES DATRAS database.

**IBTS first quarter and IBTS fourth quarter**
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
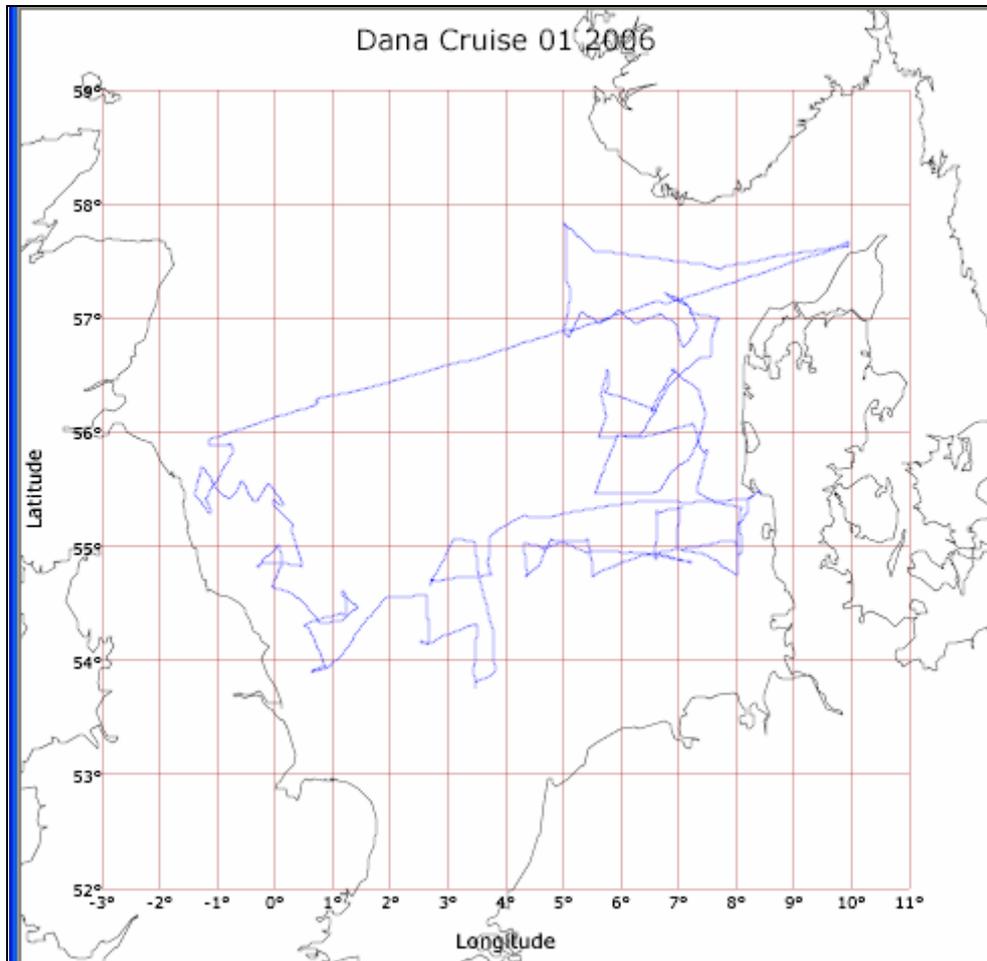


**Figure 9. 1 Map showing IBTS first quarter 2006**
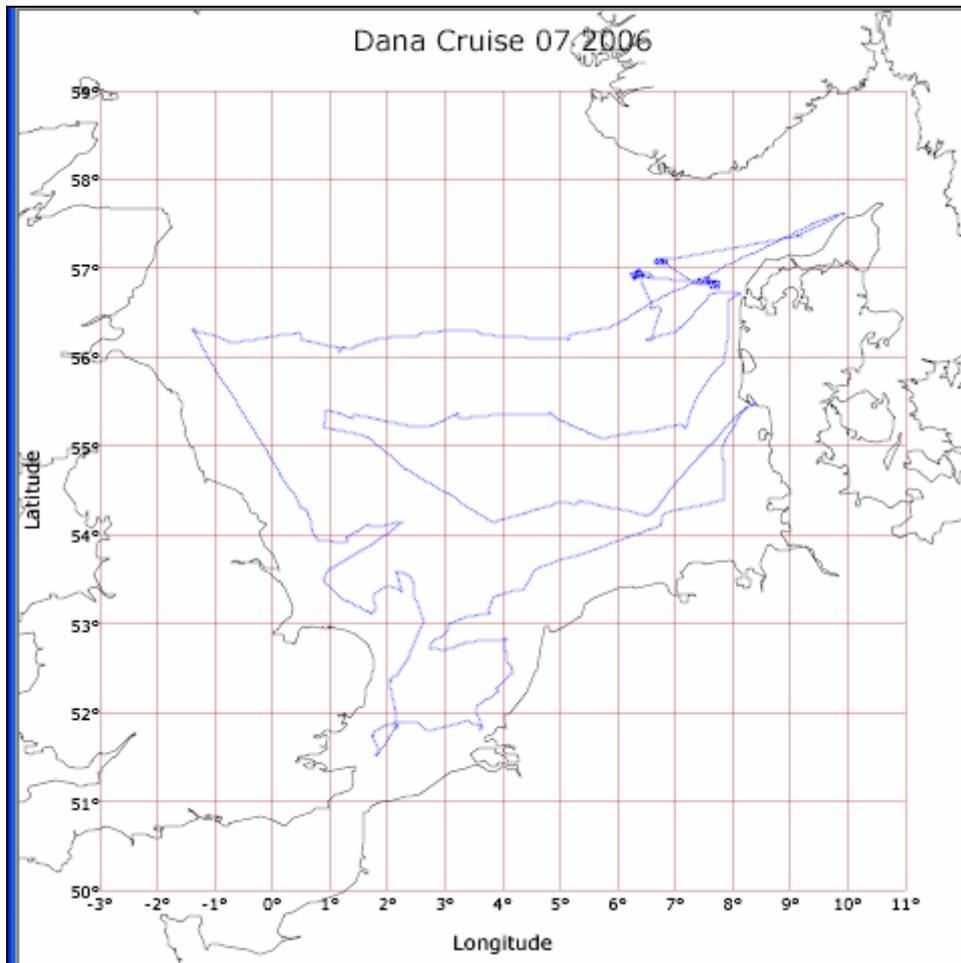
**Figure 9. 2 Map showing IBTS fourth quarter 2006**

**BITS 1st/4th quarter**

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 surveys are carried out in both the first and fourth quarters by both the research vessel R/V DANA and the smaller research vessel R/V HAVFISKEN participated. 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

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 | 49 | 38 |
| BITS 1st quarter | Havfisken | 16 | 16 | 42 | 42 |

| BITS 4th quarter | Dana | 18 | 18 | 43 | 40 |
|---|---|---|---|---|---|
| BITS 4th quarter | Havfisken | 17 | 17 | 39 | 39 |

In BITS 1st quarter on Dana the reason that only 38 out of the planned 49 hauls were achieved is that there were no oxygen at the sea bottom on 11 of the planned haul positions and therefore according to the survey manual no hauls should be made.

In BITS 4th quarter on Dana two of the planned hauls were transferred to the Swedish vessel Argos and one haul was not accomplished due to time constraints.
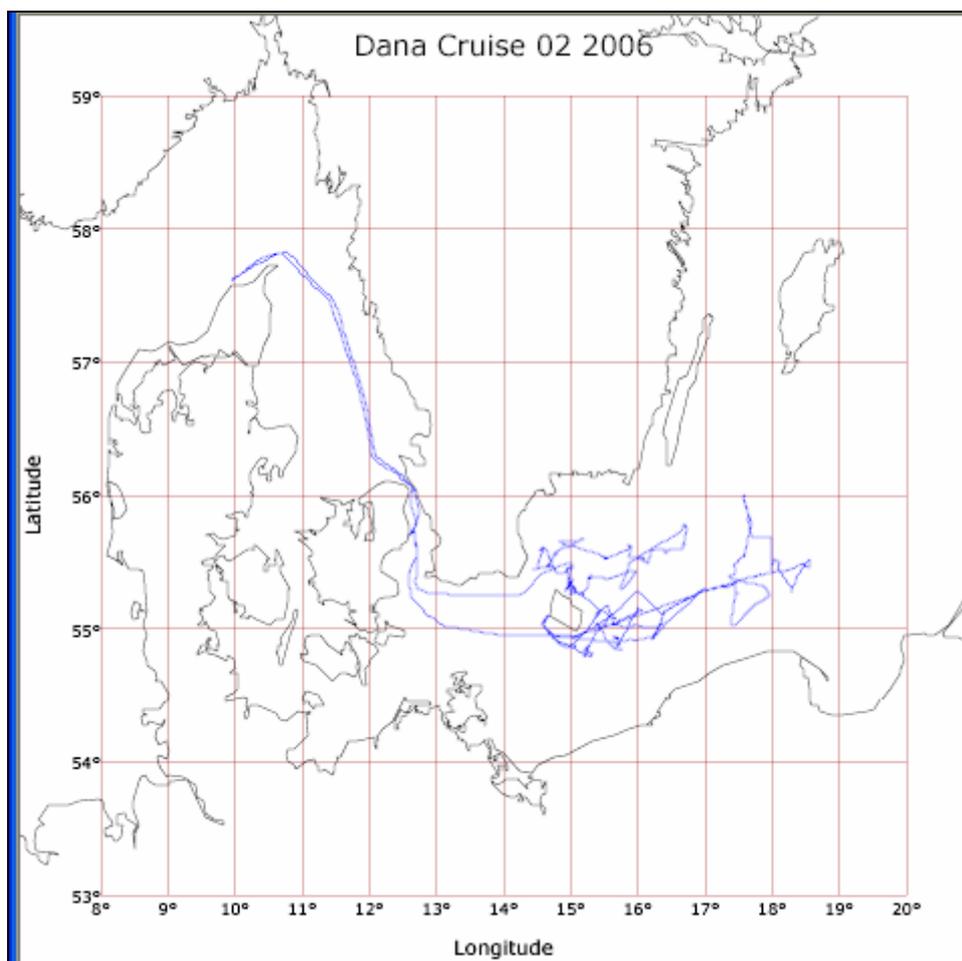


