

Estonian National Programme for collection of fisheries data for 2007

by

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Table of contents

1 Introduction	3
1.1 General framework	3
1.2 General description of the fisheries	4
2 Participating institutes	5
2.1 National correspondent	5
2.2 Participating institutes	5
3 Module C - Fishing capacities	5
3.1 MP - Planned sampling	5
3.2 MP - Derogations and non-conformities	6
4 Module D - Fishing effort	6
4.1 MP - Planned sampling	6
4.2 MP - Derogations and non-conformities	7
5 Module E - Catches and landings	8
5.1 MP - Landings - Planned sampling	8
5.2 MP - Landings - Derogations and non-conformities	8
5.3 EP - Landings - Planned sampling	9
5.4 EP - Landings - Non-conformities	9
5.5 MP & EP - Discards - Planned sampling	9
5.6 MP & EP - Discards - Derogations and non-conformities	10
5.7 MP - Recreational - Planned sampling	10
5.8 MP - Recreational - Derogations and non-conformities	11
5.9 EP - Recreational - Planned sampling	11
5.10 EP - Recreational - Non-conformities	11
6 Module F - Catches per unit effort	12
6.1 MP - Planned sampling	12
6.2 MP - Derogations and non-conformities	12
7 Module G - Scientific evaluation surveys	13
7.1 MP - Planned Priority 1 surveys	13
7.2 MP - Derogations and non-conformities	14
8 Module H - Length and age sampling	15
8.1 MP - Landings - Planned sampling	15
8.2 MP - Landings - Derogations and non-conformities	24
8.3 EP - Landings - Planned sampling	24
8.4 EP - Landings - Non-conformities	28
8.5 MP & EP - Discards - Planned sampling	28
8.6 MP & EP - Discards - Derogations and non-conformities	28
9 Module I - Other biological sampling	28
9.1 MP - Planned sampling	28
9.2 MP - Derogations and non-conformities	29
9.3 EP - Planned sampling	29
9.4 EP - Non-conformities	29
10 Module J - Economic data by group of vessels	29
10.1 MP - Planned sampling	29
10.2 MP - Derogations and non-conformities	31
11 Module K - Data concerning fish processing industry	32
11.1 MP - Planned sampling	32
11.2 MP - Derogations and non-conformities	32
12 Databases	33
12.1 Database development and data management	33
13 National and international co-ordination	34

13.1 National co-ordination	34
13.2 International co-ordination	34
13.3 Follow-up of RCM recommendations and initiatives	34
14 List of acronyms and abbreviations	35
Annexes	36

1 Introduction

1.1 General framework

This document describes the Estonian National Programme for collection of data in the fisheries sector in 2007. The programme has been developed in accordance with the rules laid down in the

Council Regulation (EC) No 1543/2000 of 29 June 2000 establishing a Community framework for the collection and management of the data needed to conduct the common fisheries policy;

Commission Regulation (EC) No 1639/2001 of 25 July 2001 (hereinafter – the Regulation) establishing the minimum and extended Community programmes for the collection of data in the fisheries sector and laying down detailed rules for the application of Council Regulation (EC) No 1543/2000;

Council Decision of 29 June 2000 on a financial contribution from the Community towards the expenditure incurred by Member States in collecting data, and for financing studies and pilot projects for carrying out the common fisheries policy (2000/439/EC).

Commission Regulation (EC) No 1581/2004 of 27 August 2004 amending Regulation (EC) No 1639/2001 establishing the minimum and extended Community programmes for the collection of data in the fisheries sector and laying down detailed rules for the application of Council Regulation (EC) No 1543/2000.

The programme will be conducted in close cooperation between:

- **Estonian Marine Institute (EMI)**

Estonian Marine Institute, University of Tartu, is a Public Research Institution that carries out research, investigations and provides advice concerning sustainable exploitation of live marine and fresh water resources. It has experience in fisheries management and economics, as well as in mathematical modelling. Institute has an agreement with the Ministry of the Environment to conduct applied fisheries research in Estonia, and is responsible for the main part of the National Data Collection Programme in 2007.

- **Estonian Ministry of the Environment (EME)**

Estonian Ministry of the Environment is responsible for regulating the questions concerning the protection of marine nature and environment, as well as for solving the tasks concerning the use of marine resources. The Fish Resources Department, established in 2001 to replace the

Fisheries Board and the Fisheries Department, manages and co-ordinates research, assessment, exploitation, reproduction and protection of fish resources.

- **Estonian Ministry of Agriculture (EMA)**

As of March 2001, the fisheries matters are divided between two ministries: the Ministry of the Environment and Ministry of Agriculture. Fishing Industry Department of the latter deals with issues of pisciculture, production, processing and marketing of fish and fish products, structural fishing policy. Since 1 January 2006, EMA holds the Estonian Fisheries Information System (EFIS).

Estonian Ministry of the Environment is acting as coordinator for the Estonian Programme. A Steering Group including members from institutions involved in the programme will coordinate the work under the programme.

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

The Estonian NP for data collection in 2007 is very similar to adopted NP-s for 2005 and 2006

1.2 General description of the fisheries

An overview of (i) the geographical areas where Estonia fishing fleet is operating, and (ii) the broader species assemblages it is exploiting, is in Table 1.1.

The main fishing areas are the Baltic Sea and NAFO area.

In the Baltic Sea, the highest catches are taken by pelagic and bottom trawls (sprat and herring, occasionally flounder; also cod in SD 25-26 mostly). There are a few gillnetters, too.

Coastal fishery uses mostly various passive gears (gill nets, trap nets, to some extent – longlines). The most important species are herring, perch, pikeperch, flounder and others.

In the NAFO area, shrimp fishery is of the biggest importance. There is also some directed fishery for Greenland halibut, redfish and skates.

Catches (as well as quotas) have been rather stable during the recent years.

2 Participating institutes

2.1 National correspondent

Estonia has assigned the Estonian Ministry of the Environment as the National Correspondent.

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3 Module C - Fishing capacities

3.1 MP - Planned sampling

All Estonian fishing vessels with the right to undertake commercial fishery are registered in the Fishing Vessel Register in EMA (a part of the EFIS, Estonian Fisheries Information System; (<https://kala.envir.ee/>)). The Fishing Vessels Register is a computerised database and includes among others the following information:

- Vessel type
- Age of the hull.
- Dimensions of the vessel; GRT or GT, length.
- Engine power.

- Owner.

The information in the Vessels Register is registered according to Regulation (EC) N° N° 2090/98 and No 2006/2004.

The Fishing Vessel Register is updated regularly.

During 2007, data on fishing capacity on an aggregated level by segments as described in Appendix III of the Data Regulation can at any time be delivered on a precision level of 3 concerning all commercial fishing vessels.

The following segments have been distinguished:

Trawlers < 24 m (Baltic Sea) (pelagic)
Trawlers 24 - 40 m (Baltic Sea) (pelagic)
Trawlers > 40 m (Atlantic) (demersal)
Gillnetters (Baltic Sea)
Coastal (polyvalent) vessels (Baltic Sea)

3.2 MP - Derogations and non-conformities

No.

4 Module D - Fishing effort

4.1 MP - Planned sampling

Member States are required to collect data for estimating the fishing effort and fuel consumption in accordance with “Data Regulation Appendix V to X. Estonia will adhere to the minimum programme.

Fuel consumption

Calculations of the average annual fuel consumption expressed in volume units for vessels in respective segments (as defined in Appendix III) and the average cost will be dealt with in the collection of economic data on the fishing fleet.

Fishing effort by type of fishing method

Fishing effort defined as the sum of weighted (as defined in Appendix V) fishing days (as defined in D.1.a) with a particular fishing method (as defined in Appendix VIII) will be reported by specific area (Level 3 as defined in Appendix I), based on EFIS. Data will be collected for all commercial fisheries (Baltic; NAFO and NEAFC).

In addition, the effort defined as the sum of weighted (as defined in Appendix V) fishing days (as defined in D.1.a) with a particular fishing method (as defined in Appendix III) will be reported by area (Level 3 as defined in Appendix I) and vessel length category (as defined in Appendix IV). Analysis will be based on data in EFIS.

Specific fishing effort

Effort defined as the sum of weighted (as defined in Appendix V) fishing days (as defined in D.1a) with a particular fishing method (as defined in Appendix VIII) will be reported by division (as defined in Appendix I) and species (as defined in D.1a (iii) and as defined in Appendix VI).

