

Ministry of Agriculture and Forestry (MAF), Natural Resources Institute  
Finland (Luke)

**Regulation (EU) 2017/1004 of the European Parliament and of the  
Council of 17 May 2017**

on the establishment of a Union framework for the collection, management and use of data in  
the fisheries sector and support for scientific advice regarding the common fisheries policy  
and repealing Council Regulation (EC) No 199/2008 (recast)

**Commission Delegated Decision (EU) 2021/1167 of 27 April 2021**

establishing the multiannual Union programme for the collection and management of  
biological, environmental, technical and socioeconomic data in the fisheries and aquaculture  
sectors from 2022

**Commission Implementing Decision (EU) 2021/1168 of 27 April  
2021**

establishing the list of mandatory research surveys at sea and thresholds as part of the  
multiannual Union programme for the collection and management of data in the fisheries and  
aquaculture sectors from 2022

**Commission Implementing Decision (EU) 2022/39 of 12 January  
2022**

laying down rules on the format and timetables for the submission of national work plans and  
annual reports for data collection in the fisheries and aquaculture sectors, and repealing  
Implementing Decisions (EU) 2016/1701 and (EU) 2018/1283

# **FIN Annual Report on data collection in the fisheries and aquaculture sectors**

2022

Version 4

Helsinki, September 29<sup>th</sup>

2023

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## SECTION 1: GENERAL INFORMATION

### Data collection framework at national level

*General comment: Use this text box to describe how data collection is organised in your Member State (institutions involved, contact information) and in which regional coordination groups (RCG) your Member State participates.*

*Outline the general framework of the national data collection programme in relation to the relevant sections of the EU MAP. If applicable, indicate major methodological changes in approach compared to previous year(s), and to which section(s) they apply.*

*Give full name, acronym and contact details of all institutes that contribute to the data collection activities, and describe briefly their role in the work plan.*

*Provide a link to the national data collection website, if there is one.*

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FIN EU-DCF collection program is conducted complying with EU legislation presented in the cover sheet of this document. Under this framework, biological, economic and statistical data are collected to support EU common fisheries policy (CFP). In Finland, Ministry of Agriculture and Forestry (MAF) has obliged Natutal Resources Institute Finland (Luke) to implement data collection, storage and dissemination.

Link to MAF: <https://mmm.fi/en/frontpage>

Link to Luke: <https://www.luke.fi/en/>

Link to FIN DCF program: <https://www.luke.fi/en/eu-data-collection-framework-in-the-fisheries-dcf-in-finland/>

(max. 1000 words)

### Text Box 1a: Test studies description

*General comment: This text box fulfils Chapter II, section 1.2 of the EU MAP Delegated Decision annex.*

#### **FIN test study 1: Monitoring of small yellow eel (elver) abundance in R. Kokemäenjoki**

##### **1. Aim of the test study**

The recruitment of small yellow eels (elvers) on Finnish coastal areas is poorly known. In Finland elvers have never been targeted by fishing (for consumption or stocking purposes), but they occur in small numbers in bycatch of other fisheries. Especially in lamprey fisheries elvers have been a regular by-catch. The river Kokemäenjoki basin is among the most significant areas where these small (20-30 cm) eels have been observed and also a significant area for lamprey fishery. According to oral information, in the 1990s, dozens of

elvers were annually observed as bycatch of lampreys caught in the River Kokemäenjoki. In 2002 nearly 40 small yellow eels were obtained from small scale monitoring done by the Finnish Game and Fisheries Research Institute (predecessor of Luke). During the last few years, the elver bycatch has decreased in some extent. The purpose of the test study is to develop and enhance bycatch monitoring and collect index data for the recruitment and abundance of elvers in the Kokemäenjoki river basin.

## 2. Duration of the test study

The planned duration of test study is three years, 2022-2024. Three years are needed, as high between-year variation and low numbers of elvers are expected. The results and progress of the test study is reported in Annual Reports 2022-2024.

## 3. Methodology and expected outcomes of the test study

In the Kokemäenjoki river basin there is only one major lamprey frying plant located in Nakkila, to where majority of lampreys caught in Kokemäenjoki and other nearby rivers is delivered. In the plant the catches they receive from fishers is examined and eels are separated from the catch and frozen for further studies. Age of the elvers is determined and the otolith microchemistry is studied since it is possible to separate migrated eels from stocked by strontium-calcium ratios. All ongrown eels stocked in Finland are also marked with strontium chloride since 2009.

As elvers and lampreys are very similar in size and color they are normally not distinguished in lamprey fisheries during the fishing. The fishers will also be instructed that there is no need for separation. The fishing effort (size, number and catching time of the fyke nets) is studied annually to improve comparability between the years. Water levels and flow data of River Kokemäenjoki affecting lamprey catches and possibly elver recruitment shall be obtained from the electric power station in Harjavalta. Temperature is measured by automatic temperature dataloggers from the mouth area of the river near the fishing sites. Outcome of the test study is an index of recruitment of elvers in the Kokemäenjoki river basin (elvers/lamprey fyke net/catching season).

## **FIN test study 2: Developing the fisheries-independent monitoring of bycatch**

Currently the bycatch -monitoring in Finland is mainly based on data provided by fishers (the landing declarations and the EU catch journals), and port observations by Luke personnel. These data are dependent on how the fishers report the bycatch and fisheries-independent data is needed. Also, the fisheries independent bycatch data is needed to evaluate the reliability of the fisheries reports. In 2022-2024 Finland is developing methods to improve the reliability of bycatch data, utilizing fisher-independent data sources. Aims of this test study are to 1) adopt fisheries-independent bycatch monitoring methods and 2)

develop a method to verify the reliability of data provided by fishers.

These methods include:

- 1) Piloting of onboard observer program in pelagic trawl fisheries and coastal trapnet fisheries of Baltic herring
- 2) The use of fishery-independent (scientific) gillnet bycatch data to verify the fishery-dependent bycatch data
- 3) The e-mail questionnaire described in (Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem (PS2-FI-2021\_Report)) will be continued.

## 2. Duration of the test study

The planned duration of the test study three years (2022-2024). During this time, FI develops the methods to collect reliable bycatch data. FI has very limited earlier experience of onboard observer program. In addition, the data is assumed to have high between-year and between season variation and low occurrence of bycatch events due to low (and decreasing) number of fishers. The result and progress of the of the test study is reported in Annual Reports 2022-2024.

## 3. Methodology and expected outcomes of the test study

- 1) In pelagic trawl fisheries and coastal trap net fisheries of Baltic herring, onboard observation of bycatch (PETS species, particularly mammals and birds) is planned to start at the beginning of year 2022. In the first study year, the number of observed trips is planned to be 10 in both trawl and trapnet fishery. The number of observed trips during the test study will be adjusted according to the results obtained and availability of resources.

During the fishing trips, the onboard observer records up information relating to fishing and documents observations by taking pictures as well as video footage. The observer also makes observations of catch, paying attention to compromised, endangered and protected species of birds and mammals, but also other bycatch species. In addition, the observer aims to make similar observation of the catch after a fishing trip when landing the catch.

- 2) To verify the fisheries-dependent gillnet bycatch data (see Text Box 4.2.), this data will be compared to the corresponding fisheries-independent bycatch data provided by scientific standard gillnet surveys. In this way, the proportion of unreported gillnet bycatch can be evaluated. In addition, the bycatch data provided by scientific standard gillnet surveys can also be used to estimate the bycatch rates in recreational gillnet fishery.

The fishery-independent bycatch data is based on scientific standard gillnet surveys, which are annually conducted in 88 sites in coastal waters of Finland by Natural Resources

Institute Finland (Luke) and consulting firms. Stratified random sampling and multimesh gillnets (nine mesh sizes between 10-60 mm from knot to knot) are used. One third (15 m) of these 45 m standard nets are comparable with the mesh sizes used in commercial gillnet fishing. The data (on average 2400 gillnet nights per year) is stored in national database.

To include bycatch monitoring (birds and mammals) in the standard gillnet monitoring programme and in the national database, Luke will contact local ELY centres and possibly relevant consulting firms in 2022. The bycatch monitoring in standard gillnet surveys is planned to start in 2022.

3) In addition, the e-mail questionnaire described in (Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem (PS2-FI-2021\_Report)) will be continued, because this study gave valuable information of the commercial bycatch in the coastal area. The e-mail questionnaire will be sent in 2023 to all commercial marine fishers who had reported their email to the central register of commercial fishery. The amount and species of seabirds that are caught in fishing gears (dead or alive) will be asked. The results of the e-mail questionnaire will be compared to the corresponding fisheries-independent bycatch data provided by scientific standard gillnet surveys and onboard observer program in coastal trapnet fisheries of Baltic herring.

The results of the comparison between the fisher-reported BYC data in commercial gillnets fishing and the BYC data in fisheries-independent standard gillnet monitoring are planned to be reported in 2024.

*(max 900 words per study)*

Brief description of the results (including deviations from the plan and justifications as to why if this was the case).

Achievement of the original expected outcomes of the study and justification if this was not the case.

### **FIN test study 1: Monitoring of small yellow eel (elver) abundance in R. Kokemäenjoki**

The first year of the pilot study only resulted very few eel. This may indicate low number of eel in the River Kokemäenjoki estuary. However, this assessment will improve with additional years in the dataset. The pilot study is planned to continue in 2023-2024 using the same method. Additionally, we will increase the effort to record the fishing pressure more reliably by the various fishing operators in the area; it was evident that the fishing pressure was changing throughout the season.

### **FIN test study 2: Developing the fisheries-independent monitoring of bycatch**

1) Onboard observer program in trawl vessels and coastal trap net fisheries was started in 2022. The trawl vessel onboard observer study started by Luke in 7 trips (as part of the MSC onboard monitoring program during 2020-2021). However, due to national collective

labor agreement, conducting monitoring program with Luke personnel was not anymore feasible in 2022. Therefore, we decided to conduct this work by private consultation company by tender invitation. Due to exclusion of Luke personnel in observation trips and time consumed to tender invitation process, three (of 10 planned) trips were achieved in late 2022 by the consulting company. Overall, the data quality collected in all trips was high and the first year of the onboard observer pilot study can be considered successful. However, the high cost associated with the onboard observer program, preliminary test with electronic monitoring technology was tested during the observation trips. Testing of the EMT method will continue in 2023-2024.

The coastal trap net observer program was successfully conducted by Luke in 9 (of 10 planned) fishing trips and the overall experience (data quality & feedback from all parties) was positive. We will continue the pilot study in 2023-2024. The data recording forms will be updated for the 2023 season based on the experience in 2022. The main changes to the form are technical and related to database integration.

2) The bycatch monitoring in standard gillnet surveys was started in 2022 in the surveys conducted by Luke (two sites in Gulf of Finland and one site in the Archipelago Sea). No bycatch was observed. It was not possible to expand the monitoring to local ELY centres and possibly relevant consulting firms in 2022 because of delay in database development, but this will be done in 2023 as widely as possible.

3) The e-mail questionnaire similar to Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem (PS2-FI-2021\_Report) will be conducted in 2023 and the results will be reported in AR 2023.

Incorporation of study results into regular sampling by the Member State.

### **FIN test study 1: Monitoring of small yellow eel (elver) abundance in R. Kokemäenjoki**

Inclusion of pilot study into regular data collection will be evaluated during 2023-2024 according to results obtained, by end-user (ICES WGEEL) needs and by national and EU legislation.

### **FIN test study 2: Developing the fisheries-independent monitoring of bycatch**

Inclusion of pilot study into regular data collection will be evaluated during 2023-2024 according to results obtained, by end-user (ICES WGBYC) and regional (RWP Baltic) needs and by national and EU legislation.

*(max. 900 words per study)*



### Text Box 1b: Other data collection activities

*General comment: Use this text box to provide information on other data collection activities that relate to your EMFAF operational programme and need to be included in the work plan and the annual report. Describe activities that are funded by the DCF but fulfil objectives under other EMFAF priorities, like marine knowledge, or activities funded by the DCF, but without a direct link to the EU MAP specific requirements or WP template tables, like freshwater fisheries. You can also include one-off specific studies for a particular end-user need that do not enter the regular data collection.*

#### **MSC monitoring of herring and sprat fisheries**

##### **1. Aim of the data collection activity**

The Finnish herring and sprat fisheries have been granted an MSC certificate of sustainable herring fishery in the Gulf of Bothnia (<https://fisheries.msc.org/en/fisheries/finland-baltic-herring-sprat/@@view>). In the Baltic Main Basin, the certificate has been suspended because of the status of the herring stock. The main basis of the MSC certificate is the monitoring and fish stock assessments conducted in the DCF. In addition, to fulfill the requirements of MSC terms, data of bycatch species is collected onboard trawlers and at trapnets in 10 fishing trips per year in two years. In general, MSC program is funded by Finland Fishermen's Association (Suomen Ammattikalastajaliitto, SAKL R.Y.). Bycatch monitoring is conducted by Luke technicians, and costs of the monitoring program is divided between FIN DCF program and Tukala (Luke's project responsible to MSC monitoring).

##### **2. Duration of the data collection activity**

The duration of MSC program depends on the needs of the Finland Fishermen's Association. The piloting bycatch monitoring program included in FIN DCF program is planned to be in force in 2022-2024 (See Text Box 1a: Test studies description.)

##### **3. Methodology and expected outcomes of the data collection activity**

See Text Box 1a: Test studies description.

#### **Funding of RCG secretariat**

##### *1. Aim of the data collection activities*

Support the operation and functioning of the RCG's Secretariat for a fluent regional coordination of data collection activities.

##### *2. Duration of the data collection activity*

01/01/2023 – 31/12/2025

##### *3. Methodology and expected outcomes of the data collection activity*

The Secretariat's organizational structured has been set up and pilot tested throughout SecWeb project. The key functions of the RCG's Secretariat have been determined in close

collaboration with all RCGs, in particular with RCG and Intersessional Subgroups (ISSGs) chairs. A business model has been developed. In addition, good practices in communication within and among the RCGs have been promoted and installed. The overall capacity to reach out to a wider public and increase the visibility of the work and output of the RCGs has been boosted with the development of a dedicated website and the consolidation of a visual identity.

RCG chairs and the RCG's network in general have acknowledged the added value of having an RCG's Secretariat to the overall aim of improving data collection activities.

Based on SecWeb project outputs the proposed data collection activity will connect the whole RCG network and stakeholders to work together on common goals. The Secretariat provides fluent administrative and coordination support for more efficient regional coordination liberating national experts involved in data collection activities from heavy burden administrative tasks.

#### Overall expected outcomes

- ✓ A full-time dedicated Secretariat support service for the RCGs enables a consistent approach to administering RCG activities, facilitates communication, and enhances the intersessional work, supporting also the work of sub-groups.
- ✓ A dynamic and permanently updated website will be kept available including as features:
  - Integration – allowing seamless synchronization with third-party information needs and requests.
  - Responsive display – to serve content across multiple devices, screens, and browsers.
  - User experience- maintaining a satisfactory user experience throughout the website sections.
  - Accessibility – To any interested visitor in a user-friendly way across the website sections.
  - Retention- keeping visitors coming back to the website.
  - Links to relevant restricted access sites and virtual environments.
- ✓ The Visual identity for the RCGs is increasingly consolidated and visibility and understanding of the work by the RCGs is enhanced for the relevant stakeholder groups.
- ✓ A regularly updated Stakeholders' database improves the communication function among the RCGs' experts and the stakeholders' community.
- ✓ Internal communication protocols and help-desk in place makes it easier for any new comer to efficiently join, adopt responsibilities, and contribute to the RCGs objectives and work commitments.
- ✓ The public description of the secretariat functions, operational working protocols and commitments will build trust and enhance the whole network transparency and accountability.

*(max 900 words per activity)*

Brief description of the results (including deviations from the plan and justifications as to why if this was the case).

Achievement of the original expected outcomes of the study and justification if this was not the case.

### **MSC onboard monitoring of herring and sprat fisheries**

MSC onboard monitoring of herring and sprat fisheries was conducted on three trawl vessels and nine trap net fishing trips in 2022. MSC onboard monitoring was done in conjunction with the bycatch onboard observer program included in FIN DCF program. (See Text Box 1a: Test studies description.).

### **Funding of RCG secretariat**

During 2022 the activities of the RCGs Secretariat still developed in the context of the SecWeb Project, which was extended to last until the end of February 2023. The RCG experts and the Member States' NCs engaged in several discussions about the long-term stabilization of the Secretariat services, given the value added by the project to the RCGs networks, and agreed on a short term solution for continuity in 2023 which was incorporated with a statement in "Text Box 1b: Other data collection activities" of the Annual Work Plans of the Member States. The longer term perspective will build upon the outcomes from SECWEB and dealt with inter-sessionally and pan regionally by ISSG NCs in 2023 and beyond.

Incorporation of study results into regular sampling by the Member State.

### **MSC onboard monitoring of herring and sprat fisheries**

Currently (2023) SAKL (Fisheries organization) does not consider to need an observer program for MSC Certificate. Data collection is then conducted for DCF purposes only. (See Text Box 1a: Test studies description).

### **Funding of RCG secretariat**

Continuation of funding in 2024 and 2025-2027 is being discussed in RCG Baltic & NANSEA. Currently FIN does not see any substantial hindrance to continue this agreement in the future.

*(max. 900 words per study)*

## **SECTION 2: BIOLOGICAL DATA**

### **Text Box 2.1: List of required species/stocks**

#### **(Baltic Sea)**

*General comment: This text box fulfils Article 5(2)(a), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 2.1(a) of the EU MAP Delegated Decision annex. This text box applies to the annual report and complements Table 2.1.*

Deviations from the work plan

*List the deviations (if any) in the achieved data collection (lengths only) compared to what was planned.*

*The general reasons for deviations from the work plan in terms of planned vs. achieved data collection*

*should be summarised in this section, while detailed comments on deviations on particular species/stocks should be included in the 'AR comments' column in Table 2.1.*

No deviations.

Actions to avoid deviations

*Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

No deviations. (One text box of max. 1 000 words per region/RFMO/RFIO/IO)

## Text Box 2.2: Planning of sampling for biological variables

### (Baltic Sea)

*General comment: This text box fulfils Article 5(2)(a), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 2.1(a) of the EU MAP Delegated Decision annex. This text box applies to the annual report and complements Table 2.2.*

Deviations from the work plan

*List the deviations (if any) in the achieved collection of biological data (other than lengths), compared to what was planned.*

No deviations from the work plan in eel, pikeperch, perch, whitefish and sprat (opportunistic sampling only) stocks.

#### **Self-sampling program targeting coastal fishery of salmon**

Salmon in the Baltic Sea: In SD22-31 52% and in SD32 74% of planned sampling was achieved. Collecting of salmon catch samples in Finland is mainly based on self-sampling by fishers. Fishers were not able to collect more samples in given circumstances (regulations, individual quota system, quota, size of catch, etc.); Consequently, it is difficult to predict number of samples fishermen are able to collect during the short fishing season. The planned number of samples can be considered as a guideline. Needed accuracy of estimates in age and sex-specific weight were met.

Sea trout in the Baltic Sea: In SD22-32 166% planned sampling was achieved. Sea trout samples are collected from bycatch of pikeperch, perch, whitefish, and salmon fishery. Therefore, it is difficult to predict number of samples collected. Sea trout maturity samples are determined only from fish caught as bycatch of coastal gillnet fishery targeting pike-perch, perch, and common whitefish. Only these harbour samples were maturity determined by Luke personnel. Reliable maturity determination is impossible for fishers in self-sampling. Three sea winter fish can be considered mature. Maturity data is not used in the assessment.

#### **On shore sampling program targeting pelagic trawl fishery of herring and sprat**

Herring in SD's 25-27, 28.2, 29, 32; 28.1: In SD's 29 and 32 only 52% of the planned sampling was achieved. The overall activity in fisheries was low in September-October due to unusually high warm water temperature. In addition to that, sharp price competition in Q3 and Q4 in herring catches between fish industries, many of the catches were landed to foreign ports. Due to these reasons, planned number of samples were not achieved

*The general reasons for deviations from the work plan in terms of planned vs. achieved data collection should be summarised in this section, while detailed comments on deviations on*

*particular species/stocks should be included in the 'AR comments' column in Table 2.2.*

Actions to avoid deviations.

*Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

### **Self-sampling program targeting coastal fishery of salmon**

Salmon in the Baltic Sea: In order to achieve planned number of samples, more fishers have to be persuaded to participate in self-sampling. However, fishers are participating in voluntary basis in self-sampling. Harbour and onboard sampling by Luke technicians is impracticable due to numerous landing places and irregular times of checking of trapnets and landing of catch in day and night.

Sea trout in the Baltic Sea: No action planned. No. of sea trout caught as a bycatch in the fishery concerned is difficult to predict and increasing the number of samples of pike-perch, perch, and common whitefish for this purpose is not meaningful.

### **On shore sampling program targeting pelagic trawl fishery of herring and sprat**

Herring in SD's 25-27, 28.2, 29, 32; 28.1: Planned number of samples were not achieved due to natural conditions and increase in foreign landings. It's difficult to predict the effect of such incidents to data collection, and therefore preventive actions are difficult to prepare.

*(One text box of max. 1 000 words per region/RFM/RFO/IO)*

## **Text Box 2.3: Diadromous species data collection in freshwater**

### **(Baltic Sea, North Atlantic)**

*General comment: This text box fulfils Article 5(2)(a), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 2.1(b) and point 2.3 of the EU MAP Delegated Decision annex. Use this text box to give an overview of the methodology used to collect data from freshwater and inland commercial and recreational fisheries for salmon, sea trout and eel. Also include overview of data to be collected from research surveys on salmon, sea trout and eel in freshwater, and on eel in any relevant habitat including coastal waters.*

Method selected for collecting data.

### **General description of salmon data collection in rivers**

Monitoring of salmon is conducted in rivers Tornionjoki and Simojoki, running into the Baltic Sea, and rivers Tenojoki and Utsjoki (a tributary of R. Tenoki), running into the North Atlantic. R. Tornionjoki is a border river between Finland and Sweden and R. Tenojoki is a border river between Finland and Norway. The rivers Tornionjoki and Simojoki are selected as index rivers for the purposes of ICES stock assesment, and data collection in these rivers follow the recommendations of the ICES WGBAST.

There is a well-established co-operation between Finland and Sweden as well as between Finland and Norway in the data collection and monitoring of the rivers Tornionjoki and Tenojoki, respectively. Data is used by ICES which produces yearly advice on Atlantic salmon in the North Atlantic (WGNAS) and Baltic Sea (WGBAST), but the data is used also for bilateral salmon management between Finland and Sweden/Norway. If DCF brings new obligations and possibilities to Atlantic salmon data collection, any changes in data collection in these border rivers have to be based on common understanding between Finland and Sweden/Norway in order to guarantee co-operation within these countries and continued collection of high-quality time-series.

For data collection in the R. Tornionjoki, Finland has agreed to take the main responsibility in data collection, mainly because Finland (Luke) has better monitoring facilities nearby and also more established connections to the local fisheries. Of the current set of monitoring activities under the DCF in the R. Tornionjoki, Finland is in charge of:

- monitoring parr densities along the border river and the Finnish tributaries
- monitoring salmon smolt run
- monitoring of ascending salmon with sonar

Moreover, Finland carries out a survey of Finnish recreational salmon catch in the river and also collects biological samples from the river catch

Data collection of the R. Tenojoki includes adult salmon sonar counting with two ARIS sonar counters. Other data collection than adult salmon counting in the R. Tenojoki is conducted as Finnish-Norwegian co-operation, financed and enforced outside DCF, which produces the data needed by the end-user (ICES WGNAS and bilateral salmon management group) in order to produce the scientific advice on salmon stocks in these rivers.

In R. Utsjoki data collection includes estimation of adult and smolt numbers with video-equipment, estimating parr densities with electro-fishing and collecting statistics and biological samples from recreational fisheries catch.

Data collection of the R. Tenojoki includes adult salmon sonar counting with two ARIS sonar counters. Other data collection than adult salmon counting in the R. Tenojoki is conducted as Finnish-Norwegian co-operation, financed and enforced outside DCF, which produces the data needed by the end-user (ICES WGNAS and bilateral salmon

management group) in order to produce the scientific advice on salmon stocks in these rivers.

In R. Utsjoki data collection includes estimation of adult and smolt numbers with video-equipment, estimating parr densities with electro-fishing and collecting statistics and biological samples from recreational fisheries catch.

A short description on diadromous sampling schemes is provided below.

### **Monitoring of salmon parr densities**

Salmon parr densities are monitored in rivers Tornionjoki and Simojoki (running into The Baltic Sea) and River Utsjoki (a tributary of R. Tenojoki, running into The North Atlantic). Parr densities are estimated annually by electrofishing (See Annex 1). In R. Tornionjoki, also monitoring of sea trout parr densities are conducted in connection with salmon parr monitoring. See Annex 1 for further details.

### **Monitoring of salmon smolt with smolt traps**

Monitoring of salmon smolt by smolt trapping are conducted in rivers Tornionjoki and Simojoki (running into The Baltic Sea). Because of the large size of these rivers, monitoring is possible only as partial trapping of the smolt run. Mark-recapture method is utilised to estimate the total run size. In R. Tornionjoki, also monitoring of sea trout smolts can be conducted in connection with the salmon smolt monitoring. See Annex 1 for further details.

### **Monitoring of salmon smolt with video counter**

Monitoring of salmon smolt run is conducted by video counting in River Utsjoki (a tributary of R. Tenoki, running into The North Atlantic). See Annex 1 for further details.