**Figure 9. 3 Map showing BITS first quarter 2006**
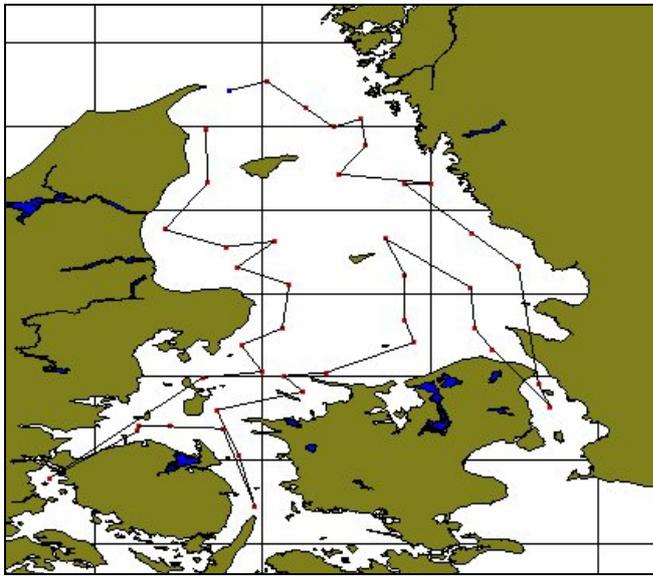
**Figure 9. 4 Supplementary map showing BITS first quarter 2006 (KASU)**
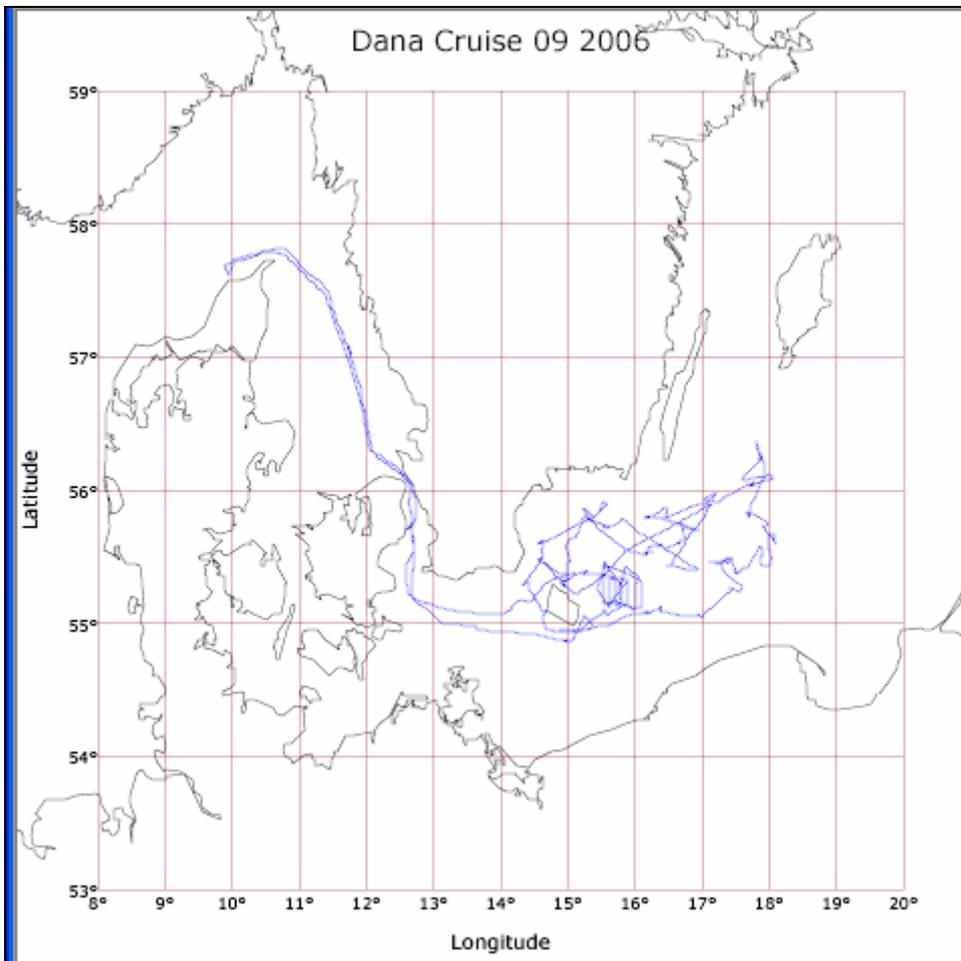


**Figure 9. 5 Map showing BITS fourth quarter 2006**
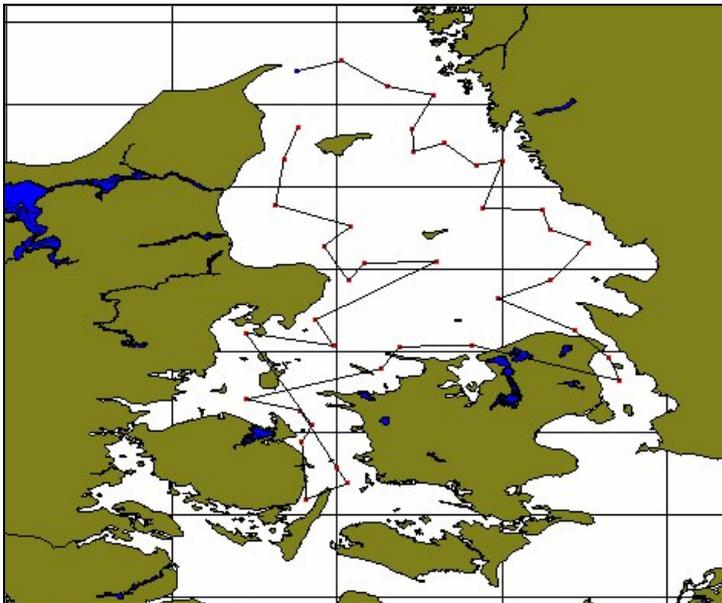
**Figure 9. 6 Supplementary map showing BITS fourth quarter 2006 (KASU)**

**NS herring acoustic survey**
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 Herring Surveys.

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

Achievements in 2006:
- 35 trawl hauls conducted
- 36 CTD stations
- 1928 Nm acoustic integration
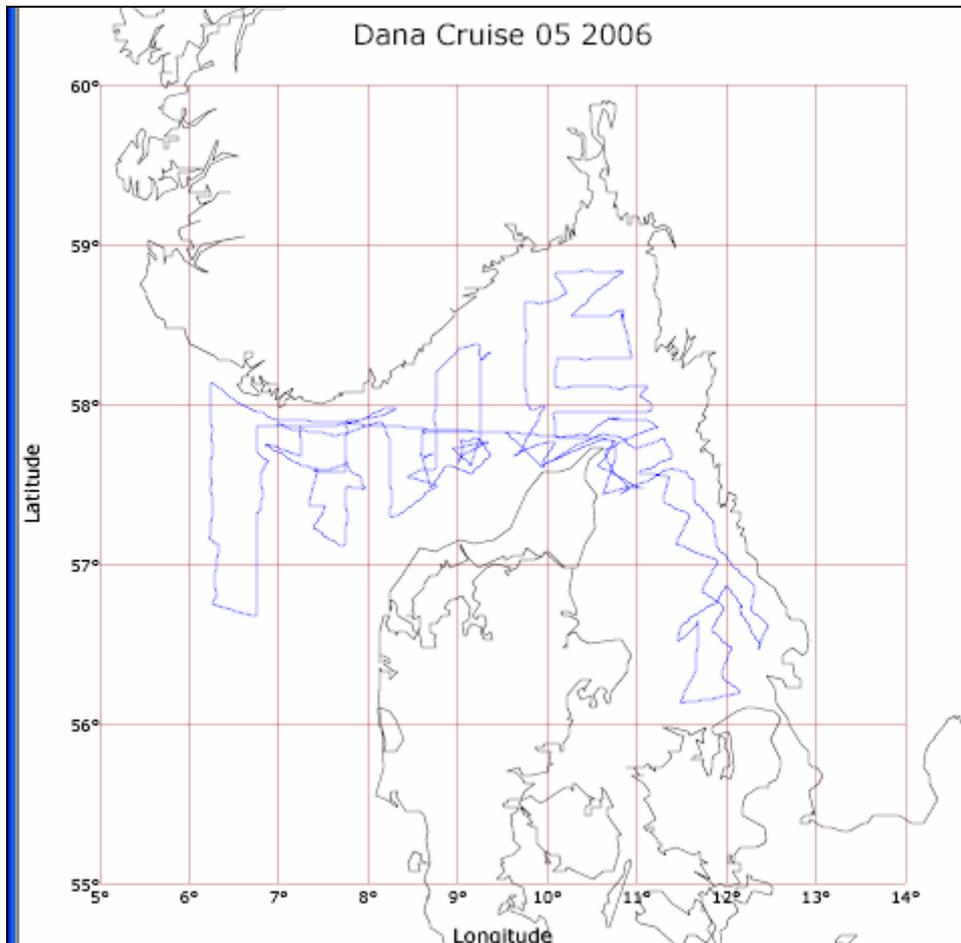
**Figure 9. 7 Map showing NS herring acoustic survey 2006**