The following data are collected:

DATA	SOURCE
Fuel consumption	Vessel register Questionnaires
Fuel prices	See Chapter 4.1
Number of fishing days with a particular type of gear (as defined in Appendix III+IV)	Log books and fishermen's diaries
Catching area (as defined in Appendix I)	Log books and fishermen's diaries
Period	Log books and fishermen's diaries
Quantity by species (as defined in Appendix VIII)	Log books and fishermen's diaries, sales notes and/or sampling)
Vessel length (as defined in Appendix III)	Vessel register

The fishing effort is estimated for every quarter (or, for every month if needed) by processing of reported data (log books, sales notes, sampling, vessel register, etc.). The results will be reported annually. It is expected that all segments will be covered and the required precision level will be achieved.

4.2 MP - Derogations and non-conformities

No.

5 Module E - Catches and landings

5.1 MP - Landings - Planned sampling

Estonia will report commercial landings of all stocks, based on data in EFIS. The data will relate to the total landed quantity and must be reported by species sub-divided by catching area and by year. For the fish stocks specified in Appendix XII to Data Regulation, details of discards and the total catch will also be reported. The catch of salmon in recreational and game fisheries in the Baltic Sea (based on fishermen's diaries in EFIS) will also be reported.

The geographical origin of catches and landings will be reported at level 2, Appendix I, in Data Regulation. For stocks included in Appendix XII of the regulation, the aggregation level will meet the terms specified for the different areas.

The aggregated data meet the requirements in respect of accuracy stipulated in Chapter 3.E.1.c of the Commission Regulation.

The information in the Sales Notes database is registered according to the provisions of Council Regulation (EC) No 2847/93 and No 104/2000.

It should be mentioned that all landings are recorded and there is no derogation for vessels less than 10 m. This means 100% coverage for all landings.

Details of the landed quantity are collected from fishermen and first-hand buyers in accordance with Council Regulation (EC) No. 2847/93. Data will reflect the Estonian landings in Estonia and abroad and transshipment to third country vessels as well as other countries' landings in Estonia.

Details in respect of the value of the landed quantities sub-divided by species are provided in the context of the economic data in accordance with Chapter 4.J.

For all stocks, the quantities landed in Estonia will be collected on monthly basis and reported annually. The reported quantities will relate to the adjusted catch after having conducted a cross-checking of data from the log books, landing declarations, sales notes and sampling.

Herring and sprat trawl fishery is often a mixed fishery. Proportion of herring and sprat in landings will be determined in every sampling of herring and sprat (see 3.5). Additional sampling will be performed in areas of mixed fishery if needed.

5.2 MP - Landings - Derogations and non-conformities

No.

5.3 EP - Landings - Planned sampling

Monthly landings from stocks mentioned in Appendix XIII, as well as catches of salmon taken in estuaries and rivers of the Baltic Sea will be provided. Data will be collected on monthly basis, by separating the catches according to the types of techniques defined in Appendix III, and by the geographical level 3 areas according to Appendix 1. Data stored in EFIS will be used.

Also, data on commercial catches for other species (not included in the DCR) are available from EFIS.

5.4 EP - Landings - Non-conformities

No.

5.5 MP & EP - Discards - Planned sampling

According to the Data Regulation chapter 3.E.1.b Estonia must collect discard data in order to be able to present estimates of discard rates for selected species (Appendix XII), by type of technique defined in Appendix III. Until recent times, only sporadic discard sampling has been carried out in the Estonian EEZ, as the Estonian legislation did not allow discards (in case of catching species or age/length groups of fish exceeding the allowed proportion, the Environmental Inspectorate should be informed, catch retained on board, and the fishing area should be changed).

Preliminary data on discards in different fisheries were obtained in 2005 and are collected in 2006. Sampling programme for 2007 is based on these data, and all important fisheries will be covered by discard sampling (Tables 5.2 and 5.3).

Data in the Baltic Sea will be collected by the staff from EMI, primarily by sampling on board of commercial fishing vessels. Also, selected and appropriately trained fishermen and observers will be engaged in data collection. In such cases, the part of the catch, which normally will be discarded, will be landed separately from the normal landing part of the catch and analyzed by EMI. Also, catch analysis of routine test fishing (gill nets, trap nets) will be used (“discards” in this case mean undersized, damaged fish and fish which catch is not allowed by legislation – in mesh sizes allowed for commercial use).

The information to be recorded is:

- Vessel and gear characteristics
- Place, date, time and duration of fishing operation
- Total weight of discard and landing by all species caught
- Separate length distributions of discard and landings by all relevant species caught.
- Otoliths (or scales, if appropriate) per cm group of undersized fish (discard part of the catch) of selected species.

All collected discard data will be recorded in national database in EMI and made available internationally (FishFrame).

Discard data for trawlers operating in the NAFO area (fishery for shrimp, Greenland halibut and redfish) will also be gathered by staff (observers) of the Estonian Marine Institute on board of vessels, parallel to gathering other data for the National Programme. Proportion of man-power to study discarding in shrimp fisheries corresponds, as in earlier years, approximately to 1 man-year (incl. 4 trips, ca 240 days at sea) and is included in the financial table.

As for skate fishery, Estonia is planning a pilot study in 2007, to reveal the magnitude of discarding, species and length composition of discards.

Observers on board of fishing vessels (length 15 m or more) in the Baltic Sea collecting data on discards and biological data, will also be engaged in collecting data on incidental catches of cetaceans in fisheries (Council Regulation (EC) N0. 812/2004 of 26.04.2004).

In 2007, parallel to MP species, discards of EP species in different fisheries will be investigated using sampling by the staff (including observers) of EMI, specifically trained fishermen cooperating with EMI, and test fishing data.

5.6 MP & EP - Discards - Derogations and non-conformities

As for skate fishery, Estonia is planning a pilot study in 2007, to reveal the magnitude of discarding, species and length composition of discards.

No discard sampling is planned for fisheries where Estonia has only marginal quotas and fishery is irregular (no directed fishery) (see Table 8.2).

5.7 MP - Recreational - Planned sampling

Estonia has no recreational fisheries for bluefin tuna.

A pilot study of cod, salmon and sea trout catches in recreational fisheries was conducted in 2005 and 2006. Generally speaking, catches of these MP species by recreational fishermen are not big (10% or less of the total catch), but (due to the alarming stock situation) data collection will be conducted also in 2007.

Catch species composition, weight of catches per species will be recorded by area, quarter, fishing method. Where possible, data on length, weight and age composition of recreational catches are recorded.

Most data on catches by recreational fishermen for salmon, sea trout and cod are available in EFIS (fishermen diaries). Angling and rod fishery data for cod are not included in EFIS, but these catches are extremely low as revealed by questionnaire in 2004.

5.8 MP - Recreational - Derogations and non-conformities

No.

5.9 EP - Recreational - Planned sampling

A study on recreational fisheries in coastal waters (other than cod, salmon and sea trout) based on questionnaires, was carried out in 2005-2006. According to these data, recreational fishery for perch *Perca fluviatilis* in winter (under-ice angling) is comparable (by catch volume) with the total commercial catch, and must be monitored further. In Estonia, recreational fishermen are allowed to use a limited number of commercial gears, gill nets, eel traps and longlines. Catch taken by these gears should be reported and is included in EFIS. Data for MP and EP species will be analyzed (catch by quarter, ICES subdivision and gear).

Data will be obtained from questionnaires (angling), on site samplings of the catch (angling), and from EFIS.

5.10 EP - Recreational - Non-conformities

No.

6 Module F - Catches per unit effort

6.1 MP - Planned sampling

Catch per unit of effort (CPUE) data from Estonian commercial fleets are used by three international scientific assessment groups:

- 1) CPUE of herring trapnet fishery in the Gulf of Riga is used by ICES WGBFAS,
- 2) CPUE of shrimp trawlers in NAFO area (3M, 3L) is used by NAFO SC.

CPUE data for herring trap-net fishery will be collected, as in previous years, according to the rules of ICES. CPUE data for shrimp trawlers will be collected on monthly basis, as required by the shrimp assessment group of NAFO, on all vessels by observers employed by MI. Also, vessel parameters and gear type will be registered.

In addition, as in earlier years, CPUE in test fishing of coastal fish communities in permanent research areas will be collected (data available since 1992). CPUE data for *Gadus morhua*, *Clupea harengus*, *Platichthys flesus*, *Salmo trutta*, *Perca fluviatilis*, *Sander lucioperca*, *Coregonus lavaretus* and other species will be gathered.

