Swedish Agency for Marine and Water Management

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

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

Swedish Work Plan for data collection in the fisheries and aquaculture sectors

2022-2024

Version 1.4

Gothenburg, 20211015_Updated_20221014

CONTENTS

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.

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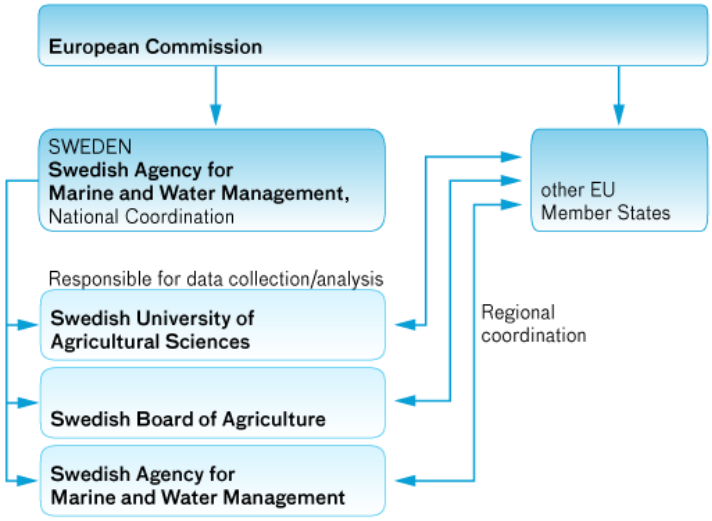
The Swedish organization of DCF work:



The Swedish Agency for Marine and Water Management is responsible for the implementation of the DCF within Sweden.
The Swedish Agency for Marine and Water Management collects information on landings, fishing efforts, and economic data regarding Sweden's fishing fleet. The Agency also collects data on recreational fisheries. The Swedish Board of Agriculture assists the Swedish Agency for Marine and Water Management in data collection concerning aquaculture and processing industries. The Department of Aquatic Resources (SLU Aqua) at the Swedish University of Agricultural Sciences is responsible for the biological sampling on surveys (bottom/pelagic trawling, acoustic, UWTV), sea-sampling onboard commercial vessels, harbour sampling, and biological sampling of recreational fisheries. SLU Aqua is also responsible for storing, quality-checking, analyzing and delivering biological data to end users as well as participating and contributing in scientific working groups.

Sweden is participating in RCG NANSEA and RCG Baltic.

A website has been established to inform involved partners, the EU Commission and the public about the Swedish implementation of the EU Data Collection framework:
Data Collection Framework (DCF) - Data Collection Framework - Swedish Agency for Marine and Water Management (havochvatten.se)

Text Box 1a: Test studies description

General comment: This text box fulfils Chapter II, section 1.2 of the EU MAP Delegated Decision annex. This text box applies to the work plan and the annual report.
Not applicable

Text Box 1b: Other data collection activities

General comment: This text box applies to the work plan and the annual report. Use this text box to provide information on other data collection activities that relate to your EMFAF operational programme and need to be included in the work plan and the annual report. Describe activities that are funded by the DCF but fulfil objectives under other EMFAF priorities, like marine knowledge, or activities funded by the DCF, but without a direct link to the EU MAP specific requirements or WP template tables, like freshwater fisheries. You can also include one-off specific studies for a particular end-user need that do not enter the regular data collection.
1. Aim of the data collection activity Developing mechanisms to support the planning and execution of administrative tasks and the branding and online visibility of the RCGs, with the aim to establish a long term supportive structure. Activity done under Project SecWeb (Mare 2020-08). 2. Duration of the data collection activity 01/01/2021 – 31/12/2022 3. Methodology and expected outcomes of the data collection activity The Regional Coordination Groups (RCGs) are the main hub for regional coordination and cooperation between member states within the different regions. The RCGs should in accordance with Council regulation (EU) 2017/1004 aim at developing and implementing procedures, methods, quality assurance and quality control for collecting and processing data with a view to enabling the reliability of scientific advice to be further improved. The RCGs may further prepare draft regional workplan, complementing or replacing the national workplan MS submit to the Commission on a regular basis. The RCGs have further a key role to interact with end-users of scientific data (EU) 2017/1004 and to, after end-user consultation, coordinate and agree on details in data to be collected and managed on the regional level ((EU) 2021/1167). All the above is of interest to all member states, active in one or more regions. This project on developing the supporting tools is currently funded by the Commission. For the long term development of the tools to support the work of the RCGs, and as such support the different MS, suggestions

were presented and discussed at the RCGs (NA NS&EA and Baltic) technical meetings in June 2020 & 2021 and presented to the NCs during the Decision meeting in September 2020&2021. In principal, the MS agrees, but the NCs requested more time to take this into account, and requested a better insight in what would be provided before a national contribution for the funding decided. Therefore, within this project, the different business scenarios are further developed and will be presented to all member states.

Objectives of this activity is to:

1. Develop a framework and setup a secretariat in support of fluent administrative procedures of the RCGs and establish a suitable long-term financial script for that;
2. Promote good practices in communication within and among the RCGs and engaging with all the MS, and other stakeholders;
3. Develop and setup a website linked with existing (relevant) websites and SharePoint, and to improve the overall capacity to reach out to the member states and to a wider audience about past and present RCG work;
4. Identify tools to increase the visibility of the work and outputs of the RCGs

Methodology

WP 1: Setting up the secretariat in support to RCGs and ISSGs,

The tasks of the RCG secretariat are defined in coordination with RCGchairs. This includes the support to organize RCG meetings, reporting and communication tasks, as well as the follow up of the intersessional work. As a case study, a secretariat is set up to support the RCG NA NSEA & RCG Baltic.

WP2: Developing and operating a website

Based on a process of consultation with the RCG, MS and end-users are contacted to collect input for the website.
Within the website, a repository for documents need to be available where confidential information can be stored. This information is of high value for the members states and will be reachable by the MS.

WP3.Ensuring future operation and funding:

This WP takes into account the output from WP1& and WP2. Through the activities in this WP different business models for long term funding will be developed and presented.

Expected outcomes:

1. The provision of dedicated Secretariat support for the RCGs to ensure the efficient use of RCG MS resource allocation.

2. A website developed by the end of 2021 with following features:

- ✓ Integration – synchronization with third-party applications.
- ✓ Responsive – to serve content across multiple screens and platforms.
- ✓ User experience- maintain a consistently good user experience.
- ✓ Accessibility – All levels of society and end-users need to be able to access in a friendly used way.
- ✓ Retention- keep visitors coming back
- ✓ Links to protected part outside the website as repository for confidential documents

3. Visual identity for RCGs

4. Stakeholders database

5. Internal communication protocol

6. Integration of the results of the Mare2020/08 Annex I project

7. A business scenario acceptable for all MS in the different regions and COM to ensure the long-term existence of a secretariat and the RCG website

A detailed description of the secretariat functions, the implementation of the secretariat, the content of the website, the building blocks of the website and the business model for the provision of Secretariat role and website continuation (updating& maintenance) will be provided.

Future progress in continued support for regional coordination depends on the project's outcomes and the selected route to proceed and fund the required work. As regional coordination is the cornerstone of the collective approach to data collection, the continuation of the work may be embedded in a regional work plan in the future based on national input and support.

Text Box 2.3: Data collection for Diadromous species in freshwater

General comment: This Textbox 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 commercial fisheries for salmon, sea trout and eel, and from research surveys on salmon and sea trout in freshwater, and on eel in any relevant habitat including coastal waters.

Method selected for collecting data.

Eel

Restocking data eel: Collection of restocking data from organizations that restock eels. Data is collected on number of restocked eels per location per year. Eels are restocked in freshwater and coastal sites. According to the Swedish eel management plan, 2.5 million quarantined eels should be restocked. Data on restocking is an important parameter that influence recruitment and is needed for the stock assessment models.

Electrofishing eel: Electrofishing of eel to collect data on recruitment. Methods for data collection follows national standards. Streams are electrofished twice (repeated) using backpack or generator (differs between sites). Stop nets are not used. A sub-sample of eels are kept and dissected for data on length, weight and parasite numbers. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked. The electrofishing program will be evaluated during 2022, and based on the results, number of sites to sample may change between 2022 and 2023-2024.

Collector/trap recruitment eel: Collection of data on number of eels migrating upstream rivers, collected/caught in eel collectors/traps at hydropower plants and dams. Eels in the collector/trap are counted by external parties and released upstream. A sub-sample of eels are kept and later dissected for data on length, weight and parasite numbers. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked. Recruitment statistics from eel collectors/traps might be affected by the retrial of hydropower plants in Sweden, which will commence in 2022. Locations from where we have previously obtained recruitment statistics from a hydropower company might be needed to be replaced by electrofishing, based on the results from the retrials. This will likely take some time however, hence the work plan has been written assuming that we will receive recruitment statistics as before for the coming work plan period.

Fisheries independent freshwater eel: Alizarin-marked and barium-marked eels have been stocked at two occasions and the population is followed thought a fyke-net fishing program. CPUE is also calculated. All eels caught are dissected. Eels are occasionally tagged with e.g., PIT-tags and DST, when recaptured these eels are used to verify estimated growth curves. During dissection, data on length, weight, sex ratio, parasite numbers and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) are collected. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Fisheries independent coastal eel: A survey run yearly in August in order to continue following the eel stock on the Swedish west coast. The commercial fishery in this area was indirectly closed due to that the minimum landing size was increased, hence it is no longer possible to continue the commercial sampling. The survey set-up includes catching a predefined number of yellow eels, all of which are length measured. Using length-stratification, a sub-sample from the total catch of yellow eel and silver eel respectively is then collected for biological (age) sampling. In the survey manual, the maximum effort (gear-days) to be aiming for is defined. No other species than eel is sampled.

Introduced population eel: Monitoring of an introduced population and silver eel escapement data collection. Eels were stocked in 1980, 1989, and 1998. When emigrating from the lake, eels are

caught in an outlet custom-made trap and counted. A subset of the eels is kept for later dissection and data collection on length, weight, sex ratio, parasite numbers and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length). Otoliths are stored as they provide a very valuable source of otoliths with known age. They are used internationally in age-reading calibrations.

Index river eel: The Index river program was set up in 2019 and is designed to provide full life history data on recruits, standing stock and migrating individuals. A custom-made trap (Wolf-trap) is used to catch downstream migrating eels, when the trap is not in use, eels are counted in a fish counter (Vaki with camera). Eels are tagged with PIT-tags to investigate migration patterns, and to validate the function of the trap and camera counter system. A PIT-tag reader (Riverwatcher) is installed by the camera counter. A subset of eels caught in the Wolf trap are stored for later dissection. During dissection, data on length, weight, sex ratio, parasite numbers and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) are collected. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Fisheries dependent freshwater eel: Sampling from commercial fishing in freshwater. Lakes to sample are selected based on areas from where we are still missing data, and lakes that have active commercial fishers. Eels are commercially fished using pound nets, and the fishers sample eel throughout the fishing season and store for later dissection. During dissection, data on length, weight, sex ratio, parasite numbers and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) are collected. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Mark-recapture eel: Estimation of fishing induced mortality through mark-recapture. Eels are mainly tagged at the coast, but also in freshwater. Eels to be tagged are commercially fished using pound nets. They are tagged on-site with an externally visible Carlin tag and data on length, weight, sex-ratio and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) is collected. The eels are then released at the site of capture. When a commercial fishery catches a tagged eel, the Carlin tag is sent to SLU Aqua (together with accompanying data on where and when the eel was fished, and length and weight) and fishing induced mortality can be calculated. The aim is to tag eels at three locations along the Baltic coast annually, on a running scheme. Due to a decreasing number of commercial fishers, this number can be difficult to reach.

Acoustic tagging eel: Estimation of silver eel escapement and fishing induced mortality (for double-tagged eels) through tagging with acoustic transmitters. This program runs side-by-side with the mark-recapture program. Eels to be tagged are commercially fished using pound nets. They are tagged on-site with an externally visible Carlin tag and an acoustic transmitter, surgically implanted in the body cavity. Data on length, weight, sex-ratio and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) is also collected. The eels are then released at the site of capture. When a commercial fishery catches a tagged eel, the Carlin tag and the acoustic transmitter is sent to SLU Aqua and fishing induced mortality can be calculated. Eels escaping from the Baltic Sea are logged in acoustic receivers deployed in the Sound between Sweden and Denmark, and in the Danish Belt straights (all exits from the Baltic Sea are covered with receivers), generating data on silver eel escapement from the Baltic Sea.

All sampling schemes are run at an annual basis; however, locations are exchanged for some schemes (Fisheries dependent freshwater eel, Electrofishing eel, Mark-recapture eel, Acoustic tagging eel), in order to cover as large part as possible of the EMU (SE_Total).

Salmon and sea trout

Data collection for salmon consists of annual electrofishing surveys of juveniles (parr), trapping of out-migrating smolts and counting of ascending spawners in designated rivers. Electrofishing and smolt counting are also undertaken in additional rivers, according to stock assessment needs.

Parr: Electrofishing of salmon and sea trout is conducted annually to collect data on recruitment. Methods for data collection follows national standards. Streams are electrofished by repeated sampling (3 times) using backpack or generator (differs between sites). Stop nets are not used. Electrofishing rivers are spread among assessment units to comply with end-user needs. The number of electrofishing sites per river varies with size/length of river and with year for non-index rivers, to cover areas of salmon reproduction. The suggested number of sites fulfills the minimum requirement for an acceptable level of certainty for each river for salmon on the east coast of Sweden, with respect to smolt production estimates used for stock assessment. The electrofishing program for salmon on the west coast of Sweden and sea trout will be evaluated during 2022, and based on the results, number of sites to sample may change between 2022 and 2023-2024.

Smolt: Estimates of smolt abundance are made annually through mark-recapture experiments by trapping of out-migrating smolts in six rivers for salmon and one river for sea trout. These rivers are spread among assessment units to comply with end-user needs. Individual length and weight are collected and scale samples are taken from sub-samples stratified by time of capture for age determination.

Spawners: Counting of ascending salmon spawners is conducted annually in five rivers spread among assessment units to comply with end-user needs. Different types of counters are used in different rivers. Individual length is estimated and, in some cases, also sea age composition (one sea winter or multi sea winter) based on length. Scale samples are taken from sub-samples stratified by time of capture for age determination.

Freshwater commercial fisheries statistics: For salmon, data from commercial fisheries in freshwater are collected from fishing log-books/journals. Only number of individuals are used in stock assessment (ICES WGBAST). This data (census) is collected from fishermen journals/logbooks as part of the Swedish official catch statistics.

Restocking data for salmon and sea trout: Annual collection of data on number of restocked salmon and sea trout per site per year in accordance with stock assessment needs. Salmon and sea trout are restocked in freshwater and in coastal sites.

M74: Annual monitoring of reproductive disease, M74 in Baltic salmon. The sickness is monitored via M74 incidence in brood stock fry from seven hatcheries together with measures of levels of thiamine in unfertilized eggs from two hatcheries. The thiamine levels acts as an early warning and indicate a high risk of M74 mortality the following year.

Genetic sampling: Genetic sampling of salmon is conducted on the west coast of Sweden and the Baltic Sea. For the west coast, collection of tissue samples for genetic analysis (in selected rivers) will be performed annually to secure that NASCO's goals of genetic diversity are met and build a genetic baseline for the west coast so that identification of alien species can be made. For the Baltic Sea, tissue samples will be collected every three years from commercial fishermen in the mixed stock salmon fishery of the Baltic Sea to estimate catch composition of different salmon populations.

Text Box 2.4: Recreational Fisheries

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 for the data collected on marine and freshwater recreational catches.

A. Questionnaire (Sampling scheme identifier: RecSelfOnshore - Offsite SCB): All regions

A web and postal questionnaire will be used to collect data (e.g., number of fishing days, gear days and catches) from recreational fishing for a range of different species, including species listed in Table 4, Commission Delegated Decision (EU) 2021/1167, in the Swedish part of regions Baltic Sea and North Sea.

The primary sampling units are permanent residents in Sweden of age 16-80. The questionnaire will be sent out at three occasions each year, with questions regarding fishing activities and targeted species in the most recent four months. In the questionnaire, also releases are quantified, but currently no explicit distinction is made between released alive or dead (discards).

A panel approach is used in the sampling. From the target population, respondents are randomly selected for the first panel. To increase the number of answers a panel design is implemented. Both respondents who fish and non-fishers have a probability of being sampled in the upcoming panels. The population is stratified by six different geographical regions in Sweden and by age and gender. For details on the design, see Annex 1.1.

The first mailing to the target population contains login information to the web questionnaire. Three written remainders will be performed, again with login details, but also a written questionnaire. The sampling progress is closely monitored during each period. The response rate has been stable with low volatility the last 24 sampling periods (8 years).

The questionnaire will also be evaluated as a means of cost-efficiently estimating catch and effort in regions not yet covered by on-site surveys (e.g., subdivisions 25 and 27)

This questionnaire is a central part of Sweden data collection with regards to its DCF objectives on recreational catches, but also provides data for other end-uses. Sweden has an ongoing project where adjustments to the questionnaire will be considered that may improve its performance in terms of data collection for DCF purposes. Improvements to aspects such as the taxonomic, spatial and temporal resolution of estimates it can produce are being considered. These will need to be balanced against the obvious advantages of maintaining the consistency of time series and securing response rates. If adjustments are made, they will be included in future updates of the Swedish NWP.

B. Tour boat sampling (Sampling scheme identifier: RecSciObsAtSea – Tour boats & RecOwnObsAtSea – Tour boat logbooks): Western Baltic Sea

In 2017-2019, a pilot study was performed to quantify Swedish recreational catches of cod and associated by-catches in ICES subdivision 23-24. Several methods were explored, including aerial observations, hydrophone and camera sampling of activity patterns, snowball survey of questionnaire and on-site sampling methods. It was found that the major part of recreational catches of cod in the area was taken by the tour boats of the for-hire sector in subdivision 23. Hence, it was proposed that on-board sampling of catches on the tour boats and the census of voluntary logbooks should be continued and incorporated as a permanent contribution to the biological sampling of cod catches from the recreational sector. The main aim of the study is to obtain census data of catches and to collect size-based catch and effort information on cod, but data on all species (including by-catch) will be collected.

The skippers of the tour boats in the study area fill voluntary logbooks of catch of cod on each fishing trip. This census constitutes a large part of the data collection from the tour boats as it is anticipated to currently provide the best approximation of catches of cod. In case of decreasing

response rates or other obstacles encountered with the data collection, the on-board sampling (see below) is designed to accommodate also estimates of catch and effort.

The tour boat sampling will include recreational fishing activity of both Swedish residents and visitors to Sweden. The on-board sampling will be performed on commercial fishing tour boats with 8 or more guests in the Western Baltic Sea (subdivision 23). The total annual number of tour boats in the area ranges from 11 to 14. Within each quarter of the year, a random set of tour boats is sampled. When a boat has several trips on a day, one trip is randomly selected.

The on-board survey provides quarterly estimates on biological data on individual fish kept (e.g., mass, length) and released alive (numbers and species), which are necessary for stock assessment. The estimates of releases from on-board sampling are then applied to data from logbooks. Both weekdays and weekends/holidays are covered in the scheme. The population is stratified by quarter and day type (weekend, weekday). In addition, demographic data on fishers are collected. Currently, on-board data are used to split the census data obtained from the logbooks in age-classes. Potentially this data may be also used to raise the catch per trip to a total estimate with an associated variance. For further details, see Annex 1.1.

C. **Recreational catches of salmon and sea trout in rivers and the Baltic**

Total recreational river catches and catches and releases of salmon (in SD 22-31 and 3a) and sea trout (in SD 22-31) will be estimated annually by enquiries, interviews, catch reports from fishing right owners. Estimates of Baltic salmon trolling catches will be carried out annually by site studies combined with effort estimates, but new methodology is under development for better spatial and temporal coverage. Estimates of total landed catch of salmon in the recreational coastal trap net fisheries will be carried out on an annual basis, based on interviews and enquiries.

Text Box 2.5: Sampling plan description for biological data

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) and 4.1 of the EU MAP Delegated Decision annex. This text box complements Table 2.5.

ALL REGIONS

Additional information on sampling schemes

In the present programme, Sweden takes the step of extending its implementation of statistically sound sampling schemes (4S) in its commercial sampling schemes to the small pelagic stocks. This work started in 2020 with a regionally coordinated sampling plan for herring and sprat in the Central Baltic using self-sampling. That pilot sampling design is now included in the routine programme and is also reflected in the test run of Baltic Regional Work Plan. In addition, strata with probabilistic designs are now proposed for the herring and sprat fisheries Kattegat, Skagerrak and North Sea and the gillnet fisheries in SD 23-29. In 2020 the affected herring and sprat stocks involved, represented >60% of Swedish landings.

The implementation of these probabilistic sampling schemes on small-pelagic fisheries brings about some uncertainties. The performance of the new schemes, e.g., in terms of number of samples obtained or fish measured/aged, depends on the specifics of sampling design and sampling effort but also on aspects like stability in fleet behaviour, good collaboration of the industry and national staff capability to circumvent significant logistical challenges (e.g., the need to pick up of samples in distant landing ports). Ultimately, chance always plays an important role in probabilistic schemes. To reduce risks the 2020-2021 stock-based sampling plans, based on quota sampling by

quarter*species*area to meet otolith goals, are still included in the programme. They will be activated in case implementation circumstances indicates insufficient sampling and significant threats to data provision to end-users. In parallel, because self-sampling schemes are thought to not adequately capture rarer by-catches from small-pelagic fisheries, a special stratum (CommSciObsAtSea - All species: Active SmallPelagics HER, SPR - 27.3.d.25-29) is created with 12 trips planned for at-sea scientific observation in the small pelagic fisheries in the Baltic. In tandem with characterization of main catches and their species and stock composition, the trips in this stratum will be used to test new methods for improved characterization of rarer by-catches, namely electronic monitoring. If successful, these methods will pave the way to improved sampling and coverage of these fisheries with regards to those by-catches in an upcoming programme.

Evaluation, development and improvement of the remainder Swedish sampling schemes is planned to continue alongside implementation and follow-up on the new probabilistic schemes now implemented and developments on the estimation side. Over 2022-2024 efforts will also increase with regards to finalizing documentation and putting it online, so it is widely available to the public.

Specific uncertainties with regards to 2022-2024:

At present there are temporary emergency measures in place to protect the eastern Baltic cod stock (EU 2019/1248). These measures have had significant impact on the Swedish cod fisheries in the Central and South Baltic. At present (10/2021), significant management measures are also expected to be put in place for the Western Baltic cod stock with yet unknown consequences for the sampling in 27.3.d.23 and 27.3.d.24. In response to these situations, the Swedish plan sets to 0 the sampling effort of its main Baltic cod-related strata, with the plan to re-activate it if the situation improves. With regards to 27.3.d.23, where the management situation is not yet defined, the sampling goals of the previous programme are maintained. These sampling goals will have to be adapted if, e.g., emergency measures are put in place, altered and/or the industry changes its response to the situation (e.g., by re-directing fishing effort to other species or fishing areas).

Text Box 2.6: Research surveys at sea

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

BALTIC SEA

BITS Q1 and BITS Q4 – Baltic International Trawl Survey

1. Objectives of the survey

To estimate cod recruitment indices, cod abundance and to follow the development of flounder and other flatfish populations in the different Sub-Divisions in the Baltic.

2. Description of the survey design and methods used in the survey for each type of data collection

The BITS survey is planned to be conducted in quarter 1 and 4 annually 2022-2024. The survey is conducted using a TV3L demersal trawl at day-time. Sweden is assigned 50 randomly selected hauls for the first quarter survey and 30 randomly selected hauls for the fourth quarter survey. For both surveys hydrographical data are collected with a CTD in connection to the trawl hauls and acoustic data are continuously recorded. Each haul is sorted and all species are recorded, length measured and weighted. For target species biological parameters are collected on fish length, age, weight, sex and gonadal maturity. In case of large catches subsampling is performed. Additional sampling like stomach content on cod and flounder, isotope analysis on cod, sampling of parasites from cod liver is also undertaken and from each haul. Marine litter are registered. The data on marine litter is uploaded to the international ICES database. The manual is available at: BITS manual.

3. Coordination and participation

The Swedish research vessel R/V Svea will be used for the surveys in the Baltic. Participating Member states in the surveys are: Denmark, Germany, Latvia, Poland, Lithuania, Estonia, Russia and Sweden. The BITS survey is coordinated by the ICES Baltic International Fish Survey Working Group (WGBIFS) and the data are uploaded to the international ICES database DATRAS.

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

There is no cost sharing agreement for this survey. No threshold agreement applied.

BIAS – Baltic International Acoustic Survey

1. Objectives of the survey

The aim of the survey is to provide abundance estimates of herring, sprat and pelagic cod in the Baltic Sea.

2. Description of the survey design and methods used in the survey for each type of data collection

The BIAS survey is planned to be conducted annually 2022-2024. The survey is using a SIMRAD EK80 echo sounder with the 38kHz transducer (ES38b) for the acoustic transect data collection and a Gloria pelagic trawl with a Fotö trawl as backup for collecting biological information. Approximately 2 hauls are made in each ICES rectangle. For each haul, all species are length measured onboard and parameters such as age, weight, and sex are analysed on herring, sprat and cod. Gonadal maturity is also analysed on herring. Sweden is responsible to cover area subdivision (SD) 27 and parts of SD 25, 26, 28 and 29. The acoustic data together with the biological information is used in the assessment models. Additional sampling on stomach content on cod is undertaken. The manual is available at: IBAS manual.

3. Coordination and participation

The Swedish research vessel R/V Svea will be used for the survey. Participating Member states in the surveys are: Germany, Latvia, Poland, Lithuania, Estonia, Russia, Finland and Sweden. The BIAS survey is coordinated by the ICES Baltic International Fish Survey Working Group (WGBIFS) and the data are uploaded to the international ICES database "Acoustic trawl surveys".

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

Sweden support the Finnish part of BIAS survey in SD30 by sending 2 persons to work in fishlab during the survey. In addition Sweden is also conducting reading of herring otoliths sampled at the survey. See detailed agreement in table 1.3

SPRAS – Sprat Acoustic Survey

1. Objectives of the survey

The aim of the SPRAS surveys is to estimate the stock indices of Sprattus sprattus in the Baltic.

2. Description of the survey design and methods used in the survey for each type of data collection

The SPRAS survey is planned to be conducted annually 2022-2024.The survey is using a SIMRAD EK80 echo sounder with the 38kHz transducer (ES38-7) for the acoustic transect data collection and a pelagic trawl, Fotö and Gloria trawl for collecting biological information. 2 hauls are made in each ICES rectangle. For each haul, all species are length measured on-board and parameters such as age, weight, and sex are analysed on sprat, herring and cod. Sweden is responsible to cover area subdivision (SD) 27 and parts of SD 28. The acoustic data together with the biological information is used in the assessment models.
The manual is available at: IBAS manual

3. Coordination and participation

The Swedish research vessel R/V Svea will be used for the survey. Participating Member states in the **su**rveys are: Poland, Germany, Estonia, Lithuania, Latvia and from 2020 also Sweden.
The SPRAS survey is coordinated by the ICES Baltic International Fish Survey Working Group (WGBIFS) and the data are uploaded to the international ICES database “Acoustic trawl surveys”.

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

There is no cost sharing agreement for this survey. No threshold agreement applied.

SSS Q1 and Q4 - Sweden Sound Survey

1. Objectives of the survey

To estimate cod recruitment indices, cod abundance and to follow the development of flounder and other flatfish populations in the Sound SD23.

2. Description of the survey design and methods used in the survey for each type of data collection

The SSS survey is planned to be conducted in quarter 1 and 4 annually 2022-2024. In the Sound, 11 stations with one haul in each station is trawled by a small Swedish vessel (Hålabben) using a down scaled TV3 930 trawl, to 30 % of original size. Except from the small trawl, the biological sampling is following the procedure manual as BITS survey.

3. Coordination and participation
The survey is a national survey and not mandatory. The spatial coverage of the stations is however coordinated with Denmark. The data are uploaded to the international ICES database DATRAS and is used in the stock assessment for cod in ICES WGBFAS.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied
It is a national survey and only Sweden is participating in this survey. Therefore, there is no cost sharing agreement for this survey and no threshold agreement applied.

NORTH SEA AND EASTERN ARCTIC

IBTS Q1 and Q3 – Sweden International Bottom Trawl Survey

1. Objectives of the survey
The survey monitors changes in the stocks of commercial fish species and collects biological information on the fish community in the areas 27.3.a.20, 27.3.a.21, 27.4 and 27.7d. It provides ICES assessment groups with recruitment- and relative abundance indices and distribution data. The primary species investigated are herring, sprat, cod, haddock, whiting, norway pout and plaice.

In quarter 1 the survey also provide data on abundance and distribution of clupeid post-larvae. The survey is also used as a platform to collect other ichthyoplankton data.

Hydrographical, environmental, and marine litter information is also collected.

2. Description of the survey design and methods used in the survey for each type of data collection
The IBTS survey is planned to be conducted in quarter 1 and 3 annually 2022-2024. The survey is grid-based, using ICES statistical rectangles of 30x30 nautical miles (1 degree longitude x 0.5-degree latitude). The aim is to samples each rectangle with two hauls by two countries when logistically possible and priority is given to cover all rectangles rather than attaining two hauls per rectangle.
The vessels are free to choose any position in the rectangles avoiding clustering by executing the tows 10 nautical miles apart when possible.

The rectangles are assigned to the participating countries for both surveys at the annual IBTSWG-meeting.
The fishing takes place daytime and the gear used is a French Herring Trawl (GOV).
Fishing conduct and handling of the catch are standardized and follows the IBTS Manual SISP 10 revision nr 11. The manual is available at: IBTS manual.