**Atlan/Scand. Herring survey**

The main objectives of this survey are to map the distribution and migrations of herring, blue whiting and other pelagic fish and to assess their biomass. Furthermore to monitor the hydrographical and plankton conditions of the Norwegian Sea and adjacent waters and describe how feeding and migration of herring and other pelagic fish are influenced by this. During the survey fishery was carried out regularly on acoustic registrations to verify the species detected and to give information about the size composition to be used in the biomass estimation. The survey is coordinated by the ICES Planning Group on North East Atlantic Pelagic Ecosystem Surveys. 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 2006:
- 44 trawl hauls conducted
- 41 CTD stations
- 41 WP2 casts
- 3850 Nm acoustic integration

15
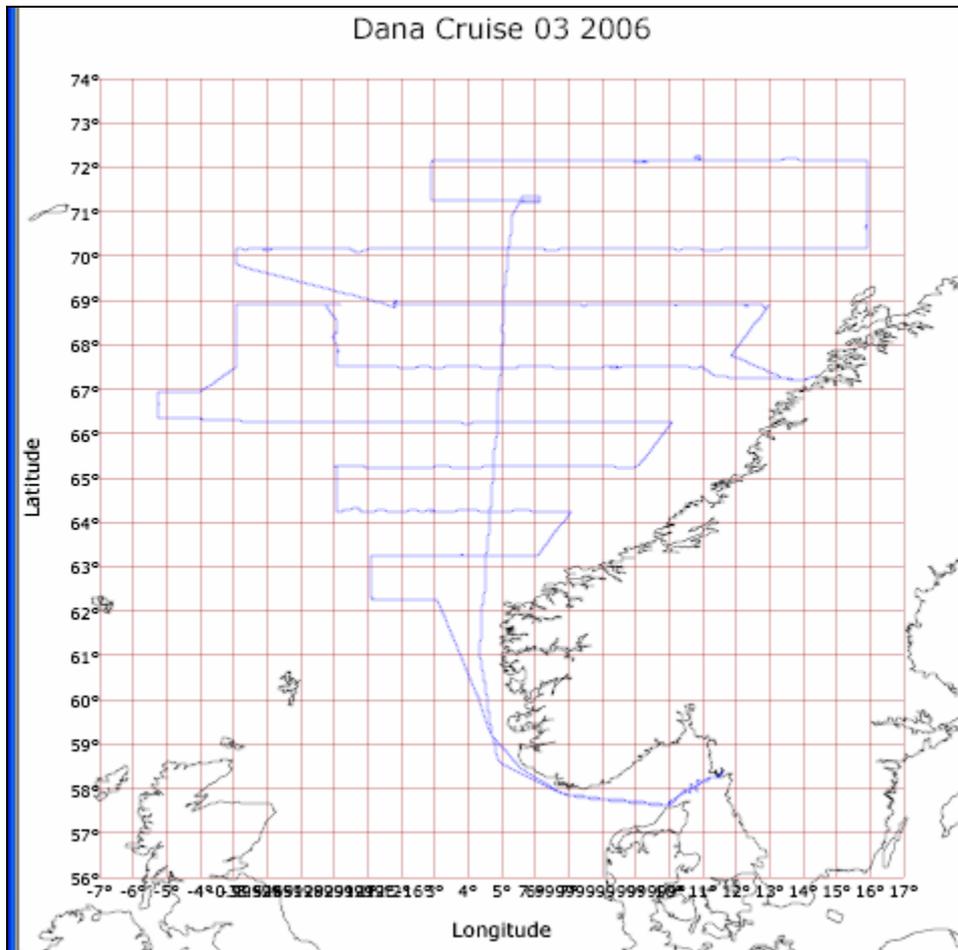
**Figure 9. 8 Map showing Atlan/Scand. Herring survey 2006**

**Herring Acoustic Survey in areas IIIa and IIIb-d**
Denmark is participating with one scientific staff member on the German R/V Solea.

**Blue Whiting Survey in area VI and VII**
Den mark is participating with one scientific staff members on the Dutch R/V Tridens and one on the Irish R/V Celtic Explorer.

## 9.2 MP – Deviations from aim

The deviations from aim in the BITS survey are described in the BITS 1st/4th quarter section.

## 9.3 EP – Required and achieved Priority 2 surveys

Denmark did not apply for an extended programme.

## 9.5 Action taken to avoid shortfalls

# 10. Module H – Length and age sampling

## 10.1 MP – Landings – Required and achieved sampling

DIFRES has been responsible for carrying out the age- and length measurements of the landings. These include landings by other member states vessels landed in Denmark.

Human consumption species are landed and sold at the fish markets, where samples are taken by DIFRES. In most human consumption sampling schemes the length measured individuals are age determined and hence no age-length key is applied. This implies for these species that the number of age readings is equal to the number of length measurements, while the DCR is generally requiring a larger number of length measurements than age readings. For human consumption species that are sold in size grade categories, the sampling is stratified on size grades. In general, whole boxes are sampled from the market.

Landings for reduction purposes are sampled by inspectors in the landing harbours. Since it is not known in advance, which areas are visited and which species are targeted, DIFRES has limited control on the origin and species composition of these samples. Therefore some areas may be sampled less than required and others may be sampled in excess of what is required according to the Danish National Programme. All the fish in these samples are length measured and a sub-sample is aged. This way of sampling for age and length results in some cases in a much higher number of length measurements than required the DCR.

In table 10.1 an overview is given of length and age measurements required, planned and achieved. The number of measurements achieved in table 10.1 is only from the harbour sampling, as these measurements are used to calculate length distribution. The length measurements from sea-going observer trips are not included as they are not size graded, and for calculating length distributions on landings, DIFRES is using the size grades on the samples and on the landings.

An exception to this is that for Norway lobster the number of length samples in table 10.1 is from sea going observer trips, harbour sampling and surveys. The nephrops working groups is using data from sea going observer trips and surveys because a high proportion of the catch is discarded due to the minimum landing size regulations.

## 10.2 MP – Landings – Deviations from aim

**Ammodytidae (Sandeel)**

Summary table of deviations from aim for Sandeel.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 749% |
| | Age | 186% |
| IV | Length | 58% |
| | Age | 21% |

The reason for length measurements in excess of the requirements in area IIIaN is that the sampling scheme is monthly based due to significant increase in mean weight from month to month. Furthermore in division IIIaN there is a significant mix of a number of Sandeel species. So in order to be able to separate these species, a significant number of samples need to be taken.

In addition to the data collection in harbours, in agreement with EC, Denmark implemented a real time monitoring scheme for managing the Sandeel fishery. In this real time monitoring 79000 Sandeel from area IV have been length measured and 32500 Sandeel from area IV have been aged in 2006. The real time monitoring programme is not founded according to the provision of the DCR.

**Clupea harengus (Herring)**

Summary table of deviations from aim for herring.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIa, V | Length | 248% |
| IIIaN | Age | 65% |
| IIIaS | Length | 941% |
| | Age | 329% |
| IIIb-c | Length | 1626% |
| | Age | 1075% |
| IIId | Length | 379% |
| | Age | 297% |
| IV, VIId | Length | 460% |
| | Age | 154% |

The reasons for sampling in excess of the requirements of herring are that the stratifications have to be covered and that a sample is a full box of herring. Following strata have to be covered:
- Time: quarter or month depending on area and period.
- Areas
- Landings for human consumption and landings for reduction purposes.
- Different herring spawning stocks

In the eastern North Sea and in division IIIa more samples have to be taken and more fish has to be analysed than required according to annex XV in the DCR because the composition of the different herring stocks have to be estimated. Furthermore the sampling in the North Sea reflects the actual fishery and misreporting from div IIIaN is known.

In division IIIb-c there is a significant oversampling according to the official landing of herring in that area. When recording industrial landings only the main species have to be recorded, and not the by-catches of other species. When catching sprat in the Baltic, a by-catch of 0-30% of herring occurs. This by-catch has been sampled.

**Gadus morhua (Cod)**

Summary table of deviations from aim for cod.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaS | Age | 52% |
| IV, VIId | Length | 70% |
| | Age | 70% |

The cod stocks in the North Sea, IIIa and the Baltic Sea are all on managed under recovery regime, and therefore the deviation is the actual measurements compared to the planned. The planned sampling was based on mean catches of the period 2002-2004, whereas the actual landings for 2006 were about half of this level in area IIIaS.
In area IIIaS there is an error in the calculation of the planned number of age measurements in the Danish National Programme for collection of fisheries data for 2006. It should have been 1300 instead of 2600. In that case the achieved level would be 105%.

**Melanogrammus aeglefinus (Haddock)**

Summary table of deviations from aim for haddock.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 206% |
| | Age | 205% |
| IV, VIId | Length | 615% |
| | Age | 1152% |

The reason for the sampling in excess of the requirements is that strata have to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken. All fish are length measured and aged.

