TECHNICAL REPORT

FOR

THE SWEDISH NATIONAL PROGRAMME FOR

COLLECTION OF FISHERIES DATA 2009

Under

Council Regulation (EC) No 199/2008
Commission Regulation (EC) No 665/2008
Commission Decision (EC) No 949/2008

I. General framework

This report gives the results of the Swedish National Programme for collection of Fisheries data in 2009. The report follows the SGRN´s *Guidelines for the Submission of Technical Reports on the National Data Collection Programmes under Council Regulation (EC) No 199/2008 Commission Regulation (EC) 665/2008 and Commission Decision (EC) No 949/2008* Version 2009. All tables are presented in a separate document.

II. National data collection organisation

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National co-ordination meetings
National coordination has been undertaken several times during 2009 where participating institutes and units are connected through electronic communication techniques. For these meetings guidelines and deadlines, development of databases has been communicated as well as discussions regarding strategy for DCF related work.

Several physical meetings have also been arranged during 2009, focusing on calibration of age reading and maturity. A few one-day meetings focusing on database development and workshops for users have also been undertaken. A 3- day introduction course in "R" was held in Lysekil for staff planned to work with the COST package for evaluating precision under the DCF.

II.B Regional and International co-ordination

II.B.1 Attendance of international meetings

All planned meetings for Sweden in 2009 are listed in table II.B.1. Sweden attended all meetings except from that WKMSSPDF was planned for 2009 but postponed to 2010. Also, a Danish-Swedish intercalibration age-reading of plaice meeting was planned but not undertaken during 2009.

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

General recommendations made by RCM Baltic and RCM NS &EA from 2005 to 2009 and actions taken by Sweden are listed below.

Source	Recommendation	Action
RCM Baltic (2009)	In order to make analyses of the data collected within DCF and to optimise the coordination work, the developed regional database FishFrame 5.0 should be used within the RCM Baltic.	SWEDEN WILL UPLOAD DATA (all species, all metiers lvl 6) FOR 2009 IN FF 5.0.
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 harmonisation of the NPs, including the quality checks, should be carried out before the next RCM.**	ACTION WILL BE TAKEN IN 2009
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*	SE COMPILED THIS DATA TO THE MEETING IN 2007 AND WILL PREPARE REQUESTED DATA FOR FUTURE MEETING 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*	DONE
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.*	SE WILL DESCRIBE SAMPLING METHOD AND STRATEGY IN NP FOR 2009-10. A QUALITY REPORT IN TR FOR 2009 WILL BE PRESENTED IN 2010.
RCM Baltic (Jan 2005)	*3.1 BALTIC RCM RECOMMENDS THAT EACH MS ON MONTHLY BASIS UPDATES "REAL TIME MONITORING SPREADSHEET" GIVING THE ACTUAL SAMPLING STATUS IN EACH COUNTRY AND GIVING THE COVERAGE AS DEFINED ACCORDING TO THE DCR.*	NOT USED, AND THEREFORE SE HAS NOT FILLED IT IN.
RCM Baltic	*3.3 BALTIC RCM RECOMMENDS THAT AN ANALYSIS REVEALING AND COMPARING THE CONSEQUENCES OF DIFFERENT RAISING*	SWEDEN WILL UPLOAD EFFORT INFORMATION TO THE

(Jan 2005)	*METHODS IS MADE AS SOON AS EFFORT INFORMATION AND MATCHING RAISING PROCEDURES ARE INCLUDED IN THE FISHFRAME DATABASE.*	FISHFRAME DATABASE IN ORDER TO BE ABLE TO ANALYZE DIFFERENT RAISING PROCEDURES.
RCM NS & EA (2009)	*RCM NS&EA recommends Sweden and Denmark to review inconsistencies in the raising/compilation procedures of discard data and to upload discard data into FishFrame.*	SWEDEN WILL UPLOAD ALL DATA TO FISHFRAME INCLUDING DISCARD DATA.
RCM NS & EA (2009)	*RCM NS&EA recommends Sweden and Denmark to compile and submit discard data of sole in Division IIIa to WGBFAS.*	SWEDEN WILL SUBMIT ALL DATA TO FISHFRAME INCLUDING DATA OF SOLE.
RCM NS & EA (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 harmonisation of the NPs, including the quality checks, should be carried out before the next RCM.***	ACTION WILL BE TAKEN IN 2009
RCM North Sea & East Arctic (2007)	*THE RCM NS&EA RECOMMENDS THAT ALL MS SUBMIT DATA IN THE AGREED FORMAT WHEN REQUESTED. THE REGIONAL DATA SHOULD BE COMPILED WELL BEFORE THE MEETING AND BE DISTRIBUTED TO THE RCM PARTICIPANTS.*	SE COMPILED THIS DATA TO THE MEETING IN 2007 AND WILL PREPARE REQUESTED DATA FOR FUTURE MEETING TO GAIN COOPERATION BETWEEN MS IN THE RCM.
RCM North Sea & East Arctic (2006)	*RCM NS AND EA TO UPLOAD THE 2004-2006 LANDINGS AND EFFORT STATISTICS INTO FISHFRAME TOGETHER WITH THE ASSOCIATED DATA FROM MARKET AND ON-BOARD SAMPLING, FOR ALL SPECIES WITHIN THE REMITS OF THE WGNSSK BY APRIL 1ST, 2007.*	DONE
RCM North Sea & East Arctic (2006)	*THE RCM NS &EA RECOMMENDS THAT DENMARK AND SWEDEN PREPARE A WORKING DOCUMENT PROPOSING HOW REGIONAL DATA COLLECTION COULD BE ARRANGED BY USING THE KATTEGAT AS A TEST ARE. THE WD WILL BE PRESENTED AT WGBFAS 2007 AND FOR THE RCM´S.*	NOT FULFILLED TO WGBFAS. THE PROCESS WILL START BY FILLING IN SUGGESTED TABLES DESCRIBING THE PRESENT SAMPLING METHODS.
RCM North Sea (2005)	*13.1 RCM NORTH SEA INSISTS THAT ALL COUNTRIES PARTICIPATE IN THE EXERCISE OF COMPARING SAMPLING STRATEGIES ON COMMERCIAL CATCHES AND DISCARDS BY PROVIDING THE RELEVANT INFORMATION TO THE SWEDISH COORDINATORS.*	DONE
RCM North Sea (2005)	*14.1 RCM NORTH SEA AGREED THAT IN ORDER TO CO-ORDINATE ACTIVITIES EFFECTIVELY THERE WAS A NEED TO DEVELOP A BETTER METHOD OF PRESENTING THE COVERAGE DISCARD SAMPLING AND THE NETHERLANDS HAVE AGREED TO PREPARE A TEMPLATE BASED ON FLEET SEGMENTATION (CURRENTLY UNDER REVIEW) AND CIRCULATE BEFORE NEXT YEAR'S MEETING.*	SWEDEN WILL PREPARE DATA AS SOON AS THE TEMPLATES ARE DELIVERED.
RCM North Sea (2005)	*14.2 RCM NORTH SEA RECOMMENDED THAT WHERE DISCARD SAMPLING COVERAGE IS RESTRICTED TO A LOW LEVEL, THE COUNTRY CONCERNED, CONSIDERS THE INPUTS FROM OTHER COUNTRIES AND ENTER INTO BILATERAL AGREEMENTS WHERE APPROPRIATE.*	WHEN GREATER KNOWLEDGE OF OTHER COUNTRIES DISCARD SAMPLING PROGRAMMES IS ACHIEVED, SWEDEN WILL DO THIS WHERE NECESSARY
RCM North Sea (2005)	*14.3 RCM NORTH SEA STRONGLY SUPPORTS THE INITIATIVE TO DEVELOP A DISCARD ATLAS AS IT IS REGARDED AS A MOVE WHICH WOULD PROVIDE USEFUL*	SWEDEN WAS REPRESENTED BY ONE PARTICIPANTS IN THE DISCARD ATLAS MEETING IN

III Module of evaluation of the fishing sector

III.A General description of the fishing sector

In the 1st of January 2008 there were 1 509 Swedish vessels with licences for commercial fishery and 1 800 licensed fishermen. The median age of the licensed fishermen in Sweden was 52 years.

The Swedish fleet consists of a majority of small vessels fishing with passive gear and a smaller number of larger ships mainly using trawls. Most demersal and pelagic trawlers have their home port on the Swedish west coast. Pelagic trawlers on the west coast mostly target herring, sprat and mackerel. Pelagic trawlers operating in the northern part of the Baltic sea mainly target vendace. Demersal trawlers in the Baltic Sea mostly target cod whereas demersal trawlers on the west coast mostly target Norway lobster and shrimp. Vessels using passive gears are spread along the entire coastline. Geographically, the activities are concentrated to ICES divisions IIIa and IIId and to some extent, divisions IVa and IVb.

The Swedish fleet can roughly be divided into three larger groups:
- Pelagic (trawl/seine) e.g. herring/sprat, mackerel, blue whiting, sandeel, vendace
- Demersal (trawl) e.g. gadoids, witch flounder, shrimp, Norway lobster
- Passive gear (gillnets, fyke-nets, longlines, creels) e.g. cod, herring, salmon, eel, plaice, flounder, turbot, perch, pike, pike-perch, Norway lobster

The table below briefly describes the number of vessels per segment in Sweden in 2008.

Segment	No vessels
Vessels using passive gears	852
Demersal trawlers < 24 m	79
Demersal trawlers > 24 m	18
Demersal trawlers targeting Shrimp	39
Demersal trawlers targeting Norway Lobster	90
Pelagic trawlers targeting Vendace	32
Pelagic trawlers < 40 m	24
Pelagic trawlers > 40 m	11
Inactive vessels	364
Total number of vessels	1 509

III.B Economic variables

There is a need for a brief explanation to the values in the technical report tables. Where a cell consists of two values describing a range the first number is related to survey conducted by the Swedish Board of Fisheries and the second number is related the exhaustive survey carried out by Statistics Sweden.

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

Estimation of total income, gross operational costs, assets, debt and crew wages

Gross operational costs and total income for the segments are collected through a census survey by Statistics Sweden. If the coverage rate is less than 70 percent an evaluation of the representativeness of the data has to be conducted. The following is a description of how Statistics Sweden collects the data, corrects for missing data and evaluates the representativeness.

Total income, gross operational costs, assets, debt and crew wages is estimated in the same way and therefore the estimation description only describe how total income is collected.

Census data from financial accounts has been collected by Statistics Sweden. Statistics Sweden matches economic data from tax declarations by enterprises to individual vessels. In some cases this may not be possible if a declaration is missing or if the deviation between declared income and income from fisheries is too large to be reliable. Statistics Sweden corrects for non-responses and missing observations with a correction factor. The correction factor is the quota between average value of landings for all vessels in the segment and the average landings value for all vessels with processable data. Statistics Sweden also evaluates the representativeness of the data.

$$cf = \frac{\overline{V}_j}{\overline{V}_l}$$

where

$cf =$ Correction factor

$\overline{V}_j =$ Average landings value in segment j

$\overline{V}_l =$ Average landings value among vessels with processable data

The declared income is estimated as the average declared income of vessels with processable data multiplied with the correction factor multiplied with the number of vessels in the segment.

$$I_j = \overline{I}_j \times cf \times N_j$$

where

I_j = Total declared income in the segment j

$\bar{I}_j$ = Average declared income in the segment j

N_j = Number of vessels in segment j

Estimation of individual income items

Value of landings per segment is compiled from sales, notes, landings declarations logbooks and monthly journals (coastal journals) which are all kept by the Swedish Board of fisheries. The compilation is exhaustive.

Fishing rights were not transferable in Sweden during 2008 neither temporarily nor permanent. No income from fishing rights did exist in 2008.

Direct subsidies are compensation for temporary fishing stops regarding cod fishing in the Baltic Sea from the European Fisheries Fund (EFF). Records are kept at the Swedish Board of Fisheries which is the authority responsible for the EFF. The collection is exhaustive.

Other income for a specific vessel is estimated as total income for the specific vessel, as compiled by Statistics Sweden, minus value of landings for the specific vessel.

Estimation of individual cost items

In order to allocate numerical values to individual cost items an allocation key for each segment is estimated. The allocation key is estimated through a survey by the Swedish Board of Fisheries.

The allocation key is estimated as the percentage of the gross operational costs for the individual cost:

$$p_{ij} = \frac{\bar{c}_{ij}}{\sum\limits_{i=1}^{4} \bar{c}_{ij}}$$

where

$\bar{c}_{ij}$ = weighted mean in the sample for costs item i for segment j

p_{ij} = percentage of gross operational costs related to the individual cost item i for segment j

i = cost item where 1 = fuel costs, 2 = repair & maintenance costs, 3 = variable costs, 4 =non-variable costs

j = Segment e.g. PTS VL40XX

The weighting scheme applied to cost item is

$$\bar{c}_{ij} = \left(\frac{\sum c_{ij}}{n_j} \right) \times W_j$$

where

c_{ij} = observation on cost item i for segment j in the sample from the survey

n_j = number of observations in the sample

W_j = weigh calcutaled as $W_j = \dfrac{\overline{D}_{pj}}{\overline{D}_{sj}}$, where $\overline{D}_{pj}$ = average number of days at sea for segment j

in the population and $\overline{D}_{sj}$ = average number of days at sea for segment j in the sample

Values for individual costs items for individual segments are calculated as:

$$\hat{c}_{ij} = GOC_j \times p_{ij}$$

where

$\hat{c}_{ij}$ = estimated (fitted) value of individual costs item i for segment j

GOC_j = Gross operational costs for segment j as estimated by Statistics Sweden

Fuel consumption for a segment is estimated using a Horvitz-Thompson-type estimator

$$\hat{F}_j = N_j \times \bar{f}_j \times W_j$$

where

$\hat{F}_j$ = Estimated fuel consumption for segment j

N_j = Total number of vessels in the segment

$\bar{f}_j$ = average fuel consumption in sample for segment j

W_j = is the same weight used in the estimation for individual costs items.

Fishing rights were not transferable in Sweden during 2008 neither temporarily nor permanent. No costs from fishing rights did exist in 2008.

Estimation of Engaged crew and FTE's

Engaged crew is estimated for each stratum using a Horvitz-Thompson-type estimator:

$$\hat{E}_j = \frac{N}{n} \sum_{k=1}^{n} e_{kj}$$

where

$\hat{E}_j$ = Estimated number of engaged crew in segment j

e_{kj} = observation in the sample for vessel k on the number of engaged crew for segment j

N = Total number of vessels in segment
n = Total number of observations in a stratum

FTE's are calculated according to:

$$FTE = ((totEC \times DAS \times hAS) + (aveCT \times hOS \times w))\,/\,FTh$$

where

FTE = Full time equivalents per vessel
$totEC$ = Total engaged crew per vessel
DAS = Days at sea per vessel
hAS = Number of working hours per day at sea, engaged crew and vessel. A working day is assumed to be 6 hours for vessels fishing with passive gears and 12 hours for vessels fishing with active gears.
$aveCT$ = Averaged crew per fishing trip and vessel
hOS = Average number of working hours in onshore per crew member, week and vessel
w = Number of working weeks per year and vessel
FTh = Number of working hours in a year for a full time employee. For national FTE's the number of working hours in year is assumed to be 1800 and for harmonised FTE's the number of hours is assumed to be 2000.