It should be noted that all fisheries in NAFO area are closely monitored by the staff of EMI (data for every single haul are available throughout the year from the observers programme), and CPUE data for all species can be calculated. However, due to low catches, these data are probably of no interest.

Also, using data in EFIS, CPUE data for trawl and coastal (passive gear) fisheries can be calculated.

6.2 MP - Derogations and non-conformities

No.

7 Module G - Scientific evaluation surveys

7.1 MP - Planned Priority 1 surveys

See Table 7.1.

HERRING ACOUSTIC SURVEY

The survey is conducted in two parts: in the Gulf of Riga (SD 28-5) jointly with Latvia (since 1999) during the 3rd quarter (when the amount of open-sea herring in the Gulf is minimal) and 2) in the open sea (SD 28, 29 and 32), carried out since 2001 during the 4th quarter. This survey will be performed in 2007 (as planned also for 2006) in cooperation with Finland and will cover the whole Gulf of Finland (except for the Russian zone).

The purpose is to provide acoustic abundance estimates of herring and sprat in the Baltic Sea.

For herring survey in the Gulf of Riga, rented fishing vessels have been used (as previously), which makes these surveys relatively cheap. The same (Latvian) vessel

has been used in recent years. Using of a (Polish) research vessel for open sea herring survey is planned, as also planned for 2006.

The sampling procedure and the level of precision are defined in the Manual for the Baltic International Acoustic surveys (ICES CM 1994/H: 3).

The acoustic abundance estimate is done in collaboration between Estonia, Germany, Poland, Russian Federation and Latvia. The herring and sprat are length measured on board and sent to EMI for further examinations such as age, weight, sex and maturity. Age determination takes place in accordance with standardized methods (Anon. 2000a), age readers are participating in regular international inter-calibrations.

Primary survey data are stored in a fish sample database administered by EMI. Aggregated data are reported and used annually by relevant ICES Working Groups.

BALTIC INTERNATIONAL TRAWL SURVEY (BITS)

The survey is conducted regularly twice a year (ICES 2000b). Estonia will participate in the 4th quarter survey. The surveys cover part of the eastern Baltic, within the Estonian EEZ - SD 28, 29, 32.

The primary purpose of the survey is to produce indices of recruitment and stock abundance of Baltic cod and flounder. Sampling of these species includes records of individual fish length, age, weight, sex, stage of gonad maturation and stomach fullness and is carried out on board of the vessel. Data on sexual maturation and individual weight are obtained to establish sex specific maturity ogives and mean weight at age for cod and flounder. The otoliths are used for fish age determination. Ageing is made in EMI. Age determination takes place in accordance with standardized methods (Anon. 2000a, ICES 1997, 2001). In addition to cod and flounder, herring and sprat from the samples are also examined and their standard biological parameters (length, weight, age, sex, gonads development) are recorded.

The survey design, sampling procedure and the level of precision are defined in the Manual for the Baltic International Trawl Surveys (ICES 2000). Since 2000 the surveys have been conducted using new standard procedure internationally. Estonian bottom trawl surveys will be conducted and samples collected in accordance with BITS Manual.

The survey is ICES coordinated and performed in collaboration with research vessels from Denmark, Germany, Latvia, Russia, Poland and Sweden. However, not all countries around the Baltic are involved in every survey. Since 2000 during the BITS survey a TV-3 cod bottom trawl is used at daytime. This gear is used as a standard fishing gear by the countries involved.

Primary survey data are stored in EMI. Aggregated data are reported and used annually by relevant ICES Working Groups. Data are also stored in an international coordinated database at ICES Secretariat in Copenhagen.

Coordination and quality assurance

The Herring acoustic survey and the Baltic International Trawl Survey in the Baltic Sea are internationally coordinated surveys, which endeavor a high level of consistency in sampling procedure among participants. As a part of this, exchange of staff on board research vessels between countries will be conducted. It is believed that this is an important contribution to the quality assurance of the survey data.

7.2 MP - Derogations and non-conformities

Estonia has never participated in sprat acoustic survey and in the spring BITS survey and asks derogation (as in 2005 and 2006) from conducting these surveys in 2007.

According to Commission Regulation (EC) N° 1639/2001, Appendix XIV, sprat acoustic survey is to be conducted in the 2nd quarter and it has priority 1. However, Estonia has never participated in this survey. For tuning the sprat assessment ICES uses results from Herring Acoustic Survey, which provides acoustic estimates of both herring and sprat stocks.

Estonia will participate, as in earlier years, in the 4th quarter BITS survey.

8 Module H - Length and age sampling

8.1 MP - Landings - Planned sampling

Member States are required to collect biological random samples in order to evaluate the composition in length and where appropriate in age of landings for all stocks specified in Appendix XV in Data Regulation.

Biological sampling must be performed if the Estonian TAC or total landing of a certain species exceeds thresholds defined in Data Regulation Chapter H.1 (d). Appendix IIIa to this programme shows the landings made in Estonia by Estonian flagged vessels and by other Member States flagged vessels. Information on Estonian and total EU TAC is given for each stock for 2006.

See Table 8.1 for planned age and length sampling of landings.

All biological sampling will be performed, and corresponding data will be stored in databases of EMI. Data security is ensured by common standards. Data entry is conducted in three laboratories in Tallinn, Tartu and Pärnu to a closed network. To

maintain data integrity and performance of the database a data manager will maintain the database.

The tasks of the data manager are:

- Merge data sampled to the unified database.
- Compact and tune the database at regular intervals.
- Perform backup of data.
- Act as help-deck for user of the base.
- Maintain look-up tables.
- Make error checking and consistency tests on the database.
- Maintain a security system, that grants users and outside partners access to data at an appropriate level.

The Estonian standard sampling scheme

The Estonian standard sampling scheme includes, as in 2005 and 2006, both sampling of commercial landings and gathering of fisheries independent data by the staff of EMI.

The standard sampling procedure for commercial fishery includes sampling on a quarterly basis by ICES division in all the main harbours where landings take place. Usually proportional sampling will be applied. Samples will be collected randomly and the number of samples will reflect the fishery activity. For each stock the minimum sampling level is given for landings in Estonia in Appendix III. The sampling level is based on the established sampling level and on the average landings for 2003-2005 and as outlined in the Data Regulation for landings made by both Estonian - and other Member States flagged vessels landing in Estonia. It should also be stressed that for some species, especially species for which recovery plans are implemented, such as for cod, the sampling levels need to be increased and sampled with a higher intensity than prescribed in the Data Regulation.

The samples are either analyzed in the harbor or sent to EMI, where all biological measures are performed. The standard measures are:

- Length.
- Weight.
- Age.

First the sample for length is collected, and the sub-sample for age is taken next. The size of the samples will be at least as specified in Appendix XV. The age sample is usually collected by length strata, taking approximately constant number of fish from a stratum. The fish sampled for age are weighed and their sex and maturity is recorded. As mostly stratified sampling for age is applied, the age composition of the catches is obtained using age-length key. Age determination of sampled fish species always takes place at EMI according to standardized methods (ICES 2000a etc).

The total number of samples collected during a year for a stock will not be lower than prescribed by the sampling rules based on annual landings, which are outlined in Appendix XV in Data Regulation. With sampling rules outlined in Appendix XV, a precision level is set. With reference to Appendix III, a description of the stocks that will be a part of the Estonian sampling programme is given below.

Fisheries-independent data collection. Council Regulation (EC) No 1543/2000 Article 4 (2) states: “In addition, member states shall undertake scientific research at sea to evaluate the abundance and distribution of stocks independently of the data provided by the commercial fisheries in the case of stocks for which such evaluations are possible and useful”.

Estonia has carried out yearly sampling of coastal fish communities (using gill nets and trap nets), and sampling of salmon and sea trout natural reproduction. These samplings will be continued in 2007.

Salmon and sea trout sampling. The minimum programme in Data Regulation prescribes market sampling of catches as the only monitoring of the salmon and sea trout stocks. SGRN noted as a general comment that the absence of river surveys made the MP inadequate to assess if the agreed management objectives are achieved (SEC 200, Brussels 9-13 December 2002). Therefore, in 2007, Estonia (EMI) will continue sampling in all salmon rivers and in selected sea trout rivers.

There are 10 Baltic salmon rivers in Estonia (9 in the Gulf of Finland basin and 1 in the Gulf of Riga basin) of which 6 rivers in the Gulf of Finland basin where salmon is re-introduced in accordance with the agreed management plan. Natural stocks in these rivers are rather small, and in most of them juveniles appear not every year. The status of the stocks in these rivers will be monitored by electro fishing and smolt trapping in salmon rivers. There are over 45 rivers and streams used by wild sea trout for reproduction, but in most of them populations are very small.