To collect clupeid larvae in quarter 1, a Midwater Ring Trawl is used and the aim is to sample each rectangle four times by two countries.

3. Coordination and participation

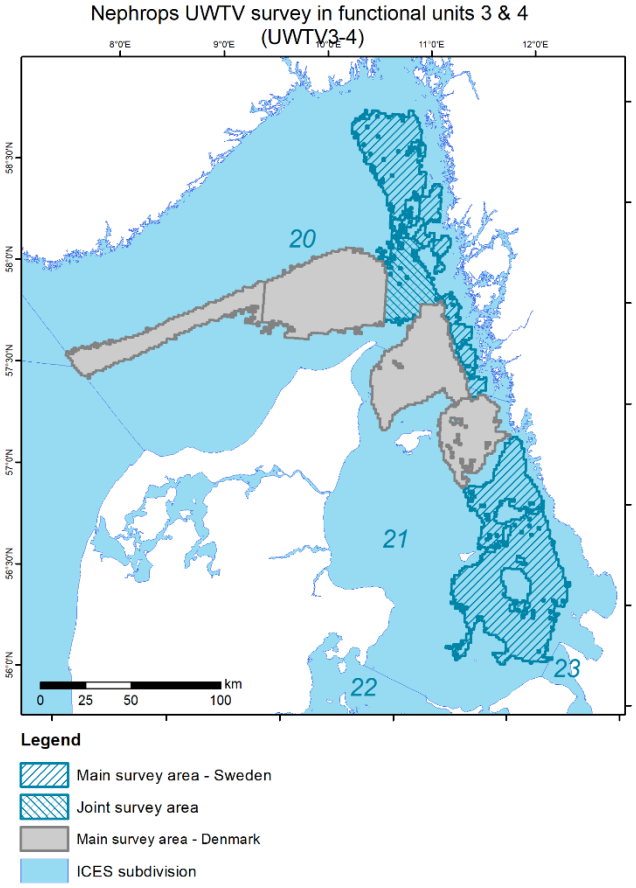
The Swedish research vessel R/V Svea will be used for the surveys. Participating Member states in the surveys are: Denmark, Germany, UK Scotland, Norway, The Netherlands, France, UK England and Sweden. The IBTS survey is coordinated by the International Bottom Trawl Survey Working Group (IBTSWG) and the data are uploaded to the international ICES database DATRAS.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied.
There is no cost sharing agreement for this survey. No threshold agreement applied.

UWTV 3-4 - Nephrops UWTV Survey in functional units 3 & 4

1. Objectives of the survey
The objective of the survey is to collect video samples from *Nephrops* habitat in order to provide burrow densities and a total abundance estimate of *Nephrops* in the Skagerrak – Kattegat area.

2. Description of the survey design and methods used in the survey for each type of data collection
The UWTV survey is planned to be conducted annually 2022-2024. The *Nephrops* habitat is sampled using a towed sledge mounted videocamera. Video data are typically collected from 200m long tows at 200 stations in total each year. A random stratified sampling scheme is applied, and the sampling area is defined by using a combination of fishing ground location, bathymetry and bottom substrate information. The sampling and video analysis protocol follows the manual provided by ICES (TIMES issue 65).



3. Coordination and participation

The survey is joint with Denmark (DNK) and coordinated through ICES working group NEPS (WGNEPS). Main survey areas for each country are shown in map above.

The survey is preformed using the Swedish vessel R/V Svea and the Danish vessel R/V Havfisken.

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

There is no cost sharing agreement for this survey. No threshold agreement applied.

CODS Q4 - Kattegat Cod Survey

1. Objectives of the survey

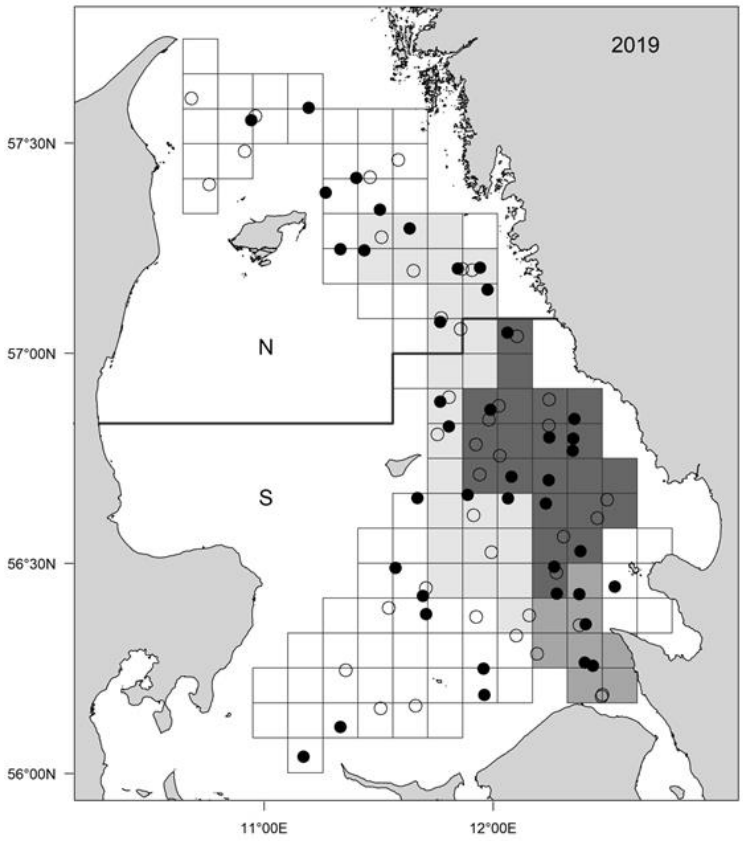
The main purpose of the survey is to provide fishery-independent data to monitor trends in abundance, biomass, recruitment and distribution of Kattegat cod.

2. Description of the survey design and methods used in the survey for each type of data collection

The CODS Q4 survey is planned to be conducted annually 2022-2024. The survey is based on a stratified random design with 80 hauls distributed within a survey grid of 5×5 nm squares. The original design was to be conducted by four chartered commercial trawlers. From 2016 and

onwards Denmark has used R/V Havfisken instead of chartered trawlers, thus two Swedish vessels and one Danish vessel currently participate in the survey. Each vessel is assigned 20 or 40 stratified randomly selected survey squares, and all vessels are assigned the same proportion of hauls from each stratum.

Within each square, the skipper decides on the best way to fish at the location, e.g., set position and tow direction. The survey gear is a 112 feet commercial bottom trawl with 70 mm liner in the cod-end. Each haul is sorted, and all species are recorded, length measured and weighted. For target species biological parameters are collected on fish length, age, weight, sex and gonadal maturity. In case of large catches subsampling is performed.



Map showing the CODS Q4 survey area and stratification (in grayscale). N (north) and S (south) identify the two domains used for biological sampling. The Swedish (filled symbols) and Danish (open symbols) set positions in 2019 are shown to illustrate the spatial distribution of sampling stations.

3. Coordination and participation

The survey is a joint survey with Denmark and is a new mandatory survey from 2022 onwards.

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

There is no cost sharing agreement for this survey. No threshold agreement applied.

ASH - International Ecosystem Survey in the Nordic Seas

1. Objectives of the survey
This survey is carried out in order to investigate distribution and migrations of the Atlanto-Scandian herring, blue whiting and other pelagic fish and to produce a biomass index for herring and a recruitment index for blue whiting for the ICES Working Group on Widely Distributed stocks (ICES WGWIDE). Furthermore, hydrographic conditions and plankton abundance in the Norwegian Sea and adjacent waters are monitored in order to investigate distribution and migration of herring and other pelagic fishes are influenced by environmental conditions.

2. Description of the survey design and methods used in the survey for each type of data collection
The survey is planned to be conducted annually 2022-2024. The sampling procedures are described in: ICES Manual for International Pelagic Surveys (IPS)

Data storage and data use and description of survey: see work plan from Denmark.

3. Coordination and participation
The survey is coordinated with Norway as an international survey with participation of Norway, Iceland, Faroe Islands and EU, where the Danish R/V Dana conducted the EU survey part. Planning and coordination is done by ICES Working Group for International Pelagic Surveys (WGIPS). Sweden participates in the ASH as part of a consortium of EU MSs and let two scientists join the survey on-board RV Dana.

4. Where applicable, provide more details on the type of participation and/or threshold agreement applied
Sweden is providing staff for this survey: the survey is carried out by RV Dana and Sweden let two scientists join the survey.

Sweden is also providing funding for this survey and cost sharing applies: the operational costs of the vessels are shared by EU MSs applying an allocation key proportional to national share of the EU TAC.

NORTH ATLANTIC

IBWSS – Blue Whiting Survey

1. Objectives of the survey
The survey aims to determine the distribution and abundance at age and length of the Northeast Atlantic blue whiting stock during the spawning season to the west of Britain and Ireland.

2. Description of the survey design and methods used in the survey for each type of data collection
The IBWSS survey is planned to be conducted annually (2022-2024) in March/April in the North Sea. During the survey transect-wise acoustic echosounder measurements are done. In addition, trawl hauls are made to identify the species composition of the acoustic recordings. Hydrographical

data are collected on regular intervals. The complete sampling procedure is defined in the ICES Manual for International Pelagic Surveys (IPS).

Data storage and data use and description of survey: see work plan from The Netherlands.

3. Coordination and participation
The survey is coordinated by the ICES Working Group on International Pelagic Surveys (WGIPS)The disaggregated survey data (hydrographic, biological, & acoustic) are stored in the ICES acoustic database. The blue whiting spawning stock estimate is used as a tuning index by ICES WGWIDE to determine the size of the population.
4. Where applicable, provide more details on the type of participation and/or threshold agreement applied
Sweden is only providing funding for this survey and cost sharing applies: the operational costs of the vessels are shared by EU MSs applying an allocation key proportional to national share of the EU TAC.

SECTION 3: FISHING ACTIVITY DATA

Text Box 3.1: Fishing activity variables data collection strategy

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

Complementary data consist of 11% of the total collected data. It is collected on a census level for vessels under 10 meters concerning variables for fishing activity, additionaly data on these vessels are collected through national licensregistry data, in excel-file stated as “Other”.

Logbook data are automatically checked when filled in regarding completeness and also regarding logic. The port inspection also checks and verifies logbook data for the specific trip when an inspection is performed. Finally there are also computerized routinely performed checks of the complete logbook data to find abnormal and exorbitant values for all trips.

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

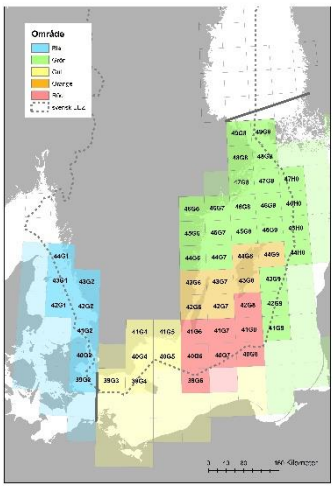
General comment: This text box fulfils Article 5(2)(c), Article 6(3)(a), (b) and (c) of Regulation (EU) 2017/1004 and Chapter II point 3.2 of the EU MAP Delegated Decision annex. It is intended to describe the methods and data sources used to estimate fishing capacity, effort and landings data.
In 2021 there is 51 commercial fishermen in inland waters with a personal permit to fish eel. Commercial fisheries are allowed during a period of 120 days in total annually. Eel landings in the three largest lakes (Mälaren, Hjälmaren and Vänern) are reported monthly to Swedish Agency for Marine and Water Management. For other lakes, landings are reported yearly to the agency. All landings, gear used and number of entities are registered, saved in a database and summarised annually at the Swedish Agency for Marine and Water Management. During the last couple years, about 80 tons eels are landed yearly in inland commercial fisheries. Eels are fished using fixed gears.

Text Box 4.2: Incidental catches of sensitive species

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.

Sweden did in 2017-2019 and 2020-2021 perform two pilot studies to examine needs and methods to complement the present sampling schemes to generate better knowledge on bycatches of PET species in Swedish fisheries. Sweden did in 2020, after the termination of the first pilot study, include two new fisheries in the observer program (reference to table 2.5 Sampling scheme identifier - CommSciObsAtSea - All species, Sampling frame identifier Passive Demersal Nets - 27.3.b.23 and Passive Demersal Nets - 27.3.a.21). Sweden have further, based on the preliminary results from the pilot study 2020-2021, included a new sampling scheme in which the monitoring is based on cameras (reference to table 2.5 Sampling scheme identifier - CommEMAtSea - PETS species, Sampling frame identifier Passive Demersal Nets - 27.3.a-d.20-29). Sweden has in 2022 initiated an extended observer program targeted towards observations of bycatches of sensitive species such as marine mammals and birds. This observer program will from 2023 and onwards be included in the sampling carried out under DCF (reference to table 2.5 Sampling scheme identifier - CommSciObsAtSea - All species, Sampling frame identifier Passive Nets - 27.3.a.21-d.20-29). The area (27.3.a.21-d.20-29) covered by this program is divided into five sub-areas identified on the basis of bycatch risk for harbor porpoises allowing sampling effort to be weighted towards sub-areas with assumed higher risk of bycatch of porpoises and sub-areas where potential bycatch of porpoises cause a larger risk to the population. The same sub-areas will be used in the above mentioned monitoring based on cameras. The overall aim is to cover 5% of the gillnet effort in area 27.3.a.21-d.20-29 by monitoring with either observers or cameras. The objective of this extended observer program as well as the camera monitoring is to generate information (and estimates) on bycatches of marine mammals and sea-birds (dedicated program). Catches of all species for all catch fractions (including catch damaged by predators) will be recorded but no biological sampling and no length sampling will be carried out (except for the PETS).

See also annex 1.1.



Sub-areas (different colours) that constitutes basis for spatial strata.

The extension of the observer program and the new sampling scheme based on cameras are both targeting gillnetters. The main reason for this is that gillnets are considered to be associated with relative high risks of bycatches of PETS. The gillnet fleet is also diverse with eg .different target species assuming that there is a heterogenity in bycatch risks within the fleet. This requires sufficient sampling coverage. Gillnetters constitutes further a fairly large part of the Swedish fisheries with passive gears. The other substantial part of the Swedish fishery with passive gears is fisheries with different pots and traps. These gears are however usually assumed to be associated with lesser risk of bycatch of PETS. The use of longlines, that can be associated with bycatch of birds, is presently limited in Swedish fisheries. Most of the trawl fisheries are sampled within the observer program (see annex 1.1 and table 2.5).

To our knowledge it is presently unclear what observation effort the end-users need. The observation effort generated by the observer program, even when extended, is most likely too low. This is why Sweden from 2022 onwards has complemented the observer program with REM monitoring (camera systems). The observation effort in the camera scheme is eventually dependent on willingness from fishers to deploy cameras. The aim is to sample 300-400 trips with cameras.
A key element for the long-term success for the sampling with cameras is to make the selection of vessels to be sampled as representative for the fishery as possible. This is a challenge as vessels presently need to participate on a voluntary basis which means that we can't apply statistical selection methods. We are thereby constantly working to get vessels interested in the sampling program, allowing for a larger basis for the selection process. In the Swedish fisheries, a substantial amount of the gillnetters is so small that the camera systems can´t use the vessels power systems. Within the pilot study 2020-2021 we thereby trialed and adapted camera systems so they, were needed, can use external power sources. This means that also small vessels are included in the REM program.
Within the Swedish observer program two observers are generally deployed on each trip. This means that one observer can keep track of hauling operations (opening of the codend, for gillnet fisheries the entire hauling procedure). If this can´t (or only partly) be done the observers should note this in the trip report (including how large part that could be observed). Observers are further noting “drop-outs” (animals that slip out of nets before reaching the vessels) specifically. If the bycatch is a “drop-out” or not should also registered in the database. Observers are always instructed to indicate how large part of the sorting process that can be checked (this is essential for all species, not only

PETS). PET species are always recorded if encountered. Observers are also instructed to take photos of bycatches of birds to allow for species identification. In the dedicated extended program, initiated 2022 and included in DCF 2023, is only one observer deployed at each trip. The manuals for the observers in those trips clearly states that observations of bycatch is the priority.
Sweden is participating in ICES WGBYC and the RCG ISSG on bycatch and are amending protocols to consider new recommendations when needed.
Sweden is presently working to develop a data model for the camera data that also fits with the data model for the RDBES. This is essential for future sharing of PETS data.

Text Box 4.3: Fisheries impact on marine habitats

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

1. Aim of the study
Spatial fisheries data are essential to understanding interactions between fisheries and the ecosystem and thus have become a key issue in European maritime policies. In order to describe fishing distribution and considering its ecological footprint, VMS and logbook data is used.

2. Duration of the study
This work is ongoing and data collection, analyses and reporting of this data are conducted every year within Sweden. The data analyses are also done on an international level, in ICES Working Group on Spatial Fisheries Data (WGSFD) were Sweden is actively participating.

3. Methodology and expected outcomes of the study
Sweden collates and analyses spatial fisheries data in order to evaluate fishing effort, intensity, and frequency.
On the international level much effort has been made in data compilation, quality control and harmonization. Standards for VMS and logbook data are defined, advice is provided for data requirement, and requests are answered from, for example, HELCOM and OSPAR. Analytical techniques are regularly reviewed and adjusted to meet criteria set up by other ICES expert groups, to fulfil policy requirements, and to anticipate future scientific questions.
In Sweden, small vessels which do not have VMS onboard are obliged to report spatial information in the monthly fishing journals making analyses of fisheries impact on marine habitats also from small scall fisheries possible. Sweden is making spatial data to end-users available upon request and in line with the appropriate regulations and data policies.

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.

1**. Description of clustering**

All segments except inactive segments in the Swedish fleet are clustered since the amount of vessels are to small that presenting the information is not compliant with the secrecy policy; Sweden can not present information for segments containing small number of vessels. Based on the number of the vessels (length segments) and type of gear the vessels are added into clusters in order to create as homogenous clusters as possible.

Depending on the number of vessels in each segment these might changes over time.

2**. Description of activity indicator**

Not applicable.

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

No deviation

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.

1. Description of the threshold application

For 2019 the Swedish production in weight was 1,04% of total production in all aquatic environments in the EU. Due to issues with confidentiality the data regarding production by value could not be retrieved from EUROSTAT. However according to data from Blue Economy Indicators the production by value in 2019 was 2,4% of total production in all aquatic environments in the EU.

Sweden has a production of over 1% of EU's total production but below 2,5% which gives us the possibility to collect social and economic data with a simplified methodology such as pilot studies with a view to extrapolate the data. Environmental data does not need to be collected according to current thresholds.

However, we consider this information important and will therfore collect all data on a census level to achieve as good quality as possible.

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

No deviations from the variable definitions. However all may not be able to be reported due to confidentiality reasons.

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.

1. The Member State should provide justification for complementary data collection for fish processing in addition to EUROSTAT data.

Data regarding fish processing comes from official statistics collected yearly by Statistics Sweden. No complementary data collection which differ from predefined data sets will occur (data sets defined in Commission Implementing Decision (EU) 2016/1251 Table 11). It is of great importance to report data from the process industry in order to follow up on needs and general trends of the industry. The reporting under the framework for data collection allows a detailed picture of the fish processing industry to be presented. The detailed knowledge and the possibility to follow the progress of the industry would be lost without reporting under this framework.

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

Describe and justify any deviations from variable definitions as listed in the 'EU MAP Guidance Document' on the DCF website.

ANNEX 1.1 - QUALITY REPORT FOR BIOLOGICAL DATA SAMPLING SCHEME

The quality report fulfils Article 6(3)(d) of Regulation (EU) 2017/1004. This document is intended to specify data to be collected under Chapter II, point 2 of the EU MAP Delegated Decision annex: 'Biological data on exploited biological resources caught by Union commercial and recreational fisheries'. Use this annex to state whether documentation in the data collection process (design, sampling implementation, data capture, data storage, sample storage and data processing) exists and identify where this documentation can be found. Names of sampling schemes and strata shall be identical to those in Tables 2.2, 2.3, 2.4, 2.5, 2.6 and 4.1 of the WP/AR. For quality information on scientific surveys, use the survey acronym as a sampling scheme identifier. For mandatory surveys, refer to Table 1 of the EU MAP Implementing Decision annex, see also MasterCodeList 'Mandatory survey at sea'.

Sample schemes in Annex 1.1:
Restocking data eel
Electrofishing eel
Collector/trap recruitment eel
Fisheries independent freshwater eel
Fisheries independent coastal eel
Introduced population eel
Index river eel
Fisheries dependent freshwater eel
Mark-recapture eel
Acoustic tagging eel

Salmon smolt trap 3a
Salmon smolt trap baltic sea
Salmon spawner counts baltic sea
Salmon spawner counts 3a
Electrofishing 3a salmon rivers
Electrofishing baltic sea trout rivers
Electrofishing baltic sea salmon rivers
Sea trout smolt trap baltic sea
M74
Aging of salmon
Genetic sampling salmon

Recreational river catches salmon 3a
Recreational river catches salmon baltic sea
Recreational river catches sea trout baltic sea
Baltic sea trolling catches salmon
Baltic sea recreational coastal catches salmon
Restocking data salmon-sea trout

RecSelfObsAtSea – tour boat log books
RecSelfOnShore - offsite scb
RecSciObsAtSea – tourboats

CommSelfAtSea - selected species/stocks
CommSelfAtSea – all species/
CommSciObsAtSea – all species/
CommSelfOnShore – selected species/stocks

BITS
BIAS
SPRAS
SSS
IBTS
UWTV3-4
CODS_Q4

MS: SWE
Region: Other regions
Sampling scheme identifier: Restocking data eel
Sampling scheme type: Diadromous (scientific)
Observation type: Self water body
Time period of validity: 2022-2024
Collection of data on number of restocked eels per location per year. Eels are restocked in freshwater and coastal sites.
Description of the population
Population targeted: PSU: Data for all eels being restocked is collected Main target species: Quarantined glass eels of the European eel Main survey area: All of Sweden, SE_Total **Population sampled:** N/A, data is collected on all eels being restocked, this sampling scheme does not sample a population. **Stratification:** N/A. All eels being restocked are registered.
Sampling design and protocols
Sampling design description: N/A. Data for all eels being restocked in all of Sweden is collected **Is the sampling design compliant with the 4S principle?:** NA **Regional coordination:** N **Link to sampling design documentation:** Data on number of restocked eels are collected by contacting the County Administrative board in Skåne, and Scandinavian Silver Eel (SSE, the only eel quarantine company in Sweden, all eels to be

restocked comes from SSE). Organisations that restock eel can also report themselves using a webform available here (page only available in Swedish): https://www.slu.se/institutioner/akvatiska-resurser/radgivning/alen-en-hotad-art-och-resurs/utvardering-av-nyttan-med-alutsattningar/

Compliance with international recommendations

Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation:

Data on number of restocked eels are collected by contacting the County Administrative board in Skåne, and Scandinavian Silver Eel (SSE, the only eel quarantine company in Sweden, all eels to be restocked comes from SSE). Organisations that restock eel can also report themselves using a webform available here (page only available in Swedish so far): https://www.slu.se/institutioner/akvatiska-resurser/radgivning/alen-en-hotad-art-och-resurs/utvardering-av-nyttan-med-alutsattningar/

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

Eels are primarily being restocked during the summer and early autumn. Data on restocking numbers are delivered or asked for when the restocking for each area has been completed. If an organisation that restocks eels have not reported, they are contacted and asked to provide data.

Data capture

Means of data capture:

N/A, no material is needed since the data collection is on number of restocked eels per site per year.

Data capture documentation:

Draft documentation on local server. The aim is to have the different aspects of data capture documented by 2023.

Quality checks documentation:

N. Draft documentation on local server. The aim is to have the different aspects of data capture documented by 2023.

Data storage

National database:

The data is currently being imported to a local Access database: Sötebasen

International database:

Processed data is delivered to ICES via WGEEL Data Calls.

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

NA, no samples are collected, only numeric data.

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Editing and imputation methods:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Quality document associated to a dataset:

N. The aim is to have the different aspects of data processing documented by 2023.

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: Other regions

Sampling scheme identifier: Electrofishing eel

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Electrofishing of eel to collect data on recruitment. A sub-sample of eels are kept and dissected for data on length, weight, age, parasite numbers, and origin (natural recruit or restocked). Within DCF

we have yearly data collection for 14 rivers (15 sampling sites) from 2011-present. There is also data from many more sites for many years (earliest available data: 1974) from other programs. The electrofishing sites targeted for eel are fished twice (repeated), but eel is also caught in other electrofishing surveys. For all electrofishing in Sweden, species composition is noted. All data is stored in the national SERS database.

Description of the population

Population targeted:

PSU: Rivers in Sweden

Main target species: European eel

Main survey area: SE_Inla. Currently, 15 sites in 14 rivers across Sweden are sampled. The electrofishing program will be evaluated in 2022, whereafter the number of sites might change.

Population sampled:

Part of the target population sampled: juvenile eel (yellow eel)

Part of the target population unreachable for sampling: It is impossible to sample all areas where juvenile eels might be found, sampling sites are instead selected based on their potential to host the target population, and where there is a lack of data on recruitment from other sources.

Stratification:

Rivers and sites are selected based on where we need more data on recruitment, and where it is technically possible to perform electrofishing.

Sampling design and protocols

Sampling design description:

PSU: Rivers and sites are selected based on where we need more data on recruitment, and where it is technically possible to perform electrofishing.

SSU: juvenile eel (yellow eel)

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

NA

Regional coordination:

N

Link to sampling design documentation:

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Compliance with international recommendations:

N. Sampling design follows national standards.

Link to sampling protocol documentation:

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Compliance with international recommendations:

N. Sampling protocols follow national standards. Sampling protocol links are provided above.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

If a sampling site would be impossible to electrofish, another close-by site can be selected. Data on several site descriptors are collected and can be used to standardize data collected from nearby sites. Stream site descriptors collected are the following: length, width, area, depth, mean width, mean area, mean depth, water level, water colour, turbidity, water and air temperature, substrate (3 grades with several options), vegetation in stream and nearby surroundings, dominating tree type (two levels), percentage shade, presence of dead wood in water, migration barriers, liming of area (yes, no), anthropogenic impacts (three levels).

If an entire river would be impossible to electrofish (e.g., due to weather conditions, too high water flow or similar) then that cannot be resolved. In such cases, data would be missing for that year and the river would be electrofished the following year (if possible).

Data capture

Means of data capture:

Methods for data collection follows national standards. Streams are electrofished twice (repeated) using backpack or generator (differs between sites). Stop nets are not used. A sub-sample of eels are kept and dissected for data on length, weight and parasite numbers. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Data capture documentation:

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Quality checks documentation:

Y

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Data storage

National database:

SERS

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

International database:

Processed data is delivered to ICES via WGEEL Data Calls

Quality checks and data validation documentation:

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Sample storage

Storage description:

During the dissections, data is collected immediately for soft tissues and those are hence not stored. Otoliths are stored for later age analysis and chemistry analysis (to determine restocked or natural recruit origin). Otoliths are stored at the Biological archive at SLU Aqua's Institute of Freshwater Research, Drottningholm – Stockholm, Sweden. The samples are placed in a fireproof archive and

handled according to SLU's routines for quality assurance. Information about the biological archive can be found here:

https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/

Sample analysis:

Dissection manual, age reading manual and manual to prepare otoliths for chemistry analysis are currently being updated, when completed they will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data processing

Evaluation of data accuracy (bias and precision):

Y. https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Editing and imputation methods:

Y. https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Quality document associated to a dataset:

There is no DOI, but an article number from the Swedish Institute for Standards: Article no: STD-34647.

https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: Other regions

Sampling scheme identifier: Collector/trap recruitment eel

Sampling scheme type: Diadromous (scientific)

Observation type: Self water body and SciObs water body

Time period of validity: 2022-2024

Collection of data on number of eels migrating upstream rivers, collected/caught in eel collectors/traps at hydropower plants and dams. Eels in the collector/trap are counted and released

upstream. A sub-sample of eels are kept and later dissected for data on length, weight, age, parasite numbers, and origin (natural recruit or restocked).

Description of the population

Population targeted:

PSU: Selected rivers

Main target species: European eel

Main survey area: SE_Inla. Selected rivers across all of Sweden.

Population sampled:

Rivers with hydropower plants equipped with eel collectors/traps are sampled.

Stratification:

Rivers that have no hydropower plants or dams, or that have hydropower plants or dams without eel collectors/traps cannot be sampled since the data is not collected there. Recruitment to some of these rivers is instead sampled within the electrofishing program.

Sampling design and protocols

Sampling design description:

Rivers that have no hydropower plants or dams, or that have hydropower plants or dams without eel collectors/traps cannot be sampled since the data is not collected there. Recruitment to some of these rivers is instead sampled within the electrofishing program.

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

NA

Regional coordination:

N

Link to sampling design documentation:

Draft documentation on local server. The aim is to have the different aspects of sampling design documented by 2023.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation:

Draft documentation on local server. The aim is to have the different aspects of sampling design documented by 2023.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

Data on recruitment numbers are delivered or asked for when the collectors/traps for each river have closed for the season and no more eels (no more data) will be collected that year. If a company that has an eel collector/trap has not reported any data, they are contacted and asked to provide data.

Data capture

Means of data capture:

N/A, no material is needed since the hydropower plants handle the material for the eel collector/traps via legal requirements (water court judgement). A sub-sample of eels are kept and later dissected for data on length, weight and parasite numbers. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Data capture documentation:

Primary data is collected by external companies, this data collection is not documented by SLU Aqua. Total data per month or per year is sent to SLU Aqua or asked for if not sent.

