

Ministry of the Flemish Community – Policy Domain Agriculture and Fisheries

Dienst Zeevisserij, Oostende, Belgium

Flanders Research Institute for Agricultural, Fisheries and Food (ILVO),
Oostende, Belgium

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

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

Commission Implementing Decision (EU) 2019/909 of 18 February 2019
establishing the list of mandatory research surveys and thresholds for the purposes of the
multiannual Union programme for the collection and management of data in the fisheries and
aquaculture sectors

Commission Delegated Decision (EU) 2019/910 of 13 March 2019
establishing the multiannual Union programme for the collection and management of
biological, environmental, technical and socioeconomic data in the fisheries and aquaculture
sectors

Commission Implementing Decision (EU) 2016/1701 of 19 August 2016
laying down rules on the format for the submission of work plans for data collection in the
fisheries and aquaculture sectors.

Commission Implementing Decision (EU) 2018/1283 of 24 August 2018
laying down rules on the format and timetables for the submission of annual data collection
reports in the fisheries and aquaculture sectors.

Belgium Annual Report for data collection in the fisheries and aquaculture sectors

2020

Version 1.0

Oostende (Belgium) 28 May 2021

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SECTION 1: BIOLOGICAL DATA

Text Box 1C: Sampling intensity for biological variables

General comment: This box fulfils paragraph 2 point (a)(i)(ii)(iii) of Chapter III, of the Annex of the Delegated Decision (EU) 2019/910 and Chapter I of the Implementing Decision (EU) 2019/909 on the multiannual Union programme; and Article 2, Article 4 paragraph 1 and Article 8 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report.

Member State should provide by Region/RFMO/RFO/IO:

Region: North Sea and Eastern Channel

1. Evidence of data quality assurance

*The sampling design and protocols follow the outcomes of sampling expert groups:

Yes. Recommendations from expert working groups such as WKACCU, WKPRECISE, WGCATCH, WKBIOPTIM, WKCOSTBEN, WGBIOP, RCGs etc. were taken into account to design the sampling protocols.

*Use of common standard criteria agreed with other countries/groups.

Yes. Recommendations from expert working groups such as WKACCU, WKPRECISE, WGCATCH, WKBIOPTIM, WKCOSTBEN, RCGs etc. were taken into account to design the sampling protocols.

*Use of special packages or tools (e.g. COST ...) for calculations.

Yes. The standardized procedures incorporated in the COST packages are used for raising of the sampled data to fleet level.

*Use of special tools for data collection.

Yes.

- **Electronic measuring board (EMB):** since December 2016, all commercial and non-commercial at sea data collection and analyses in the lab are carried out using an in-house developed electronic measuring board (presented at WKSEATEC2017). The EMBs are linked to a ruggedized tablet and available for every observer.
- **SmartDots application:** this in-house developed tool for age reading and quality control of age reading is endorsed by WGBIOP and used by the ICES community for exchanges and workshops on age reading. <https://www.ices.dk/data/tools/Pages/smartdots.aspx>
- **SmartLab application:** this in-house developed tool is used to follow up the analysis of samples, processed in the lab to determine biological parameters.
- **Plan-It application:** this in-house developed tool for project and time management was implemented in 2016 and continuously used up to date (see below under 'Use of sampling protocol for storage/processing of data').

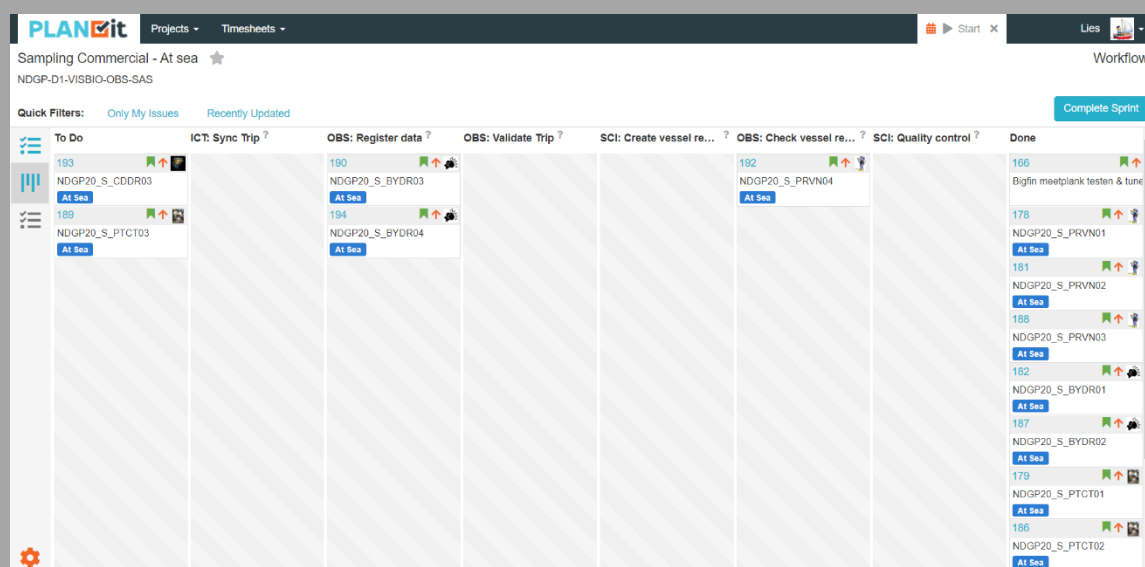
All tools and supporting software are developed by ILVO.

*Use of sampling protocol for storage/processing of data.

Belgium uses a well-documented protocol to ensure high quality data from sampled trips (documentation is stored at the ILVO-ICT intranet web portal). When seagoing observers return from sampling a commercial fishing trip, collected data are immediately transferred from their ruggedized

tablet to the SmartFish database (Sync Trip). Metadata of the trip are added to the database and all data are checked by a second observer. Before the trip can be validated, an internal quality control is run within the database. In the next step, a R-markdown script is run by a scientist and a vessel report is produced. This vessel report is checked by the seagoing observer of that specific trip and the report is sent to the vessel owner. Next, scientists run an intensive quality control in which the raw data is checked in a set of consecutive steps (among which outlier detection) using PowerBi. When no quality issues arise, the trip is given a status 'consolidated'. If quality issues arise, the observer is requested to check the raw data and to correct where needed. Finally, the trip receives status done, and data can be used for analysis and raising.

To track the data flow for each trip, the in-house developed tool 'Plan-it' is used. In the figure below, the status of each trip is visible and provides an efficient overview for both observers and scientists.



This procedure has been in place since 2017 and has proved to be very efficient. For the fisheries independent surveys, a similar approach is used.

2. Deviations from the Work Plan

MS to list the deviations (if any) in the achieved data collection compared to what was planned in the Work Plan and explain the reasons for the deviations. The threshold for deviation follow those set in the former AR: <90 % and >150 %.

Explain any deviation from the proposed:

- sampling intensity,
- methods used for collecting data.
- methods used for estimating the parameters.

General reasons for deviations from the Work Plan in terms of planned vs. achieved should be summarised in this section, while detailed comments on deviations on particular species/stocks should be included in the AR Comments column in Table 1C.

In case of Member State adding new species not included in the WP, this should be clearly explained and justified.

•

Data source: commercial sampling

Most of the oversampling and under sampling is related to the sampling design of the Belgian at-sea programme (see textbox 4a for the complete description of the sampling design). It is difficult to define the number of length measurements in advance. All fish of a once randomly chosen subsample must be

measured to calculate the retained and discarded fraction of the whole catch. Moreover, the observers measure length every other haul during the trip, irrespective of the sampling levels already achieved. The sampling targets for the collection of the biological parameters age, weight, maturity and sex, used in practice at ILVO, are expressed in terms of X number of individuals per length class per area per trip. The planned numbers for length, age, weight, maturity and sex, stated in the WP are based on an average of the achieved numbers in the past and provide an indication of what could be expected rather than a real target. It should be noted that some of these planned numbers are extremely high. Furthermore, the TBB_DEF fishery is a mixed fishery and a higher or lower occurrence of certain (bycatch) species in the sampled hauls could result in a higher or lower total number of individuals sampled compared to the planned number. Oversampling does not necessarily result in extra costs, since the observers stay on board for the entire trip. Only in the ILVO laboratory, some extra staff time is needed to process the additional samples, which is still within reasonable limits.

Data source: survey

The survey protocol prescribes that all individuals in a haul are measured. The enhanced or reduced occurrence of certain species in a haul can result in a higher or lower number of individuals sampled compared to the planned number.

3. Actions to avoid deviations.

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

Since most of the deviations are related to the sampling design of the Belgian at-sea programme and the issues related to the variable catches in a mixed fishery, it's not feasible to avoid the under sampling neither oversampling in the future under the current Work program guidelines. Detailed description for the reasons why, is described in the text above. Nevertheless, continuous effort is done to match statistically sound sampling with practical feasibility and to maximize the number of sampled trips (PSUs) to avoid under sampling. Depending on the new guidelines for the upcoming WP 2022-2027, Belgium can do adjustments to avoid this over- or undersampling.

Region: North East Atlantic and Western Channel

1. Evidence of data quality assurance

*The sampling design and protocols follow the outcomes of sampling expert groups:

Yes. Recommendations from expert working groups such as WKACCU, WKPRECISE, WGCATCH, WKBIOPTIM, WKCOSTBEN, WGBIOP, RCGs etc. were taken into account to design the sampling protocols.

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Yes.

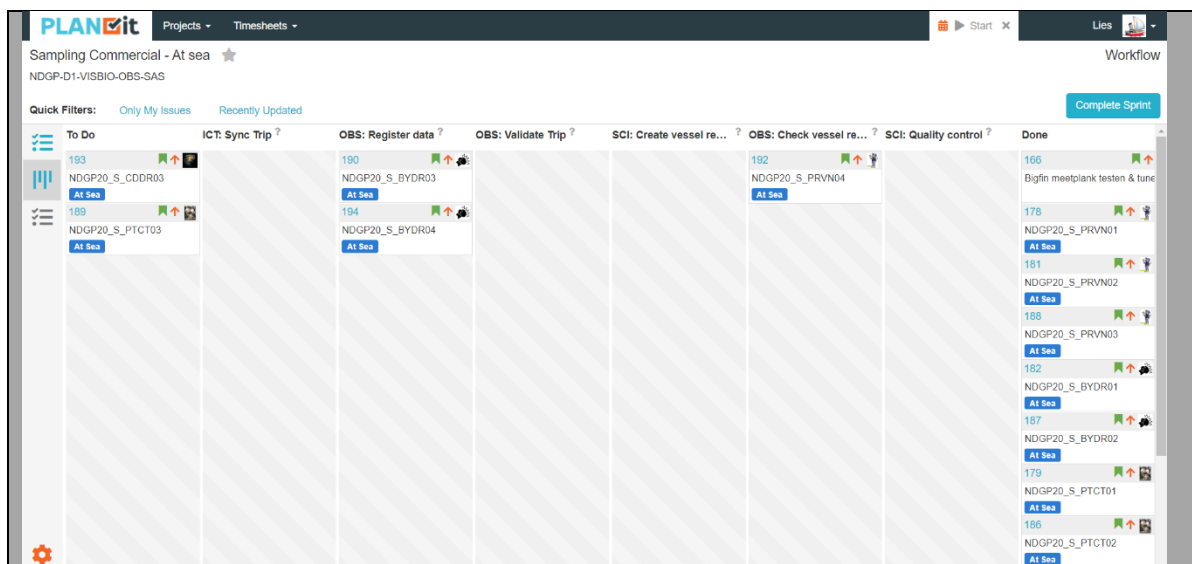
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- methods used for estimating the parameters.

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In case of Member State adding new species not included in the WP, this should be clearly explained and justified.

Data source: commercial sampling

Most of the oversampling and under sampling is related to the sampling design of the Belgian at-sea programme (see textbox 4a for the complete description of the sampling design). It is difficult to define the number of length measurements in advance. All fish of a once randomly chosen subsample must be measured to calculate the retained and discarded fraction of the whole catch. Moreover, the observers measure length every other haul during the trip, irrespective of the sampling levels already achieved. The sampling targets for the collection of the biological parameters age, weight, maturity and sex, used in practice at ILVO, are expressed in terms of X number of individuals per length class per area per trip. The planned numbers for length, age, weight, maturity and sex, stated in het WP are based on an average of the achieved numbers in the past and provide an indication of what could be expected rather than a real target. It should be noted that some of these planned numbers are extremely high. Furthermore, the TBB_DEF fishery is a mixed fishery and a higher or lower occurrence of certain (bycatch) species in the sampled hauls could result in a higher or lower total number of individuals sampled compared to the planned number. Oversampling does not necessarily result in extra costs, since

the observers stay on board for the entire trip. Only in the ILVO laboratory, some extra staff time is needed to process the additional samples, which is still within reasonable limits.

3. Actions to avoid deviations.

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

Since most of the deviations are related to the sampling design of the Belgian at-sea programme and the issues related to the variable catches in a mixed fishery, it's not feasible to avoid the under sampling/oversampling in the future under the current Work program guidelines. Detailed description for the reasons why, is described in the text above. Nevertheless, continuous effort is done to match statistically sound sampling with practical feasibility and to maximize the number of sampled trips (PSUs) to avoid under sampling. Depending on the new guidelines for the upcoming WP 2022-2027, Belgium can do adjustments to avoid this over- or undersampling.

(max. 1000 words per Region/RFO/RFO/IO)

SECTION 1: BIOLOGICAL DATA

Text Box 1D - Recreational fisheries

General comment: This box fulfills paragraph 2 point (a) (iv) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 3 and Article 4 paragraph 1 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report. This box is intended to provide information on the design, implementation and analysis of all components of sampling schemes/ surveys that are listed in Table 1D.