### **Monitoring of ascending salmon with sonar**

The number of ascending salmon is monitored by sonars, which are specially designed ‘acoustic cameras’ suitable for riverine environment and capable of producing high-resolution video images of objects like swimming fish (see <http://www.soundmetrics.com/products/aris-sonars>). This monitoring is carried out in the rivers Tornionjoki and Simojoki (running into the Baltic Sea) and the R. Tenoki (running into the North Atlantic). In rivers Tornionjoki and Tenojoki the monitoring is conducted by two ARIS echo sounders placed near the river banks opposite to each other. The



monitoring site in the R. Tenojoki is located in the lower river on Norwegian territory. Monitoring covers 3-3.5 summer months (from late May to the end of August-early September), during which period the annual salmon spawning run takes place. See Annex 1 for further details.

### **Monitoring of ascending salmon with video counter**

The number of ascending salmon is monitored by video counting in River Utsjoki (a tributary of R. Tenojoki, running into The North Atlantic). See Annex 1 for further details.

### **Survey of recreational salmon catches in rivers**

Recreational salmon catches are monitored in rivers Tornionjoki and Simojoki (running into The Baltic Sea) and River Utsjoki (a tributary of R. Tenoki, running into The Arctic Ocean).

Recreational salmon catches in Rivers Tornionjoki and Simojoki are estimated on the basis of surveys directed to fishers who have purchased salmon fishing license in those rivers. Expected number of angling license holders is less than 15 000 in R. Tornionjoki. From the register of the license holders in Tornionjoki, 1500 are randomly selected as a target sample for postal enquire (see Annex 1). Sampling and estimation procedure uses stratification based on the place of residence of a fisher (local/tourist) and care is taken to have large enough group of fishers in the stratum. The catch estimate for the rather few foreign fishers (non-Swedish; see below) fishing in Tornionjoki is derived by assuming similar fishing among them as among Finnish fishing tourists. In addition to angling, small-scale subsistence fisheries by nets are allowed in designated fishing sites of R. Tornionjoki; the households having access to this fishing is considered as a separate additional target population. All contact persons organizing small-scale net fishing in the river are interviewed by phone and site-specific total catch estimates are provided by them.

In R. Tornionjoki, fishers may be fishing on both Finnish and Swedish territories. Moreover, the same fishing license is valid on some river sections in both countries. In order to avoid overestimation (by double-counting) or underestimation (drop some fishers from the target population) of catch, coordination of recreational catch surveys need to be coordinated with Sweden. This coordination includes some exchange of license register data between the countries, as well as agreement on which fishing would be counted for which country. Finland is not including in the Finnish catch estimate any fishing by Swedish fishers and vice versa.

In R Simojoki angling is the only fishing method for salmon. It is allowed in the whole river because of the common agreement between different landowners. The fishing



licences are sold by Metsähallitus, the largest landowner in the Simojoki water course having personnel, equipment and experience to arrange the sale of licences and execute the enquiries. Metsähallitus (<https://www.metsa.fi/en/>) is a state-owned enterprise that produces environmental services and sustainably use, manage, and protect state-owned land and water areas. Expected number of angling license holders in R Simojoki is typically less than 3000, being about 2500 in 2020. The catch estimate is based on internet webropol enquiries to all licence holders having email (n=1985 in 2020). If not replied two reminders are sent after the first enquiry. The results are handled by Natural Resources Institute Finland.

In NANSEA region, a survey of recreational salmon catches by recreational fishing is conducted in the River Utsjoki, a tributary of the River Tenojoki. Only catches of *Salmo salar* are included in FIN DCF program. The catch of the other species is negligible. Currently no data is collected of released salmon catch in the River Utsjoki as releasing salmon is very occasional in this system. Share of released salmon in catches are planned to be conducted in the future.

The target population of the recreational fishers in the River Utsjoki are the owners of fishing right and fishing license buyers. There are several different license selling organizations, and the fishing right owners can also distribute/sell their personal license to other fishers, which makes the system very complicated. In addition to angling, part of the fishing right owners are allowed to fish salmon with nets. The estimated number of fishing right owner licenses in 2020 was c. 450 including both season licenses and shorter day/week licenses. In addition, at least 2400 fishing days were sold to fishers without personal fishing rights. In 2021 all salmon fishing in R. Tenojoki watercourse was prohibited due to poor stock status. In forthcoming years some fishing restrictions are highly probable to take place, which affects recreational fisheries data collection.

PSU's in the catch surveys of the River Utsjoki are fishing right holders and fishing license holders. Logbooks, postal enquiries and phone calls were used in the catch estimation of the Utsjoki system to cover the whole target population.

### **Biological sampling from recreational salmon catch in rivers**

Biological samples are annually collected from recreational catches of salmon in R. Tornionjoki. Sampling is voluntary self-sampling by the fishers and the principles of sampling (design, protocol, data storage etc.) resembles those sampling scheme Self-sampling program targeting coastal fishery of salmon (see Text Box 2.5 and corresponding section of Annex 1).

### **Biological sampling from recreational catches of eel in Finnish inland waters**

Earlier studies suggest, that most eels in freshwaters in Finland originates from restockings. Finnish eel catches are very low and in freshwaters there are no commercial fisheries targeting eel. Biennial catch estimates are available for recreational fisheries. Samples for biological data in inland waters are collected in one location in Kymijoki watershed and in

few locations in Kokemäenjoki watershed, where all eels are supposed to be of restocked origin due to migration barriers. Natural immigration ceased due to dams already in 1930s. Eels are caught as a bycatch in longline fishery for pikeperch in June-July and as a bycatch in trap nets in May-June.

### **Monitoring of silver eel escapement in River Kokemäenjoki**

Silver eel monitoring in River Kokemäenjoki watershed is done with an echosounder in Kokemäenjoki below the lowest hydro-power dam at Harjavalta. See Annex 1 for details.

### **Monitoring of silver eel escapement in River Kymijoki watershed**

An index for the silver eels migrating from the River Kymijoki watershed is obtained from an eel trap built in the regulating dam in the river running from Lake Vesijärvi. The trap catches all silver eels migrating downstream. Eels caught in this trap are marked and released into the Baltic at Kymijoki estuary (below hydro-power dams). See Annex 1 for details.

### **Monitoring of sea trout parr densities**

Monitoring of the sea trout parr densities is conducted by electrofishing in three rivers holding native sea-run trout stocks. Parr density data are used as model input in ICES WGBAST sea trout assessment for evaluation of stock status and trends by assessment units. In addition the same data is used by HELCOM for assessing the ecological status of sea trout stocks by sub-areas. In Finland these data have been collected in various projects by national funding. In order to better ensure sufficient data supply for ICES and HELCOM assessments the electrofishing surveys in Isojoki, Ingarskilanjoki and Mustajoki are included to FIN national program as regular monitoring (piloted in 2020-2021). Possibilities of establishing R. Isojoki as an index river for sea trout is examined in WP period 2022-2024 according to recommendation by ICES WGBAST. In R. Tornionjoki, also monitoring of sea trout parr densities and smolt counts are conducted in connection with salmon parr and smolt monitoring.

Electrofishing surveys will be carried out by a standard method which produce data that is

comparable with the data collected in other Baltic Sea riparian countries by electrofishing surveys (following the guidelines by Bohlin et al. 1989 and CEN: SFS-EN 14011).

Electrofishing will be carried out in 21 sites in the main stem of Isojoki (ICES subdivision 30), 11 sites in Ingarskilanjoki (western part of ICES sub-division 32) and 10 sites in Mustajoki (eastern part of ICES sub-division 32). The study will contribute in data supply for evaluating the stock status in two ICES assessment units and three HELCOM sub-areas. There are also several other rivers in Finland with native sea-run trout stocks, the information from which are used in ICES assessment.

ref.

Bohlin, T., Hamrin, S., Heggberget, T.G. et al. 1989. Electrofishing — Theory and practice with special emphasis on salmonids. *Hydrobiologia* (1989) 173: 9.

<https://doi.org/10.1007/BF00008596><https://doi.org/10.1007/BF00008596>

CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).

*(max 250 words per species and area)*

Were the planned numbers achieved?

Explanation for those sampling schemes, where planned numbers was not met, is described below:

### **Biological sampling from recreational salmon catch**

River Tornionjoki: Of the planned number (500 samples) of adult salmon samples from Tornionjoki, 431 (86%) was achieved. Achieved number of samples varies annually by no. of ascending individuals and fisher's activity. Achieved number meets the monitoring needs.

River Utsjoki: Planned numbers (250 samples) of adult salmon samples were not achieved from the Utsjoki river system because all salmon fisheries in the Tenojoki system, including the tributary river Utsjoki were prohibited in 2022. See table 2.3.

### **Survey of recreational salmon catches in rivers**

River Simojoki: Number of inquiries is related to number of purchased licences, which varies annually (decrease in 2022 compared to 2020-2021). Inquiry was sent to all fishers with licence with functional email address.

River Utsjoki: Planned numbers (700) of recreational salmon catch inquiries were not possible to achieve from the Utsjoki river system because all salmon fisheries in the Tenojoki system,

including the tributary river Utsjoki were prohibited in 2022.

### **Monitoring of sea trout parr densities**

River Isojoki: number of electrofishing sites was lower than planned due to high flooding especially in downstream sites in electrofishing season. Upstream sites were electrofished as planned. Despite lower than planned number of sampling sites collected data is adequate for stock assessment purpose.

### **Biological sampling from recreational catches of eel in Finnish inland waters**

Planned number for eel biological samples was exceeded in year 2022 (72 vs. 25). A reason to this is that eel collected from recreational fishers are collected from low number fishers and samples. Therefore, it is difficult to monitor the accumulation of samples during short fishing season. In addition, planned number of samples is low, which makes this even more difficult.

If the answer is No, explain why not, and what measures were taken to avoid non-conformity.

### **Biological sampling from recreational salmon catch**

River Tornionjoki: The network of fishers collecting samples has been kept so large that the achieved number of samples won't be seriously lower than the planned number. However, to avoid oversampling in years with very abundant spawning runs and active fishing, the network of samplers cannot be extended from the current level.

River Utsjoki: Due to fishing closure in R. Tenojoki river system, biological sampling was not possible to conduct. The situation is being followed and response considered in next WP submission.

### **Survey of recreational salmon catches in rivers**

River Simojoki: No of inquiries is related to number of purchased licences, which varies annually. Therefore, planned no. of responses is difficult to predict.

River Utsjoki: Due to fishing closure in R. Tenojoki river system, survey was not possible to conduct. The situation is being followed and response considered in next WP submission.

### **Monitoring of sea trout parr densities**

River Isojoki: Planned number of sampling sites was not met in 2022, due to natural conditions (exceptionally high flooding in late August), which is not possible to predict.

### **Biological sampling from recreational catches of eel in Finnish inland waters**

Despite difficulties described above, we plan to overcome this problem by more frequent contacting of fishers during fishing season.

(max 250 words per species and area)

## Text Box 2.4: Recreational Fisheries

### (Baltic Sea)

*General comment: This text box fulfils Article 5(2)(a), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 2.2 of the EU MAP Delegated Decision annex. Use this text box to give an overview of the methodology used to collect data on marine and freshwater recreational catches. For freshwater diadromous species, use Table and Text Box 2.3.*

Description of the sampling scheme/survey according to Table 2.4.

#### **National survey on recreational fishing**

The data on recreational marine fishing is collected by a postal survey using a sample drawn from the Population Information System maintained by the Digital and Population Data Services Agency. The whole recreational catch is surveyed, but a special attention is drawn to marine catches of salmon, trout, cod and eel for instance in terms of sample allocation. The Population Information System is the frame population, because there is no covering and usable register on the recreational fishers. On the other hand, one cannot predestinate, whether the fishers who are contacted have been fishing at the sea, in inland waters or both. The statistical unit in the recreational fishing statistics is the household-dwelling. The term recreational fishing includes all the fishing carried out by Finnish household-dwellings with the exception of professional fishers and their household-dwellings.

When surveying recreational marine catches in 2020 the sample comprised 11 000 household-dwelling units. One household-dwelling unit consists of the persons living permanently in the same dwelling. The sampling was targeted at persons aged 18-74 years. The sample design was stratified sampling. The strata were formed taking into account the payment of fisheries management fee, the location of the person's municipality of residence, the type of municipality and the location of the municipality in relation to the sea. The questionnaire had six pages, and the focus of the questions was on the age and gender of the persons participating in fishing, the importance of fishing as a hobby, fishing activity by fishing area, and catch sizes. The survey is biennial, and the next survey will be conducted in the beginning of 2023.

(max 900 words per region)

Deviations from the work plan

*List the deviations (if any) in the achieved data collection, compared to what was planned in the work plan and explain the reasons for the deviations.*

No deviations. Next survey will be conducted in 2023. Action to avoid deviations

*Describe the actions that will be considered/have been taken to avoid the deviations in the future and when these actions are expected to produce results.*

N/A

(max 900 words per region)

## Text Box 2.5: Sampling plan description for biological data

### (Baltic Sea)

*General Comment: This text box fulfils Article 5(2)(a) and (b), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter 2 point 2.1(a) of the EU MAP Delegated Decision annex. This text box complements Table 2.5.*

*This text box is complementary to information on the sampling schemes provided in the quality document (Annex 1.1). It serves to highlight additional information on sampling schemes and sampling frames that the Member State considers useful to understand the sampling design planned for the region and the implementation year(s).*

#### Additional information on sampling schemes

*You may add specific contextual information related to a region and the implementation year(s), for instance highlighting new developments not yet detailed in the quality document, regional adaptation and/or perspectives for the future. Insert the information under the same sampling scheme identifier as in Table 2.5.*

#### Additional description of sampling frames

*You may add a complementary description to what includes the 'Sampling frame description' column of Table 2.5. Insert the information under the same identifier and name as in the columns 'Sampling frame identifier' and 'Sampling frame description' of Table 2.5, and in the same order (Sampling frame identifier + Sampling frame description).*

### **FIN sampling plan description for biological data in the Baltic Sea**

Finland is implementing biological sampling of commercial catches only in the Baltic Sea. The selected fish species for the sampling are European Eel (*Anguilla anguilla*), Herring (*Clupea harengus*), Common whitefish (*Coregonus lavaretus*), Vendace (*Coregonus albula*), Perch (*Perca fluviatilis*), Salmon (*Salmo salar*), Sea trout (*Salmo trutta*), Pikeperch (*Sander lucioperca*) and Sprat (*Sprattus sprattus*). All of these species are sampled for following biological variables: length, age, weight, sex ratio and sexual maturity (in case of salmon, maturity determination is purposeless, since sampled coastal salmon fishery targets on spawning migrants). Fecundity sampling is not included in FIN DCF program. The sampling plan for biological data for each of these species (by sampling scheme identifiers) is described below. All sampling of commercial catches, excluding self-sampling on salmon catches is performed on shore. Of part of the sampled commercial catches, fishers are asked to land also discards and undersized fish (latter with permit of exception). In these cases catch includes discard-fraction.

### **On shore sampling program targeting pelagic trawl fishery of herring and sprat**

List of required stocks for sampling are Central Baltic Herring (SD 25-29,32), Bothnian Sea Herring (SD 30) and Bothnian Bay Herring (SD 31) – the latter two have always belonged to same management unit and to same assessment unit since 2017.

Biological data are collected mostly from sampling of commercial trawl fisheries (OTM\_SPF and PTM\_SPF). Sampling of Herring (and sprat) is based on length stratified sub-sampling scheme, where target number of specimen for biological data is 10/ 0.5 cm length-class/SD/quarter (the number of specimens is increased for maturity sampling in spring before spawning time). The herring stock-related biological data are used also with the trap-net length distributions and age-length relationships – and vice versa.

Finland has started the statistically sound sampling scheme (4S) from the trawl fisheries targeting herring and sprat, where it has been in force from the beginning of year 2019. The selection of PSU for herring (and sprat) is to do random sampling from a draw list, where probability of a fishing unit to be selected for sampling in certain SD and quarter is weighted by its previous years' combined catch of herring and sprat in the same SD and Q. During each quarter the sampling personnel go through the draw list in free order, recording all relevant info (sampling, refusal, out of area, etc.) of the interaction into our sampling database SUOMU, which also has the lottery function needed in the process. Additional lottery draw of PSU's will be done to reach the sampling target if there is a deficit.

#### **On shore sampling program targeting trap-net fishery of herring**

List of required stocks for sampling are Central Baltic Herring (SD 25-29,32), Bothnian Sea Herring (SD 30) and Bothnian Bay Herring (SD 31) – the latter two have always belonged to same management unit and to same assessment unit since 2017.

Biological data are collected mostly from sampling of trap-net fishery (FYK\_SPF and FPN\_SPF). Sampling of herring is based on length stratified sub-sampling scheme, where target number of specimen for biological data is 10/ 0.5 cm length-class/SD/quarter. The herring stock-related biological data are used also with the trawl fishery length distributions and age-length relationships – and vice versa.

Finland has started the statistically sound sampling scheme (4S) for the herring trap-net fisheries, where it has been in force from the beginning of year 2020. The selection of PSU for herring is to do random sampling from a draw list, where probability of a fishing unit to be selected for sampling in certain SD and quarter is weighted by its previous years' combined catch of herring and sprat in the same SD and Q. During each quarter the sampling personnel go through the draw list in free order, recording all relevant info (sampling, refusal, out of area, etc.) of the interaction into our sampling database SUOMU, which also has the lottery function needed in the process. Additional lottery draw of PSU's will be done to reach the sampling target if there is a deficit.

#### **On shore sampling program targeting coastal gillnet and trap-net fishery of perch, pikeperch and whitefish**

The fisheries of common whitefish, as well as perch and pikeperch, and other fisheries on freshwater species) are typically small-scale fisheries, where fishers operate with small boats close to the coast. Main gears are

gillnets and trap-nets. The sampling frame will be the list of individual fishers / enterprises, which have caught more than 250 kg of the targeted species/ species assemblage to be sampled during the most recent reference year. Samples are bought from selected fishers, when they arrive to port bringing the whole (until certain amount, ca. 50-60 individuals of targeted fish species have been achieved) catch of one fishing day. Sampling unit is fishing day. This practise will be continued during years 2022-2024, and possibilities to develop sampling towards statistically sound sampling design will be studied.

Biological data are collected from sampling of commercial trap net and gillnet fisheries (FYK\_FWS, GNS\_FWS). The sampling is carried out in SD's 29, 30 and 31 for Common whitefish, in SD's 29 and 30 for Perch, and in SD's 29, 30 and 32 for pikeperch.

#### **On shore sampling program targeting pelagic trawl fishery of vendace**

Biological data for Vendace are collected from commercial trawl fisheries (OTM\_FWS, PTM\_FWS; see strata descriptions below) in the Bay of Bothnia (SD 31) and the sampling is carried out as length stratified sub-sampling scheme, where target number of specimen for biological data is 10/ 0.5 cm length-class/quarter. The samples will be taken from an unsorted catch as the vessel arrives to port. The sampling unit will be vessel x fishing trip. Vendace is caught also in smaller amounts by trap-nets and in mixed trawl catches with herring.

The statistically sound sampling scheme (4S) from the trawl fisheries of Vendace has been in force from the beginning of year 2020. 4S sampling in trawl fisheries targeting Vendace (*Coregonus albula*) in the Bay of Bothnia (SD 31) has also been in force from the beginning of year 2020.

#### **Self-sampling program targeting coastal fishery of salmon**

In the Baltic Sea, the commercial catches of Salmon are taken from two management units, the Gulf of Bothnia – Baltic Main Basin (SD 22-31) and the Gulf of Finland (SD 32), both having their own annual TACs. In the sea areas, biological data of Salmon are collected from sampling of coastal trap net fisheries (FYK\_ANA) in the SD 29-32, and the catch is solely mature salmon returning to home rivers in summer (catch sampling from recreational fishery in the R. Tornionjoki is presented in Text Box 2.4).

The salmon fishery consists of several trap-net fishers which are spread all along the coast and operate with shorter than 10 m LOA vessels. The average daily salmon catch of a fisher during a rather short fishing season is about 10 fish, and the most effective way to get salmon samples has been self-sampling. Selected most active fishers are given instructions to sample during the whole fishing season their daily catch every second day at maximum 20 samples per day representing size distribution of the catch. This practise has been followed in previous program periods and will be continued during years 2022-2024. A total of 10-15 salmon fishers take part in the self-sampling program and they hold (by individual quotas) about 15% of the total salmon TAC. These fishers use the same type of trap-nets that are commonly in use at the coastal salmon fishery and their gears as well as fishing sites can be assumed to have similar catchability as other fishers. The fishers are not selected into the self-sampling program randomly, but because of their willingness and possibility to co-operate. Age composition of the catch varies little between fishers between areas since



spawning migration population consists of mainly three age groups. About 95 % of the catch is 1SW-3SW (sea winter) salmon. Stock composition varies depending on the fishing area. The trap nets used in the fishery are non-selective in terms of age/size of the fish. Sampling unit is fishing day. During years 2022-2024 FIN will continue with the fishers with whom we already have co-operation and study possibilities for randomized sampling.

In addition, the genetic analysis will focus on the catch samples collected from commercial catches in order to explore the present migration patterns (space and time) of different salmon stocks in the region. These data are needed for the ICES Baltic salmon stock assessment.

The majority of sea trout collected for sampling (in total about 100 samples) is caught as a bycatch in coastal trap net fisheries targeting Salmon (FYK\_ANA). Samples are accumulated by lesser amount from trap net (FYK\_FWS) and gillnet fishery (GNS\_FWS) of whitefish. Selected fishers sample all their landed sea trout catch (above BMS, adipose fin-clipped). Fishers are allowed to land only adipose fin-clipped sea trout that are above BMS.

#### **Eel sampling from bycatch of commercial coastal fisheries**

An index for the abundance of eels (yellow and silver altogether) along the Finnish coast is obtained from fisheries statistics. Both yellow and silver eels are caught in commercial fisheries, but entirely as bycatch in fisheries targeting other species. Samples are collected to estimate the share of yellow/silver eels and restocked/wild eels (on the basis of strontium chloride label, only for individuals from year-class 2009 and later). In commercial fisheries eels are caught as a bycatch in trap net fisheries targeting pikeperch, perch, common whitefish and other freshwater fish. The catch per fisher is extremely low. Selected fishers sample their eel catch until a total amount of 100 samples is achieved. Sampling is carried out mainly in SD 32 but occasionally if necessary also in SD 29 and 30 because of the great variation of eel bycatch among the fishers and locations and years.

*(One text box (max. 1 000 words) per region/RFMO/RFO/IO)*

#### **Deviations from the work plan**

*List deviations (if any) in the achieved data collection compared to what was planned in the work plan and explain the reasons for the deviations.*

#### **On shore sampling program targeting pelagic trawl fishery of herring and sprat**

Marginally lower number (achieved PSU just decimals below 90%) of PSU than planned due to low fishing activity in Q3. Planned number of PSU was practically achieved.

#### **Actions to avoid deviations**

*Describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

#### **On shore sampling program targeting pelagic trawl fishery of herring and sprat**

As (only marginally) lower no of PSU than planned was achieved, we will continue monitor achieved NoS/PSU:n in quarterly basis, and make corrective actions if necessary.

*(One text box of max. 1 000 words per region/RFMO/RFO/IO)*

## Text Box 2.6: Research surveys at sea

### (Baltic Sea)

*General Comment: This text box fulfils Article 5(1)(b), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapters I and II of the EU MAP Implementing Decision annex. It is intended to specify which research surveys at sea, as set out in Table 2 of the EU MAP Implementing Decision annex will be carried out. Member States shall specify whether the research survey is included in Table 2 of the EU MAP Implementing Decision annex or whether it is an additional survey.*

*(Use one text box per survey)*

Name of the research survey

BIAS

#### 1. Objectives of the survey

For mandatory surveys: list the full list of target species/ecosystem components set by the coordinating group (as opposed to the target species provided in Table 1 of the EU MAP Implementing Decision), and the international as well as additional national objectives.

For non-mandatory surveys: describe the purpose of the survey including sampling activities and target species/ecosystem components, the end user, the data use.

Baltic International Acoustic Survey (BIAS): The objective of the BIAS survey is monitoring of the spatial distribution and abundance of herring and sprat year-classes in the pelagic areas of the Baltic Sea. Survey design, acoustic measurements, fishing method and data analysis are standardized and data produced are used as indices for Baltic herring and sprat stock assessments.