The aim is to have the different aspects of data capture documented by 2023.

Quality checks documentation:

N. Primary data is collected by external companies, this data collection is not documented by SLU Aqua. Total data per month or per year is sent to SLU Aqua or asked for if not sent.

The aim is to have the different aspects of data capture documented by 2023.

Data storage

National database:

The data is currently being imported to a local Access database: Sötebasen

International database:

Processed data is delivered to ICES via WGEEL Data Calls

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

During the dissections, data is collected immediately for soft tissues and those are hence not stored. Otoliths are stored for later age analysis and chemistry analysis (to determine restocked or natural recruit origin). Otoliths are stored at the Biological archive at SLU Aqua's Institute of Freshwater Research, Drottningholm – Stockholm, Sweden. The samples are placed in a fireproof archive and handled according to SLU's routines for quality assurance. Information about the biological archive can be found here:

https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/

Sample analysis:

Dissection manual, age reading manual and manual to prepare otoliths for chemistry analysis are currently being updated, when completed they will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data processing

Evaluation of data accuracy (bias and precision):

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Editing and imputation methods:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Quality document associated to a dataset:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: Other regions

Sampling scheme identifier: Fisheries independent freshwater eel

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Scientific fyke net survey. Alizarin-marked and barium-marked eels stocked at two occasions, used to investigate effects of restocking and differences in growth, parasite load etc. between natural recruits and restocked eels. All eels caught are dissected. Eels are occasionally tagged with e.g., Passive Integrated Transponder-tags (PIT-tags) or Data Storage Tags (DST), when recaptured these eels are used to verify estimated growth curves. CPUE is also calculated.

Description of the population

Population targeted:

PSU: One site in Lake Mälaren

Main target species: European eel

Main survey area: SE_Inla, Sotholmsviken in Lake Mälaren.

Population sampled:

Part of the target population sampled: eel in Sotholmsviken.

Part of the target population unreachable for sampling: Any eel not being caught in the fyke nets will be unsampled.

Stratification:

Five fyke net-links with 16 fyke nets (16 “cod ends”, 8 paired fyke nets) per fyke net-link are distributed at the sampling site. Positions and number of fyke nets is fixed between years.

Sampling design and protocols

Sampling design description:

PSU: Sotholmsviken, Lake Mälaren is selected based on the location where the marked eels were released, and the sites suitability for fyke net fishing and long-term monitoring.

SSU: yellow and silver eel are caught in the fyke net fishing

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

NA

Regional coordination:

N

Link to sampling design documentation:

The manual is currently being updated, when completed it will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation:

The manual is currently being updated, when completed it will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

The site is sampled in May-July when the eels are active and can hence be caught in the fyke nets. Exact starting time is set by water temperature, the sampling ends when no or very few eels are caught. Issues that could affect the monitoring include severe storms or similar extreme weather events. Under such (unlikely) events, the sampling cannot take place that specific year (if the extreme weather is long-lasting).

Data capture

Means of data capture:

Eels are monitored and caught using fyke-nets. All eels caught are dissected. Eels are occasionally tagged with e.g., PIT-tags or DST, to verify estimated growth curves. During dissection, data on length, weight, sex ratio, parasite numbers and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) are collected. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Data capture documentation:

The manual is currently being updated, when completed it will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Quality checks documentation:

The manual is currently being updated, when completed it will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data storage

National database:

Sötebasen, national access database.

International database:

Processed data is reported to ICES via annual WGEEL Country Reports.

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

During the dissections, data is collected immediately for soft tissues and those are hence not stored. Otoliths are stored for later age analysis and chemistry analysis (to determine restocked or natural recruit origin). Otoliths are stored at the Biological archive at SLU Aqua's Institute of Freshwater Research, Drottningholm – Stockholm, Sweden. The samples are placed in a fireproof archive and handled according to SLU's routines for quality assurance. Information about the biological archive can be found here:

https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/

Sample analysis:

Dissection manual, age reading manual and manual to prepare otoliths for chemistry analysis are currently being updated, when completed they will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data processing

Evaluation of data accuracy (bias and precision):

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Editing and imputation methods:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Quality document associated to a dataset:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: North Sea and Eastern Arctic and the Baltic Sea

Sampling scheme identifier: Fisheries independent coastal eel

Sampling scheme type: Diadromous (scientific)

Observation type: SciObsAtSea

Time period of validity: 2022 – 2024

Short description: A survey run yearly in August in order to continue following the eel stock in this area. The commercial fishery was indirectly closed due to that the minimum landing size was increased, hence it is no longer possible to continue the commercial sampling. The survey set-up includes catching a predefined number of yellow eels, all of which are length measured. Using length-stratification, a sub-sample from the total catch of yellow eel and silver eel respectively is then collected for biological (age) sampling. In the survey manual, the maximum effort (gear-days) to be aiming for is defined. No other species than eel is sampled.

Description of the population

Population targeted:

PSU and main survey area (North Sea and Eastern Arctic): two sites in SD20 and one site in SD21.

PSU and main survey area (Baltic Sea): one site in SD23.

Main target species: European eel.

Population sampled:

Part of target population sampled: European eel caught in the tree sites in SD20-21 and one site in SD23.

Part of target population unreachable for sampling: European eel not caught in fyke or pound nets and eels outside of the sites in SD20-21 and SD23.

Stratification: The population is stratified into three sites in SD20-21 (Fjällbacka, Stenungsund [SD 20] and Vendelsö [SD 21]) and one site in SD23 (Barsebäck). At each site, pound nets and fyke nets (10 links with 5 paired fyke nets per link) are distributed. A subsample from the total catch is length-stratified.

Sampling design and protocols

Sampling design description:

PSU: The three sites are selected based on the areas being part of the ongoing national and regional environmental assessment programmes for fish in coastal waters.

SSU: Yellow and silver eel.

Is the sampling design compliant with the 4S principle? NA

Regional coordination: N.

Link to sampling design documentation: Sampling design and protocol documentation is currently stored as internal documents at SLU Aqua. After going through a review in 2022-2024, they will be publically available at SLU Aqua's webpage.

Compliance with international recommendations: Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation: Sampling design and protocol documentation is currently stored as internal documents at SLU Aqua. After going through a review in 2022-2024, they will be publically available at SLU Aqua's webpage.

Compliance with international recommendations: Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate: NA

Monitoring of sampling progress within the sampling year: Sites are sampled in August during 10 days, until the minimum sampling goals are met. The sampling period can be extended if necessary, depending on the amount of eel caught.

Data capture

Means of data capture: Pound nets and fyke nets (10 links with 5 paired fyke nets per link). Onboard sampling requires equipment such as measuring boards, buckets, protocols, rubber boots, life jackets etc. Standard dissection equipment is used for ageing (by analysing otholiths in the lab).

Data capture documentation: Data capture documentation is currently stored as internal documents at SLU Aqua. After going through a review in 2022-2024, they will be publically available at SLU Aqua's webpage.

Quality checks documentation: Quality checks documentation is currently stored as internal documents at SLU Aqua. After going through a review in 2022-2024, they will be publically available at SLU Aqua's webpage.

Data storage
National database: Data is stored in the national databases Kreg and KUL at SLU Aqua. **International database:** Processed data is reported to ICES WGEEL annually. **Quality checks and data validation documentation:** Draft documentation stored on local server. The aim is to have the different aspects of data validation documented during 2022-2024.
Sample storage
Storage description: Information about SLU Aqua's biological archive can be found here: https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/ **Sample analysis**: Sample analysis documentation is currently stored as internal documents at SLU Aqua. After going through a review in 2022-2024, they will be publically available at SLU Aqua's webpage.
Data processing
Evaluation of data accuracy (bias and precision): N. Draft documentation stored on local server. The aim is to have the different aspects of data validation documented during 2022-2024 **Editing and imputation methods:** N. Draft documentation stored on local server. The aim is to have the different aspects of data validation documented during 2022-2024 **Quality document associated to a dataset:** N. Draft documentation stored on local server. The aim is to have the different aspects of data validation documented during 2022-2024 **Validation of the final dataset:** Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE
Region: Other regions
Sampling scheme identifier: Introduced population eel
Sampling scheme type: Diadromous (scientific)
Observation type: Self water body and SciObs water body
Time period of validity: 2022-2024
Short description (max 100 words)

Monitoring of introduced population in Lake Fardume, Gotland. Eels were stocked in 1980, 1989, and 1998, when emigrating from the lake, eels are caught in an outlet trap and counted. A subset of the eels are kept for later dissection.

Description of the population

Population targeted:

PSU: One site in Lake Fardume

Main target species: European eel

Main survey area: Bångån, river from Lake Fardume, SE_Inla

Population sampled:

Part of the target population sampled: silver eel migrating from Lake Fardume through Bångån.

Part of the target population unreachable for sampling: All eels migrating from Lake Fardume will migrate through river Bångån and pass the trap, meaning that the sampling efficiency is very high. If the water level is very high, eels might pass the trap on its sides and will then be unsampled.

Stratification:

The trap is placed in Bångån where all eels must pass when they leave the lake. The aim is to count all eels leaving the lake during a given time period.

Sampling design and protocols

Sampling design description:

PSU: Bångån, Lake Fardume, selected due to the restocking events in 1980, 1989 and 1989, allowing to monitor an introduced population over time.

SSU: All eels leaving the lake are silver eels

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

NA

Regional coordination:

N

Link to sampling design documentation:

Sampling design and documentation is described in the following publications:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.

- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences*, *54*(12), pp.2775-2781.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL. Otoliths with known age are also essential for age reading intercalibration workshops, such as previous and future WKAREA workshops.

ICES. 2011. Report of the Workshop on Age Reading of European and American Eel (WKAREA2), 22-24 March 2011, Bordeaux, France. ICES CM 2011/ACOM:43. 35 pp.

Link to sampling protocol documentation:

Sampling protocol documentation is described in the following publications:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.

- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences*, *54*(12), pp.2775-2781.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL. Otoliths with known age are also essential for age reading intercalibration workshops, such as previous and future WKAREA workshops.

ICES. 2011. Report of the Workshop on Age Reading of European and American Eel (WKAREA2), 22-24 March 2011, Bordeaux, France. ICES CM 2011/ACOM:43. 35 pp.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

The eels migrate in spring and autumn (depending on water temperature, waterflow etc.). All eels caught in the trap during this time are counted. The trap is handled by a consultant, in collaboration with the County administrative board on Gotland. If any issue arises, the consultant contacts SLU Aqua and the county administrative board, and the issue is solved jointly.

Data capture

Means of data capture:

When emigrating from the lake, eels are caught in an outlet custom made trap and counted. A subset of the eels are kept for later dissection and data collection on length, weight, sex ratio, parasite numbers and Durif's silver index parameters. Otoliths are stored as they provide a very valuable source of otoliths with known age. They are used internationally in age-reading calibrations.

Data capture documentation:

Data capture documentation is described in the following publications:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.
- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences, 54*(12), pp.2775-2781.

Quality checks documentation:

Y. Quality checks documentation is described in the following publications:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.
- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences, 54*(12), pp.2775-2781.

Data storage

National database:

Dissection data is kept in Sötebasen. National access database. Data on number of migrating eels is kept on the SLU Aqua restricted server. This data is currently being imported to Sötebasen.

International database:

Processed data is delivered to ICES WGEEL via annual Data Calls.

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

During the dissections, data is collected immediately for soft tissues and those are hence not stored. Otoliths are stored for later age analysis and chemistry analysis (to determine restocked or natural recruit origin). Otoliths are stored at the Biological archive at SLU Aqua's Institute of Freshwater Research, Drottningholm – Stockholm, Sweden. The samples are placed in a fireproof archive and handled according to SLU's routines for quality assurance. Information about the biological archive can be found here:

https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/

Sample analysis:

Dissection manual, age reading manual and manual to prepare otoliths for chemistry analysis are currently being updated, when completed they will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data processing

Evaluation of data accuracy (bias and precision):

Y. Evaluation of data accuracy is described in the following publications:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.

- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences*, *54*(12), pp.2775-2781.

Editing and imputation methods:

Y. Editing and imputation methods are described in the following publications:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.

- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences*, *54*(12), pp.2775-2781.

Quality document associated to a dataset:

- Wickström, H., Westin, L. and Clevestam, P., 1996. The biological and economic yield from a long-term eel-stocking experiment. Ecology of Freshwater Fish, 5(3), pp.140-147.

- Holmgren, K., Wickström, H. and Clevestam, P., 1997. Sex-related growth of European eel, Anguilla anguilla, with focus on median silver eel age. *Canadian Journal of Fisheries and Aquatic Sciences*, *54*(12), pp.2775-2781.

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings, and age reading intercalibration working groups (e.g., WKAREA).

MS: SWE

Region: Other regions

Sampling scheme identifier: Index river eel

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

The Index river program was set up in 2019 and is designed to provide full life history data on recruits, standing stock and migrating individuals.

Description of the population

Population targeted:

PSU: River Kävlingeån

Main target species: European eel

Main survey area: SE_Inla

Population sampled:

Part of the target population sampled: eel in river Kävlingeån.

Part of the target population unreachable for sampling: In case of flooding events, all eels might not swim through counter or trap and hence would be unsampled.

Stratification:

The index river Kävlingeån has been selected based on suitability to monitor as many life-history parameters as possible. Within the river-lake system it is possible to monitor recruitment (via data from an eel pass and electrofishing), yellow eel standing stock (in Lake Vombsjön), silver eel production (fish counter and trap in the river). Via PIT-tagging studies it is also possible to validate catch frequencies in fish counter and trap.

Sampling design and protocols

Sampling design description:

PSU: River-lake system selected based on suitability to fit all different sampling types within one system.

SSU: Elver, yellow eel, silver eel, any eel being electrofished, caught in trap, counted in camera counter or caught in fyke net fishing is part of the survey.

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

NA

Regional coordination:

N

Link to sampling design documentation:

The Index river program for eel is new, it commenced in 2019, meaning that the sampling design and protocols are still under construction. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

The tagging is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation: The Index river program for eel is new, it commenced in 2019, meaning that the sampling protocols documentation is still under construction. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

The tagging is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

Eels are sampled year around in the camera counter – trap system. If there is a lot of ice in the winter, the camera counter must be removed. Very few eels (most likely none) will be active in such cold weather meaning that the data loss in such an event would be very low. If the trap and camera counter are flooded, eels may pass on the side and remain unsampled.

Data capture

Means of data capture:

A custom-made trap (Wolf-trap) is used to catch migrating eels, when the trap is not in use, eels are counted in a fish counter (Vaki). Eels are tagged with PIT-tags to investigate migration patterns, and to validate and the function of the trap and camera counter system. A PIT-tag reader (Riverwatcher) is installed by the camera counter. A subset of the eels caught in the Wolf trap are stored for later dissection. During dissection, data on length, weight, sex ratio, parasite numbers and Durif's silver index parameters (vertical and horizontal eye size and pectoral fin length) are collected. Otoliths are used to analyse age, and for otolith chemistry, to determine whether the eels are natural recruiting or restocked.

Data capture documentation:

The Index river program for eel is new, it commenced in 2019, meaning that data capture documentation are still under construction. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

The tagging is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Quality checks documentation:

Y/N. The Index river program for eel is new, it commenced in 2019, meaning that quality checks documentation is still under construction. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

Tagging data processing is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Data storage

National database:

Dissection data is kept in Sötebasen. National access database. Data from the camera counter and trap is kept at www.fiskdata.se

International database:

Processed data is delivered to ICES WGEEL via annual Data Calls.

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

During the dissections, data is collected immediately for soft tissues and those are hence not stored. Otoliths are stored for later age analysis and chemistry analysis (to determine restocked or natural recruit origin). Otoliths are stored at the Biological archive at SLU Aqua's Institute of Freshwater Research, Drottningholm – Stockholm, Sweden. The samples are placed in a fireproof archive and handled according to SLU's routines for quality assurance. Information about the biological archive can be found here:

https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/

Sample analysis:

Dissection manual, age reading manual and manual to prepare otoliths for chemistry analysis are currently being updated, when completed they will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data processing

Evaluation of data accuracy (bias and precision):

Y/N. The Index river program for eel is new, it commenced in 2019, meaning that evaluation of data accuracy and is still under construction. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

Tagging data processing is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Editing and imputation methods:

Y/N. The Index river program for eel is new, it commenced in 2019, meaning that editing and imputation methods are still under construction. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

Tagging data processing is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Quality document associated to a dataset:

The Index river program for eel is new, it commenced in 2019, meaning that there are no quality documents associated to a dataset. Annual reports (in Swedish) can be found at the SLU Quality Assurance page. The reports describe data collection related to the trap and fish counter.

https://www.slu.se/qualityassurance

Tagging data processing is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: Other regions

Sampling scheme identifier: Fisheries dependent freshwater eel

Sampling scheme type: Diadromous (commercial)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Sampling from commercial fishing in freshwater. Lakes to sample are selected based on areas from where we are currently missing data, and lakes that have active commercial fishers. The fisher sample eel throughout the fishing season and store for later dissection.

Description of the population

Population targeted:

PSU: Lakes with active commercial fishers

Main target species: European eel

Main survey area: SE_Inal

Population sampled:

Part of the target population sampled: Commercially fished eel from different sites.

Part of the target population unreachable for sampling: Any eel not being caught in the pound nets will be unsampled.

Stratification:

The eels are sampled throughout the fishing season to cover the entire season. Lakes with missing data are targeted for sampling. By default, only lakes with active fishers can be sampled.

Sampling design and protocols

Sampling design description:

PSU: Sites are selected based on where there are still active commercial fishers that catch enough eel. Priority is given to sites where we currently have a lack of data.

SSU: Both yellow eel and silver eel are caught in the freshwater fisheries.

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

NA

Regional coordination:

N

Link to sampling design documentation:

Draft documentation on local server. The aim is to have the different aspects of sampling design documented by 2023.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation:

Draft documentation on local server. The aim is to have the different aspects of sampling design documented by 2023.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

Eels are sampled throughout the fishing season. If a fisher would catch few or no eels one season, that site would remain unsampled for that specific year.

Data capture

Means of data capture:

Eels are commercially fished using pound nets. For the dissection, material typical for dissection is used. (Can we refer to a publication or similar document (the dissection manual) here?)

Data capture documentation:

Draft documentation on local server. The aim is to have the different aspects of data capture documented by 2023.

Quality checks documentation:

N. Draft documentation on local server. The aim is to have the different aspects of data capture documented by 2023.

Data storage

National database:

Sötebasen, national access database.

International database:

Processed data is delivered to ICES WGEEL via annual Data Calls.

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

During the dissections, data is collected immediately for soft tissues and those are hence not stored. Otoliths are stored for later age analysis and chemistry analysis (to determine restocked or natural recruit origin). Otoliths are stored at the Biological archive at SLU Aqua's Institute of Freshwater Research, Drottningholm – Stockholm, Sweden. The samples are placed in a fireproof archive and handled according to SLU's routines for quality assurance. Information about the biological archive can be found here:

https://www.slu.se/en/departments/aquatic-resources1/contact/research-infrastructure/biological-archive/

Sample analysis:

Dissection manual, age reading manual and manual to prepare otoliths for chemistry analysis are currently being updated, when completed they will be available at SLU Aqua's quality assurance webpage:

www.slu.se/qualityassurance

Data processing

Evaluation of data accuracy (bias and precision):

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Editing and imputation methods:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Quality document associated to a dataset:

N. Draft documentation on local server. The aim is to have the different aspects of data processing documented by 2023.

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: Other regions

Sampling scheme identifier: Mark-recapture eel

Sampling scheme type: Diadromous (commercial)

Observation type: Self on shore and SciObsOnShore

Time period of validity: 2022-2024

Short description:

Estimation of fishing induced mortality through mark-recapture. Eels are mainly tagged at the coast, but also in freshwater. The Carlin tag (externally visible tag) is reported to SLU Aqua when a tagged eel has been caught in a commercial fishery.

Description of the population

Population targeted:

PSU: Mainly coastal sites in the Baltic Sea, but also freshwater sites

Main target species: European eel

Main survey area: SE_East and SE_Inla

Population sampled:

Part of the target population sampled: eel at different locations along the Baltic coast and in freshwater.

Part of the target population unreachable for sampling: Any eel not being caught by commercial fishers will be unsampled, since the eels used for tagging are purchased from commercial eel fishers.

Stratification:

The aim is to tag eels at three locations along the Baltic coast annually, on a running scheme. Due to a decreasing number of commercial fishers, this number can be difficult to reach.

Sampling design and protocols

Sampling design description:

PSU: Coastal sites in the Baltic Sea are selected based on where there are still active commercial fishers that catch enough eel. The aim is to tag eel at different sites along the coast to cover as large proportion of the geographical area as possible and for statistical reasons. Freshwater sites are selected based on locations with trap and transport and sites with restocked eel.

SSU: Silver eel are targeted because that is the migrating life stage, and migrating eels are relevant to this program.

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

NA

Regional coordination:

N

Link to sampling design documentation:

Sampling design is documented in the following publications:

- Sjöberg, N.B., Wickström, H., Asp, A. and Petersson, E., 2017. Migration of eels tagged in the Baltic Sea and Lake Mälaren—in the context of the stocking question. *Ecology of Freshwater Fish*, *26*(4), pp.517-532.

- Dekker, W. and Sjöberg, N.B., 2013. Assessment of the fishing impact on the silver eel stock in the Baltic using survival analysis. *Canadian Journal of Fisheries and Aquatic Sciences*, *70*(12), pp.1673-1684.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Link to sampling protocol documentation:

Sampling protocol is described in the following publications:

- Sjöberg, N.B., Wickström, H., Asp, A. and Petersson, E., 2017. Migration of eels tagged in the Baltic Sea and Lake Mälaren—in the context of the stocking question. *Ecology of Freshwater Fish*, *26*(4), pp.517-532.

- Dekker, W. and Sjöberg, N.B., 2013. Assessment of the fishing impact on the silver eel stock in the Baltic using survival analysis. *Canadian Journal of Fisheries and Aquatic Sciences*, *70*(12), pp.1673-1684.

Compliance with international recommendations:

Y. Data is requested by ICES WGEEL.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

Fishing for eel usually takes place in late summer and autumn. Eels are usually tagged early in the autumn, when the fishers have caught enough eel, and when there's still time left on the fishing season (to enable measuring the fisheries induced mortality).

Data capture

Means of data capture:

Eels to be tagged are commercially fished using fyke nets or pound nets. They are tagged on-site with an externally visible Carlin tag and data on length, weight, sex-ratio and Durif's silver index parameters is collected. The eels are then released at the site of capture. The tagging is described in the following publications:

- Sjöberg, N.B., Wickström, H., Asp, A. and Petersson, E., 2017. Migration of eels tagged in the Baltic Sea and Lake Mälaren—in the context of the stocking question. *Ecology of Freshwater Fish*, *26*(4), pp.517-532.

- Dekker, W. and Sjöberg, N.B., 2013. Assessment of the fishing impact on the silver eel stock in the Baltic using survival analysis. *Canadian Journal of Fisheries and Aquatic Sciences*, *70*(12), pp.1673-1684.

Data capture documentation:

Data capture is described in the following publication:

- Sjöberg, N.B., Wickström, H., Asp, A. and Petersson, E., 2017. Migration of eels tagged in the Baltic Sea and Lake Mälaren—in the context of the stocking question. *Ecology of Freshwater Fish*, *26*(4), pp.517-532.

Quality checks documentation:

Y. Quality checks are described in the following publication:

- Sjöberg, N.B., Wickström, H., Asp, A. and Petersson, E., 2017. Migration of eels tagged in the Baltic Sea and Lake Mälaren—in the context of the stocking question. *Ecology of Freshwater Fish*, *26*(4), pp.517-532.

Data storage

National database:

Information on tagged eels (e.g., length, weight, sex-ratio, Durif's silver index) and recaptured eels is stored in Sötebasen, national access database.

International database:

Processed data is delivered to ICES WGEEL via annual Data Calls.

Quality checks and data validation documentation:

Draft documentation on local server. The aim is to have the different aspects of data validation documented by 2023.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y. Evaluation of data accuracy is described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Editing and imputation methods:

Y. Editing and imputation methods are described in the following publication:

- Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Quality document associated to a dataset:

Sjöberg, N.B., 2015. *Eel migration-results from tagging studies with relevance to management* (Doctoral dissertation, Department of Ecology, Environment and Plant Sciences, Stockholm University).

Validation of the final dataset:

Processed data is validated by annual ICES WGEEL data working group meetings.

MS: SWE

Region: Other regions

Sampling scheme identifier: Acoustic tagging eel

Sampling scheme type: Diadromous (commercial)

Observation type: SciObsOnShore

Time period of validity: 2022-2024

Short description (max 100 words):

Estimation of silver eel escapement and fishing induced mortality (for double-tagged eels) through tagging with acoustic transmitters. Eels are mainly tagged at the east coast, but also in freshwater. If a tagged eel is caught in a commercial fishery, the Carlin tag (externally visible tag) and the acoustic transmitter is reported to SLU Aqua. Eels escaping from the Baltic Sea are logged in acoustic receivers deployed in the sound between Sweden and Denmark, and in all danish sounds (all exits from the Baltic Sea are covered with receivers).

Description of the population

Population targeted:

PSU: Mainly coastal sites in the Baltic Sea, but also freshwater sites

Main target species: European eel

Main survey area: SE_East and SE_Inla

Population sampled:

Part of the target population sampled: eel at different locations along the Baltic coast and in freshwater.

Part of the target population unreachable for sampling: Any eel not being caught by commercial fishers will be unsampled, since the eels used for tagging are purchased from commercial eel fishers.

Stratification:

The aim is to tag eels at several locations along the Baltic coast annually.

Sampling design and protocols

Sampling design description:

PSU: Coastal sites in the Baltic Sea are selected based on where there are still active commercial fishers that catch enough eel. The aim is to tag eel at different sites along the coast to cover as large proportion of the geographical area as possible and for statistical reasons. Freshwater sites are selected based on locations with trap and transport and sites with restocked eel.

SSU: Silver eel are targeted because that is the migrating life stage, and migrating eels are relevant to this program.

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

NA

Regional coordination:

N, regional coordination is under development (Pan-Baltic coordination).

Link to sampling design documentation:

Sampling design is described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Compliance with international recommendations:

Y. Sampling design is in compliance with international recommendations, described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Link to sampling protocol documentation:

Sampling protocol and documentation is described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Compliance with international recommendations:

Y. Sampling protocol is in compliance with international recommendations, described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

Fishing for eel usually takes place in late summer and autumn. Eels are usually tagged early in the autumn, when the fishers have caught enough eel, and when there's still time left on the fishing season (to enable measuring the fisheries induced mortality).

Data capture

Means of data capture:

Eels to be tagged are commercially fished using fyke nets or pound nets. They are tagged on-site with an externally visible Carlin tag and an acoustic transmitter, surgically implanted in the body cavity. Data on length, weight, sex-ratio and Durif's silver index parameters is also collected. The eels are then released at the site of capture. The tagging methods are described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Data capture documentation:

Data capture is described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Quality checks documentation:

Y. Quality checks are described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Data storage

National database:

Information on tagged eels (e.g., length, weight, Durif's silver index) is stored in Sötebasen, national access database.

International database:

An international database is under construction (the Acoustic program is new, it commenced in 2019). DTU Aqua serve as the data host until the international database has been completed.

Quality checks and data validation documentation:

An international database is under construction (the Acoustic program is new, it commenced in 2019). DTU Aqua serve as the data host until the international database has been completed.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

The Acoustic program is new, it commenced in 2019, meaning that all parts of the data processing is still under construction. Evaluation and data accuracy is described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Editing and imputation methods:

Y/N. The Acoustic program is new, it commenced in 2019, meaning that all parts of the data processing is still under construction. Editing and imputation methods is described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Quality document associated to a dataset:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

Validation of the final dataset:

The Acoustic program is new, it commenced in 2019, meaning that all parts of the data processing is still under construction. Validation of final dataset is described in the following publication:

Tambets, M., Kärgenberg, E., Järvalt, A., Økland, F., Kristensen, M.L., Koed, A. and Bernotas, P., 2021. Migrating silver eels return from the sea to the river of origin after a false start. *Biology Letters*, *17*(9), p.20210346.

MS : SWE

Region: North Sea and Eastern Arctic

Sampling scheme identifier: Salmon smolt trap 3a

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Estimate of salmon smolt abundance and midpoint of smolt migration is made through mark-recapture experiments by smolt trap in river Ätran/Högvadsån. Individual length and weight are collected.

Description of the population

Population targeted:

Main target species: smolt of Salmo salar.

Main survey area: Swedish west coast

Population sampled:

Part of the target population sampled: smolt.

Part of the target population unreachable for sampling: the trap does not cover the whole river, i.e. smolt can bypass the trap. Total smolt abundance calculated from estimates of trap efficiency and mark-recapture experiments.

Stratification:

Stratification: Ätran/Högvadsån. One river per assessment unit (ICES 3a) to comply with end-user needs.

Sampling design and protocols

Sampling design description:

PSU: Designated river in ICES 3a to comply with end-user needs.

SSU: smolt on the designated river.

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

NA

Regional coordination:

N

Link to sampling design documentation:

www.slu.se/qualityassurance.

Compliance with international recommendations:

Y, sampling accepted by ICES.

Description of sampling design is available at www.slu.se/qualityassurance

Relevant expert or coordination groups for this sampling: Data used by WGNAS and NASCO.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

www.slu.se/qualityassurance.

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: WGNAS and NASCO.

