

Ministry of the Environment, Republic of Estonia (EST)

Council Regulation (EC) No 199/2008 of 25 February 2008
concerning the establishment of a Community framework for the collection, management and
use of data in the fisheries sector and support for scientific advice regarding the Common
Fisheries Policy

Commission Regulation (EC) No 665/2008 of 14 July 2008
laying down detailed rules for the application of Council Regulation (EC) No 199/2008

Commission Implementing Decision (EU) 2016/1251 of 12 July 2016 adopting a multiannual
Union programme for the collection, management and use of data in the fisheries and
aquaculture sectors for the period 2017-2019

**ESTONIAN Work Plan for data collection in the fisheries and aquaculture sectors
2017-2019**

Tallinn, 31 October 2016

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SECTION 1: BIOLOGICAL DATA

Pilot Study 1: Relative share of catches of recreational fisheries compared to commercial fisheries

General comment: This Box fulfills paragraph 4 of Chapter V of the multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (a) of this Decision.

1. Aim of pilot study

Estonia has carried out some relevant studies earlier, and the results have been published. Ministry of the Environment collects data about volume of catches of all species from recreational fishermen using commercial gear (gill nets and trap nets) as well as licenced catches of salmon and trout in rivers. Volume of catches taken by anglers and rod fishermen remains unknown, but is substantial (in addition to inland waters) in eg Pärnu Bay, especially in winter (under-ice fishery). These catches in the sea consist mostly of *Perca fluviatilis* and *Sander lucioperca*. Also, length distribution of catches remains largely unknown, but previous available data indicate substantial catch of undersized fish. Pilot study will be directed to get better estimate of total catch taken by recreational fishermen in the sea and in sea trout and salmon rivers, and on length distribution of catches.

2. Duration of pilot study

2017-2018

3. Methodology and expected outcomes of pilot study

Questionnaires and on-site evaluation of catch composition and size distribution. This study will show the impact recreational fishery has on stocks compared with commercial fisheries.

(max 900 words)

SECTION 1: BIOLOGICAL DATA

Text Box 1E: Anadromous and catadromous species data collection in fresh water

General comment: This Box fulfills paragraph 2 points (b) and (c) of Chapter III of the multi-annual Union programme and Article 2 of this Decision.

Salmon and sea trout.

The principal way of monitoring salmonid populations in rivers remains electrofishing. Permanent monitoring sites, located in important parr rearing areas, are fished annually. The sites are fished twice to calculate fishing efficiency and parr densities are presented as individuals per 100 m². The results of this method are comparable to all neighbouring countries.

Atlantic salmon and sea trout smolt abundancy estimate in river Pirita is done by capture-mark-recapture method. Smolts are caught by trap-net at the river mouth throughout the migration season. Captured smolts are tagged by VIE (visible implant elastomer) and released 2 km upstream from the trap. Some of the tagged smolts will be recaptured during their decent towards the sea. This enables to estimate the overall smolt run size. Ascending Atlantic salmon and sea trout spwners are counted in river Pirita throughout the migration season. A fish fence (type: resistance board weir) covering the entire width of the river guides fish through an opening that has a fish counter. Vaki Riverwatcher with a camera tunnel is used.

All caught fish will be measured and released after analyses.

Eel

Eel samples ($N_{\min}=200$ specimens) from fresh waters are collected using fyke nets (mouth opening <3m, mesh size >38mm in the cod end), 1 ha enclosure fyke net system or sampled in the catch of commercial fishermen. Length (TL=mm), weight (g), age (from otolith), silvering stage (length of the pectoral fins and eye diameter) and infestation with parasites are recorded for the specimens collected independent of the commercial fishery. Total length, weight and silvering stage are recorded for the individuals sampled from commercial catches.

Annual data of eel restocking is collected with average weight (g) and total number of restocked individuals recorded.

(max 250 words per Area)

SECTION 1: BIOLOGICAL DATA

Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem

General comment: This Box fulfills paragraph 3 point (c) of Chapter III of the multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (b) of this Decision.

As there are no active bottom trawlers at the moment (2016-17) we do not study fishery's impact to the sea floor. During costal fish survey we study by-catch, monitor different fish species stock fluctuations and study the diet of predatory fish to understand the predator-prey relationships.