Estimation of Imputed value of unpaid labour

Imputed value of unpaid labour is calculated as the difference between labour costs given by the income tax declaration and the number of FTE's (harmonised) times an assumed yearly minimum salary (Including Social Costs):

Imputed Value of Unpaid Labour = Labour cost – FTE (harmonised) x Yearly Minimum Salary (Including Social Costs)

Vessels displaying a positive difference are able to pay the crew a minimum wage for the time they work and are therefore removed. For all the vessels displaying a negative difference the labour costs are lower than what is expected based on assumed yearly minimum salaries. The sums of the negative differences are summarized for each segment and the absolute numbers of the sums are the imputed value of unpaid labour.

Assumed minimum wages (including social costs equal to 40 %) are 252 000 SEK for vessel shorter than 24 meters and 336 000 SEK for vessel longer than 24 meters. Excluding social costs the corresponding salaries are 180 000 SEK and 240 000 SEK.

Estimation of Capital value and cost

The estimation of value of physical capital and annual depreciation costs will be based information on insurance value given by the questionnaire survey. The insurance value is estimated by divided the vessels into two groups, one less then 24 meters and one for vessels larger than 24 meters. A regression analysis for each group will then be run which includes logarithmic data on insurance value, length, age and kW of the respondens and two dummy's, one for pelagic vessels, one for demersal vessel.

LN Insurance value = β_0 + β_1 * LN age + β_2 * LN kW + β_3 * LN length + β_4 * $D_{demersal}$ + β_5 * $D_{pelagic}$

Based on the results of the regressions fitted values of insurance values are calculated for each vessel. All vessels are divided into three groups:
1.   Vessels fishing with passive gears
2.   Vessels fishing with active gears with a length under 24 meters
3.   Vessels fishing with active gears with a length over 24 meters

For each group the gross tonnage and insurance value is summarized for each individual building year. The sum of insurance value for each building year is divided by the sum of gross tonnage for each building year to obtain the depreciated price per capacity unit for each building year. Based on the depreciated price capacity unit a linear regression with a quadratic form is carried out to estimate the price per capacity unit for the current year of interest. The estimation equation is:

$$PPC_t = \alpha + \beta t^2 + \varepsilon$$

where

PPC_t = Price per capacity unit for building year t
t = building year

And the price per capacity unit for 2008 is calculated as:

$$P\hat{P}C_{2008} = \hat{\alpha} + \hat{\beta} \times 2008^2$$

The quadratic form is used to compensate for digressive depreciation.

In calculation the depreciated replacement values price per capacity unit for 2008 is used. In calculating the depreciated historical values price per capacity unit for 2008 is deflated using time series of the consumer price index. Both types of capital value calculations use the template connected to the PIM methodology in the capital valuation report (No FISH/2005/03).

Capital costs and the value of capital for each segment are calculated by extracting the values for each of the three large groups from the template and are reweighted to distribute them to individual segments according to the weighting scheme:

$$Cap_j = Cap_G \times \frac{\sum kW_j}{\sum kW_G} \times \frac{\sum Age_G}{\sum Age_j} \times \frac{Num_j}{Num_G}$$

where

Cap = Capital value or capital costs depending on which variable to be calculated
kW = Engine power
Age = Age of vessel
Num = Number of vessels

The subscript *j* refers to the segments e.g. DFN VL1218. The subscript *G* refers to the groups described earlier for which total capital value and capital costs are estimated i.e. vessels fishing with passive gears, vessels fishing with active gears under 24 meter and vessels fishing with active gears over 24 meters.

Fishing rights were not transferable in Sweden during 2008 neither temporarily nor permanent. Since fishing rights were not transferable no value associated with the rights existed in 2008.

Estimation of in-year investments

In-year investments are estimated as the difference between the sum of tangible assets for a segment in 2008 and 2007 as compiled by Statistics Sweden.

Financial position

Is calculated as debt, as compiled by Statistic Sweden, divided by estimated vessel replacement value.

Fishing enterprises

Number of enterprises consisting of different amount of vessels is compiled from the fleet register kept by the Swedish Board of Fisheries.

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

The final data delivered to the Swedish Board of Fisheries from Statistics Sweden shows that two segments displays a coverage rate less than 70 percent for two segments; vessels using passive gears less than 10 meters and 10 to 12 meters (PG VL0010 and VL1012). The representativeness is ensured by the correction factor used by Statistics Sweden previously described.

Survey data has been collected by the Swedish Board of Fisheries through questionnaires and the aim has been a coverage rate of at least 10 % or a minimum of 10 observations in each segment. Three segments display an achieved sample number less than 10 observations; pelagic trawlers and/or seiners 24 to 40 meters and over 40 meters (TM VL2440 and 40XX) with an achieved sample number of 8 for both segments and demersal trawlers and/or seiners less than 10 meters. The achieved sample rates are 33 and 73 percent respectively, which is in line with what was the aim in the national programme.

Estimates of in-year investments were calculated from the data delivered by Statistics Sweden based on company/financial accounts. In the NP Sweden stated that investments were to be estimated from the survey conducted by the Swedish Board of Fisheries.

Estimates of financial position were calculated as debt, as compiled by Statistics Sweden, divided with vessel replacement value estimated by Swedish Board of Fisheries. In the NP Sweden stated that financial position was to be estimated as debt/asset ratio from the data delivered by Statistics Sweden.

Clustering was necessary due to confidentiality reasons. The clustering scheme can be seen in table III.B.2. Clustering has been made with segments similar to other segments, except for inactive vessels which have been clustered with non-important segments with distinct characteristics.

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

Source	RCM Recommendation	Action
RCM Baltic (2009)	*Economic variables: The inclusion of a methodology report in the NPs as proposed by SGECA, would provide significant benefits*	SWEDEN WILL GIVE A THOROUGH DESCRIPTION OF THE METHODS USED TO SAMPLE AND ESTIMATE THE ECONOMIC DATA IN THE NATIONAL PROGRAMME
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.*	Sweden will describe sampling method and strategy in NP for 2009-10. A quality report in TR for 2009 will be presented in 2010.
RCM NS&EA (2007)	*The RCM NS&EA recommends setting up a workshop to clarify all outstanding issues concerning the fleetbased approach with regard to economic data collection. Workshop on economic data collection with the following ToRs:* *1) At what level should economic data be provided – clarification.* *2) If a vessel uses different gears how should the cost per gear type/metier be calculated? Use of correction factors/coefficients?* *3) Other methodological issues concerning the fleet based approach.*	Recommendations from the Liaison Meeting were that these issues were to be addressed under SGECA 08-03.
RCM Baltic (2007)	*In compliance with the RCM NS-EA, the RCM Baltic recommends that the Commission arranges a workshop to clarify all issues concerning the fleet based approach. Terms of reference:* *At what level should economic data be provided – clarification.* *If a vessel uses different gears how should the cost per gear type/metier be calculated? Use of correction factors/ coefficients?* *Are collected data sufficient to calculate cost with respect to gear type/metier? If not, which amendments have to be done?* *Other methodological issues concerning the fleet based approach.*	
RCM North Sea & East	*The RCM NS&EA recommends setting up a workshop to clarify all outstanding issues concerning the fleet-based approach with regard to economic data collection*	Sweden participated in SGRN-SGECA 08-01: Implementation for the collection if indicators for the fleet-based approach and

Arctic (2007)		establishment of regional sampling designs for the new data collection framework
RCM North Sea & East Arctic (2008)	*The RCM NS&EA recommends that the Chair of the RCM NS&EA circulates the notes related to economic variables to the other RCMs in time to help inform their discussions of these matters, and to help determine if the views of the RCM NS&EA with regards to suggestions for areas for STECF-SGECA to look at are supported.* *The RCM NS&EA also recommends that the following actions be carried out before the STECF-SGECA Data Quality workshop (planned for 2009 quarter 1), in order to increase the effectiveness of the workshop with specific regard to clustering:* *1. A questionnaire be sent to Member States to determine what practice is followed in Member States, to identify if any formal procedures exist.* *2. Work should be carried out by Member States prior to the workshop on the degree of variation within fleet segments of indicators as suggested below so that at the workshop various options and their implications for the quality of results can be tried out* *In addition, as part of the wider preparation for the quality workshop, the RCM NS&EA recommends:* *3. A summary of procedures reported in NP proposals for the collection of economic data be drawn up (with a possible repeat of the 2004 exercise to collect such information from Member States).* *4. That SGECA work to develop early in 2009 a manual collating the various guidance that exists on the derivation of economic variables as part of helping to promote the use of such guidance by Member States during 2009.*	Sweden participated in SGECA 09-03: Report of the Working Group on the quality aspects of the collection of economic data - methods of calculation of the indicators and sampling strategies
RCM NS & EA (2009)	*Economic variables: The inclusion of a methodology report in the NPs as proposed by SGECA, would provide significant benefits*	SWEDEN WILL GIVE A THOROUGH DESCRIPTION OF THE METHODS USED TO SAMPLE AND ESTIMATE THE ECONOMIC DATA IN THE NATIONAL PROGRAMME

III.B.4 Actions to avoid shortfalls

In response lower response frequencies in certain segments the Swedish Board of Fisheries is continuously looking in to different possibilities of raising the response rate.

The Swedish Board of Fisheries is currently looking over the possibilities to introduce an information provider obligation regarding surveys of the economic performance of the fishing fleet, where failure to respond to a survey may lead to sanctions.

III.C Biological - metier-related variables

THE BALTIC SEA

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

Results of the sampling in 2009 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 2009 were in general improved and Sweden experienced better cooperation with the fishing industry. 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. Sweden has further during 2009 initiated a work to improve the sampling design of the metier based sampling following the outcomes of ICES WKACCU and WKPRECISE. In some cases this has resulted in more complex logistics around the sampling which have reduced the number of sampled trips. The design has also been new for the samplers. Deviations from aim on a metier basis are expressed below.

Midwater trawl fisheries targeting demersal fish (OTM_DEF_>=105_1_110), sub 25-32
The usage of midwater trawls in the Baltic Sea cod fisheries fluctuate considerably between years. It was already stated in the National Programme that the fishery only would be sampled if it was of any significance. In 2009 was the fishery very limited, only 29 trips were conducted in total. As a consequence only 1 out of planned 4 sampling trips was carried out. The fishery will in the future be included in the same sampling frame as the bottom trawl fishery.

Bottom trawl fisheries targeting demersal fish (OTB_DEF_>=105_1_110) , subdivision 22-24
In 2009 more than 70% of the cod catches (and >65% of the trips) from this metier origins from the third quarter. The number of trips conducted by the fishing fleet was very limited in the other quarters. As a result Sweden did not achieve the planned number of trips in quarter 1, 2 and 4. The temporal pattern of the Swedish bottom trawl fishery for cod in western Baltic (subdivision 22-24) is very much connected to national and international management actions for the eastern Baltic (were Sweden have a larger quota) since the same vessels are involved in both fisheries.

Set gillnet fisheries targeting demersal fish (cod) (GNS_DEF_>=110_0_0), sub 22-24 and 25-32
Longline fisheries targeting demersal fish (LLS_DEF_0_0_0), Subdivision 25-32
In 2009 Sweden changed the sampling design for the metier sampling of the passive gears in the Baltic Sea cod fisheries. In the past vessels to be sampled were spread out in time and space but from 2009 onwards a more statistically sound approach was taken including random sampling of vessels out of an identified sampling frame. The change was done in order to increase accuracy by getting a better possibility to evaluate possible bias including refusal rates. The change however also implied more complicated logistics (e.g fewer vessels could be sampled in a harbour during a sampling occasion) which resulted in failure to fully meet the planned target. The sampling design will during 2010 be further developed in order to take the logistical aspects into consideration.

Trawl fisheries targeting small pelagic fish (PTM_SPF_16_31_0_0) , subdivision 22-29, 32
The assumption for the planned number of trips is that the fishery is conducted all year around in the main subdivisions (24, 25, 27, 28 and 29). This is written in the National Programme. The fishery have however been very limited (or non existent) in some of the subdivisions in some quarters implying that the planned no of trips to be sampled was not achieved.

Trawl fisheries targeting small pelagic fish (OTB_SPF_16_31_0_0) , subdivision 30-31
Shortfall of 2 trips due to problems for fishermen to collect the fish samples.

Set gillnet targeting small pelagic fish (GNS_SPF_<110_0_0)
Shortfall of 3 fishing trips due to lower fishing activity during the first part of quarter 2 in subdivision 31 and problems with collecting the fish samples.

Trap net fisheries targeting anadromous species (FPO_ANA_0_0_0)
Regarding the coverage of the fishery (Table III.C.3), collection took place in the fishery at a slightly smaller scale than originally planned and the statistics of sampling trips is partly at variance with what was planned. This can be explained by the need for testing of a relevant design and that fishermen were either unable to participate due to illness or that they did not accept sampling of their fishery. The sampling design was also dependent on acceptance of that the fishermen would use detailed catch journals to record their catches. This proved out to work better than expected, thus the much higher number of fishing trips covered compared to the plan. In Table III.C.6 data for salmon and trout are based on samples from this fishery that were collected partly by fishermen and later analysed and aged. For other species it covers fish sampled by SBF personnel. In Table III.C.5 is given a summary of all samples of salmon and trout including those sampled in the recreational fishery. The recreational fishery is given as a separate metier, thus it is included only in the overall sum.

Set gillnet fisheries targeting demersal fish (GNS_DEF_>=110_0_0) …. ii) flatfish
There is a mistake in NP Table III.C.6, the planned number is two fishing trips, not four trips.

Pound net fisheries targeting catadromous species (FPN CAT 0 0 0)
Shortfall of two fishing trip due to fishermens refusal.

III.C.2 Data quality: results and deviation from NP proposal
Sweden has during 2009 initiated a work to improve the designs of the metier sampling programmes. 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. Sweden has for a number of years been waiting for the outcome of the COST project to get tools for estimation of quality indicators such as CVs. During 2009 Sweden started to work with the tools provided in order to i) investigate if and where the tools can be used to evaluate the Swedish data and ii) evaluate the Swedish sampling wherever possible. This is an ongoing work and the analysis have not been finalised for all fisheries yet. Results obtained so far are presented in table III.C.5. However, the CV values are calculated by metiers and the table only allows to present the CV values on a species level.

Trap net fisheries targeting anadromous species (FPO_ANA_0_0_0)
As the sampling methods are in development there is a need for finetuning with individual fishermen in suitable coastal areas.

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

Source	Recommendation	Action
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.*	SWEDEN WILL USE THE AGREED NAMING OF FISHING GROUND, METIERS AND UNITS OF THE VARIABLES AS WELL AS RESPECT 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 da*	SEE ABOVE
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 M 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*	SWEDEN WILL PRODUCE THE DESCRIPTION OF THE METIERS USING THE FORMAT IN ANNEX 3 BEFORE THE RCM 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.**	SE HAS ALREADY INCLUDED A SHORT DESCRIPTION OF ALL METIERS IN PROGRAMME FOR 2009-2010.
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.*	SE HAS COMPLIED WITH INTERIM ALLOCATION RULES MADE UP IN THE RCM

III.C.4 Actions to avoid shortfalls

One of the main reasons for inconsistencies between planned no of trips to be sampled and what is achieved is that it is sometimes is difficult to predict spatial and temporal fishing patterns for some metiers at the time of writing the National Programme. To some degree this is inherent to the time lag between the compilation of the National Programme and the sampling year. To a certain degree the problem can be reduced by implementation of proper sampling frames where the metiers can be seen as domains instead of strata. This is something that Sweden is working on and will continue to work on the forth coming years. Sweden will further continue to develop the sampling designs in order to reduce some of the logistical problems that have risen after implementing a true random selection of trips to sample.

Trap net fisheries targeting anadromous species (FPO_ANA_0_0_0)
There is a need to get better overview of the entire sampling scheme, including discard of undersized salmon by fishermen.

