

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

# **Finland Work Plan for data collection in the fisheries and aquaculture sectors**

**2025-2027**

Version 4

Helsinki, Finland - 14 November 2024

# CONTENTS

|                                                                                                                        |           |
|------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>SECTION 1: GENERAL INFORMATION .....</b>                                                                            | <b>5</b>  |
| <b>DATA COLLECTION FRAMEWORK AT NATIONAL LEVEL .....</b>                                                               | <b>5</b>  |
| <b>TEXT BOX 1A: TEST STUDIES DESCRIPTION .....</b>                                                                     | <b>6</b>  |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>6</i>  |
| <i>Test study 1: Developing electronic monitoring methods of bycatch in Finnish fisheries.....</i>                     | <i>6</i>  |
| <i>Test study 2: Data collection of the new social indicators of fisheries.....</i>                                    | <i>7</i>  |
| <b>TEXT BOX 1B: OTHER DATA COLLECTION ACTIVITIES.....</b>                                                              | <b>8</b>  |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>8</i>  |
| <i>Improving the science basis of the fisheries management of the Gulf of Bothnia herring (ImproFish) .....</i>        | <i>8</i>  |
| <i>Scientific cod fishing in Åland islands.....</i>                                                                    | <i>8</i>  |
| <b>SECTION 2: BIOLOGICAL DATA .....</b>                                                                                | <b>9</b>  |
| <b>TEXT BOX 2.3: DIADROMOUS SPECIES DATA COLLECTION IN FRESHWATER.....</b>                                             | <b>9</b>  |
| <i>Region: North Sea and Eastern Arctic/Baltic Sea .....</i>                                                           | <i>9</i>  |
| <i>Region: North Sea and Eastern Arctic .....</i>                                                                      | <i>12</i> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>12</i> |
| <b>TEXT BOX 2.4: RECREATIONAL FISHERIES.....</b>                                                                       | <b>14</b> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>14</i> |
| <b>TEXT BOX 2.5: SAMPLING PLAN DESCRIPTION FOR BIOLOGICAL DATA.....</b>                                                | <b>15</b> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>15</i> |
| <i>Baltic SPF regional.....</i>                                                                                        | <i>15</i> |
| <i>On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31.....</i>               | <i>16</i> |
| <i>On shore sampling program targeting trap-net fishery of herring.....</i>                                            | <i>16</i> |
| <i>On shore sampling program targeting coastal gillnet and trap-net fishery of perch, pikeperch and whitefish.....</i> | <i>17</i> |
| <i>On shore sampling program targeting pelagic trawl fishery of vendace .....</i>                                      | <i>18</i> |
| <i>Self-sampling program targeting coastal fishery of salmon.....</i>                                                  | <i>18</i> |
| <i>Eel sampling from bycatch of commercial coastal fisheries.....</i>                                                  | <i>19</i> |
| <b>TEXT BOX 2.6: RESEARCH SURVEYS AT SEA .....</b>                                                                     | <b>19</b> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>20</i> |
| <i>Research survey: Baltic International Acoustic Survey (autumn) .....</i>                                            | <i>20</i> |
| <b>SECTION 3: FISHING ACTIVITY DATA .....</b>                                                                          | <b>23</b> |
| <b>TEXT BOX 3.1: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY .....</b>                                         | <b>23</b> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>23</i> |
| <b>TEXT BOX 3.2: FISHING ACTIVITY VARIABLES DATA COLLECTION STRATEGY (FOR INLAND EEL COMMERCIAL FISHERIES).....</b>    | <b>23</b> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>23</i> |
| <b>SECTION 4: IMPACT OF FISHERIES ON MARINE BIOLOGICAL RESOURCES.....</b>                                              | <b>25</b> |
| <b>TEXT BOX 4.2: INCIDENTAL CATCHES OF SENSITIVE SPECIES.....</b>                                                      | <b>25</b> |
| <i>Region: Baltic Sea .....</i>                                                                                        | <i>25</i> |
| <b>SECTION 5: ECONOMIC AND SOCIAL DATA IN FISHERIES .....</b>                                                          | <b>27</b> |
| <b>TEXT BOX 5.2: ECONOMIC AND SOCIAL VARIABLES FOR FISHERIES DATA COLLECTION.....</b>                                  | <b>27</b> |
| <b>SECTION 6: ECONOMIC AND SOCIAL DATA IN AQUACULTURE .....</b>                                                        | <b>28</b> |
| <b>TEXT BOX 6.1: ECONOMIC AND SOCIAL VARIABLES FOR AQUACULTURE DATA COLLECTION.....</b>                                | <b>28</b> |
| <b>SECTION 7: ECONOMIC AND SOCIAL DATA IN FISH PROCESSING .....</b>                                                    | <b>29</b> |
| <b>TEXT BOX 7.1: ECONOMIC AND SOCIAL VARIABLES FOR FISH PROCESSING DATA COLLECTION .....</b>                           | <b>29</b> |
| <b>ANNEX 1.1 - QUALITY REPORT FOR BIOLOGICAL DATA SAMPLING SCHEME .....</b>                                            | <b>30</b> |
| <i>Sampling scheme identifier: Monitoring of salmon parr densities.....</i>                                            | <i>30</i> |
| <i>Sampling scheme identifier: Monitoring of ascending salmon with sonar.....</i>                                      | <i>33</i> |
| <i>Sampling scheme identifier: Survey of recreational salmon catches in rivers .....</i>                               | <i>37</i> |
| <i>Sampling scheme identifier: Biological sampling from recreational salmon catch in rivers.....</i>                   | <i>40</i> |

|                                                                                                                                                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <i>Sampling scheme identifier: Monitoring of salmon smolt with video counter.....</i>                                                              | <i>43</i>  |
| <i>Sampling scheme identifier: Monitoring of ascending salmon with video counter.....</i>                                                          | <i>46</i>  |
| <i>Sampling scheme identifier: Monitoring of salmon smolt with smolt traps.....</i>                                                                | <i>49</i>  |
| <i>Sampling scheme identifier: Monitoring of sea trout parr densities .....</i>                                                                    | <i>53</i>  |
| <i>Sampling scheme identifier: Monitoring of silver eel escapement by sonar.....</i>                                                               | <i>56</i>  |
| <i>Sampling scheme identifier: Monitoring of silver eel escapement by trapping.....</i>                                                            | <i>59</i>  |
| <i>Sampling scheme identifier: Monitoring of eel recruitment in rivers.....</i>                                                                    | <i>64</i>  |
| <i>Sampling scheme identifier: Biological sampling from recreational catches of eel in Finnish inland waters .....</i>                             | <i>66</i>  |
| <i>Sampling scheme identifier: National survey on recreational fishing.....</i>                                                                    | <i>69</i>  |
| <i>Sampling scheme identifier: Baltic SPF regional.....</i>                                                                                        | <i>72</i>  |
| <i>Sampling scheme identifier: On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31 .....</i>              | <i>77</i>  |
| <i>Sampling scheme identifier: On shore sampling program targeting trap-net fishery of herring .....</i>                                           | <i>81</i>  |
| <i>Sampling scheme identifier: On shore sampling program targeting coastal gillnet and trap-net fishery of perch, pikeperch and whitefish.....</i> | <i>86</i>  |
| <i>Sampling scheme identifier: Self-sampling program targeting coastal fishery of salmon .....</i>                                                 | <i>90</i>  |
| <i>Sampling scheme identifier: On shore sampling program targeting pelagic trawl fishery of vendace.....</i>                                       | <i>93</i>  |
| <i>Sampling scheme identifier: Eel sampling from bycatch of commercial coastal fisheries .....</i>                                                 | <i>97</i>  |
| <i>Sampling scheme identifier: Baltic International Acoustic Survey (autumn).....</i>                                                              | <i>100</i> |
| <b>ANNEX 1.2 - QUALITY REPORT FOR SOCIOECONOMIC DATA SAMPLING SCHEME .....</b>                                                                     | <b>105</b> |
| <i>FLEET-CENSUS-ECON .....</i>                                                                                                                     | <i>106</i> |
| <i>SSF-NPS.....</i>                                                                                                                                | <i>108</i> |
| <i>LSF-NPS.....</i>                                                                                                                                | <i>110</i> |
| <i>SOCIAL-IND .....</i>                                                                                                                            | <i>111</i> |
| <i>AQUA-CENSUS-ECON.....</i>                                                                                                                       | <i>113</i> |
| <i>FLEET-CENSUS-PIM.....</i>                                                                                                                       | <i>115</i> |
| <i>AQUA-CENSUS-PROD.....</i>                                                                                                                       | <i>117</i> |

## 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.*

The Finnish EU-DCF data 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 addition, all MS's need to address DCF-related elements in the Marine Action Plan, especially in relation to bycatch of sensitive (ETP) species and impact of fishing on the seabed.

Data from sensitive bycatch species is collected as follows:

- 1) Onboard-observing program in sampling scheme: "On shore sampling program targeting trap-net fishery of herring", starting from year 2025. This action is a continuum of similar action presented in The Finnish NWP 2022-2024 Test Study 1. See Textbox 2.5 and 4.2 for details.
- 2) Port-observer program for sensitive species is included the majority of commercial sampling schemes described in Textbox 2.5.
- 3) Initiation of new test study: "Developing electronic monitoring methods of bycatch in Finnish fisheries" based on Electronic Monitoring (EM) methods. See Text Box 1a: Test studies description (Test Study 1) for details.
- 4) Incorporation of other actions presented in The Finnish NWP 2022-2024 Test Study 1 into FIN NWP 2025-2027. See Textbox 4.2 for details.
- 5) In addition, according to national legislation, commercial fishers independently of the size of the vessel, are obliged to report their bycatches. See Textbox 4.2 for details.

Trawl fishing in Finland targets small pelagic species, and there is no bottom trawling targeting demersal species (See Table 2.5 and TextBox 2.5). Consequently, the impact of fishing on the seabed is virtually nonexistent. Therefore, this Work Plan does not address the impact of fishing on the seabed.

Finland has committed to support and implement regional data collection activities presented in RWP Baltic 2025-2027. Some of these activities are presented in RWP Baltic 2025-2027 Text Box 1b: Other data collection activities:

- 1) RCGs Secretariat
- 2) Regional data base and estimation System (RDBES)
- 3) Regional Coordination taking place in ISSGs and pan regional cooperation between RCGs
- 4) Smart Dots
- 5) Catch, effort and sampling overviews for RCG Technical Meeting

In Finland, Ministry of Agriculture and Forestry (MAF) has obliged Natural Resources Institute Finland (Luke) to implement these tasks, including data collection, storage and dissemination.

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

Details for the national correspondent: name: Heikki Lehtinen, phone: 0295162433, email: [heikki.lehtinen@gov.fi](mailto:heikki.lehtinen@gov.fi), postal address: PL 23 00023 Valtioneuvosto, Finland

Link to Luke: [www.luke.fi/en](http://www.luke.fi/en)

Link to FIN DCF program: <https://www.luke.fi/en/luonnonvaratieto/science-and-information/eudcf-fisheries-and-aquaculture-data-collection-program>

(max. 1000 words)

### **Text Box 1a: Test studies description**

**Region: Baltic Sea**

#### **Test study 1: Developing electronic monitoring methods of bycatch in Finnish fisheries**

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

##### **Developing electronic monitoring methods of bycatch in Finnish fisheries**

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

Currently, bycatch information in Finnish fisheries is collected according to national legislation, which obligates that commercial fishers report their bycatches regardless of vessel size. This data is sourced from landing declarations and EU catch journals. However, since this data relies on self-reporting by fishers, there is a need for fisheries-independent bycatch data collection. From 2022 to 2024, Finland conducted the FIN NWP Test Study 1, which highlighted the limitations of bycatch data collection through onboard observation programs. These limitations include labour intensity, high personnel costs, and implementation challenges in small-scale or artisanal fisheries. To address these issues, Finland will test and develop methods to monitor bycatch rates using Electronic Monitoring (EM) methods in 2025 - 2027. The development of EM monitoring will incorporate experiences from this test study and other Member States, following guidelines from ICES WGBYC.

###### **2. Duration of the test study**

The planned duration of the test study is three years (2025-2027).

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

The Test Study 1 aims to develop a fisheries-independent electronic bycatch monitoring (EM) method, starting with trawl fisheries for herring and sprat. Based on the insights from trawl EM, we will also explore whether and how this method can also be applied to coastal trap-net and gillnet fisheries.

By examining methods used in other fisheries (i.e., in other countries) and working in collaboration with voluntary fishers, the objectives of this test study are: 1) to test and develop different equipment to ensure effective electronic monitoring, 2) to optimize various installation methods to determine the most efficient and practical approaches in each vessel type, 3) to evaluate different operation periods to identify the optimal duration for monitoring, 4) to enhance data analysis techniques to improve accuracy and reliability and 5) to compare the collected data with catch journal data and other available bycatch data.

The result and progress of the of the test study is reported in Annual Reports considering years 2025-2027.

(max 900 words per study)

## **Test study 2: Data collection of the new social indicators of fisheries**

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

### **Data collection of the new social indicators of fisheries.**

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

Aim of the study is to pilot data collection and processing of five new social indicators proposed by STECF EWG 24-05. The selected indicators for the pilot describe fishers' financial and social status, working conditions, and generational status. The selected indicators for this study are:

- Social and financial status: Indicator 3. Financial position
- Well-being: Indicator B1. Time away from home
- Well-being: Indicator B3. Material well-being: Average wage comparison with national average and minimum wage
- Generational status: Indicator 4. Number of people enrolled and recent graduates of fisheries vocational training
- Generational status: Indicator 5. Number of new entrants in the vessel register

#### **2. Duration of the test study**

Test study will be conducted in three years period in 2025-2027.

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

Indicators will be calculated based following the RCG ECON guidance and taking advantage of the existing data sources as much as possible. Financial position is based on the data from existing economic and social data collection and data on average salaries from Statistics Finland. Time away from home (Days at sea/Number of trips) will be calculated using existing data from the national central control register on commercial fishery. Average wage comparison with national average and minimum wage will be calculated using existing data from economic and social data collection and data on average wages from Statistics Finland. The number of people enrolled in and recent graduates of fisheries vocational training will be reported based on existing data from administrative sources. The number of new entrants in the vessel register will be calculated based on the existing vessel register and other administrative data.

The pilot is expected to be useful in finding ways to collect and calculate the proposed new social indicators, in revealing possible methodological issues, and knowledge sharing of the participating Member States.

*(max 900 words per study)*

## Text Box 1b: Other data collection activities

**Region: Baltic Sea**

### **Improving the science basis of the fisheries management of the Gulf of Bothnia herring (ImproFish)**

*General comment: Describe either activities that are funded by the DCF without a direct link to the EU MAP specific requirements or WP template tables, like marine knowledge, or activities funded by other financial instruments and/or programmes that relate to EU MAP requirements, like actions under the marine action plan. You can also include one-off specific studies for a particular end-user need that will not enter the regular data collection.*

#### **Improving the science basis of the fisheries management of the Gulf of Bothnia herring (ImproFish)**

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

ImproFish is funded by the European Maritime, Fisheries and Aquaculture Fund (EMFAF) call “Improving scientific knowledge to strengthen the science-basis of management decisions under the Common Fisheries Policy (EMFAF-2023-PIA-FisheriesScientificAdvice)”. The project beneficiaries are Natural Resources Institute Finland (Luke, Finland), and Swedish University of Agricultural Sciences (SLU, Sweden). ImproFish aims to improve the Gulf of Bothnia herring stock assessment and fisheries management by addressing identified scientific knowledge gaps. The project therefore directly supports the aims of the CFP, and the data it uses comes largely from the DCF, including the acoustic survey data and the associated environmental information, the age, weight, and length distribution of herring, and the catch composition.

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

1.5.2024–30.4.2026

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

1. Improving the accuracy of the acoustic abundance index used for the assessment of the stock size. This part of the work improves the computation of the stock size, obtained through the acoustic index provided by the BIAS survey, by assessing the effect of the depth and intensity of thermocline and halocline on the detectability of the juvenile individuals, and incorporating the corresponding information into the calculations.
2. Improving the scientific knowledge related to the factors behind the changes of growth, weight- and size-at-age, maturity of the stock, and to enable better management that contributes to the conservation and profitable fishery of the stock.
3. Improving the scientific knowledge related to the temporal variability of the spatial distribution of herring of different age and size groups and identifying potential spawning grounds, and stock structure, to enable better management that contributes to the conservation and profitable fishery of the stock.

*(max 900 words per activity)*

### **Scientific cod fishing in Åland islands**

*General comment: Describe either activities that are funded by the DCF without a direct link to the EU MAP specific requirements or WP template tables, like marine knowledge, or activities funded by other financial instruments and/or programmes that relate to EU MAP requirements, like actions under the marine action*

*plan. You can also include one-off specific studies for a particular end-user need that will not enter the regular data collection.*

### **Scientific cod fishing in Åland islands**

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

To clarify the status of cod in the northern Baltic Sea and especially in the waters near Åland islands, annual sampling of cod has taken place from 2020 by the Government of Åland. The precondition for utilizing the Finnish bycatch quota of cod has been that the fishers contribute to the sampling from cod on in the form of scientific fishing. This activity is funded outside DCF.

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

NA, to be decided. See below.

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

The number of caught cod has been registered, and monthly individual length and weight of 25 randomly selected cod from at least one fishing trip have been measured. From 5 of the 25 randomly selected specimens, liver and stomach samples have been taken for analysis in Finland (Luke) and otoliths for analysis in Sweden (SLU). Otolith data may give better knowledge on the cod in the environmental conditions of Åland waters and to the question about where the cod grown in Åland have originally hatched Liver samples are for the monitoring of the abundance of the nematode Contracaecum, which has a role in the poor status of cod in the southern Baltic Sea. Stomach analysis give comparative data of the prey of cod in relation to the poorly growing cod in the southern Baltic Sea.