(max 900 words)

SECTION 1: BIOLOGICAL DATA

Text Box 1G: List of research surveys at sea

Baltic International Trawl Survey (BITS Q 4)

1. Objectives of the survey.

The main aim of the BITS ground-trawl survey, conducted twice per year in February-March and November-December is monitoring of the spatial distribution and abundance of cod, flounder, sprat and herring recruiting year-classes, and other fish species spatial distribution in a bottom zone of particular the ICES Subdivisions, taking into consideration the principal hydrological parameters vertical and horizontal variations. Moreover, the survey is focused on evaluation of the fishing efficiency (catch per unit of effort), and analysis of the Baltic ichthyofauna biodiversity as well as on sampling materials for the main species principal biological parameters of main fish species. The results are primarily used by the ICES Baltic Fisheries Assessment Working Group (WGBFAS) annually.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map).

Estonia follows the methods agreed for the BITS by the ICES Baltic International Fish Survey Working Group (WGBIFS) described in the Manual for the Baltic International Trawl Surveys (BITS).

<http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20%28SISP%29/SISP%207%20-%20Manual%20for%20the%20Baltic%20International%20Trawl%20Surveys%20%28BITS%29.pdf>

Map (Figure 1.) describes the approximate location of sampling sites allocated for Estonia.

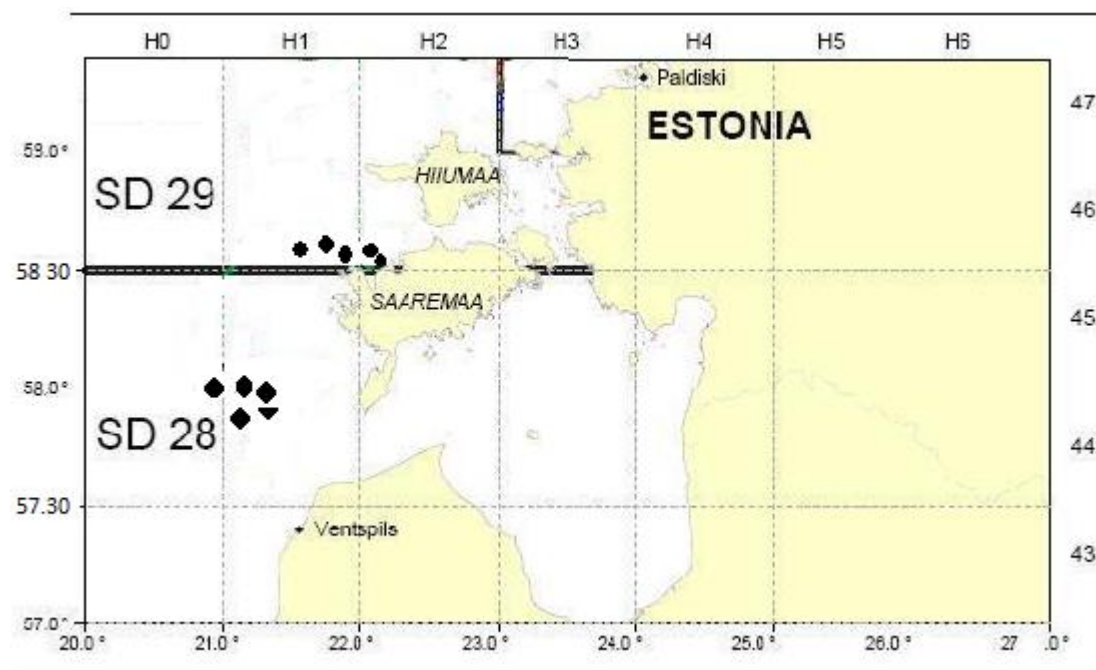


Figure 1. Approximate location of trawl stations in Sub-divisions 28.2. and 29.

3. For internationally coordinated surveys, describe the participating Member

States/vessels and the relevant international group in charge of planning the survey

National parts of the international coordinated fish surveys should be carried out in the first quarter between 15 February and 31 March (spring survey) and in the fourth quarter between 1 and 30 November (autumn survey). The total distribution area of cod should be covered by the BITS trawl survey. It was agreed by the responsible ICES WGBIFS that the ICES Subdivisions 22–28 should be covered with fish control-hauls during the trawl surveys. All Baltic countries are participating in the BITS survey. The surveys are coordinated and the results are discussed by the ICES WGBIFS annually.