THE NORTH SEA AND EAST ARCTIC

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

Results of the sampling in 2009 in relation to what was planned are presented in tables III.C3, IIIC.4, IIIC.5 and IIIC.6. The achievements of sampling in 2009 were in general improved and Sweden experienced better cooperation with the fishing industry. 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. Sweden has further during 2009 initiated a work to improve the sampling design of the metier based sampling following the outcomes of ICES WKACCU and WKPRECISE. In some cases this has resulted in more complex logistics around the sampling which have reduced the number of sampled trips. The design has also been new for the samplers. Deviations from aim on a metier basis are expressed below.

Trawl fisheries targeting demersal fish (OTB_DEF_90-119_0_0), IIIaN
This fishery is divided into two national metiers one targeting primarily cod, haddock and saithe and another targeting witch flounder. The same gears are used and sometimes fishermen change target species within a trip. In 2009 the catches dropped of witch flounder. Some of the sampling trips supposed to be witch flounder trips thereby turned into trips targeting saithe and cod. As a consequence one of the national metier (cod, haddock and saithe) became oversampled (13 sampled trips instead of planned 6) while the other (witchflounder) was undersampled (2 sampled trips out of planned 6). In 2009 Sweden tried to define unique sampling frames for the two metiers. This turned out to be problematic and the metiers will be treated within one sampling frame in the future. This sampling frame will also include the *Nephrops* fishery without sorting grid since this fishery is performed with more or less the same gear and by the same vessels (some expected *Nephrops* trips turned out to be demersal fish trips and vice versa).

Trawl fisheries targeting crustaceans (OTB_CRU_35-69_0_0), IIIa, IV
Sweden fell short to sample six trips in this fishery due a combination bad weather and shortage in staff. A large proportion of the Swedish fleet fishing for demersal species and crustaceans are relatively small vessels (<24 m). Most of them avoid being at sea in bad weather (or do not want to bring observers in bad weather due to safety conditions). This means that after prolonged period of bad weather Sweden sometimes are lagging behind in sampling of all fisheries and need to prioritise trips in the end of the quarter. In 2009 Sweden could not sample all the planned *Pandalus* (OTB_CRU_35-69_0_0) trips for this reason.

Pot and trap fisheries targeting crustaceans (FPO_CRU_0_0_0), IIIa
Sweden fell short to sample 3 out of 12 trips due to a combination of shortage in staff and bad weather.

Trawl fisheries targeting crustaceans (OTB_CRU_35-69_1_18), IIIa, IV
This metier is more or less exclusively catching *Pandalus*. In 2009 Sweden run a self-sampling programme for the metier in witch Institute of Marine Research are buying unsorted samples of *catches* from randomly selected commercial vessels. The random selection of vessels resulted however in some problems such as e.g fishermen forgetting to bring unsorted

samples ashore. All the planned trips were thereby not sampled. Sweden will continue to improve the self sampling programme during the forth coming year.

Gillnet fisheries targeting demersal fish (GNS_DEF_120-219_0_0), IIIaS
Only few vessels are involved in this fishery and the total volume of landing is small (142 tonnes in 2009). The fishery is at the same diverse (different vessels targeting different species) with a seasonal component (different species targeted different time of the year). The vessels are small and the sampling programme carried out is a self sampling programme where the fishermen bring the discards ashore. It is however logistically complex (relatively long travels to measure few fish) and sometimes fishermen forget to bring all the discarded fish to the harbour. This is the main reason to the failure to achieve what was planned. Due to the diversity in the fishery and the limited extent is it however unrealistic to assume that Sweden will gain reliable extra information from a sampling programme compared to the information already in the official statistics within a reasonable cost. In future National Programmes Sweden will thereby ask for a derogation to sample this fishery if it is picked by the ranking system.

Trawl fisheries targeting small pelagic fish (PTM_SPF_32-69_0_0), IIIa
84 out of planned 108 trips were sampled by buying unsorted samples of landings in the harbours/markets. A main reason for the deviation is that the fishery was limited in Kattegat (IIIaS) especially during the second and third quarter. The landings have declined in these fisheries from 29370 tonnes during the reference years to 18129 tonnes in 2009.

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

Sweden has during 2009 initiated a work to improve the designs of the metier sampling programmes. 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. Sweden has for a number of years been waiting for the outcome of the COST project to get tools for estimation of quality indicators such as CVs. During 2009 Sweden started to work with the tools provided in order to i) investigate if and where the tools can be used to evaluate the Swedish data and ii) evaluate the Swedish sampling wherever possible. This is an ongoing work and the analysis have not been finalised for all fisheries yet. Results obtained so far are presented in table III.C.5. However, the CV values are calculated by metiers and the table only allows to present the CV values on a species level.

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

Source	Recommendation	Action
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.*	SWEDEN HAS SUBMITTED A WD TO THE ASS WG IN 2007 WHICH SHOWED NO DISCREPANCY BETWEEN THE METIERS IN THE SWEDISH FISHERY.
RCM NS & EA	*For the purposes of ranking métiers to sample, National data on effort, landings and value by métier and fishing ground*	SWEDEN WILL USE THE AGREED NAMING OF

(2009)	*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.*	FISHING GROUND, METIERS AND UNITS OF THE VARIABLES AS WELL AS RESPECT THE DEADLINE
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 & EA (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 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*	SWEDEN WILL PRODUCE THE DESCRIPTION OF THE METIERS USING THE FORMAT IN ANNEX 3 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.**	SE HAS ALREADY INCLUDED A SHORT DESCRIPTION OF ALL METIERS IN PROGRAMME FOR 2009-2010.
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.**	SE 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 <u>IN GENERAL</u> 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.**	SE WILL CONTRIBUTE WITH THIS INFORMATION.

III.C.4 Actions to avoid shortfalls

One of the main reasons for inconsistencies between planned no of trips to be sampled and what is achieved is that it is sometimes is difficult to predict spatial and temporal fishing patterns for some metiers at the time of writing the National Programme. To some degree this is inherent to the time lag between the compilation of the National Programme and the sampling year. To a certain degree the problem can be reduced by implementation of proper sampling frames where the metiers can be seen as domains instead of strata. This is something that Sweden is working on and will continue to work on the forth coming years. Sweden will

further continue to develop the sampling designs in order to reduce some of the logistical problems that have risen after implementing a true random selection of trips to sample.

III.D Biological - Recreational fisheries

THE BALTIC SEA AND THE NORTH SEA AND EAST ARCTIC

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

For the Baltic Sea, salmon and cod are to be reported and for the North Sea only cod. Recreational fishery for eel is not allowed in Sweden and therefore no data has been collected.

Salmon
Swedish recreational salmon fishery in the Baltic takes place in rivers, at the coast and in the sea. The estimates of recreational catches at the coast and in the sea in 2009 utilized results from a pilot study (Anon. 2003) and updated information collected in 2007. Collection of river data is carried out annually in accordance with routines described in the pilot study. Summarized data are delivered to the relevant ICES group (WGBAST). There is also a sampling (length, weight, age, sex) in the fishery and as no separate reporting tables are provided for recreational fisheries the results are included in Table III.C.5 and III.E.3. No deviations from the NP proposal.

Cod and salmon – Probability sample survey
Studies as a probability sample survey on recreational fisheries has been commissioned by the Swedish Board of Fisheries and carried out by Statistics Sweden in 2009.

A postal questionnaire was as planned in the NP sent to 10 000 randomly selected permanent residence in Sweden aged 16 to 74. In Sweden recreational fishing is not licensed as they are in for example Denmark or Finland. Sweden do not either have any register on recreational fishermen which is a problem when it comes to collecting data on recreational fisheries.

The postal questionnaire was sent in two steps.

Step 1. The first enquiry aim was to catch the inhabitants that actually performed recreational fishery during 2008.

Step 2. In the second step, the persons who were actively fishing during 2008 received a more comprehensive postal enquiry. This enquiry had 21 questions to be answered and the results give a picture of the recreational fishery regarding gears used , number of days, species composition in the catch and the size of the catch (in kg) and fishing area.

In the first step the questionnaire resulted in 1800 persons that actually were recreational fishermen. In the second step it was 1100 persons that answered the questionnaire.

The studies shown that recreational fisheries are practised by an estimated 1 million Swedes aged 16 to 74. In 2008 the kept part of the catch are estimated 11 800 ton. The marine part of the catches are estimated 4 100 ton and in inland waters 7 700 ton.

The results from the study on recreational cod fisheries:

Recreational fisheries; sportfishing, rod and line

Area	Number of fishermen catching cod in the questionnaire	Estimated number of fishermen catching cod	Estimated catches of cod, tons
Skagerrak, Kattegatt	21	13 645	34
Baltic Sea	14	8 161	64
Unknown area	2	373	9
Total	37	22 179	108

Recretional fisheries, net and other passive gears

Area	Number of fishermen catching cod in the questionnaire	Estimated number of fishermen catching cod	Estimated catches of cod, tons
Skagerrak, Kattegatt	1	2 211	11
Baltic Sea	15	4 691	26
Unknown area	3	1 818	6
Total	19	8 720	42

Recretional fisheries, total, all gear

Area	Number of fishermen catching cod in the questionnaire	Estimated number of fishermen catching cod	Estimated catches of cod, tons
Skagerrak, Kattegatt	22	15 856	45
Baltic Sea	29	12 852	90
Unknown area	5	2 191	15
Total	56	30 899	150

There was no deviation in the data collection compared to what was planned in the NP proposal.

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

Salmon
A survey directed towards recreational salmon fishermen was carried out in a large northern salmon river. The result from this survey corroborated earlier beliefs of poor quality of catch data from this river. It gives further information of the need for annual surveys in this and other rivers with a similar organization of the fishery. There are no deviations from NP proposals.

Cod – Probability sample survey

There was no deviation in the achieved accuracy compared to what was planned in the relevant NP Proposal.

It is in the future important to increase the number of questionnaires reaching recreational fishermen catching cod. This means that the questionnaire in a higher degree need to be sent to randomly selected permanent residence in the southern parts of Sweden. The method of the actual probability sample survey will be evaluated in 2010. As a cross-control the results from the probability sample survey will be compared with a pilot study on recreational fisheries in Öresund and other sources.

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

Source	Recommendation	Action
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).*	SE WILL PARTICIPATE IN WK AND ACTIONS WILL BE 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.*	SWEDEN WILL PROVIDE OVERVIEW OF INLAND SAMPLING (TEMPORAL, SPATIAL, DISTRIBUTION, SAMPLING INTENSITIES, INVOLVED INSTITUTES) TO THE RCM MEETING IN 2010

III.D.4 Actions to avoid shortfalls

Salmon
There is a plan to carry out better designed and larger surveys to improve the poor quality of the catch data in some rivers.

Cod – Probability sample survey
It is in the future important to increase the number of questionnaires reaching recreational fishermen catching cod. This means that the questionnaire in a higher degree need to be sent to randomly selected permanent residence in the southern parts of Sweden. The method of the actual probability sample survey will be evaluated in 2010. As a cross-control the results from the probability sample survey will be compared with a pilot study on recreational fisheries in Öresund and other sources.

III.E Biological - stock-related variables

THE BALTIC SEA

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

All stocks sampled during 2009 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.

To get catch-in-numbers (CANUM) and weight-in-catch (WECA) by age group, sampling of the landing is undertaken. Simple random sampling was used for pelagic stocks, plaice, eel and flounder and simple random sampling with extra length measurements was used for the cod stocks. The simple random sampling means that a fixed number of individuals were sampled randomly within market size category (if sorted) /unit (unit =area, quarter and gear). All individuals in a sample were analyzed according to length, weight and age. For cod stocks, the idea is to sample all age classes in the population equally in number within a unit to build a robust Age Length Key. In order to distinguish between the different fisheries, extra length measurements are collected for each fishery (5 boats / sampling unit). The reason to add extra length measurements to the simple random sampling design is to get age-dis-aggregated information from three fisheries without increasing the number of age samples further.

To receive high quality age dis-aggregated data, a certain number of individuals for a stock were sampled per unit (area/quarter/gear) <u>independent of landing size</u>. This sampling strategy was aiming towards a more precision based sampling approach and CV on the different variables is presented for some of the stocks.
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 and a fixed number per length class was sampled for age, sex, maturity and weight. For stocks sampled on surveys and onboard fishing vessels, the length can be given an age by using an Age-Length-Key.

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. In table III.E.3 planned numbers has therefore been market as NA.

Samples of herring and sprat were collected by Denmark according to the bilateral agreements and number of individuals collected is included in table III.E.3.

Sampling of salmon and trout
Sampling of the commercial salmon and sea trout catches in the coastal métier (FPO_ANA_0_0_0) was carried out in the Gulf of Bothnia (ICES sub-divisions 30-31). The sampling was partly carried out by selected fishermen themselves in different coastal regions and the data collected include length, weight and sex of individual fish. This sampling is also

representative of the recreational fishery using similar gear. Scales are collected from all fish in samples. Scales are used for aging, determination of whether the fish is of wild or reared origin and genetic studies.

Recreational fishery was sampled in two rivers in Gulf of Bothnia and one river in the Main Basin, where catch samples of salmon and sea trout are collected throughout the fishing season. The monitored variables include smolt age, sea-age, sex, origin (wild/reared) and size at capture (weight and length). These data are an integral part of the assessment of the spawning run composition and the effects of the fishery. Data on fecundity was collected by a recreational brood stock fishery in River Dalälven, Sub-division 30.

River monitoring of wild salmon and sea trout stocks
In 2006-2008 river monitoring of Swedish wild salmon stocks was included in the NP. The monitoring consisted of annual electrofishing surveys of salmon and sea trout parr in wild salmon rivers, running of a smolt trap for emigrating smolts and maintaining counting of ascending salmon and sea trout spawners in fishladders in three rivers. In the new Commission Regulation valid for 2009-10, it is stated that countries should establish salmon index rivers, as defined bv ICES, for counting of smolts, numbers of ascending spawners and estimating densities of parr. As Sweden has a major part of the Baltic salmon rivers, this had major implications for the Swedish monitoring system. According to ICES definitions Sweden established three index rivers, two in Gulf of Bothnia and one in the Main Basin instead of one partial small index river as have been in use earlier (Sävarån).

Establishment of index rivers is normally associated with major costs because basic facilities are needed for the counting activities and the costs for running the investigations are also substantial. In order to handle the new demands it was been necessary to decrease the amount of monitoring in other non-index rivers. Furthermore SBF co-operated with other bodies, both private companies and regional and local agencies and local organizations as well as the Swedish University of Agrigculture (SLU). These are used as subcontractors and they are also contributing considerable amounts of money to the index river projects. The Swedish Board of Fisheries is responsible for project management and in some cases also detailed planning and reporting of results. These projects are seen as important parts of a new salmon management plan that is expected to replace the SAP plan (1997-2010) soon. As the Board of Fisheries will not own any of the investments in fishladders nor the new smolt traps it will be considered as subcontracting costs.

The result for index rivers in 2009 is as described in the text table below.

River	Smolt count	Adult count	Electro-fishing	Need for investment
Ume/Vindelalven, Sub-div. 31, a large river	New trap was operated.	Use of existing fishladder in 2009, need for improvement	Yes	Smolt traps and considerable investments in counting equipment in fishladder in 2009-10
Savaran, Sub-div. 31, a small river	Existing traps operated	Not in 2009 or 2010	Yes	Investigation of solution for adult counting in 2009, solution expected for 2011
Morrumsan, Sub-div. 25, midsize river	New trap was operated	Use of existing fishladder in 2009, need for improvement	Yes	Improvement of inlet to fishladder planned for 2010, counting equipment in fishladder in 2010

In addition to the monitoring of the index rivers operation of a fishladder in River Kalixalven

and electrofishing is included in the NP. All data from electrofishing survey are collected in a national database covering all Swedish surveys (SERS). Other data are also collected and kept in a database that is partly operated by the Board of Fisheries. It is expected that it will take about two years to get all datasets in order. All data from river monitoring will be reported to the relevant ICES Working Group (WGBAST).