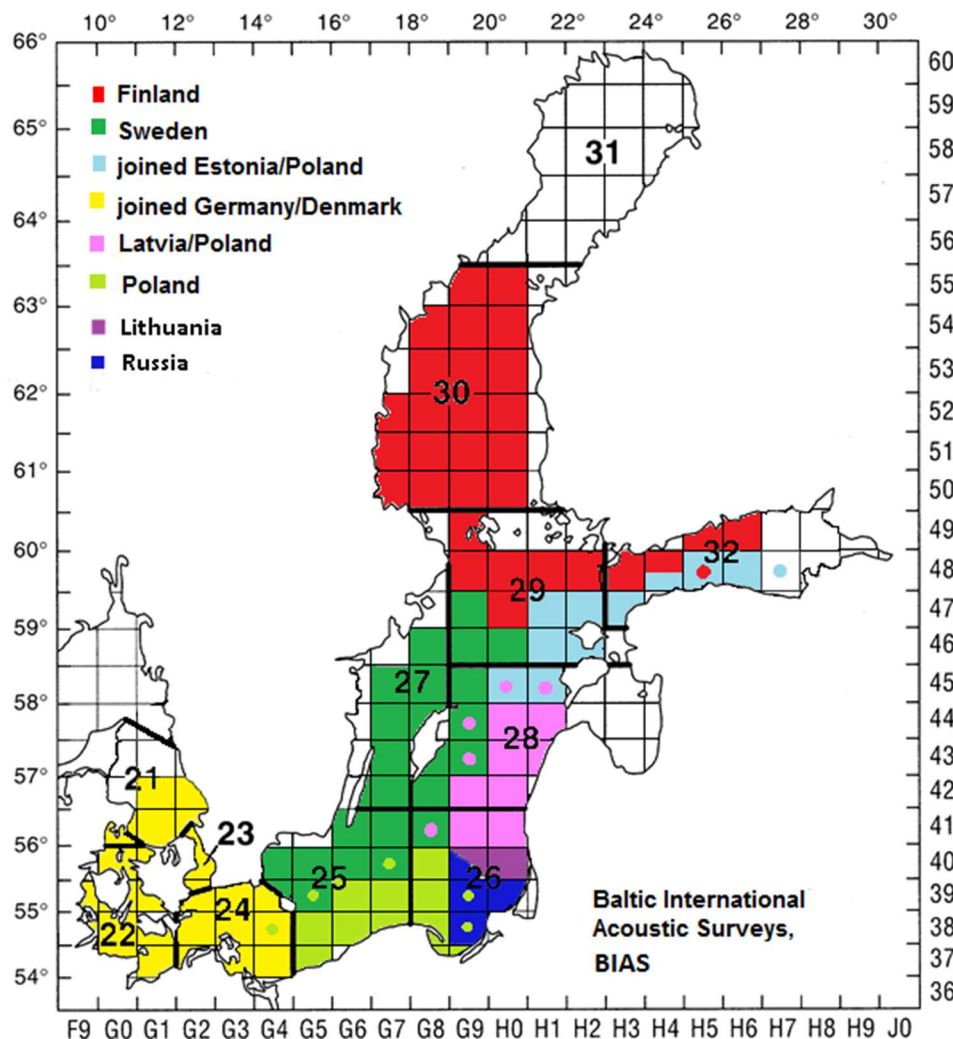
#### 2. Description of the survey design and methods used in the survey for each type of data collection as listed in Table 2.6 for this specific survey.

If documentation of the survey design and methods used is available online in English, the Member State can refer to that documentation.

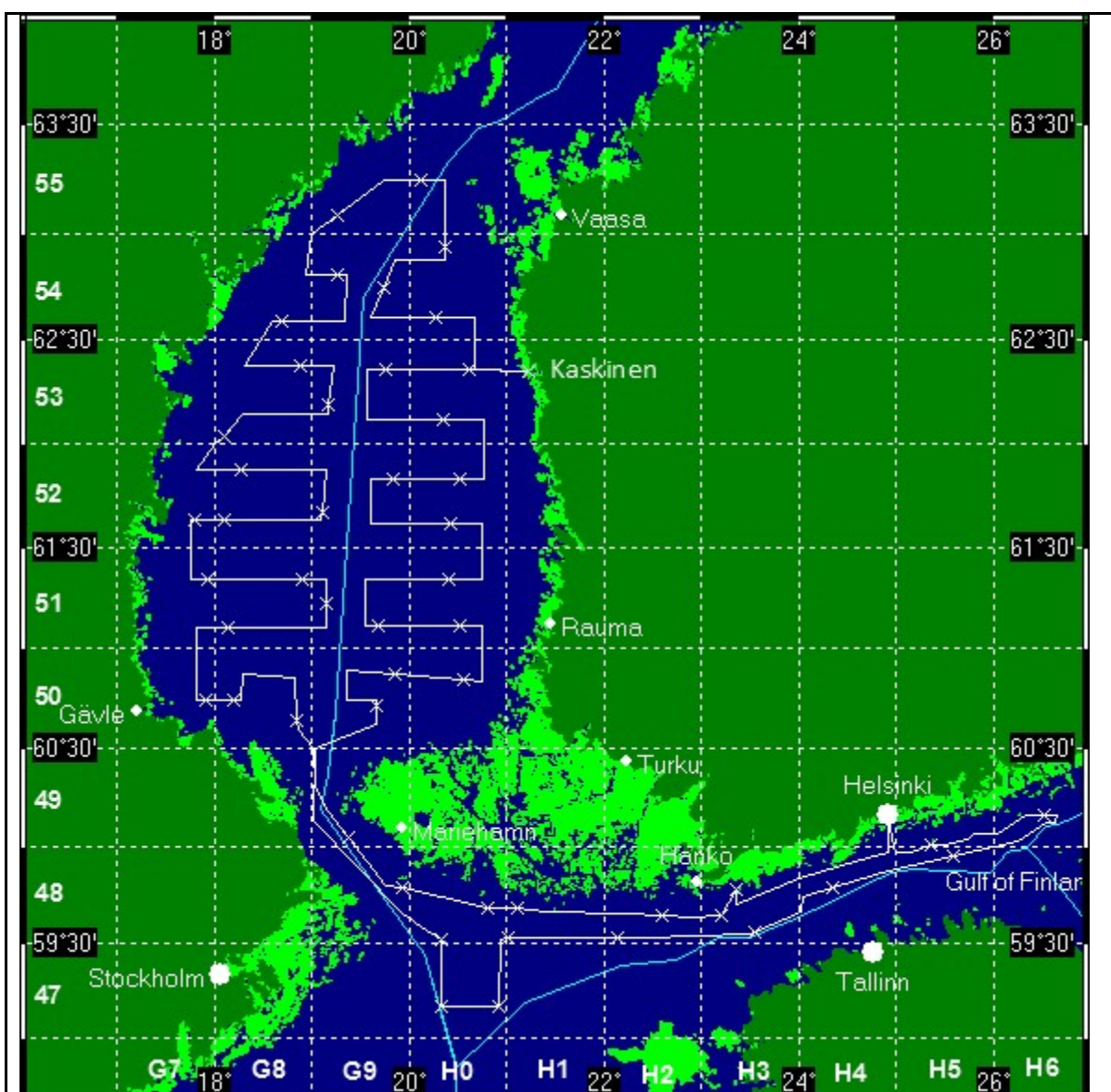
BIAS: Data collection during BIAS survey have been described in the manual of International Baltic Acoustic Surveys

[http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20\(SISP\)/SISP%208%20IBAS%202017.pdf](http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20IBAS%202017.pdf).

The BIAS surveys should cover the total area of ICES Division III (Maps 1 and 2). Each statistical rectangle of the area under investigation was allocated to one country during the Baltic International Fish Survey Working Group (WGBIFS) meeting, thus each country has a mandatory responsible area. The aim is to use acoustic transects spaced on regular rectangle basis at a maximum distance of 15 nautical miles and with a transect density of about 60 nautical miles per 1000 square nautical miles. It is recommended to sample a minimum of two trawl hauls per each statistical rectangle. Since 2013, R/V Aranda has been chartered to cover the whole area within the remit of Finland, and the use of R/V Aranda has already been agreed for the years 2022-2023.



Map 1. The planned coverage of the Baltic Sea and the assignment of the national/joint acoustic surveys to the rectangles during the BIAS surveys in 2022-2024.



Map 2. The planned cruise track (solid white line) and trawl stations (white cross) during the Finnish BIAS survey in 2022-2024.

3. For internationally coordinated surveys, describe the participating Member States/vessels.

Finland-R/V Aranda, Estonia-R/V Baltica, Sweden-R/V Svea, Poland-R/V Baltica, Latvia-R/V Baltica, Lithuania-R/V Darius and Germany-R/V Solea are the participating Member States and vessels. BIAS and other Baltic international surveys are coordinated and planned yearly in the ICES WGBIFS meetings.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.

For Type of participation other than 'Financial' describe the type of participation, and/or the background of the type of participation in more detail.

On the basis of earlier bilateral agreement, presently a mutual consent between Finland and Sweden is followed, according to which Sweden sends two technicians to BIAS-survey for SD30 part and is responsible for age reading of 50% of herring otoliths collected from that area. New survey participation and cost sharing rules are discussed in regional level.

*(max 450 words per survey)*

5. For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group.

This year's meeting report of ICES WGBIFS coordination group can be found from following link:  
<https://www.ices.dk/community/groups/pages/wgbifs.aspx>

6. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators). Specify in which context the results are used (on a routine basis), both in international and national context.

WGBIFS provides the herring and sprat abundance indices for the Baltic Fisheries Assessment Working

Group (WGBFAS) to use as tuning fleets and for the assessments of the herring and sprat stocks in the Baltic Sea. The preliminary abundance and biomass estimates have been freshly reported to the Fisheries section of Ministry of Agriculture and Forestry and published in internet, newspapers and other publications.

7. Extended comments

*Extended AR comments can be placed under this section.*

Swedish authorities didn't allow R/V Aranda to use scientific echo-sounder in the territorial water of Sweden. Therefore, no research investigations were done in the Swedish territorial areas.

*(max. 450 words per survey)*

### SECTION 3: FISHING ACTIVITY DATA

#### Text Box 3.1: Fishing activity variables data collection strategy

*General comment: This text box fulfils Article 5 (2)(c), Article 6 (3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 3.1 of the EU MAP Delegated Decision annex. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under the Control Regulation (EC) No 1224/2009 or where data collected under Regulation (EC) No 1224/2009 are not at the right aggregation level for the intended scientific use. Text Box 3.1 should be filled only in case complementary data collection is planned*

*Explain the reasons for implementing complementary data collection.*

*Information on the sampling schemes is available in the quality document (Annex 1.2). However, the Member State is invited to highlight additional information here on sampling schemes and sampling frames deemed necessary to understand the actual sampling design planned for the implementation year(s).*

The data concerning commercial fishery is mostly collected under Regulation (EU) No 1224/2009.

Complementary price data is collected by Natural Resources Institute Finland (LUKE) for commercial species not regulated by TACs.

The value of catches landed in Finland is calculated based on landings data and the average prices paid to fishers published by LUKE. The value of catches landed abroad or trans-shipped is calculated from the database called the central control register on commercial fishery maintained by the Centres for Economic Development, Transport and the Environment and the Provincial Government of Åland.

The producer prices for fish are calculated as averages weighted with volume purchased. The price information for species regulated through TACs (herring, sprat, salmon, cod, plaice) is calculated from obligatory purchase notifications made by first-hand commercial buyers. For other than TAC regulated species this data is deficient, thus complementary data is gathered from panel-style sample of 20-30 fish wholesalers. The respondents supply monthly information on purchased volume and average prices per species through email or post. The data collected from wholesalers is regionally comprehensive, including at least three companies from each coastal area. New respondents are recruited in case needed to maintain sufficient sample size.

*(max. 900 words)*

Deviations from the work plan

*List the changes from the work plan (if any) and explain the reasons.*

During 2022, the Centre for Economic Development, Transport and the Environment in Southwest Finland enforced control on submitting sales notes according to Council Regulation (EC) No 1224/2009.

Consequently, the coverage of census price data for non-quota species has significantly improved. Since sufficient price data can be obtained for all species from central control register on commercial fishery, the



panel-style sample survey for fish wholesalers will be discontinued from 2023 onwards.

Actions to avoid deviations

*Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

More comprehensive census data has been utilized, improving the coverage of producer prices of fish and quality of catch value estimates from 2022 onwards.

*(max. 900 words)*

### Text Box 3.2: Fishing activity variables data collection strategy (for inland eel commercial fisheries)

*General comment: This text box fulfils Article 5(2)(c), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 3.2 of the EU MAP Delegated Decision annex. It is intended to describe the methods and data sources used to estimate fishing capacity, effort and landings data.*

*Describe data collection of inland eel commercial fisheries landings, effort and capacity. List or describe, for instance, the number of fishing entities, fishing methods, and the associated units used.*

The amount and value of the commercial inland fishery catch is presented by fish species and region. The amount of catch is also presented by month and gear. The information is based on information provided by commercial fishers. As a result of the new Fishing Act (379/2015), commercial fishers are obligated to maintain a journal of fishing activities, apart from those taking place in sea areas, and to report the catches that they have caught and that have been caught in their name at least once per calendar year. Amount and value of catch are presented using the regional distribution of fishery units applied by the Centres for Economic Development, Transport and the Environment (ELY Centres) until the end of 2014. Catches are also presented on a monthly basis. In addition to other catches, the statistics also presents removal fishing (biomanipulation) separately. The statistics of commercial inland fishery is a census survey. Its frame population for 2016 and 2017 is the status at the end of 2017 in the register of commercial fishers maintained by the ELY Centre for Southwest Finland. A commercial fisher can be a natural person (person or one-man business) or a legal person (limited liability company, limited partnership or general partnership). Fishers must provide the Natural Resources Institute Finland (Luke) with an electronic or paper fishing journal by the end of February following the statistics year. The responses will be adjusted using statistical methods so that the estimate covers the entire frame population.

MS is invited to describe inland eel commercial fisheries landings, effort and capacity data collection. Please list or describe e.g. number of fishing entities, fishing methods as well as associated units used.

In Finland there is no inland commercial fishing targeting eel, and thus no landings, effort and capacity of fishing vessels targeting eel can be provided. Commercial inland eel catches (2018: 31 kilograms, 2019: 95 kilograms) are bycatch of other fisheries.

(max. 900 words)

Deviations from the work plan

*List the changes from the work plan (if any) and explain the reasons.*

Actions to avoid deviations

*Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

(max. 900 words)

#### SECTION 4: IMPACT OF FISHERIES ON MARINE BIOLOGICAL RESOURCES

##### Text Box 4.2: Incidental catches of sensitive species

**(Region/RFMO/RFO/IO: Please indicate per text box and update the table of contents)**

*General Comment: This text box fulfils Article 5(2)(a) and (b), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter 2 point 4.1 of the EU-MAP Delegated Decision annex. This text box complements Table 2.5.*

*This text box is complementary to information on the sampling schemes provided in the quality document (Annex 1.1). It serves to highlight information on sampling schemes and sampling frames related to incidental catches of sensitive species.*

Additional information on planning the observation of incidental catches of sensitive species (if already filled in in Annex 1.1, please indicate where it can be found):

*- Has an assessment of the relative risk of bycatch for the different gear types/metiers taken place and been taken into account for the sampling design?*

Relative risk of bycatch by gear type or metier has not been assessed yet. Relative risk has not been considered in the sampling design.

PS2-FI-2021\_Report (Pilot Study 2) indicates that the commercial trap net fishery is causing larger incidental bycatch of marine birds than the commercial gill net fishery in the coastal area of Finland. The outcome of the pilot study is also suggesting that the risk of bird bycatch is higher in trap nets: the number of fishing effort, measured as gear day (one gear is in use one day) was about 105,000 for trap nets and 2,003,000 for gillnets (Official Statistics of Finland (OSF): Commercial marine fishery [web publication]. Helsinki: Natural Resources Institute Finland [referred: 29.10.2021]. Access method: <https://stat.luke.fi/en/commercial-marine-fishery>). However, comparison of fishing effort between trap nets and gillnets is complicated because they are very different gears in how they extend in the water and capture fish and incidental bycatch species. A fisher is typically fishing with some 2-10 trap nets while he might be fishing with up to 200 gill nets. Therefore, relative risk is not a rigorous concept in this context.

Pilot Study 2 was conducted as an internet survey, targeted to all active commercial marine fishers. It allowed us to collect survey data. Commercial fishers are reporting their catches and incidental bycatches in the EU



logbooks, in the coastal fishing journals, and in the landing declarations. There is also an on-going port observer program in Finland. Pilot Study 2 was a census survey. Relative risk between gear types was not considered due to the method. Note also that it was a pilot study. It is not feasible to consider relative risk regarding the data that is received from fishers via their reports. However, the port observer program could be adjusted to consider the relative risk, but the program has several targets which all have to be considered simultaneously.

In addition, FIN is preparing to develop scientific bycatch observation program, see Textbox 1a for details.

*- What are the gear types/metiers that present the highest risk of bycatch per species/taxa of PETS in a given region?*

Anecdotal information has been suggesting that gillnets are the gear that present the highest risk for protected bird and mammal species. PS2-FI-2021\_Report (Pilot Study 2) has challenged this conclusion. Please, look at our response for the previous question.

According to present knowledge on threats ([www.ymparisto.fi/en-US/Nature/Species/Threatened\\_species](http://www.ymparisto.fi/en-US/Nature/Species/Threatened_species)) and bycatch estimates (PS2-FI-2021\_Report), the bycatch rate is not the fundamental reason for the poor status of protected bird or mammal species and seems not to be one of the main factors preventing the improvement of the status of protected bird or mammal species. The bycatch estimates, however, are currently inaccurate and more insight is necessary.

*- What are the methods to calculate the observation effort?*

Number of port sampling events (for those sampling schemes with port sampling program).

*- Does the sampling design and protocol follow the recommendations from relevant expert groups? Provide appropriate references. If there are no relevant expert groups, the design and protocol have to be explained in the text.*

Information of the incidental by-catch has been obtained via the port observer program and from the catch reports. In Finland, commercial fishers are using three types of reports that are conditional on the vessel length and the species caught: EU logbooks, coastal fishing journals, landing declarations. The Commission Delegated Decision (EU) 2021/1167 is obligating that data shall be collected on of incidental catches of all protected sea birds, mammals, reptiles and fish species, as referred to in Union legislation and under international agreements. Data are stored in the national data base (eKAKE) for commercial fisheries. Fishers are also obliged to promptly report the incidental by-catch of seals and harbour porpoise to the Natural Resources Institute Finland (Fishing Act (379/20105, 62 §).

Currently, FIN is conducting a port observer program as an elementary part of all commercial sampling schemes, excluding coastal fishery of salmon, in which self-sampling is used. The port observers enter the bycatch information in the national database (SUOMU). The vast majority of the identified by-catch data are received from the reports from the fishers, and in particular, from the coastal fisheries where the operators are using the coastal fishing journal to report catches and incidental by catches. Currently FIN is planning to verify the reliability of the fisheries-dependent bycatch data by developing on-board observer program, collection of fisheries-independent gillnet bycatch data by and e-mail questionnaire described in (Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem (PS2-FI-2021\_Report), See Text Box 1a.

Additional information on observer protocols (if already filled in in Annex 1.1, indicate where it can be found):

*- Does the on-board observer protocol contain a check for rare specimens in the catch at opening of the cod-end?*

If YES is the observer instructed to indicate if the cod-end was NOT checked in a haul?

No. Currently there is no onboard observer program in Finland (and consequently no cod-end checking), but onboard observer program is being developed (See Text Box 1a).

*- In gill nets - and hook-and-line fisheries: does the on-board observer protocol instruct the observer to indicate how much of the hauling process has been observed for (large) incidental bycatches that slip out of the net?*

In Finland there is no ongoing or planned onboard observer program for gillnet fisheries. For safety reasons observers cannot enter vessels that are deploying gill net because the boats are too small to carry an extra

person.

Instead, FIN is planning to initiate an observer program targeted for the trap net fishery where vessels are somewhat larger and safer than in the gill net fishery.

*- In large catches: does the protocol instruct to check for rare specimens during sorting of the catch (i.e. at conveyor belt)? Is the observer instructed to indicate what percentage of the sorting or hauling process has been checked at "haul level"?*

Currently (2021) not, but the inclusion on onboard observer program in trawl fishing of herring (and sprat) and trap net fishing for herring is being developed (See Text Box 1a).

#### Additional information on sampling schemes

Member State may add specific contextual information related to a region and the implementation year(s), for instance highlighting new developments not yet detailed in the quality document, regional adaptation and/or perspectives for the future. Insert the information under the same sampling scheme identifier as in Table 2.5.

#### Additional description on sampling frames

Member State may add complementary description to what includes the 'Sampling frame description' column of Table 2.5. Insert the information under the same identifier and name as in columns 'Sampling frame identifier' and 'Sampling frame description' of Table 2.5, and in the same order (Sampling frame identifier + Sampling frame description).

#### Additional information on sampling schemes:

*You may add specific contextual information related to a region and the implementation year(s), for instance highlighting new developments not yet detailed in the quality document, regional adaptation and/or perspectives for the future. Insert the information under the same sampling scheme identifier as in Table 2.5.*

#### Additional description on sampling frames

*You may add a complementary description to what includes the 'Sampling frame description' column of Table 2.5. Insert the information under the same identifier and name as in the columns 'Sampling frame identifier' and 'Sampling frame description' of Table 2.5, and in the same order (Sampling frame identifier + Sampling frame description).*

*(One text box (max. 1 000 words) per region/RFMO/RFO/IO)*

### Results

*Provide additional information, if available, in this text box. For example, summary information on the number of individuals recorded as bycaught per species, gear group and monitoring method with information about the state of the animals (i.e. were they released alive, dead, or collected for sampling).*

In 2022 at sea observers reported one *Somateria mollissima* in trap nets. Port observers reported eight *Halichoerus grypus* in trawls, one *Larus sp.* and one *Phalacrocorax carbo* in trap nets, and one *Mergus serrator* and one *Phalacrocorax carbo* in trap nets. Logbook data, which is collected by control authorities, was not yet available in May 2023.

In 2021 (the newest data on bycatch with all data sources available), in total 15 bycatch species (13 birds and 2 mammals) and 276 individuals were observed. No cetaceans were caught. At sea observers reported one *Halichoerus grypus* in trawls and two *Larus marinus* in trap nets. Port observers reported two *Halichoerus grypus* in trap nets and one in trawls, one *Larus sp.* in trap nets, two *Mergus merganser* in trap nets, and one *Mergus sp.* in gillnets. Logbooks included 19 *Halichoerus grypus* in trap nets and 11 in gillnets, 7 *Pusa hispida* in trap nets and one in gillnets, one *Alca torda* in trap nets and one in gillnets, one *Anas crecca* in gillnets, two *Anas platyrhynchos*

in trap nets, one *Aves cl.* in gillnets, two *Aythya sp.* in gillnets, 11 *Aythya fuligula* in gillnets, six *Bucephala clangula* in gillnets, three *Cephus grylle* in gillnets, four *Melanitta fusca* in gillnets, seven *Mergus sp.* in trap nets and 39 in gillnets, one *Mergus merganser* in trap nets and four in gillnets, four *Mergus serrator* in gillnets, 49 *Phalacrocorax carbo* in trap nets and 80 in gillnets, four *Podiceps cristatus* in in gillnets, and four *Somateria mollissima* in gillnets. In addition, three *Halichoerus grypus* were reported via internet service (riistahavainnot.fi).

#### Deviations from the work plan

*The Member State shall list the deviations (if any) in the achieved data collection compared to what was planned in the work plan and explain the reasons for the deviations.*

No deviations.

#### Actions to avoid deviations

*The Member State shall describe the actions that will be considered/have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

N/A

*(One text box of max. 1 000 words per region/RFMO/RFO/IO)*

### Text Box 4.3: Fisheries impact on marine habitats

*General comment: This text box fulfils Article 5 paragraph 2(a) and 2(b), Article 6 paragraph 3(a), 3(b) and 3(c) of Regulation (EU) 2017/1004 and Chapter 2, section 4.2 of the EU MAP Delegated Decision annex. It contains information on additional studies on the fisheries impact on marine habitats.*

1. Aim of the study

2. Duration of the study

3. Methodology and expected outcomes of the study

*(max 900 words per study)*

Brief description of the results (including deviations from the plan and justifications as to why if this was the case).

Achievement of the original expected outcomes and justification if this was not the case.

NA

Follow-up to the activities (what are the next steps, how the results will be used).

NA

*(max. 900 words per study)*

## SECTION 5: ECONOMIC AND SOCIAL DATA IN FISHERIES

### Text Box 5.2: Economic and social variables for fisheries data collection

*General comment: This Text box fulfils Article 5(2)(d), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 5 of the EU MAP Delegated Decision annex. It is intended to specify data to be collected under Tables 7, 8 and 9 of the EU MAP Delegated Decision annex.*

Economic data collection is based on hierarchical multi-stage survey that combines information from different data sources. Main sources are the central control register on commercial fishery (includes fishery catch and landings data, fishing vessel register, first-hand sales of quota species), structural business and financial statement statistics, statistics on business subsidies and employment statistics from Statistic Finland (SF) and additional account surveys for coastal fisheries and trawlers conducted by Natural Resources Institute Finland (LUKE).

#### 1. Description of clustering

Fishing activity data is collected as a census, no clustering is needed for data collection. However, in cases where a fleet segment has less than 10 vessels clustering is normally applied for reporting economic variables for confidentiality reasons.

In cases where a fleet segment has less than 10 vessels segment is clustered to a segment with the same fishing technique, but different length class. This is basically clustering segments *similar to other segments*. Similarity is demonstrated using expert knowledge on fishing patterns. This clustering approach applies to TM VL0812 and TM VL40.

In addition, in coastal fishing there are a few PG VL1218 vessels using hooks, gill nets and pots or traps, which have been clustered with PG VL0812. This is based on criteria of *non-important segments with distinct characteristics*. Non-importance of fleet segment is assessed in terms of landings (value and volume) and effort.

TM VL1218 has under 10 vessels but for now it has been retained as an individual segment for consistency and to maintain comparability for the time series in fleet segments.

#### 2. Description of activity indicator

No activity indicator applied.

#### 3. Deviation from the RCG ECON (ex. PGECON) definitions

Gross value of landings by species has two different data sources: Data for Gross value of landings by species as a fishing activity variable comes from logbooks and sales notes.

While the data for gross value of landings as an income variable comes from the financial statements and refers

to turnover. In this way the profitability matches with the financial statements data.

*(max. 900 words)*

No deviations.