Sampling protocol available at www.slu.se/qualityassurance

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

The smolt trap is continuously monitored and managed daily throughout the smolt migration season. If the trap needs repairing this is dealt with immediately to ensure that the trap is catching smolt

properly and covers as much of the migration season as possible. Malfunctioning due to weather conditions (too high or too low water flows) is not always possible to adjust for, depending on trap type.

Data capture

Means of data capture:

Abundance: Smolt trap

Length: measuring board

Weight: scale

Data capture documentation:

www.slu.se/qualityassurance

Quality checks documentation:

Y https://github.com/kagervall/Smoltreg

Data storage

National database:

Sötebasen

International database:

Processed data delivered to ICES

Quality checks and data validation documentation:

https://github.com/kagervall/Smoltreg

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y, www.slu.se/qualityassurance, Mäntyniemi & Romakkaniemi 2002. Canadian Journal of Fisheries and Aquatic Sciences, 59(11): 1748-1758

Editing and imputation methods:

Y, https://github.com/kagervall/Smoltreg

Quality document associated to a dataset:

No DOI

https://github.com/kagervall/Smoltreg

Validation of the final dataset:

Scripts are run to check data quality of data files delivered from smolt traps. When errors detected from the scripts are corrected the data can be formated into files suitable for import into Sötebasen. Scripts found here: https://github.com/kagervall/Smoltreg

MS :SWE

Region: Baltic Sea

Sampling scheme identifier: Salmon smolt trap Baltic sea

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Estimates of smolt abundances are made through mark-recapture experiments by traps in Vindelälven, Testeboån, Mörrumsån and two additional traps rotating between rivers according to end-user needs. The two smolt traps that are rotated between rivers are moved to a new river on average every third year. Individual length and weight are collected.

Description of the population

Population targeted:

Main target species: smolt of Salmo salar.

Main survey area: Vindelälven, Testeboån, Mörrumsån and two additional rotating traps.

Population sampled:

Part of the target population sampled: smolt.

Part of the target population unreachable for sampling: the traps does not cover the whole river, i.e. smolt can bypass the trap. Total smolt abundance calculated from estimates of trap efficiency by mark-recapture experiments.

Stratification:

Stratification: River. One river per assessment unit (AU 1-4), plus rotating sampling in two additional rivers (varying assessment units) to comply with end-user needs.

Sampling design and protocols

Sampling design description:

PSU: Designated rivers in AU 1-4 to comply with end-user (ICES) needs.

SSU: smolt on the designated river.

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

NA

Regional coordination:

N

Link to sampling design documentation:

www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Description of sampling design is available at www.slu.se/qualityassurance

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: WGRUTTA.

Sampling protocol available at www.slu.se/qualityassurance

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

The smolt trap is monitored and managed daily throughout the smolt migration season. If the trap needs repairing this is dealt with immediately to ensure that the trap is catching smolt properly and covers as much of the migration season as possible. Malfunctioning due to weather conditions (too high or too low water flows) is not always possible to adjust for, depending on trap type.

Data capture

Means of data capture:

Abundance: Smolt trap

Length: mesuring board

Weight: scale

Data capture documentation:

www.slu.se/qualityassurance

Quality checks documentation:

Y https://github.com/kagervall/Smoltreg

Data storage

National database:

Sötebasen

International database:

Processed data delivered to ICES

Quality checks and data validation documentation:

https://github.com/kagervall/Smoltreg

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y, www.slu.se/qualityassurance, Mäntyniemi & Romakkaniemi 2002. Canadian Journal of Fisheries and Aquatic Sciences, 59(11): 1748-1758

Editing and imputation methods:

Y, https://github.com/kagervall/Smoltreg

Quality document associated to a dataset:

No DOI

https://github.com/kagervall/Smoltreg

Validation of the final dataset:

Scripts are run to check data quality of data files delivered from smolt traps. When errors detected from the scripts are corrected the data can be formated into files suitable for import into Sötebasen. Scripts found here: https://github.com/kagervall/Smoltreg

MS :SWE

Region: Baltic Sea

Sampling scheme identifier: Salmon spawner counts Baltic sea

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Counting of ascending individuals (spawning salmon) in designated rivers.

Description of the population

Population targeted:

Main target species: adult Salmo salar.

Main survey area: Vindelälven, Testeboån, Mörrumsån and Kalixälven.

Population sampled:

Part of the target population sampled: ascending adults.

Part of the target population is unreachable for sampling: some individuals may pass beyond the reach of the counter.

Stratification:

Stratification: River. One river per assessment unit (AU 1-4) to comply with end-user needs.

Sampling design and protocols

Sampling design description:

PSU: Designated rivers in AU 1-4 to comply with end-user (ICES) needs.

SSU: adult salmon on the designated rivers.

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

NA

Regional coordination:

N

Link to sampling design documentation

Two types of fish counters are used to count migrating spawning fish. Optical counters with cameras provide detailed information (e.g., species determination, length automatically calculated,). These counters are installed where there is a limited area that the fish must pass e.g., fish ladders. Sonar counters emit sound waves and act more like an echo sounder. This technology makes it possible to count fish on a larger area, up to about 75 m, but it is not possible to distinguish salmon from trout and are often used complementary to optical counter or migration period is used to distinguish between sea trout and small salmon. Sonar counters are preferable in streams with a lot of debris.

The aim is to have the different aspects of thedata sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publicly available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. This analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g., monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together

with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

The counter is continuously monitored and managed throughout the smolt migration season. If the counter needs repairing or maintenance this is dealt with as soon as possible to ensure that the counter is functional throughout the season.

Data capture

Means of data capture:

Fish counter (see description under sampling design)

Data capture documentation:

Fish is counted when passing a fish counter. All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. All data analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g. monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publicly available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Quality checks documentation:

N, All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. This analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g., monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publicly available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Data storage

National database:

None. National database underway.

International database:

Processed data delivered to ICES

Quality checks and data validation documentation:

All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. This analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g. monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publicly available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N, All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. This analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g. monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publicly available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Editing and imputation methods:

N, All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. This analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g. monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Quality document associated to a dataset:

No DOI

No. The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Validation of the final dataset:

All data collected from the fish counters are analysed and interpreted manually, where each individual registered object is carefully checked. This analysis is performed in specially developed software. The software has been developed as a working tool to facilitate e.g. monitoring of operations, remote data capture, quality checks, review, interpretation and storage of data and in some cases presentation of results and compilations.

MS : SWE

Region: North Sea and Eastern Arctic

Sampling scheme identifier: Salmon spawner counts 3a

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Counts and sea age composition (one sea winter or multi sea winter, based on length) of returning adult salmon on designated river.

Description of the population

Population targeted:

Main target species: adult Salmo salar.

Main survey area: Swedish west coast

Population sampled:

Part of the target population sampled: ascending adults.

Part of the target population unreachable for sampling: at high flows some individual may bypass the trap used for counting.

Stratification:

Stratification: Ätran/Högvadsån. One river per assessment unit (3a) to comply with end-user needs.

Sampling design and protocols

Sampling design description:

PSU: Designated river to comply with end-user needs.

SSU: ascending adult salmon on the designated river.

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

NA

Regional coordination:

N

Link to sampling design documentation

Ascending individuals of salmon are caught in a trap at a hydropower dam. All trapped salmon are manually counted and registered in a logbook by sea age (one sea winter or multi sea winter) before release upstream the dam.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGNAS and NASCO.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

All caught salmon are counted, length measured by measuring board and registered in protocol. Protocol available on request at local server.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together

with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGNAS and NASCO.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

No adjustment is made during the year. Counting is conducted continuously over the migration season. The trap is continuously monitored and managed throughout the spawner migration season.

Data capture

Means of data capture:

Counting of ascending salmon in fish trap. Length measured by measuring board.

Data capture documentation:

Numbers of ascending adults caught in the trap are registered according to a standard protocol, separating one sea winter fish from multi sea winter fish.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Quality checks documentation:

N. The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Data storage

National database:

Data stored on local server. National database underway.

International database:

Aggregated data delivered to ICES

Quality checks and data validation documentation:

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Editing and imputation methods:

N. The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Quality document associated to a dataset:

No DOI.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

Validation of the final dataset:

Data is manually quality checked, comparing numbers to previous years to identify potential outliers.

The aim is to have the different aspects of the data sampling design, data capture, data storage and data processing properly documented in 2023. Work to make statistics on ascending adults (together

with a short description of the sampling) publically available in 2022-2023 via the new website Laxportalen (working name) is in progress.

MS : SWE

Region: North Sea and Eastern Arctic

Sampling scheme identifier: Electrofishing 3a salmon rivers

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Estimates of salmon parr abundance are made through repeated sampling by electrofishing in 24 rivers of the Swedish west coast to monitor reproduction.

Description of the population

Population targeted:

Main target species: parr of Salmo salar.

Main survey area: Swedish west coast

Population sampled:

Part of the target population sampled: parr.

Part of the target population unreachable for sampling: All nursery areas cannot be sampled but sampling sites are selected based on their potential to host salmon. The number of electrofishing sites per river varies with size/length of river and with year, to sufficiently cover areas of salmon reproduction. The suggested number of sites fulfills the minimum requirement for an acceptable level of certainty for each river, with respect to production and status estimates used for stock assessment.

Stratification:

Stratification: River. 24 rivers of the Swedish west coast holding wild salmon populations. Each river holds (at least) one unique salmon population.

Sampling design and protocols

Sampling design description:

PSU: salmon river

SSU: salmon parr

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

NA

Regional coordination:

N

Link to sampling design documentation

www.slu.se/qualityassurance

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Compliance with international recommendations:

Y, Sampling design follows national standard. However, population status based on electrofishing data are delivered annually to WGNAS and NASCO. Method for status classification approved by WGNAS 2017 (Tamario & Degerman 2017. Setting biological reference points for Atlantic salmon in Sweden. Working paper 2017/14. Working Group on North Atlantic Salmon) and requested by NASCO.

Relevant expert or coordination groups for this sampling: WGNAS and NASCO.

Description of sampling design is available at www.slu.se/qualityassurance

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

www.slu.se/qualityassurance,

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

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

Y, Sampling protocol follows national standard, but sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: WGNAS and NASCO.

Sampling protocol available at

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

If a sampling site would be impossible to electrofish, another close-by site can be selected. Data on several site descriptors are collected and can be used to standardize data collected from nearby sites. Stream site descriptors collected are the following: length, width, area, depth, mean width, mean area, mean depth, water level, water colour, turbidity, water and air temperature, substrate (3 grades with several options), vegetation in stream and nearby surroundings, dominating tree type (two levels), percentage shade, presence of dead wood in water, migration barriers, liming of area (yes, no), anthropogenic impacts (three levels).

If an entire river would be impossible to electrofish (e.g., due to weather conditions, too high water flow or similar) then that cannot be resolved. In such cases, data would be missing for that year and the river would be electrofished the following year (if possible).

Data capture

Means of data capture:

Electrofishing according to national standards.

Data capture documentation:

www.slu.se/qualityassurance,

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Quality checks documentation:

Y, www.slu.se/qualityassurance

Data storage

National database:

SERS, https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

International database:

Processed data delivered to ICES WGNAS and NASCO.

Quality checks and data validation documentation:

www.slu.se/qualityassurance

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y, www.slu.se/qualityassurance Script checking min, max and missing values.

Editing and imputation methods:

Y, www.slu.se/qualityassurance (section 11 and 12 of manual)

Quality document associated to a dataset:

No DOI.

Yes, available at www.slu.se/qualityassurance

Validation of the final dataset:

Scripts are run to check electrofishing data delivered to SLU before data is used by the end-users. Scripts found here: www.slu.se/qualityassurance

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Electrofishing Baltic Sea trout rivers

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Estimates of sea trout parr abundance are made through repeated sampling by electrofishing 50 sites in typical sea trout rivers of the Swedish east coast to monitor reproduction. The exact designation of rivers is not yet decided on.

Description of the population

Population targeted:

Main target species: parr of Salmo trutta.

Main survey area: typical sea trout rivers of the Swedish east coast

Population sampled:

Part of the target population sampled: sea trout parr.

Part of the target population unreachable for sampling: All nursery areas cannot be sampled but sampling sites are selected based on their potential to host trout. The number of electrofishing sites per river varies with size/length of river and with year, to sufficiently cover areas of salmon reproduction. The suggested number of sites fulfills the minimum requirement for an acceptable level of certainty for each river, with respect to production estimates used for stock assessment.

Stratification:

Stratification: River. Each river holds at least one unique sea trout population.

Sampling design and protocols

Sampling design description:

PSU: sea trout river

SSU: sea trout parr

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

NA

Regional coordination:

N

Link to sampling design documentation

www.slu.se/qualityassurance

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Compliance with international recommendations:

Y, Sampling design follows national standard, but sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data use dby WGBAST and WGTRUTTA.

Description of sampling design is available at www.slu.se/qualityassurance

Link to sampling protocol documentation:

www.slu.se/qualityassurance

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

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

Y, Sampling protocol follows national standard, but sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: WGNAS and NASCO.

Sampling protocol available at

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

If a sampling site would be impossible to electrofish, another close-by site can be selected. Data on several site descriptors are collected and can be used to standardize data collected from nearby sites. Stream site descriptors collected are the following: length, width, area, depth, mean width, mean area, mean depth, water level, water colour, turbidity, water and air temperature, substrate (3 grades with several options), vegetation in stream and nearby surroundings, dominating tree type (two levels), percentage shade, presence of dead wood in water, migration barriers, liming of area (yes, no), anthropogenic impacts (three levels).

If an entire river would be impossible to electrofish (e.g., due to weather conditions, too high water flow or similar) then that cannot be resolved. In such cases, data would be missing for that year and the river would be electrofished the following year (if possible).

Data capture

Means of data capture:

Electrofishing according to national standards.

Data capture documentation:

www.slu.se/qualityassurance,

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Quality checks documentation:

Y, www.slu.se/qualityassurance

Data storage

National database:

SERS, https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

International database:

Processed data delivered to ICES WGBAST and WGTRUTTA.

Quality checks and data validation documentation:

www.slu.se/qualityassurance

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y, www.slu.se/qualityassurance

Editing and imputation methods:

Y, www.slu.se/qualityassurance

Quality document associated to a dataset:

No DOI.

Yes, available at www.slu.se/qualityassurance

Validation of the final dataset:

Scripts are run to check electrofishing data protocols delivered to SLU before data is used by the end-users. Scripts found here: www.slu.se/qualityassurance

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Electrofishing Baltic Sea salmon rivers

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Estimates of salmon parr abundance are made through repeated sampling by electrofishing in 15 rivers of the Swedish east coast to monitor reproduction.

Description of the population

Population targeted:

Main target species: parr of Salmo salar.

Main survey area: Torneälven, Kalixälven, Råneälven, Åbyälven, Byskeälven, Kågeälven,v Rickleån, Sävareån, Vindelälven, Öreälven, Lögdeälven, Ljungan, Testeboån, Mörrumsån, Emän.

Population sampled:

Part of the target population sampled: salmon parr.

Part of the target population unreachable for sampling: All nursery areas cannot be sampled but sampling sites are selected based on their potential to host salmon. The number of electrofishing sites per river varies with size/length of river and with year, to sufficiently cover areas of salmon reproduction. The suggested number of sites fulfills the minimum requirement for an acceptable level of certainty for each river, with respect to smolt production estimates used for stock assessment.

Stratification:

Stratification: River. Each river holds (at least) one unique salmon population.

Sampling design and protocols

Sampling design description:

PSU: salmon river

SSU: salmon parr

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

NA

Regional coordination:

N

Link to sampling design documentation

www.slu.se/qualityassurance

https://www.slu.se/en/departments/aquatic-resources1/databases/database-for-testfishing-in-streams/

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Compliance with international recommendations:

N, Sampling design follows national standard, but sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Description of sampling design is available at www.slu.se/qualityassurance

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

www.slu.se/qualityassurance

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

Compliance with international recommendations:

N, Sampling protocol follows national standard, but sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: WGBAST.

Sampling protocol available at

https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

If a sampling site would be impossible to electrofish, another close-by site can be selected. Data on several site descriptors are collected and can be used to standardize data collected from nearby sites. Stream site descriptors collected are the following: length, width, area, depth, mean width, mean area, mean depth, water level, water colour, turbidity, water and air temperature, substrate (3 grades with several options), vegetation in stream and nearby surroundings, dominating tree type (two levels), percentage shade, presence of dead wood in water, migration barriers, liming of area (yes, no), anthropogenic impacts (three levels).

If an entire river would be impossible to electrofish (e.g., due to weather conditions, too high water flow or similar) then that cannot be resolved. In such cases, data would be missing for that year and the river would be electrofished the following year (if possible).

Data capture

Means of data capture:

Electrofishing according to national standards.

Data capture documentation:

www.slu.se/qualityassurance,

Swedish standard, SS-EN 14011. Water quality - Sampling of fish with electricity. Swedish Institute for Standards. https://www.sis.se/en/produkter/environment-health-protection-safety/water-quality/examination-of-biological-properties-of-water/ssen14011/

Bergquist B, Degerman E, Petersson E, Sers B, Stridsman S and Winberg S. 2014. Standardiserat elfiske i vattendrag, en manual med praktiska råd (in Swedish). SLU Aqua reports 2014:15. Sveriges lantbruksuniversitet, Drottningholm. 165 s. ISBN: 978-91-576-9275-7

Quality checks documentation:

Y, www.slu.se/qualityassurance

Data storage

National database:

SERS, https://www.slu.se/institutioner/akvatiska-resurser/databaser/elfiskeregistret/

International database:

Processed data delivered to ICES WGBAST.

Quality checks and data validation documentation:

www.slu.se/qualityassurance

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y, www.slu.se/qualityassurance

Editing and imputation methods:

Y, www.slu.se/qualityassurance

Quality document associated to a dataset:

No DOI.

Yes, available at www.slu.se/qualityassurance

Validation of the final dataset:

Scripts are run to check electrofishing data delivered to SLU before data is used by the end-users. Scripts found here: www.slu.se/qualityassurance

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Sea trout smolt trap Baltic sea

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Estimates of smolt abundance are made through mark-recapture experiments by a smolt trap in a typical sea trout river of the Baltic Sea area.

Description of the population

Population targeted:

Main target species: smolt of Salmo trutta.

Main survey area: a typical sea trout river of Sweden (not yet decided on).

Population sampled:

Part of the target population sampled: smolt.

Part of the target population unreachable for sampling: the trap does not cover the whole river, i.e. smolt can bypass the trap. Total smolt abundance calculated from estimates of trap efficiency by mark-recapture experiments.

Stratification:

Stratification: River. Currently just one river. Location of that river is yet to be decided by endusers.

Sampling design and protocols

Sampling design description:

PSU: sea trout river

SSU: sea trout smolt

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

NA

Regional coordination:

N

Link to sampling design documentation

www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Description of sampling design is available at www.slu.se/qualityassurance

Relevant expert or coordination groups for this sampling: Data used by WGTRUTTA.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: WGRUTTA.

Sampling protocol available at www.slu.se/qualityassurance

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

The smolt trap is monitored and managed daily throughout the smolt migration season. If the trap needs repairing this is dealt with immediately to ensure that the trap is catching smolt properly and covers as much of the migration season as possible. Malfunctioning due to weather conditions (too high or too low water flows) is not always possible to adjust for, depending on trap type.

Data capture

Means of data capture:

Smolt trap

Data capture documentation:

www.slu.se/qualityassurance

Quality checks documentation:

N, https://github.com/kagervall/Smoltreg

Data storage

National database:

Sötebasen

International database:

Processed data delivered to ICES.

Quality checks and data validation documentation:

N, https://github.com/kagervall/Smoltreg

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y, www.slu.se/qualityassurance, Mäntyniemi & Romakkaniemi 2002. Canadian Journal of Fisheries and Aquatic Sciences, 59(11): 1748-1758, https://doi.org/10.1139/f02-146

Editing and imputation methods:

Y, https://github.com/kagervall/Smoltreg

Quality document associated to a dataset:

No DOI

https://github.com/kagervall/Smoltreg

Validation of the final dataset:

Scripts are run to check data quality of data files delivered from smolt traps. When errors detected from the scripts are corrected the data can be formated into files suitable for import into Sötebasen. Scripts found here: https://github.com/kagervall/Smoltreg

MS : SWE

Region: North Sea and Eastern Arctic

Sampling scheme identifier: Recreational river catches salmon 3a

Sampling scheme type: recreational (off site surveys)

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

Collection of recreational fisheries statistics in rivers of the Swedish west coast salmon rivers by enquiries, interviews and catch reports (voluntary). Catches and Catch & Release (C&R) can be reported by species, location, numbers, weight, wild or reared, but what and if fishermen report is

completely voluntary. Reported catch is supplemented with an estimate of unreported catch provided by local expertise.

Description of the population

Population targeted:

Recreational fishermen of the Swedish west coast salmon rivers.

Population sampled:

Part of the target population sampled: fishermen catching salmon

Part of the target population is unreachable for sampling: Catch reporting of recreational catches are voluntary in Sweden and therefore some catches will remain unreported as some fishermen will not report their catches.

Stratification:

As recreational fishermen may have licenses to fish in several areas of the west coast during a year the data is not stratified by any particular geographical areas but aggregated for the whole 3a area.

Sampling design and protocols

Sampling design description:

PSU: Recreational fishermen of the Swedish west coast salmon rivers.

SSU: Recreational fishers of the Swedish west coast salmon rivers catching salmon.

Catch reporting of recreational catches and C&R are voluntary in Sweden. Catches and C&R can be reported by species, location, numbers, weight, wild or reared.

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

NA

Regional coordination:

N

Link to sampling design documentation

https://www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Description of sampling design is available at www.slu.se/qualityassurance

Relevant expert or coordination groups for this sampling: Data used by WGNAS and NASCO.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

Recreational fisheries statistics is collected in a number of different ways (enquiries, interviews and catch reports) and aggregated into an Excel file. This file is available at local server. Sampling design available at https://www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGNAS and NASCO.

Sampling implementation

Recording of refusal rate:

N. Refusals are registered for some parts of the data collection. Full refusal documentation will be possible first after legal obligation for recreational catch reporting is implemented.

Monitoring of sampling progress within the sampling year:

Catch and C&R statistics are compiled at the end of the year. Reporting is voluntary.

Data capture

Means of data capture:

Enquiries, interviews and catch reports.

Data capture documentation:

https://www.slu.se/qualityassurance

Quality checks documentation:

N. One major disadvantage of voluntary reporting is that it is very difficult to identify and follow up on shortcomings in reporting.

Data storage

National database:

No national database exists. Data is stored on local server. Work in progress to create national database.

International database:

Aggregated data delivered to ICES.

Quality checks and data validation documentation:

One major disadvantage of voluntary reporting is that it is very difficult to identify and follow up on shortcomings in reporting.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting. The catch and C&R estimates of salmon is of varying quality depending on river (Björkvik et al., 2014). In some rivers there is both a culture and an infrastructure to collect catch reports and close to 100% of all fish caught are reported, in other rivers the willingness to report is lower. In rivers where catch reporting does not work well, estimates are made by contact persons with good local knowledge and a large network among the river's fishermen (as described at https://www.slu.se/qualityassurance).

Björkvik, E., Dannewitz, J., Palm, S., Stridsman, S., & Östergren, J. (2014). Översyn av fångststatistiken inom fritidsfisket efter lax i Östersjön (No. SLU.aqua.2014.5.5-334) (s. 17). Drottningholm: SLU Aqua.

Editing and imputation methods:

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting.

Quality document associated to a dataset:

No DOI.

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting.

Validation of the final dataset:

Data accuracy is validated by comparing numbers to previous years to identify outliers but it is difficult to follow up and identify consistent shortcomings in the recreational catch reporting as it is voluntary.

MS :SWE

Region: Baltic Sea

Sampling scheme identifier: M74

Sampling scheme type:

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Monitoring of reproductive disease, M74 in Baltic salmon. The sickness is monitored via M74 incidence in hatched fry related mortality together with measures of levels of thiamine in unfertilized eggs. The thiamine levels acts as an early warning and indicate a high risk of M74 mortality the following year.

Description of the population

Population targeted:

Main target species: Salmo salar.

Main survey area: River Dalälven, Ljusnan, Indalsälven, Ångermanälven, Ume/Vindelälven. Skellefteälven, Luleälven.

Population sampled:

Part of the target population sampled: Salmon egg and fry of salmon brood stocks.

Part of the target population unreachable for sampling: only some populations sampled (brood stocks).

Stratification:

River.

Sampling design and protocols

Sampling design description:

The monitoring of M74 incidence in salmon constitutes of data on hatchery success from seven Swedish rivers along the Baltic Sea. The M74 monitoring is complemented by analyses of thiamine in unfertilized salmon eggs (which is used as a system for early warning). Thiamine analyses are conducted by sampling of unfertilized eggs within the premises of compensatory hatcheries Swedish rivers Dalälven and Ume/Vindelälven. About 1 dl of eggs are collected, frozen and transported for analyses of thiamine at Stockholm university, Sweden. The M74 incidence is estimated from levels of thiamine.

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

NA

Regional coordination:

N

Link to sampling design documentation:

M74 is a reproductive disorder in salmon where fry die shortly after hatching due to thiamine deficiency. The prevalence of M74 is examined each year in seven different salmon hatcheries. In one hatchery, a so-called forecast hatching takes place where the hatching of eggs from Dalälven and Ljusnan is accelerated to get an early forecast of the current year's M74 outcome by placing 200 eggs in water heated to about 7 degrees, thereby the forecast eggs hatches earlier than in the in the normal hatchery. After a certain number of days, you can see signs of M74 syndrome in the developing fry. In the other six farms, no forecast hatching is done, but a reference hatching where eggs from each female in the brood stock fishery is hatched at a normal rate but without the eggs receiving thiamine treatment (used to counteract M74). Thiamine analyses are conducted by sampling of unfertilized eggs within the premises of compensatory hatcheries Swedish rivers Dalälven and Ume/Vindelälven. About 1 dl of eggs are collected, frozen and transported for analyses of thiamine at Stockholm university, Sweden. The M74 incidence is estimated from levels of thiamine.

Compliance with international recommendations:

N.

Link to sampling protocol documentation:

Available on request or at local server.

Compliance with international recommendations:

Y, data is used by WGBAST.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

Data on M74 incidence is recorded by observations of hatching success of fry. Data on thiamine status of unfertilized salmon eggs are analysed chemical concentrations.

Data capture documentation:

Thiamine status: https://www.luke.fi/en/news/m74-syndrome-recurs-in-baltic-salmon/

Quality checks documentation:

For thiamine status, standard analysis procedure applies. Documentation can available on request from LUKE.

For hatching success no documentation on quality checks are available. The aim is to have this documented in 2023.

Data storage

National database:

Results stored on local server. Hatching success is entered into a local database called PROGKL.

International database:

Data delivered to WGBAST.

Quality checks and data validation documentation:

For thiamine status, standard analysis procedure applies. Documentation available on request from LUKE. www.LUKE.fi/en/

For hatching success no documentation on quality checks are available. The aim is to have this documented in 2023.

Sample storage

Storage description:

No samples are stored.

Sample analysis:

Data processing

Evaluation of data accuracy (bias and precision):

For thiamine status, documentation can available on request from LUKE. www.LUKE.fi/en/

For hatching success no documentation on quality checks are available. The aim is to have this documented in 2023.

Editing and imputation methods:

For thiamine status, documentation can available on request from LUKE. www.LUKE.fi/en/

For hatching success no documentation on quality checks are available. The aim is to have this documented in 2023.

Quality document associated to a dataset:

No DOI.

For thiamine status, documentation can available on request from LUKE. www.LUKE.fi/en/

For hatching success no documentation on quality checks are available. The aim is to have this documented in 2023.

Validation of the final dataset:

For thiamine status, standard analysis and quality procedure applies. www.LUKE.fi/en/

For hatching success, numbers are compared to previous years and if outliers are identified the hatcheries are contacted to validate the data.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Aging of salmon

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Age determination of salmon by scale reading.

Description of the population

Population targeted:

Main target species: salmon

Main survey area: Vindelälven, Mörrumsån, Testeboån, Högvadsån, 2 rotating rivers.

Population sampled:

Target population: salmon in designated rivers.

Target population unreachable for sampling: scale samples are taken from a sub-sample of the out migrating salmon smolt and ascending spawners.

Stratification:

River.

Each river has its own population of salmon. The designated rivers are located in different assessment units.

Sampling design and protocols

Sampling design description:

PSU: Designated rivers (Testeboån, Mörrumsån, Högvadsån, Vindelälven and 2 rotating rivers) according to enduser needs.

SSU: out-migrating smolt and ascending spawners.

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

NA

Regional coordination:

N

Link to sampling design documentation:

Description of age reading:

MetodhandbokÅlder20120703.indd(slu.se)

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Compliance with international recommendations:

Y, data used by WGBAST and WGNAS.

Link to sampling protocol documentation:

Sampling protocol available at local server or on request. Sampling protocol is excel file with water body ID, water body name, date of collection, series number, species, instrument, preparation method, measuring technic, magnification, age reader, reading date, ID code, age structure.

Compliance with international recommendations:

The age reading laboratory is calibrated internationally.

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

If the requested weekly number of samples cannot be obtained due to lack of fish this will, if possible, be compensated for the following week.

Data capture

Means of data capture:

Scales

Data capture documentation:

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Quality checks documentation:

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Data storage

National database:

Sötebasen

International database:

No international database. Data delivered to ICES.