Deviations in sampling,

Eel (*Anguilla anguilla*) SD 23, 24, 25 & 27.
Deviation in numbers of eel samples are due to bad weather conditions that caused lower number of collected eel. To achieve planed number of samples, it requires 5 samples per cm-class.

Herring (*Clupea harengus*)
SD 22-24; Due to very low fishing activity in quarter three, and only a few weeks of fishing in quarter two, hardly no sampling was performed in these quarters and therefore the planned numbers to be sampled were not possible to fulfill. (600 individuals per quarter planned numbers times 2 were impossible to sample).

SD30-31; Herring samples from gillnet fisheries in sd 30-31 are under-sampled for age due to lack of 3 fishing trips. Therefore the achieved number ended up slightly below planned numbers due to lower fishing activity during the first part of quarter 2 in subdivision 31 and problems with collecting the fish samples.

Salmon (*Salmo salar*)
The number of fish sampled was 19% lower than planned. The reason is mainly that coastal fishermen (FPO_ANA_0_0_0) were either unable to participate due to illness or that they did not accept sampling of their fishery.

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

Sweden has started to work intensively with the COST tool package to analyse the data collected in 2009, both using the exploratory runs as well as the CV analyses. A workplan has been set up, a lot of time has been spent to getting the data in the right exchange format and Sweden sent participants to join the COST workshop. However, in COST there are still crucial parts missing and the tool cannot deal with some basic sampling strategies used in Sweden and other MS. So far, there has only been possible to use the COST tool for analysing CV for some parameters, and for the others we have used boot strap and analytical methods to calculate CV.

COST has not been developed to be dealing with survey data and therefore Sweden has developed a script in R to analyse the variance on mean weight and length for different age classes and consequently estimate average CV for all age classes. The script has been used for data collected during the surveys conducted in quarter 1 and therefore the CV values, presented in table III.E.3, only refers to this quarter.

At present, the script is in a preliminary form and will be further developed in order to calculate CV also for maturity and sex ratio. Therefore, these CV values are not reported for 2009.

The COST tool is still of great value and the fact that an agreed data exchange format has been established is a big step forward, to achieve a harmonised way for analysing the quality in the data. Sweden is therefore planning to continue working with the COST tool and seek for possibilities for develop the parts that are not working at the moment.

Salmon
Smolt traps operated successfully in Ume/Vindelälven and Morrumsan in 2009, but a preliminary analysis shows that more narrow confidence intervals of production figures are needed to provide high quality estimates.

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 th 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.*	SWEDEN IS RESPONSIBLE FOR COMPILING THE DATA FROM ALL MS TO BE USED IN RCM 2010.
RCM Baltic (2009)	*MS to use the average landing figures over the ye 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 .***	SE WILL SEEK FOR TASK SHARING IN THESE CASES
RCM Baltic (2006)	***THE RCM BALTIC RECOMMENDS THAT FINLAND AND SWEDEN WILL EVALUATE THE COLLECTION OF BIOLOGICAL DATA OF THE HERRING FISHERY IN THE GULF OF BOTHNIA IN ORDER TO ELABORATE CONGRUENT PROCEDURES. THE POSSIBILITIES TO HARMONIZE THE COLLECTION OF CORRESPONDING ECONOMIC DATA SHOULD BE EVALUATED.***	IN 2007 FINLAND AND SWEDEN HAVE CONDUCTED INTERCALIBRATION IN BOTH AGE READING (COMPARING METHODS) AND MATURITY STAGING OF HERRING. HARMONIZATION OF SAMPLING METHODS ARE UNDER DISCUSSION. IMPROVEMENT OF ALL ASPECTS REGARDING THE JOINT ACOUSTIC SURVEY IN SD30 ARE ALSO DISCUSSED AND A MEETING IN END OF MAY 2008 IS PLANNED FOR SUCH DISCUSSIONS. HOWEVER IT IS A GOAL OF SWEDEN TO CONTINUE THE WORK ON HARMONIZING BOTH THE BIOLOGICAL AND ECONOMICAL COLLECTION OF DATA.
RCM Baltic (Jan 2005)	***3.2 BALTIC RCM RECOMMENDS IN CASE WHERE MORE THAN 5 PERCENT OF THE NATIONAL QUOTA IS LANDED IN A FOREIGN COUNTRY, BILATERAL AGREEMENTS SHOULD BE MADE.***	BILATERAL AGREEMENTS HAS BEEN DONE YEARLY. AND FOR 2005 THIS WAS DONE BETWEEN SWEDEN AND DENMARK IN JANUARY 2005 AND SWEDEN AND GERMANY IN MAY 2005.
RCM Baltic (Jan 2005)	***5.1 THE RCM RECOMMEND THAT BOTH EASTERN AND WESTERN BALTIC COD, OTOLITHS WEIGHT SHOULD ON A ROUTINE BASIS BE COLLECTED AS A COMPLEMENT TO AGE READING. THIS MUST START FROM 2005.***	SWEDEN IS RECORDING WEIGHT ON COD OTOLITHS ON A ROUTINE BASIS.
RCM Baltic	***6.1 THE RCM RECOMMENDS THAT SAMPLING SHOULD BE CARRIED OUT THROUGH OUT THE***	SWEDEN IS SAMPLING DATA ON OTHER BIOLOGICAL PARAMETERS EVERY YEAR.

(Jan 2005)	*ENTIRE TRI ANNUAL PERIOD.*	

III.E.4 Actions to avoid shortfalls

Eel (*Anguilla anguilla*) SD 23, 24, 25 & 27.
To achieve planned number of samples, it requires 5 samples per cm-class.

Herring IIIb-d sd 30-31
To achieve planned number of samples it requires 20 age samples per 0,5 cm-class.

Salmon (*Salmo salar*)
In the NP for 2010 several actions are taken to remedy the wide confidence intervals for results from smolt trapping. This includes better coverage of the entire migration season, education of more personnel and development of trapping methods.

Regarding CV calculation which has not been undertaken, Sweden is planning to continue working with the COST tool and seek for possibilities for develop the parts that are not working at the moment.

THE NORTH SEA AND EAST ARCTIC

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

All stocks sampled during 2009 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.

To get catch-in-numbers (CANUM) and weight-in-catch (WECA) by age group, sampling of the landing is conducted. Simple random sampling was used for pelagic stocks, plaice, and cod. Simple random sampling means that a fixed number of individuals were sampled randomly within market size category (if sorted) /unit (unit =area, quarter and gear). All individuals in a sample were analyzed according to length, weight and age.

To receive high quality age dis-aggregated data, a certain number of individuals for a stock were sampled per unit (area/quarter/gear) independent of landing size. This sampling strategy was aiming towards a more precision based sampling approach and CV on the different variables is presented for some of the stocks.

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 and a fixed

number per length class was sampled for age, sex, maturity and weight. For stocks sampled on surveys and onboard fishing vessels, the length can be given an age by using an Age-Length-Key.

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 dependent on the amount of catch. In table III.E.3 planned numbers has therefore been market as "NA" because numbers of individuals cannot be planned in advance.

Deviations in sampling

Eel (*Anguilla anguilla*) IIIaN and IIIaS
Deviation in numbers of eel samples are due to bad weather conditions that caused lower number of collected eel. To achieve planned number of samples, it requires 5 samples per cm-class.

Cod (*Gadus morhua*)
Cod sampled in IIIa S has not reached the planned numbers (at the auction) and the amount sampled in IIIa N has reached numbers above the planned numbers. Cod that was sampled and thought to be caught in IIIa S was instead caught in IIIa N.

Cod in IIIa N has been over-sampled within the sea sampling but without an extra cost. No extra trips were conducted and only more individuals were sampled for age compared to what was planned due to more individuals in the catch. Planned numbers refers to the caught amount in previous years.

Witch flounder (*Glyptocephalus cynoglossus)*
The sampling of the "new" species witch flounder was more intense compared to what was planned. To get a good data set per quarter the target was changed to sample 400-500 individuals per fishing quarter instead of 500 individuals in total. The data will be analysed through COST to see what CV we reach to be able to establish a good sampling level for this stock. Sweden also participated in lot 4 during 2009 to work on getting better knowledge of the species.

Nephrops (*Nephrops norvegicus*)
The aim is to take length measures from as many different hauls as possible. For Nephrops in IIIa N too few subsamples was taken and resulted in an incomplete numbers of length measured individuals compared to the planned numbers.

The planned numbers to be sampled of Nephrops in IIIa S was based on wrong figures and should be 8 300 instead of 10 200 stated in NP 2009-2010. The new figures are based on real sample weights and numbers of individuals / kg.

Plaice (*Pleuronectes platessa*)
No market sampling was conducted during 2009 in accordance with a bilateral agreement with Denmark. This was not taken into account in the planned numbers. Therefore, only half of the individuals are reported collected in the sea sampling program.

Sprat (*Sprattus sprattus*)
2000 individuals of sprat was in NP 2009-2010 planned to be sampled. The planned numbers had to be revised (to 1000) due to fishing activity only in two quarters instead of four. (500 individuals per quarter and area makes 1000 in total). The numbers reached was below planned due to fewer individuals of sprat in the mixed samples than expected.

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

Sweden has started to work intensively with the COST tool package to analyse the data collected in 2009, both using the exploratory runs as well as the CV analyses. A workplan has been set up, a lot of time has been spent to getting the data in the right exchange format and Sweden sent participants to join the COST workshop. However, In COST there are still crucial parts missing and the tool cannot deal with some basic sampling strategies used in Sweden and other MS. So far, there has only been possible to use the COST tool for analysing CV for some parameters, and for the others we have used boot strap and analytical methods to calculate CV.

COST has not been developed to be dealing with survey data and therefore Sweden has developed a script in R to analyse the variance on mean weight and length for different age classes and consequently estimate average CV for all age classes. The script has been used for data collected during the surveys conducted in quarter 1 and therefore the CV values, presented in table III.E.3, only refers to this quarter.

At present, the script is in a preliminary form and will be further developed in order to calculate CV also for maturity and sex ratio. Therefore, these CV values are not reported for 2009.

The COST tool is still of great value and the fact that an agreed data exchange format has been established is a big step forward, to achieve a harmonised way for analysing the quality in the data. Sweden is therefore planning to continue working with the COST tool and seek for possibilities for develop the parts that are not working at the moment.

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.*	SWEDEN IS RESPONSIBLE FOR COMPILING THE DATA FROM ALL MS TO BE USED IN RCM 2010.
RCM NS & EA (2008)	**Stock variables: Minimum required taxonomical levels for identification**	AFTER APPROVAL BY STECF, SE WILL ADOPT THE CHANGES
RCM NS & EA (2008)	**Stock variables: Group 3 on a higher taxonomical level**	AFTER APPROVAL BY STECF, SE WILL ADOPT THE CHANGES
RCM NS & EA (2008)	**Stock variables: Recommended changes in G-status**	AFTER APPROVAL BY STECF, SE WILL ADOPT 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.

RCM North Sea (2005)	*7.1 RCM North Sea expects that all labs will update the spreadsheet with their cod sampling information on a monthly basis.*	Sweden has not updated the spreadsheet.
RCM North Sea (2005)	*8.1 RCM North Sea recommends that all countries having data on NS cod participate in the proposed workshop on FishFrame (Chair: Henrik Degel, mid-January 2006, Copenhagen, Denmark).*	Sweden was represented by one participant in the FishFrame workshop
RCM North Sea (2005)	*9.1 RCM North Sea recommended that data are submitted to FishFrame, starting with the 2004 and 2005 data for North Sea cod before 1 May 2006.*	Data will be delivered before 1st June 2006.
RCM North Sea (2005)	*17.1 The RCM North Sea reiterates its 2004 recommendation on the conclusion of formal bilateral agreements on the sampling of foreign flag vessels, and on the inclusion of these agreements in the MS' national programme proposals.*	Bilateral agreements between Sweden and Denmark and Sweden and Germany were updated in first quarter of 2006.

III.E.4 Actions to avoid shortfalls

<u>Eel (Anguilla anguilla) IIIaN and IIIaS</u>
To achieve planned number of samples, it requires 5 samples per cm-class.

Regarding CV calculation which has not been undertaken, Sweden is planning to continue working with the COST tool and seek for possibilities for develop the parts that are not working at the moment.

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.

Capacity data was obtained from the fleet register. In order to segment the fleet logbooks and coastal journals was used to obtain the main gear type used. The dominance criteria to allocate each vessel to a segment were based on the number of fishing days used with each gear.

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.

Capacity data was collected exhaustively in the fleet register (Database Fartyg 2).

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.

Data was acquired as defined in Appendix VIII of the Commission decision 2008/949/EC. All spatial data used to calculate time in area for vessels reporting in logbook, was based on best information from VMS, AIS (where applicable), Effort reports, logbook and inspection information (sighting etc). The spatial data was stored trip by trip with information for each record on vessel, position (long/lat), and time and data source. Information on activity and gear onboard was linked to each trip.

Vessel not obliged to keep logbook reported there effort information in the monthly coastal journal. Data on gear capacity and activity was collected as well as information on days at sea/fishing days. For simplicity reason calendar day was used instead of 24-hour periods for the calculation of activities of vessels under 8m/10m without logbook.

Effort calculation related to static gear did not include time in port since it was almost impossible to calculate with any precision. In small scale fisheries different vessels could be used for setting gears and collecting gears or collecting catch from gears. It is also possible that gears belonging to two different vessels (on territorial waters) is set by only one of the vessels and later collected by each vessel. In order to have conformity with management effort calculations, fishing days for static gears was calculated in accordance with management provisions for calculating effort for static gears. Thus, calculating of fishing days included time when a vessel was out of port with gears on board or in sea, without just being transiting.

Variable Data sources and methodologies	Variable Data sources and methodologies
Days at sea	Spatial data sources (described above) and coastal journals for vessels without logbook
Hours fished.	Effort data in logbook (haul by haul records) information
kW * Fishing Days	Fleet register and logbook/coastal journal
GT * Fishing days	Fleet register and logbook/coastal journal
Number of trips	Logbook/Coastal journal (gear information)
Number of rigs	Logbook/Coastal journal (gear information)
Number of fishing Operations	Logbook/Coastal journal
Number of nets, Length	Logbook/Coastal journal
Number of hooks, Number of lines	Logbook/Coastal journal
Numbers of pots, traps	Logbook/Coastal journal
Soaking time	Logbook/Coastal journal

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.

Effort data derived from the same datasets used to monitor quotas and effort limitations. Comprehensive validations were made during the database entry process (logbook, landing declarations, sales notes, Coastal journals, effort reports). Spatial data from logbook, VMS, effort reports, sightings etc were compiled trip by trip. The trip information was crosschecked in order to verify catch and effort area information in the logbook and to calculate time in different effort areas. Cross-checking of effort information in the monthly coastal journals was not made on a trip by trip base and not on a regular base.

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.

Data was acquired as defined in Appendix VIII of the Commission decision 2008/949/EC.