The participating countries use their research vessel or chartered fishing vessel and the standard gear. Estonia is participating in the 4th quarter (autumn) survey using the chartered Estonian fishing vessel and TV2-520 trawl.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used.

Each MS performs the survey in its EEZ according to the pre-defined sampling stations. These are randomly chosen and assigned internationally from the Clear Tow Database.

5. Explain where thresholds apply

NA

Baltic International Acoustic Survey (BIAS)

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey

The objective of the Baltic International Acoustic Survey (BIAS) and Baltic Acoustic Spring Survey (SPARS) programs are to obtain the fisheries-independent information for tuning analytical stock assessment models for Baltic herring and sprat, to standardize survey design, acoustic measurements, fishing method and data analysis throughout all national surveys where data are used as indices for assessment purposes.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The acoustic surveys cover the total area of ICES Division III. Each statistical rectangle of the area under investigation is allocated to one particular country by the Baltic International Fish Survey Working Group (WGBIFS), thus each country has a mandatory responsible area. The area is limited inshore by the 10 m depth line. The standard equipment used for the survey is the Simrad EK/EY-60 echosounder and the standard frequency is 38 kHz. Baltic International Acoustic Survey (BIAS) is carried out in September/October. All surveys are carried out by the agreed Manual of International Baltic Acoustic Surveys (IBAS) (<http://www.ices.dk/community/groups/Pages/WGBIFS.aspx>). The surveys are coordinated and the results discussed by the ICES WGBIFS annually. Data are stored in BIAS_DB.mdb. In future the data will be transferred to the new ICES acoustic

database which is under construction.

Map (Figure 2.) describes the location of sampling sites allocated for Estonia during the BIAS.

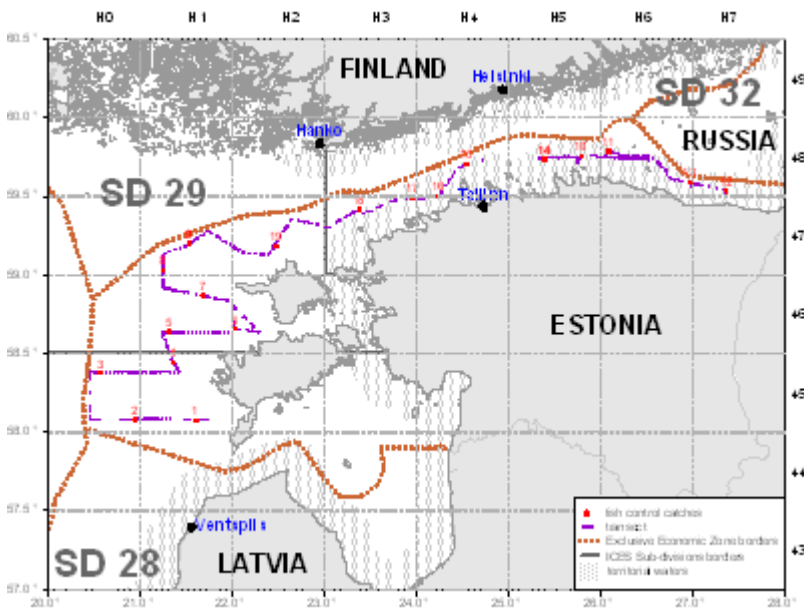


Figure 2. Location of planned track for BIAS in the Sub-divisions 28.2, 29 and 32.

3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey.

Each MS performs the survey in its EEZ on its own or shared research vessel. Estonia is using the Polish Research vessel BALTICA for both SPARS and BIAS surveys. The overall coordination of the coming surveys is done by the WGBIFS in order to secure the full coverage of the Baltic Sea.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used.

Estonia is sharing the coverage of statistical rectangles of the Gulf of Finland during the BIAS.

5. Explain where thresholds apply NA

(max 450 words per survey)

Gulf of Riga Acoustic Herring Survey GRAHS

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey.

The aim of the survey is to obtain the fisheries-independent information for tuning

analytical stock assessment models for Baltic herring in the Gulf of Riga (Gulf of Riga herring). The information obtained during the survey is used by the Baltic Fisheries Assessment Working Group of the ICES.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map).