Quality checks and data validation documentation:

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Sample storage

Storage description:

Scale samples dried and stored in specific envelops in archive. No end date for storage exist. Access to samples according to Swedish university of agricultural sciences' policy (Utlåningspolicy avseende Sötvattenslaboratoriets biologiska arkiv. (slu.se)). About 1 million samples are stored in the biological archives at the Institute of Freshwater research, SLU aqua, Stockholm. Information on quantities of sampled stored by species/stock, geographic sub-area and by year can be obtain by contacting the Institute of Freshwater research, SLU Aqua, Stockholm (Biologiskt arkiv | Externwebben (slu.se)).

Sample analysis:

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Data processing

Evaluation of data accuracy (bias and precision):

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Editing and imputation methods:

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Quality document associated to a dataset:

No DOI.

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

Validation of the final dataset:

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/sotvattenslab/alderslaboratoriet/metodhandbok-alder-20120630.pdf

MS :SWE

Region: Baltic Sea

Sampling scheme identifier: Genetic sampling salmon

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Genetic sampling of salmon for the Baltic Sea.

Baltic Sea: Tissue samples will be collected from the coastal fishery in the Baltic Sea and analysed genetically to estimate catch composition and to model catches of individual salmon populations in the coastal mixed stock fishery. This information is used by ICES for spatial and temporal management advice, and also aid in the national management to minimize exploitation of weak wild salmon populations.

Description of the population

Population targeted:

Baltic Sea:

Main target species: Salmo salar.

Main survey area: Baltic Sea

Population sampled:

Baltic Sea:

Part of the target population sampled: Adult salmon will be sampled from catches in the coastal mixed stock fishery, which target different salmon populations during the spawning migration.

Part of the target population unreachable for sampling: The sampling is focused on coastal areas and time periods when the fishery is most intense. But also less intense fisheries are sampled to cover the whole geographical area and also time periods when salmon are less abundant in order to identify certain salmon population's migration pattern.

Stratification:

Baltic Sea:

Stratification: Samples will be taken from a number of fishers spread over the area where coastal fisheries take place. The number of fishers from whom samples will be taken varies between 2 and 8 between years with the aim to focus on different local areas in different years. The coverage and details of the genetic stock information will gradually improve and can be used over several years to estimate catch composition in the coastal migration model used by e.g. ICES.

Sampling design and protocols

Sampling design description:

Baltic Sea:

PSU: salmon in catches in the coastal mixed stock fishery

SSU All or a subsample (depending on size of the catch) of landed salmon of selected fishers will be sampled and genetically analysed. In addition, a few fishers will also sample salmon caught outside the ordinary fishing season (which will be released back) to get information on stock composition from the whole migration period.

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

N

Regional coordination:

N

Link to sampling design documentation:

Baltic:

Documentation on local server. The aim is to refine and develop the collection of the genetic salmon data and therefore the sampling design may change from year to year in the coming program period and before final documentation can be in place.

Compliance with international recommendations:

Y, Sampling is requested by WGBAST.

Link to sampling protocol documentation:

Documentation on local server. The aim is to refine and develop the collection of the genetic salmon data and therefore the approach may change from year to year in the coming program period and before final documentation of the sampling protocol can be in place.

Compliance with international recommendations:

Y, Sampling is accepted by WGBAST.

Sampling implementation

Recording of refusal rate:

Baltic: Y. Information on eventual non-responses from fishermen is compiled year by year

Monitoring of sampling progress within the sampling year:

Baltic Sea: No adjustments to the sampling allocation are done within a year. However, the sampling scheme and allocation is evaluated after every sampling season and necessary changes are implemented the following year to fulfil the aims of the genetic sampling.

Data capture

Means of data capture:

Tissue samples (fin clips or scales)

Data capture documentation:

Documentation on local server.

Quality checks documentation:

N. Documentation on local server. The aim is to have the different aspects of the data quality checks properly documented in 2023. E.g. are tissue samples manually checked at arrival against field protocol and for the Baltic Sea length-weight-regression are plotted to identify outliers.

Data storage

National database:

Will be included in the national database Sötebasen. Work in progress.

International database:

Inter-calibrated against SALSEA.

Quality checks and data validation documentation:

Will be included in the national database Sötebasen. Work in progress.

Sample storage

Storage description:

Fin clips preserved in ethanol in fireproof room at the Institute of Freshwater research, SLU aqua, Stockholm. Scale samples dried and stored in specific envelops in archive at the Institute of Freshwater research, Stockholm. The storage of the samples has fixed, strict routines that are personal-independent and there is no set end-date for the storage. No international organization is yet engaged in the sample storage. Access to samples according to Swedish university of agricultural sciences' policy (Utlåningspolicy avseende Sötvattenslaboratoriets biologiska arkiv. (slu.se)). About 1 million samples are stored in the biological archives at the Institute of Freshwater research, SLU aqua, Stockholm. Information on quantities of sampled stored by species/stock, geographic sub-area and by year can be obtain by contacting the Institute of Freshwater research, SLU Aqua, Stockholm (Biologiskt arkiv | Externwebben (slu.se)).

Sample analysis:

Genetic and statistical analyses performed as described in Whitlock et al 2018.

https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/2041-210X.12946

Data processing

Evaluation of data accuracy (bias and precision):

N, but partly covered in: Whitlock et al 2018.

https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/2041-210X.12946

Draft documentation is also available on local server. The aim is to develop the different aspects of data accuracy further and document in 2023.

Editing and imputation methods:

N, but partly covered in: Whitlock et al 2018.

https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/2041-210X.12946

Draft documentation is also available on local server. The aim is to develop the different aspects of data handling further and document in 2023.

Quality document associated to a dataset:

Genetic and statistical analyses performed as described in Whitlock et al 2018.

https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/2041-210X.12946

Further documentation summarising estimation processes is available on local server.

Validation of the final dataset: Genetic analyses follow standard protocols (Whitlock et al 2018, Söderberg et al 2019, Söderberg et al 2020, Söderberg & Ek 2021) and quality checks, e.g. a minimum of 8 samples are always run twice to check for errors.

Estimates of catch composition and other parameters provided to end-users are produced as described in Whitlock et al 2018. https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/2041-210X.12946

Söderberg, L., Östergren, J., Palm, S. (2019). Genetisk analys av avelsfisk. Lax och havsöring 2017-2018 från svenska kompensationsodlingar. Aqua reports 2019:18. Institutionen för akvatiska resurser, Sveriges lantbruksuniversitet, Drottningholm Lysekil Öregrund. 53 s.

Söderberg, L., Lind, E., Degerman, E., Palm, S. (2020). Genetisk särart och variation hos svenska bestånd av Atlantlax. PROMEMORIA, SLU ID: SLU.aqua.2018.5.5-19. Institutionen för akvatiska resurser, Sveriges lantbruksuniversitet, Drottningholm. 28 s.

Söderberg, L., Ek, C. (2021). Genetisk analys av lax och havsöring kramad 2020 i svenska kompensationsodlingar. PROMEMORIA, SLU ID: SLU.aqua.2018.5.2-353. Institutionen för akvatiska resurser, Sveriges lantbruksuniversitet, Drottningholm. 49 s.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Recreational river catches salmon Baltic sea

Sampling scheme type: recreational (off site surveys)

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

Collection of recreational fisheries statistics in salmon rivers of the Swedish east coast by enquiries, interviews and catch reports. Catches and C& R can be reported by species, location, numbers, weight, wild or reared, but what and if fishermen report is completely voluntary. Reported catch is supplemented with an estimate of unreported catch provided by local expertise.

Description of the population

Population targeted:

Recreational fishermen of the Swedish east coast salmon rivers.

Population sampled:

Part of the target population sampled: fishermen catching salmon

Part of the target population is unreachable for sampling: Catch reporting of recreational catches are voluntary in Sweden and therefore some catches will remain unreported (convenience and/or voluntary sampling).

Stratification:

As recreational fishermen may have licenses to fish in several areas of the east coast during a year the data is not stratified by any particular geographical area but aggregated for the whole Baltic area.

Sampling design and protocols

Sampling design description:

PSU: Recreational fishermen of the Swedish east coast salmon rivers.

SSU: Recreational fishermen of the Swedish east coast salmon rivers catching salmon.

Catch reporting of recreational catches and C&R are voluntary in Sweden. Catches and C&R can be reported by species, location, numbers, weight, wild or reared.

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

NA

Regional coordination:

N

Link to sampling design documentation

https://www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Description of sampling design is available at www.slu.se/qualityassurance

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

Recreational fisheries statistics is collected in a number of different ways (enquiries, interviews and catch reports) and aggregated into an Excel file. This file is available at local server. Sampling design available at https://www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Sampling implementation

Recording of refusal rate:

N. Refusals are registered for some parts of the data collection. Full refusal documentation will be possible first after legal obligation for recreational catch reporting is implemented.

Monitoring of sampling progress within the sampling year:

Catch and C&R statistics are compiled at the end of the year. Reporting is voluntary.

Data capture

Means of data capture:

Enquiries, interviews and catch reports

Data capture documentation:

https://www.slu.se/qualityassurance

Quality checks documentation:

N. One major disadvantage of voluntary reporting is that it is very difficult to identify and follow up on shortcomings in reporting.

Data storage

National database:

No national database exist. Work in progress to create national database.

International database:

Aggregated data delivered to ICES.

Quality checks and data validation documentation:

One major disadvantage of voluntary reporting is that it is very difficult to identify and follow up on shortcomings in reporting.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting. The catch and C&R estimates of salmon is of varying quality depending on river (Björkvik et al., 2014). In some rivers there is both a culture and an infrastructure to collect catch reports and close to 100% of all fish caught are reported, in other rivers the willingness to report is lower. In rivers where catch reporting does not work well, estimates are made by contact persons with good local knowledge and a large network among the river's fishermen (as described at https://www.slu.se/qualityassurance).

Björkvik, E., Dannewitz, J., Palm, S., Stridsman, S., & Östergren, J. (2014). Översyn av fångststatistiken inom fritidsfisket efter lax i Östersjön (No. SLU.aqua.2014.5.5-334) (s. 17). Drottningholm: SLU Aqua.

Editing and imputation methods:

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting.

Quality document associated to a dataset:

No DOI.

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting.

Validation of the final dataset:

Data accuracy is validated by comparing numbers to previous years to identify outliers but it is difficult to follow up and identify consistent shortcomings in the recreational catch reporting as it is voluntary.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Recreational river catches Sea trout Baltic sea

Sampling scheme type: recreational (off site surveys)

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

Collection of recreational fisheries statistics in sea trout rivers of the Swedish east coast by enquiries, interviews and catch reports. Catches and C&R can be reported by species, location, numbers, weight,

wild or reared, but what and if fishermen report is completely voluntary. Reported catch is supplemented with an estimate of unreported catch provided by local expertise.

Description of the population

Population targeted:

Fishermen of the Swedish east coast sea trout rivers.

Population sampled:

Part of the target population sampled: fishermen catching trout.

Part of the target population is unreachable for sampling: Catch reporting of recreational catches are voluntary in Sweden and therefore some catches will remain unreported (convenience and/or voluntary sampling).

Stratification:

As recreational fishermen may have licenses to fish in several areas of the east coast during a year the data is not stratified by any particular geographical areas but aggregated for the whole Baltic area.

Sampling design and protocols

Sampling design description:

PSU: Recreational fishermen of the Swedish east coast sea trout rivers.

SSU: Recreational fishermen of the Swedish east coast sea trout rivers catching trout.

Catch reporting of recreational catches and C&R are voluntary in Sweden. Catches and C&R can be reported by species, location, numbers, weight, wild or reared.

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

NA

Regional coordination:

N

Link to sampling design documentation

https://www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Description of sampling design is available at www.slu.se/qualityassurance

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

Recreational fisheries statistics is collected in a number of different ways (enquiries, interviews and catch reports) and aggregated into an Excel file. This file is available at local server. Sampling design available at https://www.slu.se/qualityassurance

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGBAST.

Sampling implementation

Recording of refusal rate:

N. Refusals are registered for some parts of the data collection. Full refusal documentation will be possible first after legal obligation for recreational catch reporting is implemented.

Monitoring of sampling progress within the sampling year:

Catch and C&R statistics are compiled at the end of the year. Reporting is voluntary.

Data capture

Means of data capture:

Enquiries, interviews and catch reports

Data capture documentation:

https://www.slu.se/qualityassurance

Quality checks documentation:

N. One major disadvantage of voluntary reporting is that it is very difficult to identify and follow up on shortcomings in reporting.

Data storage

National database:

No national database exist. Work in progress to create national database.

International database:

Aggregated data delivered to ICES.

Quality checks and data validation documentation:

One major disadvantage of voluntary reporting is that it is very difficult to identify and follow up on shortcomings in reporting.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting. The catch and C&R estimates of salmon is of varying quality depending on river (Björkvik et al., 2014). In some rivers there is both a culture and an infrastructure to collect catch reports and close to 100% of all fish caught are reported, in other rivers the willingness to report is lower. In rivers where catch reporting does not work well, estimates are made by contact persons with good local knowledge and a large network among the river's fishermen (as described at https://www.slu.se/qualityassurance).

Björkvik, E., Dannewitz, J., Palm, S., Stridsman, S., & Östergren, J. (2014). Översyn av fångststatistiken inom fritidsfisket efter lax i Östersjön (No. SLU.aqua.2014.5.5-334) (s. 17). Drottningholm: SLU Aqua.

Editing and imputation methods:

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting.

Quality document associated to a dataset:

No DOI.

N. One major disadvantage of voluntary reporting is that it is very difficult to follow up and identify shortcomings in reporting.

Validation of the final dataset:

Data accuracy is validated by comparing numbers to previous years to identify outliers but it is difficult to follow up and identify consistent shortcomings in the recreational catch reporting as it is voluntary.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Baltic Sea trolling catches salmon

Sampling scheme type: recreational (off site surveys)

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

Development of methods to estimate total catch of salmon in numbers and weight made by Swedish trolling anglers. The latest method tested was a randomized onsite survey where anglers returning to harbour were interviewed. However, methods to estimate catch from trolling are under development and may change from year to year in the coming program period.

Description of the population

Population targeted:

Trolling boats returning after fishing

Population sampled:

Part of the target population sampled: Trolling boats returning after fishing

Part of the target population is unreachable for sampling: Survey is currently restricted to the most important trolling harbours and the peak of the trolling season.

Stratification:

Stratification: The time period was stratified in weekdays and weekend/holidays and equal number of port*days was sampled I each strata. Stratification was done to ensure that enough days were sampled on weekends/holidays when fishing was assumed to be more intense.

Sampling design and protocols

Sampling design description:

PSU: port*days

SSU: trolling boats returning to port after fishing (was implemented as census)

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

NA

Regional coordination:

N

Link to sampling design documentation

Follows recommendations in Pollock et al. 1994.

Angler survey methods and their applications in fisheries management | SpringerLink

However, methods to estimate catch from trolling are under development and may change from year to year in the coming program period.

Compliance with international recommendations:

Y, sampling accepted by ICES and Follows recommendations in Pollock et al. 1994.

(Pollock, K. H., Jones, C. M., & Brown, T. L. (1994). *Angler survey methods and their applications in fisheries management*. American Fisheries Society.)

Relevant expert or coordination groups for this sampling: Data used by WGBSAT.

Data required by COMMISSION DELEGATED DECISION (EU) 2021/1167

Link to sampling protocol documentation:

Angler survey methods and their applications in fisheries management | SpringerLink

Compliance with international recommendations:

Y, sampling accepted by ICES.

Relevant expert or coordination groups for this sampling: Data used by WGNAS and NASCO.

Angler survey methods and their applications in fisheries management | SpringerLink

Sampling implementation

Recording of refusal rate:

Number of boats refusing to participate is registered. The catch on refusing boats is imputed as the mean catch on participating boats on the same day.

Monitoring of sampling progress within the sampling year:

No adjustments to the sampling allocation are done within a year. However, methods to estimate catch from trolling are under development and may change from year to year in the coming program period.

Data capture

Means of data capture:

Catch reports, counting of trolling boats and interviews (species, length, weight, sex, wild/reared origin, C&R) in major trolling harbours.

Data capture documentation:

Pollock, K. H., Jones, C. M., & Brown, T. L. (1994). Angler survey methods and their applications in fisheries management. American Fisheries Society.

Quality checks documentation:

N. Documentarian on local server. The aim is to have the different aspects of the data processing and quality checks properly documented in 2023.

Data storage

National database:

No national database exist. Work in progress to create national database. Data stored on local server.

International database:

Aggregated data delivered to ICES.

Quality checks and data validation documentation:

Documentarian on local server. Work in progress to create national database

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. Documentarian on local server. The aim is to have the different aspects of the data data processing and quality checks properly documented in 2023.

Editing and imputation methods:

N. Documentarian on local server.

Quality document associated to a dataset:

N

Validation of the final dataset:

Data accuracy is validated by comparing numbers to previous years to identify outliers but it is difficult to follow up and identify consistent shortcomings in the recreational catch reporting as it is voluntary.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: Baltic Sea recreational coastal catches salmon

Sampling scheme type: recreational (off site surveys)

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

The sampling scheme is aiming to collect the total landed catch of salmon (in numbers and weight) in the recreational coastal trap net fisheries on an annual basis. If it is not possible to fulfil the census approach, then the total catch will instead be estimated. Collection or estimation of released (discarded) catch in this fishery is not included.

The data collection will first hand be based on interviews and enquiries. The aim is to refine and develop the collection of the recreational salmon catch data and therefore the approach may change from year to year in the coming program period.

Description of the population

Population targeted:

PSU: Recreational coastal trap net fishermen

Main target species: Salmon

Main survey area: SD 30-31

Population sampled:

Part of the target population sampled: All active recreational coastal trap net fishermen targeting salmon are planned to be included in the survey

Part of the target population is unreachable for sampling: Eventual refusals to respond to the survey will have an impact on the census approach

Stratification:

Stratification: Geographically the survey is focusing on SD 30-31 where the vast majority of salmon in recreational trap net fishery are caught.

Sampling design and protocols

Sampling design description:

PSU: The total population of active recreational coastal trap net fishermen targeting salmon is planned to take part in the survey where data on landed salmon is collected,

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

NA

Regional coordination:

N

Link to sampling design documentation:

Draft documentation on local server. The sampling design has a census approach where data are planned to be collected from the whole targeted population. The aim is to refine and develop the collection of the recreational salmon catch data and therefore the approach may change from year to year in the coming program period and before final documentation can be in place.

Compliance with international recommendations:

N (no internal recommendation regarding sampling design of this fishery is yet available)

Relevant expert or coordination groups for this sampling: Mainly WGBAST

Link to sampling protocol documentation:

Draft documentation on local server. The sampling protocol of the enquiry/enquires consists of interview questions in a standardised format together with general instructions on how the results are compiled.

Compliance with international recommendations:

N (no internal recommendation regarding sampling protocol of this fishery is yet available)

Relevant expert or coordination groups for this sampling: Mainly WGBAST

Sampling implementation

Recording of refusal rate:

Y. Information on eventual non-responses is compiled year by year

Monitoring of sampling progress within the sampling year:

No adjustments to the sampling allocation are done within a year. However, methods to collect and estimate the recreational catches of salmon are under revision and development and may change from year to year in the coming program period.

Data capture

Means of data capture:

Catch data (number and weight of landed salmon) is collected through interviews

Data capture documentation:

N. Draft documentation on local server including a manual with interview questions in a standardised format

Quality checks documentation:

N. Draft documentation on local server. The aim is to have the different aspects of the data quality checks properly documented in 2023.

Data storage

National database:

No national database is yet in place. Work in progress to create national database. Data stored on local server.

International database:

Aggregated data delivered to ICES.

Quality checks and data validation documentation:

Documentation on local server. Work in progress to develop quality checks and data validation and e.g. the latest annual data set is compared to data from previous years to identify outliers.

Sample storage

Storage description:

NA (no samples or any other biological variables are collected)

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. Draft documentation on local server. The aim is to have the different aspects of the data accuracy properly documented in 2023.

Editing and imputation methods:

N. Draft documentation on local server. The aim is to have the different aspects of the data handling properly documented in 2023.

Quality document associated to a dataset:

N (no DOI yet created)

N Draft documentation summarising eventual estimation process is followed.

Validation of the final dataset

Data accuracy is validated by comparing numbers to previous years to identify outliers but it is difficult to follow up and identify consistent shortcomings in the recreational catch reporting as it is voluntary.

MS: SWE

Region: All regions

Sampling scheme identifier: Restocking data Salmon-Sea trout

Sampling scheme type: Diadromous (scientific)

Observation type: SciObs water body

Time period of validity: 2022-2024

Short description:

Collection of data on number of restocked salmon and sea trout per site per year. Salmon and sea trout are restocked in freshwater and in coastal sites.

Description of the population

Population targeted:

Census data for all salmon and sea trout being restocked are collected from all Swedish waters.

Population sampled:

NA. Data are collected on all salmon and sea trout are being restocked, hence, the whole target population is sampled.

Stratification:

NA. All salmon and sea trout being restocked are registered.

Sampling design and protocols

Sampling design description:

NA. Data for all salmon and sea trout being restocked are collected

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

NA

Regional coordination:

N

Link to sampling design documentation:

https://www.slu.se/qualityassurance (Data collection of salmon and sea trout, stocked amounts and sites)

Compliance with international recommendations:

N. Data are requested by WGBAST and WGNAS (ICES/NASCO). There are not yet any international recommendations regarding sampling design for restocking data.

Link to sampling protocol documentation:

https://www.slu.se/qualityassurance (Data collection of salmon and sea trout, stocked amounts and sites)

Compliance with international recommendations:

N. Data are requested by WGBAST and WGNAS (ICES/NASCO). There are not yet any international recommendations regarding sampling protocol for restocking data.

Sampling implementation

Recording of refusal rate:

Y. eventual non-responses are recorded

Monitoring of sampling progress within the sampling year:

N. adjustments to the sampling allocation are not done within a year.

Data capture

Means of data capture:

Data are collected by a questionnaire.

Data capture documentation:

https://www.slu.se/qualityassurance (Data collection of salmon and sea trout, stocked amounts and sites)

Quality checks documentation:

N. Draft documentation on local server. The aim is to have the different aspects of the data quality checks properly documented in 2023.

Data storage

National database:

Data stored in an Access database on local server.

International database:

Aggregated data delivered to ICES and NASCO.

Quality checks and data validation documentation:

Documentation on local server. Work in progress to develop quality checks and data validation and e.g. the latest annual data set is compared to data from previous years to identify outliers.

Sample storage

Storage description:

NA (no samples or any other biological variables are collected)

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

N. Draft documentation on local server. The aim is to have the different aspects of the data accuracy properly documented in 2023.

Editing and imputation methods:

N. Draft documentation on local server. The aim is to have the different aspects of the data handling properly documented in 2023.

Quality document associated to a dataset:

N (no DOI yet created)

NA. There are no estimations made.

Validation of the final dataset:

Data accuracy is validated by comparing numbers to previous years to identify outliers (in overall magnitude) but it is difficult to follow up and identify consistent shortcomings since both number of sites and number of individuals can differ from year to year.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: RecSelfObsAtSea – Tour boat log books

Sampling scheme type: recreational (on site surveys)

Observation type: SelfObsAtSea

Time period of validity: 2022-2024

Short description:

Sampling in ICES subdivision 23 on effort and catches of recreational fisheries with focus on cod caught by the for-profit tour boat sector in the Western Baltic Sea.

The aim of the study is to obtain census data of catches of cod from tour boat log books.

Description of the population

Population targeted:

Census of voluntarily submitted logbooks from commercial fishing tour boats with 8 or more guests in subdivision 23. Catches are registered by Day * Trip

Population sampled:

Skippers of tour boats in the study area fill voluntary logbooks of catch of cod on each fishing trip. This census constitutes a large part of the data collection from the tour boats.

Stratification:

The population is stratified by quarter and day type (weekend, weekday).

Sampling design and protocols

Sampling design description:

NA (census data)

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

NA

Regional coordination:

N

Link to sampling design documentation:

Background for the sampling design is described in Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24', an internal report that will be made available at the quality assurance webpage in 2022, www.slu.se/qualityassurance.

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

See Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24', an internal report that will be made available at the quality assurance webpage in 2022, www.slu.se/qualityassurance.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

Y

Monitoring of sampling progress within the sampling year:

NA, census data

Means of data capture:

Paper forms or a spread sheet option submitted by the skipper

Data capture documentation:

Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24', an internal report that will be made available at the quality assurance webpage in 2022, www.slu.se/qualityassurance.

Quality checks documentation:

Not applicable (see above)

Data storage

National database:

N

International database:

NA

Quality checks and data validation documentation:

Proof reading of log books and contact with skippers to resolve any issues.

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

NA. This data is treated as a census with no variance.

Editing and imputation methods:

Missing log books are imputed with the mean catch from reported log books.

Quality document associated to a dataset:

N

Is there a document summarising the estimation process followed?

Y

Validation of the final dataset:

Data are aligned with corresponding data from other member states within WGBFAS.

MS : SWE

Region: Baltic Sea and North Sea and Eastern Arctic

Sampling scheme identifier: RecSelfOnshore - Offsite SCB

Sampling scheme type: recreational (off site surveys)

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

A web and postal questionnaire aiming at collecting data (e.g. number of fishing days, gear days and catches) from recreational fishing for several species, including the species listed in Table 4, Commission Delegated Decision (EU) 2021/1167, in the Swedish part of regions Baltic Sea and North Sea.

Description of the population

Population targeted:

The primary sampling units are permanent residents in Sweden of age 16-80. The questionnaire will be sent out at three occasions each year, with questions regarding fishing activities in the most recent four months. These periods consists of fishing during January-April (tertial 1), May-August (tertial 2) and September-December (tertial 3) respectively. For tertial 1 and 3 the number of questionnaires are 5 600 per tertial. Tertial 2 have the double amount of questionnaires, 10 800.

Population sampled:

A panel approach is used in the sampling. From the target population, respondents are randomly selected for the first panel (ca. 43% of the total number of questionnaires). To increase the number of answers a panel design is implemented. Both respondents who fish and non-fishers have a probability of being sampled in the upcoming panels (ca 19% of the total amount of questionnaires for each panel).

Stratification:

The population is stratified by six different geographical regions in Sweden and by age and gender.

Sampling design and protocols

Sampling design description:

The sampling design is a one-stage panel approach. For each four-month period (Jan-Apr, May-Aug, Sep-Dec) or *survey round*, a sample of Swedish residents (PSUs) is selected. The sample for a given survey round is composed of four panels. One panel consists of a new stratified simple random sample of individuals from the Register of the Total Population (RTB). The remaining three panels consist of individuals selected in earlier survey rounds; mainly individuals who reported that they had been fishing. The aim of this rather complex design is to secure inclusion of as many anglers as possible in the sample, even though anglers are quite rare in the sampling frame (the RTB). For details on the design, see the survey documentation. The sampling scheme applies to the catch fractions "retained" and "released".

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

NA

Regional coordination:

No

Link to sampling design documentation:

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

See also de Groote et al 2021, ‘Delrapport 2021-01-15 Fritidsfiske Jämförelse av två ansatser för att undersöka fritidsfisket i Öresund SCB-enkät och on-site', an internal report that will be made available at the quality assurance web page during 2022, www.slu.se/qualityassurance.

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

See also de Groote et al 2021, 'Delrapport 2021-01-15 Fritidsfiske Jämförelse av två ansatser för att undersöka fritidsfisket i Öresund SCB-enkät och on-site', an internal report that will be made available at the quality assurance web page during 2022, www.slu.se/qualityassurance.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

Y

Monitoring of sampling progress within the sampling year:

The first mailing to the target population contains login information to the web questionnaire. Three written remainders will be performed, again with login details, but also a written questionnaire. The sampling progress is closely monitored during each period. The response rate has been stable with low volatility the last 24 sampling periods (8 years).

Means of data capture:

Web and paper questionnaire

Data capture documentation:

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

Quality checks documentation:

Y

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

Data storage

National database:

Data warehouse at The Swedish Agency for Marine and Water Management and at Statistics Sweden.

International database:

NA

Quality checks and data validation documentation:

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Y

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

Editing and imputation methods:

Y. On internal server. See also:

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44aa/1623831037282/JO1104_KD_2020.pdf

https://www.havochvatten.se/download/18.29a8aed7179dd194ae9a44ad/1623831058047/JO1104_STAF_2020.pdf

Quality document associated to a dataset:

Is there a publication digital object identifier (DOI) created?

N

Is there a document summarising the estimation process followed?

Y

Validation of the final dataset:

Validation is described in details in chapter 2.6 (Validation) here: Statistikens framställning (havochvatten.se)

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: RecSciObsAtSea - Tourboats

Sampling scheme type: recreational (on site surveys)

Observation type: SciObsAtSea

Time period of validity: from when until when 2022-2024

Short description:

Sampling in ICES subdivision 23 on effort and catches of recreational fisheries with focus on cod caught by the for-profit tour boat sector in the Western Baltic Sea.

The main aim of the study is to collect catch information and length on all species, except herring. In addition, cods will be age-determined using otoliths.

Description of the population

Population targeted:

Commercial fishing tour boats with 8 or more guests in subdivision 23. The primary sampling unit is week (selected within each quarter; see below)

Population sampled:

Tour boats on which the skippers agree to take observers onboard. Excluded are boats where the skippers do not allow observers, and trips that are already fully booked and do not have space for observers.

Stratification:

The population is stratified by quarter and day type (weekend, weekday).

Sampling design and protocols

Sampling design description:

The sampling is coordinated with the commercial gill net sampling scheme "CommSciObsAtSea – All species" (stratum: "Passive Demersal Nets - 27.3.b.23"). For selection of PSU (week). (See Table 2.5); SSU is the day of the week (selected by convenience)

In brief, within each quarter, five weeks are randomly selected. Within each week, one day is allocated to on-board sampling of a tour boat. A list of all boats is randomly ordered to select an available vessel. If a boat has several trips on a day, one fishing trips is randomly selected.

