



JRC SCIENCE FOR POLICY

Scientific Technical and Economic Committee for Fisheries (STECF) - FDI methodology (STECF-23-05)

Zanzi, A., Hekim, Z., Motova-Surmava, A.

2023

This publication is a Science for Policy report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The contents of this publication do not necessarily reflect the position or opinion of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

EU Science Hub

<https://joint-research-centre.ec.europa.eu>

JRC134663

EUR 28359 EN

PDF

ISBN 978-92-68-06546-4

ISSN 1831-9424

doi:10.2760/542525

KJ-AX-23-013-EN-N

STECF

ISSN 2467-0715

Luxembourg: Publications Office of the European Union, 2023

© European Union, 2023



The reuse policy of the European Commission documents is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Unless otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

For any use or reproduction of photos or other material that is not owned by the European Union permission must be sought directly from the copyright holders.

How to cite this report: *Scientific, Technical and Economic Committee for Fisheries (STECF) - FDI methodology (STECF-23-05)*, Zanzi, A., Hekim, Z. and Motova-Surmava, A. editor(s), Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/542525, JRC134663.

CONTENTS

| | |
|---|----|
| Abstract | 1 |
| SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) – FDI methodology (STECF-23-05)..... | 3 |
| Request to the STECF | 3 |
| STECF comments..... | 3 |
| STECF conclusions..... | 6 |
| Contact details of STECF members | 6 |
| Expert Working Group EWG-22-05 report | 10 |
| 1 Introduction | 11 |
| 1.1 Terms of Reference for EWG-23-05..... | 11 |
| 2 Responses to the Terms of Reference | 13 |
| 2.1 Review approaches used by Member States responding to the FDI data call and if possible propose common best practice..... | 13 |
| 2.1.1 Follow up on methods used by Member States to partition biological sampling data to the level requested in the Table A of the FDI data call | 13 |
| 2.1.2 Any issues in preparing the data with the new métier definitions used by Member States | 14 |
| 2.1.3 Follow up on allocation of landings to c-squares using VMS/logbook data | 17 |
| 2.1.4 The data call request to specify the UK EEZ indicator for areas that have a borderline between the EU and UK. The EWG is requested to review the approach used (or planned to be used) by Member States to provide this information..... | 18 |
| 2.1.5 Discuss if fecR package produced at the 2nd Workshop on Transversal Variables held in Nicosia, Cyprus on 22-26 February 2016 is used for data preparation and how it could be maintained..... | 21 |
| 2.1.6 Quality indicators for discard estimates | 22 |
| 2.2 Review outputs of the ad hoc contract: trial on data transfer procedures to transfer biological data from the Mediterranean and Black Sea data call into the FDI database | 31 |
| 2.3 To review in detail the script (available in Annex 4 of EWG 22-10) that is used to disseminate the biological data in tables C, D E and F by merging with table A..... | 34 |
| 2.4 Discuss ICES RDBES development progress and its alignment to FDI data call | 44 |
| 3 References..... | 45 |
| 4 Contact details of EWG-23-05 participants | 45 |

| | |
|------------------------------------|----|
| Annexes | 49 |
| Annex 1..... | 49 |
| Annex 2..... | 52 |
| List of Electronic Annexes | 54 |
| List of Background Documents | 54 |

Abstract

Commission Decision of 25 February 2016 setting up a Scientific, Technical and Economic Committee for Fisheries, C(2016) 1084, OJ C 74, 26.2.2016, p. 4–10. The Commission may consult the group on any matter relating to marine and fisheries biology, fishing gear technology, fisheries economics, fisheries governance, ecosystem effects of fisheries, aquaculture or similar disciplines. This report on FDI methodology has been reviewed by STECF during the 2023 summer plenary meeting.

Authors:**STECF advice:**

Bastardie, Francois; Borges, Lisa; Casey, John; Coll Monton, Marta; Daskalov, Georgi; Döring, Ralf; Drouineau, Hilaire; Goti Aralucea, Leyre; Grati, Fabio; Hamon, Katell; Ibaibarriaga, Leire; Jardim, Ernesto; Jung, Armelle; Ligas, Alessandro; Mannini, Alessandro; Martin, Paloma; Moore, Claire; Motova-Surmava, Arina; Nielsen, Rasmus; Nimmegeers, Sofie; Nord, Jenny; Pinto, Cecilia; Prellezo, Raúl; Raid, Tiit; Rihan, Dominic; Sabatella, Evelina; Sampedro, Paz; Somarakis, Stylianos; Stransky, Christoph; Ulrich, Clara; Uriarte, Andres; Valentinsson, Daniel; van Hoof, Luc; Velasco Guevara, Francisco; Vrgoc, Nedo.

EWG-23-05 report:

EWG chairs: Motova-Surmava A. and Zanzi A.

Experts: Adamowicz, M., Avdic Mravlje, E., Cañas, L., Cano, S., Carlshamre, S., Demaneche, S., Egekvist, J., Fernandes, A.C., Hekim, Z., Ioannou, M., Jakovleva, I., Kavadas, S., Mannini, A., Molla Gazi, K., Moore, C., Nicheva, S., Nimmegeers, S., Tičina, V., Vermard, Y.

SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) – FDI methodology (STECF-23-05)

Request to the STECF

STECF is requested to review the report of the STECF Expert Working Group meeting, evaluate the findings and make any appropriate comments and recommendations.

STECF comments

EWG 23-05 met online from the 30th of May to the 2nd of June 2023. EWG 23-05 was the second STECF EWG dedicated to reviewing the methodology applied by Member States in responding to the FDI data call, propose common practices, and follow up on future development of the FDI database and data dissemination.

STECF considers that the EWG adequately addressed the TORs and has the following specific comments on the four ToRs addressed by EWG 23-05.

1. Review approaches used by Member States responding to the FDI data call and if possible, propose common best practice

STECF acknowledges that the country-specific presentations made during the EWG are very valuable for making an overview of the approaches used by Member States.

STECF observes that the EWG obtained information from 13 Member States, which is lower than the responses (21 Member States, including the United Kingdom) obtained during the first FDI methodology meeting in 2021 (EWG 21-10). This number is likely to increase as Member States will have the opportunity to provide their reports at the FDI EWG (EWG 23-10) scheduled for September, as was the case last year. For the topics addressed in 2021, the changes in methods were summarised, as well as listing the new modifications introduced in 2022.

- 1.1. *Follow up on methods used by Member States to partition biological sampling data to the level requested in Table A*

STECF observes that, there were no changes in the methodology to partition biological sampling data to the level requested in Table A, with only a minor change for one species reported by Lithuania.

STECF notes that the practices to partition discard estimates in table A, suggested by EWG 21-10 remain valid.

- 1.2. *Any issues in preparing the data(call) with the new métier definitions used by Member States*

STECF notes that there has been considerable work by the Regional Coordination Group (RCG) Intersessional Subgroup (ISSG) on Métier and transversal variable issues to harmonise métier definitions.

STECF observes that there were no major issues foreseen regarding implementing the new métier definitions for the first time in response to the 2023 FDI data call. However, issues might still appear in historical datasets.

STECF observes that in some cases there is no exact match between the métier level 6 code in the METIER field and the combination of the information provided in the GEAR_TYPE, TARGET_ASSEMBLAGE and MESH_SIZE_RANGE fields. STECF notes no major problems related to this mismatch as the information is used for different purposes. The METIER field, often derived from a scientific approach is used in the DOMAIN definition to link biological data tables with less disaggregated data in Table A, whereas the GEAR_TYPE, TARGET_ASSEMBLAGE and MESH_SIZE_RANGE fields are needed for reporting on the landing obligation exemptions.

- 1.3. *Follow up on allocation of landings to c-squares using VMS/logbook data.*

STECF observes that in 2021, a few Member States advanced the methodology used to provide spatial landings. These Member states provided landings data at the smaller spatial resolution than requested in the data call, using c-square notation, which was prepared using VMS data. This has not changed in 2022 and only a few minor changes or improvements in the spatial allocation methodology reported were reported by EWG 23-05. Member States link VMS data with landings data from logbooks for various purposes. However, Member States seem reluctant to provide this data under the FDI data call possibly because the quality of the data or confidentiality issues prevent submission or usage of this information.

- 1.4. *The data call request to specify the UK EEZ indicator for areas that have a borderline between EU and UK. The EWG is requested to review the approach used (or planned to be used) by Member States to provide this information.*

STECF observes that the EWG summarised the methods used by Member States to specify the EEZ indicator in the FDI data calls. Most Member States derive the EEZ indicator from declarative data (e-logbooks, logbooks or coastal logbooks), either directly or based on detailed coordinates/spatial aggregated information. VMS data are often used for validation purposes or when no declarative data is available.

STECF notes the lack of an agreed, or referenceable (i.e., associated doi), official shape file defining the EEZ borders because of different national/political interests. The EWG suggested to use the marine regions shape file (source: <https://www.marineregions.org>) to promote standardization/harmonization between Member States in defining the EEZ borders.

STECF acknowledges the initiative of the EWG to develop a hierarchical decision tree as currently, the EEZ indicator can be derived/estimated from different information sources that are cross validated/combined.

STECF agrees with the proposal of the EWG to add a specific report section in the national chapters on the EEZ indicator, including the appropriate shape file.

- 1.5. *Discuss if FecR package produced at the 2nd Workshop on Transversal Variables held in Nicosia, Cyprus on 22-26 February 2016 (Castro Ribeiro et al., 2016) is used for data preparation and how it could be maintained.*

STECF observes that the majority of Member States apply the so-called "Nicosia principles for fishing effort calculation", as implemented in the FecR package. Recently the package has been moved to the public GitLab repository of the JRC. The package will be reviewed and updated by the RCG ISSG Metier and transversal variables expert group together with JRC. Once agreed, it can be made available for Member States to use.

- 1.6. *Quality indicators for discard estimates*

STECF notes that the quality indicators requested last year, require further testing and exploration to improve. Therefore, it is important that currently, the indicators are provided on a voluntary basis and no validation rules are in place for the submission of quality indicators. The EWG highlighted the lack of a clear theoretical understanding of the quality statistics and referred to the survey theory and bootstrap methodology in this context.

STECF acknowledges the initiative of the EWG to provide examples of various CV and confidence interval calculations.

STECF notes that both probabilistic and non-probabilistic quality indicators are requested in multiple tables (Table C, Table D, and Table K). In table B, which contains only information from probability-based sampling designs, the refusal rate was often filled as 'NA'. In table C and D, the quality indicators were not consistently reported for every domain. In most cases Member States provided trip information, but not CV and confidence intervals statistics, as there no clear guidelines to estimate them have been provided. Table K is populated by a limited number of Member States, because often the requested information (discards data for which no biological data are available) is provided in other tables. However, STECF notes that it is more meaningful to supply the information in table K, especially in the case of domains with estimated zero discards and the corresponding quality indicators.

STECF agrees with the proposal of EWG to add a specific section in the national chapters highlighting progress in providing quality indicators as described above.

2. Review outputs of the ad hoc contract 1: trial on data transfer procedures to transfer biological data from the Mediterranean and Black Sea data call into the FDI database

STECF observes that the EWG reviewed the outputs of the ad hoc contract (Ref STECF 23-10), awarded to test, and propose the necessary steps to transfer the biological data of the Mediterranean and Black Sea data call to the FDI data format. The EWG found that all the ToRs of the ad hoc contract were addressed.

STECF observes that although previous EWGs (EWG 21-10/12) showed that it is technically feasible to transfer the biological data from the Mediterranean and Black Sea data calls into the FDI format, the main remaining problem is to link FDI table A and the MEDBS biological tables through the domain definition.

STECF observes that in order to overcome this problem, the EWG proposed to provide the variable DOMAIN in the MEDBS data call by amendment of column ID with column DOMAIN, as this does not require revision of the current formats. Member States would need to be made aware of this change.

STECF agrees with the EWG proposal to have a pilot study with 2023 data during the 2024 MEDBS data call to test the data transfer and to check the coverage and quality of the data provided under the pilot study.