Deviations from the work plan

*List the changes from the work plan (if any) and explain the reasons.*

Actions to avoid deviations

*Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

NA

*(max. 900 words)*

## SECTION 6: ECONOMIC AND SOCIAL DATA IN AQUACULTURE

### Text Box 6.1: Economic and social variables for aquaculture data collection

*General comment: This text box fulfils Article 5(2)(e), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 6 of the EU MAP Delegated Decision annex. It is intended to specify data to be collected under Tables 10 and 11 of the EU MAP Delegated Decision annex.*

Economic data collection concerning the aquaculture is carried out as a register approach that combines information from several data sources. Main data sources for economic and social data are Structural business and financial statement statistics, statistics on business subsidies and employment statistics of Statistic Finland (SF). Main source for production data is production survey (including some cost data) conducted by Natural Resources Institute Finland (LUKE). In addition, data from environmental permit system and database (YLVA) administered by Ministry of Environment is utilized.

#### 1. Description of the threshold application

No thresholds applied. In the segmentation, the company is allocated to a certain segment based on majority of the production value and weight by species.

#### 2. Deviation from the RCG ECON (ex. PGECON) definitions

Gross sales per species have two different data sources: Gross sales per species reported in a production template comes from questionnaires for aquaculture producers collected by Natural Resources Institute Finland (LUKE) for the official statistics of Finland for aquaculture. While the gross sales per species as an income variable comes from the financial statements and refers to turnover. In this way, the profitability matches with the financial statements data.

(max. 900 words)

#### Deviations from the work plan

*List the changes from the work plan (if any) and explain the reasons.*

Planned sample number was not achieved in all segments. This is due to that, the size of many enterprises in frame population are small (in terms of turnover) and therefore the financial statements data is not found in Statistics Finlands data.

#### Actions to avoid deviations

*Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

We are improving our data collection processes, and evaluating the need to find alternative sources for missing data of small aquaculture enterprises.

(max. 900 words)

## SECTION 7: ECONOMIC AND SOCIAL DATA IN FISH PROCESSING

### Text Box 7.1: Economic and social variables for fish processing data collection

*General comment: This text box fulfils Article 5(2)(f), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004, and Chapter II point 7 of the EU MAP Delegated Decision annex.*

Economic data collection concerning the processing industry is carried out as a register approach that combines information from several data sources. The main data sources are Structural business and financial statement statistics and Business Register of Statistics Finland and production survey (questionnaire) on processing compiled by Natural Resources Institute Finland (LUKE).

Financial statements are available in Statistics Finland for all firms in Business Register with fish processing as their main activity (=census) and no estimation is needed. Primary sources of financial statements data in Structural business and financial statement statistics of Statistics Finland are direct inquiries and business taxation material supplemented by Business Register data. Data is based on corporate balance sheet and profit and loss account data.

The production survey is carried out biannually to update the target frame population and to supplement the data from Statistics Finland. The production survey is collected exhaustively (=census). In this biennial survey (next reference year 2021 will be collected in 2022) data on variables not included in the SBS are collected: that is data on other business activities, employment, energy costs, production methods, production per species and by product and use of raw materials by species is collected. Any missing information is estimated by post stratification. Unit level data are raised to the total population using weights by strata.

*(max. 900 words)*

**Deviations from the work plan**

*List the changes from work plan (if any) and explain the reasons.*

No deviations.

**Actions to avoid deviations**

*Briefly describe the actions that will be considered / have been taken to avoid deviations in the future and when these actions are expected to produce an effect. If there are no deviations, then this section is not applicable.*

*(max. 900 words)*

## ANNEX 1.1 - QUALITY REPORT FOR BIOLOGICAL DATA SAMPLING SCHEME

*The quality report fulfils Article 6(3)(d) of Regulation (EU) 2017/1004. This document is intended to specify data to be collected under Chapter II, point 2 of the EU MAP Delegated Decision annex: Biological data on exploited biological resources caught by Union commercial and recreational fisheries.*

*Use this document to state whether documentation in the data collection process (design, sampling implementation, data capture, data storage, sample storage and data processing) exists and identify where this documentation can be found. Provide short descriptions where indicated, even if the documentation can be found in English. Names of sampling schemes and strata shall be identical to those in Tables 2.2, 2.3, 2.4, 2.5, 2.6 and 4.1 of the WP/AR. For quality information on scientific surveys, use the survey acronym as a sampling scheme identifier. For mandatory surveys, refer to Table 1 of the EU MAP Implementing Decision annex, see also MasterCodeList ‘Mandatory survey at sea’.*

<b>MS :</b> FIN
<b>Region:</b> Baltic Sea, North Sea and Eastern Arctic
<b>Sampling scheme identifier:</b> Monitoring of salmon parr densities
<b>Sampling scheme type:</b> Diadromous (scientific)
<b>Observation type:</b> SciObs water body
<b>Time period of validity:</b> 2022-2024
<p>Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i></p> <p>Sampling scheme aiming to estimate salmon parr densities in rivers Tornionjoki and Simojoki (Baltic Sea) and river Utsjoki (North Atlantic).</p>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Salmon populations in Rivers Tornionjoki and Simojoki (Baltic Sea) and river Utsjoki (North Atlantic)</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p>Salmon parr, i.e. juvenile stage before smoltification, which in these populations covers 2-8</p>



first years of salmon's lifecycle.

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, e.g. *population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

In rivers Tornionjoki and Simojoki sampling has a fixed stratification by river stretches with estimated amounts of parr nursery area (See Sampling design description).

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Sampling comprises of a fixed network of sampling sites, the selection of which has been based on several criteria: 1) The network of sites covers each river stretch; 2) Site is logistically accessible; 3) Site can be sampled with a wide range of river flow conditions; and 4) If several alternatives exist for a site, the final selection is done by lottery. It is acknowledged that due to the inherent methodological constraints of electrofishing (especially in large rivers), the collected data and the resulting parr density estimates are only indices of the true densities. Therefore, sampling is particularly designed to ensure interannual comparability of the data.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

For Rivers Tornionjoki and Simojoki (Baltic Sea), sampling design is documented in the national LUKE/FGFRI reports, e.g. <http://urn.fi/URN:NBN:fi-fe201704126101>.

Tornionjoki and Simojoki are selected as the Finnish index rivers for salmon in the Baltic Sea, following the recommendations of the ICES expert group of Baltic salmon (e.g. [https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGBAST/wgbast\\_2019.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGBAST/wgbast_2019.pdf)). The expert group has also proposed, what kind of information should be collected from the index rivers; sampling designs in the Tornionjoki and Simojoki follow this proposal.

For the River Utsjoki sampling design is documented in the national LUKE/FGFRI reports: (<https://jukuri.luke.fi/bitstream/handle/10024/536774/raportti402.pdf?sequence=1>) ([https://jukuri.luke.fi/bitstream/handle/10024/519920/rktrltr2014\\_3.pdf?sequence=1&isAllowed=y](https://jukuri.luke.fi/bitstream/handle/10024/519920/rktrltr2014_3.pdf?sequence=1&isAllowed=y)). After the publishing of the reports, one change in sampling design has been done: data

collection is nowadays based on single pass electrofishing (earlier three pass electrofishing).

Salmon parr monitoring in rivers Tornionjoki and Simojoki (Baltic Sea) and river Utsjoki (North Atlantic) is conducted by electrofishing based on current scientific practises presented in CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

In Finnish data collection (incl. parr survey) in rivers running into Baltic Sea are reviewed by ICES WKBALTSalmon.

ICES. 2018. Report of the Benchmark Workshop on Baltic Salmon (WKBALTSalmon), 30 January–3 February 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:31. 112 pp.ar 2020

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Electrofishing sites are typically fished in a given order by starting from the river stretches, which are most vulnerable for sampling failures (due to, e.g., incidental summer flood). In

exceptional conditions this order is changed so that any adverse impacts to the results are mitigated. If needed, the field season is prolonged to allow completion of data collection. In rare years (1-2 per decade) flow conditions are so exceptional that a proportion of sampling sites cannot be fished.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Data collection is conducted by using standard electrofishing devices, e.g. Hans Grassl (<http://www.hans-grassl.com/feEXT!00005106102021150947KAD18&T&150947>), anaesthetic, measurement board, tweezers for scale sampling and scale bags. The sampling sites are identified and surface area measured by laser distance measurement device and gps.

Aging of fish (from scales) is carried out by professional personnel in Luke according to detailed instructions.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Electrofishing is conducted according to CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011)

Age determination of salmon parr is described in <http://urn.fi/URN:NBN:fi-fe2017111550717>.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

Part of the salmon parr electrofishing data (from designated sites) is stored to national database (Koekalastusrekisteri), which include quality checks for input data. Besides that, data quality of all salmon parr densities by electrofishing is monitored and checked by expert judgement.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

National database (Koekalastusrekisteri), restricted access.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Basic data quality checks are carried out automatically in measurement phase (by digital measurement device), e.g. with condition factors and in this way errors can be eliminated/corrected. More quality checks and cross-checks are carried out when data is uploaded to the national database (SUOMU).

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Salmon parr scale samples are stored permanently in Luke's national archives.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

Aging of fish (from scales) is carried out by professional personnel in Luke according to detailed instructions following principles described in Finnish age determination guide (in Finnish): <http://urn.fi/URN:NBN:fi-fe2017111550717>.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Salmon parr densities are estimated by applying the common internationally established estimation methods (e.g. Bohlin et al. 1990).

Bohlin, T., Heggberget, T., and Strange, C. 1990. Electric fishing for sampling and stock assessment. In Fishing with electricity. Edited by I. Cowx and P. Lamargue. Fishing News Books, London, UK.

Densities are estimated separately for young-of-the-year (YOY, i.e. age 0) and older parr. For the needs of the ICES WGBAST, 1-year old parr are also estimated separately from even

older (ages 2 to 4) parr. Almost all the YOY parr can be identified based on their length. The age-specific length distributions of older parr overlap more. To identify the age of all the caught specimen, scales are aged from those parr which have their length on the overlapping ranges of the age-specific length distributions.

Aging of parr (from scales) is carried out by professional personnel in Luke according to detailed instructions following principles described in Finnish age determination guide (in Finnish): <http://urn.fi/URN:NBN:fi-fe2017111550717>.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Sometimes no scales suitable for ageing are taken from parr. In those cases the parr are given the age based on the ageing results of the other parr of the same length.

Part of the salmon parr electrofishing data (from designated sites) are stored to national database (Koekalastusrekisteri), which include quality checks for input data. Besides that, data quality of all salmon parr count by electrofishing is monitored and checked by expert judgement.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Datasets are validated by expert judgement before submitted to ICES WGBAST or ICES WGNAS.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

<b>MS : FIN</b>
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> Monitoring of salmon smolt with smolt traps
<b>Sampling scheme type:</b> Diadromous (scientific)
<b>Observation type:</b> SciObs water body
<b>Time period of validity:</b> 2022-2024

Short description (max 100 words): *e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).*

Sampling scheme for monitoring salmon smolt runs in the rivers Tornionjoki and Simojoki.

### Description of the population

**Population targeted:** Specify which are the primary sampling units (PSU), e.g. all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

Salmon population in Rivers Tornionjoki and Simojoki.

**Population sampled:** Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

Salmon smolts, i.e. the specific juvenile stage at the moment of smoltification, when salmon juveniles are descending from the rivers to the sea.

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

No stratification.

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Sampling is partial and random. The fraction of the total smolt run not caught in the sampling is estimated by a capture-mark-release-recapture method. This allows estimation of the total run size.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

For R. Tornionjoki documentation on the sampling design is described in an article: Samu Mäntyniemi, Atso Romakkaniemi, 2002. Bayesian mark-recapture estimation with an application to a salmonid smolt population. Canadian Journal of Fisheries and Aquatic Sciences, 2002, 59:1748-1758, <https://doi.org/10.1139/f02-146>. For R. Simojoki, the same principles are applied.

Sampling design is documented also in the national LUKE/FGFRI reports:

Tornionjoki <http://urn.fi/URN:NBN:fi-fe201704126101>

Simojoki <http://urn.fi/URN:ISBN:978-952-303-170-8>

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

NA

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

R. Tornionjoki: Samu Mäntyniemi, Atso Romakkaniemi, 2002. Bayesian mark-recapture estimation with an application to a salmonid smolt population. Canadian Journal of Fisheries and Aquatic Sciences, 2002, 59:1748-1758, <https://doi.org/10.1139/f02-146>.

Sampling protocol is documented also in Luke/FGFRI National report series:

Tornionjoki <http://urn.fi/URN:NBN:fi-fe201704126101>

Simojoki <http://urn.fi/URN:ISBN:978-952-303-170-8>

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

In Finnish data collection (incl. smolt survey) in rivers running into Baltic Sea are reviewed by ICES WKBALTSalmon.

ICES. 2018. Report of the Benchmark Workshop on Baltic Salmon (WKBALTSalmon), 30 January–3 February 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:31. 112 pp.



## Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Salmon smolt monitoring is conducted by smolt traps, which are sensitive to changes in environmental conditions (start depending on timing of ice-off, also floods etc. may disturb or even damage the gear). The functioning and condition of gear is checked continuously during the monitoring period, and the gear is adjusted and cleaned when necessary. However, in some years environmental conditions do not allow successful monitoring.

## Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

A gear suitable for smolt trapping, a raft for handling the catch, tanks for fish holding, oxygen supply into fish tanks, dip nets, boats, anaesthetic, measure, scale, tweezers, scale bags, documentation forms for field notes etc.

Smolt trapping gear in R. Tornionjoki:



Smolt trapping gear in R. Simojoki:





**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Data capture is documented also in the LUKE/FGFRI National report series:

Tornionjoki <http://urn.fi/URN:NBN:fi-fe201704126101>

Simojoki <http://urn.fi/URN:ISBN:978-952-303-170-8>

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

The documents containing the daily data is cross-checked by the Luke field personnel each day.

## Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

Data is stored to Luke's local server.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Data is cross-checked by the Luke personnel during the data storage.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

A fraction of the smolt catch (see above) are sampled for ageing (scales). After ageing the scale samples are stored permanently in Luke's national archives.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

Aging of fish (from scales) is carried out by professional personnel in Luke according to detailed instructions following the principles described in Finnish age determination guide (in Finnish): <http://urn.fi/URN:NBN:fi-fe2017111550717>.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Samu Mäntyniemi, Atso Romakkaniemi, 2002. Bayesian mark-recapture estimation with an application to a salmonid smolt population. Canadian Journal of Fisheries and Aquatic Sciences, 2002, 59:1748-1758, <https://doi.org/10.1139/f02-146>.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N

No editing or imputation is usually needed. If needed, missing values are imputed according to data from preceding or following days.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-

user?
Datasets are cross checked and validated by expert judgement before submitted to ICES WGBAST.
<b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.
No deviations.

<b>MS:</b> FIN
<b>Region:</b> North Sea and Eastern Arctic
<b>Sampling scheme identifier:</b> Monitoring of salmon smolt with video counter
<b>Sampling scheme type:</b> Diadromous (scientific)
<b>Observation type:</b> SciObs water body
<b>Time period of validity:</b> 2022-2024
<p>Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i></p> <p>Sampling scheme aiming to count downstream migrating salmon smolts in the River Utsjoki, a tributary of the River Teno system. Counting is conducted by underwater video monitoring.</p>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Salmon population of the River Utsjoki</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p>Salmon smolts, i.e. juvenile stage after the parr phase.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction</i>.</p> <p>No stratification. One stationary counting location at the River Utsjoki mouth.</p>
<b>Sampling design and protocols</b>
<b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Smolt count is conducted at the River Utsjoki mouth by 8 underwater cameras on annual basis. Underwater cameras are situated at fixed locations for the whole smolt migration season. Passing smolts are counted. The collected data and the resulting smolt count estimates are only indices of the true smolt numbers. Therefore, sampling is particularly designed to ensure interannual comparability of the data.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

The sampling design is shortly documented in a scientific paper:

Davidson, J., Svenning, M. A., Orell, P., Yoccoz, N., Dempson, J. B., Niemelä, E., Klemetsen, A., Lamberg, A. & Erkinaro, J. 2005. Spatial and temporal migration of wild Atlantic salmon smolts determined from a video camera array in the sub-Arctic River Tana. Fisheries Research 74, 210-222.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

There are no international recommendations for underwater video counting sampling designs of salmon smolts. The sampling design is based on expert judgement and long-term experience.

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

The sampling protocol is shortly documented in a scientific paper:

Davidson, J., Svenning, M. A., Orell, P., Yoccoz, N., Dempson, J. B., Niemelä, E., Klemetsen, A., Lamberg, A. & Erkinaro, J. 2005. Spatial and temporal migration of wild Atlantic salmon smolts determined from a video camera array in the sub-Arctic River Tana. Fisheries Research 74, 210-222.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

There are no international recommendations for underwater video counting protocols of salmon smolts. The sampling protocol is based on expert judgement and long-term experience.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.  
NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

No sampling adjustments during the counting. Operation of the counting system itself is monitored on daily basis throughout the counting season.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Data is collected by custom made light sensitive underwater cameras installed to fixed locations of the bottom of the River Utsjoki at the river mouth. The cameras have 3,5 mm wide angle lenses and videodata is stored by digital recorders (TimeSpace X300) continuously (24/7) throughout the smolt migration season. No external lights are needed as 24-hour sunlight prevails during the monitoring period. Collected videodata is analysed manually by experienced staff by using TimeSpace PCLink software.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Data capture documentation is shortly explained in:

Davidson, J., Svenning, M. A., Orell, P., Yoccoz, N., Dempson, J. B., Niemelä, E., Klemetsen, A., Lamberg, A. & Erkinaro, J. 2005. Spatial and temporal migration of wild Atlantic salmon smolts determined from a video camera array in the sub-Arctic River Tana. Fisheries Research 74, 210-222.

Some of the used equipment has, however, been updated after the publication of the article.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link

is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N

Data capture quality checks are done by checking the production of videodata files on daily basis. Datafiles are recorded in 10 min intervals.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA. Videodata is stored to external hard drives after the data-analysis. The results of counting (=number of smolts/day) are stored to local server.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Quality checks are done occasionally by comparing the counting results (number of smolts) of different videodata-analysers (cross-validation). Some expert judgement is also utilised to estimate the total smolt run size: Pulkkinen, H., Orell, P., Erkinaro, J. & Mäntyniemi, S. 2020. Bayesian arrival model for Atlantic salmon smolt counts powered by environmental covariates and expert knowledge. Canadian Journal of Fisheries and Aquatic Sciences 77, 462-474.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

There are no samples to be stored.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

There are no samples.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide

some details in the textbox.

Y

Data accuracy and precision has been evaluated based on Bayesian modelling and expert knowledge:

Pulkkinen, H., Orell, P., Erkinaro, J. & Mäntyniemi, S. 2020. Bayesian arrival model for Atlantic salmon smolt counts powered by environmental covariates and expert knowledge. Canadian Journal of Fisheries and Aquatic Sciences 77, 462-474.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N

At those rare cases with missing data, (=no videofile recorded), the missing data is imputed by using data of preceding and following hours or days.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Final Datasets are validated by expert judgement.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

**MS : FIN**

**Region:** Baltic Sea, North Sea and Eastern Arctic

**Sampling scheme identifier:** Monitoring of ascending salmon with sonar

**Sampling scheme type:** Diadromous (scientific)

**Observation type:** SciObs water body

**Time period of validity:** 2022-2024

Short description (max 100 words): *e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).*



Sampling scheme for counting annual salmon spawning runs ascending the rivers Tornionjoki and Simojoki (Baltic Sea) and the River Teno (North Atlantic).

### Description of the population

**Population targeted:** Specify which are the primary sampling units (PSU), e.g. all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

Salmon populations in rivers Tornionjoki and Simojoki (Baltic Sea) and River Tenojoki (North Atlantic).

**Population sampled:** Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

Adult salmon, i.e. fish that are ascending to their natal rivers for spawning.

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction*.

No stratification. One stationary counting location at each river.

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Adult salmon are counted at fixed locations by using one (River Simojoki) or two (rivers Tornionjoki and Tenojoki) ARIS sonar units. Guiding fences are used to narrow the river channels for full sonar coverage. Passing adult salmon are counted.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference



(author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

Sampling design in each river is documented in the national Luke reports:

- Tornionjoki <http://urn.fi/URN:ISBN:978-952-380-158-5>
- Tenojoki <http://urn.fi/URN:ISBN:978-952-326-941-5>
- Simojoki <http://urn.fi/URN:ISBN:978-952-326-928-6>

Tornionjoki and Simojoki are selected as the Finnish index rivers for salmon in the Baltic Sea, following the recommendations of the ICES expert group of Baltic salmon (e.g. [https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGBAST/wgbast\\_2019.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGBAST/wgbast_2019.pdf)). The expert group has also proposed, what kind of information should be collected from the index rivers; sampling designs in the Tornionjoki and Simojoki follow this proposal.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

Sampling protocol in each river is documented in the national Luke reports:

- Tornionjoki <http://urn.fi/URN:ISBN:978-952-380-158-5>
- Tenojoki <http://urn.fi/URN:ISBN:978-952-326-941-5>
- Simojoki <http://urn.fi/URN:ISBN:978-952-326-928-6>

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt

mitigation measures during the sampling year?

No sampling adjustments during the counting. Operation of the counting systems themselves are monitored on daily basis throughout the counting season.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Data collection is conducted by using ARIS explorer 1200 sonars ([www.soundmetrics.com/products/aris-sonars](http://www.soundmetrics.com/products/aris-sonars)) connected to laptop and power source. Guiding fences are mounted near the river banks in order to guide salmon pass the counting site at an appropriate distance from a sonar. Large external hard drives or internet connection are used to store and backup the raw data.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Data capture in each river is documented in the national Luke reports:

- Tornionjoki <http://urn.fi/URN:ISBN:978-952-380-158-5>
- Tenojoki <http://urn.fi/URN:ISBN:978-952-326-941-5>
- Simojoki <http://urn.fi/URN:ISBN:978-952-326-928-6>

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N

The quality of the raw data and the physical mounting of the sonar systems are visually checked every 1-2 days. Adjustments to the mounting and the data capture settings (ARISScope software) are made whenever needed. The sonar transducers are visually checked and cleaned for debris/sediment whenever needed.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

Sonar data are stored to external hard drives after the data-analysis. The results of counting (=numbers of adult salmon/day) are stored to local server. A national database is currently under planning.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible

through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Not applicable. All raw data is stored as such and no human errors are possible in the process. National database is under construction.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

There are no samples to be stored.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

There are no samples.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Raw data is processed and salmon are individually identified, counted and measured for their length by using a ARISFish software. Periodically this process is repeated by more than one person and the similarity of the results are compared. The length distribution of the measured salmon is compared against the length distribution among catch samples obtained from the river fishing (see the Sampling scheme ID 'Biological sampling from recreational salmon catch').

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Some imputation is needed to fill the gaps created by occasional short breaks in the data collection (breaks in electricity supply, periodic cleaning of echo sounders). Moreover, if data need to be collected from a very long range in order to cover the whole river transect

(applicable to Tornionjoki, where sonar window length up to 80 meters is needed), this long-range mode is used only for a fraction of each hour of data collection; the resulting fish observations detected outside the normal monitoring range are extended in order to obtain an estimate of the total amount of salmon.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Datasets are validated by expert judgement before submitted to ICES WGBAST or ICES WGNAS.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

**MS :** FIN

**Region:** North Sea and Eastern Arctic

**Sampling scheme identifier:** Monitoring of ascending salmon with video counter

**Sampling scheme type:** Diadromous (scientific)

**Observation type:** SciObs water body

**Time period of validity:** 2022-2024

Short description (max 100 words): *e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).*

Sampling scheme aiming to count upstream migrating adult salmon in the River Utsjoki, a tributary of the River Teno system. Counting is conducted by underwater video monitoring.

**Description of the population**

**Population targeted:** Specify which are the primary sampling units (PSU), e.g. all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

Salmon population of the River Utsjoki.

**Population sampled:** Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

Adult salmon, i.e. fish that are ascending to their natal rivers for spawning.

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, e.g. *population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

No stratification. One stationary counting location at the River Utsjoki mouth.

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Adult salmon count is conducted at the River Utsjoki mouth by 8 underwater cameras on annual basis. Underwater cameras are situated at fixed locations for the most part of the adult salmon migration season. Passing adult salmon are counted.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

The sampling design is shortly documented in a scientific paper:

Orell, P., Erkinaro, J., Svenning, M., Davidsen J. & Niemelä, E. 2007. Synchrony in the downstream migration of smolts and upstream migration of adult Atlantic salmon in the sub-Arctic River Utsjoki. *Journal of Fish Biology* 71, 1735-1750.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

There are no international recommendations for underwater video counting sampling designs of adult salmon. The sampling design is based on expert judgement and long-term experience.

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

The sampling protocol is shortly documented in a scientific paper:  
Orell, P., Erkinaro, J., Svenning, M., Davidsen J. & Niemelä, E. 2007. Synchrony in the downstream migration of smolts and upstream migration of adult Atlantic salmon in the sub-Arctic River Utsjoki. Journal of Fish Biology 71, 1735-1750.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

There are no international recommendations for underwater video counting protocols of adult salmon. The sampling protocol is based on expert judgement and long-term experience.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.  
NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

No sampling adjustments during the counting. Operation of the counting system itself is monitored on daily basis throughout the counting season.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Data is collected by custom made light sensitive underwater cameras installed to fixed locations of the bottom of the River Utsjoki at the river mouth. The cameras have 3,5 mm wide angle lenses and videodata is stored by digital recorders (TimeSpace X300) continuously (24/7) throughout the smolt migration season. No external lights are needed as 24-hour sunlight prevails during the monitoring period. Collected videodata is analysed manually by experienced staff by using TimeSpace PCLink software.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Data capture documentation is shortly explained in:

Orell, P., Erkinaro, J., Svenning, M., Davidsen J. & Niemelä, E. 2007. Synchrony in the downstream migration of smolts and upstream migration of adult Atlantic salmon in the sub-Arctic River Utsjoki. Journal of Fish Biology 71, 1735-1750.