Survey will be carried out following the agreed Manual of International Baltic Acoustic Surveys (IBAS) (<http://www.ices.dk/community/groups/Pages/WGBIFS.aspx>). The surveys are coordinated and the results are discussed by the ICES WGBIFS annually. The survey is carried out in July-August annually in order to cover the period after main spawning season when most of the stock has left the near-coast spawning grounds. Data are stored in BIAS_DB.mdb. In future the data will be transferred to the new ICES acoustic database which is under construction.

The map (Figure 3) describes the acoustic track and approximate position of trawl stations in the Gulf of Riga

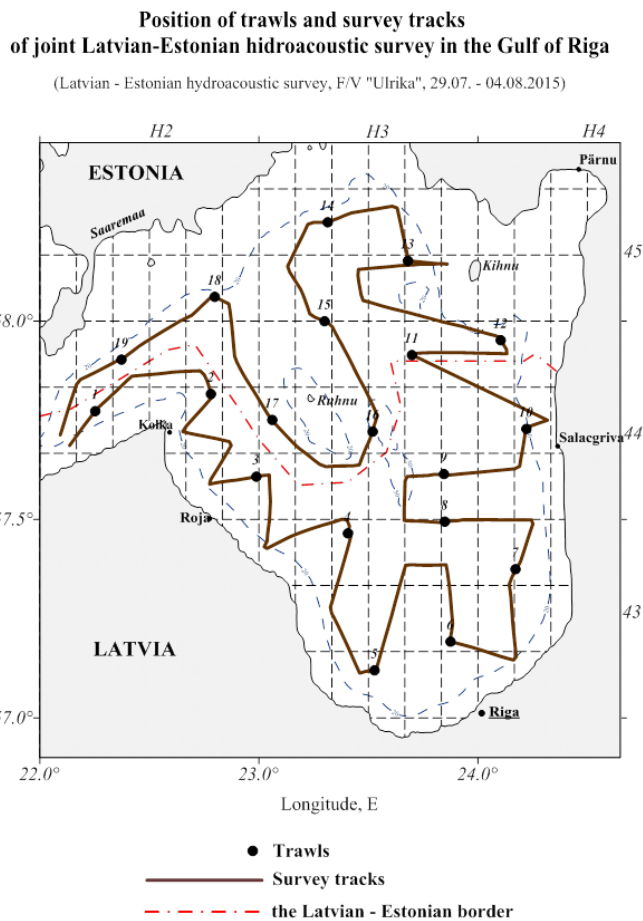


Figure 3. Acoustic track and trawl stations during the Gulf of Riga Acoustic herring survey.

3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey.

The survey is carried out jointly by the Latvian and Estonian scientists on the chartered Latvian fishing vessel. The results are discussed and future surveys planned during the meeting of the ICES WGBIFS annual meetings.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used.

Estonia and Latvia share the tasks of work and also the survey costs on this joint survey.

5. Explain where thresholds apply

NA

max450 words per survey)

Baltic Acoustic Spring Survey (SPARS or BASS)

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey.

The main objective of the Baltic Acoustic Spring Survey (SPARS) programs are to obtain the fisheries-independent information for tuning analytical stock assessment models for Baltic sprat, to standardize survey design, acoustic measurements, fishing method and data analysis throughout all national surveys where data are used as indices for assessment purposes.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The acoustic survey covers the main area of sprat distribution in the Baltic. Each statistical rectangle of the area under investigation is allocated to one particular country by the Baltic International Fish Survey Working Group (WGBIFS), thus each country has a mandatory responsible area. The area is limited inshore by the 10 m depth line. The standard equipment used for the survey is the Simrad EK/EY-60 echosounder and the standard frequency is 38 kHz. The Baltic Acoustic Spring Survey (SPARS) is carried out annually in May. All surveys are carried out by the agreed Manual of International Baltic Acoustic Surveys (IBAS) (<http://www.ices.dk/community/groups/Pages/WGBIFS.aspx>). The surveys are coordinated and the results are discussed by the ICES WGBIFS annually. Data are stored in BASS_DB.mdb. In future the data will be transferred to the new ICES acoustic database which is under construction.

Map (Figure 4) describes the location of sampling sites allocated for Estonia during the SPARS.