Surveys of juvenile densities will take place in all salmon rivers (which are also sea trout rivers) and selected sea trout rivers (altogether 30 rivers every year). The surveys will be carried out in accordance with the established standard procedure.

The smolt production is the ultimate measure of success of the management plan. Smolt traps will be used to monitor the number of emigrating fish in spring. Smolt traps were first used in 2005 (the Pirita River). Smolt production will be monitored in at least one important salmon river each year.

All surveys are in line with ICES advice and planning is carried out in cooperation with Finnish and Swedish scientists to improve co-ordination with the Finnish NP programme as suggested by SGRN (SEC 200, Brussels 9-13 December 2002).

Aggregated data are reported annually to the ICES Working Group (WGBAST).

Annual gill-net sampling of coastal fish assemblages is conducted since 1992 (in two research areas, including HELCOM COBRA coastal fish monitoring reference area southeast to Hiiumaa Island (ICES 29-4)). Later, the number of research areas has been increased to 8 covering SD 28, 29 and 32. In general, methods described in

Thoreson (1993) are followed, with some modifications (most importantly, adding bigger mesh size gill nets to the stations; ICES CM 2003/R: 14). In most areas, trap nets are also used to gather fishery-independent data on eel abundance.

This sampling provides data for cod, eel, flounder and several other species. Data on species composition of fish assemblages, age, length and sex distribution, relative strength of year-classes, mortality and growth rate have been used to manage the stocks of coastal area. Gathering fisheries-independent data has been useful as there were problems with misreporting catches in the 1990s, and several species have local stocks with different population dynamics. Furthermore, surveying of fish assemblages is more consistent with the ecosystem approach to fisheries management.

The Baltic Sea. ICES Area IIId

Sprat *Sprattus sprattus*

The average Estonian landings in 2003-2005 were 40917 tons and the quota for 2006 corresponds to >10 % of the EC shared TAC. This obliges Estonia to sample this stock.

The catches are taken almost entirely (99%) by trawlers, mostly during I and IV quarters. The total catch by trawlers in 2005 was taken from SD 32 (46%), SD 29 (30%), SD 28 (13%) and SD 24-27 (11%). Pelagic trawl fishery is often a mixed sprat-herring fishery.

The same sampling intensity of 2004-2006 will be maintained for 2007. In 2007, Estonia will take at least 37 samples, and measure at least 3700 and age at least 1850 fish. Standard sampling procedure as described in 3.5.1 will be used.

Sampling of other biological parameters such as sex and sexual maturity are performed routinely when samples for age are collected from both commercial landings/catches and survey catches.

Sex and maturity stage is obtained from the individuals randomly selected for ageing in each sample. The maturity estimates (after aggregation) have a CV, which does not exceed 5% for the interval of 20-90% of the mature fish.

Collected data are stored in the fish sample database in EMI. The results are reported annually to the ICES Working Group (WGBFAS).

Herring *Clupea harengus membras*

The average Estonian landings of herring in 2003-2005 were 28722 tons and the quota for 2005 is 31487 tons (divided between the Gulf of Riga, SD 28-5 and SD 25-29+32) corresponding to >10% of the EC shared TAC, obliging Estonia to sample this stock.

A major part of the herring catches is nowadays taken in Sub-division 28-5 (mostly in the Gulf of Riga). Both trawlers (70% of landings in 2003) and spawning-time trap-net fishery target this species. The herring fishery takes place in all seasons, however, more intensively during the spawning period in spring, followed by the IV quarter; this is the usual annual dynamics of this fishery. The catches are only landed for human consumption purposes.

In 2004, altogether 92 samples from commercial landings were obtained, 9012 fish were measured and 8588 aged. Quotas (and correspondingly, landings) are declining in SD 25-29+32, but due to the separate management of the Gulf of Riga stock, complex stock structure (“bay” and “open sea” herrings, spring- and autumn spawning herrings) and the great importance of this species for the Estonian fisheries, sampling can not be decreased accordingly. In 2007, as in 2005 and 2006, Estonia will take at least 72 samples, and measure and age at least 7200 fish. Standard sampling procedure as described in 3.5.1 will be used. Both trawl fishery and coastal pound net fishery will be sampled proportionally to their landings.

Sampling of other biological parameters such as sex and sexual maturity are performed routinely when samples for age are collected from both commercial landings/catches and survey catches.

Sex and maturity stage is obtained from the individuals randomly selected for ageing in each sample. The maturity estimates (after aggregation) have a CV, which does not exceed 5% for the interval of 20-90% of the mature fish.

Collected data are stored in the fish sample database in EMI. The results are reported annually to the ICES Working Group (WGBFAS).

Cod *Gadus morhua*

Estonian TAC for cod is 902 tons in 2006. However, due to the low abundance of cod in the Estonian EEZ, majority of catch is taken outside the Estonian EEZ (900 t, mostly in SD 25) and landings are done not in Estonia. Annual official catches in the Estonian EEZ have been only 2 tons as an average for 2003-2005.

Cod occurs regularly in NW to Saaremaa Island (Küdema Bay and other areas). Gill-net CPUE data indicate increase of abundance in recent years, with a maximum in 2003 and the second largest abundance in 2005. Commercial fishery-independent data collection on cod CPUE, length and age distribution will be continued in Küdema and other areas.

As cod stock in the Estonian waters is at a low level, and there is almost no directed fishery for cod in the Estonian EEZ. As in 2005 and 2006, Estonia will sample cod only in its own coastal zone. The intention is to collect at least two samples from gill-net fishery (100 fish). Due to unpredicted landings in Estonia, sampling of cod is mostly done in cooperation with commercial fishermen who are asked to collect cod from their catches. Fishes will be purchased and analyzed by EMI. If cod appears as

by-catch in samples collected from other fisheries all individuals are sampled, length measured and aged.

Additional data on the state of cod stock will be obtained during planned bottom trawl survey in 2006, and from recreational fisheries.

Collected data are stored in databases in EMI. The results are reported annually to the ICES Working Group (WGBFAS).

Salmon *Salmo salar*

There have been wild salmon populations in 11 Estonian rivers (10 in the Gulf of Finland region, ICES SD 32, and 1 in the Gulf of Riga region (SD 28). In one of them (Narva River) wild population was lost several tens of years ago. The only remaining native (wild) salmon populations in the Gulf of Finland exist in three Estonian rivers; in addition, native population inhabits the Pärnu River (Table below). The wild salmon populations are genetically distinctive from each other, which indicates that there are still original salmon stocks left, but there is also some evidence of straying among rivers. Surveys indicate that parr densities vary greatly over time in these rivers, but densities are generally much lower than in similar rivers at these latitudes. Some year classes have been lacking in Estonian rivers during the last 30 years. Salmon populations in six other rivers have been supported by smolt releases of river Narva strain in the last few years. Despite of the enhancement releases some of these rivers may still support fractions of the original wild salmon populations, and therefore should be considered to be subject of potential recovery program.

River, type	Repro- duction area ha *	Potent ial smolt produc tion	Smolt production									
			1997	1998	1999	2000	200 1	200 2	2003	2004	2005	
Vasalemma, wild salmon	1+2	1500	300	100	<100	0	100	100	20	0	0	0
Keila, wild salmon	3,5+3	6000	300	1200	300	300	150 0	200	200	0	0	0
Vääna, mixed	4	5000	na	na	<100	0	0	0	20	0	0	16400
Pirita, mixed	10+1	10000	100	na	0	0	600	0	300	1500	1000	38800
Jägala, mixed	0,3+2	1500	0	0	0	0	0	0	0	0	0	10700
Valgejõgi, mixed	1,5+13	16000	0	0	0	0	100	100	0	100	400	35400
Loobu, mixed	6+1	8000	600	100	0	300	300	400	40	1200	1600	8800

Selja, mixed	9	10000	200	0	0	1400	200	100	0	100	400	31600
Kunda, wild	1,5+17	20000	1400	2100	100	1800	800	400	500	400	<100	0
Narva, reared	0	0	0	0	0	0	0	0	0	0	0	35200 Estonia, 129000 Russia
Pärnu, wild	3	3500	3300	600	300	<100	300	300	<100	<100	<100	35200 Estonia, 129000 Russia

* below dam + above dam

The average Estonian landings for 2003-2005 were 11 tons (approximately 2200 individuals), and the Estonian TAC (main basin + the Gulf of Finland) in 2006 corresponds to < 5 % of the EC shared TAC, not obliging Estonia to sample this stock. However, due to the alarming situation with natural stocks in the Estonian waters, and the Estonian participation in the Salmon Action Plan, data collection will be continued.