Some of the used equipment has, however, been updated after the publication of the article.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N

Data capture quality checks are done by checking the production of videodata files on daily basis. Datafiles are recorded in 10 min intervals.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA. Videodata is stored to external hard drives after the data-analysis. The results of counting (=numbers of adult salmon/day) are stored to local server.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Quality checks are done occasionally by comparing the counting results (number of adult salmon) of different videodata-analysers (cross-validation).

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

There are no samples to be stored.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

There are no samples.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

N

Data accuracy have been occasionally evaluated by estimating the camera coverage areas and by comparing the videocount results to other counting methods (e.g. counts from the bridge situated at the video monitoring site). Overall, the video counts seems to be rather accurate during normal water levels, but the accuracy decreases during spates. No documentation is currently available on this issue.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N

At those rare cases with missing data, (=no videofile recorded), the missing data is imputed by using data of preceding and following hours or days.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Final datasets are validated by expert judgement.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

<b>MS:</b> FIN
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> Monitoring of sea trout parr densities
<b>Sampling scheme type:</b> Diadromous (scientific)
<b>Observation type:</b> SciObs water body
<b>Time period of validity:</b> 2022-2024
Short description (max 100 words) <i>Sampling scheme aiming to estimate seatrout parr densities in rivers Lapväärtin-Isojokijoki (Bothnian sea), Ingarskilanjoki (Western Gulf of Finland) and Mustajoki (Eastern Gulf of Finland)</i>



<b>Description of the population</b>
<p><b>Population targeted:</b></p> <p>Sea trout populations in rivers running into Baltic Sea: Lapväärtin-Isojoki (Bothnian sea), Ingarskilanjoki (Western Gulf of Finland) and Mustajoki (Eastern Gulf of Finland)</p> <p><b>Population sampled:</b></p> <p>Sea trout parr, i.e. juvenile stage before smoltification, which in these populations covers 1-5 first years of sea trouts's lifecycle.</p> <p><b>Stratification:</b></p> <p>Sampling has a fixed stratification by river stretches with estimated amounts of parr nursery area (See Sampling design description).</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>Sampling comprises of a fixed network of sampling sites, the selection of which has been based on several criteria: 1) The network of sites covers each river stretch; 2) Site is logistically accessible; 3) Site can be sampled with a wide range of river flow conditions; and 4) If several alternatives exist for a site, the final selection is done by lottery. It is acknowledged that due to the inherent methodological constraints of electrofishing (especially in large rivers), the collected data and the resulting parr density estimates are only indices of the true densities. Therefore, sampling is particularly designed to ensure interannual comparability of the data.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p> <p>NA</p> <p><b>Regional coordination:</b> Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.</p> <p>N</p> <p><b>Link to sampling design documentation:</b> Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.</p> <p>For Rivers Lapväärtin-Isojoki, Ingarskilanjoki and Mustajoki (Baltic Sea), sampling design is documented in the national LUKE/FGFRI reports, e.g. <a href="http://urn.fi/URN:ISBN:978-952-380-267-4">http://urn.fi/URN:ISBN:978-952-380-267-4</a>.</p> <p>Läpväärtin-Isojoki is planned to be the Finnish index river for sea trout in the Baltic Sea, following the recommendations of the ICES expert group of Baltic sea trout (e.g.</p>

[https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGBAST/wgbast\\_2019.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/Fisheries%20Resources%20Steering%20Group/2019/WGBAST/wgbast_2019.pdf)).

Sea trout parr monitoring in rivers Lapväärtin-Isojoki, Ingarskilanjoki and Mustajoki (Baltic Sea) is conducted by electrofishing based on current scientific practises presented in CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

In Finnish data collection (incl. parr survey) in rivers running into Baltic Sea are reviewed by ICES WKBALTSalmon.

ICES. 2018. Report of the Benchmark Workshop on Baltic Salmon (WKBALTSalmon), 30 January–3 February 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:31. 112 pp. ar 2020

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Electrofishing sites are typically fished in a given order by starting from the river stretches, which are most vulnerable for sampling failures (due to incidental e.g. summer flood). In exceptional conditions this order is changed so that any adverse impacts to the results are mitigated. If needed, the field season is prolonged to

allow completion of data collection. In rare years (1-2 per decade) flow conditions are so exceptional that a proportion of sampling sites cannot be fished.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Data collection is conducted by using standard electrofishing devices, e.g. Hans Grassl (<http://www.hans-grassl.com/feEXT!00005106102021150947KAD18&T&150947>), anaesthetic, measurement board, tweezers for scale sampling, scale bags. The sampling sites are identified, and surface area measured by laser distance measurement device and gps.

Aging of fish is based on the length distribution

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Electrofishing is conducted according to CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

All sea trout parr electrofishing data (from designated sites) is stored to national database (Koekalastusrekisteri), which include quality checks for input data. Besides that, data quality of all sea trout parr densities by electrofishing is monitored and checked by expert judgement.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

National database (Koekalastusrekisteri), restricted access.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Data quality checks are carried out automatically when data is uploaded to the national database (Koekalastusrekisteri).

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

No samples.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

No samples.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

The quality of datasets are validated by expert judgement before submitted to ICES WGBAST, where data is further analysed and evaluated.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Part of the salmon parr electrofishing data (from designated sites) are stored to national database (Koekalastusrekisteri), which include quality checks for input data. Besides that, data quality of all sea trout parr count by electrofishing is monitored and checked by expert judgement.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Datasets are validated by expert judgement before submitted to ICES WGBAST.

<b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.
No deviations.

<b>MS :</b> FIN
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> Monitoring of silver eel escapement in R. Kokemäenjoki
<b>Sampling scheme type:</b> Diadromous (scientific)
<b>Observation type:</b> EMA water body
<b>Time period of validity:</b> 2022-2024
Short description (max 100 words): <i>Sampling scheme aiming at estimating number of migrating silver eels in R. Kokemäenjoki by sonar counter</i>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Monitoring is targeting to count the number of migrating silver eels in River Kokemäenjoki river basin. The primary sampling unit is DIDSON sonar device located below of the last dam in downstream of River Kokemäenjoki.</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p>Every second hour of the night (18:00-06:00) and every fourth hour of the day (06:00-18:00) are checked for migrating silver eels. Sonar covers 70 -80% of the deepest part of the river bed depending on the water level.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>NA</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>Number of migrating silver eels is conducted at the River Kokemäenjoki mouth by one DIDSON sonar on annual basis. Sonar situated at fixed location for the most part of the silver</p>

eel migration season. Migrating silver eels are counted.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

There are no international recommendations for echosounder counting protocols of migrating silver eels. The sampling protocol is based on expert judgement and long-term experience.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N, see Sampling design description

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See Sampling design description

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

See Textbox 2.3, Eel in freshwater.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt

<p>mitigation measures during the sampling year?</p> <p>Hours checked are followed-up and adjusted (if needed) according to accumulation of data.</p>
<p><b>Data capture</b></p> <p><b>Means of data capture:</b> short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...</p> <p>Data is captured by a Dual Frequency Identification Sonar (DIDSON 300), made by Sound Metrics Corporation, 11010 Northup Way, Bellevue, WA 98004, USA (<a href="http://www.soundmetrics.com">www.soundmetrics.com</a>). Data is recorded in one hour blocks on external hard disk on site and uploaded on cloud service. The selected hours are checked afterwards by Luke professional staff with Didson V 5.25 software.</p> <p><b>Data capture documentation:</b> Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.</p> <p>Eels are identified from the sonar image by shape, size, swimming direction and swimming way characteristic of the species. For each fish, time of occurrence, distance from the river bank and the length of the fish are recorded.</p> <p>The reliability of the observation is estimated on a scale of 50 to 100%.</p> <p><b>Quality checks documentation:</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.</p> <p>N. Data quality checks is based on expert judgement</p>
<p><b>Data storage</b></p> <p><b>National database:</b> Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.</p> <p>N, Data is stored in local server.</p> <p><b>International database:</b> Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.</p> <p>NA</p> <p><b>Quality checks and data validation documentation:</b> Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.</p> <p>Collected data is submitted to ICES database via WGEEL data call annually. The submitted data is processed with quality checks by WGEEL subgroups.</p> <p><b>Sample storage</b></p>

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

NA

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

NA

## Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

N, see Validation of the final dataset

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N, see Validation of the final dataset

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Collected data is submitted to ICES database via WGEEL data call by R Shiny application. The submitted data is processed with quality checks by WGEEL subgroups.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

**MS :** FIN

**Region:** Baltic Sea



<b>Sampling scheme identifier:</b> Monitoring of silver eel escapement in R. Kymijoki watershed
<b>Sampling scheme type:</b> Diadromous (scientific)
<b>Observation type:</b> SciObs water body
<b>Time period of validity:</b> 2022-2024
<b>Short description (max 100 words):</b> <i>Sampling scheme aiming at estimating number of migrating silver eels in R. Kymijoki by eel trap in Vääksy canal</i>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Sampling is targeting to estimate the number of migrating silver eels from Lake Vesijärvi. Primary sample unit is eel trap closing Vääksy canal.</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p>See description above.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>N/A</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>Number of migrating silver eels is conducted at the Vääksy canal mouth by eel trap on annual basis. Trap is collecting all migrating eels in canal for the most part of the silver eel migration season. Migrating silver eels are counted and biological parameters are measured to determine silvering stage according to Durif et. al 2009. All silver eels are tagged and transported to lower part of river Kymijoki below all hydro power dams.</p> <p>Durif, Caroline &amp; Guibert, A. &amp; Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p>

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

See Sampling design description

**Compliance with international recommendations:** Indicate ‘Y’ (yes) if the sampling design is in line with international recommendations, and ‘N’ if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N, see Sampling design description

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See Sampling design description

**Compliance with international recommendations:** Member State shall state ‘Y’ (yes) if the sampling protocol is in line with international recommendations, and ‘N’ if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N. See sampling design description.

## Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or ‘NA’ (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

NA

## Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting

the data, e.g. scales, measuring board, dedicated software, ...

Length of each fish is measured in millimeters on measuring board, eels are weighted on Kern FOB scales to 1 g accuracy. Colour of the fish is determined according Durif et. al., eye diameter and the length of the pelvic fin are measured with high quality Mitutoyo digital calipers.

Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

See Means of data capture

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N. Data quality checks is based on expert judgement

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on

quantities of sampled stored by species/stock, geographic sub-area and by year.
NA
<b>Sample analysis:</b> Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.
NA
<b>Data processing</b>
<b>Evaluation of data accuracy (bias and precision):</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.
N, see Validation of the final dataset
<b>Editing and imputation methods:</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.
N, see Validation of the final dataset
<b>Quality document associated to a dataset:</b> Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?
No
<b>Validation of the final dataset:</b> How are datasets validated (quality checked) before providing to end-user?
Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.
<b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.
No deviations.

<b>MS : FIN</b>
<b>Region:</b> Baltic Sea, North Sea and Eastern Arctic
<b>Sampling scheme identifier:</b> Survey of recreational salmon catches in rivers
<b>Sampling scheme type:</b> Diadromous (recreational)
<b>Observation type:</b> SelfOnShore

<b>Time period of validity:</b> 2022-2024
<p>Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i></p> <p>Sampling scheme for estimating annual recreational salmon catches in rivers Tornionjoki and Simojoki (Baltic Sea) and in River Utsjoki (North Atlantic).</p>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Recreational fishers targeting salmon in rivers Tornionjoki and Simojoki (Baltic Sea) and River Utsjoki, a tributary of the River Teno system (North Atlantic).</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p>In this sampling scheme PSU are river fishers targeting adult salmon in the rivers Tornionjoki, Simojoki and Utsjoki. The fishers' populations comprise strata defined by the residential area (local or tourist) of a fisher and the gear type used (rod or nets).</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>See the description above.</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>Recreational salmon catches in Rivers Tornionjoki and Simojoki (Baltic Sea) and in River Utsjoki (North Atlantic) are estimated based on annual surveys directed to fishers who purchased fishing licenses in those rivers. The surveys include postal questionnaires, internet-based enquiries, and phone enquiries. Questionnaires and enquiries are re-sent 2-3 times for those who have not answered.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p> <p>NA</p>

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

NA

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

The sampling designs are roughly documented in FGFRI/LUKE reports:

Utsjoki <http://urn.fi/URN:ISBN:978-952-380-124-0>

Tornionjoki <http://urn.fi/URN:NBN:fi-fe201704126101>

Simojoki <http://urn.fi/URN:ISBN:978-952-303-170-8>

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N, Random sub-samples from each stratum are derived, or in case a stratum is very small, all fishers belonging to the stratum are targeted and their catches are enquired. Catches are estimated (raised) separately for each stratum, and summed up to obtain the total catch estimate."

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

The sampling protocols are roughly documented in FGFRI/LUKE reports:

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Tornionjoki <http://urn.fi/URN:NBN:fi-fe201704126101>

Simojoki <http://urn.fi/URN:ISBN:978-952-303-170-8>

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N

Sampling protocols are documented in the above-mentioned FGFRI/LUKE reports.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Y

Accumulation of responses are followed, and questionnaires and enquiries are re-sent 2-3 times for those who have not answered.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Postal questionnaires, internet-based enquiries, and phone enquiries (text messages and phone calls) for fishers that have purchased fishing licenses. Questionnaires and enquiries are re-sent 2-3 times for those that have not answered.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

The sampling protocols are roughly documented in FGFRI/LUKE reports:

Utsjoki <http://urn.fi/URN:ISBN:978-952-380-124-0>

Tornionjoki <http://urn.fi/URN:NBN:fi-fe201704126101>

Simojoki <http://urn.fi/URN:ISBN:978-952-303-170-8>

Questionnaire forms are stored in the Luke's local server.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N

Occasional quality checks are conducted by re-contacting respondents, in order to estimate inaccuracies in their reporting, and possible biases like double-reporting of catch (due to more than 1 fisher fishing in the same boat/group), and bycatch levels of salmon in fisheries targeting other species.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

<p>The data is stored to a local Luke's server.</p> <p><b>International database:</b> Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.</p> <p>NA</p> <p><b>Quality checks and data validation documentation:</b> Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.</p> <p>Data stored in Luke's server are back-upped regularly as a standard procedure.</p>
<p><b>Sample storage</b></p> <p><b>Storage description:</b> Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.</p> <p>There are no samples to be stored.</p> <p><b>Sample analysis:</b> Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.</p> <p>There are no samples.</p>
<p><b>Data processing</b></p> <p><b>Evaluation of data accuracy (bias and precision):</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.</p> <p>Fishing activity among the non-respondents is assumed to be on average similar to that among respondents. This assumption is has been verified by non-response surveys conducted occasionally among non-respondents (for R. Tornionjoki this was last time carried out in 2011).</p> <p><b>Editing and imputation methods:</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.</p> <p>N</p>



As catch enquiries do not necessarily include all the fishers and not all the enquired fishers answer the catch enquiries, the missing catch is estimated (i.e. the reported catch is raised to obtain the total catch estimate) based on the obtained data. This imputation process is carried out separately for each stratum of fisher and gear (see above).

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Datasets are validated by expert judgement before submitted to ICES WGBAST or ICES WGNAS.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

**MS : FIN**

**Region:** Baltic Sea, North Sea and Eastern Arctic

**Sampling scheme identifier:** Biological sampling from recreational salmon catch in rivers

**Sampling scheme type:** Diadromous (recreational)

**Observation type:** SelfOnShore

**Time period of validity:** 2022-2024

Short description (max 100 words): *e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).*

Sampling scheme aiming at collecting length, weight, sex ratio and age samples from recreational/subsistence salmon catches in the rivers Tornionjoki (Baltic Sea) and Utsjoki (North Atlantic).

**Description of the population**

**Population targeted:** Specify which are the primary sampling units (PSU), e.g. all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

In this sampling scheme PSU are recreational fishers in rivers targeting adult salmon in the rivers Tornionjoki (Baltic Sea) and Utsjoki (North Sea and Eastern Arctic).

**Population sampled:** Specify which part of the target population will be sampled and specify which part of

the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

Voluntary self-sampling of recreational fishers. Potential fishers for sampling have been searched for based on various auxiliary information, *e.g. by asking from local contact persons and by studying voluntary catch statistics and license holder registers*. The network of self-sampling fishers is kept as unchanged as possible over the years, but new fishers need to be recruited time to time.

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

No stratification, see above.

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

The sampling is based on voluntary self-sampling of fishers. Spatial representativeness of sampling is aimed to be reached by recruiting fishers into sampling following roughly the spatial distribution of the total river catch. The temporal representativeness is aimed to be reached by instructing the fishers to sample their catches throughout the fishing season.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for *e.g.* surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - *e.g.* internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

In case of the River Utsjoki (a tributary of the large Teno system) the sampling design is roughly documented in:

Erkinaro, J., Czorlich, Y., Orell, P., Kuusela, J., Falkegård, M., Lämsman, M., Pulkkinen, H., Primmer, C. R. & Niemelä, E. 2019. Life history variation across four decades in a diverse population complex of Atlantic salmon in a large subarctic river. Canadian Journal of

Fisheries and Aquatic Sciences 76, 42-55.

The sampling design is mostly similar in the River Tornionjoki.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

NA, for sampling design, see Erkinaro et al. 2019 (reference above).

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

In case of the River Utsjoki (a tributary of the large Teno system) the sampling protocol is roughly documented in:

Erkinaro, J., Czorlich, Y., Orell, P., Kuusela, J., Falkegård, M., Länsman, M., Pulkkinen, H., Primmer, C. R. & Niemelä, E. 2019. Life history variation across four decades in a diverse population complex of Atlantic salmon in a large subarctic river. Canadian Journal of Fisheries and Aquatic Sciences 76, 42-55.

The sampling protocol is similar in the River Tornionjoki.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N

The samples are collected by a network of trained fishers equipped with standard measuring boards and scales. The fishers measure the length and mass of the fish in their catches, and record the sex of the fish, date of capture, and location and fishing gear used. The fisher takes scales from upper side of a fish (above the lateral line), from the area between dorsal and adipose fins. Scales are placed in a paper bag, into which the above information is also written.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

N

Voluntary self-sampling does not allow for monitoring of refusal rate.

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

No monitoring within a sampling year. Fishers usually send the samples soon after closing of fishing season.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Volunteered fishers are provided with electrical scales and specially designed measuring boards, as well as paper bags (scale bags) for scale samples. Leaflets containing sampling instructions are also provided, which among others shows where to take the scales from a fish.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

Leaflet (separate for Tornionjoki and Utsjoki) containing sampling instructions (In Finnish only).

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N

Background information provided together with scale samples (scale bags) by fishers are checked by Luke personnel. These checks include examination, if the fishing area and time as well as the length vs. weight information appear proper, and if there are enough scales for age determination in each scale bag.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The data is stored to a local Luke server.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Data is stored to local Luke server by experienced Luke personnel. Basic quality checks (repeated check on the background information, see 'Data capture' above, and comparison of the ageing information against the background information) are conducted at this phase.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Fish scales (scale bags) are stored in their original paper bags in the Luke's national archives located in the regional offices. Samples are being permanently stored for later use.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

The length and weight information documented by the fishers in their self-sampling is critically evaluated against each other and against the ageing information obtained from the scales. Ageing procedure follows the international guidelines prepared for Atlantic salmon (<https://sfcc.co.uk/assets/files/Atlantic%20Salmon%20Scale%20Reading%20Guidelines.pdf>), which are adjusted to the known region-specific background information about the species' biology and how these specificities appear in the scale images (compiled and reviewed in <http://urn.fi/URN:NBN:fi-fe2017111550717>). The spatial, temporal and size distribution of the samples are regularly compared with the other information sources (catch statistics) about these attributes.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Y

Missing length or weight information can be imputed by established length-weight relationship.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-

user?
Datasets are validated by expert judgement before submitted to ICES WGBAST or ICES WGNAS.
<b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.
No deviations.

<b>MS : FIN</b>
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> Biological sampling from recreational catches of eel in Finnish inland waters
<b>Sampling scheme type:</b> Diadromous (recreational)
<b>Observation type:</b> SciObsOnShore
<b>Time period of validity:</b> 2022-2024
Short description (max 100 words): <i>Sampling scheme aiming for collecting biometry data from catches of recreational fisheries in Finnish freshwaters</i>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>As eel sampling is based on bycatch of recreational/subsidiary fisheries (mainly by trap nets) targeting other species, no PSU for eel sampling can be defined. Instead <i>ad hoc</i> sampling is applied where samples can be collected.</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, e.g. <i>major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (e.g. <i>demersal, pelagic</i>) in multispecies surveys.</p> <p>See description above.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, e.g. <i>population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>N/A</p>
<b>Sampling design and protocols</b>
<b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

As eel sampling is based on bycatch of other recreational/subsidiary fisheries (mainly by trap nets), no PSU for eel sampling can be defined. Instead *ad hoc* sampling is applied where samples can be collected.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

NA

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

Eel samples from recreational fisheries are examined either fresh just after capture, or frozen after capture and examined later if collecting fresh samples is not possible. All sampling is done by professional personnel in Luke. Length, weight, colour of the fish, eye diameter and the length of the pelvic fin are measured, and the otoliths are removed and stored in standardized sampling envelopes. Life-stage of each sampled eel is determined followed by protocol described by Durif et. al. 2009.

Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N, For improving documentation of eel data collection, we wait for further instructions from WGEEL.

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See Sampling design description

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available

<p>upon request for the evaluators.</p> <p>N, For improving documentation of eel data collection, we wait for further instructions from WGEEL.</p>
<p><b>Sampling implementation</b></p> <p><b>Recording of refusal rate:</b> Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.</p> <p>NA</p> <p><b>Monitoring of sampling progress within the sampling year:</b> Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?</p> <p>Sampling allocations are followed-up and adjusted (if needed) according to accumulation of samples.</p>
<p><b>Data capture</b></p> <p><b>Means of data capture:</b> short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...</p> <p>Length of each fish is measured in millimeters on measuring board, eels are weighted on Kern FOB scales to 1 g accuracy. Colour of the fish is determined according Durif et. al., eye diameter and the length of the pelvic fin are measured with high quality Mitutoyo digital calipers. Both otoliths are removed and stored in standardized sampling envelopes. Also the swim bladder is checked for parasite <i>Anguillacola crassus</i>, and if infected the number and size distribution of parasites is recorded.</p> <p>Durif, Caroline &amp; Guibert, A. &amp; Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.</p> <p><b>Data capture documentation:</b> Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.</p> <p>See Means of data capture</p> <p><b>Quality checks documentation:</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.</p> <p>N, for improving documentation of eel data collection, we wait for further instructions from WGEEL.</p>
<p><b>Sample storage</b></p>



**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Otoliths of sampled eels are stored in otolith laboratory at Luke premises for recent years and historical samples are stored in Luke biological sample archives in Jokioinen.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

Fish are aged using otolith grinding, polishing, and staining in toluidine blue, method described in ICES 2009. Storing and processing of collected data is carried out according to scientific practices. For improving documentation of eel data collection, we wait for further instructions from WGEEL. Life-stage of each sampled eel is determined followed by protocol described by Durif et. al. 2009.

ICES. 2009. Workshop on Age Reading of European and American Eel (WKAREA), 20-24 April 2009, Bordeaux, France. ICES CM 2009\ACOM: 48. 66 pp

Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.

## Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

N, see validation of final data set

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N, see validation of final data set

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

**MS:** FIN

**Region:** Baltic Sea

**Sampling scheme identifier:** National survey on recreational fishing

**Sampling scheme type:** Recreational (off-site surveys)

**Observation type:** SciOnShore

**Time period of validity:** 2022-2024

Short description (max 100 words): *e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).*

Sampling scheme for estimating biannual recreational catches in Finland

### Description of the population

**Population targeted:** Specify which are the primary sampling units (PSU), e.g. all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

The whole Finnish population living permanently in Finland. The primary sampling unit is the household-dwelling. The whole recreational catch is surveyed, but a special attention is drawn to marine catches of salmon, trout, cod and eel.