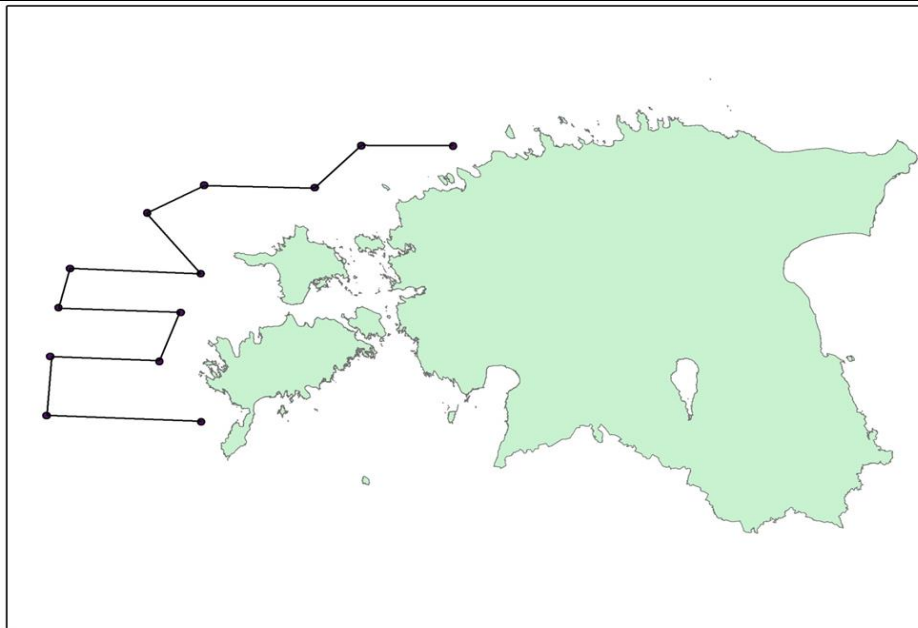


Figure 4. Location of planned acoustic track for Estonian SPARS in the Sub-divisions 28.2, 29 and 32.

3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey

Each MS performs the survey in its EEZ on its own or shared research vessel. Estonia is using the Polish Research vessel BALTICA for both SPARS and BIAS surveys. The overall coordination of the coming surveys is done by the WGBIFS in order to secure the full coverage of the agreed during the WGBIFS area.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Each MS performs the survey in its EEZ according to the agreed coverage of the statistical rectangles.

5. Explain where thresholds apply

NA

Estonian Fish Larvae Survey

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey

A national survey has been conducted annually since 1947. To study the distribution and abundance of commercially important fish larvae and juveniles with the aim to provide the ICES WGBFAS with primary information on herring year –class abundance. Additionally the information on spawning success of other commercially important

species (perch, pikeperch, smelt) will be obtained.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

Nine fixed stations will be visited weekly (May-August). Hensen larval fish net is used for 10 min. hauls in NE of the Gulf of Riga in commercially important fish spawning and nursery grounds.

Larvae and juveniles will be collected using research vessels of the Estonian Marine Institute. Larvae are identified, measured and counted. Plankton samples and environmental data are collected and analysed. The map (Figure 5) describes the location of the stations which are visited during the survey.

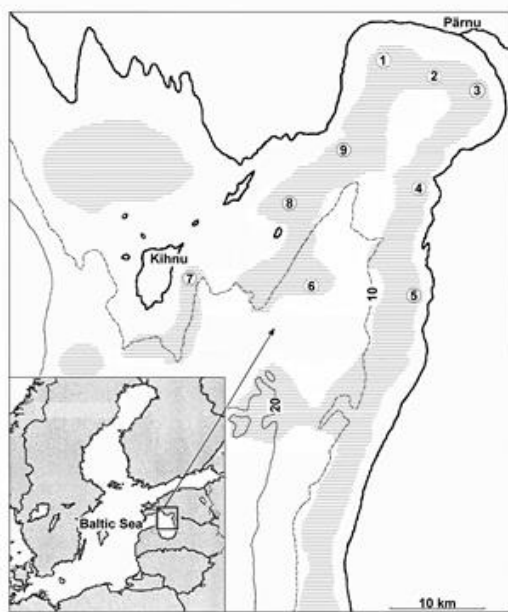


Figure 5. Location of the stations: 1 – Audru, 2 – Poi, 3 – Uulu, 4 – Tahku, 5 – Timmkanal, 6 – Palva, 7 – Kihnu, 8 – Sorgu ja 9 – Liu

(max 450 words per survey)

Gulf of Riga Fish survey

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey

Objective of this survey is to collect fisheries-independent data for tuning of pikeperch VPA assessment and to get information for other commercially important species (perch,

cyprinids).