STECF notes that this data transfer will require development over time and a clear procedure for data resubmission across both working groups, maintenance of the scripts, and a procedure to incorporate the species which are not covered by the MEDBS data call.

3. To review in detail the script (available in Annex 4 of EWG 22-10) that is used to disseminate the biological data in tables C, D E and F by merging with table A

STECF observes that the EWG reviewed the outputs of the script (available in Annex 4 of EWG 22-10) that was developed by ad hoc contract (Ref STECF 2252). This script is used to merge catch data from Table A with biological data available in Tables C, D, E and F.

STECF observes that more than half of the reported landings in the biological tables are removed from the disseminated dataset because of confidentiality rules. The landings without "confidentiality" are not all sampled for length and the coverage varies among species.

STECF observes that for many domains in the biological tables, the Sum of Products (SOP, multiplying numbers at age/length by the mean weight of that age/length) exceeds the corresponding reported total weight. As the SOP is used in the partitioning, the EWG suggested to re-run the SOP analysis and data checks after the 2023 FDI data call to check the data provided.

4. Discuss ICES RDBES development progress and its alignment to FDI data call

STECF observes that, based on the outcome of the ICES Working Group on Governance of the Regional Database and Estimation System (WGRDBESGOV) meeting, the adaptation of the RDBES to the FDI format will be established mainly by introducing new fields in the RDBES format.

STECF notes that the provision of the FDI capacity table is only feasible by integrating this table in the RDBES.

STECF notes that it would be beneficial to add two optional fields (AphiaID and Scientific Name) in the FDI table A because the information available to identify the species is dynamic and not consistent.

STECF acknowledges that although initial work is done towards the provision of FDI data from the RDBES, additional support provided by the DCF framework, and the European Commission is needed to facilitate this in the future. It is beneficial to keep track of the RDBES progress and continue this work when the RDBES data are fully integrated in the stock assessment process.

STECF conclusions

STECF concludes that the EWG 23-05 appropriately addressed all ToRs defined.

STECF reiterates its conclusion from previous years that the FDI methodology meeting is essential to achieve an agreed unified methodology among the MSs and to ensure the quality of the data. However, it should be noted that the number of Member States attending the EWG was much lower compared to the 2021 meeting. To successfully address methodological issues, a broad engagement is crucial, therefore STECF stresses the need for participation by all Member States.

STECF concludes from the available Member States responses, that there are no significant changes in the Member States approaches to the provision of spatial data compared to the previous review in 2021. Most Member States are not providing data at the finer spatial resolution (c-squares), even though data at this resolution would broaden the value of the data and increase the applications for which it could be used. DG MARE may want to reflect on how Member States could be encouraged to provide data at this finer spatial resolution.

STECF supports the EWG's initiative to provide guidance on the calculation of the different types of quality indicators requested and on the estimation of the EEZ indicator from the available information sources (logbooks, VMS).

STECF endorses the EWGs proposed procedure to run a pilot study with 2023 data during the 2024 MEDBS data call to test the transfer of the biological data from the MEDBS data call into the FDI format.

STECF supports the EWG's proposed update of the MEDBS data call, providing the DOMAIN in the ID column, which is needed to link FDI table A and the MEDBS biological tables.

STECF concludes that a significant amount of biological data cannot be published on the STECF website (dissemination page) because of the confidentiality rules. However, the data can be made available for scientific purposes if the Member States give permission.

STECF supports the EWG proposal to re-run the script for combining the biological data in Tables C, D, E and F with Table A after the 2023 FDI data call because only a subset of the data could be currently tested due to inconsistencies in the SOP. Member States were informed about the detected inconsistencies and given the opportunity to correct them.

STECF supports the initial updates to the RDBES and FDI data call, proposed by the EWG and WGRDBESGOV towards the provision of FDI data from the RDBES. As the RDBES is still in development, the alignment to the FDI data call will need the follow up and support of the European Commission with respect to the DCF framework.

Contact details of STECF members

¹ - Information on STECF members' affiliations is displayed for information only. In any case, Members of the STECF shall act independently. In the context of the STECF work, the committee members do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: <http://stecf.jrc.ec.europa.eu/adm-declarations>

| Name | Affiliation¹ | Email |
|---------------------|---|--|
| Bastardie, Francois | Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitovet, 2800 Kgs. Lyngby, Denmark | fba@aqu.dtu.dk |
| Borges, Lisa | FishFix, Lisbon, Portugal | info@fishfix.eu |
| Casey, John | Independent consultant | blindlemoncasey@gmail.com |
| Coll Monton, Marta | Consejo Superior de Investigaciones Cientificas, CSIC, Spain | mcoll@icm.csic.es |
| Daskalov, Georgi | Laboratory of Marine Ecology, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences | Georgi.m.daskalov@gmail.com |
| Döring, Ralf | Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Economic analyses Herwigstrasse 31, D-27572 Bremerhaven, Germany | ralf.doering@thuenen.de |
| Drouineau, Hilaire | Inrae, France | hilaire.drouineau@inrae.fr |
| Goti Araluca, Leyre | Thünen Institute of Sea Fisheries - Research Unit Fisheries Economics, Herwigstrasse 31, D-27572 Bremerhaven, Germany | leyre.goti@thuenen.de |
| Grati, Fabio | National Research Council (CNR) - Institute for Biological Resources and Marine Biotechnologies (IRBIM), L.go Fiera della Pesca, 2, 60125, Ancona, Italy | fabio.grati@cnr.it |
| Hamon, Katell | Wageningen Economic Research, The Netherlands | katell.hamon@wur.nl |
| Ibaibarriaga, Leire | AZTI. Marine Research Unit. Txatxarramendi Ugarte z/g. E-48395 Sukarrieta, Bizkaia. Spain. | libaibarriaga@azti.es |
| Jardim, Ernesto | Marine Stewardship Council MSC, Fisheries Standard Director FSD, London | ernesto.jardim@msc.org |

| Name | Affiliation¹ | Email |
|-----------------------------|---|--|
| Jung, Armelle | DRDH, Techopôle Brest-Iroise, BLP 15 rue Dumont d'Urville, Plouzane, France | armelle.jung@desrequinse.tdeshommes.org |
| Ligas, Alessandro | CIBM Consorzio per il Centro Interuniversitario di Biologia Marina ed Ecologia Applicata "G. Bacci", Viale N. Sauro 4, 57128 Livorno, Italy | ligas@cibm.it ; ale.ligas76@gmail.com |
| Mannini, Alessandro | CNR IRBIM Ancona, Largo Fiera della Pesca, 260125 Ancona ITALY | alessandro.mannini@irbim.cnr.it |
| Martin, Paloma | CSIC Instituto de Ciencias del Mar Passeig Marítim, 37-49, 08003 Barcelona, Spain | paloma@icm.csic.es |
| Motova -Surmava, Arina | Sea Fish Industry Authority, 18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS, U.K | arina.motova@seafish.co.uk |
| Moore, Claire | Marine Institute, Ireland | claire.moore@marine.ie |
| Nielsen, Rasmus | University of Copenhagen, Section for Environment and Natural Resources, Rolighedsvej 23, 1958 Frederiksberg C, Denmark | rn@ifro.ku.dk |
| Nimmegeers, Sofie | Flanders research institute for agriculture, fisheries and food, Belgium | Sofie.Nimmegeers@ilvo.vlaanderen.be |
| Pinto, Cecilia (vice-chair) | Università di Genova, DISTAV - Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Corso Europa 26, 16132 Genova, Italy | cecilia.pinto@edu.unige.it |
| Prellezo, Raúl (vice-chair) | AZTI -Unidad de Investigación Marina, Txatxarramendi Ugarteaz/g 48395 Sukarrieta (Bizkaia), Spain | rprellezo@azti.es |
| Raid, Tiit | Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallin, EE-126, Estonia | Tiit.raid@gmail.com |
| Rihan, Dominic (chair) | BIM, Ireland | rihan@bim.ie |

| Name | Affiliation¹ | Email |
|----------------------------|---|--|
| Sabatella, Evelina Carmen | National Research Council (CNR) – Institute for Research on Population and Social Policies (IRPPS), Corso S. Vincenzo Ferreri, 12, 84084 Fisciano, Salerno, Italy | evelina.sabatella@cnr.it |
| Sampedro, Paz | Spanish Institute of Oceanography, Center of A Coruña, Paseo Alcalde Francisco Vázquez, 10, 15001 A Coruña, Spain | paz.sampedro@ieo.csic.es |
| Somarakis, Stylianos | Institute of Marine Biological Resources and Inland Waters (IMBRIW), Hellenic Centre of Marine Research (HCMR), Thalassocosmos Gournes, P.O. Box 2214, Heraklion 71003, Crete, Greece | somarak@hcmr.gr |
| Stransky, Christoph | Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Herwigstrasse 31, D-27572 Bremerhaven, Germany | christoph.stransky@thuenen.de |
| Ulrich, Clara | IFREMER, France | Clara.Ulrich@ifremer.fr |
| Uriarte, Andres | AZTI. Gestión pesquera sostenible. Sustainable fisheries management. Arrantza kudeaketa jasangarria, Herrera Kaia - Portualdea z/g. E-20110 Pasaia - GIPUZKOA (Spain) | auriarte@azti.es |
| Valentinsson, Daniel | Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden | daniel.valentinsson@slu.se |
| van Hoof, Luc | Wageningen Marine Research Haringkade 1, IJmuiden, The Netherlands | Luc.vanhoof@wur.nl |
| Velasco Guevara, Francisco | Spanish Institute of Oceanography - National Research Council, Spain | francisco.velasco@ieo.csic.es |
| Vrgoc, Nedo | Institute of Oceanography and Fisheries, Split, Setaliste Ivana Mestrovica 63, 21000 Split, Croatia | vrgoc@izor.hr |

REPORT TO THE STECF

**EXPERT WORKING GROUP ON
FDI methodology
(EWG-23-05)**

Virtual meeting, 30 May-02 June 2023

This report does not necessarily reflect the view of the STECF and the European Commission and in no way anticipates the Commission's future policy in this area

1 INTRODUCTION

The STECF EWG 23-05 met as a virtual meeting during 30 May – 2 June 2023. The meeting was opened at 9 am on 30 May and was adjourned at 17.00 on 2 June 2023. Working conditions were adequate.

The EWG 23-05 was the second working group on FDI methodology. The first meeting was held in 2021 (STECF EWG 21-10) and information about the ToRs and results of the previous discussions can be found in the report STECF 21-12.

1.1 Terms of Reference for EWG-23-05

Based upon the

- STECF PLEN 22-03 conclusions on the STECF EWG 22-10 FDI;
- STECF PLEN 21-03 conclusions on the STECF EWG 21-10 Methodology;
- STECF PLEN 21-01 conclusions on the 7.3 preparation of the EWG 21-10 on Fisheries Dependent Information;
- STECF PLEN 20-02 conclusions on the 7.4 preparation of the EWG 20-10 Fisheries Dependent Information;
- STECF EWG 20-10 conclusions including the establishment of common practices (use of confidentiality data records and dissemination tools), and the methodology concluded to partition data (numbers at length) from Tables C and D (aggregations according to sampling programs) to Table A (detailed catch table);
- The need stressed by the STECF PLEN 19-03 to develop a suite of methodologies for the dissemination of FDI data. Such methodologies will provide a visual and numerical indication of estimate robustness and coverage – in particular for discard estimates.

The STECF supports the proposal to hold a methodology meeting every second year, as requested by the EWG. These methodology meetings form an essential pillar to the functioning of the EWG as they facilitate the development of methods used to answer the data call and check the quality of the data. The experience of having such a meeting in 2021 ensured that such dedicated methodology meetings have clear positive effects on the quality of the data (and subsequent advice), and significantly reduce the time required for data checking during the advice meeting. These methodology meetings also provide a space in which historical data can be explored and investigated for stability and consistency across years. This feature of the meeting will become increasingly important as FDI will request more historical years in future data calls (pre-2013).