**Merluccius (Hake)**

Summary table of deviations from aim for hake.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 158% |

The reason for the length sampling in excess of the requirements is that strata have to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken.

The otoliths have been sampled for age reading, but have not been read yet. Therefore precision can not be calculated.

**Micromesistius poutassou (Blue whiting)**

Summary table of deviations from aim for blue whiting.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IV, VIId | Length | 61% |
| | Age | 61% |
| I-IX, XII, XIV | Age | 264% |

Sampling of blue whiting caught in the North Sea sub area VI, V and XII has followed the fishery. It is known that mis-reporting of catches taken in the areas west of the North Sea have been reported as taken in the North Sea. This has caused the undersampling for these areas.

**Microstomus kitt (Lemon sole)**
The otoliths have been sampled for age reading, but have not been read yet. Therefore precision can not be calculated.

**Nephrops norvegicus (Norway lobster)**

Summary table of deviations from aim for Norway lobster.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 337% |
| IIIaS | Length | 486% |
| IV | Length | 36% |

The reasons for the deviations for Norway lobsters are that the figures are primarily based on samples from sea going observers (see section 10.1). The number of samples taken depends on the number of hauls on monitored trips and the time constraint for the observer onboard.

**Pandalus spp. (Shrimp)**
Summary table of deviations from aim for shrimp.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 63% |
| IV | Length | 0% |

For area IV the landings of Pandalus has been below the 5% threshold. For area IIIaN see cooperation contract with Sweden.

**Pleuronectes platessa (Plaice)**

Summary table of deviations from aim for plaice.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 87% |
|  | Age | 85% |
| IIIaS | Length | 227% |
|  | Age | 226% |
| IIIb-d | Length | 183% |
|  | Age | 182% |
| IV | Age | 275% |

The sampling in excess of the requirements is caused by the number of strata that need to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken.

**Pollachius virens (Saithe)**

Summary table of deviations from aim for saithe.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 71% |
|  | Age | 71% |
| IV, VIId | Length | 159% |
|  | Age | 317% |

The sampling in excess of the requirements in area IV is caused by the strata that have to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken.

The stock in area IIIaN and IV is managed as one stock.

**Psetta maxima (Turbot) in area IV, VIId**
The achieved number of length measurements were 442% compared to what was required. The achieved number of age measurements were 308% compared to what was required. This is caused by the strata that have to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken.

The otoliths have been sampled for age reading, but have not been read yet. Therefore precision can not be calculated.

**Salmo salar (Salmon) in area IIIb-d**
The achieved number of length measurements were 250% compared to what was required. The sampling in excess of the requirements is caused by the ICES Baltic Salmon and Trout Working Group decision that the number of samples taken by Denmark should be increased in order to get a good coverage of the significant salmon fishery in the Baltic Main Basin and because other countries in the working group have difficulties in getting data regarding open sea fisheries of salmon in the Baltic Sea. Strata have to be covered (salmon sizes and season).

**Scomber scombrus (Mackerel)**

Summary table of deviations from aim for mackerel.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 20% |
| | Age | 0% |
| IV, VIId | Length | 193% |
| | Age | 362% |

In area IIIaN length and age measurements were required on only five individuals.

The reason for the sampling in excess of the requirements in area IV,VIId is that a number of strata needed to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken.

**Solea solea (Sole)**

Summary table of deviations from aim for sole.

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIaN | Length | 0% |
| | Age | 0% |
| IIIaS | Length | 415% |
| | Age | 411% |
| IV | Length | 264% |
| | Age | 536% |

The sole in area IIIaN and IIIaS is treated as one stock and managed as so. Therefore, as most of the landings take place in area IIIaS the sampling is carried out accordingly. If the age and length samples area IIIaN and area IIIaS is summarized, the deviations compared to the planned numbers are the following:

| Area | Type of measurement | Deviation |
|------|---------------------|-----------|
| IIIa | Length | 296% |
| | Age | 294% |

The reason for the sampling in excess of the requirements in areas IIIaS and IV is that a number of strata have to be covered: areas, time (quarters) and size grade and that when taking a sample, a full box is taken.

**Sprattus sprattus (Sprat)**

Summary table of deviations from aim for sprat.

| Area | Type of measurement | Deviation |
|---|---|---|
| IIIaN | Length | 423% |
| | Age | 44% |
| IIIaS | Length | 347% |
| IIIb-d | Length | 769% |
| | Age | 314% |
| IV, VIId | Age | 44% |

The reason for sampling in excess of the requirements is the number of strata that need to be covered: areas and time (month).

The reason that the number of age measurements in area IIIaN and IV, VIId was lower than required is that the samples taken were of poor quality, so the dissection of the otoliths could not be performed.

**Trachurus spp. (Horse mackerel)**

Summary table of deviations from aim for horse mackerel.

| Area | Type of measurement | Deviation |
|---|---|---|
| IV, VIId | Length | 440% |
| | Age | 1420% |
| IIa, V, VII, VIII, IX | Length | 53% |

**Trisopterus esmarki (Norway pout)**

Summary table of deviations from aim for norway pout.

| Area | Type of measurement | Deviation |
|---|---|---|
| IIIaN | Length | 2000% |
| | Age | 1988% |
| IV | Length | 88% |
| | Age | 87% |

## 10.3 EP – Landings – Required and achieved sampling

Denmark did not apply for an extended programme.

## 10.5 MP & EP – Discards – Required and achieved sampling

In table 10.3 the length and age sampling of catches and discards from observer trips are summarized. Age sampling of the landed part of the catches recorded on observer trips has not been done because according to the Danish National Programme, harbour sampling of human consumption landings is used. Samples of all other species than listed in table 10.3 are counted and length measured.

## 10.6 MP & EP – Discards – Deviations from aim

There are no deviations from aim.

## 10.7 Action taken to avoid shortfalls

Initiatives for improving the sampling in order to ensure adequate sampling and to avoid shortfalls are constantly in focus. Better cooperation between DIFRES staff dealing with sampling and Fishery control staff has been initiated.

Furthermore initiatives to get online access to VMS data have started. VMS data will facilitate the collection of samples.

# 11. Module I – Other biological sampling

## 11.1 MP – Required and achieved sampling

In table 11.1 an overview is given of the long-term sampling strategy of other biological parameters. In tables 11.2 and 11.3 an overview is given of achieved sampling for length at age, sex ratios, sexual maturity and fecundity. The numbers achieved are based on the data sources listed in the table.

Denmark has been active in various ICES survey planning groups for upstart of coordination of sampling of other biological parameters on surveys. See ICES IBTSWG report 2006.

## 11.2 MP – Deviations from aim

Fecundity is not sampled for mackerel and horse mackerel in area IV as required. Denmark has not participated in surveys where collection of fecundity data on mackerel and horse mackerel were possible due to the time of year the surveys take place.

## 11.3 EP – Required and achieved sampling

Denmark did not apply for an extended programme.

## 11.5 Action taken to avoid shortfalls

Denmark has worked actively in the ICES PGCCDBS, the ICES IBTSWG and the ICES WGBIFS for organize coordination and co-operation of sampling of other biological parameters. It is the intension that the closer co-operation and coordination during conduction of the surveys will avoid the possibility of shortfalls.

# 12 Module J – Economic data on fishing vessels

The Danish programme 2006 for collection of economic data by groups of vessels (for 2005) is a continuation of the programmes implemented over the previous years. Results based on the data for 2005 have been reported to JRC in October 2006 and again in February 2007.

## 12.1 MP – Required and achieved sampling.

As shown in table 12.1 the achieved samples for the different fleet segments are the same as the required samples. Of the 303 fishery units drawn in the ordinary sample selection only 9 were cancelled, all of which were replaced with a supplementary unit.

***What data is being collected***.
All data on the accounting form refers to a "fishery unit" defined as a Fisherman or Fishing firm with one separately operating vessel that is a vessel which is active in fishery and has its own separate crew. When a Fishermen or Fishing firm owns more than one separately operating vessel, the account for that economic agent is split into separate accounts for each fishery unit.

The variables or "economic indicators" in the DCR report are aggregates of several detailed variables in the Danish fishery account system. All variables are collected in the individual accounts and can easily be aggregated to the specifications in the DCR.

Data collected for the DCR (Appendix XVII):

*Income (turnover):* The total revenue or Gross output for the year includes both value of landings, subsidies and other sources.

*Production costs:*
- *Crew (include social cost):* wages and salaries to all employees including owners/partners.
- *Fuel:* fuel costs excl. duties and bonus/discount, fuel quantity in litres.
- *Repair and maintenance:* maintenance of all physical fishing assets, various articles/stores.
- *Other operational costs:* landing and sales costs, rent of equipment, purchase of fishing rights, insurance, service, administration.

*Fixed costs (average cost calculated from investment):* depreciation and net interest expenditure.

*Financial position (share of own/foreign capital):* debt as a percentage of total assets (end of year).

*Investment (asset):* total value of physical capital beginning of the year including fishing rights.

*Prices/species:* Live weight quantities and first hand value per species.

*Employment (full time/part time/FTE):* number of men, number of days and hours worked.

*Fleet:* data from the Register of Fishing Vessels.
- *No:* number of fishery units (vessels).
- *GT:* Gross tonnage (for main operating period if GT is changed during the year).
- *kW:* kilowatt engine power (for main operating period if kW is changed during the year).