**Population sampled:** Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

Professional fishers and people living in their household-dwellings and people living in institutional care are not included

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

The sample design is stratified sampling. The strata are formed taking into account the payment of fisheries management fee, the location of the person's municipality of residence, the type of municipality and the location of the municipality in relation to the sea. There are

seven strata in all.
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>One household-dwelling unit consists of the persons living permanently in the same dwelling. The sampling is targeted at persons aged 18-74 years. The questionnaire has four six pages, and the focus of the questions is on the age and gender of the persons participating in fishing, the importance of fishing as a hobby, fishing activity by fishing area, and catch sizes. The survey is biennial.</p> <p>The survey includes postal questionnaires, internet-based enquiries, and phone enquiries. Questionnaires and enquiries are re-sent for those that have not answered.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p> <p>NA</p> <p><b>Regional coordination:</b> Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.</p> <p>NA</p> <p><b>Link to sampling design documentation:</b> Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.</p> <p>The sampling design is roughly documented in LUKE's web page:  <a href="https://stat.luke.fi/tilasto/4424/laatuseloste/4695">https://stat.luke.fi/tilasto/4424/laatuseloste/4695</a></p> <p><b>Compliance with international recommendations:</b> Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.</p> <p>Y</p> <p>Routine survey and estimation procedures are used.</p> <p><b>Link to sampling protocol documentation:</b> Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.</p> <p>The sampling protocols are roughly documented in AR 2020</p>

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

Routine survey and estimation procedures are used.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Y. Accumulation of answers are followed, and questionnaires and enquiries are re-sent for those who have not answered. Those who don't answer questionnaires or enquiries are tried to be interviewed by phone.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Postal questionnaires, internet-based enquiries, and phone enquiries (text messages and phone calls. Questionnaires and enquiries are re-sent for those who have not answered.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

The data capture is roughly documented in LUKE's web page:

<https://stat.luke.fi/tilasto/4424/laatuseloste/4695>

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N

To check if there is over reporting in catch, respondents reporting salmon, sea trout, cod or

eel are tried to be interviewed by phone, if the phone numbers can be found.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The data is stored to a local server.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Data stored in Luke servers are back-upped regularly as a standard procedure.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

There are no samples to be stored.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

There are no samples.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

The post-sampling for non-respondents helps to correct the bias resulting from the differences between respondents and non-respondents. If the bias is not taken into account, the catch and number of fishers would be overestimated.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link

is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N

The estimation procedure follows the survey design. For the computation, a weighting factor is formed for each statistical unit, or household-dwelling. The survey data (e.g. catch size) for the household-dwelling are then multiplied by that factor. The weighting factor is formed from the inverses of the inclusion probability and response probability of the sampling unit, that is, household-dwelling unit, and from the calibration weight. The bias caused by non-response is corrected using the homogeneous response group model. The sample is divided by stratum into two homogeneous response group sets within which the probability of responding is considered to be constant. The first group comprises those responding to the questionnaire at first and second contacts, and the second group those responding at the third contact. In the calibration, the distributions to be calculated from the sample can be made to correspond to the marginal distributions. Such marginal distributions are the number of household-dwellings in six household-dwelling groups and the number of household-dwellings by the Fishing Industry Unit obtained from Statistics Finland, the age distribution of men and women and the number of men and women by the Fishing Industry Unit obtained from population statistics, and the number of fishing household-dwellings by strata estimated using both postal questionnaire and telephone interview data. The household-dwelling groups are formed according to the size and age distribution of the household-dwelling. The calibration corrects the bias in the estimates arising from non response, as the size, structure and place of residence of the household-dwelling all have an effect on response activity. The precision of some estimates has been calculated. When needed precision can be calculated for all estimates.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Datasets are validated by expert judgement before submitting.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

Due to Luke website update, some links are not functional. Links will be updated in next WP submission.

**MS:** FIN

**Region:** Baltic Sea

**Sampling scheme identifier:** On shore sampling program targeting pelagic trawl fishery of

herring and sprat
<b>Sampling scheme type:</b> Commercial fishing trip
<b>Observation type:</b> SciObsOnShore
<b>Time period of validity:</b> 2022-2024
<b>Short description (max 100 words):</b> The sampling scheme, is aiming at collecting on-shore length samples for herring and sprat from commercial landings of herring and sprat and collecting on-shore biological length, weight, age and maturity samples of herring from prevailing length-classes from commercial landings of pelagic trawl fishery for herring and sprat (SD's 29-32).
<b>Description of the population</b>
<p><b>Population targeted:</b></p> <p>The targeted population is all active pelagic midwater trawlers (OTM, PTM) targeting herring and sprat.</p> <p><b>Population sampled:</b></p> <p>In this sampling scheme all active pelagic midwater trawlers (OTM, PTM) targeting herring and sprat in Finnish fleet are subjected to sampling, excluding those trips being landed into foreign countries. PSU is fishing trip and method of PSU selection is UPSWR. No SSU is used.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>Sampling is stratified geographically (ICES SD's 29, 30, 31 and 32) and temporally (year-quarterly, Q1-Q4).</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>The number of vessels to be sampled within SD's and quarters are based on their historical catch data.</p> <p>Biological stock-related data for herring are collected mostly from sampling of commercial trawl fisheries (OTM_SPF/ PTM_SPF) and also from the BIAS survey in the Autumn.</p> <p>Finland has a derogation of not sampling biological data for sprat from commercial fisheries</p>

due to low share in Baltic sprat quota. Sampling of Herring (and sprat in surveys) is based on length stratified sub-sampling scheme, where target number of specimen for biological data is 10/ 0.5 cm length-class/SD/quarter (the number of herring specimen is increased for maturity sampling in spring before spawning time).

Finland has moved to statistically sound sampling scheme (4S) in the trawl fisheries targeting herring and sprat and trap-net fisheries targeting herring. In trawl-fisheries 4S has been in force from the beginning of year 2019. The selection of PSU for herring (and sprat) is to do random sampling from a draw list, where probability of a fishing unit to be selected for sampling in certain SD and quarter is weighted by its previous years' combined catch of herring and sprat in the same SD and Q. During each quarter the sampling personnel go through the draw list in free order, recording all relevant info (sampling, refusal, out of area, etc.) of the interaction into our sampling database SUOMU, which also has the lottery function needed in the process. Additional lottery s will be done to reach the sampling target if there is a deficit.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

Y

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

See chapter: Sampling design description in this text box.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y



**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See chapter. Sampling design description in this text-box.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Sampling allocations are followed-up and adjusted (if needed) according to online records of accumulation of samples by SD and quarter in the SUOMU database entity.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf)). This device records simultaneously the length and the weight of a fish and informs the user when an age-sample as well as sex and maturity check from certain 0,5 cm length class needs to be taken. These are based on the sampling plan and pre-programmed into the device. The number of otoliths taken for age-reading, as well as sex and maturity stage, which are based on visual inspection of gonads of the fish, are recorded into the data-logger by the user. All information is automatically stored into the data-logger as a file, which will be uploaded to the database. The data-logger enables quality assurance during the data capture. Basic data quality checks are carried out automatically in measurement phase, e.g., with condition factors in which way measuring- or weighing errors can be eliminated/ corrected. More quality checks and cross-checks are carried out when data is uploaded to the database.



Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

Data processing is carried out according to common standard criteria agreed with other MS and WGBFAS.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

For data-logger, see (detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf)).

For determination of maturity, see: [https://www.luke.fi/wp-content/uploads/2020/06/197\\_08\\_manual\\_to\\_determine\\_gonadal\\_maturity\\_of\\_herring.pdf](https://www.luke.fi/wp-content/uploads/2020/06/197_08_manual_to_determine_gonadal_maturity_of_herring.pdf).

The process in herring age-reading (slicing and staining the otoliths) is considered the most accurate age reading method for slow-growing Baltic herring. There are also regularly inter-calibrations in herring age reading both nationally and internationally in the Baltic area to ensure the quality. The data in the database is checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

See chapter: Data capture documentation in this text-box.

## Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The name of the national database is SUOMU. The link of the database is: [https://suomu.luke.fi/suomu\\_login](https://suomu.luke.fi/suomu_login). The database has restricted access.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

## Intercatch

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

SUOMU database contains error checks. The data is checked thoroughly and validated before annual preparations of it for stock assessments.

See also chapter: Data capture documentation in previous text-box.

## Sample storage

Storage description: Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Herring (and from acoustic surveys also sprat-) otoliths are stored either attached between microscope slides (when sliced and stained) or as a whole (when they are available multiple from sampled herring and always as whole from sampled sprat) and have been stored now in the otolith processing lab in Luke Helsinki and historical samples in Luke's unit in Taivalkoski, but will in a near future be stored in institute's biobank unit in Jokioinen. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the national database.

Sample analysis: Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

In the Herring otolith analysis, the otoliths are embedded in Epoxy resine and then sawed in slices, which are stained for showing the annual growth zones clearly, then photographed and distributed to age-readers, who use the smart-dots application for age-reading.

[https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20\(CRR\)/CRR%20346.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20(CRR)/CRR%20346.pdf)

<https://www.ices.dk/community/Documents/PGCCDBS/her.agewk2005.pdf>

## Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y.

Evaluation of accuracy of data for length-, weight-, sex- and maturity-at-age is presented eg. in Annex I of the Finnish Annual Report (file "Finland\_Annual\_Report\_2011\_Text\_30-April-2012.doc")

Link:

[https://datacollection.jrc.ec.europa.eu/documents/10213/281921/Finland\\_Annual\\_Report\\_2011\\_Text\\_30-April-2012.doc/f4908249-5cb2-4f46-afab-beb37ac7f63e?version=1.0&download=true](https://datacollection.jrc.ec.europa.eu/documents/10213/281921/Finland_Annual_Report_2011_Text_30-April-2012.doc/f4908249-5cb2-4f46-afab-beb37ac7f63e?version=1.0&download=true).

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N.

If data is missing from a stratum (e.g. an ALK from a certain SD and/or year-quarter or a mean weight from catches of a certain fishing gear,), it will be replaced by data from closest SD, gear or year-quarter (sometimes the issue is discussed with international colleagues, who are working with the same fish stock). The replacements are mostly from national data, but also from international data (these annual imputations are documented in e.g. ICES InterCatch)

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

The datasets are annually calculated by Excel, examined by outlier-checks and cross-calculations. The final input for stock assessment models is processed in ICES InterCatch (at least until 2022)

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work

plan.

Due to Luke's website update, following links are not functional:

“For data-logger, see (detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).”

“For determination of maturity, see: [https://www.luke.fi/wp-content/uploads/2020/06/197\\_08\\_manual\\_to\\_determine\\_gonadal\\_maturity\\_of\\_herring.pdf](https://www.luke.fi/wp-content/uploads/2020/06/197_08_manual_to_determine_gonadal_maturity_of_herring.pdf).”

Functional links are provided below:

<https://www.luke.fi/en/documents/herring-maturity-determination-manual>

<https://www.luke.fi/en/documents/rufco-automatic-measuring-board-manual>

All links will be updated in next WP submission.

**MS : FIN**

**Region:** Baltic Sea

**Sampling scheme identifier:** On shore sampling program targeting trap-net fishery of herring

**Sampling scheme type:** Commercial fishing trip

**Observation type:** SciObsOnShore

**Time period of validity:** 2022-2024

**Short description (max 100 words):** The sampling scheme is aiming at collecting length samples from commercial landings on-shore of herring and and collecting length, weight, age and maturity samples from prevailing length-classes of those landings of on-shore trap-net fishery for herring (SD's 29-32).

### **Description of the population**

**Population targeted:** Specify which are the primary sampling units (PSU), e.g. all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

In this sampling scheme population is all active fishers targeting spawning herring with trap-nets.

**Population sampled:** Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

In this sampling scheme all active fishers targeting spring spawning herring in coastal areas of Finland are subjected to sampling. PSU is fishing day and method of PSU selection is UPSWR. No SSU is used.

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, e.g. *population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

Sampling is stratified geographically (SD's 29, 30, 31 and 32) and temporally (year-quarterly, Q1-Q2).

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Number of fisher's trips to be sampled within SD's and quarters are based on their historical catch data.

Biological data are collected from sampling trap net fisheries (FYK\_SPF and FPN\_SPF).

Sampling of spawning Herring is based on length stratified sub-sampling scheme, where target number of specimen for biological data is 10/ 0.5 cm length-class/SD/quarter.

Finland has moved to statistically sound sampling scheme (4S) for the trap-net fisheries targeting herring where it has been in force from the beginning of year 2021. The selection of PSU for herring is to do random sampling from a draw list, where probability of a fishing unit to be selected for sampling in certain SD and quarter is weighted by its previous years' combined catch of herring in the same SD and Q. During each quarter the sampling personnel go through the draw list in free order, recording all relevant info (sampling, refusal, out of area, etc.) of the interaction into our sampling database SUOMU, which also has the lottery function needed in the process. Additional lottery draw will be done to reach the sampling target if there is a deficit.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

Y

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can

be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

See chapter: Sampling design description in this text box.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See chapter: Sampling design description in this text box.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Sampling allocations are followed-up and adjusted (if needed) according to online records of accumulation of samples by SD and quarter in the SUOMU database entity.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf)). This device records simultaneously the length and the weight of a fish and informs the user when an age-sample as well as sex and maturity check from certain 0,5 cm length class needs to be taken. These are based on the sampling plan and pre-programmed into the device. The number of otoliths taken for age-reading, as well as sex and maturity stage, which are based on visual inspection of gonads of the fish, are recorded into the data-logger by the user. All information is automatically stored into the



data-logger as a file, which will be uploaded to the database. The data-logger enables quality assurance during the data capture. Basic data quality checks are carried out automatically in measurement phase, e.g., with condition factors in which way measuring- or weighing errors can be eliminated/ corrected. More quality checks and cross-checks are carried out when data is uploaded to the database.

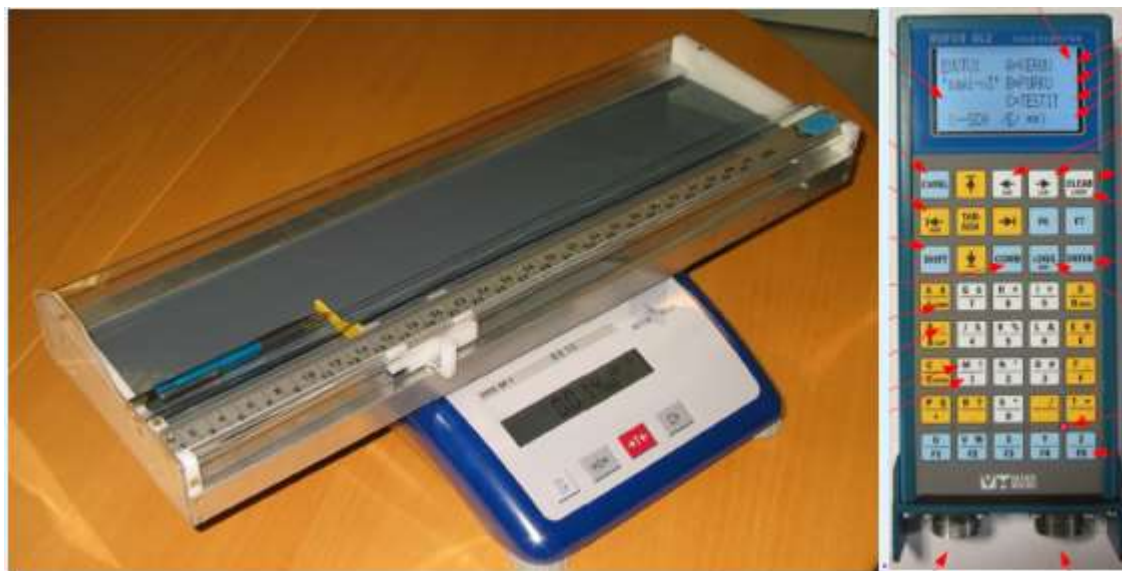


Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

Data processing is carried out according to common standard criteria agreed with other MS and WGBFAS..

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

For data-logger, see detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

For determination of maturity, see: [https://www.luke.fi/wp-content/uploads/2020/06/197\\_08\\_manual\\_to\\_determine\\_gonadal\\_maturity\\_of\\_herring.pdf](https://www.luke.fi/wp-content/uploads/2020/06/197_08_manual_to_determine_gonadal_maturity_of_herring.pdf).

The process in herring age-reading (slicing and staining the otoliths) is considered the most accurate age reading method for slow-growing Baltic herring. There are also regularly inter-calibrations in herring age reading both nationally and internationally in the Baltic area to ensure the quality. The data in the database is checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link



is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

See chapter: Data capture documentation in this text-box.

## Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The name of the national database is SUOMU. The link of the database is: [https://suomu.luke.fi/suomu\\_login](https://suomu.luke.fi/suomu_login). The database has restricted access.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

RDBES

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

See also chapter: Data capture documentation in previous text-box

## Sample storage

Storage description: Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Herring otoliths are stored either attached between microscope slides (when sliced and stained) or as a whole (when they are available multiple from sampled herring) and have been stored now in the otolith processing lab in Luke Helsinki and historical samples in Luke's unit in Taivalkoski, but will in a near future be stored in institute's biobank unit in Jokioinen. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the national database.

In the analysis, the otoliths are embedded in Epoxy Resin, then sawed in slices, which are stained for showing the annual growth zones clearly, then photographed and distributed to age-readers, who use the smart-dots application for age-reading.

Sample analysis: Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

[https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20\(CRR\)/CRR%20346.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Cooperative%20Research%20Report%20(CRR)/CRR%20346.pdf)

<https://www.ices.dk/community/Documents/PGCCDBS/her.agewk2005.pdf>

## Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y.

Evaluation of accuracy of data for length-, weight-, sex- and maturity-at-age is presented eg. in Annex I of the Finnish Annual Report (file "Finland\_Annual\_Report\_2011\_Text\_30-April-2012.doc").

Link:

[https://datacollection.jrc.ec.europa.eu/documents/10213/281921/Finland\\_Annual\\_Report\\_2011\\_Text\\_30-April-2012.doc/f4908249-5cb2-4f46-afab-beb37ac7f63e?version=1.0&download=true](https://datacollection.jrc.ec.europa.eu/documents/10213/281921/Finland_Annual_Report_2011_Text_30-April-2012.doc/f4908249-5cb2-4f46-afab-beb37ac7f63e?version=1.0&download=true).

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N.

If data is missing from a stratum (e.g. an ALK from a certain SD and/or year-quarter or a mean weight from catches of a certain fishing gear,), it will be replaced by data from closest SD, gear or year-quarter (sometimes the issue is discussed with international colleagues, who are working with the same fish stock). The replacements are mostly from national data, but also from international data (these annual imputations are documented in e.g. ICES InterCatch)

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

The datasets are annually calculated by Excel, examined by outlier-checks and cross-calculations. The final input for stock assessment models is processed in ICES InterCatch (at least until 2022).

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

Due to Luke's website update, following links are not functional:

[https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

[https://www.luke.fi/wp-content/uploads/2020/06/197\\_08\\_manual\\_to\\_determine\\_gonadal\\_maturity\\_of\\_herring.pdf](https://www.luke.fi/wp-content/uploads/2020/06/197_08_manual_to_determine_gonadal_maturity_of_herring.pdf).”

Functional links are provided below:

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<https://www.luke.fi/en/documents/herring-maturity-determination-manual>

Functional link for the Finnish Annual Report 2011:

[https://datacollection.jrc.ec.europa.eu/ars/2011?p\\_p\\_id=110\\_INSTANCE\\_FFr2&p\\_p\\_lifecycle=0&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-2&p\\_p\\_col\\_count=1&\\_110\\_INSTANCE\\_FFr2\\_struts\\_action=%2Fdocument\\_library\\_display%2Fview\\_file\\_entry&\\_110\\_INSTANCE\\_FFr2\\_redirect=https%3A%2F%2Fdatacollection.jrc.ec.europa.eu%2Fars%2F2011%3Fp\\_p\\_id%3D110\\_INSTANCE\\_FFr2%26p\\_p\\_lifecycle%3D0%26p\\_p\\_state%3Dnormal%26p\\_p\\_mode%3Dview%26p\\_p\\_col\\_id%3Dcolumn-2%26p\\_p\\_col\\_count%3D1&\\_110\\_INSTANCE\\_FFr2\\_fileEntryId=1213135](https://datacollection.jrc.ec.europa.eu/ars/2011?p_p_id=110_INSTANCE_FFr2&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_count=1&_110_INSTANCE_FFr2_struts_action=%2Fdocument_library_display%2Fview_file_entry&_110_INSTANCE_FFr2_redirect=https%3A%2F%2Fdatacollection.jrc.ec.europa.eu%2Fars%2F2011%3Fp_p_id%3D110_INSTANCE_FFr2%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_count%3D1&_110_INSTANCE_FFr2_fileEntryId=1213135)

All links will be updated in next WP submission.

<b>MS : FIN</b>
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> On shore sampling program targeting coastal gillnet and trap-net fishery of perch, pikeperch and whitefish
<b>Sampling scheme type:</b> Commercial fishing trip
<b>Observation type:</b> SciObsOnShore
<b>Time period of validity:</b> 2022-2024
Short description (max 100 words): <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i>  <i>Sampling scheme aiming at collecting length, weight, age and maturity samples from commercial landings on-shore for coastal gillnet and trap-net fishery of perch, pikeperch and whitefish (SD's 29-32).</i>
<b>Description of the population</b>
<b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.

This sampling scheme targets all fishers practising coastal gillnet and trap-net fishery of perch, pikeperch and whitefish. PSU is fishing day No SSU is used. Fishers are operating with small boats close to the coast targeting perch, pikeperch and whitefish.

**Population sampled:** Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, *e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (*e.g. demersal, pelagic*) in multispecies surveys.

Voluntary fishers operating with small boats close to the coast targeting perch, pikeperch and whitefish in Finnish fleet. All fishers in this sampling scheme are covered by sampling program (taking account constraints of NPCS-based sampling).

**Stratification:** Explain the logic taken to stratify the population and the number of strata generated, *e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction*.

Sampling is stratified geographically (SD's 29, 30, 31 and 32), temporally (quarterly, Q1-Q4) and by gears (FYK\_FWS, GNS\_FWS for all species).

### Sampling design and protocols

**Sampling design description:** Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

Biological data for perch, pikeperch and whitefish are collected from sampling of commercial trap net and gillnet fisheries (FYK\_FWS, GNS\_FWS); and the sampling is carried out in SD's 29 and 30. Samples are bought from selected fishers when they arrive to port and sampling applies to the whole catch (Landings, all fractions). This practise will continue during years 2022-2024, and possibilities to develop sampling towards statistically sound sampling design will be studied.

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

N

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

Fisheries of these species (as well as other freshwater species) are typically small-scale

fisheries, where fishers operate with small boats close to the coast. Main gears are gillnets and trap-nets. The sampling frame will be the list of individual fishers / enterprises, which have caught more than 250 kg of the targeted species/ species assemblage to be sampled during the most recent reference year. As the coastal fisheries, especially gillnet fisheries are small-scale fisheries with small boats, observer-program is not planned. Samples are bought from selected fishers when they arrive to port. Sampling unit will be fisher \* fishing day. This practise will continue during years 2022-2024, and possibilities to develop sampling towards statistically sound sampling design will be studied.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See Sampling design description

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N, Data is used primarily for national fisheries management.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

N

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Sampling progress is monitored in national database (SUOMU) if targeted no. of samples is reached in each SD, quartile and gear. Sampling effort is adjusted, if needed.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

An electronic fish measuring system (including measuring board, scale and data software) is used for processing the fish samples (individual length and weight), which enables quality assurance during the data capture (for more details see Sampling scheme identifier: On shore sampling program targeting trap-net fishery of herring).

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

For electronic fish measuring system, see detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N. Basic data quality checks of length and weight are carried out automatically in measurement phase, e.g. with condition factors and in this way, these errors can be eliminated/ corrected. More quality checks and cross-checks are carried out when data is uploaded to the database. For age reading, there are regular, national inter-calibrations to ensure the quality. The data in the database is checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

Database: SUOMU, restricted access

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Quality checks and cross-checks are carried out when data is uploaded in the database. For the electronic measuring system, and data uploading see detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf). For age reading, there are regular, national inter-calibrations to ensure the quality. The data in the database is

checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used. The data is used mainly for national purposes eg. for stock assessment of these species.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year

Scales of pikeperch, operculums of perch and otoliths and scales of whitefish are stored in Luke's unit in Taivalkoski, but will in a near future be stored in institute's biobank unit in Jokioinen. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the national database.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

The processes of pikeperch, perch and whitefish age-reading (scales, operculum and otoliths) are considered the accurate age reading method (Raitaniemi et al. 2000). There are also regular, national inter-calibrations in age reading to ensure the quality. The data in the database is checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used.

Sex and maturity are based on visual inspection of gonads. Maturity is determined on six to eight-stage scales (depending on species), according to detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

Raitaniemi, Jari; Nyberg, Kari; Torvi, Irmeli (2000). Kalojen iän ja kasvun määrittäminen. Riista- ja kalatalouden tutkimuslaitos RKTL. 322 p. <http://urn.fi/URN:NBN:fi-fe2017111550717> [In Finnish].

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

Y.

For pikeperch and perch, data accuracy is documented in LUKE/FGFRI National report series: <http://urn.fi/URN:ISBN:978-952-380-267-4> [In Finnish].

For whitefish, this is described in Kallio-Nyberg et. al. (2019) and Veneranta et. al. (2021).

Kallio-Nyberg, I., Veneranta, L., Saloniemi, I., Jokikokko, E., & Leskelä, A. (2019). Different growth trends of whitefish (*Coregonus lavaretus*) forms in the northern Baltic Sea. *Journal of Applied Ichthyology*, 35(3), 683-691.

Veneranta, L., Kallio-Nyberg, I., Saloniemi, I., & Jokikokko, E. (2021). Changes in age and maturity of anadromous whitefish (*Coregonus lavaretus*) in the northern Baltic Sea from 1998 to 2014. *Aquatic Living Resources*, 34, 9.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

Y, see above

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Quality checks are conducted by the electronic fish measuring system (see Data capture documentation) and age-readers (see Quality checks) during the data processing before providing the data to SUOMU database and Luke's researchers who are the end-users.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

Due to Luke's website update, following link is not functional:

[https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

Functional link is provided below:

<https://www.luke.fi/en/documents/rufco-automatic-measuring-board-manual>

All links will be updated in next WP submission.