The STECF EWG is requested to:

1. Review approaches used by Member States responding to the FDI data call and if possible propose common best practice

Discuss and review the following:

- 1.1. Follow up on methods used by Member States to partition biological sampling data to the level requested in Table A
- 1.2. Any issues in preparing the data(call) with the new métier definitions used by Member States
- 1.3. Follow up on allocation of landings to c-squares using VMS/logbook data
- 1.4. The data call request to specify the UK EEZ indicator for areas that have a borderline between EU and UK. The EWG is requested to review the approach used (or planned to be used) by Member States to provide this information
- 1.5. Discuss if FecR package produced at the 2nd Workshop on Transversal Variables held in Nicosia, Cyprus on 22-26 February 2016 (Castro Ribeiro et al., 2016) is used for data preparation and how it could be maintained

1.6. Quality indicators for discard estimates

1.7. The experts are invited to prepare a presentation on their methodology as changed since 2021 discussion in STECF EWG 21-10 in the respective Member State that will be given in the first days of the EWG

2. Review outputs of the ad hoc contract 1: trial on data transfer procedures to transfer biological data from the Mediterranean and Black Sea data call into the FDI database

Discuss and agree on the necessary steps to transfer the biological data from Mediterranean and Black Sea data call into the FDI format/database. Review the ad hoc contract results for transferring the biological data of the Mediterranean and Black Sea data call to the FDI data format.

3. To review in detail the script (available in Annex 4 of EWG 22-10) that is used to disseminate the biological data in tables C, D E and F by merging with table A

As discussed in STECF PLEN 22-03, the script to merge the catch data and the biological tables still maintains the underlying assumptions of the raising procedures and avoid any false assumptions of length/age composition availability at a very fine resolution. This script is available in Annex 4 of the EWG 22-10 report and was made publicly available as an electronic annex, noting that the script is still considered to be under development. The EWG is requested to review the script outputs based on 2022 published data and further develop clear guidance for the end users.

4. Discuss ICES RDBS development progress and its alignment to FDI data call

WGRDBESGOV (ICES) has formed a subgroup to investigate the possibility of the RDBES to be used to fulfil the FDI data call. The subgroup revised the Fishery Dependent Information data call tables and compared them with the corresponding tables in the RDBES Data Model and InterCatch. The output of this work (WGRDBESGOV 2022) lists the variables that are proposed to be added to the CL and CE tables of the RDBES. There is also a species list that is proposed to be added to the FDI specifications and also some issues that shall be taken into account in the alignment of RDBES and FDI data calls. The group is invited to discuss the outcomes of WGRDBESGOV and provide feedback if appropriate.

2 RESPONSES TO THE TERMS OF REFERENCE

2.1 Review approaches used by Member States responding to the FDI data call and if possible propose common best practice

Following the same format as the first methodology meeting in 2021, the EWG began with experts providing a short presentation on the methodology they currently employ to respond to the FDI data call. The experts were asked to address the six main topics defined in ToRs and discussed in this chapter. The experts were also invited to share any other methodological questions/concerns/advances with the group to find best practice and share experience. All methodological summaries from the first methodological meeting are added in the Annex 1 of this report. The presentations and discussions of the EWG 2023-05 are summarized in the Annex 2. The columns related to the topics addressed in 2021 summarise the change in methods used by the Member States since 2021. Some of the changes in the FDI data call were agreed during the first methodology meeting and introduced in 2022, therefore columns related to new topics present new information.

2.1.1 Follow up on methods used by Member States to partition biological sampling data to the level requested in the Table A of the FDI data call

Partitioning of discard estimates can be carried out by slightly different approaches, and consequently with some differences in the outputs. A summary of the information gathered on the method to partition biological data during the first FDI methodological working group (EWG 21-10) can be found in Table A.1.1 in the Annex 1.

The EWG 21-10 suggested the following practices to partition discard estimates in the Table A of the FDI data:

- Discards reported to FDI should be based on scientific estimates. To ensure these discard estimates are statistically sound, they should be estimated in accordance with the outcomes of a national sampling programs. When used correctly the detail of the program and estimation process is captured in the variable 'DOMAIN'.
- The partitioning of the discard estimates from Tables C, D and K into Table A should be completed by using the correctly specified 'DOMAIN' to link the tables, therefore ensuring that the integrity of the statistically sound sampling program and its resulting discard estimate is maintained.
- In the event of a discard estimate with zero landings and/or biological data, Member States should report these to Table K, along with a correctly specified 'DOMAIN' that can be used to partition the estimate to Table A, where it is also reported. Again, maintaining the statistical robustness of the sampling plan and estimate.

During the EWG 23-05 only one Member State, Lithuania, reported any changes to the methodology used to partition the biological data to the aggregation level of the Table A (Table 2.1.1.1).

Table 2.1.1.1: Changes in the method to partition biological data since 2021.

| Country | Method to partition biological data |
|----------|-------------------------------------|
| Belgium | no changes |
| Sweden | no changes |
| Portugal | no changes |
| Slovenia | no changes |
| Poland | no changes |

| | |
|-------------|---|
| Spain | no changes |
| Ireland | no changes |
| France | no changes |
| Denmark | no changes |
| Cyprus | no changes |
| Greece | no changes |
| Lithuania | Proportionally to all landings for flounder |
| Netherlands | no changes |

2.1.2 Any issues in preparing the data with the new métier definitions used by Member States

Since 2018 the Regional Coordination Group (RCG) Intersessional Subgroup (ISSG) on Métier and transversal variable issues has worked on the standardisation of métier definitions. The group was tasked to update and harmonise the list of métier codes used in the DCF. The new list of métiers was agreed and approved by RCGs and National Correspondents (NCs) in 2020 for the Atlantic Region. The RCG Med & BS have evaluated the métier codes for their region during the RCG meeting in 2022, and some additional métiers have been added, mainly introducing new gear codes used in the Mediterranean and Black Sea fishing region.

In 2022 the new métier codes were requested in the ICES Working Group on Bycatch of Protected Species (WGBYC) data call, and also in the ICES Regional Database & Estimation System (RDBES) data call for 2021 landings and effort data. The EWG 22-10 (STECF-22-10) agreed that the new métier codes agreed by RCGs should be requested in the 2023 FDI data call and that the list should be managed by the RCG ISSG on Métier and transversal variable issues, who also manages the list of codes that are used in ICES.

Discussions at the EWG

At the time of the EWG 23-05 there were no major issues reported regarding changing to the new métier codes requested by ICES or STECF FDI data calls. A compilation based on presentations by experts participating at the EWG is presented in the Table 2.1.2.1.

Table 2.1.2.1: Data preparation with the new métier definitions

| Country | Reply regarding preparing the FDI data call with the new métier definitions |
|----------|--|
| Belgium | No issues with the new métier definitions Small editorial conversions: SDN_DEF_0_0_0 --> SDN_DEF_>0_0_0 (similar in 2021) |
| Bulgaria | There are no issues related to the preparation of the data call or with the new métier list. METIER_7 is not applicable for Bulgarian fleet, because there are no tuna fisheries in Bulgaria. Bulgaria needs the following métier code to be included in the métier list for the FDI data call: GNS_DEF_>=400_0_0, the code will be used by Bulgaria and Romania for the gears targeting turbot. |
| Cyprus | Cyprus does not have any problems/issues with the new métier list. |

| Country | Reply regarding preparing the FDI data call with the new métier definitions |
|-----------|--|
| Denmark | <p>The methodology and script developed by the RCG ISSG on métier and transversal variable issues is used.</p> <p>For vessels without logbooks, the métiers are estimated based on fleet register and sales notes.</p> |
| France | <p>Allocation of métiers within the SACROIS system for declarative data, combined with reference tables and annual fishing calendars go into the métier algorithm to assign the métiers. Detailed methodology explained in the report of the Métier workshop in 2018: https://github.com/ices-eg/RCGs/blob/master/Metiers/Reports/2018_Workshop_DCF%20Metiers.pdf</p> <p>The métiers at DCF level 6 will be provided following the reference list developed by the RCG ISSG Transversal issues.</p> <p>Issues:</p> <ul style="list-style-type: none"> • No métier reference list for small-scale fisheries in French Guiana, Guadeloupe, Martinique, Saint-Martin, Réunion and Mayotte. Will follow FDI annex codes. • Overlapping and sometimes inconsistency between the METIER field and the GEAR_TYPE, TARGET_ASSEMBLAGE and MESH_SIZE_RANGE fields. • The mesh size ranges in Appendix 6 are not the same as in the métier reference list. Need for further harmonization/standardization? |
| Greece | <p>Following métiers were included in the Greek sampling scheme before 2021:</p> <p>OTB_DEF_>=40_0_0 PS_SPF_>=14_0_0 FPO_DEF_>=16_0_0 GNS_DEF_>=16_0_0 GTR_DEF_>=16_0_0 LLD_LPF_0_0_0 LLS_DEF_0_0_0 SB_SV_DEF_0_0_0</p> <p>New métiers included in the sampling scheme:</p> <p>DRH_MOL_0_0_0 (Hand dredgers) LHP_FIF_0_0_0 (Hand and pole liners) LTL_LPF_0_0_0 (Trolling liners) GTN_DEF_0_0_0 (Combined gillnets-trammel nets)</p> <p>Effort and landings are collected monthly.</p> <p>The effort and landings are reported to FDI for the above métiers.</p> |
| Ireland | <p>Implementing the new script designed by the RCG métier group, no issues encountered. Still MIS_MIS for some small-scale fisheries.</p> |
| Lithuania | <p>Minor issues:</p> |

| Country | Reply regarding preparing the FDI data call with the new métier definitions |
|-----------------|---|
| | <ul style="list-style-type: none"> • When allocating métiers in small scale fisheries the target species assemblage sometimes needs to be corrected, when salt water species are targeted but fresh water species are caught. • The long period of data requested in the STECF FDI 2023 data call might impact the quality of métier allocation. |
| Poland | <ul style="list-style-type: none"> • New métier codes successfully applied in ICES data calls, • Allocation of métiers done according to the workflow developed by the <i>RCG ISSG Métier and transversal variable issues</i>, • Very few cases with missing métiers. Handled using vessel pattern, • No major issues anticipated when preparing data for the 2023 FDI data call. |
| Portugal | <p>No major issues are expected concerning the new métiers definition.</p> <p>Distinct algorithms for:</p> <ul style="list-style-type: none"> • SSF: Sales notes + Licenses. Some MIS_MIS métiers for SSF • LSF: Logbook + Sales notes • DWF: Logbook <p>Métier level 7 for LP not yet applied.</p> |
| Slovenia | <p>Métier definition from EU MAP legislation and DCF data collection web sites have been used.</p> |
| Spain | <p>A re-coding of the métier codes for the historical time series (2013-2021) has been implemented. It will be applied to generate the different tables of the FDI Data Call for all years.</p> <p>These tables will be re-uploaded in 2023, along with the 2022 data.</p> |
| Sweden | <p>No particular problems.</p> <p>Métiers defined by script developed by the RCG ISSG Métier and transversal variable issues.</p> |
| The Netherlands | <p>We assign métier at the trip level using the dominant mesh size. Some trips might have more than one mesh size. Change of métier assignment from trip level to fishing sequence level.</p> |

The comments below were discussed at the EWG 23-05 meeting:

- The long time series requested in the FDI 2023 data call might be impacting the quality of métier allocation, especially for older historical data.
- There is no métier reference list for small-scale fisheries in French Guiana, Guadeloupe, Martinique, Saint-Martin, Réunion and Mayotte. Since there is no need to coordinate between Member States Outermost Regions, they do not belong to an RCG.
- There is an overlap and sometimes inconsistency between the METIER field and the GEAR_TYPE, TARGET_ASSEMBLAGE, MESH_SIZE_RANGE and SPECON fields of FDI tables. The mesh size ranges in Appendix 6 are not the same as in the métier reference list.