The sampling scheme applies to the catch fractions landing and discards.

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

Y

Regional coordination:

N

Link to sampling design documentation:

Background for the sampling design is described in Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24'. Information from this internal report will be made available at the quality assurance web page during 2022, www.slu.se/qualityassurance.

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

See Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24'. Information from this internal report will be made available at the quality assurance web page during 2022, www.slu.se/qualityassurance.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

Y

Monitoring of sampling progress within the sampling year:

Debriefing meetings with teams of scientific observers after their trips. Quarterly meetings with all observers. When problems are noticed, compensatory actions are taken to secure data to end-users (e.g., sampling additional trips). Given the design described above and our experience from five field

seasons, we have thus far not found the need to adjust sampling allocation. That said, if needed, there are ample opportunities to adjust sampling scheme in relation to e.g. weather and vessel effort.

Means of data capture:

Body length and mass of all catch (except herring) are measured using a measuring board and a scale respectively. Otoliths are extracted from cod for age determination.

Data capture documentation:

Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24'. Information from this internal report will be made available at the quality assurance web page during 2022, www.slu.se/qualityassurance.

Quality checks documentation:

Sundelöf et al 2020 SLU.Aqua.2020.5.4-264 'Sampling of catches from the recreational cod fishery in ICES subdivisions 23 and 24'. Information from this internal report will be made available at the quality assurance web page during 2022, www.slu.se/qualityassurance.

Data storage

National database:

N

International database:

NA

Quality checks and data validation documentation:

Proof reading of protocols

Sample storage

Storage description:

Storage description:

All recent otoliths are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5-10 year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

NA. Currently, this data is only used to split the census data obtained from the logbooks onto age-classes. However, potentially this data could be used to raise the catch per trip to a total estimate with an associated variance.

Editing and imputation methods:

NA

Quality document associated to a dataset:

N

Is there a document summarising the estimation process followed?

Y

Validation of the final dataset:

Data are aligned with corresponding data from other member states within WGBFAS.

MS: SWE

Region: All regions

Sampling scheme identifier: CommSelfAtSea – selected species/stocks

Sampling scheme type: Commercial fishing trip

Observation type: SelfAtSea

Time period of validity: 2022-2024

Short description:

The sampling scheme aims to collect length and age samples at-sea from selected species/stocks (herring, sprat, northern shrimp, eel) from the catches of Swedish commercial vessels operating in ICES Subareas 27.3 and 27.4 using self-sampling. The scheme encompasses a set of sub-schemes: a) small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4, b) small pelagic targeting herring in 27.3.d.30-31, c) small pelagic targeting vendance in 27.3.d.31, d) demersal northern shrimp

trawlers without fish tunnel in 27.3.a, and c) eel in poundnets in 27.3.b.23 and 27.3.d.25,27. The sub-schemes distribute and operationalize sampling activities between the three labs involved in sampling.

Description of the population

Population targeted:

All Swedish vessels participating in the a) herring and sprat fisheries of Subareas 27.3 and 27.4, b) vendance fishery in Subdivision 27.3.d.31, c) northern shrimp fishery in Division 27.3.a. and Subarea 27.4, and d) poundnet fishery in Subdivisions 27. 3.b.23, 27.3.d.25 and 27.3.d.27. Primary sampling unit are vessel, vessel*week, weeks or vessel*month, depending on the sub-scheme (see details under Sampling design description)

Population sampled:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme samples fishing trips from the most important Swedish vessels participating in consumption and industrial small-pelagic fisheries for herring and sprat. A part of the sampling carried out in this sub-scheme is regionally coordinated under RCG Baltic.

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme samples fishing trips from the most important Swedish vessels participating in consumption and industrial small-pelagic fisheries for herring.

The small pelagic sub-scheme targeting vendace in 27.3.31 sub-scheme samples fishing trips from the main Swedish vessels participating in the small pelagic vendace fishery.

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme samples fishing trips from the main eel fishery using passive pound nets.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme samples fishing trips from vessels involved in the northern shrimp trawl fishery without fish tunnel in Division 27.3.a.

Out of the frame of this sampling scheme are the Swedish vessels not included in its sampling frame. A significant proportion of the activity of these out-of-frame vessels is covered by other sampling schemes.

Stratification:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme is stratified into 6 non-overlapping lists of vessels. The stratification aims to achieve good spatial coverage over the broad geographical range of the fisheries as well as adequate number of samples and representation of fishing for human consumption and industrial uses. The following strata are considered:

1) Main vessels participating in the herring and sprat fisheries using active gears with main catches both in the Central Baltic and in the North Sea, 27.3.a-d.20-29, 27.4. These vessels are sampled in regionally coordinated way.
2) Main vessels participating in the herring and sprat fisheries using active gears with main catches mostly in the Central Baltic and South Baltic, 27.3.d.24-29. These vessels are sampled in regionally coordinated way.

3) Main vessels participating in the herring and sprat fisheries using active gears with main catches mostly in the North Sea, 27.3.a, 27.4
4) Main vessels participating in the herring fishery using passive gears with main catches in the South Baltic, 27.3.b-d.23-24
5) Main vessels participating in the herring fishery using passive gears with main catches in the Central Baltic, 27.3. d.25-29
6) Main vessels participating in the herring and sprat fisheries using active gears with main catches in 27.3.a during Q1 and Q4

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme is stratified into two regions in the Gulf of Bothnia. The basis for this stratification is to achieve good spatial coverage over the broad geographical range of the fisheries as well as adequate number of samples and representation of fishing for human consumption and industrial uses. The following strata are considered:

1) Main Swedish vessels participating in the herring fishery using active gears in subdivisions 27.3.d.30, not elsewhere included.
2) Main Swedish vessels participating in the herring fishery using passive gears in subdivisions 27.3.d.30.
3) Main Swedish vessels participating in the herring fishery using passive gears in subdivisions 27.3.d.31

The small pelagic sub-scheme targeting vendance in 27.3.31 is stratified into 5 areas. The basis for this stratification is to achieve a good spatial coverage of the main geographical range of the fishery. The following strata are considered:

1) Main Swedish vessels participating in the vendace fishery using active gears in subdivisions 27.3.d.31, area 1.
2) Main Swedish vessels participating in the vendace fishery using active gears in subdivisions 27.3.d.31, area 2.
3) Main Swedish vessels participating in the vendace fishery using active gears in subdivisions 27.3.d.31, area 3.
4) Main Swedish vessels participating in the vendace fishery using active gears in subdivisions 27.3.d.31, area 4.
5) Main Swedish vessels participating in the vendace fishery using active gears in subdivisions 27.3.d.31, area 5.

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme is stratified in to 3 subdivisions. The basis for this stratification is to achieve a good spatial coverage of the main geographical range of the fishery. The following strata are considered:

1) Swedish vessels participating in the eel fishery using passive pound nets in subdivisions 27.3.b.23.
2) Swedish vessels participating in the eel fishery using passive pound nets in subdivisions 27.3.b.25.
3) Swedish vessels participating in the eel fishery using passive pound nets in subdivisions 27.3.b.27.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme consists of a single stratum containing the vessels fishing northern shrimp with trawls without fish tunnel. The remainder of the northern shrimp fishery is covered under scheme CommSciObsAtSea. The basis for this separation is the low level of fish discards observed in this fishery.

Sampling design and protocols

Sampling design description:

The small pelagic sub-scheme targeting herring and sprat in 27.3.a-d.20-29 and 27.4 is a stratified multi-stage cluster sampling design where a random draw of vessels is taken using SRSWOR from pre-defined lists every week of each quarter. In such a set-up vessel*week is considered the PSU. Each week vessels are contacted and asked to collect samples from a trip starting the following week (SSU). In each haul/set (TSU) registering herring or sprat in the trip a sample of 3-5 kg (QSU) is collected from the catch. In the lab the boxes are stratified by subdivision and a subsample of 2 to 4 hauls analyzed.

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme is a stratified multi-stage cluster sampling design where vessels are selected systematically without replacement, or on an ad-hoc basis, from lists of vessels active in the trawl (SD30) or gillnet fishery (SD30-31), respectively. PSUs are Vessel*week (trawl fishery) and vessel*month (gillnet fishery). Trips (2SU) are selected ad-hoc from a hypothetical list of trips (trawl fishery) or from a list of trips from the fishermen (gillnet). In the trawl fishery, 1 box (4SU) of unsorted 20-25kg catch is sampled from a hypothetical list of hauls (3SU) selected by the fishermen, In the gillnet fishery, one box (3SU) 20kg landings and 5kg discard is randomly sampled from the catch of the trip. (See sampling overview table below.)

The small pelagic sub-scheme targeting vendance in 27.3.31 is a stratified multi-stage cluster sampling design where 3 weeks (PSU) for sampling are selected systematically without replacement (w. 1, 3 and 5) from the vendace spawning period in September-October, in five local fishing areas in SD31. From a list of vessels fishing in the area, 1 vessel pair (per week/per local area, 2SU) is randomly selected, and from one unsorted landing from a random vessel trip (3SU), a random subsample (about 10 liters) is taken for estimation of the total catch composition in terms of size and weight. (See sampling overview table below.)

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Sampling is set up by contacting preselected fishermen. In connection with their silver eel pound net fishery, the fishermen sign up on a yearly basis for 1) a number of métier sampling trips and 2) collection of eels for stock sampling. Additionally, it is possible to sign up for recording effort and eel landings in a voluntary daily logbook. These data are a complement to the official landing statistics and may also include discards and seal- and bird-induced damage. Each fisherman can have several vessels. Observers choose which trip they visit the fishermen to perform the métier sampling. Set-up: 1 fisherman in SD 23, SD 25 and SD 27 respectively. In total, 8 métier sampling trips are planned. Note that the eel fishery in SD 23 is currently closed.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: A stratified multi-stage cluster sampling design is used. Each quarter a random draw of vessels (PSUs) is taken from a pre-defined list using UPSWOR proportional to number of trips the vessels did in the fishery*area combination during previous year. Selected vessels are then informed, and a trip date agreed (SSU).

In the last haul (TSU) of that trip, one box of unsorted catches is collected from the catch by the fishermen (QSU). The box, considered representative of shrimp-like species, is analysed in the lab

An overview of sampling design, including details on sampling protocol for biological variables, is given in tables below.

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	List of weeks* main vessels participating in the herring and sprat large scale fisheries using active gears with main catches both in the Central Baltic and in the North Sea)	Vessel*week	Quarterly	Weekly random draw from vessel list with equal probability without replacement	1-5 (dependent on stratum)
2SU	Hypothetical list of trips from vessel	Fishing Trip	---	A trip the following week	1 (per vessel)
3SU	Hypothetical list of hauls in trip	Haul	During the trip: none In the lab: By subdivision	During the trip: census In the lab: Simple random sampling among hauls arriving from each subdivision	During the trip: census In the lab: 2-4 hauls containing sprat and/or herring per subdivision
4SU	Hypothetical list of baskets in haul	Basket	---	1 basket from every haul	1 final basket (per haul)
5SU	Hypothetical list of individuals caught in basket	Individuals	---	Random subsample	Max 50 individuals per species. Length and age are determined for all individuals sampled (*)

(*) Herring samples from 27.3.a and 27.4 are further characterized with regards to the presence of nematodes; Herring samples from 27.3.d are further characterized with regards to intestinal fat, nematodes, and *Ichthyophonus*.

Small pelagic targeting herring in 27.3.d.30-31 sub-scheme

Stratum: Passive SmallPelagics HER - 27.3.d.30, Passive SmallPelagics HER - 27.3.d.31

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	Hypothetical list of **vessel*weeks from** vessels active in the fishery	Vessel*Week	Quarter	Systematic (every fourth week, randomly select the first week); vessels selected without replacement	3
2SU	Hypothetical list of trips	Trip	---	Ad-hoc	1 Trip
3SU	Hypothetical list of hauls in trip	Haul	---	Ad-hoc (selected by the fishermen)	1 haul
4SU	Hypothetical list of boxes	Box	---	20-25 kg unsorted	1 box
5SU	Individuals in the box	Individual	Species	Census (length of all species)	---

Stratum: Active SmallPelagics HER - 27.3.d.30

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	List of vessels active in the gillnetter fisheries	Vessel*Month	Quarter	Ad-hoc	3
2SU	List of trips from fishermen	Trip	---	Ad-hoc	1 (month) In total 6 trips in one year
3SU	Catch of the trip	Box	Landings (20kg) and discards (5kg)	Ad-hoc (random)	1
4SU	Individuals in the sample (box)	Individuals	Species Biology (only Herring): Length stratified (half cm)	Census (all lengths measured) Biology: Random sampling within length	Length: all ind. Biology: 20 ind (otoliths, length (mm), weights, maturity, sex)

				class until quarterly goals are achieved	per size class and quarter

Small pelagic sub-scheme targeting vendance in 27.3.31

	Sampling frame	**Sampling unit**	**Stratification**	**Selection Method**	**Sampling effort**
1SU	List of weeks of the year (Sept-Oct 5 weeks)	Week		Systematic (1st, 3rd and 5th week samples)	3 weeks
2SU	List of vessels (fishing in the area)	Vessels	Five fishing areas within subdivision 31	"Random" selection from vessel list	1 vessel pairs (per week/per area)
3SU	Hypothetical list of trips (from that vessel)	Trip landing		Ad-hoc (convenience)	1 (per vessel)
4SU	Hypothetical list of bins of the landed fish	Bin	Species Biology (only Herring): Length stratified (half cm)	From the middle of the landing	1 bin
5SU	Hypothetical list of 10 L bucket in the bin	Bucket 10 L	---	Ad-hoc	1 bucket
6SU	All individuals in the bucket	Individual (species, individual length, weight and sex)	All length and recorded 0.5 cm groups	Census	Length: all individuals in bucket
7SU	Vendace in the bucket	Individual (Weight of gonads, maturity, age)		Ad-hoc	65-70 in the bucket

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	List of vessels active in the Demersal trawl fishery in subdiv. 22 to 29 during previous year	Vessel	Quarterly	random draw from vessel list with unequal probability (probability proportional to number of trips) without replacement	3 (per quarter)
2SU	Hypothetical list of trips from vessel	Fishing Trip	---	ad-hoc	1 (per vessel)
3SU	Hypothetical list of hauls in trip	Haul	---	Last haul	1 (per vessel)
4SU	Hypothetical list of individuals caught in haul	Individuals	Species group (Shrimps)	Sample from the catch taken by fishermen	10 kg sample Sorting by species All species: weight and number Biological analysis of a subsample [length, weight, sex, maturity, parasites]: *Pandalus borealis*

Is the sampling design compliant with the 4S principle?

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Y

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Y

The small pelagic sub-scheme targeting vendance in 27.3.31: Y

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: NA

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Y

Regional coordination:.

Strata of small pelagic sub-scheme that targeting the herring and sprat fisheries with active gears in the Central Baltic: Y

All remainder: N

Link to sampling design documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to public will be prepared during 2022-2024.

Some additional information:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Report of the RCG ISSG on small pelagic in the Baltic Sea to the Regional Coordination Group Baltic Meeting 7-11 June 2021.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme:

Compliance with international recommendations:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Y

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Y

The small pelagic sub-scheme targeting vendance in 27.3.31: Y

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Y

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Y

Link to sampling protocol documentation:

The main details of the sampling protocols are given under section “sampling design description” (above). Online documentation accessible to public will be prepared during 2022-2024.

Some additional information:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Report of the RCG ISSG on small pelagic in the Baltic Sea to the Regional Coordination Group Baltic Meeting 7-11 June 2021.

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Internal manual of procedures.

The small pelagic sub-scheme targeting vendance in 27.3.31: Internal manual of procedures.

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Internal manual of procedures.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Internal manual of procedures.

Compliance with international recommendations:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Y

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Y

The small pelagic sub-scheme targeting vendance in 27.3.31: Y

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Y

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Y

Sampling implementation

Recording of refusal rate:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Y

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Y

The small pelagic sub-scheme targeting vendance in 27.3.31: N. None has turned up so far and therefore a routine for this has not yet been established (the sampling is performed by a sub-contractor). For future work, a routine will be developed during 2022-2024.

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Y

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Y

Monitoring of sampling progress within the sampling year:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Routine follow-up meetings are organized between staff responsible for the different parts of the sub-scheme. In these meetings checks are kept on progress and issues in vessel contacts, sample shipment/arrival to lab, sample inventorying, biological sampling and data logging. Departures from original plan documented and adjustments made to the sampling design and sampling routines when needed. Staff involved in stock coordination and assessment of the main stocks participates is kept informed of main changes in data ahead of assessment season.

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: contact with the gillnet fishermen in SD30 are kept during the fishing season in order to follow up on progress and monitor potential changes and/or cancellations of fishing trips. Reserve lists of fishermen are kept in case of such events. Currently, only two vessels are trawling in SD30-31 and both are part of the sampling scheme.

The small pelagic sub-scheme targeting vendance in 27.3.31: New trips can be added to the scheme and sampled if selected original ones are cancelled.

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: New trips can be added to the scheme and sampled if selected original ones are cancelled.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Sample collection, arrival to lab and processing are closely monitored on a weekly basis to secure quarterly goals are achieved. Departures from expectations trigger compensatory measures to secure data to end-users (e.g., sampling additional trips).

Data capture

Means of data capture:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: data capture is made in paper forms. Electronic balances and measuring boards are used in sampling.

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: data capture is made in paper forms. Waterproof scale to weigh the catch. Measuring board, buckets, protocols, safety equipment life jackets and field clothes, such as rubber boots, big plastic bags, freezers etc. GPS for position. Standard dissection equipment is used for ageing.

The small pelagic sub-scheme targeting vendance in 27.3.31: data capture is made in paper forms. Waterproof scale to weigh the catch. Measuring board, buckets, protocols, safety equipment life jackets and field clothes, such as rubber boots, big plastic bags, freezers etc. GPS for position. Standard dissection equipment is used for ageing.

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: data capture is made in paper forms. Waterproof scale to weigh the catch. Measuring board, buckets, protocols, safety equipment life jackets and field clothes, such as rubber boots, big plastic bags, freezers etc. GPS for position. Standard dissection equipment is used for ageing.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: a minimum of paper forms are used. Data capture is generally made using electronic calipers and balances linked directly to the database (FD2).

Data capture documentation:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme:

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme:

The small pelagic sub-scheme targeting vendance in 27.3.31:

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme:

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme:

Data capture documentation can be found in the field manuals at www.slu.se/qualityassurance.

Quality checks documentation:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: NA

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Internal routine checks on main variables are run as data is stored in database FD2.

The small pelagic sub-scheme targeting vendance in 27.3.31: Internal routine checks on main variables are run as data is stored in database FD2.

The eel in poundnets in 27.3.b.23 and 27.3.d.25, 27 sub-scheme: NA. Documentation will be available during 2022-2024.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Internal routine checks on main variables are run as data is stored in database FD2.

Data storage

National database:

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: FD2

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: FD2

The small pelagic sub-scheme targeting vendance in 27.3.31: KUL/FD2

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: KUL

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: FD2

International database:

Small pelagic sub-scheme targeting the herring and sprat fisheries: RDB/RDBES at ICES

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: InterCatch, RDB/RDBES at ICES

The small pelagic sub-scheme targeting vendance in 27.3.31: RDB/RDBES at ICES

The eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: RDB/RDBES at ICES

Demersal sub-scheme targeting northern shrimp trawl fishery without fish tunnel: RDB/RDBES at ICES

Quality checks and data validation documentation:

Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES.

The small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme: Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES. Complementary checks and outlier analysis are carried out on trip, haul, catch and biological variables using reports from FD2 and R scripts.

The small pelagic targeting herring in 27.3.d.30-31 sub-scheme: Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES.

The small pelagic sub-scheme targeting vendance in 27.3.31: Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES.

The eel in poundnets in 27.3.b.23 and 27.3.d.25, 27 sub-scheme: Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES.

The demersal northern shrimp trawlers without fish tunnel in 27.3.a sub-scheme: Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES. Complementary checks and outlier analysis are carried out on trip, haul, catch and biological variables using reports from FD2 and R scripts.

Sample storage

Storage description:

All recent otoliths (and scales in programmes where these are collected) are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5 to 10-year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present. For the small pelagic targeting herring in 27.3.d.30-31 and the small pelagic sub-scheme targeting vendance in 27.3.31sub-schemes, otholiths are stored and archived at Kustlaboratoriet in Öregrund, where also all biological material is registered in the database Oden.

The eel in poundnets in 27.3.b.23 and 27.3.d.25, 27 sub-scheme: Whole fish is stored in freezers both at the fishermen and later in freezers at our lab before dissection. When otholits are removed they are stored in the lab and in a safe before they are sent to the age lab. The frozen fish can be stored up to 4 months before sampling, and the otholits are to be age read within 8 months after the first metier sampling. Conservation of the fish (freezing) is usually an agreement between the fisherman and his/her contact at SLU because the fisherman usually has better storage space.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Additional information:

Small pelagic sub-scheme targeting vendance in 27.3.31 and Eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Sample analysis documentation is currently stored as internal documents at SLU Aqua. After going through a review in 2022-2024, they will be publically available at SLU Aqua's webpage.

Data processing

Evaluation of data accuracy (bias and precision):

Small-pelagic targeting herring and sprat in 27.3.a-d.20-29 and 27.4 sub-scheme, Small pelagic sub-scheme targeting vendance in 27.3.31 and Eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Documentation on analyses done to evaluate data accuracy, including potential biases and precision, will be prepared and made available to the general public during the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production.

Demersal sub-scheme targeting northern shrimp trawl fishery without fish tunnel: Documentation on analyses done to evaluate data accuracy, including potential biases and precision, will be prepared and made available to the general public during the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Some information on

accuracy of estimates produced on the Swedish shrimp fisheries can be found in the form of reports and working documents of the Joint NAFO/ICES Pandalus Assessment Working Group (NIPAG).

Editing and imputation methods:

Small pelagic sub-scheme targeting the herring and sprat fisheries, Small pelagic sub-scheme targeting vendance in 27.3.31 and Eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Documentation on data editing and imputation will be prepared and made available to the general public within the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production.

Demersal sub-scheme targeting northern shrimp trawl fishery without fish tunnel: Documentation of data editing and imputation will be prepared and made available to the general public within the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production.

Quality document associated to a dataset:

Small pelagic sub-scheme targeting the herring and sprat fisheries, Small pelagic sub-scheme targeting vendance in 27.3.31 and Eel in poundnets in 27.3.b.23 and 27.3.d.25,27 sub-scheme: Documentation of the estimation process will be made available during 2022-2024. Additional documentation will be available in RDBES scripts and outputs when that system is in production.

Demersal sub-scheme targeting northern shrimp trawl fishery without fish tunnel: Work on documenting estimation methods used in this sub-scheme is planned for 2022-2024. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Some information on the main methods used in the production of estimates of the Swedish shrimp fisheries can be found in the form of reports and working documents of the Joint NAFO/ICES Pandalus Assessment Working Group (NIPAG).

Validation of the final dataset:

Small pelagic sub-scheme targeting the herring and sprat fisheries: Final validation takes place when data is compiled at ICES stock coordination level. Work on documenting national level validation routines is planned for 2022-2024.

Small pelagic sub-scheme targeting vendance in 27.3.31: Final validation takes place when data is compiled at the national level annual stock assessment, performed by SLU Aqua at the request of HaV.

Eel in poundnets in 27.3.b.23 and 27.3.d.25, 27 sub-scheme: Final validation takes place when data is compiled at ICES WGEEL data meetings.

Demersal sub-scheme targeting northern shrimp trawl fishery without fish tunnel: Final validation takes place when data is compiled at ICES stock coordination level. Work on documenting national level validation routines is being planned for 2022-2024.

MS: SWE

Region: Baltic

Sampling scheme identifier: CommSelfAtSea – all species

Sampling scheme type: Commercial fishing trip

Observation type: SelfAtSea

Time period of validity: 2022-2024

Short description:

The sampling scheme aims to collect volume of landings and discards, alongside length and age samples from selected species/stocks caught by Swedish commercial vessels operating gillnets and longlines to target demersal resources in the Baltic subdivisions 27.3.b,d.23-29 using self-sampling at-sea.

Description of the population

Population targeted:

All Swedish vessels participating in the passive fisheries of the Baltic subdivisions 27.3.b, d.23-29. The PSU is week.

Population sampled:

Swedish vessels participating in the passive gillnet and longline fisheries targeting demersal resources in Subdivisions 27.3.b, d.23-29. Not included in sampling are some weeks of the year (e.g., Christmas) and some specific gear*area combinations which catches are not significant to end-users. The most important out-of-frame components are covered by other sampling schemes.

Stratification:

The scheme is stratified by area and gear. Basis for stratification is ensuring geographical coverage of the ICES subdivisions alongside existing knowledge of the most common patterns of gear use by vessels operating in each Subdivision. The following strata are considered:

- Passive Demersal Nets - 27.3.b.23
- Passive Demersal Nets&Longlines - 27.3.d.24
- Passive Demersal Nets&Longlines - 27.3.d.25-29

Sampling design and protocols

Sampling design description:

Each stratum is sampled using a stratified multi-stage cluster design where a random draw of weeks (PSUs) is taken each quarter using simple random sampling without replacement. Each week, the vessels active are identified and random selection of vessels (SSU) contacted to retrieve samples from one of the trips (TSU) made that week. Trip-level samples of cod by size category and other species landed and discarded unsorted are taken (QSU).

An overview of sampling design, including details on sampling protocol for biological variable, is given in tables below.

	Sampling frame	**Sampling unit**	**Stratification**	**Selection Method**	**Sampling effort**
1SU	List of weeks of the year	Week	Quarterly	random sample from week list without replacement	Gillnets and Longlines: 5 (per quarter)
2SU	List of vessels active in the gillnetter or longlines fisheries for demersal species in specific subdivisions during 2016	Vessel	---	random sample from quarterly vessel list without replacement	2 (per week)
3SU	Hypothetical list of weekly trips from vessel	Fishing trip	---	ad-hoc (dependent on staff availability)	1 (per vessel)
4SU	All boxes of catch kept during fishing trip	Boxes	Species x Catch fraction x Commercial Size Category	Census or "random" sample by observer at the landing site	Cod Landings: size (1-3): all boxes (or a sample of boxes) size (4-6 and BMS): 1 box Other species landed and discarded: all boxes
5SU	All individuals in the box	Individuals (Individual length, weight, and age)	None	Length: Census Biology: Random sample or census (depending on size category)	Length: all individuals in box Biology (per size): COD Sizes 1-3: all otoliths and weights COD Sizes 4-5: 20 otoliths and weights + all remainder fish only weight COD Sizes 6 and BMS and discards: 20 otoliths and weights + 20 fish only weight

Is the sampling design compliant with the 4S principle

Y

Regional coordination:

N

Link to sampling design documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to the general public will be prepared during 2022-2024.

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to the general public will be prepared during 2022-2024.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

Y.

Monitoring of sampling progress within the sampling year:

Sample collection, arrival to lab and processing are closely monitored on a weekly basis to secure quarterly goals are achieved. Departures from expectations trigger compensatory measures to secure data to end-users (e.g., sampling additional trips).

Data capture

Means of data capture:

Data capture is made in paper forms. Electronic balances and measuring boards are used in sampling.

Data capture documentation:

Documentation of data capture will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Quality checks documentation:

Internal routine checks on main variables are run as data is stored in database FD2.

Data storage

National database:

FD2

International database:

RDB/RDBES at ICES

Quality checks and data validation documentation:

Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES. Complementary checks and outlier analysis are carried out on trip, haul, catch and biological variables using reports from FD2 and R scripts.

Sample storage

Storage description:

All recent otoliths (and scales in programmes where these are collected) are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5 to 10-year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present**.**

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

Documentation on analyses done to evaluate data accuracy, including biases and precision, will be prepared and made available to the general public during the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Some information related to potential biases and precision in this fishery can be found in documentation submitted over the years to several EGs, including WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Editing and imputation methods:

Documentation on data editing and imputation will be prepared and made available to the general public within the 2022-2024 period. Additional documentation will be available in RDBES scripts

and outputs when that system is in production. Information on the some of the estimation and imputation methods routinely considered in analysis can be found in documentation submitted over the years to several EGs, including WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Quality document associated to a dataset:

Work on documenting estimation methods is planned for 2022-2024. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Information on the some of the estimation and imputation methods routinely considered in analysis of these fisheries can be found in documentation submitted over the years to several EGs, including WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Validation of the final dataset:

Final validation takes place when data is compiled at ICES stock coordination level. Work on documenting national level validation routines is planned for 2022-2024.

MS: SWE

Region: All regions

Sampling scheme identifier: CommSciObsAtSea – All species

Sampling scheme type: Commercial fishing trip

Observation type: SciObsAtSea

Time period of validity: 2023-2024

Short description:

The sampling scheme aims to collect volume of landings, discards and bycatches of PETS, alongside length and age samples from selected species/stocks caught by Swedish commercial vessels operating active and passive gears to target demersal resources in ICES Subareas 27.3 and 27.4 using scientific observers at-sea. This scheme is complemented in some species and areas by strata scheme "CommSciObsAtSea – all species" (several strata that focus on passive gears in the Baltic) and "CommSelfAtSea - selected species/stocks" (covering another Pandalus trawl fishery in 27.3.a and the broader small-pelagic fishery).

Description of the population

Population targeted:

All Swedish vessels participating in the active and passive fisheries of Subareas 27.3 and 27.4. The PSU is vessel or week.