1. Description of the target population

The target population and the elements of this target population accessibility, need to be defined and described in this section. In the case of Recreational Fisheries, the target population could be whole population of resident anglers, charter boats etc. This will permit to evaluate if all sectors contributing to the total catch, are included in the survey.

The target population is the entire population of recreational fishermen fishing in the Belgian part of the North Sea. All gear types and platforms are included in the current survey, except for nightfishing.

2. Type of survey

In Table 1D, the methodology or type of survey used must be included, but any information about the design is missing.

Table 5A in the Work Plan allows to identify if the sampling design is documented and where it can be found. Are the surveys identified correctly in Table 5A and information about sampling design provided under this table?

If the answer is No: information on the design should be included in this section of the Annual Report (e.g.: stratification, selection of PSU, is sampling probability base etc.).

The survey consists of two parts: 1) On site survey methods are used to estimate effort and 2) catch diaries are used to estimate CPUE. On site surveys include harbour observations, beach observations and aerial surveys. Observation days are chosen at random and stratification is used to distinguish between weekdays and weekends / holidays and on and off-season. The catch diary volunteers are not randomly chosen , but post-stratification regarding avidity and gear type is applied.

3. Data Quality

Information about non-responses and refusals is found in the Work Plan, Table 5A. Are non-responses and refusals recorded in Table 5A?

If the answer is No: information on recordings of non-responses and refusals should be included in this section of the Annual Report.

No, non-responses and refusals were not recorded in table 5A.

For effort estimation non-respondent and refusal bias are not applicable as we observe the activity on-site. Interviews can be refused, but only serve the purpose of estimating the different avidity classes and as a check on the reported catches in the diaries.

The catch diaries volunteers were recruited using snow ball sampling, i.e. initial fishermen were recruited on-site and contacted via fishing clubs, these initial volunteers were then asked to recruit their friends and colleagues. This design does not provide a random sample. As such, refusals were not taken into account.

Diary participants that did not report any fishing trip during one month were contacted in order to minimise recall bias.

4. Data Analysis and processing

Information about data processing is found in the Work Plan, Table 5A. Are the editing and imputation methods documented and identified?

If the answer is No: information on estimation procedures should be included in this section of the Annual Report, following the questions below:

Does the estimation procedure follow the survey design?

Has the precision of the estimates been calculated and documented?

Precision estimates are available since the end of 2018. In 2020, the same approach was followed as in 2019. The full report and results containing precision results can be found on <https://www.recreatievezevisserij.be>

(max. 900 words per survey)

SECTION 1: BIOLOGICAL DATA

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

General comment: This box fulfils paragraph 4 of Chapter II of the Annex of the Implementing Decision (EU) 2019/909 on the multiannual Union programme and Article 2 and Article 4 paragraph (3) point (a) of the Implementing Decision (EU) 2016/1701 on the format of the WP.

General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study.

1. Aim of pilot study

In the WP2017-2019, a pilot study was established to check the relative contribution of the Belgian recreational catches of European sea bass (*Dicentrarchus labrax*), cod (*Gadus morhua*) and pollack (*Pollachius virens*) in the total national catches (recreational and commercial) of these species with regards to possible thresholds.

From 2017 onwards, the inventarization of the recreational fisheries in Belgium, is part of the ongoing Data Collection, on a yearly basis.

2. Duration of pilot study

Initially for the period 2017-2019, extended to 2020. However, due to the Covid-19 situation, the pilot study will be extended to the end of 2021, eventually to the first quarter of 2022.

3. Methodology and expected outcomes of pilot study

The exact protocol is developed, published and reported in the AR 2017-2019.

(max 900 words)

Brief description of the results obtained (including deviations from planned and justifications as to why if this was not the case).

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

The aim of the study to estimate the relative contribution of the Belgian recreational catches of the mentioned species on the total national catches was achieved. The results show that the recreational catch of European sea bass (*Dicentrarchus labrax*) and cod (*Gadus morhua*) take up a share of 8.2% (recreational catch is estimated to be 3,1 ton) and 9% (recreational catch is estimated to be 19,4 ton) of the total national catches (recreational and commercial) respectively.

Covid-19 impact:

For the recreational fisheries, the year 2020 was intended to be the main year for in situ data collection, but sector behaviour was heavily impacted by the Covid-19 pandemic. During the first lockdown period in Belgium, it was forbidden to carry out recreational fishing. Restrictions were gradually lifted from May/June until July but onsite sampling was not possible until the end of the year because of restrictions in the number of people that could gather in a group outside. In these conditions, it was not possible to interview fishermen. Air observations which are used for calculation of the effort were planned for 2020,

but could not be carried out. Social distancing cannot be done in the small air plane. The effort data collection is postponed to 2021. However, considering the persistent national restrictions, sampling could be extended to 2022.

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

The recreational catch survey which started in the period 2017-2019, continued in 2020 and will also be continued in 2021 in its current form. This is included in the WorkProgram 2020-2021.

Effort estimations will be performed biennially and catch (CPUE) estimations will be performed continuously.

See also <https://www.recreatievezevisserij.be/Monitoring/Resultaten>

The survey consists of two parts:

- a. the estimation of the total population of recreational sea fishermen or recreational fishing effort and
- b. the estimation of catches for a sample of the recreational fishermen population.

As the pilot study is extended over the period 2021-2022, an update of the protocol and a translation into English is foreseen. The aim is to have this ready by the 15th of October 2021 and integrate it in the WP 2022-2024 (as part of the new period 2022-2027).

A schematic overview of the protocol is given in figure below.

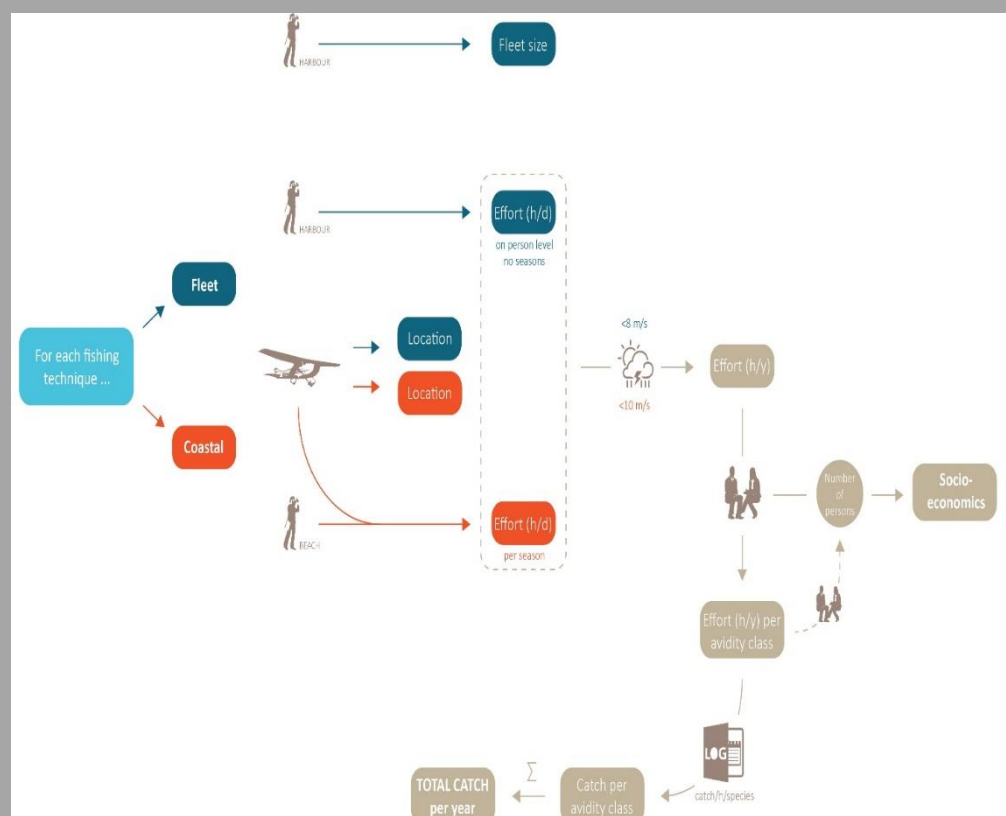


Figure : schematic overview of the protocol for collecting data on recreational fisheries and estimate the relative shares of catches of recreational fisheries.

Covid-19 impact:

Due to the Covid-19 pandemic, the effort estimations could not be continued in 2020. As soon as regulations and circumstances allow it, this part of the survey will be continued. The catch estimations (CPUE) continued, but the number of reported catches was much lower than in previous years due to several lockdowns. This will make it harder to calculate the total recreational catch and effort. In the future, we expect that the number of reported catches will increase again.

Effort estimations will be performed biennially and catch (CPUE) estimations will be performed continuously.

(max 900 words)

SECTION 1: BIOLOGICAL DATA

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

General comment: This box fulfills paragraph 2 points (b) and (c) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 of the Implementing Decision (EU) 2016/1701 on the format of the WP.

General comment: This box is applicable to the Annual Report.

1. Method selected for collecting data.

Data on anadromous and catadromous species are collected by the Research Institute for Nature and Forest (INBO) under the Belgian Eel Management Plan (Commission Decision C (2009)10510).

Following the Delegated Decision, no duplication of data collection may occur. Therefore, no data on anadromous and catadromous species is collected under this workplan2020-2021. Table 1E is filled in accordingly.

The full description of the Belgian Eel Management Plan can be found on

https://www.natuurenbos.be/sites/default/files/inserted-files/soortbeschermingsplan_voor_de_paling.pdf

(max 250 words per Area)

2. Were the planned number achieved? Yes/ No

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

Yes. In general, planned numbers were achieved. However, the balance between the assessed sites Eel Management Unit (EMU) of Scheldt and Meuse was not fully in line with the reported planning.

The reason for this was the staff availability in the different regions and the Covid-19 situation.

Covid-19 impact:

In the Scheldt EMU – “Grote Beverdijkvaart – Westkustpolder” ,data are collected on the life stage glass eel. However the data collection was significantly lower due to the Covid-19 pandemic, especially due to the inland travel restrictions during the first lockdown in Belgium.

Eel independent sampling: due to the Covid 19 situation, there was a restriction in travelling in Belgium to other places beyond the region where you lived. The scientist responsible for the eel independent sampling lives in the region of Meuse and was not allowed to go to the Scheldt region.

(max 500 words per Area)

SECTION 1: BIOLOGICAL DATA

Text box 1F: Incidental by-catch of birds, mammals, reptiles and fish

General Comment: This box fulfils paragraph 3 point (a) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910, on the multiannual Union programme; and Article 2 of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is applicable to the Annual Report. This box is applicable only for those sections where Member States have reported that they have been carrying out regular sampling. Results and deviations for Pilot studies should be reported under Pilot Study 2.

1. Results

Member States shall fill in Table 1F and provide additional information, if available, in this text box. For example, species (or family) identification, number of samples, and the state of the animals incidentally by-caught (i.e. were they released alive, dead, or collected for sampling).

Seagoing observers were instructed to register incidental bycatch of vulnerable species of fish, mammals, reptiles and birds in commercial fishing trips, both TBB_DEF_>221kW and TBB_DEF_<=221kW and on the national BTS and DYFS surveys. For the BTS and DYFS surveys all fish species were recorded in the national SmartFish database and were uploaded to the international ICES survey database (DATRAS).

Incidental bycatch was handled with care and released as fast as possible after recording the necessary information.

2. Deviations from Work Plan

Member States shall list the deviations (if any) in the achieved data collection compared to what was planned in the WP and explain the reasons for the deviations.

Explain any deviations from the proposed:

- sampling intensity
- methods used for collecting data

The VIIa,e-h and VIIIa,b TBB_DEF_<=221kW fleet segment comprises only 16 trips in 2020. This effort is too low to justify sampling this fleet segment. These vessels also have limited workspace to take observers on board.

3. Data quality

Member States shall provide information on sampling protocols and sampling design for incidental by-catch data collection.

Questions to be addressed are listed below:

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

YES

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

YES

- In gill nets - and hook-and-line fisheries: does the on-board observer protocol instruct the observer to indicate how much of the hauling process has been observed for (large) incidental bycatches which never came on board (because they fall out of the net)? In large catches: does the protocol instruct to check for rare specimens during sorting of the catch (i.e. at conveyor belt)? Is the observer instructed to indicate what percentage of the sorting or hauling process has been checked at "haul level"?

Not applicable.

-Does the on-board observer protocol instruct to report on the use of mitigation (i.e. Escape Devices or Acoustic Deterrent Devices)?

YES

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

The ICES Working group on bycatch of protected species (WGBYC) has issued the data call in 2020 (data 2019) . Similar as the year before, Belgium responded in time. This working group collates and assesses information on bycatch monitoring and assessment for protected species, including mammals, birds, reptiles and rare fish. Recommendations from WGBYC about technical improvements of the monitoring and mitigation methodology are considered by Belgium where relevant.

- Are data quality issues taken into account?

YES, seagoing observers are trained in identifying different species of incidental by-catch. If they are unsure about the identification, a picture is taken before releasing the specimen. Data on incidental by-catch is recorded on the haul level.

- How are data (and samples) stored

Since 2019, observations of incidental bycatch on commercial fishing trips are registered directly onto the SmartFish platform and automatically stored in the national database at ILVO. The data collected during the surveys (BTS & DYFS) are also recorded in SmartFish and are uploaded to the international survey database of ICES (DATRAS).