The inclusion of the METIER field as well as the GEAR_TYPE, TARGET_ASSEMBLAGE and MESH_SIZE_RANGE fields can cause confusion, as the métier level 6 code is a combination of the gear, target species assemblage and mesh size range. Some experts explained that they use the

gear code and mesh size that is reported in logbooks when reporting the GEAR_TYPE and MESH SIZE RANGE fields, while the METIER code can be derived from a scientific approach, that can differ from the information reported in the logbooks. The use and codes of the fields are the following:

- GEAR_TYPE: In some cases, gears reported in the logbooks can be grouped in the métier level 4 gear code. In the public FDI dataset with effort by country containing 2013-2021 data, 11% of the records had different gear types reported in the GEAR_TYPE and METIER fields when taking the first element of the métier field (representing the gear type) and 14% of the records do not have a métier code (reported as NK).
- TARGET ASSEMBLAGE: This code is potentially redundant, as it should be the same as what is reported in the METIER field. However, 2% of the records do not have the same target assemblage in the public FDI dataset with effort by country containing 2013-2021 data, when comparing the TARGET_ASSEMBLAGE and METIER fields when taking the second element of the métier field (representing the target assemblage) and 14% of the records don't have a métier code (reported as NK).
- MESH SIZE RANGE: this field is needed as mesh sizes different from the métier mesh size ranges are needed for reporting on the exemptions.

EWG conclusions

The experts present at the EWG have not highlighted major issues related to the allocation of métiers for the Member States listed in the Table 2.1.2.2. Therefore, it is expected that it will be possible to successfully submit data with the new métier codes in response to the FDI data call 2023.

The mismatches between the METIER, GEAR_TYPE, TARGET_ASSEMBLAGE and SPECON fields should be checked again in the September 2023 by the FDI EWG after the data resubmission with new métier codes. If major differences are found, those should be explained.

2.1.3 Follow up on allocation of landings to c-squares using VMS/logbook data

According to the FDI data call information on spatial landings and spatial effort (tables H and I) should be provided using either the c-square (at 0.5*0.5 degrees resolution) or the coordinates of the centre of a rectangle together with a rectangle type (i.e., ICES, GFCM, IOTC or ICCAT). During the first FDI methodological working group meeting (EWG 21-10) it turned out that the majority of Member States provide the coordinates of the centre of a rectangle, while only a few countries provide the c-square, which is prepared using VMS data. The most common approach is to use the information on a rectangle (e.g., ICES, GFCM) which is registered in logbooks or which can be determined from coordinates registered in logbooks. However, VMS data is widely used by most of the countries to validate rectangles and areas registered in logbooks. A summary of the information gathered on the method to spatially allocate landings during the EWG 21-10 can be found in the Table A.1.2 in Annex 1.

During the EWG 23-05 discussions related to the method used to spatially allocate landings data, only a few minor changes or improvements since 2021 were reported by experts (as shown in Table 2.1.3.1). This analysis does not cover spatial analysis needed to define the UK EEZ indicator which was introduced in the data call in 2022 and discussed in the next chapter (see subchapter 2.1.4).

Table 2.1.3.1: Changes in the spatial allocation of landings since 2021, except the UK EEZ indicator.

| Country | Spatial allocation of landings |
|----------------|---------------------------------------|
| Belgium | no changes |
| Sweden | no changes |
| Portugal | no changes |
| Slovenia | no changes |

| | |
|-------------|--|
| Poland | ICES rectangles or c-square depending on the area |
| Spain | no changes |
| Ireland | no changes |
| France | no changes |
| Denmark | If the ICES rectangle and the area are not matching, it is corrected based on VMS data. For vessels without logbooks an estimate is made based on AIS/VMS/BB data if available or harbour default. |
| Cyprus | no changes |
| Greece | no changes |
| Lithuania | no changes |
| Netherlands | no changes |

2.1.4 The data call request to specify the UK EEZ indicator for areas that have a borderline between the EU and UK. The EWG is requested to review the approach used (or planned to be used) by Member States to provide this information

In the FDI data call, the EEZ indicator variable is requested in the Tables A, G, H and I for fishing activity (transversal) data. EEZ indicator codes to be used are defined in the Appendix 9: Area coding of the FDI data call in accordance with the sub-region.

EEZ indicators are requested only for FAO areas 34 and 27 following this codification:

- EU: EU waters (excluding UK waters before the Brexit)
- UK: UK waters (also requested to separate for the historical time series before the Brexit when UK waters were part of the EU waters)
- RFMO: International waters (≥ 200 nm)
- COAST: Exclusive economic zone (< 200 nm) of countries outside EU and UK (e.g. Norwegian waters)

During the EWG 23-05 the experts were asked to give some information about how the EEZ indicator have been calculated to answer the FDI data call. The following table summarizes the information provided by country.

Table 2.1.4.1: Methodology to allocate the EEZ indicator in FAO areas 27 and 34

| Country code | Methodology to allocate the EEZ Indicator (EU / RFMO / COAST & UK) in FAO areas 27 & 34 |
|--------------|---|
| Netherlands | EEZ is determined at the fishing sequence level based on the logbooks coordinates. Outside FAO area 27, VMS data are taken into account. |
| Belgium | EEZ_INDICATOR = midpoint ICES rectangle from the logbooks -> check if located within UK EEZ ('point.in.polygon' R function) (source: https://www.marineregions.org). |
| Lithuania | Reporting UK EEZ: The logbooks records checked and validated. Allocation to UK EEZ based on indication in a logbook. |

| Country code | Methodology to allocate the EEZ Indicator (EU / RFMO / COAST & UK) in FAO areas 27 & 34 |
|---------------------------------------|---|
| France | For geolocalized vessels (incl. VMS vessels), EEZ is derived directly from geolocalized data. For non geolocalized vessels, allocation of an EEZ by fishing trip for each landing is based on: 1) Declarative forms spatialization (e.g. logbooks) refine/precise by annual fishing activity calendars where "precise" fishing areas could be informed (as national statistical sub-rectangles and/or the range of operation (in or out the 12 mile coastal band)) and 2) Then, Pro-rata calculation applied when the most precise spatial information available cover more than one EEZ. |
| Denmark | UK EEZ indicators. DTU is using the most recent version of EEZ borderline from https://marineregions.org/eezmethodology.php . The Danish administration are using official zones. A link to the zone from UK is available at https://www.gov.uk/guidance/inspire-portal-and-medin-bathymetry-data-archive-centre . Is there an official EU source defining the UK EEZ border? The allocation of effort/landings to the UK EEZ is based on VMS positions. |
| Sweden | EEZ allocated from positions in logbooks (per fishing operation), so if a square is split in more than one EEZ, landings are also split. |
| Portugal | EEZ declared in the electronic logbook. Still facing problems in the allocation of the landings to EEZ. The calculation process for the EEZ indicator is not fully developed so the data submitted may not be entirely correct. So far PRT have used only the coordinates to determine the EEZ indicator. We only use the EEZ statement in the logbook from 2023 year onwards (validated with the coordinates). PRT is still assessing ways to improve the procedure. |
| Ireland | Where VMS data was available it was used to determine the proportion of VMS effort in EU27 and UK waters. VMS is used to allocate landings to the relevant EEZ based on VMS effort per time interval between pings and vessel speed threshold. Where VMS data was not available landings were allocated to EEZ based on fixed ratios for each statistical rectangle. <12m vessels - stat rec. |
| Poland | Allocation of landings to UK EEZ will be based on the information on EEZ reported in logbooks, Information will be validated using VMS data. |
| Spain | For FDI 2023 UK EEZ indicator is assigned according to the country declared in logbook for all years (2013-2022), that is, corresponding to "United Kingdom". Discrepancies will be checked with VMS. |
| Not applicable for FAO area 37 | |
| Cyprus | NA |
| Greece | NA |
| Slovenia | NA |

EEZ indicator can be derived/estimated from different information sources each of which provide varying levels of certainty, and can be used on their own, combined, or for cross-validation. Available data sources include:

- Declarative data (e-logbooks, logbooks or coastal logbooks) where following information could be informed:
 - EEZ indicator directly
 - Detailed coordinates (latitude & longitude)
 - Spatial aggregated information e.g. ICES Rectangle for FAO area 27
- VMS/geolocalized data from which EEZ indicator could be calculated/estimated.

The EWG discussed the different sources of information that are available and proposed the following hierarchical decision tree to help Member States answer the FDI data call and improve harmonization.

Step 1. Declarative detailed coordinates informed by fishing haul/sequence. In this case, EEZ indicator could be directly derived from the declaration. An issue can arise when the starting and ending coordinates do not belong to the same EEZ. In this case declarative EEZ indicator could be evaluated first and prioritized if available and consistent with one of the coordinates. Otherwise in case it is not consistent, fishing activity estimates could be either 1) completely allocated to the “end coordinates” or to the “start coordinates” or 2) proportionally allocated considering fishing time estimated by EEZ. Furthermore, it seems useful to compare/validate coordinates with VMS/geolocalized data, if they are available, and to highlight cases with observed inconsistencies.

Step 2. Declarative EEZ indicator from fishermen directly recorded in logbooks. In this case, the EEZ indicator could be directly copied from the declaration. Furthermore, it is useful to develop quality/consistency checks against other declared spatial information (e.g., does the EEZ indicator match with the ICES rectangle recorded in the declaration?) and/or VMS/geolocalized data if available. In case of inconsistencies, a decision should be made if the declarative EEZ information is preferred or should be refined or specified considering additional spatial information.

Step 3. Aggregated spatial information. When no other information is available except the aggregated spatial information (e.g., ICES rectangle) allocated to a fishing trip, then a methodology should be defined to derive the EEZ indicator from it. When the aggregated spatial information covers more than one EEZ then a different approach could be applied to derive the EEZ: using a proportional allocation rate (e.g. area proportion - % of ICES rectangle by EEZ), allocated each spatial information to a unique EEZ (e.g. considering the ICES rectangle’ centre or the main EEZ by ICES rectangle) or using complementary information like vessel historical pattern or fishing activity calendars. Nevertheless, the information provided will be less informative and precise than derived following step 1 or 2.

Step 4. Finally, VMS/geolocalized data, if available (i.e., for geolocalized vessels, VMS \geq 12m vessels), could be used either:

- ✓ to validate/check the declarative information available (coordinates or EEZ indicator, see steps 1&2),
- ✓ to specify/refine the EEZ indicator assessed in the step 3 based on aggregated spatial information (esp. when the aggregated spatial information cover more than one EEZ) and/or
- ✓ to fill in the gap determining/calculating the EEZ directly from the VMS/geolocalized data e.g. estimating fishing effort allocated by EEZ water.

In all cases, it should be assessed if the pings are “fishing” or “non-fishing” and how much estimated fishing time should be allocated to each EEZ based on “fishing” pings directly or intervals between “fishing” pings. VMS tools R-package (<http://nielshintzen.github.io/vmstools/>) and specialized ICES working group (WGSFD, WKSSFGE0 1 & 2) could provide some guidelines to make such calculation based on the geolocalized data.

EWG highlights that before Brexit (2021) UK waters were part of the EU waters and it is impossible from EEZ indicators declared in logbooks to distinguish fishing activity in UK waters against fishing

activity in other EU countries waters. Therefore, the EWG considers that the declared EEZ indicator coming from logbooks should not be considered in this case, and the decision tree must be adjusted.

The EWG also highlights that EEZ indicator should be calculated in the same way in the tables A, G, H and I to avoid inconsistencies between the different tables.

The EWG highlights that to improve consistency when using a declarative detailed coordinates and VMS/geolocalized data, there is a need to have a commonly agreed EEZ shapefile officially validated at EU, UK and other countries level. It seems that such a shapefile is not officially available as there are some "grey areas" struggled by different countries. Marine regions (source: <https://www.marineregions.org>) is the main shape file source mentioned by EWG experts but, at the same time, experts indicate that sometimes they also have to use the official national shapefile provided by their administration. These different shapefiles could present some disparities. In the end, EWG could only make a reference to the marine regions shapefile to be used to promote standardization/harmonization between Member States, but each Member State will remain responsible of the shapefile finally used to answer the FDI data call.

EWG conclusions

The EWG observed that EEZ indicator could be derived/estimated from different information sources eventually cross-validated/combined. For this reason, the EWG proposed a hierarchical decision tree approach to help Member States answering the FDI data call and to improve the harmonization between Member States.