Variable Data sources and methodologies	Variable Data sources and methodologies
Value of landings total and per commercial species	Logbook/Landing declaration, Coastal Journal and salesnotes. Since all quantity in a landing does not necessarily end up in a salesnote, an average price for the species landed was used instead of the corresponding sales note. For monthly coastal journals an average for the month was used. The average prices were based on species, landing location and landing date.
Live Weight of landings total and per species	Logbook/Landing declaration and Coastal Journal. National conversion factors (same as for quota calculation) were used to calculate live weight from product weight.
Prices by commercial Species	Sales notes
Conversion factor per species	National conversion factors (same as for quota calculation) were used to calculate live weight from product weight.

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.

Landing data derive from the same datasets used to monitor quotas. Comprehensive validations were made during the database entry process (logbook, landing declarations, sales notes, Coastal journals, effort reports). Catch, landing and sales data as well as spatial data from logbook, VMS, effort reports, etc was compiled trip by trip. The trip information was crosschecked in order to verify catch and catch area information in the logbook. Crosschecking of information in the monthly coastal journals was not made on a trip by trip base and not on a regular base.

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

During 2009, Sweden has as planned undertaken five surveys in the Baltic Sea, Kattegat and Skagerrak using the R/V ARGOS. Sweden also participated as planned in the joint survey in area IIa. The new NTV survey in Skagerrak and Kattegat was undertaken for the first time during 2009.

A summary table of the surveys is presented in table III.G.1. A short summary of the different surveys undertaken in 2009 follows below.

BITS first and fourth quarter

The main aim of the survey is to estimate cod recruitment indices and cod abundance in the different Sub-Divisions in the Baltic. The BITS survey is coordinated by the ICES Baltic International Fish Survey Working Group (WGBIFS).

All Swedish survey data are stored in "Fish sample database" (IMR, Sweden) and sent to DATRAS for international data storage. The present surveys provide data to the ICES Baltic Fisheries Assessment Working Group (WGBFAS).

BITS first quarter

The survey was conducted during the period 23/2 - 12/3 using the TV3 demersal trawl according to the BITS manual (Anon., 2008a). Overall, 51 fish hauls were made in SD 25, 27 and 28 from the Tow Database and were completed within 15 days at sea (Map1.a). Two hauls in SD 25E were invalid but were replaced with other stations.

During the survey, a pilot study was performed following the recommendation of the WGBIFS (2008). The pilot study had the aim to explore the distribution of cod in areas with oxygen deficiency (defined as < 1 ml/l of oxygen concentration) at the bottom in SD 28 and SD 25. Five acoustic transects (3 in SD 28 and 2 in SD 25) were performed during daylight and darkness, trying to follow a gradient between good oxygen condition at bottom and no oxygen at bottom. Detailed oxygen conditions at bottom were however collected only along 4 transects (2 in SD 28 and 2 in SD 25).

Bottom trawls at night were also conducted to study the potential diel vertical migration of cod. For this purpose a total of 16 hauls were made at 8 stations, 4 in SD 28 and 4 in SD 25. Each haul lasted 30 minutes and the catches were analyzed according to the standard BITS procedure. For more details about the pilot study setup, see WGBIFS (2008b).

Almost all cod (totally 23 167) were measured and otoliths from 1 044 individuals were taken. From the catch of flounder (totally 15 517), otoliths were taken from 326 individuals. Overall, 28 fish species were caught during the survey and the catch was dominated by herring, sprat, cod and flounder.

Map 1a

BITS cod survey in the Baltic
with R/V Argos

23 February -12 March 2009
Serie no: 203- 287
Hauls with TV3L demersal trawl: 51

• station
— transect

Map 1a. Trawl stations BITS first quarter survey 2009.

Bilaga 4. Experimentområdet i SD 25. U/F Argos feb-mars 2009. Transekterna T4-T5 (röda). Hydrografistationerna T4:1-T4:8på transekt T4 och T5:1-T5:4 på transekt T5 (svarta). Trålstationerna F, I, J och K med dag/natt-drag (blå). Djup i meter (grönt). Tabell med syrehalt på hydrografistationerna, 1 meter ovanför botten.
App. 4. Experiment design in SD 25. R/V Argos Febr.-March 2009. T4-T5, transects (red). T4:1 -T4:8 and T5:1 - T5:4, hydrographical stations along the transect T4 and T5, respectively (black). F, I, J, K, double trawl stations for day/night comparison (blue). Depth in meters (green). Table with oxygen concentration at the hydrographical stations (1 meter above the bottom).

Station	Syre/oxygen (ml/l)
T4:1	9,05
T4:2	9,02
T4:3	8,98
T4:4	1,41
T4:5	1,45
T4:6	0,83
T4:7	1,25
T4:8	1,47
T5:1	8,83
T5:1b	5,90
T5:1c	0,54
T5:2	1,02
T5:3	1,18
T5:3b	1,20
T5:4	1,89

Map 1.b BITS first quarter survey 2009. Experiment design in SD25. Hydrographical stations along T4-T5 transects (black). F, I-K double trawl stations for day and night comparison (blue).
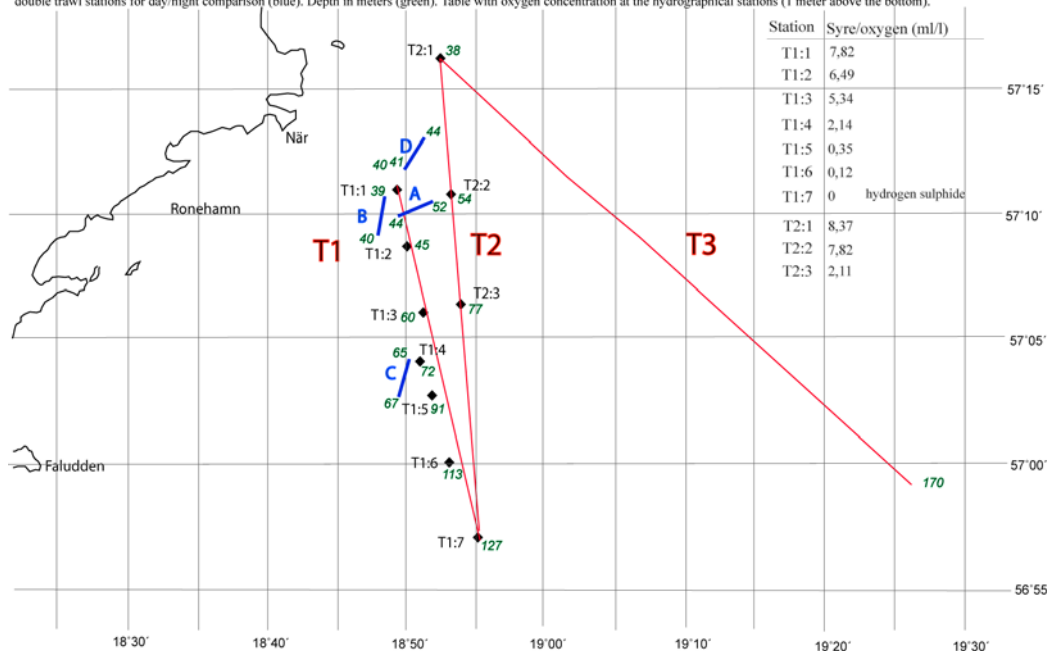
Map 1.c BITS first quarter survey 2009. Experimental design in SD28. Hydrographical stations along transects T1 and T2 (black). A-D double trawl stations for day and night comparison (blue).
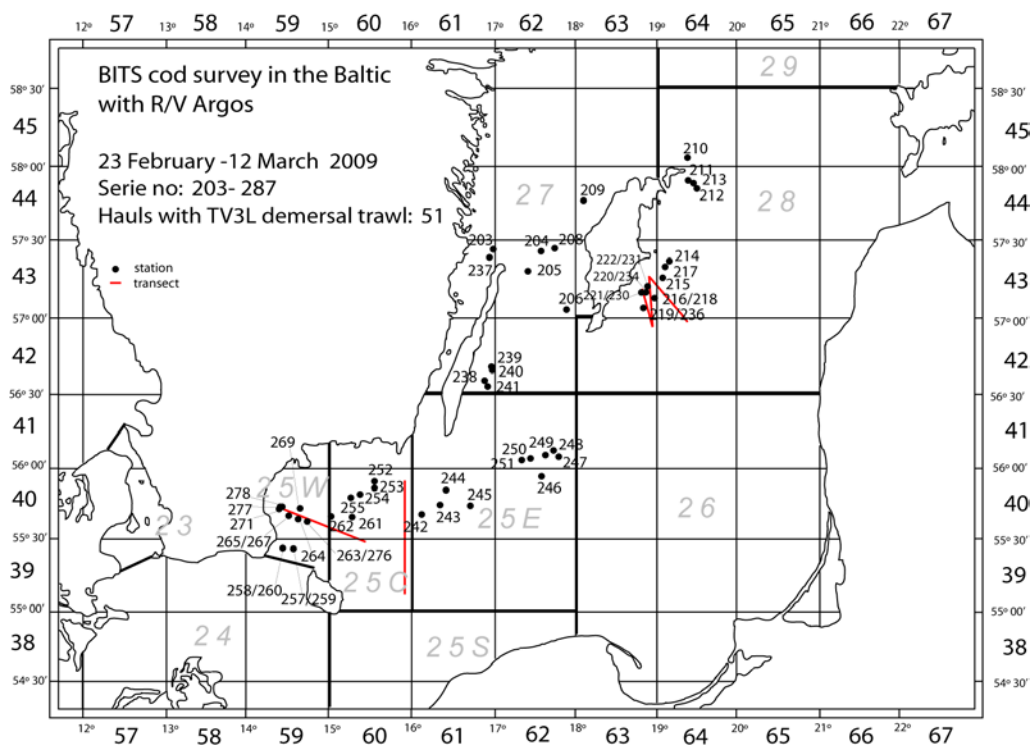
BITS fourth quarter

The survey was conducted during the period 16 – 26/11 using the TV3 demersal trawl according to the BITS manual (Anon., 2008a). Sweden was assigned 30 randomly selected hauls in SD 25, 27 and 28 from the Tow Database. In total, 30 valid hauls was realized during this survey within 10 days at sea.

Overall, Argos made 38 hauls with TV3L demersal trawl (Map 2) (including 1 invalid haul and 7 fictitious hauls which were not trawled due to oxygen concentration close to zero) and covered parts of SD 25, 27 and 28 this year. During the whole survey, acoustic data were continuously recorded.

Of the 14 799 cod caught, nearly everyone was measured and otoliths were taken from 1 079 individuals. Flounder, of which 8 945 were caught, was also analysed and otoliths were taken from 1 005 individuals. Overall, 21 fish species were caught in the Baltic during the survey and the catch was dominated by herring, sprat, cod and flounder.
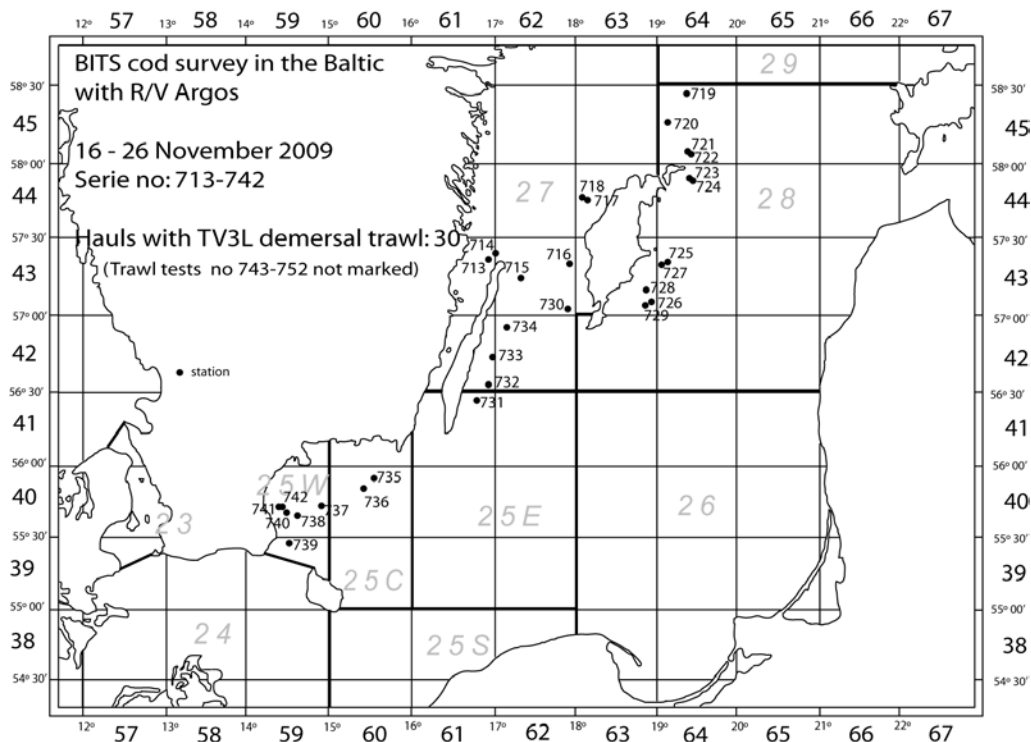
Map 2. Hauls with TV3L demersal trawl, BITS fourth quarter survey 2009

BIAS Baltic International Acoustic Survey

The main objective of the survey is to assess clupeoid resources in the Baltic Sea.

The R/V Argos cruise started 22/9 from Härnösand and ended 29/10 in Gothenburg. All trawl hauls were made using the Fotö Model 06 pelagic trawl with 6 mm mesh bar in the codend. In total 83 trawl hauls were carried out and the cruise covered ICES subdivision 27, 30 and parts of 25, 26, 28 and 29 (Map 3). Sweden follows the recommendations given by WGBIFS that states that the maximum sampling effort should preferably be used and therefore produces an age key by taking otoliths from each ICES rectangle covered by the survey. Sampling of otoliths, weight and maturity was performed on 4 456 herring and 1 932 sprat.

The surveys in September/October are coordinated within the frame of the Baltic International Acoustic Surveys (BIAS). The data are stored in "Fish sample database" (IMR, Sweden) and sent for international data storage to WGBIFS in the BAD1 database. The present survey will provide data to the ICES Assessment Working Group (WGBFAS). Data is also available to FishFrame.
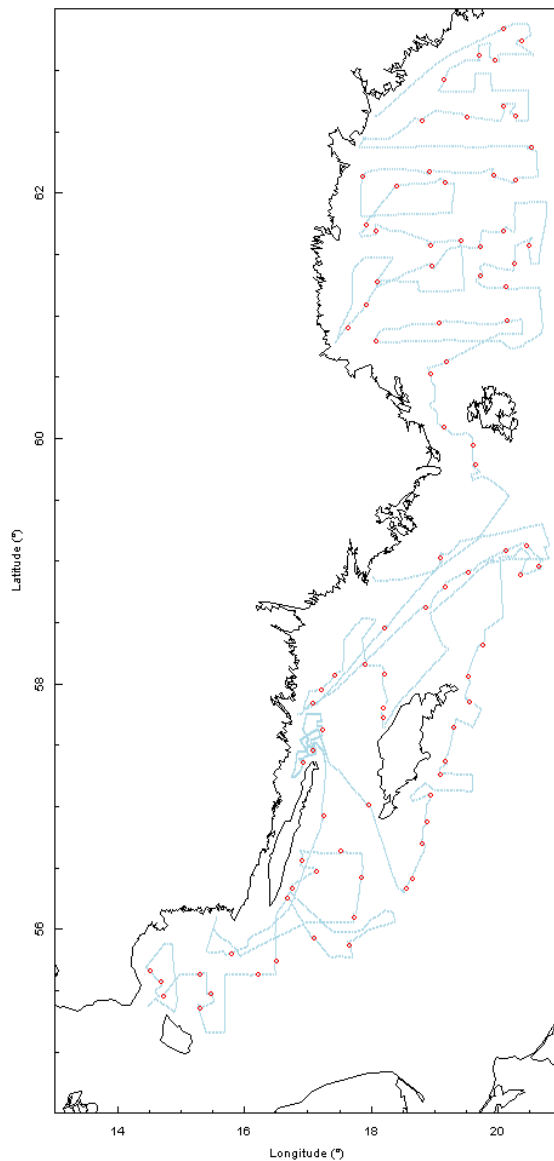
Map 3. Survey grid and trawl positions of R/V Argos during BIAS survey 2009

IBTS first and third quarter

The main aim of the survey is to estimate abundance of commercial fish species (cod, haddock, whiting, norway pout, herring, sprat, saithe and mackerel) and non commercial fish species 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. The IBTS survey is coordinated by the ICES International Bottom Trawl Survey Working Group.