(max 900 words)

SECTION 1: BIOLOGICAL DATA

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

General comment: This Box fulfills paragraph 3 point (c) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 and Article 4 paragraph (3) point (b) of the Implementing Decision (EU) 2016/1701 on the format of the WP.
General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study.
1. Aim of pilot study To be coordinated at marine regional level and based on end-user needs. Regional studies are ongoing within the RCG ISSG 2. Duration of pilot study To be coordinated at marine regional level and based on end-user needs. Regional studies are ongoing within the RCG ISSG 3. Methodology and expected outcomes of pilot study To be coordinated at marine regional level and based on end-user needs. Regional studies are ongoing within the RCG ISSG <i>(max 900 words)</i>
Brief description of the results obtained (including deviations from planned and justifications as to why if this was not the case). 4. Achievement of the original expected outcomes of pilot study and justification if this was not the case Belgium did not design a pilot study on a national level. The aim was to be part of a more coordinated study at marine regional level and based on end-user needs. Regional case studies are started under the umbrella of the RCGs. Belgium is involved in the intersessional subgroup on regional Work Plan (ISSG RWP), established under the RCG NSEA&NA and dealing with regional plans and the results from FishPi². The ISSG RWP aims at: • Reviewing the work of each ISSG sub-group in relation to potential development of the new RWP • Developing a full structure of RWP • Agreeing upon the first elements of a new RWP to be tested in 2021 • Making a roadmap and preparing a proposal for the implementation of the RWP during the RCG 2021 (for the WP 2022-2024) Additionally, during the whole process, consultation of the end-users and the involved member states allowed to review current sampling, to develop methodologies in small-scale and recreational fisheries and to identify future areas of cooperation. An added value of this approach will result in the regional sampling

coordination of new variables, needed to understand the fisheries impacts on the ecosystem and to align EU MAP obligations under other existing EU legislative instruments.

In January 2021, the MARE grant project FishnCo started in which ILVO (Belgium) is actively involved.

The study on the fishing level and impact of fisheries on biological resources and the marine ecosystem is part of the FishnCo project. Moreover, ISSG RWP, is still ongoing and is continued in 2021 and 2022 in accordance with the project timing.

5. Incorporation of results from pilot study into regular sampling by the MS

Not applicable.

(max 900 words)

SECTION 1: BIOLOGICAL DATA

Text Box 1G: List of research surveys at sea

General comment: This box fulfills Chapter I of the Annex of the Implementing Decision (EU) 2019/909, on the list of mandatory surveys and thresholds, of the multiannual Union programme; and Article 2 and Article 7 paragraph (3) of the Decision (EU) 2016/1701 on the format of the WP. It is intended to specify which research surveys at sea set out in the multiannual Union programme will be carried out. Member States shall specify whether the research survey is included in Chapter I of the Annex of the implementing decision of the multiannual Union programme or whether it is an additional survey.

General comment: This box is applicable to the Annual Report. This box should provide complementary information on the performance of the surveys, the results and their main use.

1. Objectives of the survey

North Sea Beam Trawl Survey (BTS, listed in Table 1G.1)

History:

The Belgian offshore beam trawl survey, collecting fisheries-independent data primarily for plaice and sole in the North Sea (area IVb,c), started in 1992. The continuous time-series using a 4 m-beam trawl as a standard gear, started in 1993. 62 fixed stations are fished for 30 min. at 4 knots. Although the target species are plaice and sole, all fish species are measured since 2010 (before 2010, only numbers were recorded for some fish species). All epibenthic species are recorded (numbers).

Objectives:

- ✓ Create a fisheries-independent stock estimate for plaice and sole for the sampled area
- ✓ Collection of data on all fish species for ecosystem purposes
- ✓ Collection of data on epibenthos species for ecosystem purposes

The indices are supplied to the relevant ICES stock assessment working groups.

Demersal Young Fish Survey (DYFS, listed in Table 10)

History:

As part of the international Demersal Young Fish and Brown Shrimp Survey, an annual autumn (quarter 3) DYFS survey is carried out in the Belgian coastal waters to collect data on the abundance of juvenile flatfish (primarily plaice and sole) and brown shrimp (*Crangon crangon*).

Since 1973, 33 fixed sampling stations are fished. The location of the sampling area matches the main flatfish nursery grounds along the Belgian coast.

Until 1982, the research vessel 'Hinders' was used. From 1983 onwards, the survey was carried out using the training and research vessel O.29 'Broodwinner'. From 2013 onwards, the new research vessel 'Simon Stevin' was used for the Belgian DYFS.

Objective:

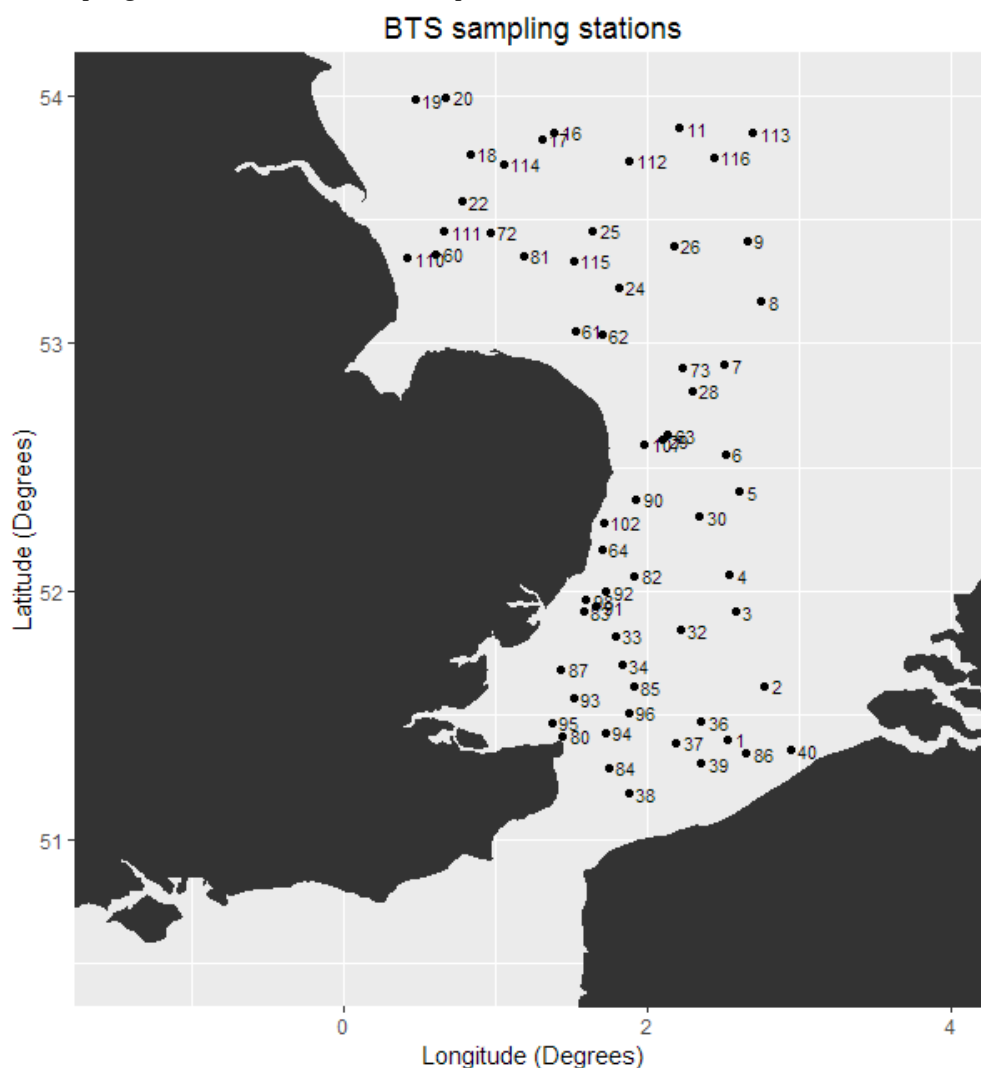
- ✓ Collect data on the abundance and distribution of juvenile flatfish (primarily plaice and sole) and brown shrimp.

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

North Sea Beam Trawl Survey (BTS)

The methods for the mandatory North Sea Beam Trawl survey (BTS) are described in the Manual for the Offshore Beam Trawl Surveys (WGBEAM, 2009; http://www.ices.dk/marine-data/Documents/DATRAS%20Manuals/WGBEAM_Manual.pdf). The ICES Working Group on Beam Trawl Surveys (WGBEAM) has prepared an update of the manual, which is under review by the SSGIEOM chair and will be published by ICES after approval. For the period 2017-2019, Belgium guarantees to continue with previous survey designs as coordinated by ICES WGBEAM.

Map 1G.1: BTS sampling stations in the south-western part of the North Sea



Demersal Young Fish Survey (DYFS)

The methods for the mandatory Demersal Young Fish Survey (DYFS) are described below as a manual is not yet available. During the WGBEAM meeting in 2015, a draft manual of this inshore survey was initiated and discussed. The working group aims to finalise the manual during WGBEAM meetings in the period 2017-2019.

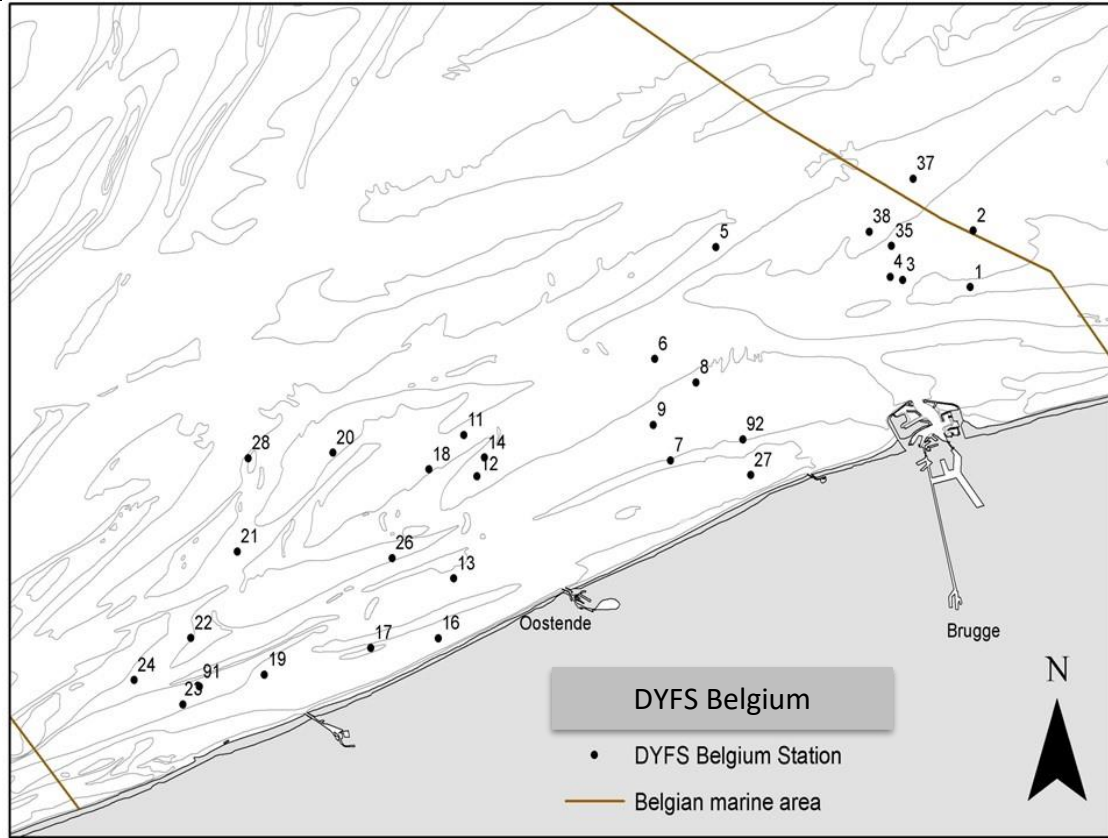
All DYFS sampling stations are fished for approximately 30 min., with a standard shrimp beam trawl (beam length 6 m; cod-end mesh size 22 mm, no tickler chains), at 3 knots against tide.

Several fish species (cod, whiting, plaice, flounder, dab, sole, brill and turbot) are hand-picked from the catches, sorted by species, weighed and measured in mm (the in-house developed SmartFish measuring board allows measuring length in mm). From 2009 onwards, the species list was extended to cover a larger range of commercial fish species (e.g. including lesser spotted dogfish, gurnards, lemon sole, horse mackerel, etc.). In this way, a total of 18 species are documented (Table 1G.1).

The brown shrimp (*Crangon crangon*) from the catches are first sorted into a 'small' and 'large' fraction by means of a rotating shrimp riddle (same type used on commercial shrimp trawlers). From each of these two fractions, 1-2 liter samples are taken (depending on the amount of shrimp and other organisms in the fractions). Samples are further sub-sampled in the lab to approximately 250 shrimps, which are then measured in mm using an in-house developed system for automated length measurements (SmartShrimp).

Table 1G.1: Commercial fish species sampled during DYFS

Species
Sole (<i>Solea solea</i>)
Plaice (<i>Pleuronectes platessa</i>)
Turbot (<i>Scophthalmus maximus</i>)
Brill (<i>Scophthalmus rhombus</i>)
Cod (<i>Gadus morhua</i>)
Whiting (<i>Merlangius merlangus</i>)
Dab (<i>Limanda limanda</i>)
Flounder (<i>Platichthys flesus</i>)
Lemon Sole (<i>Microstomus kitt</i>)
Tub Gurnard (<i>Chelidonichthys lucerna</i>)
Grey Gurnard (<i>Eutrigla gurnardus</i>)
Red Gurnard (<i>Chelidonichthys cuculus</i>)
Horse Mackerel (<i>Trachurus trachurus</i>)
Mackerel (<i>Scomber scombrus</i>)
Striped Red Mullet (<i>Mullus surmuletus</i>)
Thornback Ray (<i>Raja clavata</i>)
Lesser Spotted Dogfish (<i>Scyliorhinus canicula</i>)
European Seabass (<i>Dicentrarchus labrax</i>)



Map 1.G.2: DYFS sampling stations in the Belgian coastal waters

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

International agreements for both surveys (BTS and DYFS) are coordinated at the ICES WGBEAM working group, where Belgium is represented. Other MSs carrying out beam trawl surveys in the region are The Netherlands, Germany and UK.