Open-sea driftnet or longline fishery has not in recent years, and all landings originate from coastal (mostly gill-net) fishery. The biggest catch in 2006 was taken in ICES SD 32 followed by ICES SD 29 and 28. Catches are highest from September to November (approx 70% of annual landings).

The intention is collect at least 2 samples (100 specimens) in 2007 (the same number as in 2005 and 2006). Due to unpredicted landings, sampling of salmon will be mostly done in cooperation with commercial fishermen usually themselves registering the presence of adipose fin (in hatchery-reared juveniles adipose fin is clipped before release), length of fish and collecting scales for age-reading. All salmons registered in samplings or surveys conducted by EMI are also analysed. The scales are analysed in EMI.

The purpose of the other biological sampling is to estimate on a yearly basis the distribution of wild and reared salmon in the total landings of salmon.

Effectiveness of natural reproduction will be also assessed as in earlier years (electrofishing in rivers, smolt trapping in at least one river).

Sea trout *Salmo trutta*

The average Estonian landings for 2003-2005 were 12 tons. Sea trout is captured in coastal waters using mostly gill-nets, but it is taken also using traps, especially in spring. Most of annual landings are in September-November with another peak in May; most of landings originate from SD 32 (Gulf of Finland).

The intention is collect at least 2 samples in 2007 (one – gill-net fishery in autumn, another – trap-net fishery in spring) (the same as in 2005 and 2006). Due to unpredicted landings, sampling of sea trout is mostly done in cooperation with

commercial fishermen usually themselves registering the presence of adipose fin (in hatchery-reared juveniles adipose fin is clipped before release), length of fish and collecting scales for age reading. All sea trout registered in samplings or surveys conducted by EMI are also analyzed. The scales are analyzed in EMI.

Effectiveness of natural reproduction will be also assessed as in earlier years.

Status of monitored wild and mixed sea trout populations in Estonia in 2005:

	Poor	Satisfactory	Good	Not known	Total number
Gulf of Finland (SD 32)	17	11	5	5	38
Main basin (SD 28, 29)	13	6	4		23
<i>Total</i>	<i>30</i>	<i>17</i>	<i>9</i>	<i>5</i>	<i>61</i>
<i>% of monitored populations</i>	<i>54</i>	<i>30</i>	<i>16</i>		

Eel *Anguilla anguilla*

Landings of eel are declining since 2002 and were only 10 tons in 2005 (15 t as an average for 2003-2005). Over 50% of landings are made in July and August. Eel is fished mostly using trap-nets, but there is also some long-line fishery.

The intention is to collect, as in 2005 and 2006, 8 samples (400 fish). All fish will be identified as “yellow” or “silver”, measured and their otoliths will be collected for age determination when possible. The proportion of silver and yellow eels will be determined in catches.

The number of eel samples to be collected by ICES Sub-division, gear type and quarter weighted by catch rates.

In addition to fisheries data, fisheries independent data will be gathered in permanent research areas using trap nets.

Flounder (*Platichthys flesus*)

In 2003-2005, the total commercial flounder landings (including some by-catch of turbot) were 415 tons in average; over 90% of landings (388 t) originates from the coastal gill-net and trap-net fisheries (in SD 29 mainly seine catches) and 15 t from trawling. Data from coastal fish survey indicate increased CPUE values for flounder in most of coastal areas since the mid-1990s. Directed fishery is closed from February to June, and the minimum legal size for landings is 21 cm.

Most of flounder in coastal fishery was earlier landed from ICES SD 32, but in 2005 the share of SD 28, SD 29 and SD 32 was almost equal (35%, 35% and 30%, respectively, and the landings were the biggest in the III quarter (74%).

Sampling is weighted according to fishing method and expected landings in each subdivision. The number of samples based on the extended program D3 (50

specimens per 200 tons, which corresponds to two samples, 100 individuals) is not adequate to cover sampling of all gear types and catch areas. In recent years, the total number of flounder aged from commercial landings in Estonia has been > 1000. The annual sampling schedule for 2007 consists of 26 samples (1300 fish) in ICES subdivisions 28, 29, and 32. The sampling intensity remains at the level of 2005 and 2006. Simple random sampling is applied. Each individual will be measured for length and aged. The sampling scheme will be modified annually, depending on catch rates and fishing activities.

The number of flounder samples to be collected by ICES Sub-division, gear type and year quarter weighted by catch rates in 2005.

Additional (fishery independent) data will be gathered during the coastal fish gill-net sampling by MI.

Other areas

Estonian quotas for 2006 are in table below.

Species	Locality	2006 quota
Baltic Sea		
Cod <i>Gadus morhua</i>	SD 22-24	275
	SD 25-32	1015
Herring <i>Clupea harengus</i>	SD25-27, 28.2, 29, 32	13015
	SD 28.1	18472
Sprat <i>Sprattus sprattus</i>	IIIbcd	48204
Salmon <i>Salmo salar</i>	IIIbcd excl. SD 32	9504 specimens
	SD 32	1581 specimens
Other		
Shrimp <i>Pandalus borealis</i>	NAFO 3M	1667 fishing days
	NAFO 3L	245 fishing days
Redfish <i>Sebastes</i>	NAFO 3M	1571
	V, XII, XIV	284
Greenland halibut	NAFO 3LMNO	371
	IIa, IV, VI	8
Skates and rays	NAFO 3LNO	546
Mackerel	IIa, Vb, VI, XIII, VIIIabde, XII, XIV	119
Roundnose grenadier	VIb, VI, VII	77
Blue ling	VI, VII	5

Estonia has a significant *Pandalus borealis* quota in the NAFO area 3M (1667 fishing days; landings in 2002 were 13681 tons, in 2003 – 12849 tons, in 2004 – 14136 tons, in 2005 – 17828 tons). Also, Estonia has quotas for redfish and some other species (Estonian landings < 5% of EU landings). In addition, Estonia has smaller quotas for some other species in NAFO and NEAFC areas. In the Svalbard area, Estonia has a quota for shrimp (377 fishing days).

Total landings of the Estonian distant fleet were 22116 tons in 2005 (including 17828 tons of shrimp, 1767 tons of redfish, 988 tons of rays, and 877 tons of Greenland halibut). These landings are normally not made in Estonia but in Canada, Iceland and Spain.

Basic fishery data (locality, trawling depth, duration, catch composition and volume, discards) in the NAFO area will be routinely registered by observers. Observers on board Estonian vessels are employed by EMI since July 2005, and they have been specifically trained to collect all data, including biological data, prescribed by the Data Collection Regulation. Earlier observers' data are stored in EXCEL database in the Environmental Inspectorate, Ministry of the Environment, and are accessible to EMI.

Intensity of shrimp sampling will meet the requirements of NAFO SC shrimp assessment group, and will therefore exceed that prescribed by the Data Collection Regulation. Catches, landings and discards will be reported on monthly basis for 4 subunits of NAFO 3M area, and length distribution of catches will be monitored throughout the year. Also, sex composition of catches will be analyzed by specifically trained observers.

Despite the fact that catches of the Estonian distant fleet will mostly not be landed in Estonia, all sampling will be done by EMI in 2007. Sampling intensity will be adjusted according to actual catches. Age samples will be collected, if needed, but ageing will not be performed in 2007 due to the lack of expertise at this moment. Age samples will be available to other Member States for age reading, if needed.

Observers' data will be analysed in EMI and the results will be forwarded to NAFO SC.

Biological sampling will be done by observers, to cover all the year and all fishing areas. The total man-power needed for this is estimated at 24 man-months (8 trips to vessels).

8.2 MP - Landings - Derogations and non-conformities

Estonia asks the same derogations as for 2005 and 2006.

1. Most of MP stocks are over sampled as compared to DCR. However, the level of sampling is the same as in 2005 and 2006 (accepted by STECF). In the case of cod this is justified by the recovery plan, in most other cases – by the need to get sufficient data for management decisions and to reach appropriate precision levels. Over sampling is sometimes (eg shrimp in NAFO area) done using other funds and no EU contribution is asked. See 8.1 for further explanations.

2. Estonia is performing (as Finland) studies to reveal salmon and trout smolt production (electrofishing and smolt trapping in rivers). This has been adopted by STECF for 2005 and 2006. See 8.1 for further explanations.