All survey data are stored in "Fish sample database" (IMR, Sweden) and sent to DATRAS for international data storage. The present surveys provides data to the ICES Assessment working groups WGBFAS, HAWG and WGNSSK.

IBTS first quarter

The survey was conducted between 19/1 – 5/2 using the GOV demersal trawl according to the IBTS manual (Anon., 2006b). All planned hauls were completed within the 15 days at sea. In total 48 valid hauls with a GOV demersal trawl were made in the Skagerrak/Kattegat area (Map 4.a). Sampling of otoliths, individual weight and maturity stage was performed on 826 cod, 224 haddock, 49 saithe, 130 Norway pout, 694 plaice, 66 witch flounder, 1 533 herring and 826 sprat. Overall 68 fish species were caught. In total 55 larvae hauls (targeting herring and sprat larvae) were conducted during the nights using a MIK (Methots Isaacs Kidd) according to the IBTS manual (Anon., 2006b). On average, 18 herring larvae per haul but no sprat larvae were caught (Map 4.b)
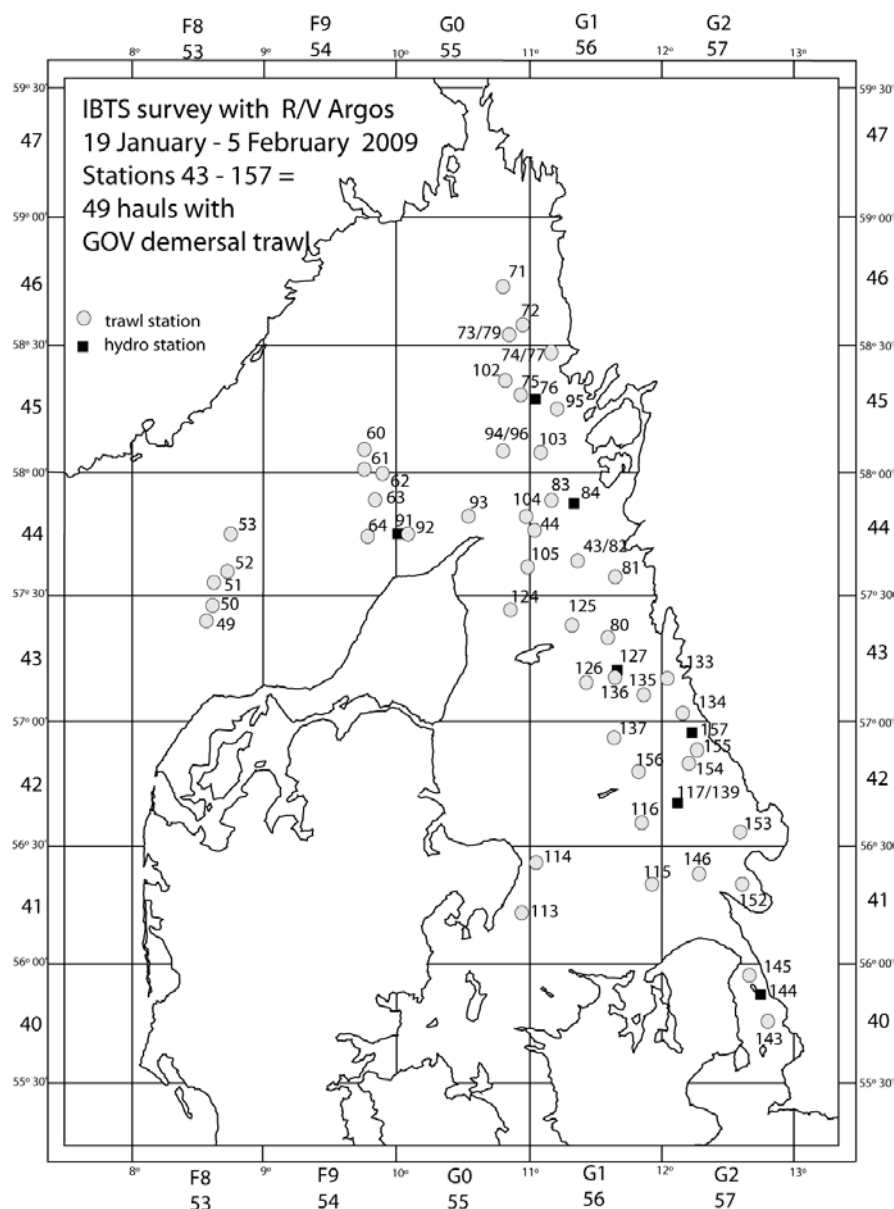
Map 4.a Hauls with GOV demersal trawl IBTS first quarter survey 2009.
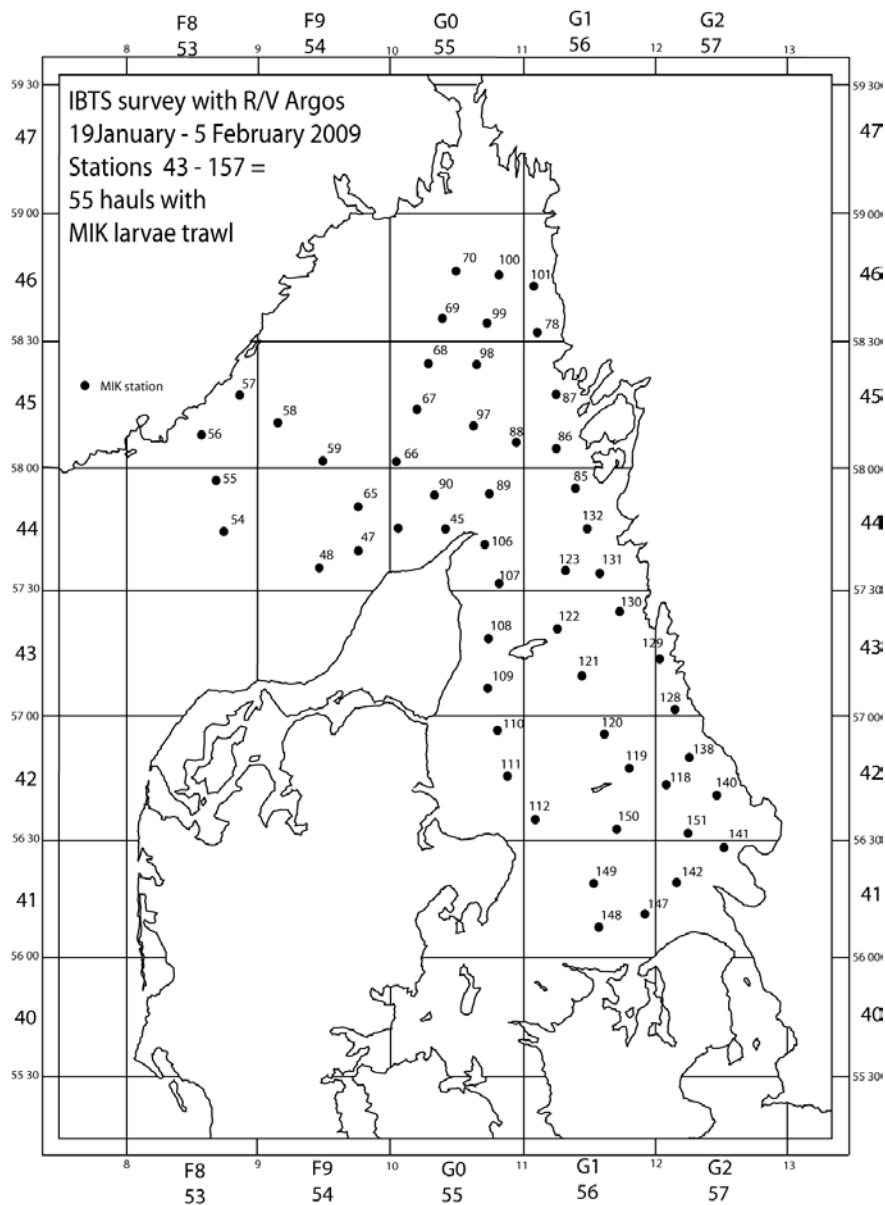
Map 4.b. MIK larvae trawl IBTS first quarter survey 2009

IBTS third quarter

The survey was conducted during the period 24/8– 10/9 using the GOV demersal trawl according to the IBTS manual (Anon., 2006b). All planned hauls could be made within 14 days at sea. In total 50 valid hauls using a GOV demersal trawl were made in the Skagerrak/Kattegat area (Map 5). Sampling of otoliths, individual weight and maturity stage was performed on 618 cod, 211 haddock, 108 saithe, 129 Norway pout, 787 plaice, 158 lemon sole, 111 witch flounder, 1 176 herring and 618 sprat.. Overall 61 fish species were caught.

On this survey we used a semi random stratified sampling design for the fifth time in the Skagerrak. The reason for this change is that the typography in the area is more divers compared to the rest of the North Sea.
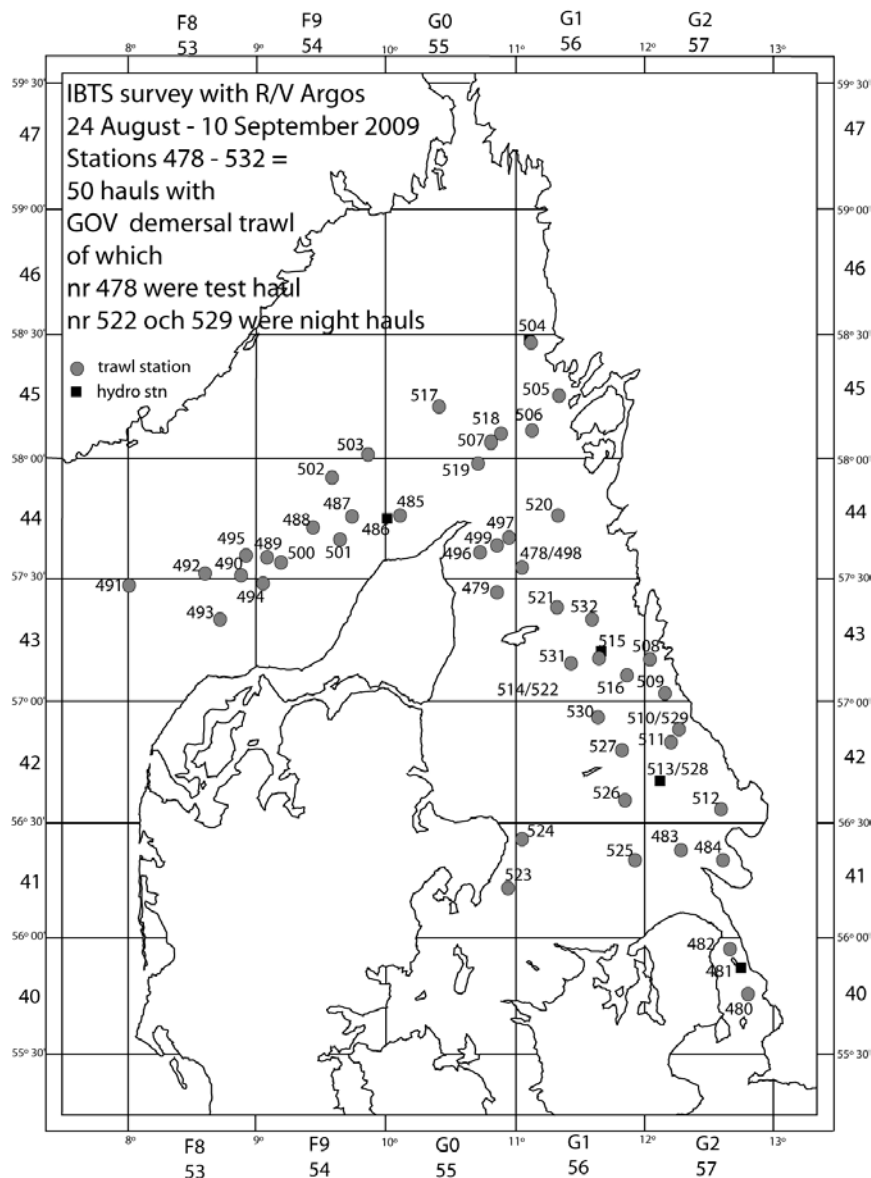
Map 5. Hauls with GOV demersal trawl IBTS third quarter survey 2009.

Underwater TV (UWTV) survey on *Nephrops* grounds.

Uncertainty over landings figures and concern over some of the analytical assumptions upon which analytical assessments are based, has lead to investigations into alternative approaches for providing *Nephrops* advice.

Nephrops stocks are limited to bottoms with suitable silty clay sediment where they live in burrows. This mud-burrowing species is protected from trawling while inside its burrow. Burrow emergence is known to vary with environmental (ambient light intensity) and biological (moult cycle, female reproductive condition) factors. Trawl surveys are therefore not ideal for *Nephrops*, and underwater TV (UWTV) has been developed as a means of estimating stock size from burrow densities.

The Marine laboratory in Aberdeen developed a fishery independent UWTV survey in order to estimate stock size from burrow densities. UWTV consists of a video camera mounted on a sledge that is towed slowly on the bottom by a vessel. *Nephrops* burrows are counted and converted into densities using information on the width of the view of the camera and length of the tow.

ICES Advisory Committee for Fisheries Management (ACFM) recommend that UWTV surveys should be used to provide biomass estimates for mud-burrowing animals like *Nephrops*.

The Swedish and Danish *Nephrops* fishery has got an increasing economic importance in recent years and it was agreed that Denmark and Sweden start a joint UWTV survey at around 90 stations in six sub-areas on *Nephrops* grounds in the Skagerrak and Kattegat during 2009 (see map 6).

The UWTV survey during 2009.
The Swedish research vessel came to Danish port 16/11 2009 (week 47) to be equipped with the Danish sledge and the UWTV survey was planned to be conducted during the weeks 48, 49 and 50 (to be terminated 11/12 2009). Only one of 48 planned Swedish sledge hauls were conducted due to extremely bad weather conditions.