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

Not applicable

5. Explain where thresholds apply

For all target species (*i.e.* sole, plaice and brown shrimp) of the selected mandatory surveys (BTS and DYFS in area IV), the threshold is attained ($\geq 3\%$ of the TAC or when no TAC is available $\geq 3\%$ of the share in average EU landings).

Belgian average landings 2016-2018 of sole in area IV are 716 tonnes, representing 27% of the TAC.

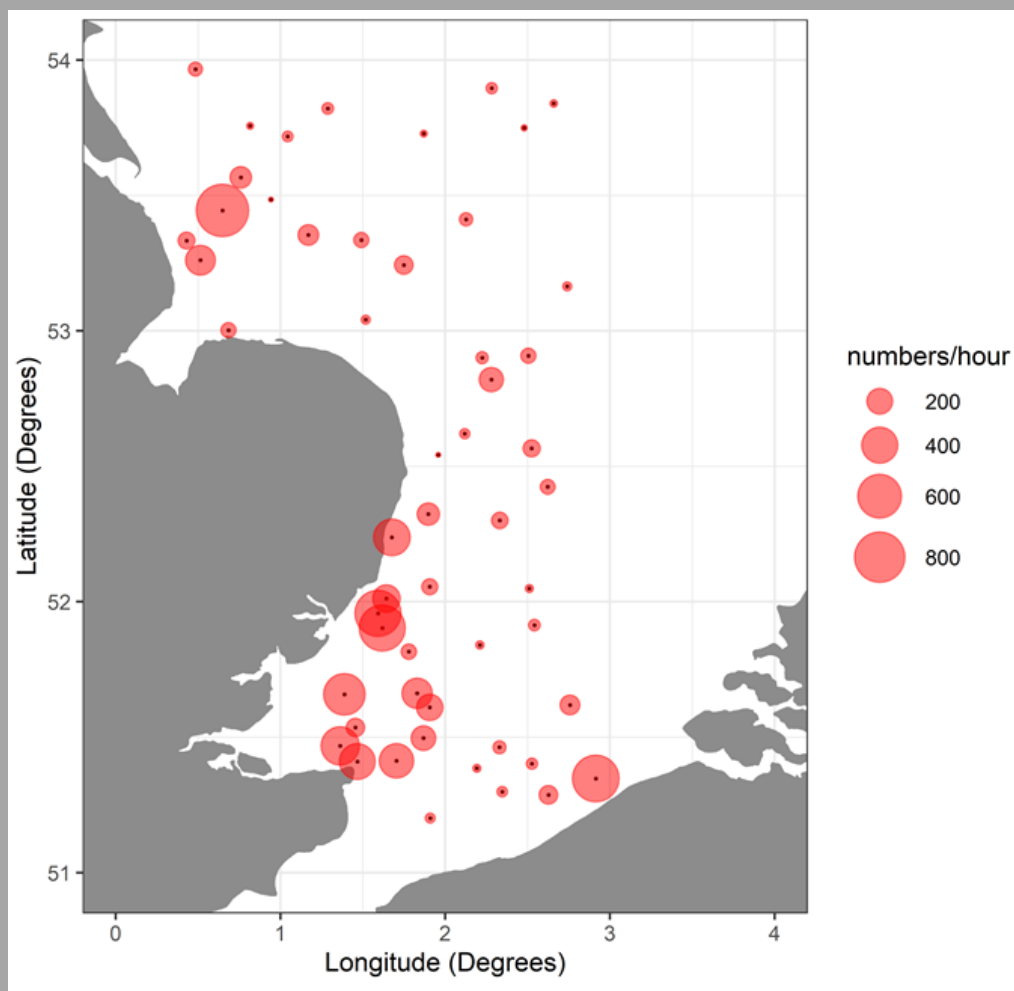
Belgian average landings 2016-2018 of plaice in area IV are 2103 tonnes, representing 16% of the TAC.

Belgian average landings of rown Shrimp in area IV are 1074 tonnes, representing 3% of the share in average EU landings.

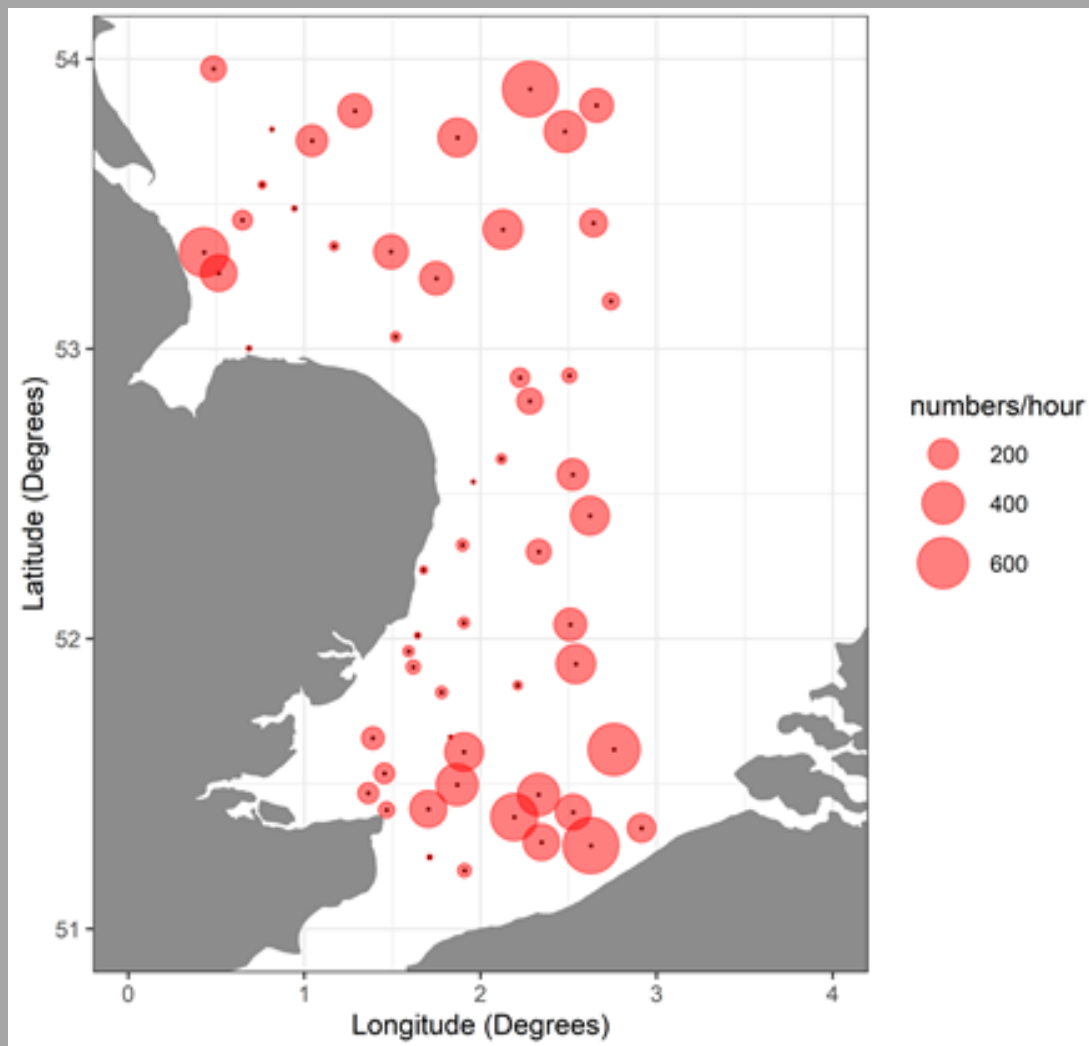
(max. 450 words per survey)

6. Graphical representation (map) showing the positions (locations) of the realized samples. Member State shall provide maps presenting the spatial distribution of the main sampling types obtained during the survey.

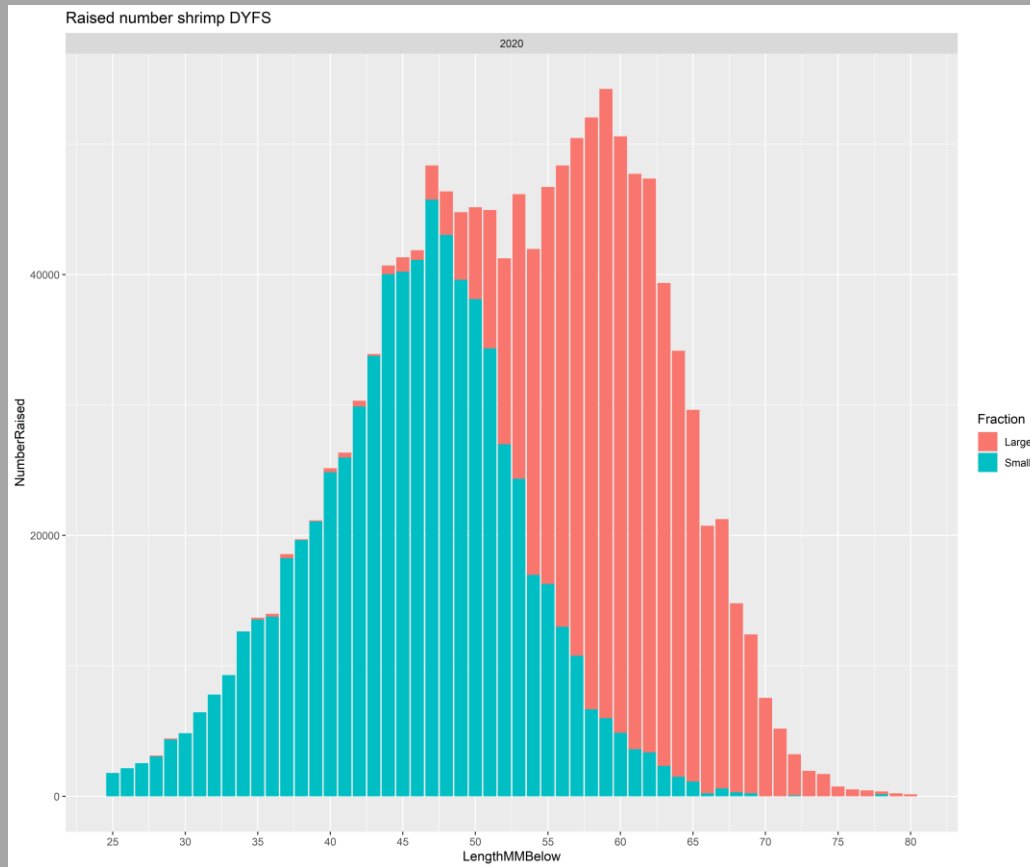
Map 1: CPUE (Numbers per hour) of focus species sole (SOL) in the realized BTS stations in 2020.



Map 2: CPUE (Numbers per hour) of focus species plaice (PLE) in the realized BTS stations 2020.



Map 3: Length frequency distribution of brown shrimp in the realized DYFS stations 2020. Data is available in the national database Smartfish and will be uploaded to DATRAS by the end of 2021.



7. For internationally coordinated surveys, provide a link to the latest meeting report of the coordination group. Member State shall provide a hyperlink to the meeting report from the body coordinating the survey (ICES, MEDITS coordination group, MEDIAS coordination group etc.). For non-international coordinated surveys, Member State shall refer to any status report (e.g. Cruise report).

<https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2021/WGBEAM%20Report%202021.pdf>

8. List the main use of the results of the survey (e.g. indices, abundance estimates, environmental indicators). Member State shall specify in which context the results are used (on routine basis), both on an international as well as on a national context.

- The Belgian BTS data on plaice is included in the international combined beam trawl survey index which is used in the assessment of the North Sea plaice stock (ple.27.420) during WGNSSK.
- The Belgian BTS data on sole is included in the international combined beam trawl survey index which is used in the assessment of the North Sea sole stock (sol.27.4) from the WKFLATNSCS 2020 benchmark onwards.
- The Belgian BTS and DYFS data on sole and plaice also feed into the MSFD assessments for Descriptor 3, which are based on the ICES fish stock assessments for the North Sea.
- The Belgian BTS data on Thornback rays (*Raja clavata*) is used in the MSFD assessment for Descriptor 1.
- The Belgian DYFS data on plaice and sole is used in the international combined inshore indices for age groups 0 and 1 which are used in the assessments of the North Sea plaice (ple.27.420) and North Sea sole (sol.27.4) stocks during the WGNSSK.

9. Extended comments (Tables 1G and 1H)

If the Member State has extended AR Comments, these can be placed under this section. If this is the case, a reference to this text box should be provided in the corresponding tables.

None

(max 450 words per survey)

SECTION 2: FISHING ACTIVITY DATA

Text Box 2A: Fishing activity variables data collection strategy

General comment: This box fulfills paragraph 4 of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under Regulation (EU) No 1224/2009 or where data collected under Regulation (EU) No 1224/2009 are not at the right aggregation level for the intended scientific use.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the data collection of fishing activity variables of Member States.

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

Capacity:

Data are 100% covered by the Fleet register and the logbooks.

Effort:

The logbooks provide information on the fishing hours per day and per ICES Statistical Rectangle. Those data are used to derive the hours at sea and based thereon, the days at sea. The hours at sea per trip and per ICES Statistical Rectangle (or Division) are summed, divided by 24 and rounded up to calculate the days at sea. Effort variables from the fishing logbooks are cross-validated with effort estimates derived from VMS data. The estimated quantities in kilograms live-weight of each species in the fishing logbooks are compared with the sales notes.