Population sampled:

Swedish vessels participating in the following active or passive fisheries:

- Northern shrimp fishery using demersal trawl equipped with fish tunnel in subdivision 27.3.a and 27.4
- Norway lobster fishery using demersal trawls equipped using grid in subdivision 27.3.a.20
- Norway lobster fishery using demersal trawls equipped using grid in subdivision 27.3.a.21
- Mixed fishery using demersal trawl in subdivision 27.3.a.20
- Mixed fishery using demersal trawl in subdivision 27.3.a.21
- Norway lobster fishery using pots in subdivision 27.3.a
- Fishery for demersal species using demersal gill or trammel nets in subdivision 27.3.a.21
- Fishery for demersal species using demersal trawls in subdivisions 27.3.b-d.22-29
- Fishery for demersal species using demersal gill or trammel nets in subdivision 27.3.b.23
- Small-pelagic fishery using active gears to target sprat and herring in subdivisions 27.3.d.25-29
- Fisheries with gill or trammel nets in subdivision 27.3.a.21-27.b-d.22-29

Not included in sampling are some weeks of the year (e.g., Christmas) and similar fisheries occurring in other subdivisions, and some specific gear*area combinations which catch characterization have not been particularly relevant to main end-users. The most important out-of-frame components are covered by other sampling schemes.

Stratification:

The scheme is to most extent stratified by area and gear. Basis for stratification is ensuring geographical coverage of the ICES subdivisions alongside existing knowledge on the most common patterns of gear use by vessels operating in each Subdivision. In some cases where patterns in activity across subdivisions are similar, subdivisions were merged. The following strata are considered:

- Active Demersal TrawlPanTun - 27.3.a, 27.4.a
- Active Demersal TrawlNepGrid - 27.3.a.20
- Active Demersal TrawlNepGrid - 27.3.a.21
- Active Demersal TrawlMix - 27.3.a.20
- Active Demersal TrawlMix - 27.3.a.21
- Passive Demersal NepPots - 27.3.a
- Passive Demersal Nets - 27.3.a.21
- Active Demersal Trawl - 27.3.b-d.22-29
- Passive Demersal Nets - 27.3.b.23
- Active small pelagic trawls – 27.3.d.25-29 Q1, Q4
- Passive Nets - 27.3.a.21-27.b-d.22-29*

*) The stratum Passive Nets - 27.3.a.21-27.b-d.22-29 is to some extent overlapping with two other strata (Passive Demersal Nets - 27.3.b.23 and Passive Demersal Nets - 27.3.a.21) but have a different protocol as the main objective within this stratum is to collect data on bycatches of sensitive species such as marine mammals and birds.

Sampling design and protocols

Sampling design description:

All strata but "Passive Demersal Nets - 27.3.b.23", "Active small pelagic trawls – 27.3.d.25-29" and "Passive Nets - 27.3.a.21-27.b-d.22-29": A stratified multi-stage cluster sampling design is used. Each quarter a random draw of vessels (PSUs) is taken from a pre-defined list using UPSWOR proportional to number of trips carried out in that fishery*area combination the previous year. Vessels are sent a letter and a trip date agreed (SSU). Observers are deployed and quantify landings and discards of all species in all hauls (TSU), taking lengths and biological samples (QSU) from a selected number of species and stocks.

Stratum "Passive Demersal Nets - 27.3.b.23" - A stratified multi-stage cluster sampling design is used. A random draw of weeks (PSUs) is taken each quarter using SRSWOR. Each week, the vessels expected to be active are identified and random selection of vessels (SSU) contacted to retrieve samples from one of the trips (TSU) made that week. Trip-level samples of cod by size category and other species landed and discarded unsorted are taken (QSU).

Stratum "Active small pelagic trawls – 27.3.d.25-29 Q1, Q4" - A stratified multi-stage cluster sampling design is used. The objective of this stratum is related with method development for by-catch monitoring in this fleet which trips are long and hard to sample with observers at sea. Vessel selection (PSU) and trip selection (SSU) are non-probabilistic based on convenience. Hauls (TSU) are sampled for species composition (multiple baskets) with species present counted, weighed and measured. Different methods of quantification of by-catches will be tested (e.g., cameras).

Stratum "Passive Nets - 27.3.a.21-27.b-d.22-29" – A stratified multistage cluster sampling design is used. The area is divided into five sub-areas identified on the basis of bycatch risk for harbor porpoises. Each vessel are assigned to sub-strata (statistically: spatial strata based on the sub-areas) depending on their spatial fishing pattern during the previous year. A random draw of vessels (PSUs) is taken from the pre-defined lists for each sub-strata using SRSWR. The objective of this stratum is primarily to observe potential bycatches of marine mammals, sea-birds and other sensitive species. Catches of all species for all catch fractions (including catch damaged by predators) will be recorded but no biological sampling and no length sampling will be carried out (except for the sensitive species).

An overview of sampling design, including details on sampling protocol for biological variable, is given in tables below.

Stratum: "Active Demersal Trawl - 27.3.b-d.22-29"

	Sampling frame	**Sampling unit**	**Stratification**	**Selection Method**	**Sampling effort**
1SU	List of vessels active in the Demersal trawl fishery in subdiv. 22 to 29 during previous year	Vessel	Quarterly	random draw from vessel list with unequal probability (probability proportional to number of trips) without replacement	0 (per quarter)*

2SU	Hypothetical list of trips from vessel	Fishing Trip	---	ad-hoc (dependent on staff availability)	1 (per vessel)
3SU	Hypothetical list of hauls in trip	Haul	---	Census	Census
4SU	Hypothetical list of individuals caught in haul	Individuals	Species x Catch Fraction x Commercial Size Category Biology: also 1cm length classes	Length: Census (random sample if too large) Biology: Census (random sample if too large); sampling stops when trip goals are achieved	Length: all individuals Biology: COD BMS and discards: 5 otoliths and individual weights (per size class and trip)

*Dependent on the evolution of the situation of the cod fishery in western Baltic (n=4 per quarter if significant fishery resumes)

Stratum: Passive Demersal Nets - 27.3.b.23

	Sampling frame	**Sampling unit**	**Stratification**	**Selection Method**	**Sampling effort**
1SU	List of weeks of the year	Week	Quarterly	random sample from week list without replacement	Gillnets: 5 (per quarter)
2SU	List of vessels expected to be active in the gillnet fishery for demersal species each week	Vessel	---	random sample without replacement	1 (per week)
3SU	Hypothetical list of weekly trips from vessel	Fishing trip	---	ad-hoc (dependent on staff availability)	1 (per vessel)
4SU	All boxes of catch kept during fishing trip	Boxes	Species x Catch fraction x Commercial Size Category	Census or “random” sample by observer	Cod Landings: size (1-3): all boxes (or a sample of boxes) size (4-7): 1 box Other species landed and discarded: all boxes
5SU	All individuals in the box	Individuals (Individual length, weight and age)	None	Length: Census Biology: Random sample or census (depending on size category)	Length: all individuals in box Biology (per size): COD Sizes 1-3: all otoliths and weights COD Sizes 4-5: 20 otoliths and weights + all remainder fish only weight COD Sizes 6, BMS and discards: 20 otoliths and weights + 20 fish only weight

Stratum: Active small pelagic trawls – 27.3.d.25-29 Q1, Q4

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	List of vessels active in the fishery	Vessel	Quarterly (Q1 and Q4 only)	Convenience sample	6 (per quarter)
2SU	Hypothetical list of trips from vessel	Fishing Trip	---	ad-hoc (dependent on staff availability)	1 (per vessel)
3SU	Hypothetical list of hauls in trip	Haul	---	Census	Census
4SU	Target species: hypothetical list of buckets By-catch: minutes of film or other (to be defined)	Target species: Bucket By-catch: chunk of minutes or other	---	Target species: Systematic sampling By-catches: To be defined	Target species: Variable By-catches: To be defined
5SU	Hypothetical list of individuals caught in haul	Individuals	Species	Target species: census or subsample without replacement By-catch: to be determined	Target species lengths: all By-catch: to be determined

Stratum: Passive Nets - 27.3.a.21-27.b-d.22-29

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	List of vessels active in the fishery	Vessel	Annual, Sub-area	random draw from vessel lists with equal probability with replacement	Aim to cover 2% of fishing effort. Approx 145
2SU	Hypothetical list of trips from vessel	Fishing trip	---	ad-hoc (dependent on staff availability)	1
3SU	Hypothetical list of sets in trip	Set	---	Census	Census Total weight by species and catch fraction (landings, discards, fish damaged by predators) will be recorded at trip level for all species that are not considered sensitive.
4SU	All individuals of sensitive species bycaught in the set	Individuals	---	Census	Census

All other strata

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort

1SU	List of vessels active in the fishery during previous year	Vessel	Quarterly	random draw from vessel list with unequal probability (probability proportional to number of trips; draw without replacement)	3-5 (per quarter dependent on stratum)
2SU	Hypothetical list of trips from vessel	Fishing Trip	---	ad-hoc (dependent on staff availability)	1 (per vessel)
3SU	Hypothetical list of hauls/sets in trip	Haul	---	Census	Census
4SU	Hypothetical list of individuals caught in haul/set	Individuals	Species x Catch Fraction x Commercial Size Category (*) Biology: also 1cm length classes	Length: Census (random sample if too large) Biology: Census (random sample if too large); sampling stops when trip goals are achieved	Length: all individuals Biology: COD discards: 3 otoliths and individual weights (per size class and trip) PLE discards: 3 otoliths and individual weights (per size class and trip)

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

Active small pelagic trawls – 27.3.d.25-29 Q1, Q4: N

All other strata: Y

Regional coordination:

N

Link to sampling design documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to public will be prepared during 2022-2024.

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to the public will be prepared during 2022-2024.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

Y

Monitoring of sampling progress within the sampling year:

Debriefing meetings with teams of scientific observers after their trips. Quarterly meetings with all observers. When problems are noticed, compensatory actions are taken to secure data to end-users (e.g., sampling additional trips).

Data capture

Means of data capture:

Data capture is made in paper forms or with an internally developed electronic registration system, E-reg. Electronic balances and measuring boards are used during sampling.

Data capture documentation:

Documentation of data capture in E-reg will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Quality checks documentation:

Documentation on quality checks, that are made directly at data capture, in E-reg will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Data storage

National database:

FD2

International database:

RDB/RDBES at ICES

Quality checks and data validation documentation:

Routine checks on main variables are in place for all schemes with the database FD2 and RDBES. A set of complementary checks and outlier analysis on main variables are carried out via R scripts.

Sample storage

Storage description:

All recent otoliths (and scales in programmes where these are collected) are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5 to 10-year intervals. Two

archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

Work on documenting possible biases and precision in scheme is planned for 2022-2027. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Some information related to biases and precision in these fisheries can be found in documentation submitted over the years to several EGs, including WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Editing and imputation methods:

Documentation on data editing and imputation will be prepared and made available to the general public within the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Information on some of the estimation and imputation methods more routinely considered can be found in documentation submitted over the years to several EGs, including WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Quality document associated to a dataset:

Documentation of the estimation process will be made available during 2022-2024. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Some information on estimation and imputation methods routinely considered in analysis of these fisheries can be found in documentation submitted over the years to several EGs, including WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Validation of the final dataset:

Final validation takes place when data is compiled at ICES stock coordination level. Work on documenting national level validation routines is planned for 2022-2024.

MS: SWE

Region: All regions

Sampling scheme identifier: CommSelfOnShore - Selected species/stocks

Sampling scheme type: Commercial by category

Observation type: SelfOnShore

Time period of validity: 2022-2024

Short description:

Sampling scheme that aims to collect length, length-weight relationship, age, maturity and stock composition information from selected species/stocks (cod, herring, sprat) caught by Swedish commercial vessels operating in ICES Subareas 27.3 and 27.4 using self-sampling onshore by buyers or control. The objective of this sampling scheme is to routinely provide data on landings of some key species and stocks (e.g., cod) which frequently are not sampled enough within at-sea sampling schemes. The scheme is also used as a sampling back-up when probabilistic sampling appears to fail providing the minimal information required by end-user.

Description of the population

Population targeted:

Swedish landings of target species*area*commercial_category combinations. The PSU is Fishing trip x species combinations in most strata.

Population sampled:

Routine: Swedish landings of the following species*area*commercial_category combinations:

- Size categories of cod landed from the Swedish fisheries in subdivision 27.3.a.20
- Size categories of cod landed from the Swedish fisheries in subdivision 27.3.a.21
- Size categories of cod landed from the Swedish trawl fishery in subdivisions 27.3.b-d.22-29

Back-up to probabilistic schemes:

- Unsorted landings of herring and sprat landed from the Swedish fisheries in subdivision 27.3.a.20-21, 27.3.b.23 and 27.3.d.24-29

Not included in routine sampling are buyers located in places other than Gothenburg or Simrishamn.

Stratification:

The scheme is stratified by species and area. Basis for stratification is ensuring data availability on landings of trips fishing over the most important ICES subdivisions for assessment of target stocks.

The following strata are considered in the routine programme:

- Commercial Category COD - 27.3.a.20
- Commercial Category COD - 27.3.a.21
- Active Demersal Trawl Commercial Category COD - 27.3.b-d.22-29

The following strata are considered in the back-up programme:

- Commercial Category - HER, SPR - 27.3.a.20
- Commercial Category - HER, SPR - 27.3.a.21

- Commercial Category - HER, SPR - 27.3.a.23
- Commercial Category - HER, SPR - 27.3.a.24
- Commercial Category - HER, SPR - 27.3.a.25
- Commercial Category - HER, SPR - 27.3.a.26
- Commercial Category - HER, SPR - 27.3.a.27
- Commercial Category - HER, SPR - 27.3.a.28.2
- Commercial Category - HER, SPR - 27.3.a.29

Sampling design and protocols

Sampling design description:

The scheme uses a stratified multi-stage cluster sampling design to obtain samples for each species*area combination.

Strata All Commercial Category COD - 27.3.a.20, 27.3.a.21: Each quarter, first hand buyers are asked to select among the landings they possess of each target species and area (PSU) and select 1 size category (SSU) and then 1 box from that size category (TSU) until sampling targets are achieved. Buyers are requested to spread the sampling over time.

Stratum Active Commercial Category COD - 27.3.b-d.22-29: Each quarter a set of weeks (PSU) is selected using SRSWOR. In each week, a list of vessels expected to be active in the trawl fishery is built using a variety of sources (AIS, Logbooks, Information from the fishery) and a set of vessels (SSU) selected for sampling. The information on selected vessels is sent to contractor that selects a daily landing of cod from those vessels (TSU). A box from each size category is taken (QSU) and a number of individuals sampled according to pre-specified goals per size class.

An overview of sampling design, including details on sampling protocol for biological variable, is given in tables below.

Strata Commercial Category COD - 27.3.a.20, 27.3.a.21 (stratified by area and species)

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	Hypothetical list of fishing trips with landings of cod from target subdivision during year	Fishing trip x species	Quarter and Subdivision (20, 21)	ad-hoc selection by first-hand buyer until sampling targets are achieved. It is requested that trips are spread in time.	Variable
2SU	List of size categories of cod in fishing trip	Size category	---	ad-hoc selection by first-hand buyer until sampling targets are achieved. It is requested that size categories are spread across trips (i.e., only 1-2 size	1 size category

				categories are sampled per trip)	
2SU	List of boxes in size category	Box	---	ad-hoc selection by first-hand buyer until sampling targets are achieved	1 box (size 1 to 4) ½ to 1 box (size 5)
3SU	Cod individuals in box	Biology of individuals (individual length, weight and age)	---	ad-hoc selection by first-hand buyer until sampling targets are achieved	All fish are sampled for weight and otoliths until the following quarter*subdiv targets are achieved: Size 1: 50 indiv. Size 2: 50 indiv. Size 3: 100 indiv. Size 4: 100 indiv. Size 5: 100 indiv.

Stratum Active Demersal Trawl Commercial Category COD - 27.3.b-d.22-29

	Sampling frame	**Sampling unit**	**Stratification**	**Selection Method**	**Sampling effort**
1SU	List of weeks of the year	Week	Quarterly	random draw from week list without replacement	6 (per quarter)
2SU	List of vessels expected to be active in the Demersal trawl fishery in that week (*)	Vessel	---	Random selection from quarterly vessel list	4 (per week) (**)
3SU	Hypothetical list of daily landings of cod from vessel in week	Daily landing of cod	---	ad-hoc (performed by buyer)	1 (per vessel)
4SU	All boxes of cod landed in fishing trip	Boxes of cod	Commercial Size Category	ad-hoc (performed by buyer)	1 box (***)
5SU	All individuals in the box	Individuals	None	Length: Census Biology: Random sample	Length: all individuals in box

	(Individual length, weight, and age)		or census (depending on size category)	Biology: Sizes 1-3: all otoliths and weights Size 4: 20 otoliths and weights + 20 fish only weight Sizes 5-7: 10 otoliths and weights + 10 fish only weight

(*) AIS, logbook records and direct information from the industry are used to identify the vessels expected to be active on a weekly basis

(**) to ensure coverage of areas with less activity, buyers are also instructed to deliver full samples from additional landings from rarer subdivisions, e.g., subdivision 24 whenever fleet activity occurs in that subdivision and vessels are not on the list;

(***) n=1 additional box is requested from sizes 1-3 from another vessel to ensure less frequent size classes are sampled.

Backup: Strata All Commercial Category – HER, SPR (stratified by area and species)

	Sampling frame	**Sampling unit**	**Stratification**	**Selection Method**	**Sampling effort**
1SU	Hypothetical list of fishing trips with landings of herring or sprat from target subdivision during year	Fishing trip x species	Quarter and Subdivision (20, 21)	ad-hoc selection by first-hand buyer or control until targets achieved; it is requested that samples are spread out in quarter	Variable
2SU	Individuals landed on fishing trip	Box	---	ad-hoc selection by first-hand buyer or control	1 Box
3SU	Herring individuals in box	Biology of individuals (Individual length, weight, age, maturity. Herring only: nematodes)	---	Census or subsamples (50-150 per box when boxes are large and many boxes are available) until sampling targets are achieved	Herring: Max individuals per Quarter and Subdivision Herring: n = 650 SD20, 21 n = 400 SD24-29S n = 800 SD29N-31

	Sprat: n = 400 SD20, 21 n = 500 24-29S n = 800 SD29N-31

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

Stratum: Active Demersal Trawl Commercial Category COD - 27.3.b-d.22-29: Y

Remaining strata: N*

*Possibilities of changing the sampling design of "Commercial Category COD - 27.3.a.20, 27.3.a.21" to a more probabilistic/4S will be explored during the 2022-2024 period.

Regional coordination:

N

Link to sampling design documentation:

Details of sampling design are given under section "sampling design description" (above). Online documentation will be prepared during 2022-2024.

Compliance with international recommendations:

Stratum: Active Demersal Trawl Commercial Category COD - 27.3.b-d.22-29: Y

Remaining strata: N*

*Possibilities of changing the sampling design of "Commercial Category COD - 27.3.a.20, 27.3.a.21" to a more probabilistic/4S will be explored during the 2022-2024 period.

Link to sampling protocol documentation:

Main details of sampling protocols are given under section "sampling design description" (see above). Online documentation will be prepared during 2022-2024.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

Stratum: Active Demersal Trawl Commercial Category COD - 27.3.b-d.22-29: Y

Remaining strata: N

Monitoring of sampling progress within the sampling year:

Sample acquisition, sample collection, arrival to lab and processing are closely monitored on a weekly basis to secure quarterly goals are achieved. Departures from expectations lead to compensatory actions to secure data to end-users (e.g., sampling additional trips).

Data capture

Means of data capture:

Data capture is made in paper forms. Electronic balances and measuring boards are used during sampling.

Data capture documentation:

Documentation of data capture will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Quality checks documentation:

Internal routine checks on main variables are run as data is stored in database FD2.

Data storage

National database:

FD2

International database:

RDB/RDBES at ICES

Quality checks and data validation documentation:

Internal routine checks on main variables are in place for all schemes within the database FD2 and RDBES. Complementary checks and outlier analysis are carried out on trip, catch and biological variables using reports from FD2 and R scripts.

Sample storage

Storage description:

All recent otoliths (and scales in programmes where these are collected) are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5 to 10-year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

Documentation on analyses done to evaluate data accuracy, including potential biases and precision, will be prepared and made available to the general public during the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Some information related to biases and precision in these fisheries can be found in documentation submitted over the years to several EGs, including HAWG, WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Editing and imputation methods:

Documentation of data editing and imputation will be prepared and made available to the general public within the 2022-2024 period. Additional documentation will be available in RDBES scripts and outputs when that system is in production. Information on some of the estimation and imputation methods routinely considered in these fisheries can be found in documentation submitted over the years to several EGs, including HAWG, WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Quality document associated to a dataset:

Work on documenting estimation methods used in this sub-scheme is planned for 2022-2024. Some information on estimation and imputation methods routinely considered in analysis of these fisheries can be found in documentation submitted over the years to several EGs, including HAWG, WGBFAS, WGNSSK, WGCATCH, WKPICS and SGPIDS, among other.

Validation of the final dataset:

Final validation takes place when data is compiled at ICES stock coordination level. Work on documenting national level validation routines is being planned for 2022-2024.

MS: SWE

Region: All regions

Sampling scheme identifier: CommEMAtSea - PETS species

Sampling scheme type: Commercial fishing trip

Observation type: EMAtSea

Time period of validity: 2023-2024

Short description:

The sampling scheme aims to collect data on bycatches of PET species (number) caught by Swedish commercial vessels operating gillnets and trammel nets to target demersal, freshwater or pelagic species in 27.3.a (Kattegat and Skagerrak) and subdivisions 27.3.b-d.23-29 (Baltic) using cameras. The reason for using cameras is to increase sampling coverage to get better estimates of bycatches of sensitive species such as marine mammals and birds. The sampling scheme is designed to generate as good estimates for harbor porpoise as possible (spatial strata based on risk for bycatches) but data on all mammals, birds and elasmobranchs species will be collected.

Description of the population

Population targeted:

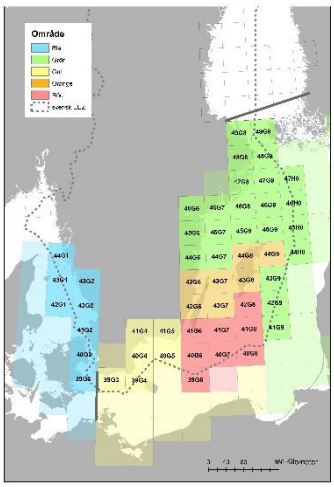
All Swedish vessels participating in the gillnet and trammel net fisheries for demersal, freshwater or pelagic species in 27.3.a (Kattegat and Skagerrak) and subdivisions 27.3.b-d.23-29 (Baltic). The PSU is vessel.

Population sampled:

Swedish vessels participating in the gillnet and trammel net fisheries for demersal, freshwater or pelagic species in 27.3.a (Kattegat and Skagerrak) and subdivisions 27.3.b-d.23-29 (Baltic). Vessels will participate in the sampling on a voluntary basis.

Stratification:

The area is divided into sub-areas based on distribution of the porpoise populations in the area. Vessels are assigned to spatial strata based on where they fished the majority of the time the preceding year.



Sub-areas (different colours) that constitutes basis for spatial strata.

Sampling design and protocols

Sampling design description:

All vessels, with an activity level equal to or above 25 trips the preceding year, participating in the fishery will be contacted and asked for interest to participate in the sampling. Track will be kept on positive / negative response. Participating vessels will sign a contact and agreements will be made on number of trips to sample (sampling by camera will be accompanied with a limited protocol for self-sampling). Number of trips to sample will be dependent on the activity level of the vessel, the heterogeneity of the fishing pattern of the vessel and the main area of fishing for the individual vessels. Effort will be made to spread out sampling effort between different sub- areas, vessels and fisheries. If the number of interested vessels exceeds available resources priority will be given to vessels fishing in sub-areas with assumed higher risk of bycatch of porpoises and areas where potential bycatch of porpoises cause a larger risk to the population.

	Sampling frame	Sampling unit	Stratification	Selection Method	Sampling effort
1SU	List of vessels	Vessels	---	ad-hoc (voluntary basis)	15
2SU	Hypothetical list of trips by vessel for the participating gillnetters based on level of activity 2021.	Trip	---	Census or ad-hoc dependent on the activity level of the vessel, the heterogeneity of the fishing pattern of the vessel and the main sub- area of fishing for the individual vessels	Dependent on vessel

Is the sampling design compliant with the 4S principle

N

Regional coordination:

N

Link to sampling design documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to the general public will be prepared during 2022-2024.

Compliance with international recommendations:

NA

Link to sampling protocol documentation:

The main details of sampling design are given under section “sampling design description” (above). Online documentation accessible to the general public will be prepared during 2022-2024.

Compliance with international recommendations:

NA

Sampling implementation

Recording of refusal rate:

Y.

Monitoring of sampling progress within the sampling year:

Sampling progress will be closely monitored by assigned members of the staff. This monitoring will include regular contacts with participating vessels to sort out different problems and regular quality checks of received film material as well as other types of data.

Data capture

Means of data capture:

A camera system from SpotX will be used on the vessels. Anchorlabs black box analyzer (BBA) will be used to capture data from the films.

Data capture documentation:

Documentation of data capture will be prepared during 2022 as a part of the report from the camera pilot study 2020-2021.

Quality checks documentation:

Documentation of data capture, including quality checks, will be prepared during 2022 as a part of the report from the camera pilot study 2020-2021.

Data storage

National database:

Data is presently stored in a Microsoft SQL database, connected to the Anchorlab BBA. Reports from the analyzed films are also stored on a NAS (Network Attached Storage). There are almost finalized, work to adapt the national database, FiskData2, to house also this type of data. The aim is to develop the data model allowing

the data to be uploaded to ICES RDBES. A subset of data was successfully uploaded to ICES RDBES 2022. This development is assumed to be completed during 2022 and data will then be stored in FiskData2.

Quality checks and data validation documentation:

Documentation on quality checks and data validation will be prepared during 2022 as a part of the report from the camera pilot study 2020-2021.

Sample storage

Storage description:

Films are stored on a NAS for at least 3 years.

Sample analysis:

Anchorlabs black box analyzer (BBA) will be used to analyze the films.

Data processing

Evaluation of data accuracy (bias and precision):

Bias need to be evaluated as the sampling scheme will be based on vessels that participate on a voluntary basis. This evaluation of bias will include risk assessments of fisheries (are there particular parts of the fisheries (targets species, season and areas) that have a higher risk of bycatch) and a comparison between the activities of the vessels within the sampling scheme and the entire fleet. We will also compare results from the observer program (in fisheries/areas were we have both observers and cameras) with results from the camera sampling scheme. The analysis of bias will be documented.

Editing and imputation methods:

Presently no estimation is carried out at population level. How this will be done will be dependent on results from the sampling and the analysis of bias.

Quality document associated to a dataset:

Presently no estimation is carried out at population level. How this will be done will be dependent on results from the sampling and the analysis of bias.

Validation of the final dataset:

Presently no estimation is carried out at population level. How this will be done will be dependent on results from the sampling and the analysis of bias.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: BITS_Q1 , BITS_Q4

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: 2022-2024

Short description:

An internationally coordinated bottom trawl survey to provide ICES working groups with data (survey index) for stock assessment for cod, flounder and other flatfish in the Baltic proper areas.

Description of the population

Population targeted:

Cod, flounder, plaice.

Population sampled:

Demersal

Stratification:

ICES subdivisions and depth intervals

Sampling design and protocols

Sampling design description:

In the manual:

BITS manual

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

NA

Regional coordination:

Y, Denmark, Sweden, Germany, Estonia, Latvia. Lithuania, Poland and Russia.

Link to sampling design documentation:

https://datras.ices.dk/documents/manuals/manuals.aspx

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

http://www.ices.dk/community/groups/Pages/WGBIFS.aspx

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

Data is captured in an internally developed electronic registration system, Sve-reg, by connected scales and by registrating lengths, measured on a common measuring board or a connected electronic measuring board. Other data (sex, maturity etc) is also registered in the system. Data is stored in the national database FD2.

Data capture documentation:

Documentation of data capture in Sve-reg will be available at the quality assurance web page in 2022.

www.slu.se/qualityassurance

Quality checks documentation:

Documentation on quality checks that are made directly at data capture in Sve-reg will be available at the quality assurance web page in 2022.

www.slu.se/qualityassurance

Data storage

National database:

FD2

International database:

DATRAS https://www.ices.dk/data/data-portals/Pages/DATRAS.aspx

Quality checks and data validation documentation:

National quality checks in Fiskdata2; www.slu.se/qualityassurance.

International quality checks DATRAS: https://datsu.ices.dk/web/selRep.aspx

Sample storage

Storage description:

All recent otoliths are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of

Gothenburg at 5-10 year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

https://www.ices.dk/data/data-portals/Pages/DATRAS-Docs.aspx

Editing and imputation methods:

Partly

Quality document associated to a dataset:

N

Validation of the final dataset:

Final data set is screened automatically by DATRAS when submitted to this ICES database.

Survey indices are produced by ICES Data Centre.

https://www.ices.dk/data/Documents/DATRAS/Indices_Calculation_Steps_BITS.pdf

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: BIAS

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: 2022-2024

Short description:

International hydroacoustic surveys have been conducted in the Baltic Sea since 1978 by between the Institute of Marine Research (IMR) in Lysekil, Sweden. IMR currently belonging to the Department

of Aquatic Resources, Swedish University of Agricultural Sciences is responsible for the Swedish part of Baltic international acoustic survey (BIAS).

The BIAS survey is co-ordinated and managed by the ICES working group WGBIFS. The main objective of BIAS is to assess herring and sprat resources in the Baltic Sea. The survey provides data to amongst other the ICES Baltic Fisheries Assessment Working Group (WGBFAS).