Bottom trawl survey in the Pärnu Bay which was conducted already in earlier decades (since 1950s), and resumed in a few years ago.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

During pilot study (until 2016) survey trawl hauls was performed monthly from spring to autumn. The final design will include trawling in spring and autumn (since 2017, completion of pilot study). Research vessel AURELIE of the Estonian Marine Institute is used.

Survey manual is in preparation

(max 450 words per survey)

Coastal fish survey

General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of the multi-annual Union programme or whether it is an additional survey.

1. Objectives of the survey

National annual survey started in 1992, now in 8 fixed areas. Collected information (CPUE, age and length distribution, age-length keys for commercial species etc) form the basis for advice for commercially important stocks (perch, pikeperch, flounder, cyprinids) and allow following fish assemblage dynamics, including abundance of alien species and their distribution.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

Annual gill-net survey in defined areas along the Estonian coast, in fixed (Hiiumaa) or random stations. Each station consists of a series of gill nets of fixed mesh sizes and construction. 30-72 stations are fished in each area (less in Vaindloo).

Methods: Thoresson, 1995, HELCOM 2015

(<http://www.helcom.fi/Documents/Action%20areas/Monitoring%20and%20assessment/Manuals%20and%20Guidelines/Guidelines%20for%20Coastal%20fish%20Monitoring%20of%20HELCOM.pdf>), described in appendix of annual research agreement between the Ministry of the Environment and Estonian Marine Institute (unchanged from the beginning of survey).

3. For internationally coordinated surveys, describe the participating Member States and the relevant international group in charge of planning the survey

Similar surveys have been conducted in Sweden, Finland, Lithuania and Latvia. Data are stored in national database, and are delivered to HELCOM.

(max 450 words per survey)

SECTION 2: FISHING ACTIVITY DATA

Text Box 2A: Fishing activity variables data collection strategy

General comment: This Box fulfills paragraph 4 of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of this Decision. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under Regulation (EU) No 1224/2009 or where data collected under Regulation (EU) No 1224/2009 are not at the right aggregation level for the intended scientific use.

1. Description of methodologies used to cross-validate the different sources of data.

The census data are obtained from an administrative source – Estonian Fisheries Information System (an electronic database - includes logbook and coastal fishing data, fishing vessel register, first-sales data etc.).

2. Description of methodologies used to estimate the value of landings.

Value of landings is calculated through the multiplication of the amount of landings per species in kilograms and the average price per kilogram live weight per species.

3. Description of methodologies used to estimate the average price (it is recommended to use weighted averages, trip by trip)

Estimation about the average price per kilogram live weight per species based on first-sales data.

4. Description of methodologies used to plan collection of the complementary data (sample plan methodology, type of data collected, frequency of collection etc)

No additional studies are planned.

(max 900 words per Region)

SECTION 3: ECONOMIC AND SOCIAL DATA

Text Box 3A: Population segments for collection of economic and social data for fisheries

General comment: This Box fulfills paragraph 5 points (a) and (b) of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraphs (1), (2) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Tables 5(A) and 6 of the multi-annual Union programme.

1. Description of methodologies used to choose the different sources of data

Selection of the data source depends on the variable and its availability. Main sources are:

- Survey (questionnaires - the variables which are not available from administrative sources);
- Estonian Fisheries Information System (an electronic database - includes logbook and coastal fishing data, fishing vessel register and first-sales data);
- Estonian Agricultural Registers and Information Board (information about operating and investment subsidies)

2. Description of methodologies used to choose the different types of data collection

Fishing vessel register, logbook and first-sales data which are obtained from administrative sources are census data. To collect other variables surveys are conducted. The Estonian fishing fleet can be divided into two - open sea trawlers and coastal fishing fleet using mainly passive gears. Due to the small number of vessels in trawlers segments census type of data collection survey is planned to use - a questionnaire will be sent to each company engaged in trawling. In the case of coastal fishery probability sample survey will be used.

3. Description of methodologies used to choose sampling frame and allocation scheme

For the questionnaire survey only fleet segments from coastal fishery (length classes 0-< 10 m and 10-< 12 m) are sampled by simple random sample, The sampling unit is a vessel and a randomly selected sample of vessels is selected for both segment. For other fleet segments all vessels are planned to cover by census based approach.