Landings:

The estimated weight for all species caught, grouped by ICES Statistical Rectangle and by day is obtained from the logbooks, while information about the quantities auctioned by market category for all species landed is obtained from the sales notes. These two data sources are merged to obtain the landings by area and market category. As the retained catches from the logbooks are estimated weights, the landed weights are derived from the quantities recorded in the sales notes. The two systems are equally important to the Belgian data collection system and are complementary. The combination of the two data sources has clear advantages.

(1) The two approaches yield independent estimates of the retained and landed portions of the catches and can thus be used for quality control and validation purposes. This helps improving the reliability of the landing numbers.

(2) In the Logbook Regulation, it is stipulated that ‘only catches of an amount greater than 50 kg of live-weight equivalent of any species retained on board must be recorded in the logbook’ (Article 2.4.2. of Annex V of Commission Regulation (EEC) No. 2807/83). Consequently, small amounts of bycatch of fish and shellfish often remain unrecorded in the logbooks. However, these quantities can be obtained from the sales notes, which helps to improve the species coverage and hence the comprehensiveness of the landing statistics.

(3) Roughly one fifth of all fish and shellfish landed by Belgian vessels in the southern and central North Sea are auctioned abroad, mostly in the Netherlands. Furthermore, vessels making consecutive fishing trips in distant waters before returning to their homeport in Belgium, may sell part of their catches during their stop-overs in a foreign port. Sales data from abroad are collected by local authorities from sales notes and submitted to the Sea Fisheries Service (Dienst Zeevisserij) for incorporation in the Belgian national fishstats database. These data require additional quality checks and codification, to ensure that the imported data are compatible with the recipient database.

(4) Lastly, the landing data by market category are of critical importance to the biological data collection program related to landings and heavily relies on stratified sampling by market category.

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

The actual value of each landing is available in the sales notes, and therefore no estimation is needed.

The sales notes contain information about the quantities auctioned and the price by market category for all species landed. Information about the exact origin of the landings (from the logbooks) is added to allocate the price and the corresponding quantities auctioned to an ICES Statistical Rectangle. Multiplication of the latter

two will result in a value on a specific level.

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

The actual value of each landing is available in the sales notes, and therefore no estimation of average price is needed.

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

In 2015, Belgium had one demersal trawler in LOA 10-<12m, however this vessel was inactive. All active vessels are >12m, therefore all data needed are collected under Regulation (EU) No 1224/2009 and no additional data collection will be done.

(max 900 words per Region)

5. Deviations from Work Plan methodology used to cross-validate the different sources of data.

List the deviations (if any) and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

6. Deviations from Work Plan methodology used to estimate the value of landings.

List the deviations (if any) and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

7. Deviations from Work Plan methodology used to estimate the average price.

List the deviations (if any) and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

8. Deviations from Work Plan methodology used to plan collection of the complementary data

List the deviations (if any) and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

(max 900 words per Region)

SECTION 3: ECONOMIC AND SOCIAL DATA

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

General comment: This box fulfils paragraph 5 points (a) and (b) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraphs (1), (2) and (5) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Tables 5(A) and 6 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the fleet socio-economic data collection of Member States.

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

The Belgian fleet encompasses mainly beam and demersal trawlers and has no registered fishing vessels of <-10m LOA. Fleet overview in 2018:

Type of fishing technique		Length classes (LOA)	N° of vessels
Active gears	Beam trawlers	10-<12 m	0
		12-<18 m	2
		18-<24 m	18
		24-<40 m	27
Active gears	Demersal trawlers and/or demersal seiners	10-<12 m	0
		12-<18 m	1
		18-<24 m	8
		24-<40 m	6
Active gears	Dredges ¹	18-<40 m	1
Passive gears	Drift and/or fixed netter ²	12-<24 m	1
Total active vessels			64
Inactive vessel		12-<18 m	1
		18-<24 m	2
		24-<40 m	1
Inactive vessels			4
Total			68
¹ dredges (18-<24 m and 24-<40 m)			
² Passive gears - drift and/or fixed netter (12-<18 m and 18-< 24m)			

An annual survey is conducted by Dienst Zeevisserij, Department of Agriculture and Fisheries (Flemish government) to collect fleet socio-economic data. Information is collected per vessel. Wherever possible, data on the balance accounts of the company are also consulted.

Employment data are obtained through the employers social-accounting secretariat, who gathers data regarding the social costs. The Belgian fishery sector has a unique system of social security. These data are delivered directly to Dienst Zeevisserij via the accredited accountancy office Morbee & Ballegeer.

Landing and effort data are obtained from official logbooks. The official Belgian vessel register (the Fleet register) is used to obtain data with regards to vessel characteristics. Value of landings (sales notes) is available from all Belgian fish auctions. Sales notes are also provided for vessels that do not sell their catches through the auction (*i.e.* coastal vessels). Logbook, Sales and Fleet data are provided by the controlling bodies under Regulation (EU) no. 1224/2009. “Fishstats Database DZV” is the official database of Dienst Zeevisserij containing this information.

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

A census approach is used for socio-economic data collection. All vessels are surveyed (via a questionnaire). From the 1st of September 2010, a Decision was agreed upon by the Flemish Government, regarding the obligation to supply economic data. Thus, national legislation was introduced to impose the obligation to provide data requested under Appendix VI of the DCF. As a consequence, response rates increased.

Methodologies are in accordance with ad hoc contract Commitment No. SI2 725 694 - Methodologies for the socio-economic data described in EU MAP.

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

The target and the frame population are identical. Following the national legislation, the coverage of the population is close to 100%. The sampling frame of the economic data covers the complete Belgian marine fishing fleet as registered in the EU vessel register. Inland and aquaculture fishing vessels are excluded from data collection.

Fleet segments are determined as described in European legislation. However, this raises the necessity of clustering. Many segments consist of less than 10 fishing vessels (see table under point 1). Economic data are sensitive data and therefore confidentiality must be guaranteed. There are two possibilities to tackle this issue:

1. Data by fleet segment for segments where the number of vessels is too low shall not be reported separately.
2. Data for these fleet segments can be clustered. The clustering procedures are based on technical data and catch composition. Important fleet segments shall not be clustered or shall be clustered in accordance with the similarity principle. Therefore, beam trawlers 12-18m would be clustered with beam trawlers 18-24m. The latter is an important segment, however both segments use the same fishing gear and exhibit similar behavior in terms of target species. Based on the same logic, demersal trawlers or seiners of all length categories would be clustered in order to be consistent over time.

Option 2 is preferred. However, a problem remains for dredges and passive gear. In the last data reporting years (Data call 2016; Annual Report 2015), these fleet segments were clustered together as they do not resemble any of the other fleet segments within the Belgian fleet. These segments were clustered based on the ‘Non-important segments with distinct characteristics’ principle in order to provide a full dataset. As there is no real dominant segment in this cluster and in an attempt to avoid misleading the end-user, these vessels were clustered as ‘Vessels using active and passive gears’ (PMP). A category ‘Other’ is non-existent. This also allowed for constant clustering over the time series 2008-2014. However, with only three vessels remaining in the cluster, Belgium chooses option 1 for these fleet segments.

4. Description of methodologies used for estimation procedures

Costs and earnings from the active vessels are surveyed through a questionnaire. As the response within the important fleet segments is high, missing data will be estimated by calculating the mean per fleet segment in the sample. This is subsequently used to calculate costs and earnings on the population level of each segment. The sum of the totals of the different categories estimate the total value for the entire fleet.

Information about technical characteristics, effort and landings from all vessels in the population are available in the logbooks and the vessel register (collected under Regulation (EU) no. 1224/2009).

5. Description of methodologies used on data quality

Wherever possible, data from different sources will be cross-checked. During 2017-2020, Belgium would like to further develop and improve routine data quality check-ups (e.g. summary statistics, analyze outliers, correlations between variables, ...).

(max 900 words per Region)

6. Deviations from Work Plan methodology for selection of data source

List the deviations (if any) from the methodology used to select data source compared to what was planned in the Work Plan, and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

7. Deviations from Work Plan methodology to choose type of data collection

List the deviations (if any) from the methodologies to choose type of data collection scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

8. Deviations from Work Plan methodology regarding sampling frame and allocation scheme

List the deviations (if any) from the methodologies used regarding sampling frame and allocation scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.

There are no deviations.

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

9. Deviations from Work Plan methodology used for estimation procedures

List the deviations (if any) from the methodologies used for estimation procedures compared to what was planned in the Work Plan, and explain the reasons for the deviations. **There are no deviations.**

Actions to avoid deviations. **Not applicable.**

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Not applicable.

10. Quality assurance

10.1 Sound methodology

Briefly describe if the data collection follow methodologies, guidelines and best practices agreed in expert groups and whether methodologies are documented and are made publicly available.

Belgium has clarified and adjusted its survey to be in line with the suggestions made by the RCGECON expert group. More specifically as a result of recommendations made in the Statistical issues and methodologies (SIM) workshop in Rome in December 2016 and the 6th annual RCGECON meeting in Vilnius in May 2017.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3A.

For additional information, briefly describe how raw data inputs, intermediate results and outputs are regularly assessed and validated and how errors are identified, documented and dealt with.

The RCGECON (previous PGECON) group has made many efforts to clarify definitions and interpretations of economic variables for the fleet in order to improve comparability across Member States. Furthermore, the commission implemented a new decision in 2016 (EU 2016/1251), updating its requested variables and also including new variables.

Belgium aims to follow these changes and adapted its 2017 surveys accordingly. Surveys were further fine-tuned during 2018 and 2019. Consequently, anomalies in the time-series may occur as a result of these changes (respondents interpreted some questions differently).

Belgium has made efforts to develop a number of automated data quality validation steps of intermediate results and outputs in the framework of the Data Call for the Annual Economic Report (AER). These validation steps are carried out using markdown documents generated in the R-software environment. Similar quality validation steps were developed for raw data inputs. However, there is still room for improvement and Belgium plans to further improve these steps and corresponding documents.

Some variables such as total hours worked and number of unpaid workers have proven difficult to obtain. Total hours worked is part of a questionnaire, however response rate to this question is low. This information is not usually recorded. The crew is paid per day at sea, which varies from 4h to 24h and this may not reflect the actual hours worked. Therefore the relevance of this variable for Belgium is currently under discussion .

Due to the limitations related to the Covid-19 pandemic, the organisation of the data collection on the fishing industry faced a number of challenges. In addition, the fishing industry also faces numerous challenges related to the pandemic and appear less available for questions. As such data cleaning and some specific data checks have been put on hold.

Deviation specifically related to the COVID-19 pandemic: First of all, key personnel responsible for collecting and processing the data was unavailable due to sickness. In addition, both organisations (DZV and ILVO) involved in sending, collecting and processing the data of the questionnaire needed to comply with national regulations concerning obligatory working from home. This involved a reorganisation of the workflow. Moreover, employees of DZV and ILVO had to reorganise their day-to-day lives which brings many challenges (kids at home due to closure of schools to list one).

In order to improve the response rate and accessibility of the questionnaires in these trying times a new online format was used. However, this new format may have proved challenging for responders to fill. Additionally, the responders (fishing industry) had a challenging year with reduced returns, a

reduced market for landed products and a decreased international market exchange. These challenging circumstances for the fishing industry may have resulted in a reduced response rate (i.e. other worries were prioritized).

10.3. Accessibility and Clarity

Indicate with Yes or No

Are methodological documents publicly available?

Yes

Are data stored in databases?

Yes

Where can methodological and other documentation be found?

Online and on request

Provide the web link, if documentation is publicly available

<http://www.smartfisheries.be/>

<https://lv.vlaanderen.be/nl/visserij/cijfers-marktoverzichten/publicaties-zeevisserij> -> see publications called "Bedrijfsresultaten 2018" and "Aanvoer en besomming 2018".

The version 2019 is to be published within the coming weeks (will be available on <https://lv.vlaanderen.be/nl/visserij/cijfers-marktoverzichten/publicaties-zeevisserij>)

(max 1000 words)

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

General comment: This box fulfills paragraph 5 point (b) and paragraph 6 point (b) of Chapter III of the Annex Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 and Article 4 paragraph (3) point (c) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Table 6 of the delegated decision on the multiannual Union programme.
General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study (including deviations from planned and justifications as to why if this was not the case).
1. Aim of pilot study The Belgian fishery sector has a unique system of social security. Fishermen receive relatively high incomes. Since 2003, a law on employment ended the ‘No catch, no pay’ principle, assuring income security for each sea trip (Royal Decree, Belgian State Journal, 07/03/2005). The crew receives a fixed percentage of the value of landings. If the value of landings is lower than a certain minimum wage, the employer has to pay a minimum wage. This is a system that favors employees over employers, bearing in mind that being a fisherman remains a dangerous profession. The legislation of the minimum wage for fishermen on all vessels in Belgium is unique in Europe and may contribute to the fight against illegal fishing. However, finding appropriate staff for fishery tasks remains a challenge. Young people graduating from the Maritime Institute prefer to work for dredging companies or in the tourism industry. Therefore, it is possible that crew members from elsewhere (from other sectors and/or abroad) are attracted. Although wages are relatively high and may attract potential staff, minimum educational requirements in the Belgian fishery sector are strict and costly. To acquire more insights in this matter, this pilot study aims to collect information on the age, nationality and education level of crew members on Belgian fishing vessels. Initially, the focus lies on the beam trawler fleet. Beam trawlers with a vessel length of 24-40 m provide about half of employment opportunities (STECF, 2016). Ultimately, this will be expanded to the entire fleet. 2. Duration of pilot study This pilot study will start in 2017 and data collection will be carried out throughout the year for engaged crew members. Data analyses will be performed in 2018. 3. Methodology and expected outcomes of pilot study Close collaboration with the employers social-accounting secretariat will be necessary to collect social data on employment by education level and nationality. The employers social-accounting secretariat should have part of this information available on a trip and vessel level. Data gaps will be filled by surveying vessel owners and/or fishermen. (max 900 words) 4. Achievement of the original expected outcomes of pilot study and justification if this was not the case. The aim of this pilot study was to collect information on age, nationality and education level of crew members on Belgian fishing vessels. To avoid collecting data twice, an inventory was made for which data were already collected and by whom. This was complemented with a literature review on the Belgian Social Security system for ‘sea fisheries’ (including its legal basis). This research showed that there is a ‘Paritair Comité’ in place for sea fisheries. A Paritair Comité groups companies with similar activities and acts as a council linking employers and employees. For example, negotiations concerning collective labour agreements (CAO) happen at this level.