- *Age:* number of years from year of construction of vessel to operating year.
- *Gear used:* Main gears from the vessel register.

*Effort (relevant unit accounting for technology and time):* Vessel days at sea.

### Who the data is being collected from.
The population of fishery units is defined as fishing firms who owns one separately operating fishing vessel that has been registered for at least 6 month of the year. Fishing firms that owns more than one separately operating vessel are divided into units according to the number of separately operating vessels. By separately operating means that the vessels has it own crew, and that it is not only used as auxiliary vessel. The 2005 population consisting of 1,167 ACTIVE fishery units in the commercial fishery together with 1,100 LESS_ACTIVE fishery units is shown in table 12.1.

### How the data are being collected.
The administrative and statistical registers in FD are the basic source to information about the Danish fishery. The registers relevant to the collection of economic information for groups of vessels are: the Register of Fishing Vessels, the Register of Fishermen/Vessel Owners, the Sales Note Register and the Logbook Register. These registers are fully comprehensive in the sense that all fisheries related activities are registered for all individuals, which means that statistical analysis based on the registers can cover all activities in the fishery and on the first-hand market for fish (e.g. the official fishery statistics).

Cost data, financial information and information on factor input like fuel consumption and labour input are not registered in the FD's register. These data are collected by FOI on the yearly accounting forms. FOI obtains each year an extract from the FD registers containing information on all active vessels for the year before. This extract is used to analyse and stratify the population of fishery units before the sample for the year is drawn. The population is stratified according to the fleet segmentation laid out in the DCR together with additional national length groups and economic size groups.

The possibility of stratification on economic size groups is an important cornerstone for the statistical sampling. It can only be done because Denmark has a total registration by economic agent (and fishing vessel) of all landings of fish intended for the market, which includes landings from both commercial and non-commercial fishermen. Only own consumption of fish is not registered. The Danish Tax authorities set rules for calculating the use of own production which also includes fishery products, and these rules are also applied to the Account Statistics for Fishery whereas the estimated own consumption of fish is added to the production in the individual accounts.

Only authorized persons can legally buy and sell fish on the first hand market. The authorized first hand purchasers of fish report daily the registered landings of fish to the Directorate of Fisheries. The cost of having this exhaustive registration of all landings of fish is not a part of this national data collection program, and the data necessary for setting up the population of fishermen/fishing firms for the completion of the DCR has so far been delivered each year to FOI free of charge.

Having full knowledge of the yearly revenue (per species) of each individual vessel unit in the population makes it possible to stratify the entire population according to fleet segmentation and economic size groups and calculate an optimal sample size for each stratum. The optimal sample sizes are calculated in order to minimize the variances on the economic variables. Therefore the

sample size varies from 12 per cent of the units with small revenue to 45 per cent of the units with high revenue.

For each stratum the sample is drawn randomly from a selection of fishermen/fishing firms who have beforehand agreed to participate. This method ensures that there are nearly no non-response in contrast to common random sampling, where non-response is a grave problem and often causes bias in the sample. If for some reason an account from any of the sampled units cannot be collected, that unit is replaced with a substitute from the same stratum. Finally based on our knowledge of the production of each vessel unit in the population we improve the sample by including all units (100%) for some important strata like beam trawlers and purse seiners.

Full knowledge of many variables for the total population has the effect that the weighting system is able to rectify for most of the sample uncertainty. The calculation of the economic variables is done in a goal programming model with restrictions on the number of units and the known production of each species for each stratum, groups of strata and the entire population.

The method is similar to the method used for many years for the sampling of accounts for the FADN statistics to the DG Agriculture.

As every landing of fish is registered the population will include vessel units with landings of only a few fish like for instance sideline fishermen. These units have to be separated, because it is totally unrealistic to get solid information about costs from these part-time/leisure fishermen, as they are not setting up yearly accounts. Instead of using the accounting form in these cases, the exhaustive data on production, revenue, equipment and capacity are used to calculate a costs estimate based on the parameters for similar vessels/fishery.

The non-commercial or part-time fishermen are reported separately in the DCR reports submitted to JRC, as these "fleets" are marked LESS_ACTIVE in the report. For 2006 vessels with total revenue for the year at less that EUR 30,700 has been grouped as LESS_ACTIVE. Only vessels less that 12 metres using polyvalent gear or passive polyvalent gear (netters) are grouped as LESS_ACTIVE according to the revenue. Bigger vessels with very short period of operation are also marked as LESS_ACTIVE and separated in the report (cf. annex table 12.1).

The coherent structure of economic data makes it necessary to be able 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 FOI has constructed a harmonized accounting form for fishery, which ensures that the data is broken down to meet the requirements of the Account Statistic for Fishery as well as the specifications in Regulation (EC) No 1639/2001.

Specific information on the contents of the economic variables is listed below.

Income (turnover):
- Gross value of landings (total and per species).
- Additional payments regarding production from earlier years.
- Received/handed over amounts to cover landings by/for other vessels (pair-trawling).
- Other fishery income, for instance sale of self made gear.
- Leasing or hire out of vessels and other operative assets.
- Other sources, for instance salvage money.
- Subsidies, for instance for participation in research fishery.

Production costs - crew (include social costs):
- Salary to other partners/shareholders
- Salary to hired skipper
- Salary to hired crew (including pension)
- Paid/received salary from other vessels for instance when pair-trawling (+/-)
- Subsidies and repayments e.g. for trainees or long-term unemployed (-)
- Other personnel expenses (insurance, social expenses etc.)
- Salary to the owner/fisherman (skipper/owners share)

Production costs - fuel:
- Fuel costs excl. duties.
- Bonus and discount on fuel (-).
- Fuel quantity (Litres).

Production costs - repair and maintenance:
- Maintenance of vessel, hull etc.
- Maintenance of engines and winches.
- Maintenance of electronic equipment.
- Maintenance of fishing gear (purchase should be added to assets).
- Maintenance of land-based plants and equipment, e.g. truck or van.
- Stores, various articles for consumption.

Production costs - other operational costs:
- Other expenses on energy and lubrications excl. duties
- Tax and duties on energy
- Ice, salt and bait etc., used on the fishing vessel
- Provisions
- Harbour dues, pilot service and brokerage
- Collecting, sorting and auctioneering
- Packing, chilling and freight
- Other landing service costs (not hired crew)
- Landing service provided by own crew (not included in crew share/salary)
- Market regulation fees
- Subscription to fishermen's union, fishery duties
- Purchase of fishing rights or quotas (incl. quota in 3'rd country fishing zones)
- Rent of equipment, incl. leasing for a period less than a year
- Rent of buildings (gear sheds), incl. leasing of less than a year
- Insurance of vessel, equipment and fishing gear etc.
- Other expenses on insurance (land-based plants, van, liability etc., excl. personnel insurance).
- Administration, accounting etc.
- Communication, telephone etc. (exclusive private use)
- Operating share of cost on private vehicles (exclusive depreciation)
- Other service costs
- Tax on real property (fishery assets)

Fixed costs:
- Depreciation on vessel, hull etc.
- Depreciation on engines and winches
- Depreciation on electronic equipment
- Depreciation on fishing gear

- Depreciation on van, truck etc.
- Depreciation on buildings (gear sheds etc.)
- Operating share of depreciation on private vehicles etc.
- Net interest expenditure (recorded by 10 variables)

Financial position:
- Financial (debt / assets) recorded by (7 + 14) variables both beginning and end of year

"Investment" (assets): Value at the beginning of the year.
- Value of vessel, hull etc.
- Value of engines and winches
- Value of electronic equipment
- Value of fishing gear
- Value of van, truck etc.
- Value of buildings (gear sheds etc.)
- Value of stocks, for instance storage of fuel
- Value of fishing rights (IQ, ITQ)

Complement to the value at the beginning of the year regulation due to price changes, investment (purchase minus sale) during the year and depreciation are entered the accounting form, whereas the value at the end of the year is calculated.

Prices (species):
- Value of landings by species
- Quantity measured as live weight quantity in accounting form.
- 51 main species/species groups in the accounting form.

Employment (FTE):
- Number of men (persons)
- Number of (men * fishing trips)
- Number of (men * days at sea)
- Average number of hours worked per day at sea
- Number of (men * working days at land)

In order to ensure an adequate data quality FOI is collecting data from the fisherman's 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 100% correct.
- A beforehand obtained consent from the fishermen to allow their accountants to report all necessary data to avoid participation from a biased population of fishermen.
- Co-operation from professional accountants to achieve the best possible harmonized data.
- Full knowledge of the fishing activity of each individual vessel and fisherman.
- Make use of actual fishing activity in the selection process and the weighting scheme and thereby avoid miscalculation and vaporous estimates.
- Improving the calculations by using full scale survey for specific fleet segments like purse seiners and beam trawlers.
- Taking substitutes that match the categorization criteria when a selected fishery unit (vessel) has to be cancelled (less than 4% of the selected sample).

- Calculating statistical weights for each account in the sample by using known measures of vessel activity for row and column aggregates in the categorization matrix as targets in a quadratic goal programming model.

## 12.2 MP – Deviations from aim

No derogations or non-conformities in 2006.

## 12.3 EP – Required and achieved sampling

No extended program for 2006

## 12.4 EP – Deviation from aim

No extended program for 2006

# 13 Module K - Data concerning the processing industry

**Collection of data concerning the fish processing industry in Denmark.**
1. Examination and investigation of the existing collection of data by Statistics Denmark, the Directorate of Fisheries, and other relevant Authorities.
2. Examine the need for collection of complementary data.
3. On the basis of the investigations, if it's possible and there is a need for it, work out a plan for collecting more data on the processing industry in Denmark.
4. Collection, evaluation and adaptation of complementary data.
5. Evaluation and reporting to the Commission.