4. Description of methodologies used for estimation procedures

In the case of simple random sampling the Horvitz-Thompson estimator is used to estimate the total values. In case the variable which is not directly collected but estimated, indirect survey is applied:

Value of unpaid labour – is calculated through the multiplication of the FTE number of unpaid labour and the average wage of person employed (FTE).

Estimation of capital value – the capital value were estimated according to the PIM methodology in the capital valuation report (No FISH/2005/03). Additionally, the final report of the DCF workshop on “calculation of capital value in accordance to PIM methodology and definition of variables not clearly defined in the DCF” is considered as guideline for capital estimation. The calculations of the price per capacity unit (GT) will

be based on the book values of the vessels from the balance sheets.

Value of landings per species – is calculated through the multiplication of the annual amount of landings per species in kilograms and the average annual price per kilogram live weight per species.

Average price per species – the average annual price per kilogram live weight per species (based on first-sales data from Estonian Fisheries Information System).

5. Description of methodologies used on data quality

For data will be collected by a probability sample survey the bias will be assessed by coverage rate and variability by CV. In case of low response rate (<70%) CV will be calculated also for census based approach.

Consistency and comparability for some economic variables will be ensured by using of official data sources. Results of questionnaires will be checked for consistency and comparability of the numbers. Extreme values which are wrong by evidence will be reviewed.

(max 900 words per Region)

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 3: Data on employment by education level and nationality

General comment: This Box fulfills paragraph 5 point (b) and paragraph 6 point (b) of Chapter III of the multi-annual Union programme and Article 2 and Article 3 paragraph (3) point (c) of this Decision. It is intended to specify data to be collected under Table 6 of the multi-annual Union programme.

1. Aim of pilot study

The aim of the study is to assess the data availability.

2. Duration of pilot study

From 1 September until 31 October 2017.

3. Methodology and expected outcomes of pilot study

Due to the small number of companies in trawlers segments census type of data collection survey is planned to use - a questionnaire will be sent to each company engaged in trawling. In the case of coastal fishery probability sample survey will be used. The data availability could be evaluated after the analysis of the pilot study results.

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Text Box 3B: Population segments for collection of economic and social data for aquaculture

General comment: This Box fulfills paragraph 6 points (a) and (b) of Chapter III of the multi-annual Union programme and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Tables 6 and 7 of the multi-annual Union programme.

According to the multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019, the collection of social, economic and environmental data on freshwater aquaculture is optional. Because there is no marine aquaculture and the total production of freshwater aquaculture is very low, Estonia does not collect data on aquaculture under the EU MAP.

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 4: Environmental data on aquaculture

General comment: This Box fulfills paragraph 6 point (c) of Chapter III of the multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (d) of this Decision. It is intended to specify data to be collected under Table 8 of the multi-annual Union programme.

According to the multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019, the collection of social, economic and environmental data on freshwater aquaculture is optional. Because there is no marine aquaculture and the total production of freshwater aquaculture is very low, Estonia does not collect data on aquaculture under the EU MAP.

SECTION 3: ECONOMIC AND SOCIAL DATA

Text Box 3C: Population segments for collection of economic and social data for the processing industry

General comment: This Box fulfills footnote 6 of paragraph 1.1(d) of Chapter III of the multi-annual Union programme, Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Table 11 of the multi-annual Union programme.

According to the multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019, the collection of data on the processing industry is optional. Because similar data is already collected by Statistics Estonia and forwarded to Eurostat, Estonia will not collect data on the processing industry in frames of DCF, to avoid the duplication in data collection under the EU MAP.

Text Box 4A: Sampling plan description for biological data

General Comment: This Box fulfills Article 3, Article 4 paragraph (4) and Article 8 of this Decision and forms the basis for the fulfilment of paragraph 2 point (a)(i) of Chapter III of the multi-annual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of the multi-annual Union programme.