The Council will decide 22 October 2024 for 2025 the fishing opportunities or the allowable by-catches of cod in the Baltic Sea. The continuation of scientific cod fishing will be discussed nationally after this meeting. Before this decision, it is impossible to plan data collection activities, and therefore this activity is not presented in Table or Textbox 2.5. If this activity continues, sampling program can be planned according to possible end-used need, and WP amended accordingly in the next submission.

*(max 900 words per activity)*

## **SECTION 2: BIOLOGICAL DATA**

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

#### **Region: North Sea and Eastern Arctic/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(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.*

RWP BALTIC 2025-2027  
RWP NANSEA 2025-2027

#### **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 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. Tenojoki (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.

There is a well-established co-operation between Finland and Sweden in the data collection and monitoring of the river Tornionjoki. Data is used by ICES which produces yearly advice on Atlantic salmon in the Baltic Sea (WGBAST), but the data is used also for bilateral salmon management between Finland and Sweden.

In the R. Tenojoki four underwater cameras are used in parallel with the sonar units for species determination purposes. 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. 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.

If DCF brings new obligations and possibilities to Atlantic salmon data collection, any changes in data collection have to be based on common understanding between Finland and Norway in order to guarantee co-operation within these countries and continued collection of high-quality time-series.

### **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. Tenojoki, 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. The number of angling license holders in R Simojoki is typically less than 3000, for example, approx. 2300 in 2023. The catch estimate is based on internet (Webropol) enquiries to all license holders having a valid email address (n=1540 in 2023). 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 2021-2024 all salmon fishing in R. Tenojoki watercourse was prohibited due to poor stock status. In forthcoming years total salmon fishing prohibition or other salmon 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 (Baltic Sea) and R. Utsjoki (NANSEA). 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).

*(max 250 words per species and area)*

## **Region: North Sea and Eastern Arctic**

*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.*

RWP NANSEA 2025-2027

### **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 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.

*(max 250 words per species and area)*

## **Region: 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(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.*

RWP BALTIC 2025-2027

### **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 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 2025-2027 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>

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

### **Monitoring of silver eel escapement by sonar**

To collect data also on naturally migrating silver eel, escapement is monitored in a river section that is free from migration barriers. A multibeam echosounder is used to monitor escapement in a location that is downstream of all migration barriers. See Annex 1 for details.

### **Monitoring of silver eel escapement by trapping**

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, where all eels originate from restocking. The trap catches all silver eels migrating downstream. Eels caught in this trap are counted and released into the Baltic at Kymijoki estuary (below hydro-power dams). See Annex 1 for details.

### **Monitoring of eel recruitment in rivers**

An index for young ascending eel (elvers) will be obtained from eel traps in rivers Kokemäenjoki, Kymijoki and Iijoki. This sampling scheme is based on preliminary promising results obtained from FIN test study 1: Monitoring of small yellow eel (elver) abundance in R. Kokemäenjoki, described in FIN Work Plan for data collection in the fisheries and aquaculture sectors 2022-2024. The results of FIN Test Study 1 will be reported in FIN Annual Report 2024. The collected specimens are analyzed to determine their origin (wild or restocked) by, for example, testing for a strontium chloride label. See Annex 1 for details.

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

Earlier studies suggest that most eels in freshwater in Finland originate from restocking. Finnish eel catches are very low. Biennial catch estimates are available for recreational fisheries. Samples for biological data in inland waters are collected from recreational and commercial fishers. Eels are typically caught as a bycatch in longline fishery for pikeperch in June-July and as a bycatch in trap nets in May-June.

*(max 250 words per species and area)*

## **Text Box 2.4: Recreational Fisheries**

### **Region: 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.*

### **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. The Population Information System is the frame population because there is no comprehensive 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 survey is the household-dwelling. The term recreational fishing includes all the fishing carried out by Finnish household-dwellings except for commercial fishers and their household-dwellings.

When surveying recreational marine catches in 2022 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 consist of six regional strata, and one stratus for household dwellings where at least one person purchased the fisheries management fee. 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. The survey is biennial, and the next survey will be conducted in the beginning of 2025.

*(max 900 words per region)*

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

#### **Region: Baltic Sea**

#### **Baltic SPF regional**

*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.*

#### **Sampling scheme name (or identifier): Baltic SPF regional**

RWP Baltic 2025-2027

Baltic SPF regional sampling is following the RWP Baltic 2025-2027 scheme directed to mixed trawl catches of herring and sprat in SD's 25-29 and 32, covering the distribution area of Central Baltic Herring stock and the main distribution area of Baltic sprat.

Length distributions and biological data of herring and sprat are collected from sampling of Finnish commercial trawl fisheries (OTM\_SPF and PTM\_SPF) from SD's 29 and 32. Sampling of these mixed catches is based on random sampling scheme, where 1 specimen/ prevailing length-class/SD/quarter is sampled. The herring stock-related biological data obtained from trawl fisheries are combined with those obtained from trapnet fisheries for all relevant age-related parameters in the same sub-divisions.

For sprat commercial sampling, FIN starts collecting biological variables (weight and age) in the basis of 50 ind/sample as described in RWP Baltic Annex 1: Biological sampling protocols.

In all sampled trips, information on ETP species is recorded by port observer by interviewing the fisher

whether there were any ETP species in the catch.

*(max 250 words per sampling scheme)*

### **On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31**

*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.*

#### **On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31**

Additional information on sampling schemes

Length distributions and biological data are collected from sampling of commercial trawl fisheries (OTM\_SPF and PTM\_SPF). Sampling of these mixed catches is based on length stratified sub-sampling scheme, where the target number of herring specimens for biological data is 10 per 0.5 cm length-class/SD/quarter in SD 30 (the main [ $>90\%$  of catches] contributor to the GoB herring stock) and less in SD 31, but usually in both SD's one individual is sub-sampled per length class per catch sample anyway). The number of sampled herring specimens is increased for adequate maturity data in spring prior to the spawning period to 2 / 0.5 cm length-class/SD/catch sample. The herring stock-related biological data obtained from trawl fisheries are combined with those obtained from trapnet fisheries for all relevant age-related parameters in the same sub-divisions. For sprat commercial sampling, FIN starts collecting biological variables in the basis of 50 ind/sample as described in RWP Baltic Annex 1: Biological sampling protocols.

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 is through random sampling from a draw list, where the probability of a fishing unit to be selected for sampling in a certain SD and quarter is weighted by its previous years' combined catch of herring and sprat in the same SD and quarter. 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 draws of PSU's are done to reach the sampling target in case there is a deficit. In all sampled trips, information on ETP species is recorded by port observer by interviewing the fisher whether there were any ETP species in the catch.

Additional description of sampling frames

See above.

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

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

*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.*

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

Additional information on sampling schemes

Stocks for this sampling are Central Baltic Herring (SD 25-29,32), and Gulf of Bothnia herring (SD 30 and 31) – SD's 30 and SD 31 have been merged into the same assessment unit in 2017.

Biological data are collected from sampling of spawning fishery with trap-nets (FYK\_SPF and FPN\_SPF combined). Individual sampling procedure follows the one set for trawl-fisheries in relevant areas. The herring stock-related biological data obtained from trapnet fisheries are combined with those obtained from trawl fisheries for all relevant age-related parameters in the same sub-divisions. In all sampled trips, information on ETP species is recorded by port observer by interviewing the fisher whether there were any ETP species in the catch.

Finland has started the statistically sound sampling scheme (4S) for the herring trapnet 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 the probability of a fishing unit to be selected for sampling in a certain SD and quarter is weighted by its previous years' combined catch of herring and sprat in the same SD and quarter. 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 draws of PSU's are done to reach the sampling target in case there is a deficit.

Based on positive experiences on PS1 of FIN NWP 2022-2024, The EPT onboard-observing program was incorporated as regular data collection for years 2025-2027 for trap-net fishery of herring. The planned annual number of observer trips is 10. Observed trip are preferable the same as trips from sampling lottery, but if this not possible, also other trips may be observed. Reason to this is, as an example, that it is not always possible to enter the vessels due to e.g., vessel size or fishers schedule.

Additional description of sampling frames

See above.

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

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

*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.*

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

Additional information on sampling schemes

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 2025-2027.

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. In all sampled trips, information on ETP species is recorded by port observer by interviewing the fisher whether there were any ETP species in the catch.

Additional description of sampling frames

See above.

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

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

*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.*

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

Additional information on sampling schemes

Biological data for vendace are collected from commercial trawl fisheries (OTM\_FWS, PTM\_FWS; see strata descriptions below) that operate in the Bothnian Bay (SD 31). The sampling is carried out as a length stratified sub-sampling scheme, in which the target number of specimen is 10 per each 0.5 cm length-class for both quarters (Q3 and Q4) that are sampled. The samples will be taken from the unsorted catch when the vessel arrives to the port. The sampling unit is vessel x fishing trip. Vendace are also caught commercially in smaller quantities by trap-nets and trawls that primarily target the herring.

The statistically sound sampling scheme (4S) has been in effect for the vendace trawl fisheries since the beginning of 2020, including in the Bothnian Bay (SD 31), from where the biological vendace data are collected. In all sampled trips, information on ETP species is recorded by port observer by interviewing the fisher whether there were any ETP species in the catch.

Additional description of sampling frames

See above.

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

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

*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.*

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

Additional information on sampling schemes

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 2025-2027. A total of 10-14 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 2025-2027 FIN will continue with the fishers with whom we already have co-operation.

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 (planned 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.

Additional description of sampling frames

See above.

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

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

*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.*

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

Additional information on sampling schemes

An index for the abundance of eels (yellow and silver altogether) along the Finnish coast is obtained from fisheries statistics. Eels are caught in commercial fisheries as bycatch only in fisheries targeting other species. Samples are collected to estimate the proportion of restocked/wild eels (on the basis of, e.g., strontium chloride label, only for restocked individuals from year-class 2009 and later). The catch per unit effort is low, and selected fishers sample their eel catch until a total amount of 50 samples is achieved. The collected specimens are analyzed to determine their origin (wild or restocked) by, for example, testing for a strontium chloride label.

Additional description of sampling frames

See above.

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

## **Text Box 2.6: Research surveys at sea**

## Region: Baltic Sea

### Research survey: Baltic International Acoustic Survey (autumn)

*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.*

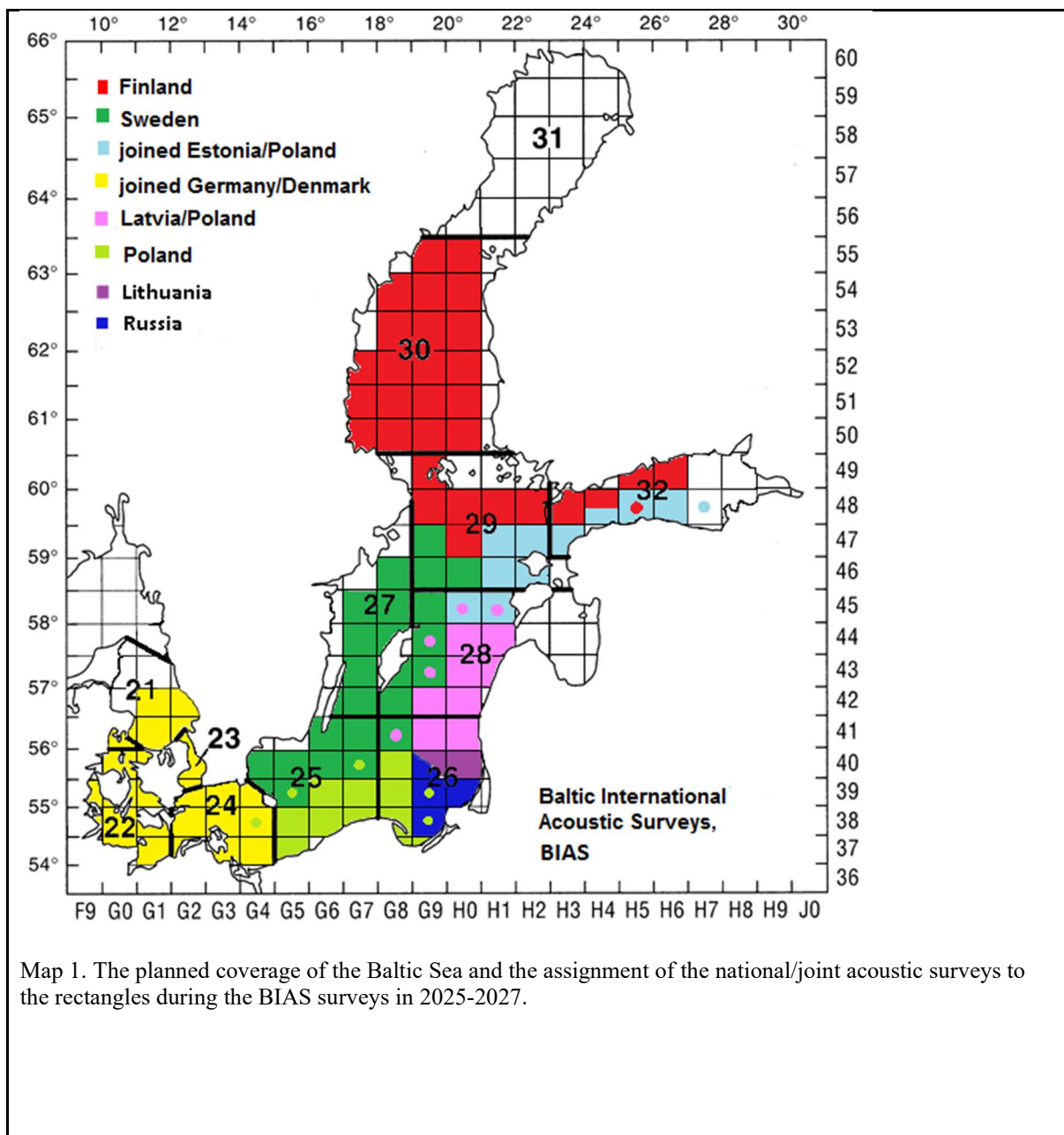
#### Baltic International Acoustic Survey (BIAS)

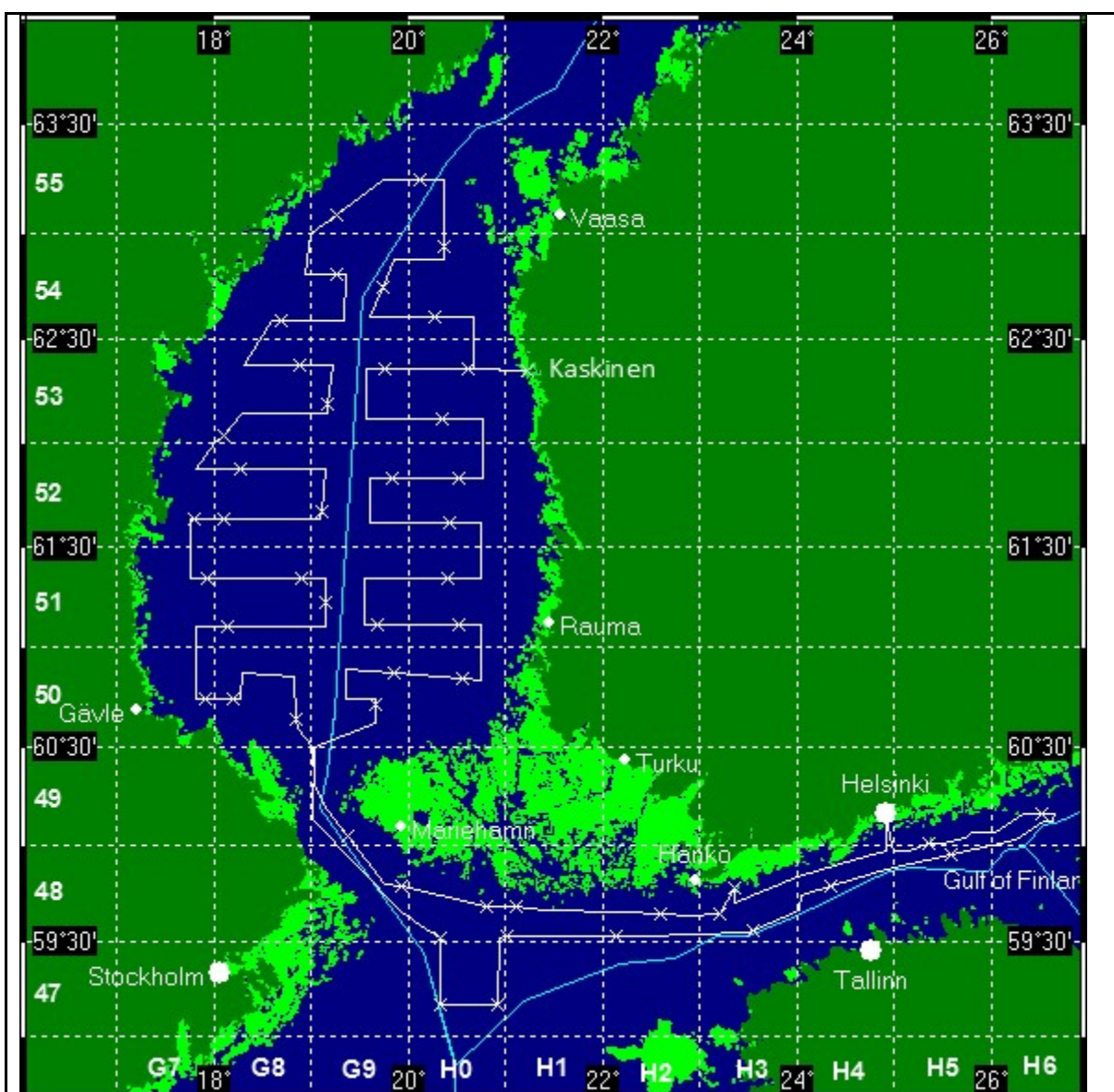
##### RWP BALTIC 2025-2027

The objective of the BIAS survey is to monitor 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.

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. Also Mysidae are monitored during the survey, as requested by WKHERBAL. In recent years, Swedish Coast Guard have set restrictions for R/V Aranda to use scientific echo-sounder in the territorial waters of Sweden. The permission is requested annually prior to survey, and the survey plan have to be redesigned according to restrictions included in the permission.