Agreements from this Paritair Comité are binding for the whole sector. An example of such a binding agreement is that all sea fishing enterprises must make their employment declarations through the Social Secretariat of the Coast, which is recognised by the Federal Government (Belgian Public Service). Information is collected through an employment declaration (so called Dimona and Multifunctional declarations) for the entire Belgian fleet for every trip separately.

The social secretariat calculates monthly wages and pays the crew and social security contribution. It collects information on age, gender, nationality (national vs. non-national), residency, number of days at sea and job function of the crew. This information is used to calculate FTE and number of engaged crew. However, no information is available on education level or on unpaid labour. The intermediary findings of this investigatory work were presented at the RCGECON Workshop on Social variables in Vilnius in May 2017. During this workshop some recommendations were made with regards to the groups that should be used for the social variables. With the information collected by the Social Secretariat of the Coast it should be possible to meet most of these recommendations.

Information on the education level was found in a dedicated database of the Department of Education of the Flemish Government. This database contains information on qualification levels (diplomas, certificates, proof of experience, ...), on higher education since 2000 and secondary education since 2001 in Flanders. Citizens can consult their personal information and so can governmental bodies that have been granted permission by the Oversight Committee for specific tasks.

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

Most of the social data requested under the DCMAP is already collected by the Social Secretariat of the Coast and by the Department of Education of the Flemish Government as described above. Consequently, it is more a matter of accessing this information using a legally correct process. Agreements need to be made with these different institutions to obtain anonymised/aggregated social information of the crew members to full-fill DCMAP requirements. However, it is imperative to guard the privacy of these crew members. Therefore, such agreements need to happen on an administrative level, but this is sometimes a lengthy process.

Belgium (ILVO) made agreements in 2019 with the Social Secretariat of the Coast to receive most social data required under the DCF. However, the implementation of this agreement was not in time to be used for the 2019 Social Data Call.

In theory, to obtain some information on education level (i.e. after 2001), it should be possible to link the personal information on education with the personal crew information that is collected by the Social Secretariat of the Coast. This would give information on education for all crew members that graduated secondary school after 2001. However, an important matter that needs a great deal of consideration regards privacy issues (GDPR). It was not easy to find a party that is authorised to link this sensitive information. Therefore, it was esteemed that the procedure to do this was too lengthy and too labour intensive relative to the gained information. Getting this information will require a large amount of effort (and be costly), while the added value is questionable. For the same reasons, Belgium decided not to conduct additional surveys to gather this information.

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

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

General comment: This box fulfills paragraph 6 points (a) and (b) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Tables 6 and 7 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the socio-economic data collection for aquaculture of Member States.

According to Eurostat, the total Belgian annual production in aquaculture was 32 tonnes in 2015 (last data year). As this production did not increase since 2015, the Belgian Federal Department of Economics, which is still monitoring the volume and value of this sector, did not publish actualised data in Eurostat.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

See WP 2020-2021.

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

Not applicable.

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

Not applicable.

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

Not applicable.

4. Description of methodologies used for estimation procedures

Not applicable.

5. Description of methodologies used on data quality

Not applicable.

(max 1000 words)

6. Deviations from Work Plan methodology for selection of data source

List the deviations (if any) from the methodology used to select data source compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Actions to avoid deviations.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

7. Deviations from Work Plan methodology to choose type of data collection

List the deviations (if any) from the methodologies to choose type of data collection scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

Actions to avoid deviations

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

8. Deviations from Work Plan methodology regarding sampling frame and allocation scheme

List the deviations (if any) from the methodologies used regarding sampling frame and allocation scheme compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Actions to avoid deviations

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

9. Deviations from Work Plan methodology used for estimation procedures

List the deviations (if any) from the methodologies used for estimation procedures compared to what was planned in the Work Plan, and explain the reasons for the deviations.

Actions to avoid deviations

Briefly describe the actions that will be considered / have been taken to avoid the deviations in the future and when these actions are expected to produce effect. If there are no deviations, then this section can be skipped.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

10. Quality assurance

10.1 Sound methodology

Briefly describe if the data collection follow methodologies, guidelines and best practices agreed in expert groups and whether methodologies are documented and are made publicly available.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3B.

For additional information, briefly describe how raw data inputs, intermediate results and outputs are regularly assessed and validated and how errors are identified, documented and dealt with.

Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector.

10.3. Accessibility and Clarity

Indicate with Yes or No

Are methodological documents publicly available?

Not applicable.

Are data stored in databases?

Not applicable.

Where can methodological and other documentation be found?

Not applicable.

Provide the web link, if documentation is publicly available

Not available.

(max 1000 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 4: Environmental data on aquaculture

General comment: This box fulfills paragraph 6 point (c) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2 and Article 4 paragraph (3) point (d) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Table 8 of the delegated decision on the multiannual Union programme.
General comment: This box is applicable to the Annual Report. This box is intended to provide information on the results obtained from the implementation of the pilot study (including deviations from planned and justifications as to why if this was not the case).
To investigate whether Belgium complies with the thresholds as described in Chapter V of Commission Implementing Decision 2016/1251, a pilot study will be executed to collect economic, social as well as environmental data on the aquaculture sector. 1. Aim of pilot study Investigate whether Belgium complies with the thresholds as described in Chapter V of Commission Implementing Decision 2016/1251. 2. Duration of pilot study Period 2017-2018. 3. Methodology and expected outcomes of pilot study Due to the very fragmented situation of the aquaculture sector in Belgium, it will take time to develop a proper strategy for setting up a proper methodology. Initially, Belgium will start with making an inventory of the aquaculture production sector with the respective data on production, systems used, value, etc. (max 900 words)
4. Achievement of the original expected outcomes of pilot study and justification if this was not the case. Belgium complies with the thresholds as described in Commission Implementing Decision (EU) 2019/909 and as such does not have to collect data for the aquaculture sector (see WP 2020-2021) (max 900 words)

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

General comment: This box fulfils footnote 6 of paragraph 1.1(d) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme; and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of the Implementing Decision (EU) 2016/1701 on the format of the WP. It is intended to specify data to be collected under Table 10 of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the implementation of the socio-economic data collection for aquaculture of Member States.

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

The list of fish processing companies has been rigorously updated by cross-checking different sources with information on companies involved in fish-based activities. The effort invested in the improvement of this list resulted in a better population identification and thus data quality. ILVO collaborated with the Federal Agency for the Safety of the Food Chain (FASFC) who strictly monitors processing activities of these companies from a health safety perspective. Their list was further cross-checked with other lists, such as the initial ‘top-255’ list, the database of FPS Economy, S.M.E.s, Self-employed and Energy (Federal Government) and a list of the Belgian representative of AIPCE-CEP (European Fish Processors Association - European Federation of National Organisations of Importers and Exporters of Fish).

This led to a population of approximately 250 companies. Not all companies process fish as their main activity. Based on answers obtained through a questionnaire, via consulting public balance accounts, or direct contact with some companies as well as web-research, it was estimated that in 2013 there were 68 companies that processed fish as their main activity, with an estimated turnover of 650 million euro and 1500 FTE’s.

The companies list is updated on an annual basis through the consultation of the following sources:

- Federal Agency for the Safety of the Food Chain (FASFC)
- FPS Economy, S.M.E.s, Self-employed and Energy (Federal Government)
- Balance accounts, National Bank of Belgium
- Questionnaire

If resources are available, Belgium will invest in further refining the information by contacting the enterprises directly.

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

Socio-economic data can be acquired from different sources:

- Balance sheets: The balance sheets for some companies can be publically consulted. A lot of information is especially available in the balance sheets of the larger companies. Not all variables requested under EU Decision 2016/1251, Table 11, are available in the company accounts, which is a limitation. For example energy costs are not separately available, but aggregated within other operational costs.
- Questionnaires: Information which is not available through balance sheets, or in general not publically available will be obtained via questionnaires. Online surveys are preferred, whenever possible (i.e. when an e-mail-address is available), in other cases paper surveys are sent out.

Efforts related to determining the main activity of the company will continue. Total weight and weight of seafood and fish for the most important processed species will be surveyed. However, collecting data by origin is not feasible.

The data requested under Decision 2016/1251 is considered to be sensitive data. In the past, some companies have responded that they did not have the time or they simply refused to provide the requested economic data.

Especially small and medium enterprises do not see the purpose of the requested economic data and therefore their response rate is limited. Regular and direct contact with enterprises improves trust, improving their understanding of why providing this data is important. Hence their willingness to cooperate and provide the requested data will increase. Important however is that direct contact with the enterprises, given the size of the population, is labour intensive. Therefore, Belgium cannot yet guarantee that the necessary resources will be available to effectively adopt this approach.

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

Enterprises for which fish processing is an important activity are prioritised first. Currently, it is not possible to directly determine the importance of the activity from the population list. The questionnaire aims to identify those enterprises with important fish processing activities. For this purpose, the questionnaire uses questions about turnover and employment in order to determine the proportional importance of the fish processing activity in each company. In the online questionnaire, a shortened version is provided in case fish processing is not an important activity. Under the current circumstances, economic and social variables are not collected from these enterprises.

4. Description of methodologies used for estimation procedures

The enterprises are classified in categories according to the number of employees (≤ 10 ; 11-49; 50-249; ≥ 250 employees). When the number of companies per category are low, several categories are grouped. Variables for missing data are estimated by calculating the mean per category in the sample. This is then raised to the population level of each category. The sum of the totals of the different categories estimate the total value for the entire population. More information will be included on larger companies (less prevalent in our population) than on smaller ones (more prevalent in our population). This leads to a stratified sample in which larger companies are relatively oversampled. Nonetheless, the total estimation is likely to be precise, given that larger companies have a larger overall contribution.

An alternative method could be applied if the variance between observations in a given category is large. This concerns mostly the 11-49 employee group. Companies in this group could be further subdivided based on their balance account type. Above certain thresholds, companies must provide a 'full' balance account. The 'complete' and the 'short' balance account could then be separately estimated.

5. Description of methodologies used on data quality

In the period 2014-2016, data of the balance accounts was compared to answers in the questionnaire (whenever possible), which made it possible to determine whether both sources could be combined and to test the effectiveness of the questionnaire. As both sources were comparable, redundant questions were omitted, thus enabling the use of balance accounts for companies that did not respond to the questionnaire.

(max 1000 words)

6. Deviations from Work Plan methodology for selection of data source

The starting point was to further update and finetune the ILVO 2019 list of fish processing companies by cross checking data from various sources:

- **Federal Agency for Safety of the Food Chain (FASFC)**
- **FPC Economy, S.M.E.s, Self-employed and Energy (Federal Government)**
- **Balance accounts, National Bank of Belgium (NBB)**
- **Belgian Federation of the Fish Industry (member of the AIPCE-CEP (European Fish Processors Association – European Federation of National Organisations of Importers and Exporters of Fish))**
- **Trends Top Database of Belgian Companies**

These data sources allowed us to identify new fish processing companies, and companies which stopped their fish processing activities (due to bankruptcy or because they no longer processed fish or fish products).

For the new companies, email addresses and other contact details were collected through extensive web research and telephone enquiries. This process resulted in a list of approximately 245 companies involved in fish processing in 2019, either as main or a side activity.

In 2021 an electronic survey was sent out to all companies for which email addresses were obtained. We developed two different surveys: an extensive survey for the smaller companies and a basic survey for the larger companies. This was done to increase the response rate and to avoid duplication. Especially for the larger companies, a lot of the requested information can already be found in their balance accounts.

As a result of the survey and the preliminary investigations, we identified 37 companies which confirmed they were not, or no longer involved in fish processing. Most of these companies were previously considered to be secondary fish processing companies.

Actions to avoid deviations

Not applicable

7. Deviations from Work Plan methodology to choose type of data collection

Two separate multilingual questionnaires were created electronically using Survey Monkey. A comprehensive survey for the smaller companies with limited annual accounts and a basic survey for the major companies who have full annual accounts. The two questionnaires included the new variables introduced in the new WP (e.g. raw material, employment by nationality, etc.).

In mid-December, we sent out the survey to 208 companies. Two reminders were sent: one after three weeks, the second one after four weeks. Although an extensive web search was carried out, we could not find any contact details for 10 companies. In addition, we also contacted companies via telephone, hereby focussing on the main fish processors. However, the overall response rate remained very low. The most important reasons for not cooperating included:

- it is a company policy not to fill out questionnaires
- we are too busy
- it involves too much work to collect the required data
- we have concerns about the confidentiality of the data to be provided

Keeping the database updated with the email addresses of the proper contact persons will require a continued effort.

In order to achieve a higher response rate, a more personal approach would be required. Due to the Covid-19 restrictions, this was impossible.

Despite the many challenges, 27% of the companies with fish processing as a main activity and 24% with fish processing as a secondary activity responded.