Furthermore, the EWG agreed to make an overview by country of the methodology applied to define the EEZ indicator, including the shapefile considered if any, during the September FDI meeting.

2.1.5 Discuss if fecR package produced at the 2nd Workshop on Transversal Variables held in Nicosia, Cyprus on 22-26 February 2016 is used for data preparation and how it could be maintained

The EWG 23-05 FDI Methodology under the ToR1 was asked to discuss if fecR package, produced at the 2nd Workshop on Transversal Variables held in Nicosia (Castro Ribeiro et al., 2016), is used by Member States for data preparation and how it could be maintained.

The fecR package implements fishing effort calculations that were developed at the 2nd Workshop on Transversal Variables held in Nicosia, Cyprus on 22-26 February 2016 (Castro Ribeiro et al., 2016). The package provides a set of functions that implement the so called "Nicosia principles for fishing effort calculation" that aim to standardize the calculation of fishing days and days at sea across the EU Member States. The development of fecR started during the 2nd Workshop on Transversal Variables (22-26 February 2016) and the first version was put online in a public repository (CRAN) in early November 2016. The use of the package by Member States for the effort calculations was then promoted in the 2017 and 2018 FDI data calls. But in December 2018 the package was put offline and archived by CRAN after its code failed to pass some internal checks to CRAN and CRAN registered difficulties when contacting the maintainer of the package. From that moment to the present, the package remained offline with only archived versions being available to Member States. This situation complicated its usage in the answering to effort data calls. Such a situation was largely motivated by difficulties from JRC side in finding the resources needed to retake the regular updates required for the package to be put back up on CRAN. The original code, as of the last update made, remained in a private JRC GitLab, available only to a couple of developers external to JRC that, however, lacked the GitLab permissions required to put the package back online. The issue was taken up by the RCG ISSG Metier and transversal variables for its work in 2022/2023 and JRC moved the fecR package from its original private repository in GitLab to a public one in mid-April 2023.

The ISSG Metier and transversal variable issues of the RCG North Atlantic and Baltic Sea prepared a questionnaire that also included some questions related to the use of the fecR package by Member States. Based on this questionnaire, 5 Member States report that they are using the fecR package, 3 are using it partly and 4 are not using the package. All Member States that are not using the package have developed similar procedures in other software to estimate effort in line with the Nicosia principles.

The outcomes from the questionnaire made by the RCG ISSG Metier and transversal variables group can be found in the report:

[https://github.com/ices-eg/RCGs/blob/master/Metiers/Reports/ISSG Metier and transversal variable issues 2023 Report.pdf](https://github.com/ices-eg/RCGs/blob/master/Metiers/Reports/ISSG%20Metier%20and%20transversal%20variable%20issues%202023%20Report.pdf).

At the EWG 23-05 experts also provided information on the usage of the fecR package by Member States. Table 2.1.5.1 presents the overview of the usage of the fecR package by the Member States that presented their methodology at the EWG.

Table 2.1.5.1: Information on the fecR package, usage, maintenance request and principles applied by Member States.

| Country | fecR package used | Maintenance fecR package requested | Nicosia principles applied | Comments |
|-------------|-------------------|------------------------------------|----------------------------|---------------------|
| Belgium | yes | yes | yes | |
| Cyprus | no | | | |
| Denmark | no | yes | yes | |
| France | no | | yes | |
| Greece | no | | | uses another script |
| Ireland | yes | yes | yes | |
| Lithuania | yes | yes | yes | |
| Netherlands | no | | yes | |
| Poland | no | | yes | uses another script |
| Portugal | no | yes | | |
| Slovenia | no | | yes | |
| Spain | no | | yes | uses another script |
| Sweden | yes | yes | yes | |

EWG conclusions

The table above and the discussions at the EWG 23-05 suggest that the fecR package would be used by Member States if made available. Recently the package has been moved to the public GitLab repository of the JRC. The package will be reviewed and updated by the RCG ISSG Metier and transversal variables experts together with JRC and after that it can be made available for Member States to use.

2.1.6 Quality indicators for discard estimates

Quality indicators currently requested in the FDI data call

Quality indicators are requested in the following tables of the data call: Table B, Table C, Table D, and Table K. These indicators were first proposed in 2021 (STECF 21-10) to enable users of the data to assess coverage and robustness in terms of precision and accuracy. This data was first called in 2022 when 2021 and 2013 data was requested. This EWG would like to highlight that these indicators are still under development, and it will take time, testing and exploration to improve. The following sections detail the indicators submitted by Member States in 2022 data call by FDI data table, challenges reported by Member States in submission, outcomes of testing and plans for future development.

Table B – Refusal rates

In Table B Member States supply information on refusal rates within their sampling plan, if their sampling design can be considered a probability-based vessel selection design. Now that there are a number of years data available in Table B, the EWG recommends that time be spent at the next meeting developing guidance around how this table should be interpreted, and if it should be disseminated.

This table contains 7 quality indicators, all of which describe the coverage of the sampling plan and number of vessels and trips they refer to.

Both probabilistic and non-probabilistic quality indicators are captured in tables C, D, E, F, and K, i.e., trips etc. But Table B is only for probabilistic, otherwise it can be misinterpreted. In the absence of a probability-based vessel selection design, please submit 'NK' as an acknowledgement that they have no such plan.

Outline of variables requested from the data call are detailed below. The full description of the table can be found in the data call (<https://datacollection.jrc.ec.europa.eu/dc/fdi>):

5. COVERAGE_RATE: The proportion of the population that was sampled as a rate (<1, precision to 2 digits after the decimal; if not known use 'NK'.
6. NONRESPONSE_RATE: The non-response rate (<1, precision to 2 digits after the decimal), which is defined as the proportion of all attempted contacts that ultimately failed to provide a sample, for whatever reason; if not known use 'NK'.
7. VESSELS_FLEET: [integer] Total number of vessels in the fleet; if not known use 'NK'.
8. TRIPS_FLEET: [integer] Total number of trips conducted by the fleet in the year; if not known use 'NK'.
9. TRIPS_SAMPLED_ONBOARD: [integer] Number of trips sampled on-board vessels; if not known use 'NK'.
10. UNIQUE_VESSELS_SAMPLED: [integer] Number of unique vessels sampled in the year; if not known use 'NK'.
11. UNIQUE_VESSELS_CONTACTED: [integer] Number of unique vessels contacted in the year; if not known use 'NK'.

In 2021 several Member States supplied information in Table B, but refusal rate was NA. Although this was done for valid reasons (low sampling etc.), these Member States were excluded from this analysis to provide an informative overview.

Table 2.1.6.1 shows a summary of the data submitted to Table B for 2021 and provides information in counts of the unique strata (SAMPLING_PLAN) for which a quality indicator was provided. If unique counts are the same across all quality indicators for a Member State, it means that they reported all indicators for each sampling plan in 2021. Note that in 2021, some Member States submitted material without a calculated refusal rate.

Improvements to the data call:

Both probabilistic and non-probabilistic quality indicators are captured in the Tables C, D, E, F and K, i.e. trips etc. But table B is only for probabilistic sampling, otherwise it can be misinterpreted. In the absence of a probability-based vessel selection design please submit 'NK' as an acknowledgement that they have no such plan.

Member States should report SAMPLING_FRAME name the same as what is reported in the DCF sampling frame name (reported in the DCF National Annual Report Table 2.5). If a new sampling frame arises, this should be named following the guidance provided by the DCF Annual Report.

Table 2.1.6.1: Summary of sampling frames for which quality indicators were reported in Table B for 2021.

| COUNTRY CODE | REFUSAL RATE | COVERAGE RATE | NON-RESPONSE RATE | VESSELS FLEET | TRIPS FLEET | TRIPS SAMPLED ONBOARD | UNIQUE VESSELS SAMPLED | UNIQUE VESSELS CONTACTED |
|--------------|--------------|---------------|-------------------|---------------|-------------|-----------------------|------------------------|--------------------------|
| BGR | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| CYP | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| DEU | 9 | 9 | 8 | 9 | 9 | 9 | 9 | 9 |
| ESP | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| FIN | 17 | 0 | 0 | 17 | 0 | 17 | 17 | 0 |
| FRA | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| IRL | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| LVA | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| MLT | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 5 |
| NLD | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| POL | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

Table C- Discards at age

In Table C Member States supply information on discard data at age. This table contains 7 quality indicators. Three of these quality indicators relate to the quality of the estimated discard tonnage (Discards): coefficient of variation, confidence interval upper, and confidence interval lower. Two of the quality indicators relate to the quality of the age allocation process during raising at a national level: number of actual age measurements for that domain, and proportion of age measurements from that domain represented in Age Length Keys (ALK). Two quality indicators relate to the overall coverage and sample size of the estimate in relation the domain : number of trips executed in fishery by the domain, and number of trips sampled in this domain.

Outline of variables requested from data call are detailed below. The full description of the table can be found in the data call (<https://datacollection.jrc.ec.europa.eu/dc/fdi>):

7. DISCARDS: Estimated discards in tonnes [precision to 3 digits after the decimal]; missing values not allowed. If age based information is present, this quantity should correspond to the sum of products.

8. DISCARD_CV: the coefficient of variation of the estimate based on the sample available for the strata considered (i.e., DOMAIN_DISCARDS) and the sampling design. This is calculated for the weight of discards, and is reported as a rate <1. Mandatory. 'NK' if not known.

9. DISCARD_CI_UPPER: the upper confidence limit of the estimate based on the strata sampled (i.e., DOMAIN_DISCARDS), 95% confidence interval (i.e., the confidence interval that allows us to be 95% confident that the real value is contained into; is between the upper and the lower confidence limit), supplied in weight. Mandatory. 'NK' if not known.

10. DISCARD_CI_LOWER: the lower confidence limit of the estimate based on the strata sampled (i.e., DOMAIN_DISCARDS), 95% confidence interval (i.e., the confidence interval that allows us to be 95% confident that the real value is contained into; is between the upper and the lower confidence limit), supplied in weight. Mandatory. 'NK' if not known.

11. TOTAL_TRIPS: The total number of trips that relate to domain; a number should only be given only if it relates to this domain, otherwise use 'NK'.

12. TOTAL_SAMPLED_TRIPS: The total number of sampled trips that relate to domain; a number should only be given only if it relates to this domain, otherwise use 'NK'.

13. NO_AGE_MEASUREMENTS: The number of age measurements that relate to discards. If an ALK formed from a larger aggregation of vessels than the domain has been used to estimate age information for this domain, insert the total number of age measurements used to form the ALK. If age measurements are not available or the number of measurements is not known use 'NK'.

14. AGE_MEASUREMENTS_PROP: [a value between 0 and 1] If an ALK formed from a larger aggregation of vessels than the domain has been used to estimate age information for this domain, insert the proportion of age measurements coming from the domain. If not applicable (i.e. all age measurements came from within the domain) use 'NA'.

Below there is a summary of the data submitted to Table C for 2021 providing information in counts of the unique strata (DOMAIN) for which a quality indicator was provided. If unique counts are the same across all quality indicators for a Member State, it means that they reported all indicators for a stratum in 2021.

In most cases MS provided trip information, but not CV and confidence intervals statistics as its difficult to estimate without better defined guidelines, that have been tested for robustness (see conclusions) and agreed by the EWG. However, the EWG recognised the importance of these indicators and suggested that the rules during data upload be relaxed to allow the submission of all calculated estimates.