**Flowchart of study phases**

|  | 2002 | 2003 | 2003 | 2004 | 2004 | 2005 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|
| Pilot study investigating method and strategy for data collection | X | | | | | | | |
| Examining of existing data | | X | | | | | | |
| Collection and processing of existing data | | | X | | | | | |
| Investigation for collection of complementary data | | | | X | | | | |
| Collection and test of data | | | | | X | | | |
| Collection and processing of yearly data series | | | | | | X | | |
| Test and evaluation of data | | | | | | | X | |
| Reporting to the Commission | | | | | | | | X |

## 13.1 MP – Required and achieved sampling

In this investigation data from Statistics Denmark's Industrial Commodity-, Account- and Raw Materiel Statistics will be used. The purpose of this study is to investigate data from these statistics, and find out if they can provide the needed data to comply with the demands, that are listed in the Commission regulation (EC) No 1639/2001 of 25 July 2001 appendix XIX.

This investigation will include data from NACE 15.20

NACE 15.20.10 – Fish processing and preservation
NACE 15.20.20 – Smoking, curing and salting of fish etc.
NACE 15.20.30 – Fish meal factories

The data from the Industrial Commodity Statistics have been examined to disclose the possibility to define homogenous sub branches in the sense of input of raw material and output of commodities from the existing branches in the Danish fish processing industry (NACE 15.20.10-30). The purpose of creating these new sub branches of enterprises is to provide yearly time series data of the processing industry, which reflect the physical and economic data from the primary sector.

FOI has examined the composition of commodities from each enterprise in the processing industry for the years 2000 until 2006. This investigation has provided the background for dividing the enterprises into 13 sub branches on the basis of the enterprise's commodity production (see table 13.1.). The first criteria for the division of the sub branches is the species that the enterprise processes and secondly the degree of processing. From these 13 sub branches it will probably be possible to evaluate the supply of raw materiel going into the processing industry from the Danish market and from abroad. The 13 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 13 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.

The analysis of the Industrial Commodity Statistics for 2004 represent 73 Kind of Activity Units with a total sales of commodities of approximately EUR 1.3 billion, which covers 97 % of the total sales of commodities in the Account Statistics. The Account Statistics covers all enterprises in the Danish fish processing industry.

For the present the analysis of the "purity" of the processing industry suggest, that the "purity" is very high, which means that most, more than 90 %, of the commodities, which contain fish or fish products are produced in the branches defined by NACE 15.20.10-30.

13.1.1 Contents of the Account Statistics

***What data is being collected?***
The statistics are essentially aggregations of items of the annual accounts of business enterprises, notably items of the profit and loss account, the balance sheet and the statement of fixed assets. Thus, a wide range of subjects are covered, e.g. turnover, purchases, expenses, profits, assets, liabilities and investment.

***Who the data is being collected from?***
The accounts statistics are a reliable indicator of the activity level and of the structure of the Danish business sector. The highest data quality is achieved at the enterprise level, primarily because the enterprises prepare their annual accounts at that level. But also at the establishment level the published results for major activity groups and for counties are highly reliable.

Source: The Statistics are based on questionnaires, The Central Customs and Tax Administration (SLS-E data), and the business register. The population is defined on the basis of Statistics Denmark's Central Business Register covering all businesses in Denmark (ESR).

Complete set of accounts: The data collected from all sources are combined in such a way that a complete set of accounting items is computed for each business enterprise.

A. Direct surveying. The most thorough coverage is extended to the enterprises that are selected for direct surveying. They are given the choice of either filling in a lengthy questionnaire or submitting their annual accounts plus detailed specifications. The questionnaire is modelled on the list of items set out in the Danish annual accounts legislation, so as to facilitate responding. The data obtained by direct surveying are keyed into a data entry system which comprises error detection and verification procedures. Thus, the data are checked for accounting inconsistencies, and warning messages are written out if significant deviations are found when comparing with last year's data or with figures for enterprises in the same stratum (form of ownership / activity / size group). Frequently the respondents are contacted for clarification.

B. The SLS-E system of the Danish tax authorities does not comprise so many items as Statistics Denmark's questionnaire, but the quality of the data is regarded as high, because they are used for individual tax assessment. By stratified imputation the data aggregates of the SLS-E system are distributed among the more detailed items, and in the opinion of Statistics Denmark the resulting item values are reasonably reliable for profit and loss account as well as balance sheet. The SLS-E system does not include information about investment (spending on fixed capital).

C. The enterprises that are not covered by the sources A and B are mainly small enterprises, so the available information is limited. For these enterprises stratified imputation based on employment size groups is used to fill out the missing information.

### How the data are being collected?
The reporting unit is the Kind of Activity Unit which is the total sum of workplaces engaged in the same economic activity (industry).

Industrial groupings: Kind of activity. This concept, which is sometimes termed branch or industry, refers to the 6-digit code numbers found in the Danish activity classification DB03, which is based on the European NACE nomenclature.

13.1.2 Contents of the Industrial Commodity Statistics

### What data is being collected?
The industrial commodity statistics describe manufacturers' sales of commodities measured in volume and value. In addition to this the statistics comprise a survey of the commodity sales distributed by industries.

### Who the data is being collected from?
The Statistics are based on questionnaires. The population is defined on the basis of Statistics Denmark's Central Business Register covering all businesses in Denmark (ESR).

Survey population: The statistics cover industrial enterprises with at least 10 fulltime-employees as well as sales of enterprises registered as non-industrial enterprises, but with workplaces within manufacturing and with at least 10 fulltime-employees, are included in the statistics.

The reporting unit is the Kind of Activity Unit.

### How the data are being collected?
The value is calculated as invoice sales ex factory or free delivery inside Denmark. Turnover taxes and production taxes are excluded from the sales value. Invoiced discounts are deducted. General packaging, freight charges and insurance costs are included if they can be distributed to individual commodities.

The total turnover is divided into different kinds of sales
- Sales of own commodities, i.e. commodities which are manufactured, processed or assembled by the enterprise itself.
- Construction work done for other enterprises, where the other enterprises own the machinery etc., which relates to the work involved in installation.
- Reconditioning and mending for other enterprises, where the other enterprises own the machinery.
- Paid work (contract work) performed for other enterprises, where the other enterprises own the raw materials etc.
- Commercial turnover or resale turnover
- Other turnover including income from licences, commissions, income from know how etc.

Information on quantities is declared as net weight, including the wrapping normally used when the commodity is sold in the retail trade. The transport packaging is not included.

Industrial groupings: Enterprises are grouped in the 4-digit NACE-classes and in the more detailed 6-digit DB03 national branch grouping based on NACE.

Commodity nomenclature: The commodities are grouped in a 10-digit nomenclature based on the 8-digit Combined Nomenclature (CN). The first 8 digits in the commodity nomenclature are always identical with the CN.

13.1.3 Contents of the Raw Materiel Statistics

*What data is being collected?*
The survey describes the use of raw materials, semi-manufactured- and intermediary products, purchase of services, packing costs and use of water in the production of industrial commodities.

*Who the data is being collected from?*
The statistics contain a survey of the raw materials etc. distributed to groups of industries.

The Statistics are based on questionnaires. The population is defined on the basis of Statistic Denmark's Central Business Register covering all businesses in Denmark (ESR).

Survey population: The statistics cover industrial enterprises with at least 50 fulltime-employees.

*How the data are being collected?*
Industrial groupings: The survey is based on the 6-digit Danish Branch nomenclature of which the 4 first digits are the NACE nomenclature.

Commodity groupings: The raw materials etc. are collected on basis on the 8-digit CN nomenclature also used in External Trade Statistics. The first 4 digits of the CN are used as basis in the raw material nomenclature.

13.1.4. Definitions of parameter (Table 13.1, and paragraph 13.6.1 and 13.6.2)

- **Raw material (volume)**
The data on volume for raw materiel is not yet available, but data can be calculated from the Commodity Sales Statistics. The Institute is looking into other methods of collecting this information, as an example it will be disclosed, if it is possible to get the information through the questionnaire already presented to the enterprises in the processing industry by Statistics Denmark or directly from the company accounts.

- **Income (turnover)**

- **Income (turnover)** represents the net sales. Included are capitalised work performed by the enterprise for own purposes and all charges (transport, packaging, etc.) passed on to the customer. Excluded is reduction in prices, rebates, discounts, VAT, and excise duties. Income classified as other operating income, financial income and extraordinary income in company accounts is also excluded from turnover.

- **Other income** is classified as other operating income exclusive of turnover, financial- and extraordinary income in company accounts.

- **Production costs**

- **Labour** cost is defined as the total remuneration, in cash or in kind, payable by an employer to an employee (regular and temporary employees as well as home-workers) in return for work done by the latter during the reference period. Personnel costs also include taxes and employees' social security contributions retained by the unit as well as the employer's compulsory and voluntary social contributions. These include employer's social security contributions to schemes for retirement pensions, sickness, maternity, disability, unemployment, occupational accidents and diseases, family allowances as well as other schemes. These costs are included regardless of whether they are statutory, collectively agreed, contractual or voluntary in nature. Payments for agency workers are not included in personnel costs.