Since 2013, R/V Aranda has been chartered to cover the whole area within the remit of Finland, and currently the use of R/V Aranda has already been agreed until end of the year 2027. Currently FIN and SWE have a Common Understanding for cost sharing practises (combined) in the context of the development of Regional Work Plan for the Baltic Sea in the framework of the DCF. The content of this memo is described in RWP BALTIC 2025-2027 Table 1.3.





Map 2. The planned cruise track (solid white line) and trawl stations (white cross) during the Finnish BIAS survey in 2025-2027.

*(max 450 words per survey)*

### SECTION 3: FISHING ACTIVITY DATA

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

##### Region: Baltic Sea

*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*

The data concerning commercial fishery is collected under Regulation (EU) No 1224/2009. 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 Centre for Economic Development, Transport and the Environment and the Provincial Government of Åland. The value of catches landed in Finland is calculated based on landings data and the average prices paid to fishers published by Luke. The producer prices for fish are calculated as averages weighted with volume purchased. The price information is calculated from obligatory purchase notifications made by first-hand commercial buyers.

*(max. 900 words)*

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

##### Region: Baltic Sea

*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.*

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 Fishing Act (448/2023), 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 any given year are fishers that have been registered in the register of inland commercial fishers, maintained by the ELY Centre for Southwest Finland, and having a valid administrative decision for at least one day for that year. 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 report the catches and fishing effort to the ELY Centre for Southwest Finland Luke by the end of February following the statistics year. Reporting can be done with an electronic application or by a paper fishing journal. The responses will be adjusted using statistical methods so that the estimates cover the entire frame population.

In Finland, commercial inland fishing targeting eel negligible. Thus, estimates for effort or capacity of fishing vessels targeting eel cannot be provided. Commercial inland eel catches (2020: 350 kilograms, 2021: 380 kilograms, 2022: 2000 kilograms) are mainly a bycatch of fisheries targeting other species.

*(max. 900 words)*

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

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

#### Region: 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 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?**

The relative risk of bycatch by gear type or métier has not yet been assessed at a national level, and consequently, relative risk has not been considered in the sampling design. FIN will provide data for and follow the risk assessment of ICES WGBYC, continuing to work towards a comprehensive risk assessment and improved sampling design.

Currently, FIN is collecting bycatch data through various methods, including onboard and port observing programs, catch journals, interviews, and starting a test study of electronic monitoring program for years 2025-2027. FIN has conducted two rounds of interviews regarding bycatch incidents (see: PS2-FI-2021\_Report, Pilot Study 2) and plans to continue these interviews in the future.

By using these various methods and testing new approaches, the aim is to develop a broader understanding of not only the most effective methods but also the bycatch risk. Starting in 2024, a data analysis/research project commenced to assess bycatch risk per gear type, location, and season. The results of this analysis, along with all collected data, other studies, and ICES WGBYC recommendations, will guide FIN's future bycatch sampling efforts.

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

Anecdotal evidence has suggested that gillnets pose the highest risk to protected bird and mammal species. However, findings from PS2-FI-2021\_Report (Pilot Study 2) have challenged this conclusion, indicating that fyke nets may, in fact, present a higher risk. FIN continues to evaluate this matter and, as an example, have started a data analysis/research project, to assess bycatch risk per gear type, both spatially and temporally.

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

Number of sampling events (for those sampling schemes with port sampling program and onboard observation program). In Electronic monitoring, observation effort calculation methods will be evaluated during the Test Study 1, following recommendations by WGBYC. Observation effort data are reported annually by FIN in the ICES WGBYC data call, where these figures are also calculated and analyzed.

**- 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.**

Following the Test Study 1 in FIN WP 2022-2024 period, FIN will continue on-board observer program in fyke net fishery of herring fisheries as regular data collection. In trawlers, FIN will start an electronic monitoring (EM) program (See Text Box 1A, Test Study 1). During the test study, FIN evaluates the possibility to adopt EM in coastal fisheries, for gillnet and fyke net fisheries. Electronic monitoring and onboard observers are preferred methods for high-risk fisheries monitoring (ICES 2024, see WKEMP and WGBYC <https://doi.org/10.17895/ices.pub.25061522>).

FIN is also verifying the reliability of the fisheries-dependent bycatch data by developing on-board observer

program, collection of fisheries-independent gillnet bycatch data and by e-mail questionnaire (e.g., PS2-FI-2021\_Report), See Text Box 1a. 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, and 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 §).

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. On-board observer programs in FIN will only be used in trap net fisheries. Electronic monitoring in trawlers will be installed, when possible, so that a check for rare specimens in the catch at opening of the cod-end would be possible. (See Text Box 1a, Test study 1).

**- 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 onboard observer program for gillnet fisheries. In gillnet fisheries, small vessels are used. For safety and space reasons, small vessels have very limited capacity to carry onboard observer as extra personnel. Instead, FIN is initiating an observer program targeted for the trap net fishery where some vessels can carry onboard observer. FIN is also developing EM methods for these fisheries and will aim to incorporate the assessment of hauling process and bycatch that slips out of the net during hauling process, when feasible (Test Study 1)

**- 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”?**

In our onboard observer program in trap net fishing of herring, an observer will check for rare specimens during sorting of the catch, when possible. . FIN will also develop EM methods where these this approach will be considered (Text Box 1A: Test Study 1).

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).

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

## 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.*

#### RWP ECON 2025-2027

Economic data collection is based on hierarchical multi-stage survey that combines information from different sources. Main data sources are the central control register on commercial fishery (includes fishery catch and landings data, fishing vessel register, purchase notifications), business register, 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). Additionally, data on subsidies from European Maritime, Fisheries and Aquaculture Fund Programme for Finland is used. Information on fuel subsidies is received from the Tax administration.

#### 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 insufficient number of vessels clustering is 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*. This clustering approach applies to pelagic trawlers. 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*. This clustering approach applies to vessels using passive gears.

#### 2. Description of activity indicator

No activity indicator is applied. However, it has been identified that activity level in fleet segments PG VL0008 and PG VL0812 could have significant impact on economic variables. Determining the correct indicator for measuring the activity and the appropriate level for the activity is ongoing (RCG ECON 2024. Regional Coordination Group on Economic Issues. 2024. Annual Technical Meeting Report 45 pgs.).

#### 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)*

## 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.*

RWP ECON 2025-2027

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 threshold 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). While the gross sales per species as an income variable comes from the financial statements and refers to turnover.

*(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. MS should provide justification for complementary data collection for fish processing.*

RWP ECON 2025-2027

Economic data collection concerning the processing industry is carried out as a register approach. The main data sources are Structural Business and Financial Statement Statistics and Business Register of Statistics Finland.

Financial statements are available in Statistics Finland for all firms in Business Register with fish processing as their main activity 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. Natural Resources Institute Finland calculates the aggregates from SBS data following the EU MAP classification on size categories for enterprises.

*(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*

*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*

### **Sampling scheme identifier: Monitoring of salmon parr densities**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>Short description (max 100 words):<br/> Sampling scheme aiming to estimate salmon parr densities in rivers Tornionjoki and Simojoki (Baltic Sea) and river Utsjoki (North Atlantic).</p> <p>RWP BALTIC 2025-2027<br/> RWP NANSEA 2025-2027</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Population targeted:</b><br/> Salmon populations in Rivers Tornionjoki and Simojoki (Baltic Sea) and river Utsjoki (North Atlantic)</p> <p><b>Population sampled:</b><br/> Salmon parr, i.e. juvenile stage before smoltification, which in these populations covers 2-8 first years of salmon's lifecycle.</p> <p><b>Stratification:</b><br/> In rivers Tornionjoki and Simojoki 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></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> |

**Is the sampling design compliant with the 4S principle?:**

NA

**Regional coordination:**

N

**Link to sampling design documentation:**

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/rktltr2014\\_3.pdf?sequence=1&isAllowed=y](https://jukuri.luke.fi/bitstream/handle/10024/519920/rktltr2014_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).

**Design follows international recommendations:**

Y

The 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:**

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

**Protocol follows international recommendations:**

Y

**Sampling implementation**

**Recording of refusal rate:**

NA

**Monitoring of sampling progress within 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:**

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:**

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:**

Y

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:**

National database (Koekalastusrekisteri), restricted access.

**International database:** NA

**Quality checks and data validation documentation:**

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:**

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

**Sample analysis:**

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):**

Y

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:**

N

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:**

N

### **Validation of the final dataset:**

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

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS : FIN</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Region:</b> Baltic Sea, North Sea and Eastern Arctic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Sampling scheme identifier:</b> Monitoring of ascending salmon with sonar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Sampling scheme type:</b> Diadromous (scientific)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Observation type:</b> SciObs water body                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Short description (max 100 words):</p> <p>Sampling scheme for counting annual salmon spawning runs ascending the rivers Tornionjoki and Simojoki (Baltic Sea) and the River Tenojoki (North Atlantic).</p> <p>RWP BALTIC 2025-2027<br/>RWP NANSEA 2025-2027</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>Population targeted:</b></p> <p>Salmon populations in rivers Tornionjoki and Simojoki (Baltic Sea) and River Tenojoki (North Atlantic).</p> <p><b>Population sampled:</b></p> <p>Adult salmon, i.e. fish that are ascending to their natal rivers for spawning.</p> <p><b>Stratification:</b></p> <p>No stratification. One stationary counting location at each river.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>Sampling design description:</b></p> <p>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. In the R. Tenojoki four underwater cameras are used in parallel with the sonar units for species determination purposes.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b></p> <p>NA</p> <p><b>Regional coordination:</b></p> <p>N</p> <p><b>Link to sampling design documentation:</b></p> <p>Sampling design in each river is documented in the national Luke reports:</p> <ul style="list-style-type: none"> <li>• Tornionjoki <a href="http://urn.fi/URN:ISBN:978-952-380-158-5">http://urn.fi/URN:ISBN:978-952-380-158-5</a></li> <li>• Tenojoki <a href="http://urn.fi/URN:ISBN:978-952-326-941-5">http://urn.fi/URN:ISBN:978-952-326-941-5</a></li> <li>• Simojoki <a href="http://urn.fi/URN:ISBN:978-952-326-928-6">http://urn.fi/URN:ISBN:978-952-326-928-6</a></li> </ul> |

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.

**Design follows international recommendations:**

Y

**Link to sampling protocol documentation:**

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>

**Protocol follows international recommendations:**

Y

**Sampling implementation**

**Recording of refusal rate:**

NA

**Monitoring of sampling progress within 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:**

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:**

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

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

**Quality checks documentation:**

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:**

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:**

NA

##### **Quality checks and data validation documentation:**

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:**

There are no samples to be stored.

##### **Sample analysis:**

There are no samples.

#### **Data processing**

##### **Evaluation of data accuracy (bias and precision):**

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'). Underwater videodata is used in the R. Tenojoki for increasing the accuracy of the small (<65 cm) salmon numbers from the sonar count.

**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:**

N

**Validation of the final dataset:**

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

**Sampling scheme identifier: Survey of recreational salmon catches in rivers**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Short description (max 100 words):</p> <p>Sampling scheme for estimating annual recreational salmon catches in rivers Tornionjoki and Simojoki (Baltic Sea) and in River Utsjoki (North Atlantic).</p> <p>RWP BALTIC 2025-2027<br/>RWP NANSEA 2025-2027</p>                                                                                                                                                                                                                                                                                                                         |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Population targeted:</b></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></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></p> <p>See the description above.</p> |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Sampling design description:</b></p> <p>Recreational salmon catches in Rivers Tornionjoki and Simojoki (Baltic Sea) and in River</p>                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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.

**Is the sampling design compliant with the 4S principle?:**

NA

**Regional coordination:**

NA

**Link to sampling design documentation:**

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>

**Design follows international recommendations:**

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:**

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>

**Protocol follows international recommendations:**

N

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

### **Sampling implementation**

**Recording of refusal rate:**

Y

**Monitoring of sampling progress within 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:**

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:**

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:**

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:**

The data is stored to a local Luke's server.

**International database:**

NA

**Quality checks and data validation documentation:**

Data stored in Luke's server are back-upped regularly as a standard procedure.

**Sample storage**

**Storage description:**

There are no samples to be stored.

**Sample analysis:**

There are no samples.

**Data processing**

**Evaluation of data accuracy (bias and precision):**

Fishing activity among the non-respondents is assumed to be on average similar to that among respondents. This assumption has been verified by non-response surveys conducted occasionally among non-respondents (for R. Tornionjoki this was last time carried out in 2011).

**Editing and imputation methods:**

N

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:**

N

**Validation of the final dataset:**

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

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS:</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Region:</b> Baltic Sea, North Sea and Eastern Arctic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Sampling scheme identifier:</b> Biological sampling from recreational salmon catch in rivers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Sampling scheme type:</b> Diadromous (recreational)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Observation type:</b> SelfOnShore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Short description (max 100 words):<br><br>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).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Population targeted:</b><br><br>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).<br><br><b>Population sampled:</b><br><br>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.<br><br><b>Stratification:</b><br><br>No stratification, see above. |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Sampling design description:</b></p> <p>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.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b></p> <p>NA</p> <p><b>Regional coordination:</b></p> <p>N</p> <p><b>Link to sampling design documentation:</b></p> <p>In case of the River Utsjoki (a tributary of the large Teno system) the sampling design is roughly documented in:<br/> Erkinaro, J., Czorlich, Y., Orell, P., Kuusela, J., Falkegård, M., Länsman, M., Pulkkinen, H., Primmer, C. R. &amp; 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.<br/> The sampling design is mostly similar in the River Tornionjoki.</p> <p><b>Design follows international recommendations:</b></p> <p>NA, for sampling design, see Erkinaro et al. 2019 (reference above).</p> <p><b>Link to sampling protocol documentation:</b></p> <p>In case of the River Utsjoki (a tributary of the large Teno system) the sampling protocol is roughly documented in:<br/> Erkinaro, J., Czorlich, Y., Orell, P., Kuusela, J., Falkegård, M., Länsman, M., Pulkkinen, H., Primmer, C. R. &amp; 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.<br/> The sampling protocol is similar in the River Tornionjoki.</p> <p><b>Protocol follows international recommendations:</b></p> <p>N</p> <p>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.</p> |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sampling implementation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><b>Recording of refusal rate:</b></p> <p>N<br/>Voluntary self-sampling does not allow for monitoring of refusal rate.</p> <p><b>Monitoring of sampling progress within the sampling year:</b></p> <p>No monitoring within a sampling year. Fishers usually send the samples soon after closing of fishing season.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Means of data capture:</b></p> <p>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.</p> <p><b>Data capture documentation:</b></p> <p>Leaflet (separate for Tornionjoki and Utsjoki) containing sampling instructions (In Finnish only).</p> <p><b>Quality checks documentation:</b></p> <p>N<br/>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.</p> |
| <b>Data storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>National database:</b></p> <p>The data is stored to a local Luke server.</p> <p><b>International database:</b></p> <p>NA</p> <p><b>Quality checks and data validation documentation:</b></p> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Storage description:</b></p> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Evaluation of data accuracy (bias and precision):</b></p> <p>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 (<a href="https://sfcc.co.uk/assets/files/Atlantic%20Salmon%20Scale%20Reading%20Guidelines.pdf">https://sfcc.co.uk/assets/files/Atlantic%20Salmon%20Scale%20Reading%20Guidelines.pdf</a>), 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 <a href="http://urn.fi/URN:NBN:fi-fe2017111550717">http://urn.fi/URN:NBN:fi-fe2017111550717</a>). The spatial, temporal and size distribution of the samples are regularly compared with the other information sources (catch statistics) about these attributes.</p> <p><b>Editing and imputation methods:</b></p> <p>Y</p> <p>Missing length or weight information can be imputed by established length-weight relationship.</p> <p><b>Quality document associated to a dataset:</b></p> <p>N</p> <p><b>Validation of the final dataset:</b></p> <p>Datasets are validated by expert judgement before submitted to ICES WGBAST or ICES WGNAS.</p> |

### **Sampling scheme identifier: Monitoring of salmon smolt with video counter**

|                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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> 2025-2027                                                                                                                                                                                                                  |
| <p>Short description (max 100 words):</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. RWP NANSEA 2025-2027</p> |
| <b>Description of the population</b>                                                                                                                                                                                                                       |
| <p><b>Population targeted:</b></p> <p>Salmon population of the River Utsjoki.</p> <p><b>Population sampled:</b></p>                                                                                                                                        |

Salmon smolts, i.e. juvenile stage after the parr phase.

**Stratification:**

No stratification. One stationary counting location at the River Utsjoki mouth where all smolts are passing during their downstream migration.

**Sampling design and protocols**

**Sampling design description:**

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?:**

NA

**Regional coordination:**

N

**Link to sampling design documentation:**

The sampling design is shortly documented in a scientific paper:

Dauidsen, 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.

**Design follows international recommendations:**

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:**

The sampling protocol is shortly documented in a scientific paper:

Dauidsen, 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.