Table 2.1.6.2: Summary of domains for which quality indicators reported in Table C in 2021.

| COUNTRY CODE | DOMAINS REPROTED | DISCARD CV | DISCARD CI UPPER | DISCARD CI LOWER | TOTAL TRIPS | TOTAL SAMPLED TRIPS | NO AGE MEASUREMENTS |
|--------------|------------------|------------|------------------|------------------|-------------|---------------------|---------------------|
| BEL | 18 | 0 | 0 | 0 | 18 | 18 | 18 |
| DEU | 18 | 16 | 9 | 9 | 18 | 18 | 18 |
| DNK | 23 | 0 | 0 | 0 | 0 | 23 | 23 |
| ESP | 46 | 0 | 0 | 0 | 0 | 0 | 46 |
| EST | 30 | 0 | 0 | 0 | 9 | 7 | 3 |
| FIN | 27 | 0 | 0 | 0 | 0 | 27 | 27 |
| FRA | 752 | 0 | 0 | 0 | 0 | 0 | 0 |
| IRL | 61 | 0 | 0 | 0 | 0 | 61 | 61 |
| NLD | 31 | 0 | 0 | 0 | 31 | 28 | 26 |
| POL | 5 | 2 | 2 | 2 | 5 | 5 | 5 |
| PRT | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| SWE | 34 | 0 | 0 | 0 | 34 | 32 | 9 |

Table D - Discards at length

In Table D Member States supply information on discard data at length. This table contains 7 quality indicators. Three of these quality indicators relate to the quality of the estimated discard tonnage (Discards): coefficient of variation, confidence interval upper, and confidence interval lower. One quality indicator relates to the representativeness of the sample by describing the number of length measurements recorded for that domain. Finally, two quality indicators relate to the overall quality

of the estimated length and discards in terms of the overall fishery: number of trips executed in fishery by the domain, and number of trips sampled in this domain.

Outline of variables requested from data call are detailed below. The full description of the table can be found in the data call (<https://datacollection.jrc.ec.europa.eu/dc/fdi>):

7. DISCARDS: Estimated discards in tonnes [precision to 3 digits after the decimal]; missing values not allowed. If age based information is present, this quantity should correspond to the sum of products.

8. DISCARD_CV: the coefficient of variation of the estimate based on the sample available for the strata considered (i.e., DOMAIN_DISCARDS) and the sampling design. This is calculated for the weight of discards, and is reported as a rate <1. Mandatory. 'NK' if not known.

9. DISCARD_CI_UPPER: the upper confidence limit of the estimate based on the strata sampled (i.e., DOMAIN_DISCARDS), 95% confidence interval (i.e., the confidence interval that allows us to be 95% confident that the real value is contained into; is between the upper and the lower confidence limit), supplied in weight. Mandatory. 'NK' if not known.

10. DISCARD_CI_LOWER: the lower confidence limit of the estimate based on the strata sampled (i.e., DOMAIN_DISCARDS), 95% confidence interval (i.e., the confidence interval that allows us to be 95% confident that the real value is contained into; is between the upper and the lower confidence limit), supplied in weight. Mandatory. 'NK' if not known.

11. TOTAL_TRIPS: The total number of trips that relate to domain; a number should only be given only if it relates to this domain, otherwise use 'NK'.

12. TOTAL_SAMPLED_TRIPS: The total number of sampled trips that relate to domain; a number should only be given only if it relates to this domain, otherwise use 'NK'.

13. NO_LENGTH_MEASUREMENTS: The number of length measurements, from within the domain, that relate to discards; a number should be given only if it relates to this domain, otherwise use 'NK'.

Below is a summary of the data submitted to Table D for 2021 providing information in counts of the unique strata (DOMAIN) for which quality indicators were provided. If unique counts are the same across all quality indicators for a Member State it means that they reported all indicators for a stratum in 2021.

Table 2.1.6.3: Summary of domains for which quality indicators reported in Table D in 2021.

| COUNTRY CODE | DOMAINS REPROTED | DISCARD CV | DISCARD CI UPPER | DISCARD CI LOWER | TOTAL TRIPS | TOTAL SAMPLED TRIPS | NO LENGTH MEASUREMENTS |
|--------------|------------------|------------|------------------|------------------|-------------|---------------------|------------------------|
| BEL | 36 | 0 | 0 | 0 | 36 | 36 | 36 |
| DEU | 31 | 26 | 16 | 16 | 31 | 31 | 20 |
| DNK | 25 | 0 | 0 | 0 | 0 | 25 | 25 |
| ESP | 100 | 0 | 0 | 0 | 0 | 0 | 100 |
| EST | 30 | 0 | 0 | 0 | 9 | 10 | 8 |
| FIN | 79 | 0 | 0 | 0 | 0 | 79 | 79 |
| FRA | 1147 | 0 | 0 | 0 | 0 | 395 | 1147 |
| IRL | 596 | 0 | 0 | 0 | 0 | 596 | 596 |
| NLD | 165 | 0 | 0 | 0 | 155 | 161 | 165 |

| COUNTRY CODE | DOMAINS REPROTED | DISCARD CV | DISCARD CI UPPER | DISCARD CI LOWER | TOTAL TRIPS | TOTAL SAMPLED TRIPS | NO LENGTH MEASUREMENTS |
|--------------|------------------|------------|------------------|------------------|-------------|---------------------|------------------------|
| POL | 8 | 4 | 4 | 4 | 8 | 8 | 8 |
| PRT | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| SWE | 34 | 0 | 0 | 0 | 34 | 32 | 14 |

Table K – Discards estimated by domain

In Table K Member States supply information on discard estimates which do not have associated biological data. During the EWG it became clear that not all Member States are using this table. This table must be used to provide only discards data for which no biological data are available (that is, for discards data that have not already been reported in tables C and D). Although some countries report this information to the biological tables (C, D), and in table A, it may be more meaningful to report in K. An important example is that domains with estimated zero discards should have a record in this table so that end users can see that it is an estimated value, with corresponding quality indicators.

This table contains 6 quality indicators. Three of these quality indicators relate to the quality of the estimated discard tonnage (Discards): coefficient of variation, confidence interval upper, and confidence interval lower; and two quality indicators relate to the overall quality of the estimated discards in terms of the overall fishery: number of trips executed in fishery by the domain, and number of trips sampled in this domain.

Outline of variables requested from data call are detailed below. The full description of the table can be found in the data call (<https://datacollection.jrc.ec.europa.eu/dc/fdi>):

5. DISCARDS: Estimated discards in tonnes [precision to 3 digits after the decimal]; missing values not allowed. If age based information is present, this quantity should correspond to the sum of products.
6. DISCARD_CV: the coefficient of variation of the estimate based on the sample available for the strata considered (i.e., DOMAIN_DISCARDS) and the sampling design. This is calculated for the weight of discards, and is reported as a rate <1. Mandatory. 'NK' if not known.
7. DISCARD_CI_UPPER: the upper confidence limit of the estimate based on the strata sampled (i.e., DOMAIN_DISCARDS), 95% confidence interval (i.e., the confidence interval that allows us to be 95% confident that the real value is contained into; is between the upper and the lower confidence limit), supplied in weight. Mandatory. 'NK' if not known.
8. DISCARD_CI_LOWER: the lower confidence limit of the estimate based on the strata sampled (i.e., DOMAIN_DISCARDS), 95% confidence interval (i.e., the confidence interval that allows us to be 95% confident that the real value is contained into; is between the upper and the lower confidence limit), supplied in weight. Mandatory. 'NK' if not known.
9. TOTAL_TRIPS: The total number of trips that relate to domain; a number should only be given only if it relates to this domain, otherwise use 'NK'.
10. NO_TRIPS_SAMPLED_WITH_SPECIES: [integer] Number of trips in which the species was sampled/observed; if not known use 'NK'.
11. NO_TRIPS_SAMPLED: [integer] Number of trips sampled for the specified domain discards; if not known use 'NK'.

Below is a summary of the data submitted to Table K for 2021 providing information in counts of the unique strata (DOMAIN) for which quality indicators were provided. If unique counts are the same across all quality indicators for a Member State it means that they reported all indicators for a stratum in 2021.

Zero discard estimates, for some of these domains the CV was reported as zero, this should have been NA as it is not applicable. FDI data base should accept NA here.

Table 2.1.6.4: Summary of domains for which quality indicators reported in Table K in 2021.

| COUNTRY CODE | DOMAINS REPROTED | DISCARD CV | DISCARD CI UPPER | DISCARD CI LOWER | TOTAL TRIPS | NO TRIPS SAMPLED |
|--------------|------------------|------------|------------------|------------------|-------------|------------------|
| BEL | 22 | 0 | 0 | 0 | 22 | 22 |
| DNK | 36 | 0 | 0 | 0 | 0 | 36 |
| NLD | 60 | 60 | 60 | 60 | 60 | 60 |
| POL | 15 | 0 | 5 | 5 | 15 | 15 |

Summary from Member States presentations

The information provided by the experts during the EWG is summarized in Table 2.1.6.5.

Table 2.1.6.5: Summary of the information provided by the experts.

| Country | Information provided |
|-------------|---|
| Belgium | Up until now we did not calculate any quality indicators because of time constraints. Hope to get this sorted out in the future. The RDBES estimation group is working on an R package for discard estimation, including quality indicators. |
| Cyprus | Quality indicators are not estimated. |
| Croatia | No information provided |
| Denmark | The quality indicators TOTAL_TRIPS, DISCARD_CV, DISCARD_CI_UPPER and DISCARD_CI_LOWER were not calculated in 2022 |
| France | No information provided |
| Greece | Quality indicators for discard estimates are calculated (CI, upper confidence limit), never used for any purpose |
| Ireland | Done but in current state do not seem very meaningful. We need time to develop good methodology with experts. |
| Lithuania | The refusal rates are not sensible for the Lithuanian fleet. Self-sampling on the North Sea (no discards registered) and sampling of the Baltic Sea fisheries on land. Risk of bias. Discard Raising Procedure Key developed by the Workshop on DRP, 6–9 February 2007, San Sebastian, Spain. Since the cod fisheries prohibition in the Baltic Sea no data on discards collected. |
| Netherlands | Issue with providing the CV and CIs on the FDI domain level. |
| Poland | Several approaches to calculate quality indicators have been tested, not sure how to calculate, will provide an example. |
| Portugal | CVs are usually estimated but were not included yet in the FDI; still need to evaluate the best way to include this information. |
| Slovenia | No information provided |

| Country | Information provided |
|---------|---|
| Spain | The quality indicators (DISCARD_CV, DISCARD_CI_UPPER, DISCARD_CI_LOWER, TOTAL_TRIPS, TOTAL_SAMPLED_TRIPS) were calculated to fisheries of ICES area, and TOTAL_SAMPLED_TRIPS for CECAF area fisheries. However, for operational reasons, they were not included in Tables C or D. |
| Sweden | Not calculated, mainly due to time constraints. |

EWG conclusions

The EWG highlights the need to better understand the statistical theory behind the discards estimates calculation and make references to basic scientific literature for report and data call. Basic principles of survey theory could be found in Cochran (1977). Vigneau (2023) aims to provide to discards sampling users some practical ways to calculate discards estimates, discards estimates variance and confidence intervals following the survey theory. Nevertheless, the EWG highlights that theory and analytical calculation of discards estimates variances and confidence intervals could become highly difficult to do especially for ratio estimators and in the context of complex sampling design. In this case, the use of bootstrap methodology, introduced by Efron, Tibshirani & Tibshirani (1994), could help to calculate estimates' variance and confidence interval. Indeed, bootstrap is a computer-intensive method based on resampling for approximating the sampling distribution of any statistics derived from a random sample and is now widely used as a tool to do statistical inference. Statistical software, such as R propose functions to use bootstrap methodology. The power of the bootstrap lies in the fact that the method applies to (almost) any estimator, no matter how complicated (Boos & Stefanski, 2010).