- **Energy** includes purchases of all energy products during the reference period for electricity, heating and production. Fuel for vehicles is not included.

- **Raw material** is divided into 3 subcategories

  o **Raw material fish** contains fish and fish product auxiliaries.

  o **Packaging** purchased as raw material.

  o **Resale commodities** purchased as raw material for resale without transformation.

- **Other running costs** include payments for agency workers, subcontracts, rents, minor inventories, leasing expenditure, ordinary losses on debtors, and other and secondary expenses.

- **Fixed costs (Depreciations)** includes write offs and write downs.

- **Financial costs, net** includes income and expenses from interest and returns from capital assets

- **Extraordinary costs, net** include extraordinary income and expenses.

- **Tax** includes all taxes.

- **Financial position**

- **Financial position** is the share of Net capital calculated from the Total liabilities.

- **Investment (Assets)**

- **Assets** current prices. The Perpetual Inventory method is used. "The Perpetual Inventory Method" (PIM) generates an estimate of the capital stock by accumulating past purchases of assets over their estimated service lives. The standard, or traditional, procedure is to use the PIM to estimate the gross capital stock, to apply a depreciation function to calculate consumption of fixed capital and to obtain the net capital stock by subtracting accumulated capital consumption from the gross capital stock."

- **Investment (Gross investment in tangible goods)**
- **Investment** during the reference period in all tangible goods. Included are new and existing tangible capital goods, whether bought from third parties or produced for own use (i.e. capitalised production of tangible capital goods), having a useful life of more than one year including non-produced tangible goods such as land. The threshold for the useful life of a good that can be capitalised may be increased according to company accounting practices where these practices require, a greater expected useful life than the one-year threshold indicated above.

All investments are valued prior to (i.e. gross of) value adjustments, and before the deduction of income from disposals. Purchased goods are valued at purchase price, i.e. transport and installation charges, fees, taxes and other costs of ownership transfer are included. Own produced tangible goods are valued at production cost. Goods acquired through restructuring (such as mergers, take-overs, break-ups, split-off) are excluded. Purchases of small tools which are not capitalised are included under current expenditure.

Also included are all additions, alterations, improvements and renovations which prolong the service life or increase the productive capacity of capital goods.

Current maintenance costs are excluded as is the value and current expenditure on capital goods used under rental and lease contracts. Investments in intangible and financial assets are excluded.

- **Price/Product**
- **Price/product** is calculated from the Industrial Commodity Statistics, which covers 97% of the total sales of commodities in the Danish fish processing industry (Paragraph 13.6.2).

- **Employment**
- **Employment** is equal to full-time equivalents (FTE).

- **Capacity utilisation**
- **Capacity utilisation** is not estimated for the Danish fish processing industry at present.


## 13.2 MP- Deviation from aims

It have not been possible to show all 13 new sub branches in paragraph 13.6.1, because the population in these branches is too small, which means there will be problems referring to confidentiality of the data given by the industry. Instead following sub branches is merged "Prepared or preserved product industry" for mackerel (15.20.13) and herring (15.20.16), "primary- and secondary industry" for herring (15.20.14) and (15.20.15), "Prepared or preserved products industry" for molluscs, shrimps and crustaceans (15.20.17) and (15.20.18).

Raw material volume can be calculated from the output of the enterprises, presented in the Industrial Commodity Statistics, but FOI are still working to improve the calculation-model for the raw material volume.

Capacity utilisation is not estimated for the Danish fish processing industry at present. For the time being there is no meaningful way of measuring capacity utilisation in the Danish fish processing industry. Denmark suggests that this parameter is removed from section K.

## 13.3 EP – Required and achieved sampling

Denmark has no extended program for 2006


## 13.4 EP – Deviation from aim

Denmark has no extended program for 2006


## 13.5. Action taken to avoid shortfalls

On the basis of the new 13 sub branches the data from the Industrial Commodity-, Account- and Raw Materiel Statistics will be distributed as shown in table 13.1. From the previous investigations FOI expect, that the existing data provided by Statistics Denmark will cover most of the needed data to comply with the demands listed in Commission regulation (EC) No 1639/2001 of 25 July 2001 appendix XIX, as shown in paragraph 13.6.1 and 13.6.2.

The on going investigations of the 13 sub branches will focus on the need for collection of complementary data. When the existing data is collected it will be examined if there is a need for collection of complementary data. As an example it will be disclosed if there is a need for a larger spot test covering the Raw Material Statistics. At present only enterprises with more than 50 employees are covered in the Raw Material Statistics.

There will be a need for a more detailed investigation of the connection between "Kind of Activity Units" in the Industrial Commodity Statistics and "Enterprises" in the Account Statistics and have they are distributed into the 13 sub branches. There will also be a need for investigating how many fish processing enterprises there placed into other branches than NACE 15.20.

It has also proved more difficult to calculate the raw material volume per species going into the processing industry than first expected. FOI will have to conduct further investigation on how to collected the needed data to comply with the demands listed in Commission regulation (EC) No 1639/2001 of 25 July 2001 appendix XIX.

If there is a need for complementary data, FOI will work out a plan in collaboration with Statistics Denmark to collect and process the needed data.

**Annex to section 13. Module K. Collected data on the 13 new sub branches**

**13.1 – Data collected from the Account Statistics**
**Account Statistics for 2004 in 1.000 EUR**     **1 EUR= 7,44 DKK**

| Branches (NACE) | 15.20.10 | 15.20.11 | 15.20.12 | 15.20.13 + 15.20.16 | 15.20.14 + 15.20.15 | 15.20.17 + 15.20.18 | 15.20.19 |
|---|---|---|---|---|---|---|---|
| | Total 15.20.11-19 | Cod, flatfish etc. | Cod, flatfish etc. | Mackerel and Herring | Herring | Molluscs, shrimps and crustaceans | Mixed production |
| **Degree of processing** | | **Primary** | **Mixed** | **Preserved/ Prepared** | **Primary** | **Preserved/ Prepared** | **Mixed** |
| Number of enterprises | **62** | 8 | 4 | 4 | 13 | 11 | 22 |
| Employment (FTE) | **3122** | 447 | 657 | 249 | 405 | 368 | 996 |
| | | | | | | | |
| Operating result: | | | | | | | |
| **+ Income** | **1.064.659** | 118.116 | 233.605 | 73.659 | 94.550 | 155.149 | 389.580 |
| **+ Other income** | **18.353** | -730 | 8.161 | -300 | 5.106 | 1.188 | 4.928 |
| **- Labour** | **-130.611** | -18.037 | -28.253 | -10.765 | -18.312 | -15.792 | -39.452 |
| **- Energy** | **-13.483** | -1.342 | -3.239 | -1.630 | -1.451 | -2.178 | -3.645 |
| **- Raw material (1+2+3)** | **-784.097** | -82.861 | -179.347 | -46.745 | -62.890 | -101.367 | -310.888 |
| *1 - Raw material fish* | *-318.930* | *-45.558* | *-54.656* | *-23.379* | *-45.660* | *-82.885* | *-66.791* |
| *2 - Packaging* | *-67.743* | *-3.075* | *-12.376* | *-22.194* | *-14.842* | *-7.638* | *-7.617* |
| *3 - Resale commodities* | **-397.424** | -34.228 | -112.314 | -1.171 | -2.387 | -10.843 | -236.480 |
| **- Other running costs** | **-97.011** | -11.416 | -19.693 | -5.353 | -12.299 | -18.992 | -29.258 |
| - Depreciation | **-25.785** | -2.546 | -2.940 | -4.178 | -4.384 | -4.377 | -7.360 |
| - Financial costs, net | **-3.722** | -879 | 961 | 183 | -2.792 | -1.091 | -104 |
| - Extraordinary costs, net | **28** | -2 | 0 | -2 | -1 | -1 | 34 |
| - Tax | **-8.826** | 78 | -2.349 | -1.315 | 724 | -4.177 | -1.785 |
| **Net profit** | **19.504** | 382 | 6.905 | 3.555 | -1.751 | 8.364 | 2.050 |
| | | | | | | | |
| **Financial position** | 31% | 55% | 42% | 40% | 27% | 38% | 21% |
| | | | | | | | |
| + Total fixed assets | **279.399** | 11.151 | 33.092 | 35.679 | 37.213 | 28.720 | 133.544 |
| + Total current assets | **368.890** | 20.326 | 73.788 | 38.539 | 34.269 | 54.991 | 146.977 |
| **Total assets** | **648.289** | 31.478 | 106.880 | 74.218 | 71.481 | 83.711 | 280.521 |
| | | | | | | | |
| Net capital | **203.151** | 17.166 | 44.813 | 29.807 | 19.281 | 32.040 | 60.045 |
| + Provisions | **14.663** | 348 | 3.095 | 4.075 | 1.524 | 1.579 | 4.042 |
| + Long-term debt | **99.145** | 2.425 | 9.609 | 19.985 | 25.057 | 12.538 | 29.531 |
| + Short-term debt | **331.330** | 11.539 | 49.363 | 20.352 | 25.619 | 37.555 | 186.903 |
| **Total liabilities** | **648.289** | 31.478 | 106.880 | 74.218 | 71.481 | 83.711 | 280.521 |
| | | | | | | | |
| **Investment, gross** | **28.770** | 1.338 | 5.115 | 4.119 | 5.789 | 5.219 | 7.191 |
| **Sales** | **-8.290** | -1.334 | -215 | -903 | -566 | -748 | -4.524 |
| **Investment, net** | **20.481** | 4 | 4.900 | 3.217 | 5.223 | 4.470 | 2.667 |