**Protocol follows international recommendations:**

N

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.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sampling implementation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Recording of refusal rate:</b><br>NA <p><b>Monitoring of sampling progress within the sampling year:</b><br/> No sampling adjustments during the counting. Operation of the counting system itself is monitored on daily basis throughout the counting season.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Means of data capture:</b><br>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. <p><b>Data capture documentation:</b><br/> Data capture documentation is shortly explained in:<br/> Davidsen, J., Svenning, M. A., Orell, P., Yoccoz, N., Dempson, J. B., Niemelä, E., Klemetsen, A., Lamberg, A. &amp; 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.</p> <p>Some of the used equipment has, however, been updated after the publication of the article.</p> <p><b>Quality checks documentation:</b><br/> N<br/> Data capture quality checks are done by checking the production of videodata files on daily basis. Datafiles are recorded in 10 min intervals.</p> |
| <b>Data storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>National database:</b><br>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. <p><b>International database:</b><br/> NA</p> <p><b>Quality checks and data validation documentation:</b><br/> 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. &amp; 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Storage description:</b><br>There are no samples to be stored.                                                                                                                                                                                                                                                                                                                                                    |
| <b>Sample analysis:</b><br>There are no samples.                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Evaluation of data accuracy (bias and precision):</b><br>Y<br>Data accuracy and precision has been evaluated based on Bayesian modelling and expert knowledge:<br>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. |
| <b>Editing and imputation methods:</b><br>N<br>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.                                                                                                                                                                                                                  |
| <b>Quality document associated to a dataset:</b><br>N                                                                                                                                                                                                                                                                                                                                                                |
| <b>Validation of the final dataset:</b><br>Final Datasets are validated by expert judgement.                                                                                                                                                                                                                                                                                                                         |

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

|                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS : FIN</b>                                                                                                                                                                                                                                         |
| <b>Region:</b> North Sea and Eastern Arctic                                                                                                                                                                                                             |
| <b>Sampling scheme identifier:</b> Monitoring of ascending salmon with video counter                                                                                                                                                                    |
| <b>Sampling scheme type:</b> Diadromous (scientific)                                                                                                                                                                                                    |
| <b>Observation type:</b> SciObs water body                                                                                                                                                                                                              |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                               |
| Short description (max 100 words):<br><br>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.<br><br>RWP NANSEA 2025-2027 |
| <b>Description of the population</b>                                                                                                                                                                                                                    |
| <b>Population targeted:</b>                                                                                                                                                                                                                             |

|                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Salmon population of the River Utsjoki.                                                                                                                                                                                                                                                                                                                                     |
| <b>Population sampled:</b><br><br>Adult salmon, i.e. fish that are ascending to their natal rivers for spawning.                                                                                                                                                                                                                                                            |
| <b>Stratification:</b><br>No stratification. One stationary counting location at the River Utsjoki mouth where the ascending fish are passing by.                                                                                                                                                                                                                           |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                        |
| <b>Sampling design description:</b><br><br>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.                                                                                 |
| <b>Is the sampling design compliant with the 4S principle?:</b><br>NA                                                                                                                                                                                                                                                                                                       |
| <b>Regional coordination:</b><br>N                                                                                                                                                                                                                                                                                                                                          |
| <b>Link to sampling design documentation:</b><br><br>The sampling design is shortly documented in a scientific paper:<br>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.     |
| <b>Design follows international recommendations:</b><br><br>N<br>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.                                                                                                                      |
| <b>Link to sampling protocol documentation:</b><br><br>The sampling protocol is shortly documented in a scientific paper:<br>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. |
| <b>Protocol follows international recommendations:</b><br><br>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.                                                                                                                              |
| <b>Sampling implementation</b>                                                                                                                                                                                                                                                                                                                                              |
| <b>Recording of refusal rate:</b>                                                                                                                                                                                                                                                                                                                                           |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Monitoring of sampling progress within the sampling year:</b></p> <p>No sampling adjustments during the counting. Operation of the counting system itself is monitored on daily basis throughout the counting season.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>Means of data capture:</b></p> <p>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.</p> <p><b>Data capture documentation:</b></p> <p>Data capture documentation is shortly explained in:<br/> Orell, P., Erkinaro, J., Svenning, M., Davidsen J. &amp; 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.</p> <p>Some of the used equipment has, however, been updated after the publication of the article.</p> <p><b>Quality checks documentation:</b></p> <p>N</p> <p>Data capture quality checks are done by checking the production of videodata files on daily basis. Datafiles are recorded in 10 min intervals.</p> |
| <b>Data storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>National database:</b></p> <p><b>International database:</b></p> <p>NA</p> <p><b>Quality checks and data validation documentation:</b></p> <p>Quality checks are done occasionally by comparing the counting results (number of adult salmon) of different videodata-analysers (cross-validation).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Storage description:</b></p> <p>There are no samples to be stored.</p> <p><b>Sample analysis:</b></p> <p>There are no samples.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>Evaluation of data accuracy (bias and precision):</b></p> <p>N</p> <p>Data accuracy have been occasionally evaluated by estimating the camera coverage areas and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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:**

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:**

N

**Validation of the final dataset:**

Final datasets are validated by expert judgement.

**Sampling scheme identifier: Monitoring of salmon smolt with smolt traps**

|                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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> 2025-2027                                                                                                                                                                                                                                                                                                   |
| Short description (max 100 words):<br><br>Sampling scheme for monitoring salmon smolt runs in the rivers Tornionjoki and Simojoki.<br><br>RWP BALTIC 2025-2027                                                                                                                                                                              |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                        |
| <b>Population targeted:</b><br><br>Salmon population in Rivers Tornionjoki and Simojoki.<br><br><b>Population sampled:</b><br><br>Salmon smolts, i.e. the specific juvenile stage at the moment of smoltification, when salmon juveniles are descending from the rivers to the sea.<br><br><b>Stratification:</b><br><br>No stratification. |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>Sampling design description:</b></p> <p>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.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b></p> <p>NA</p> <p><b>Regional coordination:</b></p> <p>N</p> <p><b>Link to sampling design documentation:</b></p> <p>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, <a href="https://doi.org/10.1139/f02-146">https://doi.org/10.1139/f02-146</a>. For R. Simojoki, the same principles are applied.</p> <p>Sampling design is documented also in the national Luke/FGFRI reports:<br/> Tornionjoki <a href="http://urn.fi/URN:NBN:fi-fe201704126101">http://urn.fi/URN:NBN:fi-fe201704126101</a><br/> Simojoki <a href="http://urn.fi/URN:ISBN:978-952-303-170-8">http://urn.fi/URN:ISBN:978-952-303-170-8</a></p> <p><b>Design follows international recommendations:</b></p> <p>NA</p> <p><b>Link to sampling protocol documentation:</b></p> <p>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, <a href="https://doi.org/10.1139/f02-146">https://doi.org/10.1139/f02-146</a>.</p> <p>Sampling protocol is documented also in Luke/FGFRI National report series:<br/> Tornionjoki <a href="http://urn.fi/URN:NBN:fi-fe201704126101">http://urn.fi/URN:NBN:fi-fe201704126101</a><br/> Simojoki <a href="http://urn.fi/URN:ISBN:978-952-303-170-8">http://urn.fi/URN:ISBN:978-952-303-170-8</a></p> <p><b>Protocol follows international recommendations:</b></p> <p>Y</p> <p>In Finnish data collection (incl. smolt survey) in rivers running into Baltic Sea are reviewed by ICES WKBALTSalmon.</p> <p>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.</p> |

## Sampling implementation

### Recording of refusal rate:

NA

### Monitoring of sampling progress within 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:

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:**

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:**

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

#### **Data storage**

##### **National database:**

Data is stored to Luke's local server.

##### **International database:**

NA

##### **Quality checks and data validation documentation:**

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

#### **Sample storage**

##### **Storage description:**

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:**

Ageing 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):**

Y

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:**

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:**

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

**Sampling scheme identifier: Monitoring of sea trout parr densities****MS:** FIN**Region:** Baltic Sea**Sampling scheme identifier:** Monitoring of sea trout parr densities**Sampling scheme type:** Diadromous (scientific)**Observation type:** SciObs water body**Time period of validity:** 2025-2027

Short description (max 100 words):

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)

RWP BALTIC 2025-2027

**Description of the population****Population targeted:**

Seatrout populations in rivers running into Baltic Sea: Tornionjoki (Bothnian Bay), Lapväärtin-Isojoki (Bothnian sea), Ingarskilanjoki (Western Gulf of Finland) and Mustajoki (Eastern Gulf of Finland)

**Population sampled:**

Seatrout parr, i.e. juvenile stage before smoltification, which in these populations covers 1-5 first years of seatrouts's lifecycle.

**Stratification:**

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:**

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?:**

NA

#### **Regional coordination:**

N

#### **Link to sampling design documentation:**

For River Tornionjoki, sampling design is documented in the national Luke/FGFRI reports, e.g. <http://urn.fi/URN:NBN:fi-fe201704126101>.

For Rivers Lapväärtin-Isojoki, Ingarskilanjoki and Mustajoki (Baltic Sea), sampling design is documented in the national Luke/FGFRI reports, e.g. <http://urn.fi/URN:ISBN:978-952-380-267-4>.

Läpväärtin-Isojoki is planned to be the Finnish index river for seatrout in the Baltic Sea, following the recommendations of the ICES expert group of Baltic seatrout (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)).

Sea trout parr monitoring in all the named rivers is conducted by electrofishing based on current scientific practises presented in CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).

#### **Design follows international recommendations:**

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:**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011).</p> <p><b>Protocol follows international recommendations:</b></p> <p>Y</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Sampling implementation</b></p> <p><b>Recording of refusal rate:</b></p> <p>NA</p> <p><b>Monitoring of sampling progress within the sampling year:</b></p> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Data capture</b></p> <p><b>Means of data capture:</b></p> <p>Data collection is conducted by using standard electrofishing devices, e.g. Hans Grassl (<a href="http://www.hans-grassl.com/feEXT!00005106102021150947KAD18&amp;T&amp;150947">http://www.hans-grassl.com/feEXT!00005106102021150947KAD18&amp;T&amp;150947</a>), 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.</p> <p>Aging of fish is based on the length distribution</p> <p><b>Data capture documentation:</b></p> <p>Electrofishing is conducted according to CEN-standard: (Water quality-Sampling Fish with Electricity, SFS-EN 14011)</p> <p><b>Quality checks documentation:</b></p> <p>All seatrout 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.</p> |
| <p><b>Data storage</b></p> <p><b>National database:</b></p> <p>National database (Koekalastusrekisteri), restricted access.</p> <p><b>International database:</b></p> <p>NA</p> <p><b>Quality checks and data validation documentation:</b></p> <p>Data quality checks are carried out automatically when data is uploaded to the national database</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (Koekalastusrekisteri).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Storage description:</b><br>No samples.<br><br><b>Sample analysis:</b><br>No samples.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Evaluation of data accuracy (bias and precision):</b><br><p>The quality of datasets are validated by expert judgement before submitted to ICES WGBAST, where data is further analysed and evaluated.</p> <b>Editing and imputation methods:</b><br><p>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.</p> <b>Quality document associated to a dataset:</b><br>N<br><br><b>Validation of the final dataset:</b><br><p>Datasets are validated by expert judgement before submitted to ICES WGBAST.</p> |

### **Sampling scheme identifier: Monitoring of silver eel escapement by sonar**

|                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS : FIN</b>                                                                                                                                                                                                                                                                                                       |
| <b>Region:</b> Baltic Sea                                                                                                                                                                                                                                                                                             |
| <b>Sampling scheme identifier:</b> Monitoring of silver eel escapement by sonar                                                                                                                                                                                                                                       |
| <b>Sampling scheme type:</b> Diadromous (scientific)                                                                                                                                                                                                                                                                  |
| <b>Observation type:</b> EMA water body                                                                                                                                                                                                                                                                               |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                             |
| Short description (max 100 words):<br>Sampling scheme aiming at estimating number of migrating silver eels in river sections downstream of migration barriers using a multibeam sonar.<br><br>RWP BALTIC 2025-2027                                                                                                    |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                  |
| <b>Population targeted:</b><br><p>Monitoring is targeting migrating silver eels in river sections that are available for migration. The primary sampling unit is a multibeam sonar device that is currently used in River Kokemäenjoki. The data will be evaluated, and the monitoring site adjusted accordingly.</p> |

**Population sampled:**

The method aims to produce a full count of silver eel escapement of the studied river. However, depending on the studied site, only parts of the river width may be covered. In such instances, the method produces a partial sample that will be modelled to include the uncovered areas (based on the width of the river).

**Stratification:**

NA

**Sampling design and protocols****Sampling design description:**

Migrating silver eels are counted using a multibeam sonar. Every year, a sonar is installed at a fixed location, and it will record data throughout the peak silver eel migration period.

**Is the sampling design compliant with the 4S principle?:**

NA

**Regional coordination:**

Y

FIN will follow the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and adjust data collection accordingly.

**Link to sampling design documentation:**

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.

**Design follows international recommendations:**

N, see Sampling design description

**Link to sampling protocol documentation:**

See Sampling design description

**Protocol follows international recommendations:**

Y

**Sampling implementation****Recording of refusal rate:**

NA

**Monitoring of sampling progress within the sampling year:**

Peak migration period is analysed, and data collection and analysis are adjusted (if needed) according to

|                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| accumulation of data.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Means of data capture:</b><br><br>Data is captured by a ARIS Explorer 1200, made by Sound Metrics Corporation, 11010 Northup Way, Bellevue, WA 98004, USA (). Data are recorded in one hour blocks on an external hard disk on site and uploaded to a cloud service. The selected hours are analysed afterwards by Luke professional staff using a dedicated software.                                                                                 |
| <b>Data capture documentation:</b><br><br>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.<br>The reliability of the observation is estimated using a subjective scale of % certainty, based on how certain the person analysing the data is that the fish is an eel. |
| <b>Quality checks documentation:</b><br><br>N. Data quality checks is based on expert judgement                                                                                                                                                                                                                                                                                                                                                           |
| <b>Data storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>National database:</b><br><br>N, Data is stored in local server.                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>International database:</b><br>WGEEL database.                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Quality checks and data validation documentation:</b><br><br>Collected data is submitted to ICES WGEEL database via WGEEL data call annually. The submitted data is processed with quality checks by WGEEL subgroups.                                                                                                                                                                                                                                  |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Storage description</b><br>NA<br><b>Sample analysis:</b><br><br>NA                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Evaluation of data accuracy (bias and precision):</b><br><br>N, see Validation of the final dataset                                                                                                                                                                                                                                                                                                                                                    |
| <b>Editing and imputation methods:</b><br><br>N, see Validation of the final dataset                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Quality document associated to a dataset:</b><br><br>N                                                                                                                                                                                                                                                                                                                                                                                                 |

**Validation of the final dataset:**

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.

**Sampling scheme identifier: Monitoring of silver eel escapement by trapping**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS :</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Region:</b> Baltic Sea                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Sampling scheme identifier:</b> Monitoring of silver eel escapement by trapping                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Sampling scheme type:</b> Diadromous (scientific)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Observation type:</b> SciObs water body                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Short description (max 100 words):</i><br>Sampling scheme aiming at estimating number of migrating silver eels in R. Kymijoki by eel trap in Vääksy canal<br><br>RWP BALTIC 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Population targeted:</b><br><br>Sampling is targeting to estimate the number of migrating silver eels from Lake Vesijärvi. Primary sample unit is eel trap closing the Vääksy canal.<br><br><b>Population sampled:</b><br><br>See description above.<br><br><b>Stratification:</b><br><br>N/A                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Sampling design description:</b><br><br>Number of migrating silver eels is counted at the Vääksy canal mouth by eel trap on annual basis. Trap is collecting all migrating eels in canal for the peak 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, downstream of all hydro power dams.<br><br>Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.<br><br><b>Is the sampling design compliant with the 4S principle?:</b><br><br>NA |

**Regional coordination:**

FIN will follow the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and adjust data collection accordingly.

**Link to sampling design documentation:**

See Sampling design description

**Design follows international recommendations:**

N, see Sampling design description

**Link to sampling protocol documentation:**

See Sampling design description

**Protocol follows international recommendations:**

N. See sampling design description.

**Sampling implementation****Recording of refusal rate:**

NA

**Monitoring of sampling progress within the sampling year:**

NA

**Data capture****Means of data capture:**

A sample of the catch (at least 10 % of the number of total number of individuals annually) is measured. Length of the fish is measured in millimeters on a 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:**

See Means of data capture.

**Quality checks documentation:**

N. Data quality checks is based on expert judgement

**Data storage****National database:**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>International database:</b><br>WGEEL database.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <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.<br><br>Collected data is submitted to ICES WGEEL database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.                                                                                                                                      |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Storage description:</b><br>NA<br><b>Sample analysis:</b><br><br>NA                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Evaluation of data accuracy (bias and precision):</b><br><br>N, see Validation of the final dataset<br><br><b>Editing and imputation methods:</b><br><br>N, see Validation of the final dataset<br><br><b>Quality document associated to a dataset:</b><br><br>N<br><br><b>Validation of the final dataset:</b><br><br>Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups. |

|                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sampling scheme identifier: Monitoring of silver eel escapement in R. Kymijoki watershed                                                                                                 |
| <b>MS : FIN</b>                                                                                                                                                                          |
| <b>Region:</b> 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> 2025-2027                                                                                                                                                |
| <i>Short description (max 100 words):</i><br>Sampling scheme aiming at estimating number of migrating silver eels in R. Kymijoki by eel trap in Vääksy canal<br><br>RWP BALTIC 2025-2027 |
| <b>Description of the population</b>                                                                                                                                                     |
| <b>Population targeted:</b><br><br>Sampling is targeting to estimate the number of migrating silver eels from Lake Vesijärvi.                                                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Primary sample unit is eel trap closing the Vääksy canal.</p> <p><b>Population sampled:</b></p> <p>See description above.</p> <p><b>Stratification:</b></p> <p>N/A</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Sampling design and protocols</b></p> <p><b>Sampling design description:</b></p> <p>Number of migrating silver eels is counted at the Vääksy canal mouth by eel trap on annual basis. Trap is collecting all migrating eels in canal for the peak 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, downstream of 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></p> <p>NA</p> <p><b>Regional coordination:</b></p> <p>FIN will follow the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and adjust data collection accordingly.</p> <p><b>Link to sampling design documentation:</b></p> <p>See Sampling design description</p> <p><b>Compliance with international recommendations:</b></p> <p>N, see Sampling design description</p> <p><b>Link to sampling protocol documentation:</b></p> <p>See Sampling design description</p> <p><b>Compliance with international recommendations:</b></p> <p>N. See sampling design description.</p> |
| <p><b>Sampling implementation</b></p> <p><b>Recording of refusal rate:</b></p> <p>NA</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitoring of sampling progress within the sampling year:</b><br><br>NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Means of data capture:</b><br><br>A sample of the catch (at least 10 % of the number of total number of individuals annually) is measured. Length of the fish is measured in millimeters on a 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.<br><br>Durif, Caroline & Guibert, A. & Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel. |
| <b>Data capture documentation:</b><br><br>See Means of data capture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Quality checks documentation:</b><br><br>N. Data quality checks is based on expert judgement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Data storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>National database:</b><br><br>NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>International database:</b><br>WGEEL database.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <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.<br><br>Collected data is submitted to ICES WGEEL database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.                                                                                                                                                                                                                                                   |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Storage description:</b><br>NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Sample analysis:</b><br><br>NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Evaluation of data accuracy (bias and precision):</b><br><br>N, see Validation of the final dataset                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Editing and imputation methods:</b><br><br>N, see Validation of the final dataset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Quality document associated to a dataset:**

N

**Validation of the final dataset:**

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

**Sampling scheme identifier: Monitoring of eel recruitment in rivers****MS :** FIN**Region:** Baltic Sea**Sampling scheme identifier:** Monitoring of eel recruitment in rivers**Sampling scheme type:** Diadromous (scientific)**Observation type:** SciObs water body**Time period of validity:** 2025-2027

Short description (max 100 words):

Sampling scheme aiming at estimating number of ascending young eels (elvers) by trapping in R. Kokemäenjoki, R. Kymijoki and R. Iijoki.