3. Estonia will conduct, as in 2005 and 2006, fishery independent data collection in permanent test fishing areas using standard set of gill nets and also trap nets. This sampling provides data for cod, eel, flounder and several other species. Data on species composition of fish assemblages, age, length and sex distribution, relative strength of year-classes, mortality and growth rate have been used to manage the stocks of coastal area. Gathering fisheries-independent data has been useful as several species have local stocks with different population dynamics. Furthermore, surveying of fish assemblages is more consistent with the ecosystem approach to fisheries management. See 8.1 for further explanations.

4. Estonia asks derogation from sampling of Illex in Area 3, 4 and from sampling of mackerel and redfish in NEAFC as well as roundnose grenadier, blue ling and Greenland halibut in IIa, IV and VI, as Estonian quotas and landings for these stocks are marginal and no regular fishery occurs.

8.3 EP - Landings - Planned sampling

Collection of data according to Chapter H. Biological sampling of catches: composition by age and length, and Chapter I

- Turbot IIIb-d
- European whitefish IIIId
- Pikeperch IIIId
- Pike IIIId
- Perch IIIId

These stocks (especially pike, pikeperch) are of high commercial interest in Estonia, and some of them are subjected to over fishing. In some cases (e.g. perch, pike, whitefish) stock structure is complex (many local stocks) and analytical stock assessment will not be used; for these species, fishery-independent data collected by EMI form the main basis for management decisions. Landings sampling of these species will be kept at a relatively low level.

Sampling procedure for the species in the Baltic is explained below.

Turbot *Psetta maxima*

Until now, catches of turbot are usually registered together with flounder. Normally, by-catch of turbot is less than 10% in the flounder fishery, but may be periodically in

some places up to 50%. It is more abundant in the open-sea areas, e.g. western coast of islands Saaremaa and Hiiumaa (ICES 28-2, 29-2) and 32-1. Recent annual landings of turbot have been low, but coastal gill net survey data for 2005 indicate a strong incoming year-class. Fishery for turbot is closed from 15 February to 15 June (in ICES 32 until 30 June).

Sporadic directed gill-net fishery for turbot has been occurred in ICES 29-2.

A pilot study on turbot was done in 2005 to reveal actual landings and length/age composition of the catches. Turbot by-catch were recorded and analyzed in every sampling of flounder landings. Data on length and age were obtained from test fishing. A strong incoming year class was detected in SD 29. Bycatch in gill nets was significant only during the spawning period when commercial fishery for this species is closed.

Also, earlier data on catches of turbot during coastal fish sampling (by EMI) will be analysed in 2007.

These data are used to elaborate a sampling programme for 2006 and subsequent years. Preliminary sampling programme includes 4 samples (200 fish).

European whitefish, *Coregonus lavaretus sensu lato*

European whitefish has a complex stock structure. Recent data indicate that there are at least three species of whitefish in the Estonian waters (sea-spawning whitefish with a low number of gill rakers, anadromous whitefishes with low and high gill raker count) and (probably) a hybrid form of whitefish. The abundance of this hybrid form has increased, but the stocks of native species have declined and several local spawning populations have disappeared (ICES CM 2003/R: 15).

Catches have been somewhat increased in recent years but were low in 2005 (19 t); average annual landings were 26 tons in 2003-2005. Whitefish is mainly captured using gill-nets; some catches (especially in spring) are taken using trap-nets. Most of landings are taken from ICES SD 32, followed by SD 29 and 28. Landings are almost equally distributed in II, III and IV quarters.

The number of samples predicted by the EP (1 sample of 50 specimens per 100 tons of landings, C3) is definitively too low to get any meaningful data about whitefish stocks. Landings sampling will be done in cooperation with fishermen, and in addition to standard data, the number of gill rakers will be registered (to distinguish between forms), and samples for DNA analysis are collected where possible (no EU funding is asked for collection of DNA samples). Additional data on whitefish stocks will be gathered in 2006 within the coastal fish sampling by EMI.

Altogether, 10 whitefish samples (500 specimens) will be collected by ICES Sub-division, gear type and quarter weighted by catch rates in recent years. The sampling intensity remains the same as in 2005 and 2006.

The sampling intensity is the same as in 2005 and 2006.

Pikeperch *Sander lucioperca*

Pikeperch stock in the main distribution area, Pärnu Bay (ICES 28-5) was over fished in the 1990s. Subsequent to severe catch restrictions, this stock is slowly recovering. In 2004, increased catches were reported from ICES 32; stock in SD 29 has declined substantially and landings are negligible. Pikeperch is mostly captured by gill-nets and trap-nets, and to a much lesser extent – by longlines. Over 2/3 of the total catches are landed in the II and III quarters. The mean catch in 2003-2005 was 124 t.

The number of samples predicted by the EP (1 sample of 50 specimens per 100 tons of landings, C3) is definitively too low to get any meaningful data about pikeperch stocks. Sampling is weighted according to fishing method and expected landings in each subdivision. The annual sampling schedule consists of 15 samples and 750 individuals. Simple random sampling is applied. Each individual will be measured for length and aged. To improve the accuracy of age readings, both scales and gill covers (*operculum*) are used in age readings. The sampling scheme will be modified annually, depending on catch rates and fishing activities.

The sampling intensity will be the same as in 2005 and 2006. Additional data will be gathered during the coastal fish gill-net sampling by EMI.

Pike *Esox lucius*

The total commercial pike catches exceeded 400 t in the 1930s but declined to the historical low levels in the 1990s, due to both excessive fishery and natural conditions. The stock is recovering during the most recent years as indicated by coastal fish survey CPUE data. Landings increased in 2003 and 2004 but were only 22 t in 2005; average landings in 2003-2005 were 34 tons. Pike is targeted mostly by gill-nets, also (especially in spring) by trap nets. It is also targeted by recreational fishermen.

Sampling is weighted according to fishing method and expected landings in each subdivision. The annual sampling schedule consists of 11 samples (550 fish) in ICES subdivisions 28, 29 and 32. Simple random sampling is applied. Each individual will be measured for length and aged. The sampling scheme will be modified annually, depending on catch rates and fishing activities.

The sampling intensity will be the same as in 2005 and 2006. Additional data will be gathered during the coastal fish gill-net survey.

Perch *Perca fluviatilis*

The total commercial perch catch in the Estonian coastal waters has been up to 2130 t, but catches declined (especially in ICES SD 29) in the 1990s due to over-fishing and poor recruitment. In recent years, due to strong year-classes and fishery limitations, the stock is recovering also in SD 29. Landings in 2005 were 761 tons (average for 2003-2005 – 750 and were mostly made from SD 28. Approximately 50% were landed in the II quarter (mainly trap net catches), the rest in the III and IV quarters (mostly gill-net catches).

Basic data on perch populations in SD 28, 29 and 32 are obtained during the coastal fish sampling by EMI. For this reason, sampling of commercial landings is kept at reasonably low level. Furthermore, detailed age-length keys for both sexes are available for these areas (with different growth rate) from coastal fish sampling. Therefore there is no need to age the fish sampled from commercial landings.

Nevertheless, the number of samples based on the extended program C3 (8 samples, 400 individuals) is not adequate to cover sampling of all gear types and catch areas. Gill- and trap net catches of perch differ from each other in terms of size selectivity, and therefore both gear types must be covered in the sampling programme.

Sampling is weighted according to fishing method and expected landings in each subdivision. The annual sampling schedule consists of 26 samples (1300 fish) in ICES subdivisions 28, 29 and 32. Simple random sampling is applied. Each individual will be measured for length and, if possible, sexed. The sampling scheme will be modified annually, depending on catch rates and fishing activities.

The sampling intensity will be the same as in 2005 and 2006.

8.4 EP - Landings - Non-conformities

EP stocks are over sampled as compared to DCR. However, the level of sampling is the same as in 2005 and 2006 (accepted by STECF). Over sampling is justified by the need to get sufficient data for management decisions and to reach appropriate precision levels. See 8.1 for further explanations.

8.5 MP & EP - Discards - Planned sampling

Planned sampling of discards is in Table 8.4.

Length of discarded specimens and age data of discards will be collected:

- 1) in NAFO area – routinely by observers on board,
- 2) in Baltic trawl fisheries – in ports and by observers on board,
- 3) in other fisheries – unsorted landings.

8.6 MP & EP - Discards - Derogations and non-conformities

No. All important fisheries will be sampled.

9 Module I - Other biological sampling

9.1 MP - Planned sampling

Long-term planning of data collection on Other biological parameters is in Table 9.1. Estonia joined the DCR in 2005, but earlier available data are also included in the Table 9.1.