The UWTV survey is very dependent of good weather and current conditions as the sledge shall be towed smoothly at 0.5 – 0.8 knots. Due to extremely bad weather conditions during the whole period the vessel was at sea only two times. During the first possible survey day the current was too strong to handle the sledge and the vessel was forced to go back to port. During the second opportunity the vessel engine had a breakdown and was forced to go to shipyard and new gales turned up and prevented us from continuing the UWTV survey.
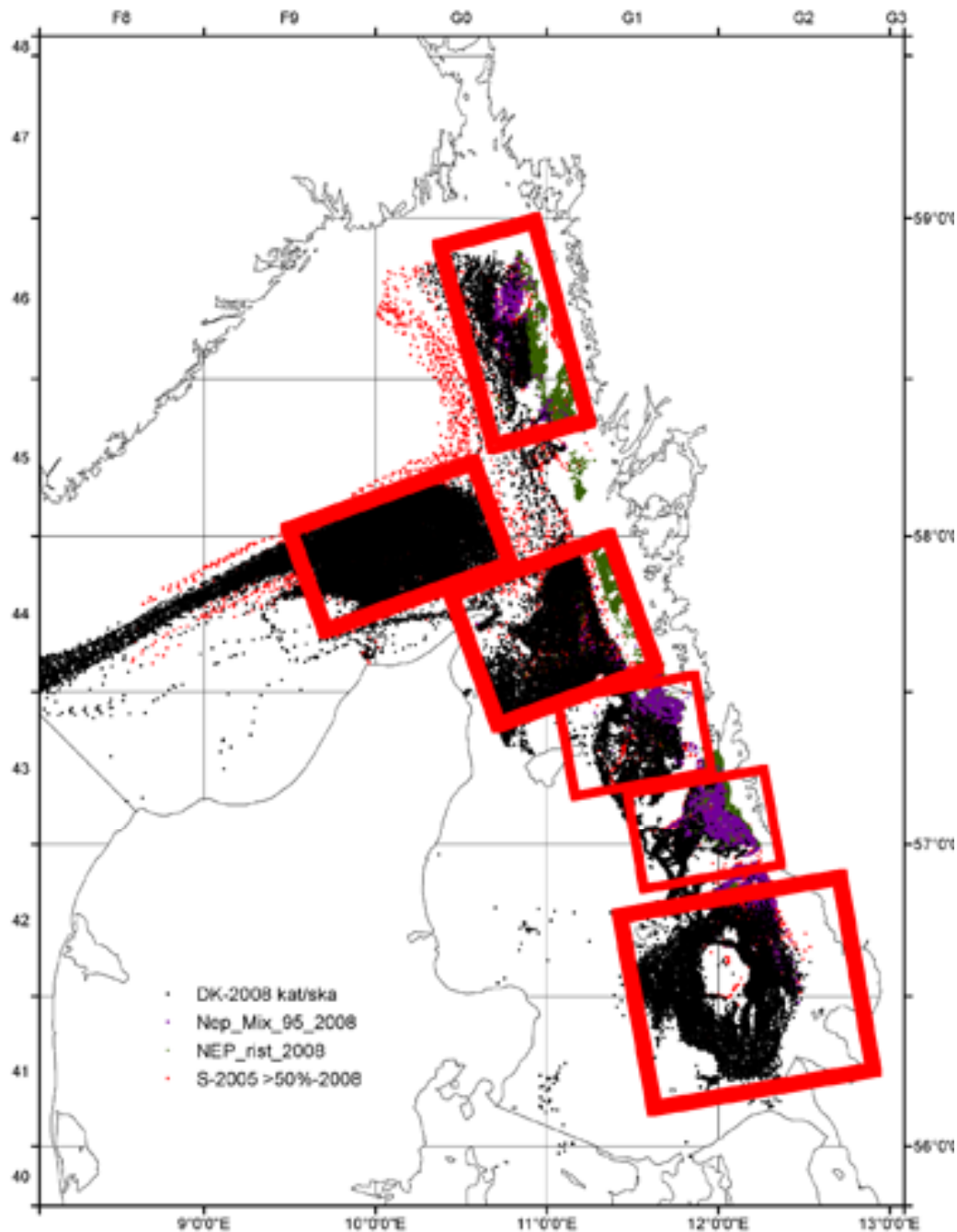
Map 6. Map over Danish and Swedish *Nephrops* trawler VMS data and six subareas with concentration of *Nephrops* trawling in Skagerrak and Kattegat.

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

Generally, the surveys are following the international manuals set up for the different surveys. The quality is therefore established by these manuals. Sweden is following the written manuals and is actively taking part in quality work done in the WGBIFS and WGBITS, no deviations can be reported.

For the UWTV survey, data quality of the recorded video was very poor due to strong currents and high turbidity in the bottom water.

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

Recommendations on UWTV survey (like standardisations, edge effects and statistical analysis of data) are regularly updated in workshops arranged within ICES.

III.G.4 Actions to avoid shortfalls

This misfortune and failure resulted in that it was decided that from 2010 and onward the survey should be conducted during spring (May) when weather conditions are much better and usually permit the conditions for an UWTV survey in the Skagerrak and Kattegat.

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

IV.A Collection of economic data concerning the aquaculture

IV.A.1 Achievements: results and deviation from NP proposal

Economic data for the reference year of 2008 was collected and compiled by Statistics Sweden in cooperation with the Swedish Board of Fisheries. Three sources of information were used: income tax declarations (census data), a questionnaire (Q1) sent to every aquaculture *farm unit* (census data) and a questionnaire (Q2) sent to a non-probability sample of all aquaculture *enterprises*. All three parts were implemented and compiled by Statistics Sweden. The planned segmentation presented in the National Programme 2009 – 2010 was made before the declaration of the Council Regulation (EC) No 199/2008 of 25 February 2008 and the Commission Decision of 6 November 2008. Therefore the final segmentation presented in the Technical Report 2009 is different from the one proposed in the National Programme 2009 - 2010. The updated segmentation is presented along with the clustering of segments.

Clustered strata for reporting	No of enterprises in clustered strata	Sampled segments	No of enterprises in sampled segments
Land based farms - On growing - Rainbow trout, Arctic char, Eel and other freshwater fish	42	Land based farms - On growing - Arctic char	5
		Land based farms - On growing - Eel	1
		Land based farms - On growing - Other freshwater fish	6
		Land based farms - On growing - Rainbow trout	30
Land based farms - Combined - rainbow trout	10	Land based farms - Combined - Arctic char	1
		Land based farms - Combined - other fresh water fish	1
		Land based farms - Combined - Rainbow trout	7
		Hatcheries and nurseries - Other fresh water fish	1
Cages - Salmon and Brown trout	8	Cages - Salmon	1
		Cages - Brown trout	7
Cages - Salmon and Brown trout	66	Cages - Rainbow trout	58
		Cages - Arctic char	8
Shellfish and farming techniques - Long line - mussels	8	Shellfish farming techniques - Long line - mussels	7
		Shellfish farming techniques - Other - oysters	1
Land based farms – On growing, Combined - Salmon and Brown trout	22	Land based farms – On growing - Salmon and Brown trout	13
		Land based farms - Combined - Salmon and Brown trout	7
		Hatcheries and nurseries - Salmon and Brown trout	2

In the National Programme for 2009 Sweden planned to involve Fiskhälsan AB (responsible for the National Fish Health Control Programme in Sweden) to collect detailed data on variable costs, imputed value of unpaid labour, costs for feed and livestock as well as volume. These data were planned to be used for compiling a cost allocation key to specify variable costs from income tax declarations and for estimations of variables as mentioned above. After thorough discussions these plans were abandoned due to statistical reasons. Since not all aquaculture enterprises in Sweden are obliged to be a part of the National Fish Health Control Programme the population of aquaculture enterprises that Fiskhälsan AB is able to collect data from is a subpopulation of the total population. This subpopulation does not coincide with the population that Statistics Sweden collects data from which means that data collected by Fiskhälsan AB has to be estimated for the total population. Estimating the variables collected in questionnaire Q2 for the target population would not have been possible since Fiskhälsan AB and Statistics Sweden due to confidentiality can not exchange primary data, neither can they share primary data with the Swedish Board of Fisheries. With no connection between data and the individual enterprise there is no possibility to estimate the variables

according to the segmentation and not even for the total population. The most cost efficient and statistically sound way of dealing with these issues was to let Statistics Sweden collect and compile all data and not involve a third part.

There would also have been problems with clustering farming units into enterprises since Fiskhälsan AB does not have access to income tax declarations and therefore can only use the individual farm as the smallest statistical unit. In many cases several farms belong to the same enterprise and several farms then need to be clustered to the correct enterprise. The clustering has to be based on information from income tax declarations that Statistics Sweden has access to. The income tax declarations are confidential and can not be exchanged between Statistics Sweden and Fiskhälsan AB. This means that Fiskhälsan AB can not cluster farming units into enterprises.

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

The year of 2009 (the reference year of 2008) was the first year of collecting economic data on aquaculture. Therefore we only had a very general view of the number of enterprises in each aquaculture segment when writing the National Programme for 2009 – 2010. When the farming units were clustered into enterprises the number of enterprises in each segment turned out to be a bit different than in the proposed sample. Both sampling strategies are presented in Table IV A 2.

The planned sample is presented as a range in Table IV A 2. The first figure refers to the questionnaire (Q2) based on a non-probability sample and the second figure refers to census data from both income tax declarations, administrative records and a questionnaire (Q1) sent to all aquaculture farmers. The sample for the second questionnaire (Q2) is a non-probability sample based on *a priori* information that comes from Q1 and income tax declarations. Therefore it could not be planned before the income tax declarations and the results of the first questionnaire (Q1, covering every farming unit) were compiled. Based on the results of the census data, Statistics Sweden made decisions on which enterprises were most representative for the second questionnaire (Q2). In order to be sure of covering large enterprises as well as enterprises from all other appropriate corporate structures and enterprises from every segment, Statistics Sweden decided on the appropriate sampling and sample size for this questionnaire (Q2).

In table IV A 2 the calculation of Achieved sample rate is redefined as A/F and not as A/P as first noted in the template. The calculation of A/F gives information on the achieved sample rate and can then be compared to the planned sample rate in column K (Table IV A 2). The calculation of achieved sample rate as A/P gives information of answering frequencies in the sample but can not be compared to the planned sample rate in column K.

This first year of collecting economic data on aquaculture the correct population had to be established. To be sure of not missing any enterprises every aquaculture enterprise that had an income tax declaration was included in the data collection population this year. Those enterprises whose income from aquaculture production (based on the answers given in questionnaire Q1) did not exceed 40 percent of the income given in the income tax declarations were considered as nonresponses and the nonresponses were corrected for in the calculations. These enterprises did not have aquaculture as their primary activity but was still

in the population since we decided on studying the total population for the reference year of 2008. For 2009 only enterprises with an income from aquaculture production that exceeds 50 percent of the income given in the income tax declarations will be considered as part of the population. These enterprises are considered as having aquaculture as their primary acitivity and they should be covered in the data collection according to the Commission Decision (EC) 2008/949. This will reduce the number of nonresponses in the data concerning the reference year of 2009 and the variance within the segments will not be as large. For the reference year of 2008 Statistics Sweden decided on not calculating any measures of the variability of estimates (noted as NA in Table IV A 3) since this would only present a large variance within many of the segments due to covering the total population. This would be a true picture of the total population of enterprises but not a true picture of the population of enterprises that has aquaculture as their primary activity. For the reference year of 2009 we will only cover the enterprises that have aquaculture as their primary activity. Then it will also make sense to present data on variability of estimates.

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

There are no regional or international recommendations at the moment.

IV.A.4 Actions to avoid shortfalls

We have now established a population except for minor yearly changes of new enterprises entering aquaculture production and others ending their production which will cause natural changes in the population. From the reference year of 2009 we will have more information about the population and will be able to cover only enterprises whose income from aquaculture production exceeds 50 percent of the income given in the income tax declarations. This will be one of the criteria for considering aquaculture production as the primary activity in addition to what is stated in the Commission Decision (EC) 2008/949. For the data collection of the reference year of 2008 we needed to establish the correct population since every register until now only held farming units and not enterprises. From the reference year of 2009 we will also be able to present data on variability of estimates.
The crayfish producers are not part of the population of 2008 since we still need to establish the correct number of farming units in order to cluster them into enterprises. The Swedish Board of Fisheries is working on the task.

IV.B Collection of data concerning the processing industry

IV.B.1 Achievements: results and deviation from NP proposal

The data was collected and processed by Statistics Sweden through the SRU register which is maintained by Statistics Sweden and consists of income tax declarations in Sweden. Part of the data is also collected from the Statistical Business Register which is a central register consisting of information on all registered enterprises in Sweden which is maintained by Statistics Sweden. Two variables where collected through questionnaires by Statistics Sweden based on PPS-selection in the Statistical Business Register. The variables collected through questionnaires are subsidies and energy costs. Since the fish processing industry was stratified together with the meat processing industry in the survey related to 2007 only 4 questionnaires were sent out to the fish processing industry, with two responses. The questionnaires are the base for estimating an allocation key to allocate costs and income to variables not included in the company/financial accounts. The total sum of costs and total sum of income is unaffected. The data still holds for calculations such as gross value added and return on investment.

All data is collected, estimated and checked by Statistics Sweden which ensures the consistency of the final data.

The achieved sample rate is 100 % for variables collected through company/financial accounts by Statistics Sweden.

IV.B.2 Data quality: results and deviation from NP proposal

Although all data is collected and processed by Statistics Sweden some variables are not available through company/financial accounts. Some variables are collected through questionnaires such as energy costs and subsidies. The number of questionnaires for 2009 (reference year 2007) were not sufficiently large to estimate reliable estimates of energy costs and subsidies or estimates on precision levels (CV-levels).

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

No related recommendations have been made about the collection of economic data on the processing industry.

IV.B.4 Actions to avoid shortfalls

In data collection from 2010 (reference year 2008) and onward the fish processing industry is an own stratum. This means that a larger number of questionnaires will be used and approximately 15 questionnaires will be sent out in 2010 concerning the fish processing industry. This will improve the reliability of the estimates on energy costs and subsidies.

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

V.1 Achievements: results and deviation from NP proposal

Through our annual surveys, The Swedish Board of Fisheries can realize the data requirements for the indicators 1-4 proposed in the Commission Decision 2008/949/EC Appendix XIII. The spatial and temporal coverage of data collection for the evaluation of effects of the fishing sector will consist of area IIIa in the first and third quarters and area IIId in the first and fourth quarters 2009. The data collection will be fishery independent and is carried out by our research vessel ARGOS using standard gear, thereby fulfilling the required precision level. The surveys are described in section III.G.1. Data on species, length frequencies and abundance will be collected from all hauls including individual parameters such as age, length, sex and maturity from the target species of the survey at the required precision level.

Sweden is collecting VMS data and the Research and Development Department of the Swedish Board of Fisheries has full access to VMS data from all Swedish vessels in all waters. Positions are reported once every hour for boats of 15m length or longer. Data can be aggregated at metier level 6 for environmental indicators 4, 5 and 6 and processed accordingly.

V.2 Actions to avoid shortfalls

No shortfalls to be reported and therefore no actions to be taken

VI. Module for management and use of the data

VI.1 Achievements: results and deviation from NP proposal

The development of databases during 2009 included projects for the data collection at the Institute of Costal Research (ICR), for the data collection at the Institute of Marine Research (IMR) and for the data collection of economical data at the Swedish Board of Fisheries (SBF).

The Institute of Costal Research continued their project of improving their new system including data entry and reporting of fish sample data. The development phases during 2009 covered:
- Continued work with the conversion of data.
- Improvements of the data entry system.
- Improvements of the data warehouse for reporting of the fish sample data.

The Institute of Marine Research continued with their project of modernizing and refactoring the existing systems including data entry and reporting of fish sample data. The development phases during 2009 covered:
- Continued work with the database modelling and design.
- Continued work with the analysis and design of the functionality and the GUI layout.
- Continued work with the construction of the data entry routines.
- Continued work with the migration of data from Excel to the current Oracle database.
- Continued work with the migration of data from the current Oracle database to the new Oracle database.