RWP BALTIC 2025-2027

**Description of the population****Population targeted:**

Sampling is targeting to estimate the number of recruiting elvers in three rivers in Finland.

**Population sampled:**

The recruitment of small yellow eels (elvers) on Finnish coastal areas is poorly know. 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. The aim is to collect data annually on the number of eels recruiting to three rivers.

**Stratification:**

NA

**Sampling design and protocols****Sampling design description:**

At each location, the number of eels caught will be recorded and a sample (max. 20 specimen per site) will be taken for measurements and analysis.

**Is the sampling design compliant with the 4S principle?:**

NA

**Regional coordination:**

Y FIN will follow the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and adjust data collection accordingly.

**Link to sampling design documentation:**

See Sampling design description

**Design follows international recommendations:**

N, see Sampling design description

**Link to sampling protocol documentation:**

See Sampling design description

**Protocol follows international recommendations:**

N. See sampling design description.

**Sampling implementation**

**Recording of refusal rate:**

NA

**Monitoring of sampling progress within the sampling year:**

NA

**Data capture**

**Means of data capture:**

At each location, the number of eels caught will be recorded (a time-series of recruitment) and a sample (max. 20 specimen per site) will be taken for measurements and analysis. 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 digital calipers, when available for measurement. Age of the elvers in the sample 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 restocked in Finland are also marked with strontium chloride since 2009.

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

**Data capture documentation:**

See Means of data capture

**Quality checks documentation:**

N. Data quality checks is based on expert judgement

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>National database:</b><br>NA<br><br><b>International database:</b><br>WGEEL database.<br><br><b>Quality checks and data validation documentation:</b><br>Collected data is submitted to ICES WGEEL database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups.                                                                                                                                                         |
| <b>Sample storage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Storage description:</b><br>NA<br><b>Sample analysis:</b><br>NA                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Evaluation of data accuracy (bias and precision):</b><br><br>N, see Validation of the final dataset<br><br><b>Editing and imputation methods:</b><br><br>N, see Validation of the final dataset<br><br><b>Quality document associated to a dataset:</b><br><br>N<br><br><b>Validation of the final dataset:</b><br><br>Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups. |

**Sampling scheme identifier: Biological sampling from recreational catches of eel in Finnish inland waters**

|                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS : FIN</b>                                                                                                                                                |
| <b>Region:</b> Baltic Sea                                                                                                                                      |
| <b>Sampling scheme identifier: Biological sampling from recreational catches of eel in Finnish inland waters</b>                                               |
| <b>Sampling scheme type:</b> Diadromous (recreational)                                                                                                         |
| <b>Observation type:</b> SciObsOnShore                                                                                                                         |
| <b>Time period of validity:</b> 2025-2027                                                                                                                      |
| Short description (max 100 words):<br><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></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></p> <p>See description above.</p> <p><b>Stratification:</b></p> <p>N/A</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Sampling design description:</b></p> <p>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 <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></p> <p>NA</p> <p><b>Regional coordination:</b></p> <p>Y<br/>FIN will follow the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and adjust data collection accordingly.</p> <p><b>Link to sampling design documentation:</b></p> <p>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.</p> <p>Durif, Caroline &amp; Guibert, A. &amp; Elie, Pierre. (2009). Morphological discrimination of the silvering stages of the European eel.</p> <p><b>Design follows international recommendations:</b></p> <p>Y: Biometric data requested in WGEEL data call are collected.</p> <p><b>Link to sampling protocol documentation:</b></p> <p>See Sampling design description</p> |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Protocol follows international recommendations:</b></p> <p>N. See sampling design description.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Sampling implementation</b></p> <p><b>Recording of refusal rate:</b></p> <p>NA</p> <p><b>Monitoring of sampling progress within the sampling year:</b></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></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>Anguillicoloides 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></p> <p>See Means of data capture</p> <p><b>Quality checks documentation:</b></p> <p>N, FIN will follow the development of the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and instructions from WGEEL.</p> |
| <p><b>Sample storage</b></p> <p><b>Storage description:</b></p> <p>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.</p> <p><b>Sample analysis:</b></p> <p>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.. Life-stage of each sampled eel is determined followed by protocol described by Durif et. al. 2009.</p> <p>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</p> <p>Durif, Caroline &amp; Guibert, A. &amp; Elie, Pierre. (2009). Morphological discrimination of the</p>                                                                                                                                                               |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| silvering stages of the European eel.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Data processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Evaluation of data accuracy (bias and precision):</b><br><br>N, see validation of final data set<br><br><b>Editing and imputation methods:</b><br><br>N, see validation of final data set<br><br><b>Quality document associated to a dataset:</b><br><br>N<br><br><b>Validation of the final dataset:</b><br><br>Collected data is submitted to ICES database via WGEEL data call. The submitted data is processed with quality checks by WGEEL subgroups. |

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS:</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Region:</b> Baltic Sea                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Sampling scheme identifier:</b> National survey on recreational fishing                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Sampling scheme type:</b> Recreational (off-site surveys)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Observation type:</b> SciOnShore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Short description (max 100 words):</b><br><br>Sampling scheme for estimating biennial recreational catches in Finland.<br><br>RWP NANSEA 2025-2027<br>RWP BALTIC 2025-2027                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Population targeted:</b><br><br>The primary sampling unit is a household-dwelling.<br><br><b>Population sampled:</b><br>Target population is all Finnish household dwellings. Professional fishers and people living in their household-dwellings and people living in institutional care are not included.<br><br><b>Stratification:</b><br><br>The sample design is stratified sampling. The strata consist of six regional strata, and one stratus for household dwellings where at least one person purchased the fisheries |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| management fee. There are seven strata in total.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Sampling design description:</b></p> <p>The PSUs (household-dwelling units) consists of the persons living permanently in the same dwelling. The sampling is targeted at persons aged 18-74 years.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b></p> <p>NA</p> <p><b>Regional coordination:</b></p> <p>NA</p> <p><b>Link to sampling design documentation:</b></p> <p>The sampling design is documented in Luke's web page:<br/> <a href="https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing">https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing</a></p> <p><b>Design follows international recommendations:</b></p> <p>Y</p> <p>The survey is a multispecies survey according to WGRFS recommendations. The survey was assessed by WGRFS Quality Assurance Tool in 2023.</p> <p><b>Link to sampling protocol documentation:</b></p> <p>The sampling protocol is documented in Luke's web page:<br/> <a href="https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing">https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing</a></p> <p><b>Protocol follows international recommendations:</b></p> <p>Y</p> <p>The survey was assessed by WGRFS Quality Assurance Tool in 2023.</p> |
| <b>Sampling implementation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Recording of refusal rate:</b></p> <p>Y</p> <p><b>Monitoring of sampling progress within the sampling year:</b></p> <p>Y. Accumulation of responses 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Means of data capture:</b></p> <p>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.</p> <p><b>Data capture documentation:</b></p> <p>The data capture is documented in Luke's web page:<br/> <a href="https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing">https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing</a></p> <p><b>Quality checks documentation:</b></p> <p>Y</p> <p>The survey was assessed by WGRFS Quality Assurance Tool in 2023:<br/> <a href="https://ices-library.figshare.com/articles/report/Working_Group_on_Recreational_Fisheries_Surveys_WGRFS_outputs_from_2023_meeting_/25067702?file=44238809">https://ices-library.figshare.com/articles/report/Working_Group_on_Recreational_Fisheries_Surveys_WGRFS_outputs_from_2023_meeting_/25067702?file=44238809</a></p> |
| <p><b>Data storage</b></p> <p><b>National database:</b></p> <p>The data is stored in Luke servers.</p> <p><b>International database:</b></p> <p>NA</p> <p><b>Quality checks and data validation documentation:</b></p> <p>Data stored in Luke servers are back-upped regularly as a standard procedure.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Sample storage</b></p> <p><b>Storage description:</b></p> <p>N/A. There are no samples to be stored.</p> <p><b>Sample analysis:</b></p> <p>N/A. There are no samples.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>Data processing</b></p> <p><b>Evaluation of data accuracy (bias and precision):</b></p> <p>Y</p> <p>The methodology is documented in Luke's web page:<br/> <a href="https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing">https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing</a></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</p>                                                                                                                                                                                                                                                                                                                                                                                                 |

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

The methodology is documented in Luke's web page:

<https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing>

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

Estimation process is described in Luke's webpage:

<https://www.luke.fi/en/statistics/recreational-fishing/documentation-of-statistics-recreational-fishing>

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

Datasets are validated by expert judgement before submitting.

### Sampling scheme identifier: Baltic SPF regional

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS:</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Region:</b> Baltic Sea                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Sampling scheme identifier:</b> Baltic SPF regional                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Sampling scheme type:</b> Commercial fishing trip                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Observation type:</b> SciObsOnShore                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>Short description (max 100 words):</b></p> <p>The sampling scheme aims to collect onshore length samples of herring and sprat from commercial landings and to collect onshore biological samples (length, weight, age and maturity) of herring and sprat from prevailing length-classes from commercial landings of pelagic trawl fishery for herring and sprat (SD's 29 and-32).</p> <p>RWP BALTIC 2025-2027</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 herring and sprat in SD's 29 and 32.</p> <p><b>Population sampled:</b></p> <p>In this sampling scheme all active pelagic midwater trawlers (OTM, PTM) in SD's 29 and 32 targeting herring and sprat in Finnish fleet are subjected to sampling, excluding trips landing into foreign countries. PSU is fishing vessel and method of PSU selection is UPSWR. No</p> |

SSU is used.

**Stratification:**

Sampling is stratified geographically (ICES SD's 29 and 32) covering the assessment unit of the relevant herring stock and temporally (year-quarterly, Q1-Q4).

**Sampling design and protocols**

**Sampling design description:**

Baltic SPF regional sampling is following the RWP Baltic 2025-2027 scheme directed to mixed trawl catches of herring and sprat in SD's 25-29 and 32, covering the distribution area of Central Baltic Herring stock and the main distribution area of Baltic sprat. For sprat, FIN collects only catch length distributions, as agreed in regional level (RWP Baltic Table 2.1 Stocks). Finnish TAC is less than 10, and currently there is no end-user requirement for collection of individual sprat data.

Length distributions and biological data are collected from sampling of Finnish commercial trawl fisheries (OTM\_SPF and PTM\_SPF) from SD's 29 and 32. Sampling of these mixed catches is based on random sampling scheme, where 1 specimen/ prevailing length-class/SD/quarter is sampled. The herring stock-related biological data obtained from trawl fisheries are combined with those obtained from trapnet fisheries for all relevant age-related parameters in the same sub-divisions. For sprat commercial sampling, FIN starts collecting biological variables in the basis of 50 ind/sample as described in RWP Baltic Annex 1: Biological sampling protocols.

Finland follows the statistically sound sampling scheme (4S) in trawl fisheries targeting herring and sprat as well as in trap-net fisheries targeting herring. The 4S has been implemented in trawl fisheries from the beginning of 2019. The selection of PSU for herring (and sprat) is done by random sampling from a draw list, where the probability of a fishing unit being selected for sampling in a 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 information (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 lotteries will be done to reach the sampling target if there is a deficit.

**Is the sampling design compliant with the 4S principle?:**

Y

**Regional coordination:**

Y, regional coordination with DEU, DNK, EST, FIN, LTU, LVA, POL and SWE. See RWP Baltic 2025-2027 Table and Textbox 2.5 for details.

**Link to sampling design documentation:**

See chapter: Sampling design description in this text box.

**Design follows international recommendations:**

Y

**Link to sampling protocol documentation:**

See chapter Sampling design description in this text box.

**Protocol follows international recommendations:**

Y

**Sampling implementation**

**Recording of refusal rate:**

Y

**Monitoring of sampling progress within 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:**

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish (<https://www.luke.fi/en/media/196189>)). This device records the length and the weight of a fish simultaneously and informs the user when an age, sex and maturity sample from a 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 determination, as well as the sex and maturity stage, which are based on visual inspection of fish gonads, 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 the measurement phase, e.g., with condition factors, in which way measuring or weighing errors can be eliminated/ corrected. Additional quality checks and cross-checks are carried out when the data are uploaded to the database.

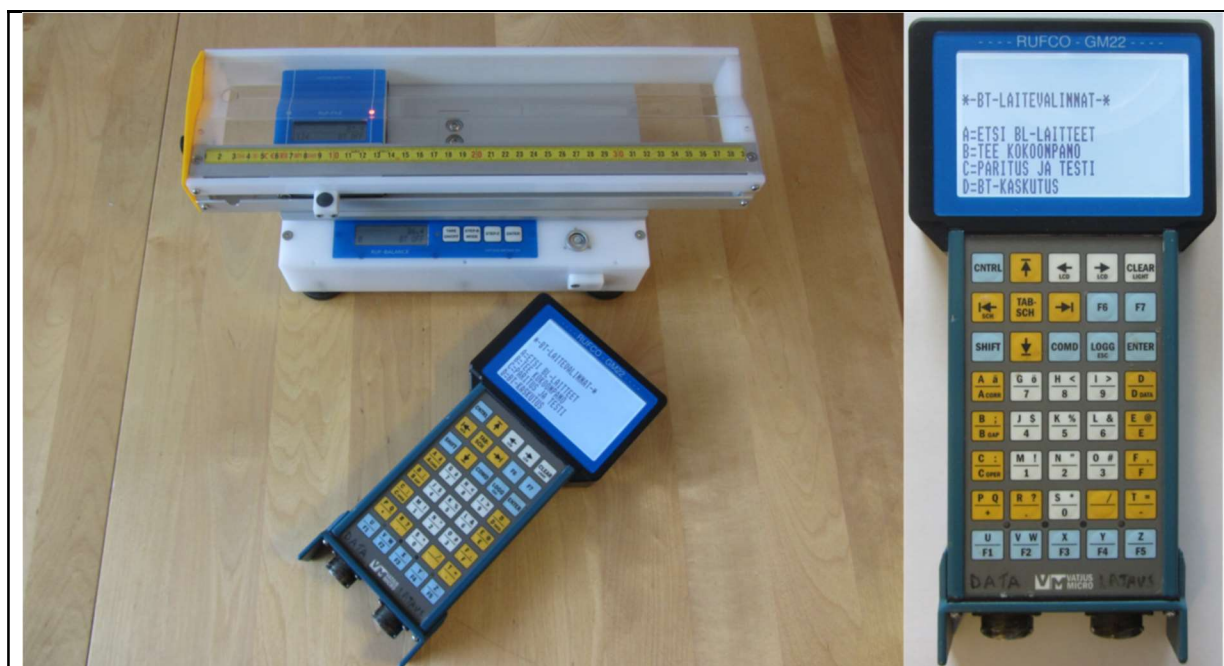


Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

Data processing is carried out according to common standard criteria agreed with other MS and WGBFAS.

### Data capture documentation:

For data-logger, see detailed instructions in Finnish: <https://www.luke.fi/en/media/196189>. Herring maturity determination follows the new revised SMSF maturity scale (WKMATCH 2012 maturity scale revised), see:

An inter-calibration of Bothnian herring maturity staging is in planning together with Sweden in SmartDots.

The process of herring age determination (slicing and staining the otoliths) is considered the most accurate age reading method for the slow-growing Baltic herring. Age quality (AQ) scores are used for individual ages: <https://vocab.ices.dk/>.

Regular inter-calibrations are conducted in herring age reading both nationally and internationally in the Baltic area for quality assurance. During 2024, an inter-calibration for Bothnian herring is conducted together with Sweden in SmartDots.

The data in the database are checked for outliers in age-length relations and errors in data recording and are corrected (revised or deleted) before they are used.

### Quality checks documentation:

See chapter: Data capture documentation in this text-box.

### Data storage

#### National database:

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:**

Intercatch (until 2026)  
RDBES (2026 onwards)

**Quality checks and data validation documentation:**

SUOMU database contains error checks. The data are checked thoroughly and validated before the annual preparation for stock assessments.

See also chapter: Data capture documentation in previous text-box.

**Sample storage**

**Storage description:**

Herring otoliths (and sprat otoliths from acoustic surveys) are stored either attached between microscope slides (when sliced and stained) or as a whole otoliths (when both otoliths are available from sampled herring, and always as whole from sampled sprat). Currently, otolith samples are stored in the otolith processing lab in Luke Helsinki, with historical samples in Luke's unit in Taivalkoski. From 2024, all available samples will be gradually transferred to the Institute's Biobank for Natural Resources (<https://www.luke.fi/en/research/research-infrastructures/biobank-of-natural-resources>) in Jokioinen for permanent storage. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the Suomu database and Luke's sample management database.

**Sample analysis:**

In the Herring otolith analysis, the otoliths are embedded in epoxy resin and then sawed into thin slices. These slices are stained to make the age rings more visible, then photographed and distributed to age-readers.

[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):**

Y.

Data is evaluated for stock assessment process in ICES WGBFAS. For all national sampling programmes, process to evaluate of data accuracy for biological sampling is under way and will be completed in 2025.