Covid-19 impact:

Fish processing industry: the questionnaire was sent but there was a limited response rate . 25% of the companies who was sent the questionnaire, replied that responding to the questionnaire was not possible due to the Covid-19 pandemic: the company was closed or there was not enough staff or not enough time to complete the questionnaire. Replies from companies in fish processing and aquaculture are impacted as many companies struggle economically and responding to questionnaires is not a priority under these circumstances. Despite the many challenges, 27% of the companies with fish processing as a main activity and 24% with fish processing as a secondary activity responded.

Actions to avoid deviations

To achieve a higher response rate, companies will be contacted using a more personal approach, if Covid-19 restrictions allow it.

8. Deviations from Work Plan methodology regarding sampling frame and allocation scheme

There were no deviations from the Work Plan methodology regarding sampling frame and allocation scheme.

Actions to avoid deviations

Not applicable.

9. Deviations from Work Plan methodology used for estimation procedures

There were no deviations from the Work Plan methodology used for estimation procedures.

Actions to avoid deviations

Not applicable.

10. Quality assurance

10.1 Sound methodology

Briefly describe if the data collection follow methodologies, guidelines and best practices agreed in expert groups and whether methodologies are documented and are made publicly available.

As described in the WP, the list provided by the Federal Agency for the Safety of the Food Chain (FASFC) is used as a starting point for the identification of the population of companies involved in fish processing.

Next, the frame population of companies with fish processing as a main activity need to be determined. Those companies are usually identified by consulting the NACE code in de 'Kruispunt Bank voor Ondernemingen' (KBO), the company website, literature, web-research as well as by consulting previous answers to the questionnaires or contact by phone. Data from the national balance accounts was retrieved for this frame population.

As described in the WP, the enterprises can be classified in categories according to the number of employees (≤ 10 ; 11-49; 50-249; ≥ 250 employees) and balance sheet type. When data is missing, the mean per category can be calculated from a sample and imputed to estimated totals. Data for the smaller enterprises is generally more limited and therefore the survey is needed.

There are no plans to change this method as a way of determining the population and using information from the national balance accounts as an additional source of information.

A survey was compiled to obtain sufficient background knowledge on the industry in order to raise the data within groups of comparable companies.

10.2. Accuracy and reliability

Response rate and Achieved sample rate are provided in Table 3C.

For additional information, briefly describe how raw data inputs, intermediate results and outputs are regularly assessed and validated and how errors are identified, documented and dealt with.

Raw data inputs are assessed by checking the different data sources used for collection of the data. The major challenge lies in identifying the difference between the companies which have fish processing as their main activity and the companies that have fish processing as a side activity (non-main activity). These companies are identified based on the register of the FASFC, the NACE code in de 'Kruispunt Bank voor Ondernemingen' (KBO), the company website. Whenever the identity of the company was unclear, the company is contacted by phone.

Another challenge is related to variables that are not always separately available in the national balance. For example, energy costs are underestimated for seg.1 and part of seg.2 as these costs are partly included in raw material. In addition, purchase of raw materials was overestimated for seg.1 and part of seg.2 as energy costs were partly included. However, total operational costs should still add up. Although, these new variables were included in the newly compiled survey, they have however proven to be difficult to obtain.

R scripts are used to raise the data and to run checks to assure data quality. The R-scripts are available under subversion control (SVN) on the ILVO server.

10.3. Accessibility and Clarity

Indicate with Yes or No:

Are methodological documents publicly available? **No.**

Are data stored in databases?

No. A new database for the fish processing industry data is under construction (active from september 2021).

Where can methodological and other documentation be found?

The documents are currently safely stored on the ILVO server.

Provide the web link, if documentation is publicly available.

(max 1000 words)

Text Box 4A: Sampling plan description for biological data

General comment: This box fulfills Article 3, Article 4 paragraph (4) and Article 8 of the Implementing Decision (EU) 2016/1701 on the format of the WP and forms the basis for the fulfilment of paragraph 2 point (a)(i) of Chapter III of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of the delegated decision on the multiannual Union programme.

General comment: This box is applicable to the Annual Report. This box should provide information on the deviations from the planned sampling of Member States.

1. Description of the sampling plan according to Article 5 paragraph (3) of the Implementing Decision (EU) 2016/1701 on the format of the WP.

Belgian fisheries:

The beam trawl fishery is by far the most important fishery for Belgium (in 2018 TBB covered 80% of the total Belgian fishing hours) and comprises of a beam trawl fleet targeting crustaceans (TBB_CRU covers 12% of the total Belgian fishing hours) and a beam trawl fleet targeting demersal species (TBB_DEF covers 68% of the total Belgian fishing hours). The TBB_DEF fleet comprises of 2 fleet segments: the TBB_DEF_>221 kW fleet segment and the TBB_DEF_<=221 kW fleet segment.

The TBB_DEF_>221 kW fleet segment comprises vessels with a capacity of more than 221 kW, operating in ICES divisions IV, VIId, VIIe-h, VIIa, VIIab (referred to as 'all regions' in Table 4A). The TBB_DEF_>221 kW trip duration is on average 8-10 days and one trip can cover several areas.

The TBB_DEF_<=221 kW fleet segment comprises vessels with a maximum power of 221 kW (coastal vessels and euro cutters), operating in ICES divisions IV and VIId. In contrast to TBB_DEF_>221 kW, TBB_DEF_<=221 kW also has access to the 12 mile zone. A coastal vessel has a trip duration of less than 48 hours and a euro cutter of approximately 4 days.

Sampling design:

Belgium does not have an onshore sampling programme (market sampling) in place because the origin of the fish that are sold in the market is unknown. The landings of the trips very often cover several areas and it is not traceable from what area the fish is landed.

In accordance with the recommendations from STECF-EWGs and RCMs/RCGs following the preparation of the new DCF, Belgium started from 2011 onwards to redesign the catch sampling schemes to move from a 'métier-based' to a 'statistically sound' sampling. Considering the importance of the Belgian beam trawl fleet targeting demersal species, Belgium focusses on the collection of fishery-dependent data for this fleet (both fleet segments). The two fleet segments (TBB_DEF_>221 kW and TBB_DEF_<=221 kW) are treated as two separate strata in the Belgian at sea sampling programme. Catch information (all catch fractions are covered) is obtained through on-board observation or 'at sea sampling'. Four ILVO observers assure a sampling coverage of on average 1% of all fishing hours (i.e. approximately 40 trips). The sampling effort targets for one year are set at 8 trips for the TBB_DEF_<=221 kW fleet segment and 34 trips for the TBB_DEF_>221 kW fleet segment.

The primary sampling unit (PSU) in the Belgian at sea sampling programme is vessel x trip (as a proxy for trip) so the sampling design class is defined as 'type A'¹. A haul (within a trip) is defined as the secondary sampling unit (SSU).

A vessel x trip (PSU) for the TBB_DEF_>221 kW fleet segment is selected ad hoc or standard quota sampling is conducted (non-probability-based sampling). In 2018, there were 27 TBB_DEF vessels with a capacity >221 kW flying the Belgian flag. The vessels that are willing to take observers onboard and those that are suited, from a logistic point of view, to have an observer onboard are included in the vessel list (sampling frame): currently the sampling frame covers ± 15 vessels. The observer coordinator keeps track of the vessels within the sampling frame but ILVO considers collecting non-responses and refusals on PSU (trip) level not relevant. The sampling will be spread as much as possible over all these 15 vessels. We introduced 2 types of sampling:

- Ad hoc sampling: for those strata with a lower sampling coverage (based on previous years):
 - TBB_DEF_70-99 kW>221 fleet area 7a
 - TBB_DEF_70-99 kW>221 fleet area 8ab
 - TBB_DEF_120 kW>221 fleet area 4b
- Quota sampling: sampling effort is proportionally to the fleet effort (based on previous year)

The table below represents an overview of the planned sampling-effort in terms of number of trips per quarter/area/gear:

Q1	Q2	Q3	Q4		
		3		TBB_DEF_70-99 kW>221 fleet, area 8ab	} Ad Hoc
	2		2	TBB_DEF_>120 kW>221 fleet, area 4b	
1	1	1	1	TBB_DEF_70-99 kW>221 fleet, area 7a	
2	1	1	2	TBB_DEF_70-99 kW>221 fleet, area 4	} Quota sampling
4	2	1	2	TBB_DEF_70-99 kW>221 fleet, area 7d	
2	3	1	2	TBB_DEF_70-99 kW>221 fleet, area 7fg	

A vessel x trip (PSU) for the TBB_DEF_<=221 kW fleet segment is selected ad hoc. In 2018, there were 21 TBB_DEF vessels with a capacity <=221 kW flying the Belgian flag. However, 12 of those are regularly fishing for shrimp (TBB_CRU). Until the end of 2021, Belgium has a derogation for sampling the TBB_CRU métier. The TBB_DEF_<=221 kW vessel list (sampling frame) has been steadily decreasing and proved too small to ensure random PSU selection. This was the result of vessels being taken out of service, but also logistic issues onboard facilitated this decrease. Therefore, ad hoc sampling of 2 euro cutters and 2 coastal vessels is carried out. The observer coordinator keeps track of the vessels within the sampling frame but ILVO considers collecting non-responses and refusals on PSU (trip) level not relevant.

For the TBB_DEF_>221 kW fleet segment, every other haul (systematic sampling of SSU) is sampled by an observer. Sampling takes place around the clock to reflect typical working conditions on board. For the TBB_DEF_<=221 kW fleet segment, the goal is to sample all hauls during the short trips of the coastal vessels. During euro cutter trips, every other haul is sampled, similar to the TBB_DEF_>221 kW fleet segment. The crew is sorting the marketable fish from the conveyor belt and stores it per species for the observer to sample later on. In the meantime, the observer is sampling the discarded fraction of the catch by sorting all commercially important species, *i.e.* selected set of species as indicated in Table 1A & 1B. The total weight per species in each haul is determined and lengths are measured. When a species is extremely abundant, a smaller representative subsample (TSU) is measured. The marketable part of the catch (landings) is sampled in the same way as the discarded part of the catch.

During each trip, otoliths from minimum 3 fish per cm-size class per species per area, are collected (except for cod 1 fish per cm-size class) for age estimations. Otoliths are collected throughout the whole trip (several hauls) until the quota of otoliths is achieved. For the discarded part of the catch, otoliths are being removed on board. For the retained part (landings) of the catch, the fish are purchased for individual length, weight, sex, maturity and age determination.

All the at sea sampling data (metadata and all biological data) are stored in a national database called 'SmartFish'. For quality assurance and analyses (e.g. raising) of the catch data, powerBI desktop and several R scripts (o.a. COST packages) are being used.

Sampling strategy optimization:

ILVO, as developer and executor of the sampling plan, will invest in the further optimization of the at sea sampling design. Continuous effort is done to optimise the current sampling plan in order to match statistically sound sampling with practical feasibility. In the upcoming years (2020-2021), ILVO will investigate alternative sampling techniques such as self-sampling and will test the potential added value of electronic monitoring in the commercial sampling programme. In this way, ILVO will try to increase the numbers of vessels in both sampling frames (TBB_DEF_>221 kW and TBB_DEF_<=221 kW) and the number of sampled PSUs in the medium to long term.

¹: ICES. 2013. Report of the second Workshop on Practical Implementation of Statistical Sound Catch Sampling Programmes, 6 - 9 November 2012, ICES Copenhagen. ICES CM 2012 / ACOM:52 71 pp.

(max 900 words per region)

Deviation from the sampling plan according to Article 5 paragraph (3) of the Implementing Decision (EU) 2016/1701:

2. Deviations from the Work Plan

Member State shall list the deviations (if any) in the achieved data collection, compared to what was planned in the Work Plan and explain the reasons for the deviations

The sampling plan was executed as described in the WP except for the deviations described below. Deviations concerning the planned number of trips versus what has been realized in 2020:

For the TBB_DEF_<=221kW stratum, 8 trips were planned but 4 trips were sampled. The main reasons are:

- Lack of space onboard the vessel to perform the sampling
- Lack of place to sleep for the observer
- Refusal by the vessel owner or crew to have an observer onboard
- Some vessels use two different métiers during the year: TBB_DEF and TBB_CRU. When the vessel owners of these vessels decide to target shrimp (TBB_CRU), this means that they were not available for sampling (TBB_DEF).

For the TBB_DEF_>221kW stratum, 34 trips were planned (according to the WP) and 26 were sampled. The main reasons are:

- Lack of space onboard the vessel to perform the sampling
- Lack of place to sleep for the observer
- Refusal of the vessel crew or owner to have an observer onboard
- A trainee on board resulting in no available place to sleep for the observer or not enough space available in the life raft (refusal due to safety reasons).

COVID-19 impact

The Covid 19 pandemic situation had an impact on the numbers of trips for commercial sampling at sea. From March until April 2020, a number of commercial vessels stopped fishing. The very low fuel prices stimulated the fishermen to re-start their activities as this gave them some continuation in their

income. Access to foreign ports for embarking or disembarking was difficult because of the local restrictions and the Belgian restrictions when returning from a foreign port.

In the period from March until April, when a number of vessels, i.e. TBB, stopped fishing, the observers could not join for sampling. Additionally, once the sector re-started with fishing, many vessels refused to take observers on board as they were not belonging to the same 'bubble' as the crew. The vessel owners did not want to take any risk for their crew and their family. Also, the Belgian fisheries sector had several vessels where the crewmembers had infections with Covid-19, and therefore the sea going observers preferred to join those vessels, of which they were quite certain that health and sanitary conditions were respected.

Belgium investigated to increase the sampling at port, but also here the fish auction did not allow ILVO personnel (or other external people) to enter the fish auction.