For the data collection of economical data a project was started to modernize and rebuild the existing systems including data entry and reporting. The development phases during 2009 covered:
Processing industry
- Start of the development of data entry routines.
- Development of a data warehouse for the reporting of economical data.
- Migration of data for all previous years to the new data warehouse.
Aquaculture industry
- Start of the development of data entry routines.
- Start of the development of a data warehouse for the reporting of economical data.
Fishing sector
- Start of the development of data entry routines.
- Start of the development of a data warehouse for the reporting of economical data.

VI.2 Actions to avoid shortfalls

No shortfalls to be reported and therefore no actions to be taken.

VII. Follow-up of STECF recommendations

Sweden has taken the recommendations made by SGRN (Evaluation of the 2008 Technical report and the evaluation of 2009 National Programme) under consideration while writing the Technical report for 2009.

Source	Recommendation	Action
SGRN June 2009 Evaluation of TR 2008	*The TR should be structured by region*	From 2009 onwards Sweden will follow the guidelines and structure the National programme and Technical report by region.
SGRN Febr 2009 Evaluation of NP 2009	*General: Although the proposal metiers mergers are sensible there is no statistical evidence put forward to justify them.*	"The merging of metiers is for the planned sampling in 2009-2010 not always based on a thorough scientific analysis but on the knowledge of the exploitation pattern, management of the fisheries and "common sense". Scientific analysis of the metiers and the possibilities to merge them based on scientific analysis will be a prioritised issue during the programme period. WKMERGE (2010), in which Sweden will participate will be of great value for the analyses of merging fisheries.
SGRN Febr 2009 Evaluation of NP 2009	*General: Discard level for metiers which are not selected by ranking is not included in the NP*	Metiers not selected by the ranking have not been selected for discard sampling as "*stand alone metiers*". The main reason for this is that the activity and catches in these metiers are low making sampling difficult and cost ineffective. Metiers not selected by the ranking system are further to a certain extent included in merged metiers that are sampled.
SGRN Febr 2009 Evaluation of NP 2009	**Economic and Transversal Variables: the method for raising the sample results to the total population is not clearly presented. more clear information of the method used for this calculation is needed.**	Sweden has within this section in the Technical report 2009 specified the methods used for the calculations.
SGRN Febr 2009 Evaluation of NP 2009	**Metier-related variables; It is not clear if <10 are included.**	Sweden are including all vessels for the ranking and vessels < 10 meters are included.

VIII. List of acronyms and abbreviations

ACE	Advisory Committee on Ecosystem
ACOM	Advisory Committee
BIAS	Baltic International Acoustic Survey
BITS	Baltic International Trawl Survey
DATRAS	Database Trawl Surveys
GUI	Graphical User Interface
HAWG	Herring Assessment Working Group for the Area South of 62˚ N
HELCOM	Helsinki Commission
IBTS	International Bottom Trawl Survey
IBTSWG	International Bottom trawl Survey Working Group
PGCCDBS	Planning Group on Commercial Catch, Discards and Biological Sampling
SERS	Database for electrofishing
WGBIFS	Baltic International Fish Survey Working Group
WGBFAS	Baltic Fisheries Assessment Working Group
WGBAST	Baltic Salmon and Trout Assessment Working Group
WGEEL	Working Group on Eels
WGFAST	Working Group on Fisheries Acoustics Science and Technology
WGNSSK	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
NIPAG	The joint NAFO/ ICES Pandalus Working Group
WKARFLO	Workshop on age reading on Flounder
WGIAB	Working Group on Integrated Assessments of the Baltic Sea
WKSCMFD	Workshop on Sampling and Calculation Methodology for Fisheries Data
WGECO	Working Group on Ecosystem Effects of Fishing Activities

IX. Comments, suggestions and reflections

Comments on the guidelines

The new standard tables for the Technical Reports reflect the standard tables for the NP proposals 2011-2013. This concept is a clear step forward and will facilitate compilation of TR (as well as evaluation of achievements) in the future. However, the National Programmes for 2009 and 2010 did not include this new standard tables and the present situation of transferring information (in different formats) from the NP standard tables to the TR standard tables increases the workload considerably. It is further not clear which columns referring to the NP in the standard tables that should be filled in and which could be left blank (page 3 in the guidelines). It would be nice if the guidelines for the TR 2010 will be somewhat clearer in this respect.

It is probably an error in standard table III_C_5. It seems like a column is missing (the table and the text in the guidelines are inconsistent).

CV for discard in table III_C_5 can only be presented by species and area. The COST tool is developed to deliver CV on species and metier but the values can not be presented in any of the tables in the technical report. This should be considered in the updated tables and guidelines for TR 2010.

X. References

Anon. 2003. Game and recreational fishery in Sweden. Pilot study. Report by the Swedish Board of Fisheries dated 10 October, 2003.

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Efron, B. & Tibshirani, R.J. 1993. An introduction to the Monographs on Statistics and Applied Probability no. 57. Chapman & Hall. 436 pp.

XI. Annexes

ANNEX I

Estimation of CV for Eel, Baltic herring, Flounder in the Baltic sea and for Eel in the North Sea and East Arctic.

Estimation of CV for length and weight at age
Sampling for Eel, Baltic herring (SD 30-31) and flounder, is based on random samples of 100-300 individuals collected from landings and/or discard from selected fishing vessels. However, since there are very few samples per stratum (subdivision, gear, and quarter), analytical methods for calculating coefficient of variation is not appropriate, and the bootstrap method (explained below) was used instead (see WKSCMFD 2004). To this end, each subdivision, gear and quarter was in most cases considered the sampling unit, and 1000 bootstraps were made from which the CV of both length at age and weight at age was estimated. The estimated CVs at each age are presented for each species and subdivision in Tables 1-5 below. For flounder, sexes have been separated since they differ substantially in their growth and thereby in their abundance in the catches (and sampling). For eel, silver eel and yellow eel are caught in different gears, and thus, both sampling and estimation of CV are done separately for the two stages of the species.

Method used for estimating CV
While waiting for the standard tool (COST) for analysing precision, Sweden has calculated CV in the national programme of DCR using analytical or bootstrap methods. The results from the analyses have been used to adjust the sampling size as well as improve and optimise the sampling scheme. Also, in 2009 the bootstrap method has been used for estimating CV in the DCF stock sampling for eel, Baltic herring and flounder.

Introduction to estimation of CV using the bootstrap method
The statistically correct way of estimating coefficient of variance of a parameter estimated from a set of bootstrapped samples is as the mean of the CV of that parameter within each individual bootstrap sample (Efron & Tibshirani 1993). Calculation of this mean CV across bootstrap samples thus requires that there is variation of the estimated parameter within each individual bootstrap sample. This is

possible for both length-at-age and weight-at-age within each sample when there is more than one individual of each age. However, for numbers-at-age there is no variation within each sample, and thus, CV has not been calculated for this parameter from the bootstrapped samples.

Table 1. Coefficient of variation of length at age and weight at age achieved for silver eel (females only) caught in pound nets per SD.

silver eel	females	Q 3-4	pound net	
SD 23				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
7	14	45	1	1
8	18	51	6	7
9	20	67	14	21
10	16	55	14.5	35.5
11	16	50	6	41.5
12	14	47	10	51.5
13	14	46	12.5	64
14	16	51	13	77
15	15	47	7.5	84.5
16	15	43	5.5	90
17	7	19	3	93
18	19	54	3	96
19	14	40	1.5	97.5
20	9	23	1.5	99
21	1	6	1	100

silver eel	females	Q 3-4	pound net	
SD 25				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
7	10	27	1	1
8	4	12	1	2
9	13	37	6	8
10	11	36	8	16
11	18	56	7	23
12	13	43	13	36
13	13	38	13	49
14	11	36	16	65
15	12	33	14	79
16	10	35	8	87
17	13	34	6	93
18	7	23	3	96
19	10	27	2	98
20	3	0	1	99
21	3	9	1	100

silver eel	females	Q 3	pound net	
SD 27				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
7	-	-	0	0
8	-	-	0	0
9	-	-	0	0
10	4	13	3	3
11	11	37	8	11
12	11	31	10	21
13	10	34	12	33
14	12	39	12.5	45.5
15	14	41	7	52.5
16	9	29	15	67.5
17	11	37	8.5	76
18	9	26	8.5	84.5
19	9	27	6	90.5
20	12	34	2	92.5
21	4	11	1.5	94
22	2	12	1.5	95.5
23	5	15	1.5	97
24	-	-	0	97
25	0	0	1	98
26	0	0	1	99
27	0	0	1	100

Table 2. Coefficient of variation of length at age and weight at age achieved for yellow eel (females only) caught in fyke nets per SD.

yellow eel	females	Q 2	fyke net	
SD 20				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	-	-	0	0
3	-	-	0	0
4	2	5	1	1
5	9	28	3	4
6	14	46	10	14
7	15	50	27	41
8	11	35	9	50
9	15	49	18	68
10	15	48	14	82
11	12	39	8	90
12	12	42	5	95
13	9	32	2	97
14	7	19	1	98
15	13	35	2	100

yellow eel	females	Q 2	fyke net	
SD 21				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	-	-	0	0
3	-	-	0	0
4	0	0	0.5	0.5
5	0	0	0.5	1
6	12	40	5	6
7	13	49	14.5	20.5
8	14	48	9.5	30
9	16	60	22	52
10	17	63	20.5	72.5
11	16	57	9	81.5
12	18	61	7	88.5
13	15	58	6	94.5
14	0	0	0.5	95
15	5	21	2.5	97.5
16	6	16	1.5	99
17	0	0	0.5	99.5
18	-	-	0	99.5
19	0	0	0.5	100

yellow eel	females	Q 2	fyke net	
SD 23				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	6	18	3	3
3	1	4	2	5
4	14	54	17	22
5	8	27	2.5	24.5
6	18	63	13.5	38
7	16	55	27	65
8	18	63	12.5	77.5
9	17	58	11	88.5
10	15	48	7	95.5
11	7	31	3.5	99
12	0	0	0.5	99.5
13	-	-	0	99.5
14	-	-	0	99.5
15	-	-	0	99.5
16	0	0	0.5	100

yellow eel	females	Q 2	fyke net	
SD 27				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	-	-	0	0
3	0	0	1	1
4	9	33	3	4
5	0	0	1	5
6	0	0	1	6
7	10	33	5	11
8	13	43	13	24
9	13	48	20	44
10	9	35	12	56
11	17	52	11.5	67.5
12	9	31	9	76.5
13	13	41	5	81.5
14	15	42	6	87.5
15	9	37	4	91.5
16	4	11	3	94.5
17	6	23	2	96.5
18	3	10	3	99.5
19	-	-	0	99.5
20	0	0	0.5	100

Table 3. Coefficient of variation of length and weight at age achieved for Baltic herring caught in gill nets per quarter in SD 30 and SD 31.

herring	both sexes	Q 2	gillnet set	
SD 30				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
1	-	-	0	0
2	-	-	0	0
3	0	0	0.5	0.5
4	13	40	2	2.5
5	12	39	1.5	4
6	6	18	1.5	5.5
7	5	16	13	18.5
8	5	15	7	25.5
9	5	16	5	30.5
10	7	20	11	41.5
11	6	19	11	52.5
12	5	16	13.5	66
13	5	16	12	78
14	6	20	8	86
15	4	14	8	94
16	1	1	1	95
17	4	13	2	97
18	4	14	2	99
19	-	-	0	99
20	0	0	0.5	99.5
21	-	-	0	99.5
22	0	0	0.5	100

herring	both sexes	Q 3	gillnet set	
SD 30				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
1	-	-	0	0
2	2	16	1	1
3	9	38	7	8
4	5	17	3	11
5	9	25	3	14
6	7	22	5.5	19.5
7	6	18	22	41.5
8	7	18	7	48.5
9	3	10	5	53.5
10	6	21	9	62.5
11	7	16	13	75.5
12	7	21	12	87.5
13	6	9	3	90.5
14	6	19	4	94.5
15	3	14	1	95.5
16	2	6	2	97.5
17	2	13	1	98.5
18	2	8	1	99.5
19	-	-	0	99.5
20	-	-	0	99.5
21	0	0	0.5	100

herring	both sexes	Q 2	gillnet set	
SD 31				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
1	-	-	0	0
2	5	13	2	2
3	10	35	3	5
4	10	34	6	11
5	3	10	7	18
6	6	20	12	30
7	6	25	13	43
8	7	34	15	58
9	7	28	15	73
10	6	23	11	84
11	5	24	9	93
12	4	22	4	97
13	3	16	2	99
14	0	0	0.5	99.5
15	0	0	0.5	100

herring	both sexes	Q 3	gillnet set	
SD 31				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
1	3	4	1	1
2	5	12	13	14
3	6	17	52	66
4	8	24	20	86
5	0	5	1	87
6	2	13	4	91
7	3	9	4	95
8	1	5	1	96
9	1	3	1	97
10	0	0	1	98
11	0	0	1	99
12	-	-	0	99
13	0	0	1	100

Table 4. Coefficient of variation of length at age and weight at age achieved for flounder (females and males separately) per gear, quarter and SD.

flounder	females	Q 1	bottom trawl	
SD 25				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	-	-	0	0
3	1	3	2	2
4	14	41	20	22
5	10	28	5	27
6	9	25	55	82
7	12	37	10	92
8	0	0	1	93
9	7	25	3	96
10	0	0	1	97
11	3	7	2	99
12	-	-	0	99
13	0	0	1	100

flounder	males	Q 1	bottom trawl	
SD 25				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	0	0	1	1
3	8	22	17	18
4	9	24	20	38
5	3	10	7	45
6	7	18	38	83
7	4	12	4.5	87.5
8	5	10	4.5	92
9	4	12	3	95
10	2	9	2	97
11	1	2	2	99
12	-	-	0	99
13	0	0	1	100

flounder	females	Q 4	bottom trawl	
SD 25				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	0	0	1	1
3	6	17	21	22
4	9	23	29	51
5	4	11	7	58
6	7	18	31	89
7	0	0	1	90
8	11	25	5	95
9	5	7	3	98
10	0	0	1	99
11	-	-	0	99
12	-	-	0	99
13	-	-	0	99
14	-	-	0	99
15	-	-	0	99
16	0	0	1	100

flounder	males	Q 4	bottom trawl	
SD 25				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	-	-	0	0
3	7	21	27	27
4	5	19	29	56
5	6	13	8	64
6	7	19	18	82
7	4	7	5	87
8	0	1	3	90
9	0	0	2	92
10	1	1	3	95
11	3	2	3	98
12	-	-	0	98
13	-	-	0	98
14	-	-	0	98
15	-	-	0	98
16	0	0	2	100

flounder	females	Q 3	gillnet set	
SD 27				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	0	0	0.5	0.5
3	6	16	2.5	3
4	12	31	9.5	12.5
5	8	24	4.5	17
6	11	35	14	31
7	8	26	16	47
8	7	29	6.5	53.5
9	10	28	10	63.5
10	9	25	11	74.5
11	10	34	6.5	81
12	11	31	11	92
13	3	8	2	94
14	2	11	2	96
15	7	35	2.5	98.5
16	0	0	0.5	99
17	2	17	1	100

flounder	males	Q 3	gillnet set	
SD 27				
Age class	CV (length)	CV (weight)	% age classes	% cumulative
2	-	-	0	0
3	0	0	1	1
4	6	13	5	6
5	3	10	4	10
6	8	26	9	19
7	8	20	15	34
8	5	23	5	39
9	3	10	8	47
10	5	16	9	56
11	6	23	13	69
12	10	35	12	81
13	4	11	2	83
14	6	16	2	85
15	0	10	2	87
16	6	21	8	95
17	6	17	4	99
18	-	-	0	99
19	-	-	0	99
20	-	-	0	99
21	-	-	0	99
22	0	0	1	100