**MS:** FIN

**Region:** Baltic Sea



<b>Sampling scheme identifier:</b> Self-sampling program targeting coastal fishery of salmon
<b>Sampling scheme type:</b> Commercial fishing trip
<b>Observation type:</b> SelfOnShore
<b>Time period of validity:</b> 2022-2024
<p><b>Short description (max 100 words):</b> <i>e.g. sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU MAP Delegated Decision annex. The scheme covers mainland and all outermost regions ('RUP' in French, Portuguese, and Spanish).</i></p> <p>Sampling scheme aiming at collecting length, weight, age, sex and origin samples from commercial salmon and sea trout landings on-shore for coastal trap-net fishery of salmon (SD29-32). Sampling is conducted by self sampling by fishers.</p>
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Commercial salmon fishers in Finnish coastal areas is SD 29-32. PSU is fishing day. No SSU is used.</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p>Selected fishers along the coast sampling throughout the spawning migration (May- August). All fishers in this sampling scheme are covered by sampling program (taking account constrains of NPCS-based sampling).</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>No stratification, selected fishers.</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>As regarding to PSU, samples are taken from the landed catch during the whole fishing season by designated fishers. No SSU is used.</p> <p>From the collected samples 800 samples are selected for the DNA analysis. Selection aims to follow the temporal distribution and age composition of the catch.</p>

**Is the sampling design compliant with the 4S principle?:** Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)

N

**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

[https://datacollection.jrc.ec.europa.eu/documents/10213/688307/Finland\\_NP\\_Proposal\\_2011-2013\\_Amended-for-2013.docx](https://datacollection.jrc.ec.europa.eu/documents/10213/688307/Finland_NP_Proposal_2011-2013_Amended-for-2013.docx)

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N no international recommendation is directly applied in the sampling design, but the salmon data is used by the ICES WGBAST

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

Designated fishers are instructed to sample during the whole fishing season in other words throughout the spawning migration period their daily catch every second day at maximum 20 samples per day representing size distribution of the catch. (instructions are available in Finnish). All landed sea trout (i.e. adipose fin-clipped above BMS) are sampled.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N no international recommendation is directly applied in the sampling design, but the salmon data is used by the ICES WGBAST

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

N, Designated fishers are selected into the self-sampling program due to their willingness and capability to co-operate. Therefore, no refusal is met.

DNA samples are resampled from the salmon samples supplied by the fishers concerned. i.e. same physical samples are used for the DNA analysis than ageing of fish. DNA is not analysed from the seatrout samples.

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Monitoring is not necessary, usually fishers send scale samples to Luke shortly after fishing season.

## Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Information on individual scale sample is handwritten by fishers on the sample envelope: date, fishing site, species, length, weight, sex, adipose fin. In connection of ageing these information is recorded to the data base by Luke technicians.

For salmon no maturity data is collected, as reliable maturity determination is impossible for fishers. All salmon caught at the Finnish coast in summer can be considered mature since fishing takes place when salmon are returning to their home rivers. Maturity data is not used in the assessment.

Regarding sea trout all maturity samples are collected from bycatch of commercial coastal fishery targeting freshwater species by Luke technicians. Maturity determination is based on visual inspection of gonads. For sea trout bycatch of commercial salmon fishing, no maturity data is collected, as reliable maturity determination impossible for fishers. Three sea winter fish can be considered mature. Maturity data is not used in the assessment.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

See above.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N, Self-sampling is conducted by fishers, according to instructions. Recording errors may occur. These are

partly uncovered in logical error checking process after the data of the samples are recorded into the database after the age reading.

DNA: e.g. Pella, J., and Masuda, M. 2001. Bayesian method for analysis of stock mixtures from genetic characters. Fish. Bull. 99: 151-167.

Koljonen, M-L. 2006. Annual changes in the proportions of wild and hatchery Atlantic salmon (*Salmo salar*) caught in the Baltic Sea. ICES Journal of Marine Science 63: 1274-1285.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

National Lohi database (restricted access)

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

RDB

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Evaluation of accuracy of data for length-, weight-, sex-at-age is presented eg. in Annex I of the Finnish Annual Report (file "Finland\_Annual\_Report\_2011\_Text\_30-April-2012.doc").

Link:

[https://datacollection.jrc.ec.europa.eu/documents/10213/281921/Finland\\_Annual\\_Report\\_2011\\_Text\\_30-April-2012.doc/f4908249-5cb2-4f46-afab-beb37ac7f63e?version=1.0&download=true](https://datacollection.jrc.ec.europa.eu/documents/10213/281921/Finland_Annual_Report_2011_Text_30-April-2012.doc/f4908249-5cb2-4f46-afab-beb37ac7f63e?version=1.0&download=true).

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Scale samples are stored in Luke's storage in Taivalkoski (storage will be moved to the Luke's sample storage center in Jokioinen in 2022).

DNA samples (extracted DNA) is stored in Lukes DNA storage in Jokioinen.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

e.g. ICES. 2013. Report of the Second Workshop on Age Determination of Salmon (WKADS2), 4th - 6th September 2012, Derry, Northern Ireland. ICES CM 2012/ACOM:61. 28 pp.

<b>Data processing</b>
<p><b>Evaluation of data accuracy (bias and precision):</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.</p> <p>e.g. ICES. 2013. Report of the Second Workshop on Age Determination of Salmon (WKADS2), 4th - 6th September 2012, Derry, Northern Ireland. ICES CM 2012/ACOM:61. 28 pp.</p> <p><b>Editing and imputation methods:</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.</p> <p>Only minor imputation is needed in the primary data. Potential missing weights can be imputed by length-weight equation.</p> <p><b>Quality document associated to a dataset:</b> Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?</p> <p>N</p> <p><b>Validation of the final dataset:</b> How are datasets validated (quality checked) before providing to end-user?</p> <p>Validation of the final dataset is conducted by expert judgement.</p>
<p><b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.</p> <p>No deviations.</p>

<b>MS : FIN</b>
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> On shore sampling program targeting pelagic trawl fishery of vendace
<b>Sampling scheme type:</b> Commercial fishing trip
<b>Observation type:</b> SciObsOnShore
<b>Time period of validity:</b> 2022-2024
<p>Short description (max 100 words): The sampling scheme, is aiming at collecting on-shore length samples for vendace from commercial landings and collecting on-shore biological length, weight, age and maturity samples from prevailing length-classes from commercial landings of pelagic trawl fishery in the Bay of Bothnia (SD 31).</p>

<b>Description of the population</b>
<p><b>Population targeted:</b></p> <p>The targeted population is all active pelagic midwater trawlers (OTM, PTM) targeting vendace.</p> <p><b>Population sampled:</b></p> <p>In this sampling scheme all active pelagic midwater trawlers (OTM, PTM) targeting vendace in Finnish fleet are subjected to sampling. PSU is fishing vessel and method of PSU selection is UPSWR. No SSU is used.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, e.g. <i>population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>Sampling is stratified geographically (ICES SD 31) and temporally (quarterly Q2-Q4)</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>The number of vessels to be sampled within SD's and quarters are based on their historical catch data.</p> <p>Biological stock-related data for vendace are collected from sampling of commercial trawl fisheries (OTM_FWS / PTM_FWS).</p> <p>Sampling is based on length stratified sub-sampling scheme, where target number of specimen for biological data is 10/ 0.5 cm length-class/quarter.</p> <p>Finland has moved to statistically sound sampling scheme (4S) in the trawl fisheries. 4S sampling in trawl fisheries targeting Vendace has also been in force from the beginning of year 2020. The selection of PSU for vendace is to do random sampling from a draw list, where probability of a fishing unit to be selected for sampling in certain SD and quarter is weighted by its previous years' combined catch of vendace in the same Q. During each quarter the sampling personnel go through the draw list in free order, recording all relevant info (sampling, refusal, out of area, etc.) of the interaction into our sampling database SUOMU, which also has the lottery function needed in the process.</p> <p>Additional lottery will be done to reach the sampling target if there is a deficit.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p> <p>Y</p> <p><b>Regional coordination:</b> Indicate if the sampling design and protocols were developed as part of a regional</p>

or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

N

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

See chapter: Sampling design description in this text box.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See chapter: Sampling design description in this text-box.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N. In Finland, the 4S principle is applied for vendace trawl fishing. However, there is no international coordination or recommendation concerning sampling on vendace. For sampling protocol, see Sampling design description.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Sampling allocations are followed-up and adjusted (if needed) according to online records of accumulation of samples by SD and quarter in the SUOMU database entity.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

In Finland, an electronic fish measuring system is used for processing the fish samples samples (detailed instructions in Finnish: <https://www.luke.fi/wp->



[content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf). This device records simultaneously the length and the weight of a fish and informs the user when an age-sample as well as sex and maturity check from certain 0,5 cm length class needs to be taken. These are based on the sampling plan and pre-programmed into the device. The number of otoliths taken for age-reading, as well as sex and maturity stage, which are based on visual inspection of gonads of the fish, are recorded into the data-logger by the user. All information is automatically stored into the data-logger as a file, which will be uploaded to the database. The data-logger enables quality assurance during the data capture. Basic data quality checks are carried out automatically in measurement phase (by digital measurement device), e.g. with condition factors and in this way errors can be eliminated/corrected. More quality checks and cross-checks are carried out when data is uploaded to the database.

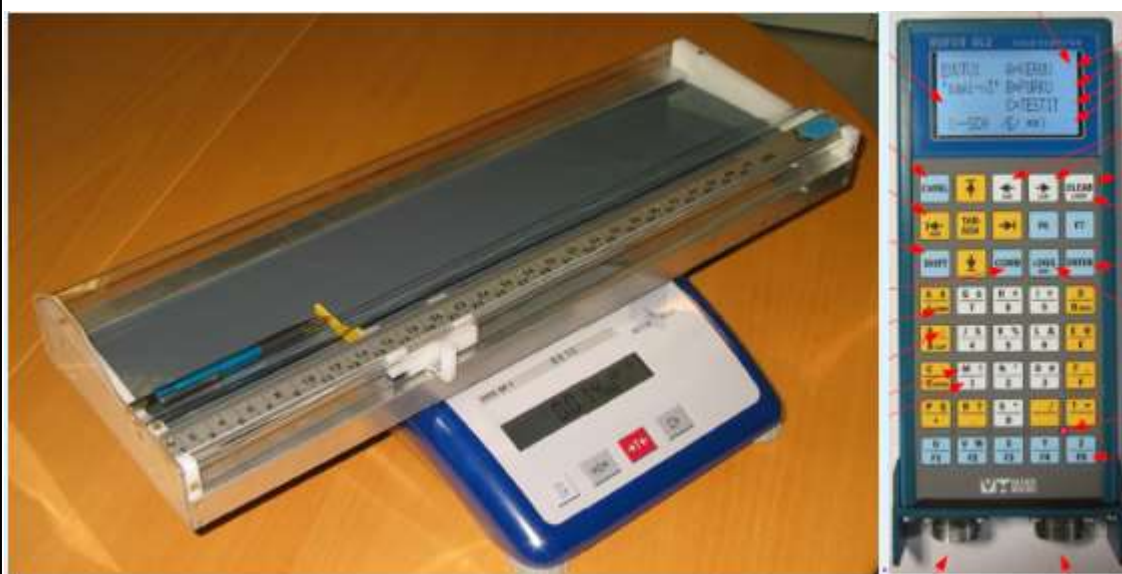


Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

For data-logger, see detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

**Maturity:** Sex and maturity are based on visual inspection of gonads. Maturity is determined by six-stage scale, according to detailed instructions in Finnish: [https://www.luke.fi/wp-content/uploads/2021/10/Rufco\\_manual.pdf](https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf).

The data in the database is checked for outliers in age-length relations and errors in data



recording and corrected (revised or deleted) before it is used.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

See chapter: Data capture documentation in this text-box.

## Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The name of the national database is SUOMU. The link of the database is: [https://suomu.luke.fi/suomu\\_login](https://suomu.luke.fi/suomu_login). The database has restricted access.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

NA

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

SUOMU database contains error checks. See also chapter: Data capture documentation in previous text-box.

## Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Scales are currently stored in Luke's unit in Taivalkoski but will in a near future be stored in institute's biobank unit in Jokioinen. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the national database.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

Age-reading (from scales) is considered the accurate age reading method for vendace. The data in the database is checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used nationally.

<b>Data processing</b>
<p><b>Evaluation of data accuracy (bias and precision):</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.</p> <p>N.</p> <p>Evaluation of data accuracy is based on expert judgement.</p> <p><b>Editing and imputation methods:</b> Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.</p> <p>N. Editing and imputation is conducted based on expert judgement.</p> <p><b>Quality document associated to a dataset:</b> Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?</p> <p>N</p> <p><b>Validation of the final dataset:</b> How are datasets validated (quality checked) before providing to end-user?</p> <p>The datasets are annually calculated in Excel, examined by outlier-checks and cross-calculations.</p> <p><b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.</p> <p>Due to Luke's website update, following link is not functional:  <a href="https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf">https://www.luke.fi/wp-content/uploads/2021/10/Rufco_manual.pdf</a>.</p> <p>Functional link is provided below:  <a href="https://www.luke.fi/en/documents/rufco-automatic-measuring-board-manual">https://www.luke.fi/en/documents/rufco-automatic-measuring-board-manual</a></p> <p>All links will be updated in next WP submission.</p>

<b>MS:</b> FIN
<b>Region:</b> Baltic Sea
<b>Sampling scheme identifier:</b> Eel sampling from bycatch of commercial coastal fisheries
<b>Sampling scheme type:</b> Diadromous (commercial)
<b>Observation type:</b> SciObsOnShore

<b>Time period of validity:</b> 2022-2024
Short description (max 100 words):  Sampling scheme aiming collecting biometry data on eels in Finnish coastal areas
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>Sampling is targeting on eels in Finnish coastal areas. As sampling is based on bycatch of commercial fisheries targeting other species (mainly by trap nets), no PSU or SSU for eel sampling can be defined. Instead <i>ad hoc</i> sampling is applied where samples can be collected.</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, e.g. <i>major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (e.g. <i>demersal, pelagic</i>) in multispecies surveys.</p> <p>See description above.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, e.g. <i>population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.</i></p> <p>No stratification, <i>ad hoc</i> sampling.</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>As eel sampling is based on bycatch of commercial fisheries (mainly by trap nets) targeting other species, no PSU for eel sampling can be defined. Instead <i>ad hoc</i> sampling is applied where samples can be collected.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p> <p>N</p> <p><b>Regional coordination:</b> Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.</p> <p>N</p> <p><b>Link to sampling design documentation:</b> Provide a link to a webpage where the documentation can</p>

be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

Eel samples from commercial fisheries are examined either fresh just after capture, or frozen after capture and examined later if collecting fresh samples is not possible. All sampling is done by professional personnel in Luke. Length, weight, colour of the fish, eye diameter and the length of the pelvic fin are measured, and the otoliths are removed and stored in standardized sampling envelopes. Life-stage of each sampled eel is determined followed by protocol described by Durif et. al. 2009.

Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

N, for improving documentation of eel data collection, we wait for further instructions from WGEEL.

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

See Sampling design description.

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

N, for improving documentation of eel data collection, we wait for further instructions from WGEEL.

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

N

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

Sampling allocations are followed-up and adjusted (if needed) according to accumulation of samples.

## Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

Length of each fish is measured in millimeters on measuring board, eels are weighted on Kern FOB scales to 1 g accuracy. Colour of the fish is determined according Durif et. al., eye diameter and the length of the pelvic fin are measured with high quality Mitutoyo digital callipers. The both otoliths are removed and stored in standardized sampling envelopes. Also the swim bladder is checked for parasite *Anguillacola crassus*, and if infected the number and size distribution of parasites is recorded.

Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

See Means of data capture

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

N. for improving documentation of eel data collection, we wait for further instructions from WGEEL.

## Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

N, data is stored to local server.

**International database:** Provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

N

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.

## Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach,

plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Otoliths of sampled eels are stored in otolith laboratory at Luke premises for recent years and historical samples are stored in Luke biological sample archives in Jokioinen.

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

Fish are aged using otolith grinding, polishing, and staining in toluidine blue, method described in ICES 2009. Storing and processing of collected data is carried out according to scientific practices. For improving documentation of eel data collection, we wait for further instructions from WGEEL. Life-stage of each sampled eel is determined followed by protocol described by Durif et. al. 2009.

ICES. 2009. Workshop on Age Reading of European and American Eel (WKAREA), 20-24 April 2009, Bordeaux, France. ICES CM 2009\ACOM: 48. 66 pp

Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.

## Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

N, see validation of final data set

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N, see validation of final data set

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

N

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

Collected data is submitted to ICES database via WGEEL data call. The submitted data is

processed with quality checks by WGEEL subgroups.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

<b>MS: FIN</b>
<b>Region: Baltic Sea</b>
<b>Sampling scheme identifier:</b> Baltic International Acoustic Survey (BIAS)
<b>Sampling scheme type:</b> Research survey at sea
<b>Observation type:</b> SciObsAtSea
<b>Time period of validity:</b> 2022-2024
Short description (max 100 words): The sampling scheme, is aiming at collecting acoustic data . The objective of BIAS survey is to standardize survey design, acoustic measurements, fishing method and data analysis throughout all national surveys where data are used as abundance indices for Baltic herring and sprat stocks assessment purposes.
<b>Description of the population</b>
<p><b>Population targeted:</b> Specify which are the primary sampling units (PSU), e.g. all national port*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to Table 1 in the Annex to the Implementing Decision) and the main survey area.</p> <p>The main target species are herring and sprat in SD's 29, 30, and 32.</p> <p><b>Population sampled:</b> Specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, <i>e.g. major ports being listed as auctions excluding all minor ports and no sampling during the week-ends</i>. For research surveys at sea describe target species in single-species surveys or ecosystem component (<i>e.g. demersal, pelagic</i>) in multispecies surveys.</p> <p><b>Stratification:</b> Explain the logic taken to stratify the population and the number of strata generated, <i>e.g. population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction</i>.</p> <p>Sampling is stratified geographically (SD's 29, 30, and 32).</p>
<b>Sampling design and protocols</b>
<p><b>Sampling design description:</b> Describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.</p> <p>Sampling design is described in survey manual:  <a href="http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20I BAS%202017.pdf">http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20I BAS%202017.pdf</a></p> <p><b>Is the sampling design compliant with the 4S principle?:</b> Y/N/NA (NA for e.g. surveys and diadromous and recreational sampling schemes)</p> <p>NA</p>



**Regional coordination:** Indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table 1.3) and list all MS participating.

Y

**Link to sampling design documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

[http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20\(SISP\)/SISP%208%20IBAS%202017.pdf](http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20IBAS%202017.pdf)

**Compliance with international recommendations:** Indicate 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y

**Link to sampling protocol documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the sampling design exists, provide details on the sampling protocol in this textbox.

Samples from BIAS -survey are collected and processed according to IBAS manual

[http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20\(SISP\)/SISP%208%20IBAS%202017.pdf](http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20IBAS%202017.pdf)

**Compliance with international recommendations:** Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

### Sampling implementation

**Recording of refusal rate:** Indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

NA

**Monitoring of sampling progress within the sampling year:** Indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

NA, sampling is allocated within survey period.

### Data capture

**Means of data capture:** short description (+ photo optionally). Indicate what are the means for collecting the data, e.g. scales, measuring board, dedicated software, ...

In Finland, an electronic fish measuring system is used for processing the fish samples, which enables quality assurance during the data capture. Basic data quality checks are carried out automatically in measurement phase, e.g. with condition factors in which way measuring- or weighing errors can be eliminated/ corrected. More quality checks and cross-checks are carried out when data is uploaded to the database.

Acoustic data is collected according to BIAS manual with a standard acoustic equipment.  
[http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20\(SISP\)/SISP%208%20IBAS%202017.pdf](http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20IBAS%202017.pdf)

The acoustic data were processed using Echoview software. This software was used for plotting, checking, editing, bottom tracking, mark classification, echo integration, and the calculation of acoustic densities.

**Data capture documentation:** Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on data capture (e.g. measuring protocols, maturity staging, manual for the data capture means etc.) exists, provide some details in the textbox.

[http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20\(SISP\)/SISP%208%20IBAS%202017.pdf](http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20IBAS%202017.pdf)

The process in herring age-reading (slicing and staining the otoliths) is considered the most accurate age reading method for slow-growing Baltic herring. There are also regularly inter-calibrations in herring age reading both nationally and internationally in the Baltic area to ensure the quality. The data in the database is checked for outliers in age-length relations and errors in data recording and corrected (revised or deleted) before it is used.

**Quality checks documentation:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the quality checks exists, provide some details in the text box.

See chapter: Data capture documentation in this text-box.

Quality of BIAS data were checked annually during the ICES WGBIFS meeting.

### Data storage

**National database:** Provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

The name of the national database is SUOMU. The link of the database is: [https://suomu.luke.fi/suomu\\_login](https://suomu.luke.fi/suomu_login). The database has restricted access.

**International database:** Provide the name of international database(s) and the organisation hosting the

database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

Acoustic indexes are saved in BAD1 database which is Microsoft access database hosting by Baltic International Fish Survey working group (WGBIFS). In addition, both acoustic and trawl data are also downloaded in ICES Acoustic trawl surveys database:

<https://acoustic.ices.dk/submissions>

**Quality checks and data validation documentation:** Provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

Data submitted to ICES databases undergo several steps of quality verification.

<https://www.ices.dk/data/tools/Pages/data-validation.aspx>

Suomu database contains also error checks. The data is checked thoroughly and validated before annual preparations of index calculations.

### Sample storage

**Storage description:** Indicate the type of soft tissues and hard parts stored (e.g. age structures, stomach, plankton, genetics) and the location used for samples storage; how long the samples are stored; how conservation and maintenance as well as access to samples are organised; whether the samples are stored under the auspices/responsibility of an international organization; if yes, which one. Provide a link to information on quantities of sampled stored by species/stock, geographic sub-area and by year.

Herring and sprat otoliths are stored either attached between microscope slides (when sliced and stained) or as a whole (when they are available multiple from sampled herring and always as whole from sampled sprat) and have been stored now in the otolith processing lab in Luke Helsinki and historical samples in Luke's unit in Taivalkoski, but will in a near future be stored in institute's biobank unit in Jokioinen. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the national database.

Acoustic raw data is stored annually in several external hard disk. Since raw data were thoroughly scrutinized with Echoview software the data were also stored in national database (Suomu).

**Sample analysis:** Provide a brief description or the references to documents, including link to webpages (e.g. age reading manuals, EGs reports and protocols) if adequate, where information on the processing of the samples is provided.

[http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20\(SISP\)/SISP%208%20I BAS%202017.pdf](http://prep.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20(SISP)/SISP%208%20I BAS%202017.pdf)

See also chapter: Sampling scheme: On shore sampling program targeting pelagic trawl fishery of herring and sprat: Sample analysis text box.

### Data processing

**Evaluation of data accuracy (bias and precision):** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the evaluation of data accuracy exists, provide some details in the textbox.

The group compiles results from BIAS surveys and provides the herring and sprat abundance indices for the Baltic Fisheries Assessment Working Group (WGBFAS) to use as tuning fleets.

**Editing and imputation methods:** Indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, provide a literature reference (author(s), year and type of publication - e.g. internal report). If no documentation on the editing and imputation methods exists, provide some details in the textbox.

N

If data is missing from a stratum (e.g. no trawl station in some rectangle), it will be replaced by data from closest rectangle. The replacements are mostly from national data, but sometimes from international data.

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

NA

**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

The datasets are annually calculated by Excel and StoX softwares, before final calculations data were examined by outlier-checks and cross-calculations using r-script.

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

No deviations.

## ANNEX 1.2 - QUALITY REPORT FOR SOCIOECONOMIC DATA SAMPLING SCHEME

*The quality report fulfils Article 6 (3) (d) of the Regulation (EU) 2017/1004. This document is intended to specify data to be collected under chapter II, points 3, 5, 6, and 7 of the Delegated Decision annex: Socioeconomic data on fisheries, aquaculture and any complementary data collection of fishing activity and fish processing.*

*Use this document to describe quality aspects of the data collection process (design, sampling implementation, data capture, data storage and data processing etc.). The annex should be filled for each sampling scheme. Where applicable, use the handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study), available on the DCF website.*

*Provide information under each point in all sections. Do not delete any text from the template.*

<b>Survey Specifications</b>
<p><i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.</i></p> <p><i>Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.</i></p> <p><i>Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.</i></p>
<b>Sector name(s):</b> Complementary data collection of fishing activity
<b>Sampling scheme:</b> Non-Probability Sampling
<b>Variables:</b> Average prices per species
<b>Supra region(s):</b> Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)
<b>Survey planning</b>
Price information for species other than those covered by quotas obtained from larger fish wholesalers
<b>Survey design and strategy</b>
The price information for species other than those covered by quotas is calculated from samples of purchasing information given by 20-30 enterprises. A panel-style sample of larger fish wholesalers has been chosen and recruited based on expert evaluation. The respondents supply monthly information on purchased volume and average prices per species through email or post. The data collected from wholesalers is regionally comprehensive, including at least three companies from each coastal area. New respondents are recruited in case needed to maintain sufficient sample size.
<b>Estimation design</b>
No estimation needed.