The EWG discussed the practical implementation of the 2022 data call and quality indicators reported by Member States and provided the following suggestions:

- There should be no validation rules applied to the submission of quality indicators in 2023. These indicators are currently under development and the FDI must remain flexible so that all calculated values can be submitted. A Member States could not submit calculated values as they were outside rules set. For example, DISCARD_CV which were greater than three digits (e.g. 0.000001), or greater than 1 (e.g. 1.2225).
- It would be useful if Member States could outline details in National Chapter in September describing attempts/challenges in calculation, why some were not calculated, or why none were submitted at all.
- Member States are encouraged to use Table K to ensure that any discards in Table A with no corresponding biological information are still provided, along with quality indicators. The EWG suggests that time be spent at the next meeting discussing the contents of this table, its value, and how it should be interpreted.
- Continued work is needed, nationally, and within methodology meetings, summary of submissions annually to track improvements and quality. It is planned to estimate similar quality indicators as part of the RDBES estimation process in the future, there is still a need to invest time and human power on this process within FDI to ensure that the indicators are meaningful and useful for the DCF, STECF and all end users. The EWG would require support from the DCF framework to achieve this goal. A possible solution would be the establishment of an RCG subgroup, perhaps ISSG Quality.
- Now that there are a number of years data available in the Table B, the EWG suggests that time be spent at the next meeting developing guidance around how this table should be interpreted, and if it should be disseminated.
- MS should report SAMPLING_FRAME name the same as what is reported in the DCF sampling frame name (reported in the DCF National Annual Reports, Table 2.5).
- Table K - Zero discard estimates, for some of these domains the CV was reported as zero, this should have been NA as it is not applicable. FDI data base should accept NA here.

The EWG also discussed possible interpretation of the quality statistics requested in the 2022 FDI data call and provided examples of various CV and confidence intervals calculations presented below.

Example

Quality indicators for discard estimates

Discards are estimated using ratio estimation. Discards are raised proportionally to the landings of the same species.

Discard rates are calculated from observed fishing operations only.

$$Discard\ rate_{domain,species} = \frac{\sum Discards_{observed\ hauls\ in\ the\ domain,species}}{\sum Landings_{observed\ hauls\ in\ the\ domain,species}}$$

$$Discards_{domain,species} = Discard\ rate_{domain,species} \times Landings_{domain,species}$$

Coefficient of variation

Version 1: Raw discards

CV calculated as standard deviation of discard weights from **observed hauls divided by mean discard weight**.

$$CV = \frac{SD(Discards_{observed\ hauls\ in\ the\ domain,species})}{MEAN(Discards_{observed\ hauls\ in\ the\ domain,species})}$$

High variability of observed discard weights. Most of the CVs were higher than 1. In the data call it is stated that CV should be lower than 1.

Version 2: Discards weighted by landings

CV calculated as weighted standard deviation of discard weights from **observed hauls divided by weighted mean discard weight**. Discards are weighted by the tonnage of landings.

$$CV = \frac{WEIGHTED_SD(Discards_{observed\ hauls\ in\ the\ domain,species}, Wgt = Landings_{observed\ hauls\ in\ the\ domain,species})}{WEIGHTED_MEAN(Discards_{observed\ hauls\ in\ the\ domain,species}, Wgt = Landings_{observed\ hauls\ in\ the\ domain,species})}$$

When weighted by landings, there is a lower variability of observed discard weights. More CVs lower than 1.

Version 3: Discard rate weighted by landings

CV calculated as weighted standard deviation of discard rates from **observed hauls divided by weighted mean discard rate**. Discard rates are weighted by the tonnage of landings.

Even more CVs lower than 1.

Confidence limits

Confidence limits are calculated using **R qt** function from stats package. The first step of determining the 95% confidence interval is to calculate a confidence interval margin.

$$CI\ MARGIN = qt(probability = 0.975, \quad degrees\ of\ freedom = N\ Samples - 1) * \frac{SD}{N\ Samples}$$

In the next step, CI margin is added to the mean and subtracted from the mean to calculate upper and lower confidence limits.

$$CI\ UPPER = MEAN + CI\ MARGIN$$

$$CI\ LOWER = MEAN - CI\ MARGIN$$

2.2 Review outputs of the ad hoc contract: trial on data transfer procedures to transfer biological data from the Mediterranean and Black Sea data call into the FDI database

Background

After the launch of the new FDI data call in 2018, the European Commission received complaints from some of the Member States operating in the Mediterranean and in the Black Sea about the extra work in preparing and providing the same data to two data calls in different formats.

During the EWG 19-11 experts compared the data requested to the FDI data call with the data provided to the Mediterranean and Black Sea data call; the result of the comparison was that “the two datasets are entirely consistent regarding effort and biological data and therefore Member States should not be requested to send the same information twice in the same period of the year with different formats” (STECF-19-11). Thus starting from 2020 data call biological data for Mediterranean and Black Sea were not requested anymore in the FDI data call.

In 2021 the EWG 21-10 (methodology) reviewed both data sets and concluded “that the transfer of the biological data from the Mediterranean and Black Sea data call into the FDI format/database is technical feasible” and suggested to use tools that have been developed by the STREAM project. The EWG also recommended some changes in the data calls and to perform trial on data transfer. STECF plenary and DGMARE agreed with the proposal of previous EWGs to implement trial, therefore ad hoc contract was assigned in 2023 to implement this task.

Results from the ad hoc contract

The EWG reviewed the results from the ad hoc contract STECF 23-10 for transferring the biological data of the Mediterranean and Black Sea data call to the FDI data format, discussed and proposed the necessary steps to transfer the biological data from Mediterranean and Black Sea data call into the FDI format/database.

The main tasks of the ad hoc contract are listed below:

Task 1 - Perform a test transposing of historic data provided in the Mediterranean and Black Sea data call to the FDI data call format using as starting point the provided scripts developed in the STREAM project, while further adapting this script to the current format of the FDI data call tables.

Task 2 - To link the transferred biological data from Med and BS to the existing data in the FDI Table A which is done using the domain. The domain definition for landings and discards in the transferred data needs to be created according to the suggestion of the FDI data call guidelines. These domains that will be created will further need to be checked against the corresponding domain in the existing FDI Table A. In case when the domain is missing new domains should be created according to the same FDI data call guidelines.

Task 3 - To identify any potential improvements and recommend any changes in the FDI data call template format to streamline the transfer process.

Task 4 - Provide conclusions and recommendations on the process of transferring the commercial data from the Mediterranean and Black Sea data call to the FDI.

Based on the information presented by the expert and discussions, a summary and the analysis of the ad hoc contract results for transferring biological data from the Mediterranean and Black Sea data call into the FDI database are provided in the text below.

1. Vessel length

- The number of records with missing vessel length information (-1 or NA) is high in ITA, ESP, and HRV in the MEDBS data call.
- In contrast, the vessel length information provided through the FDI data call is high. The FDI data call specifically asks for transversal data.

2. Quarter

- The availability of quarter information in the MEDBS data call increased in the last years even if it could be still limited for historical data. Indeed, when data collection at the

quarter/species combination resulted poor, the data have been aggregated at the year level (-1 or NA in the past data call).

- On the contrary FDI data call expects quarter details for transversal data, which are fully provided.

3. Comparison of MEDBS and FDI data

- Figures 40-42 from the ad hoc report show the number of quarter records provided through the MEDBS data call based on landings at length, discards at length, and catch at age templates, respectively.
- Figure 43 from the ad hoc report shows the same information extracted from the FDI Table A template.
- The comparison highlights the differences in data availability and structure between the MEDBS and FDI data calls.

Recommendations from the author of the ad hoc report for improving the FDI data call template format and the transfer process are listed below:

1. Simplify the domain concept

- The need to define a domain for the MEDBS data when most of the requested information is already available through the MEDBS templates is not clear.
- If the main reason for the domain is to raise abundance data in length and age provided through Tables C, D, E, and F to the whole production in Table A, then using the MEDBS templates directly without a domain may be more efficient.

2. Modify FDI templates

- Consider adding extra fields (SUB_REGION, QUARTER, VESSEL_LENGTH, GEAR_TYPE, TARGET_ASSEMBLAGE, and MESH_SIZE_RANGE) to Tables C, D, E and F of the FDI templates. These variables are already available in the MEDBS templates and their inclusion in the FDI templates would make them workable without the need for a domain. This would provide the same level of detail as Table A, enabling the use of these tables without any link with Table A.

3. Use discards data from MEDBS data call

- Consider using the discards data provided through the MEDBS data call as they are, rather than requesting them in Table A.
- Recognize that for some Member States, discards data may have "NK" values for fleet/fishing technique aggregations, especially when estimated discards are requested.

Conclusions from the report of the ad hoc contract:

- The transfer of commercial biological data from the MEDBS format to the FDI format is feasible by reshaping the MEDBS data and making some code changes.
- Avoid unnecessary changes in the templates to ensure compatibility and ease of use.
- Clearly define and discuss any template changes with the relevant parties before launching the data call.
- Consider using the MEDBS templates directly, as they already provide most of the information available in the FDI Table A.
- To avoid linking issues and enable their use without a domain, add the fields used in the MEDBS templates in Tables C, D, E, and F.

Discussion at the EWG

The working group reviewed the report and agreed that the expert addressed the ToR of the ad hoc contract.

The author of the report rearranged the STREAM script and reshaped the MEDBS template to match the FDI tables C, D, E and F. The main remaining problem is how to define the domain to make the connection between table A and the biological tables derived from MEDBS data.

A solution for deriving Tables C, D, E and F from the biological data submitted to the MEDBS data call could be if Member States agree to provide the variable DOMAIN in the MEDBS data call. This will not change the format of the template as the DOMAIN will replace the ID column in the MEDBS templates which is a free text column. This domain could in principle not include the vessel length or assign it as "ALL". The domains defined in the MEDBS tables (landings and discards by length and catches by age) should be assigned consistently with the ones reported in the Table A of the FDI data call. This could lead to a need for a further coordination effort within MS when preparing MEDBS and FDI data tables in addressing the two data calls which are usually launched at the same time.

EWG conclusions

The EWG highlighted that the purpose of DOMAIN field in the FDI data call is to link biological data tables with less disaggregated Table A. As stated in the FDI data call: "Domains refer to the group of vessels used to calculate estimates (discards, numbers at age, number at length) by a country". The domain may or may not be equivalent to a métier and is country specific. In the FDI data call a format for the domain is proposed, however individual Member State should update it in line with individual sampling scheme.

The group did not agree with the suggestion from the ad hoc report to add the following variables: SUB_REGION, GEAR_TYPE, MESH_SIZE_RANGE, TARGET_ASSEMBLAGE and VESSEL_LENGTH in Tables C, D, E and F to give the same level of details available in table A as these tables should be reported at the level of sampling strata (domain). The decision on the fields to be included in the biological tables was made when the new FDI data call was designed.

The group identified and agreed on the steps to be taken in the future implementing the transition of the data. Those steps have been grouped to short and longer term and are detailed below.

Short term steps:

- RCG MEDBS chairs should be involved in this process.
- To present during the RCG MEDBS coordination meeting the need for the amendment of column ID with column DOMAIN, focusing on the benefits from the change and the linkage between the two data calls. Explaining that it will not gain additional burden to the Member States administration and research institutes, since the templates for the MEDBS data call will not change and DOMAIN is a flexible field that should capture the sampling program design, so it can be adapted to Member State data.
- To propose to Member States and to the Commission to have a pilot study with 2023 data during the 2024 MEDBS data call.

To ensure that the data submitted to FDI is robust and representative, the inclusion of the MEDBS biological data in FDI will require development over a couple of years and the long-term goals are:

- To amend the guidance for the MEDBS data call adding a detailed explanation of DOMAIN.
- To check the coverage and quality of the data provided under the pilot study in 2024.
- To report regular feedback to the RCG MEDBS on the status of the development.
- To establish a clear procedure for data resubmission across both working groups (MEDBS and FDI).
- To agree on how the species which are not covered by the MEDBS data call should be incorporated in the dataset.
- To decide who will be responsible for maintaining the scripts and for the transfer of the data from the MEDBS data call to FDI tables.

2.3 To review in detail the script (available in Annex 4 of EWG 22-10) that is used to disseminate the biological data in tables C, D E and F by merging with table A

Background

In 2022 a script was developed in the ad hoc contract (STECF 2252) to merge FDI catch data from Table A with the biological data available in Tables C, D, E and F. The aim of the script was to support the dissemination of the data, allowing end users to combine, in a consistent way, catch and biological data published on the STECF website. In particular, the script allows end users to allocate the biological data to the fleet segment level of aggregation used to disseminate catch data.