The intention of 'Other biological sampling' is to estimate for stock indicated in Annex to the Data Regulation (Appendix XVI)

- sex composition of the catches,
- maturity at age and length,
- length and weight at age (i.e. growth curves).

These parameters are (in the Baltic) routinely sampled both during surveys, test fishing and from the commercial landings.

Planned sampling level for growth and sex ratios is in Table 9.2, for maturity and fecundity – in Table 9.3.

9.2 MP - Derogations and non-conformities

No data will be collected for rays due to the lack of expertise. The situation may change if it appears possible to train a person of EMI to conduct this work.

As fish weight, sex and maturity are routinely registered during sampling, these data are collected (without major costs) annually.

9.3 EP - Planned sampling

Long-term planning of data collection on Other biological parameters is in Table 9.4. Estonia joined the DCR in 2005, but earlier available data are also included in the Table 9.4.

Planned sampling level for growth and sex ratios is in Table 9.5, for maturity and fecundity – in Table 9.6.

9.4 EP - Non-conformities

As fish weight, sex and maturity are routinely registered during sampling, these data are collected (without major costs) annually.

10 Module J - Economic data by group of vessels

10.1 MP - Planned sampling

Data sources

The Estonian programme for section J covering the information for the Community Programme, as defined in appendix XVII and XVIII, will be completed by two main sources of data.

- 1) The central administrative and statistical register of the Fisheries Department, Estonian Ministry of Agriculture: The Estonian Fisheries Information System (EFIS). This database contains all relevant data: logbooks (trawling fisheries), fishermen's diaries (passive gears), effort landings, sales notes, average first buyer prices, issued licenses etc.
- 2) Sample statistics compiled at the Estonian Marine Institute (MEI) on the base of questionnaires and interviews with the representatives of the fishing enterprises from a selected sample groups.

Some data will be obtained also from Statistical Office of Estonia (e.g. price statistics on fuel).

Earnings of the fishing enterprises will be calculated using the landings data, sales notes and first buyer prices registered in EFIS. For cost data, which is not subject to administrative control by the fisheries authorities, there is no need to build a comprehensive register or database. Instead it is more cost efficient to use a statistical sample, which will be compiled in MEI. When selecting trawlers to be included into the sample group of a certain segment (see chapter 4.1.2), all vessels in these segments will be divided into three subgroups based on the total catch per vessel. From all groups (high, average and small catch per vessel) at least three vessels will be randomly selected for the sample. Gill-netters will be treated in one group due to the secrecy (only 6 vessels).

Evaluation of the economic situation of the main two Estonian fleet segments (Baltic trawlers <24m and >24 m) has been carried on in MEI for years 2001-2003 in the framework of Concerted Action (FAIR PL97-3541; Economic Performance of Selected European Fishing Fleets) using above mentioned scheme. In 2007, all fleet

segments will be evaluated based on questionnaires, including vessels operating in NAFO area and other areas of the Atlantic Ocean.

Segmentation

The population comprises all commercial fishermen and fishing firms. According to the national legislation the sale of fish is not allowed for recreational fishermen. So, all legal fish sale is recorded in the Estonian Fisheries Database. Before drawing the sample the population is stratified according to vessel segment, fishing technique, and fishing region.

Fleet segmentation in 2006 will be according to the provisions of DCR; segments defined in the Appendix III will be considered.

Fleet segment	Total population no. (2005)
Trawlers < 24 m (Baltic Sea)	34
Trawlers 24 - 40 m (Baltic Sea)	72
Trawlers > 40 m (Atlantic)	11
Gillnetters (Baltic Sea)	6
Coastal (polyvalent) vessels (Baltic Sea)	885

Data for basic economic evaluation

Description	Parameter	Source
Income	Total and per species	- Sales notes (EFD in EME) - Logbooks (EFD in EME)
Production costs	Crew Fuel Repair and maintenance Other operational costs	- Questionnaires (vessel owners, fishing enterprises) - Price statistics on fuel
Fixed costs	Average cost	- Calculated costs on replacement value
Financial position	Share of own / foreign capital	- Questionnaire (vessel owners)
Investment	Value	- Calculated replacement value
Prices/species	Value/quantities	- Logbooks (EFD in EME)

		- Sales notes (EFD in EME)
Employment	Number	- Questionnaire (vessel owners) - Calculated according to the average crew number per vessel (Estonian 12-40 m fleet consists of 6 distinct types of vessels)
Fleet	Number GT KW Age Gear used	- vessel register (EFD in EME) - Logbooks
Effort		- Vessel register (EFD in EME) - Logbooks (EFD in EME)

10.2 MP - Derogations and non-conformities

Data on invested capital will be based on replacement value in 2007, as also in earlier years. This approach has been used also in the Concerted Action Q5CA-2001-01502 (Economic Performance of Selected European Fishing Fleets). Insured value of vessels cannot be used, as many smaller boats are not insured. However, available data on insured value will be also collected.

The yearly routine for producing the statistics for evaluation of the economic situation of the fishery is scheduled at completing the data by the end of October of the next year.

EFIS is updated constantly (daily). Earnings of fishing enterprises of year 2006 will be finalized (in MEI) by June 2007. Financial statements for 2006 of fishing enterprises belonging to the samples of the segments will be available from July 2007. After that this information will be analyzed by MEI. Information on economic situation of fishing enterprises in 2006 is available by October 2007.

11 Module K - Data concerning fish processing industry

11.1 MP - Planned sampling

Collection of economic data concerning the processing industry has not performed by Estonia in earlier years. A pilot study is planned in 2007.

The target population are all fish processing firms (determined in Council Regulation (EEC) No 3037/90: Nomenclature Générale des Activités Economiques dans les

Communautés Européennes). All operational firms, with fish processing as their main branch, should be listed in the Business Register of Statistics Estonia.

Economic data of fish processing firms will be gathered from financial statements and by Statistics Estonia. Fish processing data will be collected by a survey by FGFR and this information will be linked to economic data of processing firms in the Business Register. Collected data will cover the parameters mentioned in Article 13 and Annex XIX.

Financial statements are based on data collected by Statistics Estonia. Primary sources of information are direct inquiries and business taxation material supplemented by Business Register data.

Data on fish processing will be conducted by means of a survey. The survey is carried out as a stratified sampling survey according to the size of the fish processing enterprises. The amount of domestic and imported fish raw material and the amount of final products by main species, in terms of raw material used, are investigated. At the same time additional information including the job creation capacity of the sector will be inquired.

Information of the economic situation of fish processing sector will be provided not earlier than one year after the period investigated..

11.2 MP - Derogations and non-conformities

Due to the lack of former expertise, a pilot study is planned for 2007.

12 Databases

12.1 Database development and data management

Primary data collected under the Estonian programme will be stored in the following computerized databases:

- Estonian Fisheries Information System, EFIS (EMA) Includes:
 - o Logbook database. Data on origin of catches and on effort.
 - o Fishermen's diaries database. Data on catches and effort by gear type and area of coastal fishery.
 - o Landings declaration database, data on quantities landed by species.
 - o Sales notes database. Data on quantities landed and prices.
 - o Fishing Vessel Register. Data on fishing capacity. (EMA)
- Biological database. Data on biological parameters, CPUEs etc. (EMI)
- Economic data (EMA, EMI)

Biological database

Biological data aggregated by the ICES sub-divisions and quarters have been presented for the Baltic stock assessment working groups of ICES to assess stock size, project biomass development and advise total allowable catches (TAC).

Until 2005, Estonian biological data were stored in several databases; usually data for one species were stored in a separate database. These databases were developed in dBaseIV, ACCESS, BASIC or as an Excel or ASCII files. They contain biological data for herring, sprat, flounder and other species, including main coastal fish species exploited by the Estonian fishing fleet in the eastern Baltic Sea. A unified database has been developed during 2005 and 2006.

Some of the Estonian data have also been stored in the international databases managed within ICES. These are

- **FISHFRAME** - international database from commercial fishery of main Baltic species (excluding salmonids) containing biological parameters of fish (length, weight, age, sex, maturity) from landings and discards.
- **BALTDAT** - international database from acoustic surveys. The database contains acoustic measurements and biological data on Baltic herring and sprat.

Coastal fish test-fishing data for the reference area are stored in the **HELCOM COBRA** database (since 1992).