<b>Error checks</b>
Respondents are contacted in case of deviant prices are given.
<b>Data storage and documentation</b>
Data is stored in protected network drive. More methodological documentation can be found in: <a href="https://stat.luke.fi/en/tilasto/4484/laatuseloste/7918">https://stat.luke.fi/en/tilasto/4484/laatuseloste/7918</a> .
<b>Revision</b>
Official statistics Finland are revised as described: <a href="https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html">https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html</a>
<b>Confidentiality</b>
Unit-level data are protected as required in the Statistics Act so that original unit-level data cannot be derived from the statistical data. The price information is calculated on the basis of the price information submitted by several companies and so that no individual company accounts for a significant large share of the total volume of the catch. <a href="https://stat.luke.fi/en/tilasto/4484/laatuseloste/7918">https://stat.luke.fi/en/tilasto/4484/laatuseloste/7918</a>
<p><b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.</p> <p>Public website under construction and therefore some hyperlinks might be broken. Hyperlinks will be updated in next WP.</p>

<b>Survey Specifications</b>
<p><i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.</i></p> <p><i>Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.</i></p> <p><i>Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.</i></p>
<b>Sector name(s):</b> Fleet
<b>Sampling scheme:</b> Census
<b>Variables:</b> Operating subsidies, Other income, Personnel costs, Value of unpaid labour, Energy costs, Repair and maintenance costs, Other variable costs, Other non-variable costs, Lease/rental payments for quota or other fishing rights, Total value of assets, Gross debt, Paid labour, Unpaid labour, Full-time Equivalent (FTE), Energy consumption, Number of fishing enterprises/units
<b>Supra region(s):</b> Fisheries: Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)
<b>Survey planning</b>

No sampling, unit level register data (structural business and financial statement statistics, statistics on business subsidies and employment statistics) from Statistic Finland (SF) is used.
<b>Survey design and strategy</b>
<p>No sampling, unit level register data (structural business and financial statement statistics, statistics on business subsidies and employment statistics) from Statistic Finland (SF) is used.</p> <p>Primary sources of financial statements data in Statistics Finland are direct inquiries and business taxation material supplemented by Business Register data. Data is based on corporate balance sheet and profit and loss account data. Coverage of the financial statements is relatively good. Financial data gives a reliable estimate for profitability of the larger vessels, but the disaggregation of cost items does not follow that in regulation. Therefore, data on the cost and earnings structure is collected with an additional account survey on larger fishing firms (trawlers, see account survey for trawlers). Value of landings (calculated from logbooks and sales notes) is used as an auxiliary variable for estimating turnover (=gross value of landings) and total income using regression estimation (see Handbook section 4.2).</p>
<b>Estimation design</b>
<p>Cost and earnings estimates are done by design-based and model assisted regression and ratio estimation. Population totals are estimated using regression and ratio estimation (see Handbook section 4.2) for detailed income and cost structure. Value of landings is used as an auxiliary variable for estimating turnover (=gross value of landings) and total income for each segment using regression estimation. Estimated values for turnover are then used as an auxiliary variable to estimate total costs for each segment using regression. Total costs are divided to specific cost items using ratio estimation and data from account surveys. Coefficients of variation and coverage rates are calculated for each variable and for each vessel segment. Regression output results are analysed to check they are statistically valid. Employment data (FTE and number of employees) is estimated with regression (see Handbook section 4.2), based on the employment data from Statistics Finland. Opportunity costs for unpaid labour are estimated by Statistics Finland based on the annual amount of unpaid work and the average wage of the enterprise or the average wage of the sector.</p>
<b>Error checks</b>
<p>A large part of the catch notification forms are checked at LUKE before the data are processed, and erroneous information is corrected according to standardised instructions. The search for illogical entries is made using error query software.</p> <p>Primary sources of financial statements data in Statistics Finland are direct inquiries and business taxation material supplemented by Business Register data. Statistics Finland checks for the validity of these data.</p> <p>LUKE compares landings statistics against the turnover data from Statistics Finland and from account survey. Ratio between turnover and value of landings per company is calculated to spot abnormalities. Outliers for economic data are excluded for the sample used for the estimation.</p>
<b>Data storage and documentation</b>
<p>Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en">https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en</a>.</p>
<b>Revision</b>
<p>Official statistics Finland are revised as described: <a href="https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html">https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html</a></p>
<b>Confidentiality</b>

Unit-level data are protected as required in the Statistics Act so that original unit-level data cannot be derived from the statistical data published. More information on confidentiality of Statistics Finland's data collection can be found in: [https://www.stat.fi/keruu/luottamuksellisuus\\_en.html](https://www.stat.fi/keruu/luottamuksellisuus_en.html).

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

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## Survey Specifications

*Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.*

*Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.*

*Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.*

**Sector name(s):** Fleet/Coastal fishing

**Sampling scheme:** Non-Probability Sampling

### Variables:

Income from leasing out quota or other fishing rights, Other income, Personnel costs, Value of unpaid labour, Energy costs, Repair and maintenance costs, Other variable costs, Other non-variable costs, Lease/rental payments for quota or other fishing rights, Full-time Equivalent (FTE)

**Supra region(s):** Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)

## Survey planning

Account survey for all small-scale coastal fishers (mainly PG VL0008) above the threshold (see below).

## Survey design and strategy

Account survey for coastal fishers is conducted annually by Natural Resources Institute Finland (Luke). Questionnaire is sent to all coastal fishers that have reported catch and have an estimated value of annual catch more than 5 000 euros. This group covers around 90 % of the total turnover of coastal fishers. Survey is sent by mail but respondents can report their cost and earnings data also through an electronic data collection system.

## Estimation design

Cost and earnings estimates are done by design-based and model assisted regression and ratio estimation. Population totals are estimated using regression and ratio estimation (see Handbook chapter 4.2) for detailed income and cost structure. Value of landings is used as an auxiliary variable for estimating turnover (=gross value of landings) and total income for each segment using regression estimation. Estimated values for turnover are then used as an auxiliary variable to estimate total costs for each segment using regression. Total costs are divided to specific cost items using ratio estimation.



Employment data (FTE and number of employees) is estimated with regression, based on the employment numbers reported by the coastal fishers in account survey. Number of employees of coastal fisheries is mainly based on coastal landing declarations. Opportunity costs for unpaid labour are estimated by Statistics Finland based on the annual amount of unpaid work and the average wage of the enterprise or the average wage of the sector.
<b>Error checks</b>
<p>From 2017 on, coastal fishers have been able to report their cost and earnings data (account survey) through an electronic data collection system and the data are saved into ERAPU database. In this system, automatic validity check for each variable is performed when the values are entered in the database. For returned paper questionnaires, the data is entered into the same data base and similar automatic validity checks are performed. The responses for each variable are validated and logical checks are run before the estimation phase.</p> <p>Luke compares landings statistics against the turnover data from Statistics Finland and from account survey. Ratio between turnover and value of landings per company is calculated to spot abnormalities. Outliers for economic data are excluded for the sample used for the estimation.</p>
<b>Data storage and documentation</b>
Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en">https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en</a> .
<b>Revision</b>
Account survey for coastal fishing is carried out annually and the methodology for sampling and estimation is evaluated annually.
<b>Confidentiality</b>
<p>Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Privacy statement for economic data collection can be found in Finnish: <a href="https://stat.luke.fi/sites/default/files/kalatalouden_eu-tike_fi_1.pdf">https://stat.luke.fi/sites/default/files/kalatalouden_eu-tike_fi_1.pdf</a>. Statistical services unit in LUKE applies the same principles when handling statistical data as Statistics Finland: <a href="https://www.stat.fi/keruu/luottamuksellisuus_en.html">https://www.stat.fi/keruu/luottamuksellisuus_en.html</a>.</p>
<p><b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan.</p> <p>Public website under construction and therefore some hyperlinks might be broken. Hyperlinks will be updated in next WP.</p>

<b>Survey Specifications</b>
<p><i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.</i></p> <p><i>Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.</i></p> <p><i>Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put</i></p>

<i>'All Supra regions'.</i>
<b>Sector name(s):</b> Fleet/trawlers
<b>Sampling scheme:</b> Census
<b>Variables:</b> Income from leasing out quota or other fishing rights, Personnel costs, Value of unpaid labour, Energy costs, Repair and maintenance costs, Other variable costs, Other non-variable costs, Lease/rental payments for quota or other fishing rights
<b>Supra region(s):</b> Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)
<b>Survey planning</b>
Account survey for trawler fisheries, questionnaires sent to all commercial fishers with more active trawlers.
<b>Survey design and strategy</b>
Account survey for trawlers is conducted every 2-3 years by Natural Resources Institute Finland (LUKE). Questionnaires are sent to all trawlers that have reported annual catch above 50 000 kilos via logbooks. Survey is sent by mail but respondents can report their cost and earnings data also through an electronic data collection system. Non-respondents are contacted by phone.
<b>Estimation design</b>
Cost and earnings estimates are done by design-based and model assisted regression and ratio estimation. Data from account survey is used for ratio estimation (see Handbook section 4.2) for the cost structure for trawlers required by the EU-MAP.
<b>Error checks</b>
The responses for each variable are validated and logical checks are run before the estimation phase. Luke compares landings statistics against the turnover data from Statistics Finland and from account survey. Ratio between turnover and value of landings per company is calculated to spot abnormalities. Outliers for economic data are excluded for the sample used for the estimation.
<b>Data storage and documentation</b>
Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en">https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en</a> .
<b>Revision</b>
Account survey for trawlers is carried out every 2-3 years and the methodology for defining the sample and estimation method is evaluated according the same schedule.
<b>Confidentiality</b>
Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Privacy statement for economic data collection can be found in Finnish: <a href="https://stat.luke.fi/sites/default/files/kalatalouden_eu-tike_fi_1.pdf">https://stat.luke.fi/sites/default/files/kalatalouden_eu-tike_fi_1.pdf</a> . Statistical services unit in LUKE applies the same principles when handling statistical data as Statistics Finland: <a href="https://www.stat.fi/keruu/luottamuksellisuus_en.html">https://www.stat.fi/keruu/luottamuksellisuus_en.html</a> .

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.

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## Survey Specifications

*Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.*

*Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.*

*Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.*

**Sector name(s):** Fleet

**Sampling scheme:** IND

**Variables:** Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTE by gender, Unpaid labour by gender

**Supra region(s):** NA

## Survey planning

No sampling needed, official statistical data from Statistics Finland is used.

## Survey design and strategy

Social data on employment by class is collected by combining data from official statistics of Statistics Finland using employment statistics and financial statement statistics. The employment statistics data covers the whole population. The data includes information on sex, age group, nationality, education level and employment status by employee. The employment statistics is used together with the financial statements data including full time employment (fte) and number of employees by company to estimate the social data variables to the fisheries companies. Then the estimates of the social variables as specified in Table 6 of the multi-annual Union programme are calculated using SAS software according to RCG ECON guidelines.

## Estimation design

The employment statistics were combined with the financial statements data to connect the employee data from employment statistics to the fisheries companies/vessels in the financial statement statistics. The estimates of the social variables were calculated according to RCG ECON guidelines by using SAS software. Calculations are based on the ratios of employees by age, sex, employment status and education level in fisheries sector from employment statistics. Final estimates for social variables were produced by applying those ratios to financial statement data (FTE and number of employees).

## Error checks

Statistics Finland checks for the validity of these data.

## Data storage and documentation

Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> .
<b>Revision</b>
Official statistics Finland are revised as described: <a href="https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html">https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html</a>
<b>Confidentiality</b>
Unit-level data are protected as required in the Statistics Act so that original unit-level data cannot be derived from the statistical data.
<b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan. Public website under construction and therefore some hyperlinks might be broken. Hyperlinks will be updated in next WP.

<b>Survey Specifications</b>
<i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex. Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design. Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.</i>
<b>Sector name(s):</b> Fleet
<b>Sampling scheme:</b> Census
<b>Variables:</b> Consumption of fixed capital, Investments in tangible assets (net purchase of assets), Value of physical capital
<b>Supra region(s):</b> Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)
<b>Survey planning</b>
Population is all vessels in the vessel register.
<b>Survey design and strategy</b>
Data sources are vessel register and complementary data collection for defining the price per capacity unit. For measuring the price per capacity unit, surveys are conducted every 5-10 years. Data is collected with the account surveys and interviewing experts for vessel composition and defining depreciation schemes.
<b>Estimation design</b>

Perpetual Inventory Method is applied: <https://stats.oecd.org/glossary/detail.asp?ID=2055>.

PIM method is used for the calculation of the value of physical capital, consumption of fixed capital and the investments in tangible assets for the fleet. Price per capacity unit for vessels under 12 meters is based on the book values of the vessels. Price per capacity unit for trawlers is based on the insurance values from a fishing insurance association. Account data of coastal vessels is combined with the vessel register data by vessel code. Then cumulated depreciation costs are calculated using digressive depreciation scheme from the book value of the vessels. Cumulated depreciation costs are added to the book value to get gross historical values by vessel using the following formula:

[Kaava],

where  $i$  is the asset (hull, engine, electronics and other equipment). Then heavy machinery producer price index is applied to get the replacement value of the total fleet with current price level. Price per GT is then calculated from the replacement value for each vessel segment. Prices/GT are used to calculate the depreciated replacement value, consumption of fixed capital and investments in tangible assets for the Finnish fleet.

Assumptions used in the PIM are as follows:

Depreciation rates applied: hull 6.6%, engine 16.5%, electronics 40% and other equipment 23.6%.

Vessel composition assumed for vessels under 12 meters: hull 35%, engine 50%, electronics 7.5% and other equipment 7.5%.

Vessel composition assumed for pelagic trawlers: hull 40%, engine 30%, electronics 5% and other equipment 25%.

Renewal times: hull never renewed, engine 10 years, electronics 5 years and other equipment 7 years.

## Error checks

Data are validated before the PIM application phase. Data processing codes are checked and modified annually. Results are compared to the results from previous years to spot any differences/abnormalities.

## Data storage and documentation

Data is stored in PostgreSQL database and in protected network drive. More methodological documentation can be found in: [https://stat.luke.fi/sites/default/files/methodological\\_report\\_2018.pdf](https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf).

## Revision

The assumptions used in the PIM application are reviewed annually. The assumptions are revised always when more current data is available.

## Confidentiality

Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Privacy statement for economic data collection can be found in Finnish: [https://stat.luke.fi/sites/default/files/kalatalouden\\_eu-tike\\_fi\\_1.pdf](https://stat.luke.fi/sites/default/files/kalatalouden_eu-tike_fi_1.pdf). Statistical services unit in LUKE applies the same principles when handling statistical data as Statistics Finland:

[https://www.stat.fi/keruu/luottamuksellisuus\\_en.html](https://www.stat.fi/keruu/luottamuksellisuus_en.html).

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## Survey Specifications

*Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.*

*Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.*

*Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.*

**Sector name(s):** Aquaculture

**Sampling scheme:** Census

**Variables:** Operating subsidies, Other income, Personnel costs, Value of unpaid labour, Energy costs, Raw material: livestock costs, Raw material: feed costs, Repair and maintenance costs, Other operating costs, Consumption of fixed capital, Investments in tangible assets (net purchase of assets), Total value of assets, Gross debt, Financial income, Financial expenditures, Paid labour, Unpaid labour, Full-time Equivalent (FTE), Number of enterprises by size category

**Supra region(s):** Fisheries: Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)

## Survey planning

No sampling, unit level register data (structural business and financial statement statistics, statistics on business subsidies and employment statistics) from Statistic Finland (SF) is used.

## Survey design and strategy

No sampling, unit level register data (structural business and financial statement statistics, statistics on business subsidies and employment statistics) from Statistic Finland (SF) is used.

Primary sources of financial statements data in Statistics Finland are direct inquiries and business taxation material supplemented by Business Register data. Data is based on corporate balance sheet and profit and loss account data. Coverage of the financial statements is relatively good. Value of production/sales is used as an auxiliary variable for estimating turnover (=gross sales) and total income using regression estimation (see Handbook section 4.2).

## Estimation design

Cost and earnings estimates are done by design-based and model assisted regression and ratio estimation. Population totals are estimated using regression and ratio estimation (see Handbook section 4.2) for detailed income and cost structure. Value of production/sales is used as an auxiliary variable for estimating turnover (=gross sales) and total income for each segment using regression estimation. Estimated values for turnover are then used as an auxiliary variable to estimate total costs for each segment using regression. Total costs are divided to specific cost items using ratio estimation and data from production survey. Coefficients of variation and coverage rates are calculated for each variable and for each segment. Regression output results are

<p>analysed to check they are statistically valid. Employment data (FTE and number of employees) is estimated with regression (see Handbook section 4.2), based on the employment data from Statistics Finland. Opportunity costs for unpaid labour are estimated by Statistics Finland based on the annual amount of unpaid work and the average wage of the enterprise or the average wage of the sector.</p>
<p><b>Error checks</b></p>
<p>Primary sources of financial statements data in Statistics Finland are direct inquiries and business taxation material supplemented by Business Register data. Statistics Finland checks for the validity of these data.</p> <p>LUKE compares production statistics against the turnover data from Statistics Finland. Ratio between turnover and value of production per company is calculated to spot abnormalities. Outliers for economic data are excluded for the sample used for the estimation.</p>
<p><b>Data storage and documentation</b></p>
<p>Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en">https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en</a>.</p>
<p><b>Revision</b></p>
<p>Official statistics Finland are revised as described: <a href="https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html">https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html</a></p>
<p><b>Confidentiality</b></p>
<p>Unit-level data are protected as required in the Statistics Act so that original unit-level data cannot be derived from the statistical data published. More information on confidentiality of Statistics Finland's data collection can be found in: <a href="https://www.stat.fi/keruu/luottamuksellisuus_en.html">https://www.stat.fi/keruu/luottamuksellisuus_en.html</a>.</p>
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<p><b>Survey Specifications</b></p>
<p><i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.</i></p> <p><i>Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.</i></p> <p><i>Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.</i></p>
<p><b>Sector name(s):</b> Aquaculture</p>
<p><b>Sampling scheme:</b> IND</p>
<p><b>Variables:</b> Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTE by gender, Unpaid labour by gender</p>

<b>Supra region(s):</b> NA
<b>Survey planning</b>
No sampling needed, official statistical data from Statistics Finland is used.
<b>Survey design and strategy</b>
Social data on employment by class is collected by combining data from official statistics of Statistics Finland using employment statistics and financial statement statistics. The employment statistics data covers the whole population. The data includes information on sex, age group, nationality, education level and employment status by employee. The employment statistics is used together with the financial statements data including full time employment (fte) and number of employees by company to estimate the social data variables to the fisheries companies. Then the estimates of the social variables as specified in Table 6 of the multi-annual Union programme are calculated using SAS software according to RCG ECON guidelines.
<b>Estimation design</b>
The employment statistics were combined with the financial statements data to connect the employee data from employment statistics to the aquaculture companies in the financial statement statistics. The estimates of the social variables were calculated according to RCG ECON guidelines by using SAS software. Calculations are based on the ratios of employees by age, sex, employment status and education level in aquaculture sector from employment statistics. Final estimates for social variables were produced by applying those ratios to financial statement data (FTE and number of employees).
<b>Error checks</b>
Statistics Finland checks for the validity of these data.
<b>Data storage and documentation</b>
Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> .
<b>Revision</b>
Official statistics Finland are revised as described: <a href="https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html">https://www.stat.fi/org/periaatteet/revisiokaytannot_en.html</a>
<b>Confidentiality</b>
Unit-level data are protected as required in the Statistics Act so that original unit-level data cannot be derived from the statistical data.
<b>AR comment:</b> Indicate any deviations. Do not change the text already adopted in the work plan. Public website under construction and therefore some hyperlinks might be broken. Hyperlinks will be updated in next WP.

<b>Survey Specifications</b>
<i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of</i>



<p><i>fishing activity and processing as given in the EU MAP Delegated Decision annex.</i></p> <p><i>Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.</i></p> <p><i>Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.</i></p>
<b>Sector name(s):</b> Aquaculture
<b>Sampling scheme:</b> Census
<b>Variables:</b> Gross sales per species, energy costs, Raw material: livestock costs, Raw material: feed costs, Livestock used, Weight of sales per species
<b>Supra region(s):</b> NA
<b>Survey planning</b>
Census survey, questionnaire sent to all aquaculture producers.
<b>Survey design and strategy</b>
Questionnaires sent by mail to all aquaculture producers and companies in the aquaculture register. Data can be reported through electronic data collection system or using paper questionnaires. Non-respondents are contacted and interviewed by phone.
<b>Estimation design</b>
<p>Production survey is collected exhaustively from the aquaculture producers. Any missing information is estimated by post stratification (see Handbook A.7 Section 4.3.3). Unit level data are raised to the total population using weights by strata.</p> <p>Data from production survey is used for ratio estimation (see Handbook section 4.2) for energy costs and raw material costs.</p>
<b>Error checks</b>
<p>The responses for each variable are validated and logical checks are run before the estimation phase.</p> <p>Any errors in the statistics are corrected as quickly as possible in accordance with the recommendations issued by the advisory council of the Official Statistics of Finland (OSF). Errors will be corrected in statistical databases, and corrected data will be published on the website of the statistics.</p>
<b>Data storage and documentation</b>
Data is stored in Oracle and PostgreSQL databases maintained by LUKE. More methodological documentation can be found: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-aquaculture_en">https://stat.luke.fi/en/quality-description-aquaculture_en</a> .
<b>Revision</b>
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<b>Confidentiality</b>
Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Privacy statement for economic data collection can be found in Finnish:

[https://stat.luke.fi/sites/default/files/kalatalouden\\_eu-tike\\_fi\\_1.pdf](https://stat.luke.fi/sites/default/files/kalatalouden_eu-tike_fi_1.pdf). Statistical services unit in LUKE applies the same principles when handling statistical data as Statistics Finland:  
[https://www.stat.fi/keruu/luottamuksellisuus\\_en.html](https://www.stat.fi/keruu/luottamuksellisuus_en.html).

**AR comment:** Indicate any deviations. Do not change the text already adopted in the work plan.  
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## Survey Specifications

*Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.*  
*Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.*  
*Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.*

**Sector name(s):** Fish processing

**Sampling scheme:** Census

**Variables:** Energy costs, Purchase of fish and other raw material for production, Value of raw material by species, Weight of raw material by species

**Supra region(s):** NA

## Survey planning

Census survey, questionnaires sent to all fish processing companies.

## Survey design and strategy

Questionnaires sent by mail to all fish processing companies in the business register having fish processing as main activity. Data can be reported through electronic data collection system or using paper questionnaires. Non-respondents are contacted and interviewed by phone.

## Estimation design

Production survey is collected exhaustively from the producers. Any missing information is estimated by post stratification (see Handbook A.7 Section 4.3.3). Unit level data are raised to the total population using weights by strata.

Data from production survey is used for ratio estimation (see Handbook section 4.2) for energy costs and raw material costs.

## Error checks

The responses for each variable are validated and logical checks are run before the estimation phase. Any errors in the statistics are corrected as quickly as possible in accordance with the recommendations issued

by the advisory council of the Official Statistics of Finland (OSF). Errors will be corrected in statistical databases, and corrected data will be published on the website of the statistics.
<b>Data storage and documentation</b>
Data is stored in Oracle and PostgreSQL databases maintained by LUKE. More methodological documentation can be found: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en">https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en</a>
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<b>Survey Specifications</b>
<i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex. Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design. Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put 'All Supra regions'.</i>
<b>Sector name(s):</b> Fish processing
<b>Sampling scheme:</b> Census
<b>Variables:</b> Turnover, Other income, Personnel costs, Value of unpaid labour, Energy costs, Purchase of fish and other raw material for production, Other operational costs, Operating subsidies, Consumption of fixed capital, Total value of assets, Financial income, Financial expenditures, Net investments, Debt, Number of persons employed, FTE National, Unpaid labour, Number of enterprises by size category
<b>Supra region(s):</b> Fisheries: Baltic Sea; North Sea; Eastern Arctic; NAFO; extended North Western waters (ICES areas 5, 6 and 7) and extended South Western waters (ICES areas 10, 12 and 14)
<b>Survey planning</b>

No sampling, unit level register data (structural business and financial statement statistics, statistics on business subsidies and employment statistics) from Statistic Finland (SF) is used.
<b>Survey design and strategy</b>
No sampling, unit level register data (structural business and financial statement statistics, statistics on business subsidies and employment statistics) from Statistic Finland (SF) is used.
<b>Estimation design</b>
Census data from Statistics Finland is used and no estimation is needed. Total costs are divided to specific cost items using data from production survey.
<b>Error checks</b>
Primary sources of financial statements data in Statistics Finland are direct inquiries and business taxation material supplemented by Business Register data. Statistics Finland checks for the validity of these data.
<b>Data storage and documentation</b>
Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> and <a href="https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en">https://stat.luke.fi/en/quality-description-profitability-fisheries-industry_en</a> .
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<b>Survey Specifications</b>
<p><i>Sector name refers to socio economic data on fisheries, aquaculture and any complementary data collection of fishing activity and processing as given in the EU MAP Delegated Decision annex.</i></p> <p><i>Sampling scheme refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling then outline sampling design.</i></p> <p><i>Variables refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex. Supra region refers to Table 2 of the EU MAP Implementing Decision annex. If the sampling scheme is the same in all supra regions put</i></p>

<i>'All Supra regions'.</i>
<b>Sector name(s):</b> Fish processing
<b>Sampling scheme:</b> IND
<b>Variables:</b> Employment by age, Employment by employment status, Employment by gender, Employment by level of education, Employment by nationality, FTE by gender, Unpaid labour by gender
<b>Supra region(s):</b> NA
<b>Survey planning</b>
No sampling needed, official statistical data from Statistics Finland is used.
<b>Survey design and strategy</b>
Social data on employment by class is collected by combining data from official statistics of Statistics Finland using employment statistics and financial statement statistics. The employment statistics data covers the whole population. The data includes information on sex, age group, nationality, education level and employment status by employee. The employment statistics is used together with the financial statements data including full time employment (fte) and number of employees by company to estimate the social data variables to the fish processing companies. Then the estimates of the social variables as specified in Table 6 of the multi-annual Union programme are calculated using SAS software according to RCG ECON guidelines.
<b>Estimation design</b>
The employment statistics were combined with the financial statements data to connect the employee data from employment statistics to the fisheries companies/vessels in the financial statement statistics. The estimates of the social variables were calculated according to RCG ECON guidelines by using SAS software. Calculations are based on the ratios of employees by age, sex, employment status and education level in fisheries sector from employment statistics. Final estimates for social variables were produced by applying those ratios to financial statement data (FTE and number of employees).
<b>Error checks</b>
Statistics Finland checks for the validity of these data.
<b>Data storage and documentation</b>
Data is stored in PostgreSQL database maintained by LUKE. More methodological documentation can be found in: <a href="https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf">https://stat.luke.fi/sites/default/files/methodological_report_2018.pdf</a> .
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