**Editing and imputation methods:**

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 the 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:**

N

**Validation of the final dataset:**

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 2025).

**Sampling scheme identifier: On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS:</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Region:</b> Baltic Sea                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Sampling scheme identifier:</b> On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Sampling scheme type:</b> Commercial fishing trip                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Observation type:</b> SciObsOnShore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time period of validity:</b> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Short description (max 100 words):</b><br><br>The sampling scheme aims to collect onshore length samples of herring and sprat from commercial landings and to collect onshore biological samples (length, weight, age and maturity) of herring and sprat from prevailing length-classes from commercial landings of pelagic trawl fishery for herring and sprat (SD's 30-31).                                                                                                                                                                                                                                                                                                            |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Population targeted:</b><br><br>The targeted population is all active pelagic midwater trawlers (OTM, PTM) targeting herring and sprat in SD's 30-31.<br><br><b>Population sampled:</b><br>In this sampling scheme all active pelagic midwater trawlers (OTM, PTM) in SD's 30-31 targeting herring and sprat in Finnish fleet are subjected to sampling, excluding trips landing into foreign countries. PSU is fishing vessel and method of PSU selection is UPSWR. No SSU is used.<br><br><b>Stratification:</b><br><br>Sampling is stratified geographically (ICES SD's 30 and 31) covering the assessment unit of the relevant herring stock and temporally (year-quarterly, Q1-Q4). |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Sampling design description:**

Length distributions and biological data are collected from sampling of commercial trawl fisheries (OTM\_SPF and PTM\_SPF). Sampling of these mixed catches is based on length stratified sub-sampling scheme, where the target number of herring specimens for biological data is 10 per 0.5 cm length-class/SD/quarter in SD 30 (the main [>90% of catches] contributor to the GoB herring stock) and less in SD 31, but usually in both SD's one individual is sub-sampled per length class per catch sample anyway). The number of sampled herring specimens is increased for adequate maturity data in spring prior to the spawning period to 2 / 0.5 cm length-class/SD/catch sample. The herring stock-related biological data obtained from trawl fisheries are combined with those obtained from trapnet fisheries for all relevant age-related parameters in the same sub-divisions. For sprat commercial sampling, FIN starts collecting biological variables in the basis of 50 ind/sample as described in RWP Baltic Annex 1: Biological sampling protocols.

Finland follows the statistically sound sampling scheme (4S) in trawl fisheries targeting herring and sprat as well as in trap-net fisheries targeting herring. The 4S has been implemented in trawl fisheries from the beginning of 2019. The selection of PSU for herring (and sprat) is done by random sampling from a draw list, where the probability of a fishing unit being selected for sampling in a 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 information (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 lotteries will be done to reach the sampling target if there is a deficit.

**Is the sampling design compliant with the 4S principle?:**

Y

**Regional coordination:**

N

**Link to sampling design documentation:**

See chapter: Sampling design description in this text box.

**Design follows international recommendations:**

Y

**Link to sampling protocol documentation:**

See chapter Sampling design description in this text box.

**Protocol follows international recommendations:**

Y

**Sampling implementation****Recording of refusal rate:**

Y

### Monitoring of sampling progress within 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:

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish (<https://www.luke.fi/en/media/196189>)). This device records the length and the weight of a fish simultaneously and informs the user when an age, sex and maturity sample from a 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 determination, as well as the sex and maturity stage, which are based on visual inspection of fish gonads, 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 the measurement phase, e.g., with condition factors, in which way measuring or weighing errors can be eliminated/ corrected. Additional quality checks and cross-checks are carried out when the data are 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:

For data-logger, see detailed instructions in Finnish: <https://www.luke.fi/en/media/196189>.

Herring maturity determination follows the new revised SMSF maturity scale (WKMATCH 2012 maturity scale revised), see:

An inter-calibration of Bothnian herring maturity staging is in planning together with Sweden in SmartDots.

The process of herring age determination (slicing and staining the otoliths) is considered the most accurate age reading method for the slow-growing Baltic herring. Age quality (AQ) scores are used for individual ages: <https://vocab.ices.dk/>.

Regular inter-calibrations are conducted in herring age reading both nationally and internationally in the Baltic area for quality assurance. During 2024, an inter-calibration for Bothnian herring is conducted together with Sweden in SmartDots.

The data in the database are checked for outliers in age-length relations and errors in data recording and are corrected (revised or deleted) before they are used.

#### **Quality checks documentation:**

See chapter: Data capture documentation in this text-box.

#### **Data storage**

##### **National database:**

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:**

Intercatch (until 2026)  
RDBES (2026 onwards)

#### **Quality checks and data validation documentation:**

SUOMU database contains error checks. The data are checked thoroughly and validated before the annual preparation for stock assessments.

See also chapter: Data capture documentation in previous text-box.

#### **Sample storage**

##### **Storage description:**

Herring otoliths (and sprat otoliths from acoustic surveys) are stored either attached between microscope slides (when sliced and stained) or as a whole otoliths (when both otoliths are available from sampled herring, and always as whole from sampled sprat). Currently, otolith samples are stored in the otolith processing lab in Luke Helsinki, with historical samples in Luke's unit in Taivalkoski. From 2024, all available samples will be gradually transferred to the Institute's Biobank for Natural Resources (<https://www.luke.fi/en/research/research-infrastructures/biobank-of-natural-resources>) in Jokioinen for permanent storage. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the Suomu database and Luke's sample management 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 resin and then sawed into thin slices. These slices are stained to make the age rings more visible, then photographed and distributed to age-readers.

[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):**

Y.

Data is evaluated for stock assessment process in ICES WGBFAS. For all national sampling programmes, process to evaluate of data accuracy for biological sampling is under way and will be completed in 2025.

#### **Editing and imputation methods:**

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 the 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:**

N

#### **Validation of the final dataset:**

The datasets are currently calculated annually by Excel, examined by outlier-checks and cross-calculations. The final input for stock assessment models is processed in ICES InterCatch (at least until 2025).

### **Sampling scheme identifier: On shore sampling program targeting trap-net fishery of herring**

**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:** 2025-2027

**Short description (max 100 words):**

The sampling scheme aims to collect onshore length samples of herring from commercial

landings and to collect onshore biological samples (length, weight, age and maturity) of herring from prevailing length-classes of those landings of trap-net fishery for herring (SD's 29-32).

### **Description of the population**

**Population targeted:** In this sampling scheme the targeted population is all active fishers targeting spawning herring with trap-nets.

**Population sampled:** 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:**

Sampling is stratified geographically (SD's 29, 30, 31 and 32) and temporally (year-quarterly, Q1-Q2-Q3, depending on SD and longitude).

### **Sampling design and protocols**

#### **Sampling design description:**

Number of fishing trips to be sampled within SD's and quarters are based on their historical catch data. List of required stocks for this sampling are Central Baltic Herring (SD 25-29,32), and Gulf of Bothnia herring (SD 30 and 31) – SD's 30 and SD 31 have been merged into the same assessment unit in 2017.

Biological data are collected from sampling of spawning fishery with trap-nets (FYK\_SPF and FPN\_SPF combined). Individual sampling procedure follows the one set for trawl-fisheries in relevant areas. The herring stock-related biological data obtained from trapnet fisheries are combined with those obtained from trawl fisheries for all relevant age-related parameters in the same sub-divisions.

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.

Based on positive experiences on PS1 of FIN NWP 2022-2024, The EPT onboard-observing program was incorporated as regular data collection for years 2025-2027 for trap-net fishery of herring. The planned annual number of observer trips is 10. Observed trip are preferable the same as trips from sampling lottery, but if this not possible (due to schedules, safety issues or refusal of the fisher etc.), also other trips than those sampled may be observed.

#### **Is the sampling design compliant with the 4S principle?:**

Y

#### **Regional coordination:**

N

#### **Link to sampling design documentation:**

See chapter: Sampling design description in this text box.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Design follows international recommendations:</b></p> <p>Y</p> <p><b>Link to sampling protocol documentation:</b></p> <p>See chapter: Sampling design description in this text box.</p> <p><b>Protocol follows international recommendations:</b></p> <p>Y</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Sampling implementation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Recording of refusal rate:</b></p> <p>Y</p> <p><b>Monitoring of sampling progress within the sampling year:</b></p> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Data capture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Means of data capture:</b></p> <p>In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish (<a href="https://www.luke.fi/en/media/196189">https://www.luke.fi/en/media/196189</a>)). This device records the length and the weight of a fish simultaneously and informs the user when an age, sex and maturity sample from a 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 determination, as well as the sex and maturity stage, which are based on visual inspection of fish gonads, 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 the measurement phase, e.g., with condition factors, in which way measuring or weighing errors can be eliminated/ corrected. Additional quality checks and cross-checks are carried out when the data are uploaded to the database.</p> |

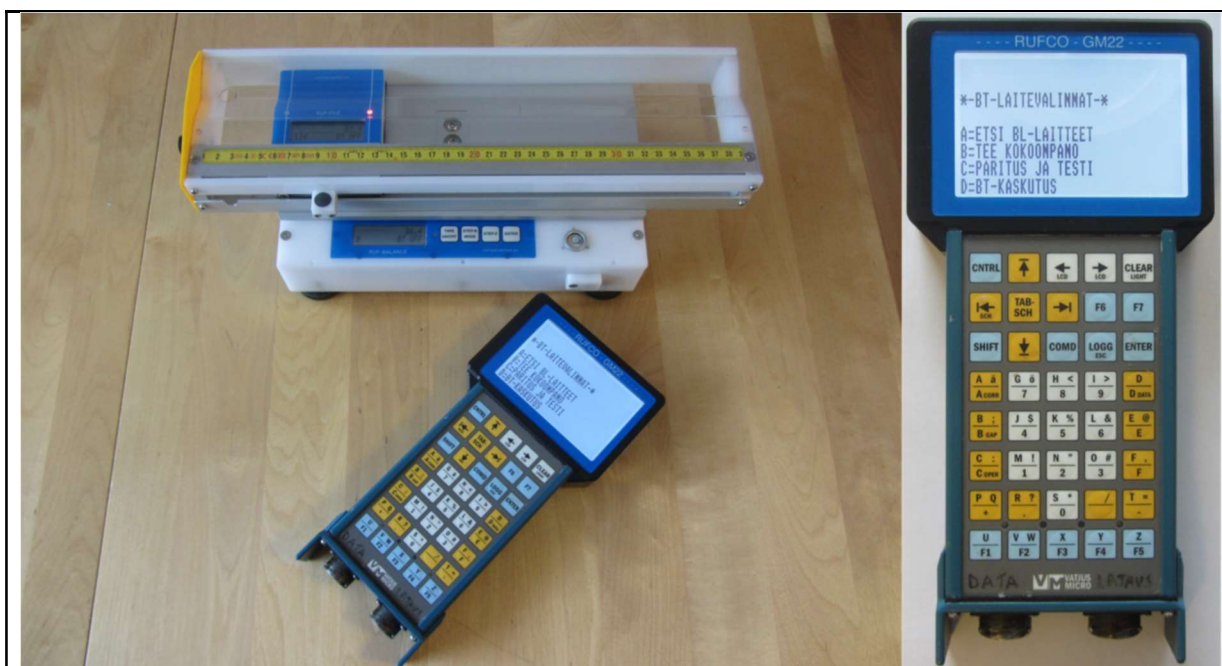


Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

Data processing is carried out according to common standard criteria agreed with other MS and WGBFAS.

### Data capture documentation:

For data-logger, see detailed instructions in Finnish: <https://www.luke.fi/en/media/196189>. 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:

See chapter: Data capture documentation in this text-box.

### Data storage

#### National database:

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:

InterCatch

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RDBES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Quality checks and data validation documentation:</b><br><br>See also chapter: Data capture documentation in previous text-box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Sample storage</b><br>Herring otoliths (and sprat otoliths from acoustic surveys) are stored either attached between microscope slides (when sliced and stained) or as a whole otoliths (when both otoliths are available from sampled herring, and always as whole from sampled sprat). Currently, otolith samples are stored in the otolith processing lab in Luke Helsinki, with historical samples in Luke's unit in Taivalkoski. From 2024, all available samples will be gradually transferred to the Institute's Biobank for Natural Resources ( <a href="https://www.luke.fi/en/research/research-infrastructures/biobank-of-natural-resources">https://www.luke.fi/en/research/research-infrastructures/biobank-of-natural-resources</a> ) in Jokioinen for permanent storage. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the Suomu database and Luke's sample management database. |
| <b>Sample analysis:</b><br>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.<br><br><a href="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</a><br><a href="https://www.ices.dk/community/Documents/PGCCDBS/her.agewk2005.pdf">https://www.ices.dk/community/Documents/PGCCDBS/her.agewk2005.pdf</a>                                                                                                                                                                                                                                                                     |
| <b>Data processing</b><br><b>Evaluation of data accuracy (bias and precision):</b><br>Y.<br><br>Data is evaluated for stock assessment process in ICES WGBFAS. For all national sampling programmes, process to evaluate of data accuracy for biological sampling is under way and will be completed in 2025.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Editing and imputation methods:</b><br>N.<br><br>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)                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Quality document associated to a dataset:</b><br><br>N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Validation of the final dataset:</b><br><br>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).

**Sampling scheme identifier: On shore sampling program targeting coastal gillnet and trap-net fishery of perch, pikeperch and whitefish**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS :</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <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> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Short description (max 100 words):<br><br>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).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description of the population</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Population targeted:</b><br>This sampling scheme targets all fishers practising coastal gillnet and trap-net fishery of perch, pikeperch and whitefish. PSU is fishing dayNo SSU is used. Fishers are operating with small boats close to the coast targeting perch, pikeperch and whitefish.<br><br><b>Population sampled:</b><br><br>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).<br><br><b>Stratification:</b><br><br>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). |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Sampling design description:</b><br><br>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 2025-2027, and possibilities to develop sampling towards statistically sound sampling design will be studied.<br><br><b>Is the sampling design compliant with the 4S principle?:</b><br><br>N<br><br><b>Regional coordination:</b><br><br>N                                                                                                           |

**Link to sampling design documentation:**

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 2025-2027, and possibilities to develop sampling towards statistically sound sampling design will be studied.

**Design follows international recommendations:**

N

**Link to sampling protocol documentation:**

See Sampling design description

**Protocol follows international recommendations:**

N, Data is used primarily for national fisheries management.

**Sampling implementation****Recording of refusal rate:**

N

**Monitoring of sampling progress within 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:**

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish (<https://www.luke.fi/en/media/196189>)). This device records the length and the weight of a fish simultaneously and informs the user when an age, sex and maturity sample from a 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 determination, as well as the sex and maturity stage, which are based on visual inspection of fish gonads, 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 the measurement phase, e.g., with condition factors, in which way measuring or weighing errors can be eliminated/ corrected. Additional quality checks and cross-checks are carried out when the data are uploaded to the database.

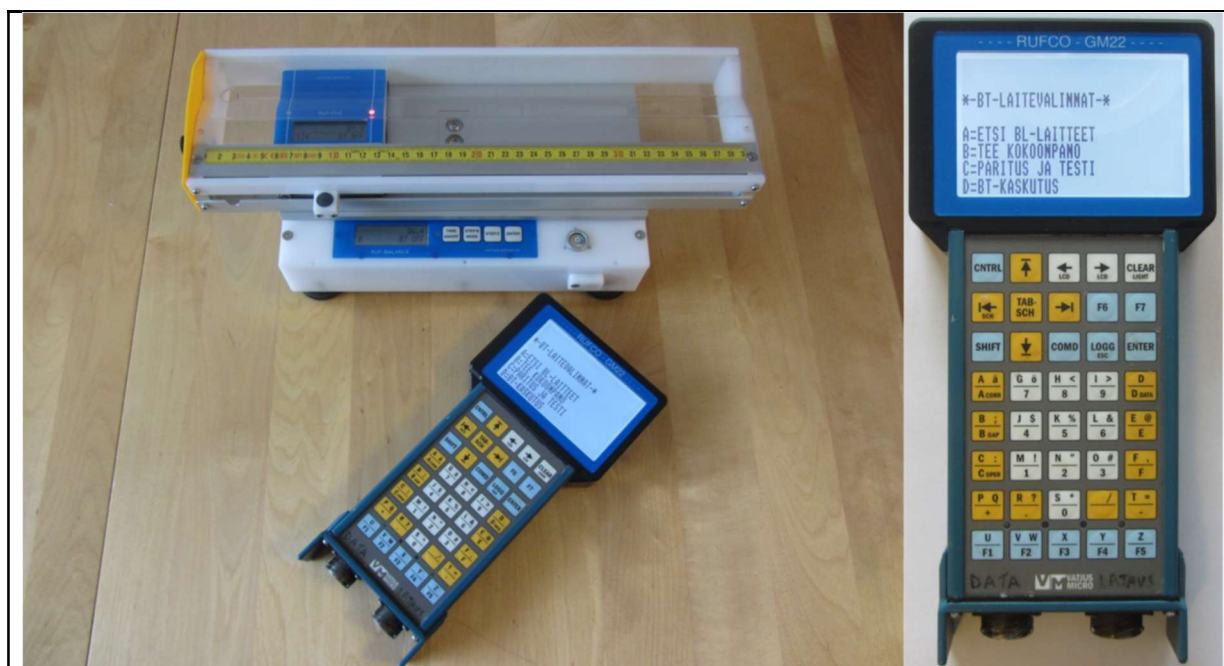


Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

Data processing is carried out according to common standard criteria agreed with other MS.

### Data capture documentation:

For electronic fish measuring system, see detailed instructions in Finnish: <https://www.luke.fi/en/media/196189>.

### Quality checks documentation:

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:

Database: SUOMU, restricted access

#### International database:

NA

### Quality checks and data validation documentation:

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/en/media/196189>. 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:**

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:**

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/en/media/196189>.

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):**

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:**

Y, see above

#### **Quality document associated to a dataset:**

N

**Validation of the final dataset:**

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.