Economic databases

Primary data for economic analyses such as catch volumes by enterprises (boats) and raw fish prices will be obtained from EFIS. Cost data will be collected by EMI (using surveys) and managed by the institute; these data are surrounded by strict confidentiality and will not in any circumstance be passed on to other persons or authorities. EMI has access to the data stored in EFIS. Each year EMI produces a statistical file on the costs and earnings of the fishing fleet (divided into three segments: coastal fishery, trawlers below 24 m, and trawlers above 24 m; Atlantic trawlers data is also available since 2005). This file does not contain individual data on separate fishing enterprises and can therefore be made available for external users.

Database development in 2007 will include development of a new module (economic data for processing industry). Also, the aim is to upgrade and restructure databases in Pärnu Branch (responsible for data collection in the Gulf of Riga area).

13 National and international co-ordination

13.1 National co-ordination

National coordination meeting will be arranged in spring 2007, before submission the 2008 Programme Proposal and 2006 Report. All participating persons (including observers and representatives from the ministries) will participate.

The main aims of national coordination are 1) analysis of data collection (and data quality) during the previous year, revealing of shortfalls and ways for improvements, 2) tasks for 2007, 3) information about international cooperation, new regulations, recommendations of regional meetings.

13.2 International co-ordination

See table 13.1.

13.3 Follow-up of RCM recommendations and initiatives

Estonia will implement Baltic and NAFO RCM recommendations and initiatives.

14 List of acronyms and abbreviations

EFIS	Estonian Fisheries Information System (a computerized database in the Fisheries Department, Ministry of Agriculture)
EMI	Estonian Marine Institute
WGBFAS	Baltic Fisheries Assessment Working Group (ICES)
WGBIFS	Baltic International Fish Survey Working Group (ICES)
WGBAST	Baltic Salmon and Trout Working Group (ICES)

Annexes

Appendix I. Conversion factors from gutted weight to live weight (adopted from the Danish National Programme).

GUTTED, WITH HEAD:

COD	1.18
EUROPEAN FLOUNDER	1.05
TURBOT	1.05
SALMON	1.10

GUTTED, WITHOUT HEAD:

COD	1.60
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Appendix II.

Provisional calculation of Estonian discard sampling effort by species and area.

Species	Area	EE landings in EE 2004 tonnes	Discard % of landing (estimate)	Estimated discard in 2004 (tonnes)	Beforehand estimates		Yearly discard sampling required (Y/N)	Sampling frequency rules				Sampling frequency		
					Discard rates (weight)	Discard rates (numbers)		Length measure -ment t	Sampling Age reading	No of individuals length measured per sample	No of fish aged per sample	No of length samples to be sampled	No of individuals to be measured	No of samples to be aged

MP

Cod	IIId	2	12	0	>10%	>20%	N	1:200	1:200	50	25			
Herring	IIId	27380	3	820	<10%	<20%	N	1:1000	1:1000	100	50	1	100	50
Sprat	IIId	34113	0	0	<10%	<20%	N	1:1000	1:1000	100	50			
Salmon	IIId	7	10	1	<10%	<20%	N	1:100	1:100	50	50			
Pandalus borealis	NA FO	0												
Sebastes	NA FO	0												
EP														
Sea trout	IIId	10	10	1	<10%	<20%	N	1:50	1:50	100	100			
Flounder	IIId	384	10	38	<10%	<20%	N	1:200	1:200	50	50			
Perch	IIId	666	10	66	<10%	<20%	N	1:100	1:100	50	50			
Pikeperch	IIId	206	10	21	<10%	<20%	N	1:100	1:100	50	50			
Eel	IIId	16	10	2	<10%	<20%	N	1:100	1:100	50	50			
Pike	IIId	49	10	5	<10%	<20%	N	1:100	1:100	50	50			
Whitefish	IIId	28	10	3	<10%	<20%	N	1:100	1:100	50	50			

Remark. All species except for sprat and herring listed in Table have a minimum legal size for landing. In some fisheries for flounder and freshwater species discarding rates will probably be higher (> 10% by weight, > 20% by numbers) depending on area and year. Discard rates to be studied in 2005-06.

Appendix III

**Estonian sampling effort by species and area based on landings made in the Estonian ports.
Minimum programme**

Species	Area	EU TAC 2005 (tonnes)	EE TAC 2005 (tonnes)	EE TAC % of EU TAC	EE landings in Estonia 2003- 2005 (tonnes)	EE landings in EE in 2005	Other member states landings in EE in 2005	Sampling required (Y/N) EE	Sampling frequency rules 1)			Minimum sampling 2007 1)			Estonian sa	
									No of samples per fished tonnes	No of fish measured per sample	No of fish aged per sample	Minimum no. of samples	Minimum No of measured fish	Minimum No of aged fish	Minimum no. of samples	Minimum no. of samples
Herring	IIId	168000	30190	> 10	31185	27380	0	Y	1/1000	100	100	30	3000	3000	72	
Sprat	IIId	550000	56650	> 10	34770	34113	0	Y	1/2000	100	50	15	1500	750	37	
Cod	IIId	24700+	1112	< 5	2	2		N	1/200	50	25	0	0	0	2	
Salmon	IIId	477000	9504+1581 specimens	< 5	11	7	0	N	1/100	50	50	0	0	0	2	
Sea trout	IIId				12	10	0	N		50	50	0	0	0	2	
Eel	IIId	--		--	21	16	0	Y	1/100	50	50	0	0	0	8	
Shrimp	NAFO 3M		1667 days	> 10	0	0		Y	1/200	100		110	11000	NA	110	
Redfish	NAFO 3M	5000	1571	> 10		(1767)		Y	1/20	100	50/1000	88	8800	100	88	
Redfish	NEAFC	15513	284	< 5	0	0		N								
Illex	Area 3, 4		128	< 10	0	0		N								
Gr. halibut	NAFO	14079	371	< 5	0	(877)		N	1/20	100	50/500	0	0	0	44	4
Rays	NAFO	13500	546	< 5	0	(988)		N	1/200	100	NA	0	0	0	5	5
Mackerel	NEAFC	420000	119	< 5	0	0		N								
Flounder	IIId	NA	NA		415		0	N	1/200	50	50	0	0	0	26	

1) As specified in Data Regulation

Appendix IIIa

Appendix IIIa.1

Estonian landings in the Baltic Sea in 2002, 2003, 2004 and 2005 (tonnes)
(for calculation of average landings in Appendix III and IV)

Species	Area	2001	2002	2003	2004	2005	Average 2003-05
MP							
Herring	IIId	41111	36306	29870	27380	65500	40917
Sprat	IIId	39375	40830	29367	34113	22685	28722
Cod	IIId	7,4	0,8	1,6	2,1	1,3	2
Salmon	IIId	14	16	10	7	8,5	9
Sea trout	IIId	13	16	9	10	10	10
Eel	IIId	27	27	19	16	10	15
Flounder	IIId	482	501	457	384	403	415
EP							0
Whitefish	IIId	33	47	30	28	19	26
Pike	IIId	19	19	31	49	22	34
Perch	IIId	386	578	824	666	761	750
Turbot	IIId					0,1	0
Pikeperch	IIId	33	39	96	206	71	124

Appendix IIIa.2

Other EU member states landings in Estonia in 2001, 2002, 2003, 2004 and 2005 (tonnes)

(for calculation of average landings in Appendix III)

Species	Area	2001	2002	2003	2004, 2005	Average 2003- 2005
MP						
Herring	IIId	3080	1883	265	0	82
Sprat	IIId	2626	935	154	0	51

Appendix IV

Estonian sampling effort by species and area based on landings made in the Estonian ports. Extended programme

Species	Area	EU TAC 2005 (tonnes)	EE TAC 2005 (tonnes)	EE landings in Estonia 2003-2005 (tonnes)	EE landings in EE in 2005	Sampling required (Y/N) EE	Sampling frequency rules 1)			Minimum sampling 2005 1)			Estonian sampling 2005 2)		
							No of samples per fished tonnes	No of fish measured per sample	No of fish aged per sample	Minimum no. of samples	Minimum No of measured fish	Minimum No of aged fish	Minimum no. of samples	Minimum No of measured fish	Minimum No of aged fish
Whitefish	IIId	---	---	26	19	Y	1/100	50	50				10	500	500
Pike	IIId	---	---	34	22	Y	1/100	50	50				11	550	550
Perch	IIId	---	---	750	761	Y	1/100	50	50				26	1300	1300
Turbot	IIId	---	---	NA	0,1 (underestimated)	Y	1/100	50	50				4	200	200
Pikeperch	IIId	---	---	124	71	Y	1/100	50	50				15	750	750

1) As specified in Commission Regulation (EC) 1639/2001