Both sea and coastal segments of commercial fisheries (strata OSF PEL-1, OSF PEL-2, OSF PEL-3 – altogether 34 vessels; GOR PEL-1, GOR PEL-2 – altogether 15 vessels; OSF DEM – 1 vessel; HSF-1 – 3 vessels; HSF-2 – 5 and stratum SB – 1424 vessels) are sampled. Primary sampling unit for each segment is vessel trip (no exclusions). All the vessels from strata OSF DEM, HSF-1 and HSF-2 are sampled and strata OSF PEL-1, OSF PEL-2, OSF PEL-3, GOR PEL-1 and GOR PEL-2 are selected by random draw from stratum list. Stratum SB is sampled by on board and self-sampling by fishermen and sampling is evenly distributed by catch volumes along the coastal area. On-board sampling of SB is complicated due to small capacity of vessels. If possible, samples are taken on the sea (using boats of the Estonian Marine Institute). Otherwise, trained fishermen are asked to take all the catch to the port and samples will taken there.

In the Baltic Sea the selected fish species for biological sampling of commercial catches are *Anguilla Anguilla*, *Clupea harengus*, *Coregonus lavaretus*, *Gadus morhua*, *Perca fluviatilis*, *Platichthys flesus*, *Psetta maxima*, *Salmo salar*, *Salmo trutta*, *Sander lucioperca* and *Sprattus sprattus*. *Clupea harengus* in the Baltic sea is sampled separately for Area/Stock 25-29, 32 and the Gulf of Riga.

In the Eastern Arctic (ICES areas I and II) the sampled species are *Gadus morhua* and *Pandalus borealis*. In the North-East Atlantic (ICES Subarea XIV) the only sampled species is *Pandalus borealis*. *Sebastes spp.* is sampled in NAFO areas (3LN, 3M and 3O), but *Gadus morhua* only in NAFO 3M area. *Limanda ferruginea* will be sampled in NAFO areas (3LNO) and *Reinhardtius hippoglossoides* in areas (3KLMNO).

All selected Baltic Sea fish species are sampled for following biological variables: length, age, weight, sex ratio and sexual maturity. Subsample of 200-300 fish is taken from catch, so approximately 100 specimens are biologically analysed for all dominant species. Most of the Baltic fish species are sampled on the monthly basis, except *Anguilla anguilla* and *Psetta maxima*, which are sampled yearly and *Coregonus lavaretus* and *Gadus morhua*, which are sampled quarterly. Selected Eastern Arctic and North Atlantic species are sampled annually by scientific observers on board for length, age, weight and sex ratio with the only exception for *Pandalus borealis*, which is sampled for length, sex ratio and sexual maturity.

The number of sampled variables from commercial catches for different species is related to the stock and catch size, number of fisheries involved, availability of survey data, end-user needs etc. In certain cases the quota availability, e.g. in the second half of the year, and/or fishers' behavior may affects both fishery and thus also the sampling intensity (see table 1C). The biggest problems with data quality will be related to the sampling of very variable métiers, namely fyke nets and gill nets. Sampling effort will be directed to the

most important fishing grounds and fishing seasons. As for gill net fishery, test fishing data from different parts of the coastal sea will be used as a reference.

Sampling plan purpose, design, quality assurance procedures, analysis methods, sampling units, sampling frames and sample selection methods and data archiving methods are regionally coordinated (RCMs), and follow the needs of the relevant end-users (eg ICES, NAFO) via their respective working groups (ICES WGBFAS, WGBIFS, WGBAST etc.). To ensure quality of data, observers on board are regularly trained and briefed before every trip. Data of different observers are cross-checked.

Corresponding ICES manuals (Manual for the Baltic International Trawl Surveys (BITS), March 2014, ICES Baltic International Fish Survey Working Group; SISP MANUAL OF INTERNATIONAL BALTIC ACOUSTIC SURVEYS (IBAS) Version 1.02 28-03-2014, ICES 2014) are followed in detail. Methods for coastal fish analyses are accredited nationally by the accreditation certificate No L179 (2017) of the Tartu University, Estonian Marine Institute: Assessment of biodiversity, abundance and biomass of fish assemblages; KJ 1/20; based on EVSEN 14757; Helcom, 2015 (Coastal Fish Guidelines) and Assessment of species composition and abundance of salmonids in riverine habitat, KJ 1/21; based on Bohlin et al., 1989 and ICES, 2014. Laboratory of the Estonian Marine Institute is accredited against the requirements of standard EVS-EN ISO/IEC 17025:2006 (<http://www.sea.ee/en/11064/>).

(max 900 words per Region)