## Account Statistics for 2004 in 1.000 EUR     1 EUR= 7,44 DKK

| Branches (NACE) | 15.20.20 | 15.20.21 | 15.20.22 | 15.20.23 | 15.20.30 | Total |
|---|---|---|---|---|---|---|
| | Total 15.20.21-23 | Smoked salmon | Salmonoids | Smoke-houses | Fish meal factories | |
| **Degree of processing** | | **Preserved/ Prepared** | **Mixed** | **Preserved/ Prepared** | **Preserved/ Prepared** | |
| Number of enterprises | **51** | 14 | 16 | 21 | 7 | **120** |
| Employment (FTE) | **1311** | 670 | 576 | 65 | 401 | **4834** |
| | | | | | | |
| Operating result: | | | | | | |
| + Income | **241.884** | 125.376 | 107.599 | 8.909 | 252.641 | **1.559.185** |
| + Other income | **432** | 406 | -70 | 96 | -334 | **18.450** |
| - Labour | **-48.810** | -25.248 | -21.839 | -1.723 | -21.156 | **-200.578** |
| - Energy | **-3.024** | -1.281 | -1.590 | -153 | -13.588 | **-30.095** |
| - Raw material (1+2+3) | **-168.798** | -82.664 | -72.568 | -13.566 | -136.787 | **-1.089.682** |
| *1 - Raw material fish* | *130.812* | *70.969* | *59.843* | *-12.064* | *121.811* | *585.125* |
| *2 - Packaging* | *15.646* | *10.461* | *5.185* | *-1.340* | *2.683* | *85.904* |
| 3 - Resale commodities | **-8.937** | -1.234 | -7.540 | -162 | -12.293 | **-418.653** |
| - Other running costs | **-20.229** | -10.590 | -8.377 | -1.262 | -69.399 | **-186.639** |
| - Depreciation | **-6.442** | -2.817 | -3.365 | -261 | -7.895 | **-40.121** |
| - Financial costs, net | **-3.417** | -1.557 | -1.749 | -111 | -2.169 | **-9.307** |
| - Extraordinary costs, net | **-107** | 87 | -192 | -2 | -400 | **-479** |
| - Tax | **-609** | -892 | 381 | -97 | -263 | **-9.697** |
| Net profit | **-9.120** | 820 | -1.770 | -8.171 | 651 | **11.035** |
| | | | | | | |
| **Financial position** | 25% | 21% | 29% | 22% | 18% | 28% |
| | | | | | | |
| + Total fixed assets | **51.876** | 19.606 | 30.152 | 2.118 | 49.527 | **380.803** |
| + Total current assets | **72.302** | 36.348 | 33.605 | 2.350 | 98.295 | **539.487** |
| Total assets | **124.178** | 55.954 | 63.756 | 4.468 | 147.822 | **920.289** |
| | | | | | | |
| Net capital | **31.423** | 11.805 | 18.620 | 998 | 25.967 | **260.541** |
| + Provisions | **1.101** | 588 | 450 | 64 | 689 | **16.453** |
| + Long-term debt | **21.552** | 7.305 | 12.952 | 1.296 | 35.280 | **155.977** |
| + Short-term debt | **70.102** | 36.257 | 31.734 | 2.111 | 85.886 | **487.317** |
| Total liabilities | **124.178** | 55.954 | 63.756 | 4.468 | 147.822 | **920.289** |
| | | | | | | |
| Investment, gross | **9.564** | 3.096 | 6.032 | 436 | 22.607 | **60.940** |
| Sales | **2.036** | 707 | 1.178 | 150 | 672 | **10.997** |
| Investment, net | **7.528** | 2.389 | 4.853 | 286 | 21.935 | **49.943** |

## 13.2 – Data collected from the Industrial Commodity Statistics on prices/product

Example of price per product calculated from the Industrial Commodity Statistics 2004.

**Industrial Commodity Statistics 2004 in EUR.     1 EUR= 7,44 DKK**

| NACE Branches 15.20.10 – 15.20.30 | | | |
|---|---|---|---|
| **Commodity numbers CN** | | | **Price per kilogram EUR** |
| 302190000 | 1.000 EUR | 36 | |
| | Tonne | 8 | 4,70 |
| 302211000 | 1.000 EUR | 196 | |
| | Tonne | 41 | 4,76 |
| 302213000 | 1.000 EUR | 24 | |
| | Tonne | 4 | 5,76 |
| 302220000 | 1.000 EUR | 305 | |
| | Tonne | 69 | 4,39 |
| 302230000 | 1.000 EUR | 35 | |
| | Tonne | 3 | 13,18 |
| 302299000 | 1.000 EUR | 57 | |
| | Tonne | 10 | 5,43 |
| 302400000 | 1.000 EUR | 1.131 | |
| | Tonne | 1.606 | 0,70 |
| 302501000 | 1.000 EUR | 1.351 | |
| | Tonne | 311 | 4,35 |
| 302620000 | 1.000 EUR | 332 | |
| | Tonne | 120 | 2,77 |
| 302630000 | 1.000 EUR | 18 | |
| | Tonne | 7 | 2,66 |
| 302640000 | 1.000 EUR | 81 | |
| | Tonne | 107 | 0,75 |

# 14 Databases

## 14.1 Database development and data management

**Danish Fisheries Analysis Database (DFAD)**
All data collected according to the provisions concerning logbooks, sales notes and registration of fishing vessels and the primary data collected under the Danish programme are 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. (DIFRES)
- Economic data. (FOI)

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 is 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 database is yearly updated.

The design and development of the database has been made in a co-operation between the three above mentioned institutes.

Data from 1987-2006 are stored in the DFAD database. DIFRES is working on applying the Nantes matrix to each trip on DFAD.

**Babelfisk**
The data from biological sampling are stored in a MS SQL Server based database at DIFRES. This database contains data collected at surveys, harbour sampling and sea-going observer trips. It contains length and age measurements, discards information, sex and maturity of the individuals and also additional information regarding the sampling. Still further development of the data base takes place in order to conduct a better quality assurance of the collected and analyzed data and samples.

**FishFrame**
All Danish catch data sampled during discard sampling in the Kattegat and the Baltic Sea are included in the international database "FishFrame", which is a further development of the BALTCOM database. This database will constitute the backbone in all international discard calculations made for the area and is essential for the further development and international cooperation concerning discard.

All countries around the Baltic Sea submit data to the database and have full access to all data collected if the data are used for scientific purposes. The ICES Baltic Fish Assessment Working Group is using this database for compiling basic input data for their stock assessment work.

DIFRES is working on further development of the database, and it can now calculate total acoustic estimates for ICES PGHERS.

# 15. National and international co-ordination

## 15.1 National co-ordination

The Danish Institute for Fisheries Research is acting as coordinator for the Danish Programme. A Steering Group has been established with members from the three Institutes involved in the programme:
1. Danish Institute for Fisheries Research (DIFRES)
2. Danish Directorate of Fisheries (FD)
3. Danish Food and Resource Economics Institute

The main objective of the Steering Group is to coordinate the work under the programme.

## 15.2 International co-ordination

Collection of information on fishing capacity, fishing effort, economic and landing statistics have been carried out entirely on a national basis. Biological information on catches, information collected by research vessels and information on discards have been co-ordinated internationally by several ICES working-, study- and planning groups and carried out in close co-operation with research institutes in Member States and third countries (see table 15.1).

Denmark did not participate in the NE Atlantic RCM meetings because the Danish fishery in the area covered by the NE Atlantic RCM is minor and for surveys a long term plan was made in 2005.

## 15.3 Follow-up of RCM recommendations and initiatives

Denmark has followed the recommendations made by the RCM's.

## 15.4 Follow-up of SGRN recommendations

In the SGRN report "Analysis of derogations and non-conformities of Member States' data collection National Programme Proposals for 2006" there are no recommendations in the evaluation of the Danish National Programme Proposal 2006, only comments. There are no general recommendations of relevance to Denmark.

# 16. List of acronyms and abbreviations

| Acronym/Abbreviation | Description |
|---|---|
| DCR | Commission Regulation (EC) No 1639/2001 (Data Collection Regulation) |
| DIFRES | Danish Institute for Fisheries Research |
| FD | Danish Directorate of Fisheries |
| FOI | Danish Food and Resource Economics Institute, Denmark |
| FTE | Full Time Employed |
| ICES HAWG | ICES Herring Assessment Working Group for the Area South of 62° N |
| ICES IBTSWG | ICES International Bottom Trawl Survey Working Group |
| ICES PGCCDBS | ICES Planning Group on Commercial Catch, Discards and Biological Sampling |

| | |
|---|---|
| ICES PGHERS | ICES Planning Group for Herring Surveys |
| 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 WGBIFS | ICES Baltic International Fish Survey 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 |
| IQ/ITQ | Individual quota / Individual transferable quota. |
| SCV | Standard Catch Value = landings per species multiplied by 3-year average prices. |
| STECF | Scientific, Technical and Economic Committee for Fisheries |
| STECF SGRST | STECF Subgroup on the Review of Stocks |

# 17. Comments, suggestions and reflections

# 18. References

King, M. (1995): Fisheries Biology, Assessment and Management. Fishing New Books.

Vigneau, J. and Mahévas S. (2004): Precision in catch at age data with regard to sampling design. WKSMFD (Nantes 26-31/01/2004).