Description of the population

Population targeted:

Sprat and herring in the Baltic sea in SD27 and a parts of SD25-29

Population sampled:

Pelagic

Stratification:

No stratification, Surveyed area limited by the 10m depth curve.

Sampling design and protocols

Sampling design description:

The survey is based on hydro acoustic transects of 60 nautical miles in each statistical rectangle according to the survey manual. In each statistical rectangle 2 fishing hauls are performed to classify species composition and length distribution of all caught species.

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

NA

Regional coordination:

BIAS is coordinated by ICES WGBIFS, participating countries is Finland**,** Estonia, Germany, Latvia, Lithuania, Poland and Sweden.

Link to sampling design documentation:

Sampling design documentation can be found in the IBAS manual:

IBAS manual

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

Sampling protocol documentation can be found in the IBAS manual:

IBAS manual

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

For fish sampling Sweden use calibrated field scales (Marel M1100) and manual measuring boards. A special software (Sve-reg) developed by the institute is used to register data. Hydro acoustic sampling Sweden follow IBAS manual and use Simrad EK80 software tool and LSSS for acoustic data analyses.

Data capture documentation:

Sweden follows the IBAS manual regarding data capture, IBAS manual.

Quality checks documentation:

Y, for instance the validation of existing lengths for registred specimen.

https://www.slu.se/globalassets/ew/org/inst/aqua/externwebb/datainsamling/quality-assurance/quality-checks-after-registration-in-the-database-fd2.docx

Data storage

National database:

FD2, for biological data

International database:

ICES acoustic trawl DB, https://acoustic.ices.dk

ICES WGBIFS IBASdb, numbers and mean weights per age and area

Quality checks and data validation documentation:

National quality checks in FD2; www.slu.se/qualityassurance
International quality checks (biological data) DATRAS: https://datsu.ices.dk/web/selRep.aspx
International quality checks ICES acoustic trawl DB: https://acoustic.ices.dk/validationrules

Sample storage

Storage description:

All recent otoliths are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5-10 year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

Very limited, work in progress by ICES WGBIFS. See the WGBIFS report**s:**
http://www.ices.dk/community/groups/Pages/WGBIFS.aspx

Editing and imputation methods:

N. No date available.

Quality document associated to a dataset:

Y

Validation of the final dataset:

There are quality checks made in the ICES database, see https://acoustic.ices.dk/validationrules

There are quality checks made on the data stored in the WGBIFS IBAS db, although there is no known documentation over those. Also quality checks are made on local level (for instance by responsible fish lab crew leader (automatic controls within Fiskdata2) also expert knowledge type quality checks are made by the responsible analyst, furthermore in the whole data collecting and analysing line various checks both qualitative and quantitative are made, normally those have not been documented yet, but consists of amongst other; tools in software (LSSS), new checking scripts from December 2020 WGBIFS meeting at sharepoint for WG, spreadsheet checks like age-length, length-weight, etc.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: SPRAS

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: 2022-2024

Short description:

Internationally coordinated hydro acoustic survey targeting herring and spawning sprat in the Baltic Sea to provide data for stock assessment through the ICES working group WGBFAS.

Description of the population

Population targeted:

Sprat and herring in the Baltic Sea in SD27 and a part of SD28

Population sampled:

Pelagic

Stratification:

No stratification

Sampling design and protocols

Sampling design description:

The survey is based on hydro acoustic transects of 60 nautical miles in each statistical rectangle according to the survey manual. In each statistical rectangle 2 fishing hauls are performed to classify species composition and length distribution of all caught species.

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

NA

Regional coordination:

SPRAS is a coordinated survey by ICES WGBIFS with Estonia, Germany, Latvia, Lithuania, Poland and Sweden.

Link to sampling design documentation:

Sampling design is described in the IBAS manual:

IBAS manual

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

Sampling design is described in the IBAS manual:

IBAS manual

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

For fish sampling Sweden use calibrated field scales (Marel M1100) and manual measuring boards. A special software (Sve-reg) developed by the institute is used to register data. Hydro acoustic sampling Sweden follow IBAS manual and use Simrad EK80 software tool and LSSS for acoustic data analysis.

Data capture documentation:

Sweden follows the IBAS manual regarding data capture.

Documentation of Sve-reg (the electronic sampling system) will be available on the quality documentation webpage in 2022, www.slu.se/qualityassurance

Quality checks documentation:

Y

Documentation of the quality controls made in Sve-reg at data capture will be available on the quality documentation webpage in 2022, www.slu.se/qualityassurance

Data storage

National database:

FD2 (not accessible through a website)

International database:

ICES acoustic trawl DB, https://acoustic.ices.dk
ICES WGBIFS IBASdb, numbers and mean weights per age and area.

Quality checks and data validation documentation:

National quality checks in FD2; www.slu.se/qualityassurance

International quality checks (biological data) DATRAS: https://datsu.ices.dk/web/selRep.aspx

International quality checks ICES acoustic trawl DB: https://acoustic.ices.dk/validationrules

Sample storage

Storage description:

All recent otoliths registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5-10 year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

N. Work in progress in ICES WGBIFS. See last report
http://www.ices.dk/community/groups/Pages/WGBIFS.aspx

Editing and imputation methods:

N. No date available.

Quality document associated to a dataset:

N

Validation of the final dataset:

No formal quality check before end user.

MS : SWE

Region: Baltic Sea

Sampling scheme identifier: SSS

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: 2022-2024

Short description:

National demersal trawl survey in SD23, in the sound between Sweden and Denmark.

Description of the population

Population targeted:

Cod and flounder in SD23

Population sampled:

Demersal

Stratification:

Stratification by depth strata.

Sampling design and protocols

Sampling design description:

The Swedish sound survey use the same sampling design as BITS.

BITS manual

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

NA

Regional coordination:

N

Link to sampling design documentation:

Sampling design is described in the BITS manual:

https://datras.ices.dk/documents/manuals/manuals.aspx

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

http://www.ices.dk/community/groups/Pages/WGBIFS.aspx

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

For fish sampling Sweden use calibrated field scales (Marel M1100) and manual measuring boards. A special software (E-reg) developed by the institute is used to register data. Other data (sex, maturity etc) is also added in the system.

Data capture documentation:

Documentation of E-reg (the electronic sampling system) will be available on the quality documentation webpage in 2022, www.slu.se/qualityassurance

Quality checks documentation:

Y

Documentation of the quality controls made in E-reg at data capture will be available on the quality documentation webpage in 2022, www.slu.se/qualityassurance

Data storage

National database:

FD2 (not accessible through a website)

International database:

DATRAS, https://www.ices.dk/data/data-portals/Pages/DATRAS.aspx

Quality checks and data validation documentation:

National quality checks in FD2; www.slu.se/qualityassurance

International quality checks (biological data) DATRAS: https://datsu.ices.dk/web/selRep.aspx

Sample storage

Storage description:
All recent otoliths are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent

a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5-10 year intervals. Two archive accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

N.

Editing and imputation methods:

N. No date available.

Quality document associated to a dataset:

N

Validation of the final dataset:

No formal quality check before end user.

MS : SWE

Region: North Sea and Eastern Arctic

Sampling scheme identifier: IBTS_Q1 , IBTS_Q3

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: 2022-2024

Short description:

An internationally coordinated bottom trawl survey to provide ICES working groups with data (survey index) for stock assessment for several fish species in Skagerrak, Kattegat and parts of the North Sea.

Description of the population

Population targeted:

Cod, Haddock, Herring, Whiting, Norway Pout, Plaice, Mackerel - 27.3a; 27.4

Population sampled:

Demersal

Stratification:

ICES statistical rectangles

Sampling design and protocols

Sampling design description:

The statistical squares are allocated to the countries by the survey coordinator and agreed on at the annual IBTSWG. Within each square 2 hauls should be performed, preferably by two different countries which for logistical reasons isn't always possible. The cruise leader is free to choose any haul (or two) to tow in the square but usually follows a list of plausible hauls in the rectangle (excerpt from Datras) for safety reasons. In quarter 1, Sweden is following a fixed design in the Skagerrak and the Kattegat for historical reasons and in quarter 3 Sweden has a depth stratification in the Skagerrak.

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

NA

Regional coordination:

NA

Link to sampling design documentation:

https://datras.ices.dk/documents/manuals/manuals.aspx

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

https://www.ices.dk/community/groups/Pages/IBTSWG.aspx

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

Trawldata collected from Kongsberg MDM500 system onboard is delivered to on-board trawl database Svepa. The catch is through a national catch data system Sve-reg, fish measurements and sex/maturity judging are manual and punched directly onto a touch screen into Sve-reg and weights are captured automatically. Both systems feed into a copy of the Oracle database FD2 which post-cruise updates the land-based main database FD2.

Data capture documentation:

Documentation of data capture in Sve-reg will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Quality checks documentation:

Y

National quality checks in FD2; www.slu.se/qualityassurance

Documentation on quality checks, that are made directly at data capture, in Sve-reg will be available at the quality assurance web page in 2022.

Data storage

National database:

FD2

International database:

DATRAS https://www.ices.dk/data/data-portals/Pages/DATRAS.aspx

Quality checks and data validation documentation:

National quality checks in FD2; www.slu.se/qualityassurance.

International quality checks DATRAS: https://datsu.ices.dk/web/selRep.aspx

Sample storage

Storage description:

All recent otoliths are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5-10 year intervals. Two archive accounting systems are in place: an older one that

contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

Y

https://www.ices.dk/data/data-portals/Pages/DATRAS-Docs.aspx

Editing and imputation methods:

N

Quality document associated to a dataset:

N

Validation of the final dataset:

Final data set is screened automatically by DATRAS when submitted to this ICES database.

Survey indices are produced by ICES Data Centre.

https://www.ices.dk/data/Documents/DATRAS/Indices_Calculation_Steps_IBTS.pdf

MS: SWE

Region: North Sea & Eastern Arctic

Sampling scheme identifier: UWTV3-4

Sampling scheme type: Research survey at sea

Observation type: EMAtSea

Time period of validity: 2022-2024

Short description:

The joint Swedish and Danish survey is a UWTV survey (UWTV3-4) conducted to provide estimates of Norwegian lobster (Nephrops norvegicus) burrow densities used for the estimation of total

abundance. The survey is conducted in spring and repeated annually. Data is collected using a sledgemounted video camera. A sledge is towed behind research vessels included in the survey. Video recording from 200 m long segments of Nephrops habitat are collected at approximately 200 stations in the Kattegat and Skagerrak area.

Description of the population

Population targeted:

Nephrops norvegicus in 27.3.a.20 and 27.3.a.21

Population sampled:

Demersal

Stratification:

The survey area is stratified into 9 subareas defined as fishing grounds, ie geographically separated areas of suitable Nephrops habitat. One of the strata is defined by gear restriction.

Sampling design and protocols

Sampling design description:

The survey is based on a stratified random design with approximately 200 station distributed within a predefined gridnet (of approximately 10000 stations). Each year the number of stations allocated to each strata is calculated by minimizing the variance using the previous year's results.

Is the sampling design compliant with the 4S principle?

NA

Regional coordination:

UWTV3-4 is a joint survey by Sweden & Denmark

Link to sampling design documentation:

Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Sciences Vol. 65. 44 pp. **https://doi.org/10.17895/ices.pub.8014**

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Sciences Vol. 65. 44 pp. **https://doi.org/10.17895/ices.pub.8014**

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

Full HD-video recordings and associated positional ship / sledge transponder data.

Data capture documentation:

Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Sciences Vol. 65. 44 pp. **https://doi.org/10.17895/ices.pub.8014**

Quality checks documentation:

Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Sciences Vol. 65. 44 pp. **https://doi.org/10.17895/ices.pub.8014**

Data storage

National database:

Raw video recordings saved on multiple, geographically portable hard drives.

International database:

No international database at present but will be uploaded to ICES run database in the future.

Quality checks and data validation documentation:

NA

Sample storage

Storage description:

NA

Sample analysis:

NA

Data processing

Evaluation of data accuracy (bias and precision):

Different steps in film analysis is found here:

Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Sciences Vol. 65. 44 pp. **https://doi.org/10.17895/ices.pub.8014**.

Editing and imputation methods:

NA (no imputation is applied if missing stations typically variance increase)

Quality document associated to a dataset:

Annual ICES WGNEPS report

Validation of the final dataset:

Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Sciences Vol. 65. 44 pp. **https://doi.org/10.17895/ices.pub.8014**

MS: SWE

Region: North Sea & Eastern Arctic

Sampling scheme identifier: CODS_Q4

Sampling scheme type: Research survey at sea

Observation type: SciObsAtSea

Time period of validity: 2022–2024

Short description:

The joint Swedish and Danish survey was initiated in 2008 to provide data for monitoring trends in abundance, biomass, recruitment and distribution of Kattegat cod.

Description of the population

Population targeted:

Cod in 27.3.a.21

Population sampled:

Demersal

Stratification:

Survey area stratified into high, medium and low-density strata based on information from the commercial fishery. In 2013 an additional stratum covering the closed area in south-eastern Kattegat was implemented.

Sampling design and protocols

Sampling design description:

The survey is based on a stratified random design with 80 hauls distributed within a survey grid of 5×5 nm squares. Each participating vessel is assigned 20 or 40 stratified randomly selected survey squares, in proportion to the strata size. Within each square, the skipper decides on the best way to fish at the location, e.g., set position and tow direction. The haul is the PSU. Each haul is sorted, and all species are recorded, length measured and weighted. In case of large catches subsampling is performed. Biological samples (age and weight) are collected for cod (see table 2.2).

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

NA

Regional coordination:

CODS_Q4 was developed as a joint survey by Sweden and Denmark starting in 2008. There is no formal bi-lateral agreement, however.

Link to sampling design documentation:

ICES. 2020. Baltic Fisheries Assessment Working Group (WGBFAS). ICES Scientific Reports. 2:45. 643 pp. http://doi.org/10.17895/ices.pub.6024

WDO3 Joint Swedish and Danish survey for cod in the Kattegat, November-December 2019.

Compliance with international recommendations:

Y

Link to sampling protocol documentation:

ICES. 2020. Baltic Fisheries Assessment Working Group (WGBFAS). ICES Scientific Reports. 2:45. 643 pp. http://doi.org/10.17895/ices.pub.6024.

WDO3 Joint Swedish and Danish survey for cod in the Kattegat, November-December 2019.

Compliance with international recommendations:

Y

Sampling implementation

Recording of refusal rate:

NA

Monitoring of sampling progress within the sampling year:

NA

Data capture

Means of data capture:

On-board observers on Swedish ships use calibrated field scales and manual measuring boards. A software for electronic data capture (E-reg) developed by the institute is used to register data.

Data capture documentation:

Documentation of data capture in E-reg (the electronic sampling system) will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Quality checks documentation:

Y

Documentation on quality checks, that are made directly at data capture, in E-reg, will be available at the quality assurance web page in 2022. www.slu.se/qualityassurance

Data storage

National database:

FD2

International database:

No international database at present but could be uploaded to DATRAS in the future if they are willing to host the data.

Quality checks and data validation documentation:

National quality checks in FD2: www.slu.se/qualityassurance

Sample storage

Storage description:

Otoliths stored dry, genetic samples stored in 70% ethanol.

All recent otoliths (and scales in programmes where these are collected) are registered, stored and archived at Havsfiskelaboratoriet in Lysekil. To prevent a large accumulation of archived biological material, samples are sent to the National Archives of Gothenburg at 5-10 year intervals. Two archive

accounting systems are in place: an older one that contains mostly material from 1929-2012; and a new archive system covering all governmental institutions that runs from 2013 to present.

Sample analysis:

Biological analysis of the different stocks follows the guidelines established by ICES WGBIOP and associated workshops: https://www.ices.dk/community/Pages/PGCCDBS-doc-repository.aspx.

Information on age preparation and processing, including handbook, is available online

https://www.slu.se/institutioner/akvatiska-resurser/kontakt/forskningsinfrastuktur/alderslaboratorier/Metodhandbok-for-aldersanalys-av-fisk/

Data processing

Evaluation of data accuracy (bias and precision):

N, documentation will be available in 2023.

Editing and imputation methods:

N, documentation will be available in 2023.

Quality document associated to a dataset:

N, documentation will be available in 2023.

Validation of the final dataset:

N, documentation of index estimation will be available in 2023.

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.

Sector names in Annex 1.2:
Fisheries
Aquaculture
Fish processing

Survey Specifications
Sector name(s): Fisheries
Sampling scheme: Census
Variables: Capacity, Effort, Landings, Economic, and social variables
Supra region(s): all regions
Survey planning
Census The population includes all active vessels in the Swedish fleet, and census for inactive vessels.
Survey design and strategy

List of the data sources used:
Logbooks, monthly journals, sales notes, EU fleet register, questionnaire and, tax declarations.

Logbook data and sales notes are automatically checked when filled in regarding completeness and also regarding logic. In addition, random checks are performed later on catches landed compared to those sold and also given geographic positions compared to VMS data. The port inspection also checks and verifies logbook data for the specific trip when an inspection is performed. Finally there are also computerized routinely performed checks of the complete logbook data to find abnormal and exorbitant values for all trips.

Journal data are automatically checked when filled in regarding completeness and also regarding logic. Since the data is on monthly bases no further checks can be done on administrational or field bases. There are computerized routinely performed checks of the complete journal data to find abnormal and exorbitant values for all trips.

Questionnaires are send out to fishermen by mail but there is also a possibility for them to hand in their answers electronically via a web-formula. The questionnaires are sent out to the licensees' official address which is updated yearly with the Swedish post agency. To access the web-formula a unique code for each signal is needed and are given to them via mail. This method is used both for economic and social variables.

The information on the fishermen's registered company is then used and merged with register data form Statistics Sweden on tax declaration on economics variables. The information form the tax declarations in then compared with the catch value in order to distinguish deviations. If deviations appears adjustment are made by using the share of the catch value in relation to the declared turnover.

Estimation design

If there are missing values in the collected data, estimated/imputed values are made. A simple linear model is use to estimate the missing values. For each missing variable a suitable estimation is done by adding control variables such as year, vessels size, gear, gross tonnage, kW, subdivision etc. by each segment in order to get as realistic estimated value as possible.

Error checks

Before merging the data it is investigated thoroughly for duplicates in reporting, some leave comments on questionnaires if their tax declarations represents more than one vessel. If that it is the case then the additional variables are adjusted to the share of catch value if nothing else is stated. Errors are checked manually by investigating each variable visually do detect outliers. For each variable there are certain intervals that flag if there are values outside of this interval. If outliers are detected it is replaced with an estimated value instead.

Data storage and documentation

Data is stored in locked folder where only individuals with approved authority has access since there is confidential information concerning the economic variables on vessel level. Further it is not published on any homepage. Homepage for description on methodological procedures are under construction and not available at this moment.

Revision

The methodology of collecting data is yearly reviewed, yet since everything is at census level the collection scheme has not been adjusted. The questionnaire is reviewed yearly however, only marginal

adjustment has been made due to not losing continuity over time. The estimation methods are reviewed on a regular basis.

Confidentiality

Before the data is clustered the economics variables contains confidential information. Therefore only experts working with DCF and the economic data have access to it. When it is clustered still these are the individual who gains access, yet by making data calls it can be delivered to other who are interested. There are protocols in place when it comes to external users. If someone make a data call wanting access to the data with confidential information and legal assessment is done to question the risk of exposing the privacy information before delivering to external part. At segment level there are issues publishing data, however before delivering the data to the commission clustering has been done, which makes is possible to publish without having any issues with confidentiality.

Survey Specifications

Sector name(s): Aquaculture

Sampling scheme: Census

Variables: All economic and social variables

Supra region(s): All regions

Survey planning

The survey includes all aquaculture enterprises. The population is decided on information from the national aquaculture register which is cross-referenced to income tax declarations. All enterprises with an income of over 50% is part of the population.

Survey design and strategy

Data will be collected by Statistics Sweden and the Swedish board of Agriculture in three ways.

a. Statistics Sweden: Income tax declarations from every enterprise whose main source of income (more than 50 %) comes from aquaculture will be compiled from official registers.
b. Statistics Sweden: A questionnaire (Q1) about farming techniques, investments, production value and volume, costs that are not specified in the income tax declaration, social vaiables and mortality will be sent to all aquaculture enterprises. The questionnaire is to be filled out online.
c. Swedish board of Agriculture: Data on subsidies will be collected from the Swedish board of Agriculture existing systems, the managing authority of the European Maritime, Fisheries and Aquaculture Fund (EMFAF), and will be compiled by Swedish board of Agriculture. Data on treatments will be collected from official records.

From 2021 the questionnaire is a mandatory survey in Sweden with support from national legislation.

Estimation design

A questionnaire (Q1) about farming techniques, investments, production value and volume, costs that are not specified in the income tax declaration, social vaiables and mortality will be sent to all aquaculture enterprises (Census). The questionnaire will make it possible to compare information on value of aquaculture production with declared income from income tax declarations. These comparisons are needed to be able to classify the aquaculture farming as main acitivity of the enterprise or not. Non-respondents will be contacted and asked to fill out the questionnaire. Missing data will be checked and imputed to give an estimation of the whole aquaculture sector. The imputation is done with data from previous years related to the development for the current year.

Error checks

Data is collected, estimated and cross-checked by Statistics Sweden which ensures the consistency and quality of final data. Questionnaire is evaluated by Statistics Sweden. They conduct telephone interviews with aquaculture enterprises when there are incomplete answers, unreasonable answers or non-responses. Results are checked for bias.

Data storage and documentation

Data is stored at Statistics Sweden (https://www.scb.se/hitta-statistik/statistik-efter-amne/jord-och-skogsbruk-fiske/vattenbruk/vattenbruk/) as well as in a database at the Swedish Board of Agriculture (https://statistik.sjv.se/PXWeb/pxweb/sv/Jordbruksverkets%20statistikdatabas/?rxid=5adf4929-f548-4f27-9bc9-78e127837625).
Methodology and quality reports can be found at https://www.scb.se/hitta-statistik/statistik-efter-amne/jord-och-skogsbruk-fiske/vattenbruk/vattenbruk/

Revision

The methodology on sampling is revised continuously to minimise bias in the data. Methodology on variables and segmentation follow EU legislation and guidelines by RCGECON.

Confidentiality

All raw data are handled by Statistics Sweden. Data delivered to the Swedish Board of Agriculture and thereafter to JRC is checked for confidentiality by Statistics Sweden. Since Sweden has a small aquaculture industry segments are clustered, both with respect to specie as well as technique, due to confidentiality.

Survey Specifications

Sector name(s): Fish processing

Sampling scheme: Non-probability sample for 3 variables

Variables: Table 11 according to (EU)2016/1251 chapter III article 1.1 d footnote 1

Supra region(s): Not included in table 11

Survey planning

The population of the sampling schemes is the fish processing industry in Sweden. The data comes mainly from official statistics that has been collected and processed by Statistics Sweden through the SRU register which is maintained by Statistics Sweden and consists of income tax declarations in Sweden. Part of the data will be collected from the Statistical Business Register which is a central register consisting of information on all registered enterprises in Sweden. It is also maintained by Statistics Sweden.

Survey design and strategy

All data is collected, estimated and checked by Statistics Sweden which ensures the consistency of the final data. Data on variables energy costs and subsidies will be collected from answers from a questionnaire sent out by Statistics Sweden based on PPS-selection in the Statistical Business Register. The questionnaire is used as a base for estimating an allocation key for variables not included in the financial accounts. The sampling method for the variables collected with probability sample survey is Probability Proportional to Size (PPS sampling) where the sum of total income and total costs is used to select which enterprises that will be sampled.

It is not possible for Sweden to separate data on subsidies to a reasonable cost, therefore data will be collected for the variable group Operating Subsidies and Subsidies on Investments.

In addition to this, the Statistical Business Register
is used.
-

Estimation design

All data is collected, estimated and checked by Statistics Sweden which ensures the consistency of the final data. Data on variables energy costs and subsidies will be collected from answers from a questionnaire sent out by Statistics Sweden based on PPS-selection in the Statistical Business Register. The questionnaire is used as a base for estimating the variables (including energy costs and income from subsidies) not included in the financial account.

Error checks

A data quality evaluation is carried out by Statistics Sweden before delivering data to the Board of Agriculture, who conducts a macro evaluation upon delivery to ensure no abnormal or implausible changes have occurred by comparing the new data with previous years.
For variables subsidies and energy costs collected through the probability sample survey CV values are estimated to display the uncertainties due to sampling. A possible shortfall is that, although data is collected, processed and ensured by Statistics Sweden, some variables are not available through financial accounts. The variables affected by this possible shortfall are subsidies and energy costs. The reason for this is that those variables were solely collected through questionnaires and there is a certain range of uncertainty of these variables and it is also difficult to control if they are correct. There are some shortfalls when it comes to subsidies, but the best available method is used which provide comparable data over time. Data are collected through Statistics Sweden’s standardized method to obtain the financial information for the processing industry and the possible shortfalls will most certainly not decline using another (not yet known) method since the data are based on official statistics for Sweden.

Data storage and documentation

Data is stored by Statistics Sweden and then delivered to The Board of Agriculture. The Board of Agriculture will deliver the data to the Swedish Agency for Marine and Water Management for the yearly national data calls. The data is stored at computers belonging to the authorities and until processed only affected employees will have access to the data.

Revision

Sampled data is reviewed on a micro level by Statistics Sweden regarding summations, plausibility and relationships between variables. Outliers that may have a large effect on the estimation are checked and evaluated. The sample data is later aggregated, checked and evaluated at a macro level. In the last step no difference is made between sample and census data. The aforementioned methodology review takes place annually.

Confidentiality

Data is collected in wider size segments than suggested intervals (master code list). Enterprises with ≥ 250 employees will be clustered with enterprises with 50-249 employees due to confidentiality reasons. Fish processing in Sweden is a small industry hence, too detailed figures on economics regarding businesses would give away sensitive business information.

Survey Specifications

Sector name(s): Fish processing

Sampling scheme: Census for 19 variables

Variables: Table 11 according to (EU)2016/1251 chapter III article 1.1 d footnote 1

Supra region(s): Not included in table 11

Survey planning

The population of the sampling schemes is the fish processing industry in Sweden. The data comes from official statistics that has been collected and processed by Statistics Sweden through the SRU register which is maintained by Statistics Sweden and consists of income tax declarations in Sweden. Part of the data will be collected from the Statistical Business Register which is a central register consisting of information on all registered enterprises in Sweden. It is also maintained by Statistics Sweden. Another part of the data will be collected from Labour market statistics, which is a central register that is maintained by Statistics Sweden.

Survey design and strategy

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

In addition to this, the following data sources (registers) are used:

- SRU register

- Statistical Business Register
- Labour market statistics

Estimation design

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

Error checks

A data quality evaluation is carried out by Statistics Sweden before delivering data to the Board of Agriculture, who conducts a macro evaluation upon delivery to ensure no abnormal or implausible changes have occurred by comparing the new data with previous years.

Data storage and documentation

Data is stored by Statistics Sweden and then delivered to The Board of Agriculture. The Board of Agriculture will deliver the data to the Swedish Agency for Marine and Water Management for the yearly national data calls. The data is stored at computers belonging to the authorities and until processed only affected employees will have access to the data.

Revision

Census data from the Swedish Tax Agency and the Statistical Business Register is evaluated by Statistics Sweden although not to such a large extent as sample data. The evaluation of census data mostly consists of reviewing suspiciously extreme values that may be small or large. The aforementioned methodology review takes place annually.

Confidentiality

Data is collected in wider size segments than suggested intervals (master code list). Enterprises with ≥ 250 employees will be clustered with enterprises with 50-249 employees due to confidentiality reasons. Fish processing in Sweden is a small industry hence, too detailed figures on economics regarding businesses would give away sensitive business information.

Survey Specifications

Sector name(s): Fish processing

Sampling scheme: Expert evaluation, 1 variable

Variables: Table 11 according to (EU)2016/1251 chapter III article 1.1 d footnote 1

Supra region(s): Not included in table 11

Survey planning

The population of the sampling schemes is the fish processing industry in Sweden. The data comes mainly from official statistics that has been collected and processed by Statistics Sweden through the SRU register which is maintained by Statistics Sweden and consists of income tax declarations in

Sweden. Part of the data will be collected from the Statistical Business Register which is a central register consisting of information on all registered enterprises in Sweden. It is also maintained by Statistics Sweden.
Survey design and strategy
All data is collected, estimated and checked by Statistics Sweden which ensures the consistency of the final data. Data on one variable (unpaid labour) will be based on an expert evaluation made by the component authority Statistics Sweden. The reason for this is that there is not possible to use any regular data collection scheme for that variable.
Estimation design
All data is collected, estimated and checked by Statistics Sweden which ensures the consistency of the final data.
Error checks
A data quality evaluation is carried out by Statistics Sweden before delivering data to the Board of Agriculture, who conducts a macro evaluation upon delivery to ensure no abnormal or implausible changes have occurred by comparing the new data with previous years.
Data storage and documentation
Data is stored by Statistics Sweden and then delivered to The Board of Agriculture. The Board of Agriculture will deliver the data to the Swedish Agency for Marine and Water Management for the yearly national data calls. The data is stored at computers belonging to the authorities and until processed only affected employees will have access to the data.
Revision
Expert evaluation may be revised when needed.
Confidentiality
Data is collected in wider size segments than suggested intervals (master code list). Enterprises with ≥ 250 employees will be clustered with enterprises with 50-249 employees due to confidentiality reasons. Fish processing in Sweden is a small industry hence, too detailed figures on economics regarding businesses would give away sensitive business information.