**Sampling scheme identifier: Self-sampling program targeting coastal fishery of salmon**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MS:</b> FIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Region:</b> 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> 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>Short description (max 100 words):</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></p> <p>Commercial salmon fishers in Finnish coastal areas SD 29-32. PSU is fishing day. No SSU is used.</p> <p><b>Population sampled:</b></p> <p>Voluntary fishers along the coast sampling throughout the spawning migration (May-August). All fishers in this sampling scheme are covered by sampling program (taking account constraints of NPCS-based sampling).</p> <p><b>Stratification:</b></p> <p>No stratification, sampling is based on voluntary basis of fishers.</p> |
| <b>Sampling design and protocols</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Sampling design description:</b></p> <p>As regarding to PSU, samples are taken from the landed catch during the whole fishing season by designated voluntary 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> <p><b>Is the sampling design compliant with the 4S principle?:</b></p> <p>N</p>                                                            |

**Regional coordination:**

N

**Link to sampling design documentation:**

NA

**Design follows international recommendations:**

N

No international recommendation is directly applied in the sampling design, but the collection of salmon data is designed to be used by the ICES WGBAST

**Link to sampling protocol documentation:**

Designed voluntary 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.

**Protocol follows international recommendations**

N

No international recommendation is directly applied in the sampling design, but the collection of salmon data is designed to be used by the ICES WGBAST.

**Sampling implementation****Recording of refusal rate:**

N

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 sea trout samples.

**Monitoring of sampling progress within the sampling year:**

Monitoring is not necessary, usually fishers send scale samples to Luke shortly after fishing season.

**Data capture****Means of data capture:**

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 this

information is recorded to the database 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 is impossible for fishers. Three sea winter (3SW) fish can be considered mature. Maturity data is not used in the assessment.

#### **Data capture documentation:**

See above.

#### **Quality checks documentation:**

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.

The name of the national database is Suomu-cloud. The link of the database is: <https://suomu-cloud.luke.fi>. The database has restricted access.

#### **International database:**

RDB

#### **Quality checks and data validation documentation:**

NA

#### **Sample storage**

##### **Storage description:**

Scale samples are stored in Luke's storage in Taivalkoski (storage will be moved to the Luke's sample storage center (Biobank) in Jokioinen between 2025-2027).

DNA samples (extracted DNA) is stored in Lukes DNA storage in Jokioinen.

##### **Sample analysis:**

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.

#### **Data processing**

**Evaluation of data accuracy (bias and precision):**

Y

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.

**Editing and imputation methods:**

N Only minor imputation is needed in the primary data. Potential missing weights can be imputed by length-weight equation.

**Quality document associated to a dataset:**

N

**Validation of the final dataset:**

Validation of the final dataset is conducted by expert judgement.

**Sampling scheme identifier: On shore sampling program targeting pelagic trawl fishery of vendace**

MS : FIN

Region: Baltic Sea

**Sampling scheme identifier:** On shore sampling program targeting pelagic trawl fishery of vendace

**Sampling scheme type:** Commercial fishing trip

**Observation type:** SciObsOnShore

**Time period of validity:** 2025-2027

Short description (max 100 words): The sampling scheme aims to collect onshore vendace length samples from commercial landings and, in the Bothnian Bay (SD 31), also onshore biological length, weight, age and maturity subsamples per length-class from the commercial pelagic trawl fishery.

**Description of the population****Population targeted:**

The sampled population includes all active pelagic midwater trawlers (OTM, PTM) that target the vendace.

**Population sampled:**

In this sampling scheme, all Finnish fleet's active pelagic midwater trawlers (OTM, PTM) that target the vendace are subjected to the sampling. PSU is a fishing vessel, and the method of PSU selection is UPSWR. No SSU is used.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Stratification:</b> Sampling is stratified geographically (ICES SD 31) and temporally (quarters Q3 and Q4)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><b>Sampling design and protocols</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Sampling design description:</b></p> <p>The number of vessels to be sampled within subdivisions (SD) and quarters (Q) are based on their historical catch data. Biological stock-related data for the vendace are collected by sampling commercial trawl fisheries (OTM_FWS / PTM_FWS). The sampling protocol is based on a length stratified sub-sampling scheme, in which the target number of specimen for biological data is 10 individuals per 0.5 cm length class for each Q.</p> <p>Finland has implemented statistically sound sampling scheme (4S) in the trawl fisheries. For the trawl fisheries targeting vendace, 4S sampling has been in effect since the beginning of 2020. The selection of PSU for the vendace is by random sampling using a draw list, where the probability of a fishing unit to be selected for sampling, in a certain subdivision (SD) and quarter (Q), is weighted by its previous years' vendace catch in that Q. During each Q, the sampling personnel goes through the draw list (in any order) and records all relevant interaction information (sampling, refusal, out of area, etc.) into the SUOMU sampling database, which also has the randomisation function needed in the process.</p> <p>Additional randomisations will be done to reach the sampling target, in the case of a deficit.</p> <p><b>Is the sampling design compliant with the 4S principle?:</b></p> <p>Y</p> <p><b>Regional coordination:</b></p> <p>N</p> <p><b>Link to sampling design documentation:</b></p> <p>See chapter: Sampling design description in this text box.</p> <p><b>Design follows international recommendations:</b></p> <p>Y</p> <p><b>Link to sampling protocol documentation:</b></p> <p>See chapter: Sampling design description in this text-box.</p> <p><b>Protocol follows international recommendations:</b></p> <p>N. In Finland, the 4S principle is applied for the vendace trawl fishery samples. However, there currently is no international coordination or recommendation for vendace sampling protocols. For the sampling protocol in use in Finland, see <a href="#">Sampling design description</a>.</p> |
| <p><b>Sampling implementation</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Recording of refusal rate:</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Y

### Monitoring of sampling progress within 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:

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish (<https://www.luke.fi/en/media/196189>)). This device records the length and the weight of a fish simultaneously and informs the user when an age, sex and maturity sample from a 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 determination, as well as the sex and maturity stage, which are based on visual inspection of fish gonads, 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 the measurement phase, e.g., with condition factors, in which way measuring or weighing errors can be eliminated/ corrected. Additional quality checks and cross-checks are carried out when the data are uploaded to the database.



Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

#### Data capture documentation:

For data-logger, see detailed instructions in Finnish: <https://www.luke.fi/en/media/196189>.

Maturity: Sex and maturity are based on visual inspection of the gonads. The maturity scale will be adjusted according to the scale used in Sweden, if necessary.

The data in the database are checked for outliers in age-length relations and for any other errors in the data recording. These are corrected (revised or deleted) before the data are used.

**Quality checks documentation:**

See chapter: Data capture documentation in this text-box.

**Data storage**

**National database:**

The name of the national database is SUOMU. The database can be found at: [https://suomu.luke.fi/suomu\\_login](https://suomu.luke.fi/suomu_login). The database has restricted access.

**International database:**

NA

**Quality checks and data validation documentation:**

The SUOMU database contains error checks. See also chapter: Data capture documentation in previous text-box.

**Sample storage**

**Storage description:**

Scales are currently stored in Luke's unit in Taivalkoski but will in the near future be stored in the institute's biobank unit in Jokioinen. The quantities of the stored samples by stock, geographic sub-area and by year can be tracked from the national database.

**Sample analysis:**

Age-reading (from scales) is considered an accurate age assessment method for the vendace. The data in the database are checked for outliers in age-length relations and for any other errors in the data recording. These are corrected (revised or deleted) before the data are used nationally.

**Data processing**

**Evaluation of data accuracy (bias and precision):**

N.

Evaluation of the data accuracy is based on expert judgement.

**Editing and imputation methods:**

N. Editing and imputation are conducted based on expert judgement.

**Quality document associated to a dataset:**

N

**Validation of the final dataset:**

The datasets are annually calculated in Excel, examined by outlier-checks and cross-calculations.

**Sampling scheme identifier: Eel sampling from bycatch of commercial coastal fisheries**

**MS:** FIN

**Region:** Baltic Sea

**Sampling scheme identifier:** Eel sampling from bycatch of commercial coastal fisheries

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

**Observation type:** SciObsOnShore

**Time period of validity:** 2025-2027

Short description (max 100 words):

Sampling scheme aiming collecting biometry data on eels in Finnish coastal areas

**Description of the population**

**Population targeted:**

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 *ad hoc* sampling is applied where samples can be collected.

**Population sampled:**

See description above.

**Stratification:**

No stratification, *ad hoc* sampling.

**Sampling design and protocols**

**Sampling design description:**

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 *ad hoc* sampling is applied where samples can be collected.

**Is the sampling design compliant with the 4S principle?:**

N

**Regional coordination:**

Y

FIN will follow the current diadromous test study in the Regional Work Plan (RWP; text box

1a) and adjust data collection accordingly.

**Link to sampling design documentation:**

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.

**Design follows international recommendations:**

N, FIN will follow the development of the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and instructions from WGEEL.

**Link to sampling protocol documentation:**

See Sampling design description.

**Protocol follows international recommendations:**

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.

N

**Monitoring of sampling progress within the sampling year:**

Sampling allocations are followed-up and adjusted (if needed) according to accumulation of samples.

**Data capture**

**Means of data capture:**

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 to Durif et. al., eye diameter and the length of the pelvic fin are measured with high quality Mitutoyo digital callipers. Both otoliths are removed and stored in standardized sampling envelopes. Also, the swim bladder is checked for parasite *Anguillicoloides 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:**

See Means of data capture

**Quality checks documentation:**

N, FIN will follow the development of the current diadromous test study in the Regional Work Plan (RWP; text box 1a) and instructions from WGEEL.

**Data storage**

**National database:**

N, data is stored to local server.

**International database:**

N

**Quality checks and data validation documentation:**

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:**

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:**

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. 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):**

N, see validation of final data set

**Editing and imputation methods:**

N, see validation of final data set

**Quality document associated to a dataset:**

N

**Validation of the final dataset:**

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

**Sampling scheme identifier: Baltic International Acoustic Survey (autumn)**

**MS:** FIN

**Region:** Baltic Sea

**Sampling scheme identifier:** Baltic International Acoustic Survey (autumn)

**Sampling scheme type:** Research survey at sea

**Observation type:** SciObsAtSea

**Time period of validity:** 2025-2027

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.

RWP BALTIC 2025-2027

**Description of the population**

**Population targeted:**

The main target species are herring and sprat in SD's 29, 30, and 32.

**Population sampled:**

The main target species are herring and sprat in SD's 29, 30, and 32.

**Stratification:**

Sampling is stratified geographically (SD's 29, 30, and 32).

**Sampling design and protocols**

**Sampling design description:**

Sampling design is described in survey manual:

[https://ices-library.figshare.com/articles/report/SISP\\_8\\_-\\_Manual\\_of\\_International\\_Baltic\\_Acoustic\\_Surveys\\_IBAS\\_/19051013?file=33873401](https://ices-library.figshare.com/articles/report/SISP_8_-_Manual_of_International_Baltic_Acoustic_Surveys_IBAS_/19051013?file=33873401).

**Is the sampling design compliant with the 4S principle?:**

NA

**Regional coordination:**

Y, cost-sharing with SWE, see agreement in RWP Baltic 2025-2027 Table 1.3.

**Link to sampling design documentation:**

[https://ices-library.figshare.com/articles/report/SISP\\_8 -  
Manual of International Baltic Acoustic Surveys IBAS\\_/19051013?file=33873401](https://ices-library.figshare.com/articles/report/SISP_8_-_Manual_of_International_Baltic_Acoustic_Surveys_IBAS_/19051013?file=33873401).

**Design follows international recommendations:**

Y

**Link to sampling protocol documentation:**

Samples from BIAS -survey are collected and processed according to IBAS manual

[https://ices-library.figshare.com/articles/report/SISP\\_8 -  
Manual of International Baltic Acoustic Surveys IBAS\\_/19051013?file=33873401](https://ices-library.figshare.com/articles/report/SISP_8_-_Manual_of_International_Baltic_Acoustic_Surveys_IBAS_/19051013?file=33873401).

**Protocol follows international recommendations:**

Y

**Sampling implementation****Recording of refusal rate:**

NA

**Monitoring of sampling progress within the sampling year:**

NA, sampling is allocated within survey period.

**Data capture****Means of data capture:**

In Finland, an electronic fish measuring system is used for processing the fish samples (detailed instructions in Finnish (<https://www.luke.fi/en/media/196189>)). This device records the length and the weight of a fish simultaneously and informs the user when an age, sex and maturity sample from a 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 determination, as well as the sex and maturity stage, which are based on visual inspection of fish gonads, 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 the measurement phase, e.g., with condition factors, in which way measuring or weighing errors can be eliminated/ corrected. Additional quality checks and cross-checks are carried out when the data are uploaded to the database.

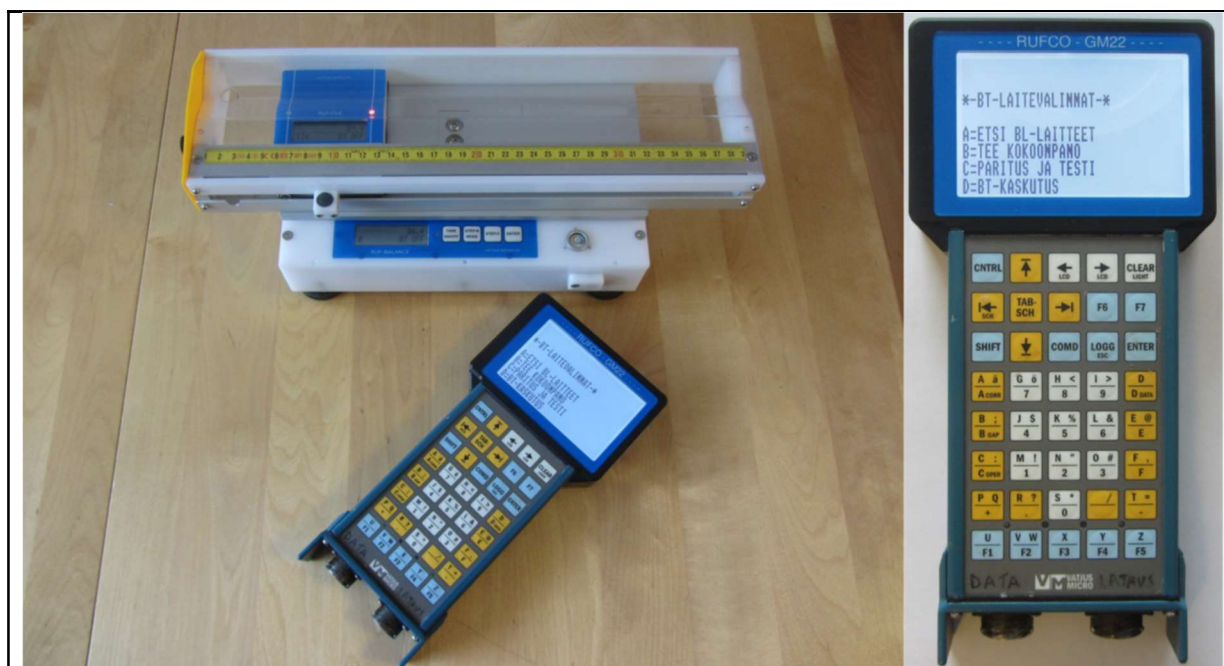


Figure caption: On the left: The measuring and weighing units. On the right: The Data logger.

Data processing is carried out according to common standard criteria agreed with other MS and WGBFAS.

Acoustic data is collected according to BIAS manual with a standard acoustic equipment.

[https://ices-library.figshare.com/articles/report/SISP\\_8 -  
Manual of International Baltic Acoustic Surveys IBAS\\_/19051013?file=33873401](https://ices-library.figshare.com/articles/report/SISP_8_-_Manual_of_International_Baltic_Acoustic_Surveys_IBAS_/19051013?file=33873401).

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:**

[https://ices-library.figshare.com/articles/report/SISP\\_8 -  
Manual of International Baltic Acoustic Surveys IBAS\\_/19051013?file=33873401](https://ices-library.figshare.com/articles/report/SISP_8_-_Manual_of_International_Baltic_Acoustic_Surveys_IBAS_/19051013?file=33873401)

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:**

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:**

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:**

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:**

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:**

Herring and sprat otoliths are stored either attached between microscope slides (when sliced and stained) or as a whole otoliths (when both otoliths are available from sampled herring, and always as whole from sampled sprat). Currently, otolith samples are stored in the otolith processing lab in Luke Helsinki, with historical samples in Luke's unit in Taivalkoski. From 2024, all available samples will be gradually transferred to the Institute's Biobank for Natural Resources (<https://www.luke.fi/en/research/research-infrastructure/biobank-of-natural-resources>) in Jokioinen for permanent storage. The quantities of stored samples by stock, geographic sub-area and by year can be traced from the Suomu database and Luke's sample management 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:**

[https://ices-library.figshare.com/articles/report/SISP\\_8\\_-\\_Manual\\_of\\_International\\_Baltic\\_Acoustic\\_Surveys\\_IBAS\\_/19051013?file=33873401](https://ices-library.figshare.com/articles/report/SISP_8_-_Manual_of_International_Baltic_Acoustic_Surveys_IBAS_/19051013?file=33873401).

See also chapter: Sampling scheme: On shore sampling program targeting pelagic trawl fishery of herring and sprat in SD's 30-31: Sample analysis text box.

**Data processing****Evaluation of data accuracy (bias and precision)**

Y

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:**

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:**

NA

**Validation of the final dataset:**

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.