3. Action to avoid deviations

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

ILVO, as developer and executor of the sampling plan, aims on a daily basis to keep relations with the fishermen in a good condition in order to acquire, maintain and improve access to the vessels for sampling. Nevertheless, having a rather small fleet fishing in 5 different fishing grounds hampers the development of a simple sampling design. Continuous effort is done to optimize the current sampling plan in order to match statistically sound sampling with practical feasibility.

Belgium is investing in the further optimization of the sampling strategy. The ultimate goal is to make the most efficient use of sampling resources and collect unbiased and precise catch data. Alternatives for the traditional observer programme, such as self-sampling and electronic monitoring, are being tested.

In 2019, a self-sampling protocol focusing on sole (*Solea solea*) in the Irish Sea was tested. The crew of the commercial vessel was asked to collect total catch weights of this species by haul and by catch fraction. The crew also collected a representative discard sample that was brought ashore and analyzed in the ILVO lab. The landed sole fraction was sampled by ILVO in the auction (length sampling) and part of that fraction was analyzed in the lab for biological parameters. ILVO has further expanded its knowledge and experience related to self-sampling in 2020. Three self-sampling trips (using the same protocol as the 2019 test trip) took place in 2020: two trips in the Irish Sea and one trip in the Bay of Biscay. All catch fractions combined, these 3 trips resulted in 7799 length measurements, 337 individual weight, sex and maturity determinations and 325 age determinations (these numbers are not added in the 1C and 4A table, since this self-sampling programme is still in a testing phase). The quality of the data was checked and approved, so the information was delivered to ICES for stock assessment purposes. ILVO will further investigate the added value of this type of sampling in 2021. Self-sampling might be a good way to expand the number of sampled trips (PSUs) in the future.

Unsampled strata: as these cover **unsampled** strata, it is **not possible** to **identify** a primary **sampling** unit (PSU). This is discussed in the 2021 RCG NA NS&EA and the RCG recommended for the new WP 2022-2027 to quantify unsampled strata by text, in terms of effort or landings and not in terms of PSUs.

(max. 1000 words per region OR fishing ground)

SECTION 5: DATA QUALITY

Text Box 5A: Quality assurance framework for biological data

General comment: This box is applicable to the Annual Report. This box fulfills Article 5 paragraph (2) point (a) of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is intended to specify data to be collected under Tables 1(A), 1(B) and 1(C) of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. Use this box to provide additional information on Table 5A of the Annual Report.

1. Evidence of data quality assurance

Within this section Member State shall provide information on the methodology used to assure the quality of the data collected, highlighting those aspects where changes have been made during the sampling year. Information shall be provided by each sampling scheme for which data was collected. In the case where the same quality assurance framework is applied to all data collection schemes, information can be provided at general level with the indication “all sampling schemes”.

In those sections of Table 5A where “N” is indicated, Member States shall explain the main constraints and/ or the steps taken to fulfil this obligation. In the cases where a reference documents is requested, Member States shall provide a web link.

In cases where documents are not publicly available, due to institutions internal policy, confidentiality or other reasons, this shall be indicated by the Member State.

At sea

All information is provided in Table 5A and the references therein.

Recvis

All information is provided in Table 5A and the references therein.

Eel

All information is provided in Table 5A and the references therein.

Salmonidae

Belgium has no fisheries on salmonidae

2. Sampling design

Explain main constraints and/ or steps taken, if ‘N’ (no) was indicated in Table 5A.

At sea

Not applicable to the at sea sampling scheme.

RecVis

Not applicable to the recreational fisheries sampling scheme.

Eel

Not applicable to the eel sampling scheme.

Salmonidae

Belgium has no fisheries on salmonidae.

3. Sampling implementation

Explain main constraints and/or steps taken, if 'N' (no) was indicated in Table 5A.

At sea

The commercial sampling programme at ILVO is defined as ad hoc/quota sampling (see Text Box 4A). Therefore, ILVO considers collecting non-responses and refusals on PSU (trip) level not relevant. However, the sea-going observers keep track of the vessels they contact within the sampling frame.

RecVis

Given that effort estimation relies fully on on-site surveys (creel survey, aerial survey and harbor observations), non-response is not applicable. Although interviews can be refused, total effort in fishing hours can always be estimated. For the selection of the diary volunteers, we used snowball sampling methods. The sample is non-random but post-stratification for gear type and avidity is applied. Given this selection procedure, non-response is not applicable.

Eel

Not applicable to the eel sampling scheme.

Salmonidae

Belgium has no fisheries on salmonidae.

4. Data capture

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

At sea

Not applicable to the at sea sampling scheme.

RecVis

The full protocol can be found online (in Dutch): Verleye, T., van Winsen, F., 2016. Protocol recreatieve zeevisserij monitoring. ILVO-VLIZ publicatie 001. 43 pp.

https://www.recreatievezevisserij.be/Portals/0/Bestanden/PROTOCOL%20Recreatieve%20zeevisserijmonitoring_FINAL_incl%20annex.pdf

Eel

Not applicable to the eel sampling scheme.

Salmonidae

Belgium has no fisheries on salmonidae.

5. Data Storage

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A. Please provide a link if the documented revisions are available and not confidential.

At sea

The SmartFish database is hosted on the ILVO servers. The RDB is hosted at ICES.

RecVis

Not applicable to the recreational fisheries sampling scheme.

Eel

The data are stored in the eel database on the servers of INBO (nationally) and on the international ICES database EQD (Eel Quality Database).

Salmonidae

Belgium has no fisheries on salmonidae.

6. Data processing

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5A.

At sea

Not applicable to the at sea sampling scheme.

RecVis

In Belgium, there is no license system in place for the registration of recreational fishermen. This implies that it is not possible to obtain a random sample of catch diary volunteers, as the total population is not known.

Post-stratification on gear type and avidity is applied to somewhat overcome possible biases caused by the non-random sample design. It is currently investigated if there are other possibilities to obtain a random sample of volunteers from 2019 onwards.

Documentation on biases, precision and uncertainty around the data and results is available on the ILVO server.

Eel

Not applicable to the eel sampling scheme.

Salmonidae

Belgium has no fisheries on salmonidae.

(max. 900 words per Region/RFMO/RFO/IO OR sampling scheme)

SECTION 5: DATA QUALITY

Text Box 5B: Quality assurance framework for socioeconomic data

General comment: This box fulfills Article 5 paragraph (2) point (b) of the Implementing Decision (EU) 2016/1701 on the format of the WP. This box is intended to specify data to be collected under Tables 5(A), 6 and 7 of the Annex of the Delegated Decision (EU) 2019/910 on the multiannual Union programme. Use this box to provide additional information on Table 5B of the Annual Report.

1. Evidence of data quality assurance

Within this section MS shall provide information on the methodology used to assure the quality of the data collected, highlighting those aspects where changes have been made during the sampling year. Information shall be provided by each sector (Fishing fleet, Aquaculture, Fish processing) for which data was collected and by each data collection scheme. In the case where the same quality assurance framework is applied to all sectors or/and all data collection schemes, information can be provided at general level with the indication “all sectors” or “all data collection schemes”.

In those sections of Table 5B where “N” is indicated, Member States shall explain the main constraints and/ or the steps taken to fulfil this obligation. In the cases where a reference documents is requested, Member States shall provide a web link.

In cases where documents are not publicly available, due to institutions internal policy, confidentiality or other reasons, this shall be indicated by the Member State.

For the fishing fleet, see text box 3A.

For the aquaculture sector: Not applicable – derogation for Belgium (see WP 2020-2021)

For the fish processing industry, see text box 3C.

2. Section P3 Impartiality and objectiveness

Explain main constraints and/ or steps taken, if ‘N’ (no) was indicated in Table 5B

Fishing fleet:

An annual survey is conducted by Dienst Zeevisserij (DZV), Department of Agriculture and Fisheries (Flemish government) to collect fleet socio-economic data. As given in Table 3A, the questionnaire to collect data on the balance sheet of the fishing companies, is sent to all vessel owners. Information is collected by vessel. Wherever possible, data on the balance accounts of the company are also consulted.

Employment data are obtained through the employers social-accounting secretariat, who gather data regarding the social costs. The Belgian fishery sector has a unique system of social security. These data are delivered directly to Dienst Zeevisserij via the accredited Social Secretariat of the Coast.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021)

Fish processing industry:

No data quality validation steps on National balance accounts required: information from the national balance accounts is considered correct, as the source of these data is the National Bank of Belgium (<https://www.nbb.be/nl/balanscentrale>). The 'Balanscentrale' is the legal entity collecting all financial statements of companies.

3. Section P4 Confidentiality

Explain main constraints and/ or steps taken, if ‘N’ (no) was indicated in Table 5B

Fishing fleet:

Not applicable.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021)

Fish processing industry:

External end-users are currently limited.

4. Section P5 Sound methodology

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Information on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

Fishing Fleet:

Methodologies are in accordance with Commission Delegated Decision (EU) 2019/910 .

Costs and earnings from the active vessels are surveyed through a questionnaire. As the response within the important fleet segments is high, missing data will be estimated by calculating the mean per fleet segment in the sample. This is then raised to the population level of each segment. The sum of the totals of the different categories estimates the total value for the entire fleet.

Information on technical characteristics, effort and landings from all vessels in the population are available from the logbooks and the vessel register (collected under Regulation (EU) no. 1224/2009).

For further elaboration on this, see Table and Text 3A.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Not applicable.

5. Section P6 Appropriate statistical procedures

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Please provide a link if the documented revisions are available and not confidential.

Fishing fleet:

Column P - Logbook data and sales data: cross-checks of totals are possible, as part of the sales originate from direct sales at the 'Vistrap' (Ostend) or from the vessels, Data checks on the databases at Dienst Zeevisserij are continuously improved.

Column T - questionnaire balance sheets, employers social-accounting secretariat: methodologies are available (see column S), however, there is no structured documentation of the methods. Over the period 2018-2020, an effort was made to document the used editing and imputation methodologies. ILVO supported the 'Dienst Zeevisserij' (DZV) in achieving this, in cooperation with the newly appointed database manager .

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Not applicable.

6. Section P7 Non-excessive burden on respondents

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Fishing fleet:

Not applicable.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Not applicable.

7. Section P8 Cost effectiveness

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Fishing fleet:

Not applicable.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Not applicable.

8. Section P9 Relevance

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Fishing fleet:

Not applicable.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

External end-users are currently limited.

9. Section P10 Accuracy and reliability

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Information on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

Fishing fleet:

The RCGECON (previously PGECON) has made many efforts to clarify definitions and interpretations of economic variables for the fleet in order to improve comparability across Member States. Furthermore, the commission implemented a new decision (EU) 2019/910 , updating its requested variables and also including new variables.

Belgium followed these changes and adapted its 2017 survey accordingly. The data collection was further fine-tuned in 2018 and continued in 2019 and 2020.

Belgium has made efforts to develop a number of automated data quality validation steps of intermediate results and outputs in the framework of the Data Call for the Annual Economic Report (AER). These steps are carried out using markdown documents generated in the R-software environment. Belgium has further improved these data quality validation steps and corresponding documents. Similar quality validation steps were developed for the raw data inputs and are now being elaborated.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Raw data inputs are assessed by cross-validating the different data sources used for collection of the data. The major challenge is identifying the difference between the companies which have fish processing as main activity and those that have fish processing as a side activity (non-main activity). These companies are identified based on the register of the FASFC, the NACE code in the 'Kruispunt Bank voor Ondernemingen' (KBO), company websites, literature, web research, answers to previous questionnaires, previous phone contact and previous interviews.

R-scripts are used to raise the data and to validate data quality. The R-scripts are available under subversion control (SVN) on the ILVO server.

On a yearly basis, the different variables are compared with the time series generated in the previous years. A time series is present from 2008 onwards.

Checking for errors is applied as new data are added to the time series. However, when feedback is received from JRC (issued when a data call for fish processing industry is launched) immediate action is undertaken by Belgium.

10. Section P11 Timeliness and punctuality

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Fishing fleet:

On a monthly basis, DZV sends reports on the Belgian fishing fleet to the EU. To prove continuity in the data reporting, DZV summarises its reports every quarter. These summaries are also sent to the EU.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Not applicable.

11. Section P12 coherence and comparability

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B

Fishing fleet:

Logbook and sales data - Internal coherence is partly checked. Both logbook and sales data are cross validated. However, this is only partly possible for the totals of sales. Part of the sales originate from direct sales at the 'Vistrap' (Ostend) or from the vessels, another part of the sales is estimated and this estimate is checked with the actual sales on a monthly basis.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Not applicable.

12. Section P13 Accessibility and Clarity

Explain main constraints and/ or steps taken, if 'N' (no) was indicated in Table 5B. Information and links to documentation on this principle should be briefly explained in Text boxes 3A, 3B and 3C. Description of methodologies used on data quality.

Fishing fleet:

Methodologies are available (see column S); however, structured documentation is not available. With the ongoing process of the development of the new DZV database 'Polaris', the Department is at the same time looking to document used editing and imputation methodologies. ILVO is supporting the 'Dienst Zeevisserij' (DZV) in achieving this, in corporation with the recently appointed database manager of the Department.

However, due to recent restructuring of DZV resulting in several job changes as well as the additive effect of a long absence due to health reasons of a key staff member, both the documentation process and database building has slowed down. These challenges, faced both by DZV and ILVO, find their origin in the COVID-19 pandemic. Nonetheless, strong emphasis remains on the continued communication between DZV and ILVO where both parties support each other. Data flow between DZV and ILVO remained viable, resulting in a successful completion of the AR and AER. Nevertheless, a further investment of money and time in the coming year will be necessary to tackle all challenges.

Aquaculture:

Not applicable – derogation for Belgium (see WP 2020-2021).

Fish processing industry:

Documents are stored on the ILVO server (see text box 3C).

(max. 900 words per Region/RFMO/RFO/IO/NSB OR sector)