## 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.*

*Please indicate sampling scheme identifier (e.g combination of 'sector' and 'sampling scheme' or 'variables' from the annex table). Each identifier is unique and can be used only once; records with identical scheme identifiers are overwritten in the platform. Do not add any tables others than from the template.*

*Create a first survey specification record as a reference to the regional WP, add 'RWP ECON' in the 'sector name' field and leave the other fields empty.*

*Create a first survey specification record as a reference to the regional WP, add 'RWP ECON' in the 'sector name' field and leave the other fields empty.*

*Create a first survey specification record as a reference to the regional WP, add 'RWP ECON' in the 'sector name' field and leave the other fields empty.*

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Survey Specifications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>'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.</p> <p>'Sampling scheme' refers to survey technique: by census, by sampling, random or non-random, other (with explanation). If sampling, then outline sampling design.</p> <p>'Variables' refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex.</p> <p>'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'.</p> |
| <b>Sector name(s):</b> RWP ECON 2025-2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Sampling scheme:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Variables:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Supra region(s):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Survey planning</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                              |
| 1. Data sources:<br>2. Sample sizes:<br>3. Survey methods:<br>4. Additional information used in the survey strategy:                                                                                                                                                                                                                                                           |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                       |
| 1. Calculation method for population estimate:<br>2. Calculation method for derived data:<br>3. Nonresponse handling:                                                                                                                                                                                                                                                          |
| <b>Error checks</b>                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Data storage and documentation</b>                                                                                                                                                                                                                                                                                                                                          |
| 1. Data storage:<br>2. Documentation:                                                                                                                                                                                                                                                                                                                                          |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                         |
| 1. Are procedures for confidential data handling in place and documented?<br>2. Are protocols to enforce confidentiality between DCF partners in place and documented?<br>3. Are protocols to enforce confidentiality with external users in place and documented?<br>4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. |

## FLEET-CENSUS-ECON

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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.</i></p> <p><i>'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), Number of fishing enterprises/units                                                                                                                                                                                                                                                                                     |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| No sampling. Unit level register data from Statistics Finland (SF).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ol style="list-style-type: none"> <li>1. Data sources: Official Statistics: Structural business and financial statement statistics, Business register, statistics on business subsidies and employment statistics.</li> <li>2. Sample sizes: Unit level register data</li> <li>3. Survey methods: Unit level register data</li> <li>4. Additional information used in the survey strategy: Auxiliary data on the value of landings used for validation.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ol style="list-style-type: none"> <li>1. Calculation method for population estimate: Population totals are estimated using regression and ratio estimation (see Handbook section 4.2) for detailed income and cost structure. Cost and earnings estimates are done by design-based and model assisted regression and ratio estimation.</li> <li>2. Calculation method for derived data: Value of landings is used as an auxiliary variable for estimating turnover 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. 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 (see account survey for trawlers).</li> <li>3. Nonresponse handling: Not applicable.</li> </ol> |
| <b>Error checks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <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> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Data storage and documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ol style="list-style-type: none"> <li>1. Data storage: Data is stored in a protected network drive and database maintained by Luke.</li> <li>2. Documentation: <a href="https://www.luke.fi/fi/documents/methodological-report">https://www.luke.fi/fi/documents/methodological-report</a><br/><a href="https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-">https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-</a></li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">fisheries-industry-statistics</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| The production of the financial data is carried out annually and the methodology for estimation and imputation are evaluated annually.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <ol style="list-style-type: none"> <li>1. Are procedures for confidential data handling in place and documented? 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://stat.fi/en/surveys">https://stat.fi/en/surveys</a>.</li> <li>2. Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <a href="https://www.luke.fi/fi/documents/tietosuoja/moituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu">https://www.luke.fi/fi/documents/tietosuoja/moituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu</a>.</li> <li>3. Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.</li> <li>4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation.<br/>No, see sections 1 and 2.</li> </ol> |

## SSF-NPS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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.</i></p> <p><i>'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> Non-Probability Sampling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Variables:</b> 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)                                                                                                                                                                                                                                                                                                                                                       |
| <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 small-scale coastal fishers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Data sources: Account survey</li> <li>2. Sample sizes: Sample includes all commercial coastal fisheries that have reported catch and have an estimated value of annual catch above 5 000 euros.</li> <li>3. Survey methods: Questionnaire forms by post but respondents can also reply online using electronic data entry software.</li> <li>4. Additional information used in the survey strategy: Auxiliary data on value of landings used for validation.</li> </ol>                                                                                                                                                                                                                                                                                                                                   |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ol style="list-style-type: none"> <li>1. Calculation method for population estimate: Population totals are estimated using regression and ratio estimation (see Handbook chapter 4.2) for detailed income and cost structure. Cost and earnings estimates are done by design-based, and model assisted regression and ratio estimation.</li> <li>2. Calculation method for derived data: 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.</li> <li>3. Nonresponse handling: Not applicable.</li> </ol>                   |
| <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 database. Automatic validity check for each variable is performed when the electronic responses are saved. For returned paper questionnaires, the data is entered into the same data entry system 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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ol style="list-style-type: none"> <li>1. Data storage: Data is stored in a protected network drive and database maintained by Luke.</li> <li>2. Documentation: <a href="https://www.luke.fi/fi/documents/methodological-report">https://www.luke.fi/fi/documents/methodological-report</a><br/><a href="https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics">https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics</a></li> </ol>                                                                                                                                                                                                                                                  |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Account survey for coastal fishing is carried out annually and the methodology for sampling, estimation and imputation are evaluated annually.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <ol style="list-style-type: none"> <li>1. Are procedures for confidential data handling in place and documented? Confidentiality is a base principle of statistics and assures the confidential processing of data provided by informants, and the Natural Resources Institute Finland has undertaken to follow this principle. Micro-data is confidential</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | and must never be released for administrative decision-making, investigation, surveillance, legal proceedings, or similar purposes. Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Statistical services unit in Luke applies the same principles when handling statistical data as Statistics Finland: <a href="https://stat.fi/en/surveys">https://stat.fi/en/surveys</a> . |
| 2. | Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <a href="https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-etiendonkeruu">https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-etiendonkeruu</a> .                  |
| 3. | Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.                                                                                                                                                                                                                                                                                                                                   |
| 4. | Are there any issues with publication of data due to confidentiality reasons? Provide an explanation.<br>No, see sections 1 and 2.                                                                                                                                                                                                                                                                                                                  |

## LSF-NPS

| Survey Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <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><br><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><br><i>'Variables' refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex.</i><br><i>'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> Non-Probability Sampling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                        |
| <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)                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                        |
| Survey planning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                        |
| Account survey for trawler fisheries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                        |
| Survey design and strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                        |
| 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Data sources: Account survey                                                                                           |
| 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sample sizes: Questionnaires are sent to all trawler fisheries that have reported annual catch above 50 000 kilograms. |
| 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Survey methods: Questionnaire forms by post                                                                            |
| 4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Additional information used in the survey strategy: Auxiliary data on value of landings used for validation.           |
| Estimation design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                        |

|                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.                                                                                                                                                                                                                                                                                                                                                                                               | Calculation method for population estimate: Data from account survey is used for ratio estimation (see Handbook section 4.2) for the cost structure for trawlers required by the RWP ECON.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2.                                                                                                                                                                                                                                                                                                                                                                                               | Calculation method for derived data: This survey is used as an auxiliary data to gain the required cost and earning structure for DCF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3.                                                                                                                                                                                                                                                                                                                                                                                               | Nonresponse handling: Cost and earning structures are constructed based on the sample data available.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <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>                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1.                                                                                                                                                                                                                                                                                                                                                                                               | Data storage: Data is stored in a protected network drive and database maintained by Luke.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2.                                                                                                                                                                                                                                                                                                                                                                                               | Documentation:<br><a href="https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics">https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Account survey for trawlers is carried out annually or every 2 years and the methodology for defining the sample, estimation and imputation method is evaluated according to the same schedule.                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1.                                                                                                                                                                                                                                                                                                                                                                                               | Are procedures for confidential data handling in place and documented? Confidentiality is a base principle of statistics and assures the confidential processing of data provided by informants, and the Natural Resources Institute Finland has undertaken to follow this principle. Micro-data is confidential and must never be released for administrative decision-making, investigation, surveillance, legal proceedings, or similar purposes. Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Statistical services unit in Luke applies the same principles when handling statistical data as Statistics Finland: <a href="https://stat.fi/en/surveys">https://stat.fi/en/surveys</a> . |
| 2.                                                                                                                                                                                                                                                                                                                                                                                               | Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <a href="https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu">https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu</a> .                                                                                                                                                                                                                                                                                                                                   |
| 3.                                                                                                                                                                                                                                                                                                                                                                                               | Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 4.                                                                                                                                                                                                                                                                                                                                                                                               | Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. No, see sections 1 and 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## SOCIAL-IND

### Survey Specifications

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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.</i></p> <p><i>'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, aquaculture, and 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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Social data for fisheries, aquaculture, and fish processing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ol style="list-style-type: none"> <li>1. Data sources: Official Statistics: Employment and financial statement statistics from Statistics Finland.</li> <li>2. Sample sizes: The employment statistics data covers the whole national population.</li> <li>3. Survey methods: The employment statistics is used together with the financial statements data including full time employment and number of employees by company to estimate the social data variables to the fisheries industries. Then the estimates of the social variables as specified in Table 6 of the multi-annual Union programme are calculated according to RCG ECON guidelines.</li> <li>4. Additional information used in the survey strategy:</li> </ol>                                                                                 |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <ol style="list-style-type: none"> <li>1. Calculation method for population estimate: The employment statistics are combined with the financial statements data to connect the employee data from employment statistics to the fisheries companies/vessels in the financial statement statistics.</li> <li>2. Calculation method for derived data: The estimates of the social variables are calculated according to RCG ECON guidelines on classifications. 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 are produced by applying those ratios to financial statement data (FTE and number of employees).</li> <li>3. Nonresponse handling: Not applicable.</li> </ol> |
| <b>Error checks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Statistics Finland checks for the validity of these data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Data storage and documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <ol style="list-style-type: none"> <li>1. Data storage: Data is stored in a protected network drive and database maintained by Luke.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. Documentation:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Official statistics Finland are revised as described: <a href="https://stat.fi/org/principles/publication-principles-for-statistics/practices-when-changes-are-made-to-statistical-data">https://stat.fi/org/principles/publication-principles-for-statistics/practices-when-changes-are-made-to-statistical-data</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ol style="list-style-type: none"> <li>1. Are procedures for confidential data handling in place and documented? Unit-level data are protected as required in the Statistics Act so that original unit-level data cannot be derived from the statistical data.</li> <li>2. Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <a href="https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-etuiedonkeruu">https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-etuiedonkeruu</a>.</li> <li>3. Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.</li> <li>4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. No, see sections 1 and 2.</li> </ol> |

## AQUA-CENSUS-ECON

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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.</i></p> <p><i>'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> 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                                                                                                                                                                          |
| <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| No sampling. Unit level register data from Statistics Finland (SF).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ol style="list-style-type: none"> <li>1. Data sources: Official Statistics: Structural business and financial statement statistics, Business</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>register, statistics on business subsidies and employment statistics.</p> <p>2. Sample sizes: Unit level register data</p> <p>3. Survey methods: Unit level register data</p> <p>4. Additional information used in the survey strategy:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>1. Calculation method for population estimate: Population totals are estimated using regression and ratio estimation (see Handbook section 4.2) for detailed income and cost structure. Cost and earnings estimates are done by design-based and model assisted regression and ratio estimation.</p> <p>2. Calculation method for derived data: 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.</p> <p>3. Nonresponse handling: Not applicable.</p> |
| <b>Error checks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <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>Coefficients of variation and coverage rates are calculated for each variable and for each segment. Regression output results are analysed to check they are statistically valid.</p>                                                                                                         |
| <b>Data storage and documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>1. Data storage: Data is stored in a protected network drive and database maintained by Luke.</p> <p>2. Documentation: <a href="https://www.luke.fi/fi/documents/methodological-report">https://www.luke.fi/fi/documents/methodological-report</a><br/> <a href="https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics">www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics</a></p>                                                                                                                                                                                                                                                                 |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>The production of the financial data is carried out annually and the methodology for estimation and imputation are evaluated annually.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>1. Are procedures for confidential data handling in place and documented? 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://stat.fi/en/surveys">https://stat.fi/en/surveys</a>.</p> <p>2. Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy</p>                                                                                                                                                                                                                                                                                            |

statement for economic data collection can be found in Finnish:  
<https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu>.

3. Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.
4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation.  
No, see sections 1 and 2.

## FLEET-CENSUS-PIM

### 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:** Census

**Variables:** Consumption of fixed capital, Investments in tangible assets (net purchase of assets), Value of physical capital

**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

National fleet from the Vessel register

### Survey design and strategy

1. Data sources: Vessel register and complementary data collection for defining the price per capacity unit
2. Sample sizes: All vessels in the vessel register
3. Survey methods: Vessel register information used combined with questionnaire forms by post
4. Additional information used in the survey strategy: For measuring the price per capacity unit, surveys are conducted roughly every 5 years. Data is collected with the account surveys and interviewing experts for vessel composition and defining depreciation schemes.

### Estimation design

1. Calculation method for population estimate: Perpetual Inventory Method is applied.  
  
Calculation method for derived data: 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:

$$\text{Gross historical value}_i = \frac{\text{Book value}_i}{(1 - \text{Depreciation \%}_i)^{\text{Age}_i}}$$

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 PG vessels: 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.

2. Nonresponse handling: Not applicable.

#### 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

1. Data storage: Data is stored in a protected network drive and database maintained by Luke.

2. Documentation:

#### Revision

The assumptions used in the PIM application are reviewed annually. The assumptions are revised always when more current data is available.

#### Confidentiality

1. Are procedures for confidential data handling in place and documented? Confidentiality is a base principle of statistics and assures the confidential processing of data provided by informants, and the Natural Resources Institute Finland has undertaken to follow this principle. Micro-data is confidential and must never be released for administrative decision-making, investigation, surveillance, legal proceedings, or similar purposes. Unit-level data are protected so that original unit-level data cannot be derived from the statistical data published. Statistical services unit in Luke applies the same principles when handling statistical data as Statistics Finland: <https://stat.fi/en/surveys>.

2. Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu>.

|    |                                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------|
| 3. | Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.               |
| 4. | Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. No, see sections 1 and 2. |

## AQUA-CENSUS-PROD

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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.</i></p> <p><i>'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> 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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Aquaculture producers and companies in the aquaculture register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ol style="list-style-type: none"> <li>1. Data sources: Aquaculture register</li> <li>2. Sample sizes: Production survey is collected exhaustively from the aquaculture producers.</li> <li>3. Survey methods: 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.</li> <li>4. Additional information used in the survey strategy:</li> </ol>                                                                                                                   |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <ol style="list-style-type: none"> <li>1. Calculation method for population estimate: 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.</li> <li>2. Calculation method for derived data: Data from production survey is used for ratio estimation (see Handbook section 4.2) for energy costs and raw material costs.</li> <li>3. Nonresponse handling: Not applicable.</li> </ol>                                                                                |
| <b>Error checks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Data storage and documentation</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <ol style="list-style-type: none"> <li>1. Data storage: Data is stored in a protected network drive and database maintained by Luke.</li> <li>2. Documentation: <a href="https://www.luke.fi/fi/documents/methodological-report">https://www.luke.fi/fi/documents/methodological-report</a></li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Revision</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>Official statistics Finland are revised as described: <a href="https://stat.fi/org/principles/publication-principles-for-statistics/practices-when-changes-are-made-to-statistical-data">https://stat.fi/org/principles/publication-principles-for-statistics/practices-when-changes-are-made-to-statistical-data</a>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Confidentiality</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ol style="list-style-type: none"> <li>1. Are procedures for confidential data handling in place and documented? 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://stat.fi/en/surveys">https://stat.fi/en/surveys</a>.</li> <li>2. Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <a href="https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu">https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu</a>.</li> <li>3. Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.</li> <li>4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. No, see sections 1 and 2.</li> </ol> |

## PROCESSING-CENSUS-ECON

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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><br/> <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><br/> <i>'Variables' refer to Tables 7, 9 and 10 of the EU MAP Delegated Decision annex.</i><br/> <i>'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> Fish processing</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Sampling scheme:</b> Census</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Variables:</b> Turnover, Other income, Personnel costs, Value of unpaid labour, Energy costs, Other operating costs, Operating subsidies, Subsidies on investment, Consumption of fixed capital, Total value of assets, Financial income, Financial expenditures, Gross investments, Fross debt, Number of persons employed, Full-time equivalent (FTE), Unpaid labour, Number of enterprises by size category</p>                                                                                                                                                                                                                                        |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| No sampling. Unit level register data from Statistics Finland (SF).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Survey design and strategy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <ol style="list-style-type: none"> <li>1. Data sources: Official Statistics: Structural business and financial statement statistics, Business register, statistics on business subsidies and employment statistics.</li> <li>2. Sample sizes: Unit level register data</li> <li>3. Survey methods: Unit level register data</li> <li>4. Additional information used in the survey strategy:</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Estimation design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ol style="list-style-type: none"> <li>1. Calculation method for population estimate: Census data from Statistics Finland is used and no estimation is needed.</li> <li>2. Calculation method for derived data: Not applicable.</li> <li>3. Nonresponse handling: Not applicable.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ol style="list-style-type: none"> <li>1. Data storage: Data is stored in a protected network drive and database maintained by Luke.</li> <li>2. Documentation: <a href="https://www.luke.fi/fi/documents/methodological-report">https://www.luke.fi/fi/documents/methodological-report</a><br/><a href="https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics">https://www.luke.fi/en/statistics/profitability-of-fishery/quality-description-of-profitability-of-the-fisheries-industry-statistics</a></li> </ol>                                                                                                                                                                                                                                                                                                  |
| <b>Revision</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| The production of the financial data is carried out annually and the methodology is evaluated annually.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Confidentiality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <ol style="list-style-type: none"> <li>1. Are procedures for confidential data handling in place and documented? 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://stat.fi/en/surveys">https://stat.fi/en/surveys</a>.</li> <li>2. Are protocols to enforce confidentiality between DCF partners in place and documented? Privacy statement for economic data collection can be found in Finnish: <a href="https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu">https://www.luke.fi/fi/documents/tietosuojailmoituskalakantojen-arviointi-kalastus-vesiviljely-kalatalouden-eutiedonkeruu</a>.</li> </ol> |

3. Are protocols to enforce confidentiality with external users in place and documented? See above sections 1 and 2.
4. Are there any issues with publication of data due to confidentiality reasons? Provide an explanation. No, see sections 1 and 2.