During the EWG 23-05 the script to merge the biological tables with Table A was tested and updated. In addition, an analysis of the output produced by the script was carried out focusing on the Table A and landings length structures. In the following, the result of this analysis is presented.

Comparison of the total landings in the disseminated biological table and in the original table before filtering confidential domains

According to the confidentiality procedures agreed in 2022, when a domain has a row declared as confidential in the Table A, this domain is removed from the biological tables (length and age landings and discards structures). The differences between data provided by MS and disseminated are displayed in the table 2.3.1. The percentage coverage goes from 0 to 100%. 0% means that all domains with length distribution had at least one line declared as confidential in Table A, whereas 100% means that no lines were declared as confidential in Table A. The overall coverage of the disseminated table is presented in Table 2.3.2.

Table 2.3.1: Comparison by country between total landings reported in the original biological table (Table F: length distribution of the landings) and landings in the same biological table disseminated on the STECF website

| Country | Total reported Landings in the initial table | Total reported Landings biological disseminated table | Percentage coverage |
|-------------|--|---|---------------------|
| Belgium | 83,720.17 | 2,796.441 | 3.3 |
| Denmark | 2,110,043.21 | | |
| Estonia | 663,733.81 | 408,756.342 | 61.6 |
| Finland | 844,186.59 | 1,367.582 | 0.2 |
| France | 2,623,789.54 | 1,686,198.772 | 64.3 |
| Germany | 1,063,435.24 | 1,063,435.239 | 100.0 |
| Ireland | 579,250.57 | | |
| Latvia | 484,202.09 | 263,215.579 | 54.4 |
| Lithuania | 49,386.68 | 408.492 | 0.8 |
| Netherlands | 659,610.65 | 35,900.111 | 5.4 |
| Poland | 1,003,624.63 | 952,642.005 | 94.9 |
| Portugal | 949,634.26 | | |
| Spain | 3,250,777.99 | 559.208 | 0.0 |
| Sweden | 140,595.70 | 38,452.808 | 27.3 |

| Country | Total reported Landings in the initial table | Total reported Landings biological disseminated table | Percentage coverage |
|----------------|--|---|---------------------|
| United Kingdom | 2,110,134.97 | 2,088,064.499 | 99.0 |

Table 2.3.2: Comparison between total landings reported in the original biological table and landings in the same biological table disseminated on the STECF website

| Total Reported Landings in the initial table | Total Reported Landings biological disseminated table | Percentage coverage |
|--|---|---------------------|
| 16,616,126 | 6,541,797 | 39.4 |

Merging Table A and the biological tables

Table A and the biological tables are merged using the following columns: country, year, species, domain_discards/domain_landings, and nep_sub_region. The variable nep_sub_region is used to avoid any duplicates that might exist.

The first test done using the biological tables is to compute the Sum Of Products (SOP, multiplying numbers at age/length by the mean weight of that age/length) to compare it with the reported landings/discards weight. For many strata, the SOP are 1000 times higher than the reported weights (Figure 2.3.1). As the error cannot be easily tracked between error in the numbers or mean weight, it was decided to remove all strata with more than 10% difference between SOP and reported weights.

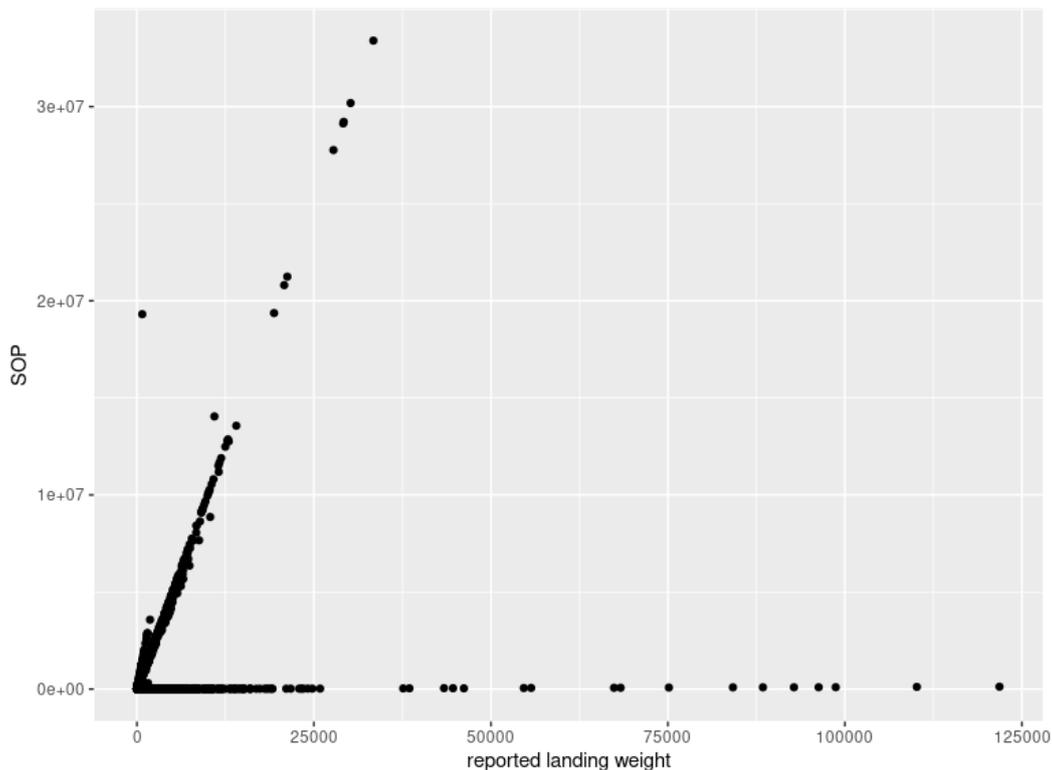


Figure 2.3.1: Comparison of SOP and landings weights in the length structured landing table. (each point is a domain).

Figure 2.3.2 shows that the sum of landings over a domain in Table A is very consistent with the reported weight of that domain in the biological table when they are both filled.

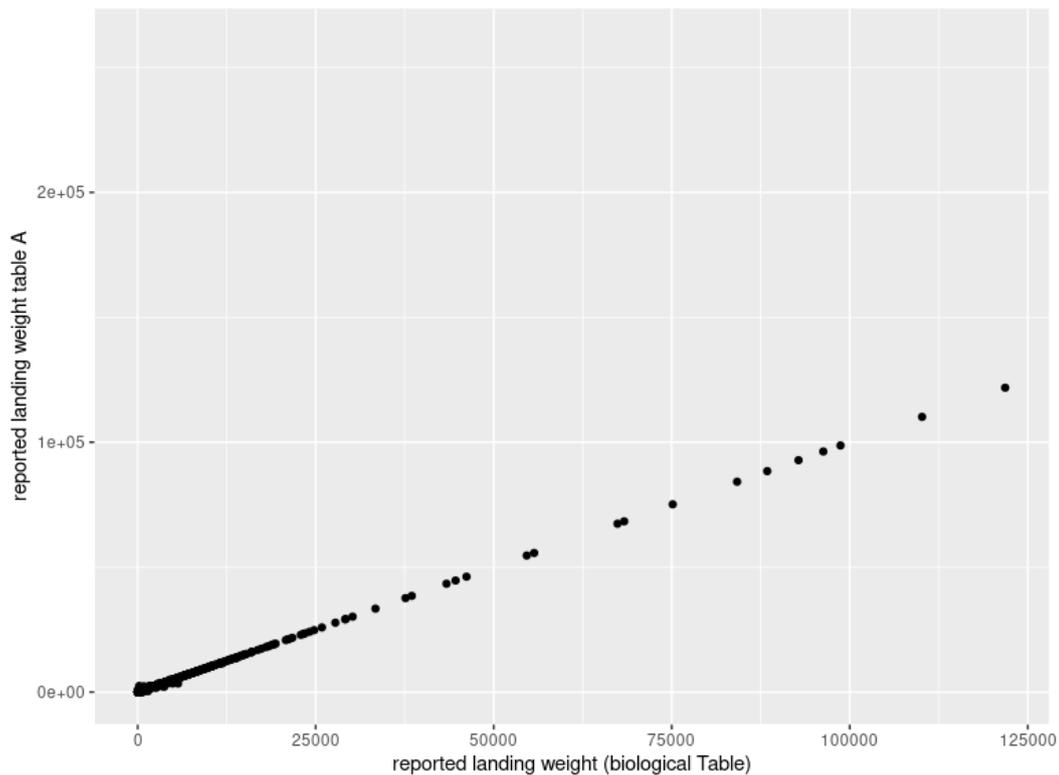


Figure 2.3.2: Comparison of SOP and landings weights in the length structured landing table (each point is a domain).

Removing the domains for which the difference between SOP and the reported landings is greater than 10% reduces the number of domains with length structure by 43.26 percent and the total landings in weight by 39.74 percent. Therefore Member States are encouraged to check their data prior submission to make sure data reported is consistent with SOP derived. The data check results by Member State were produced during the meeting and shared with experts to improve 2023 FDI data submissions.

Impact of confidentiality

For each domain, the percentage of lines defined as confidential by domain was computed during the meeting. If one line was confidential, a boolean variable was set to "YES". Figure 2.3.3 shows that only domains with no confidentiality data are reported in the biological tables. This is consistent with the procedures defined by FDI EWG.

No length structure can be derived for domains containing one confidential line.

Figure 2.3.4 shows that the majority of domains do not contain any confidential lines. However, many domains are also set as fully confidential.

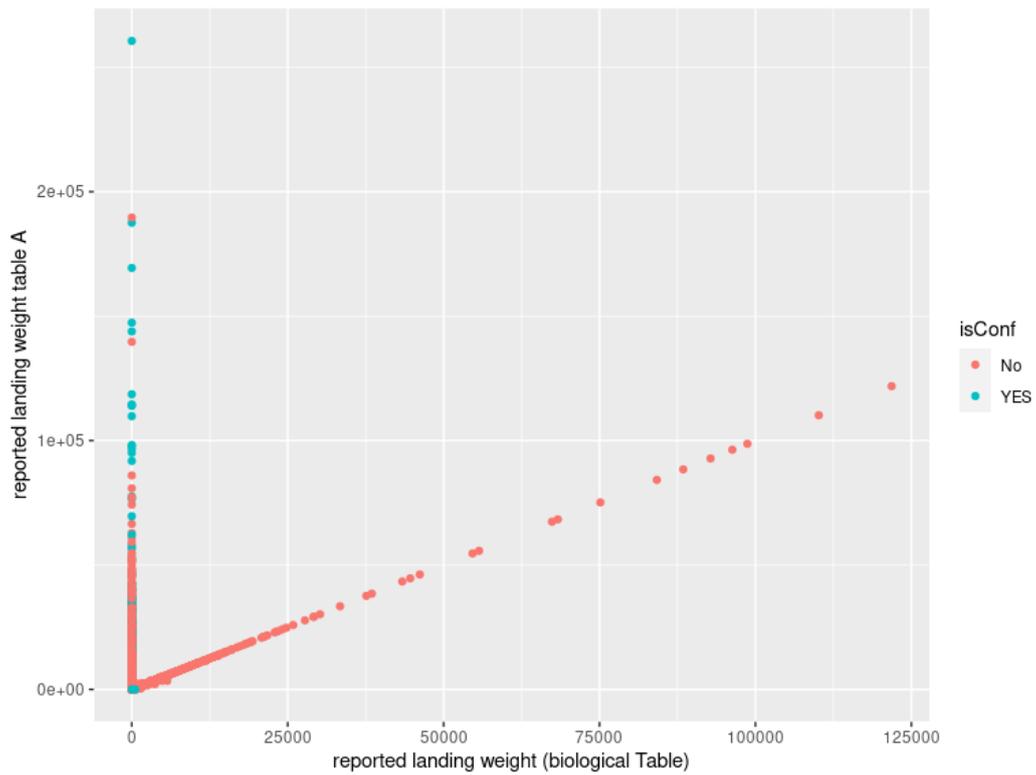


Figure 2.3.3: Impact of data anonymisation.

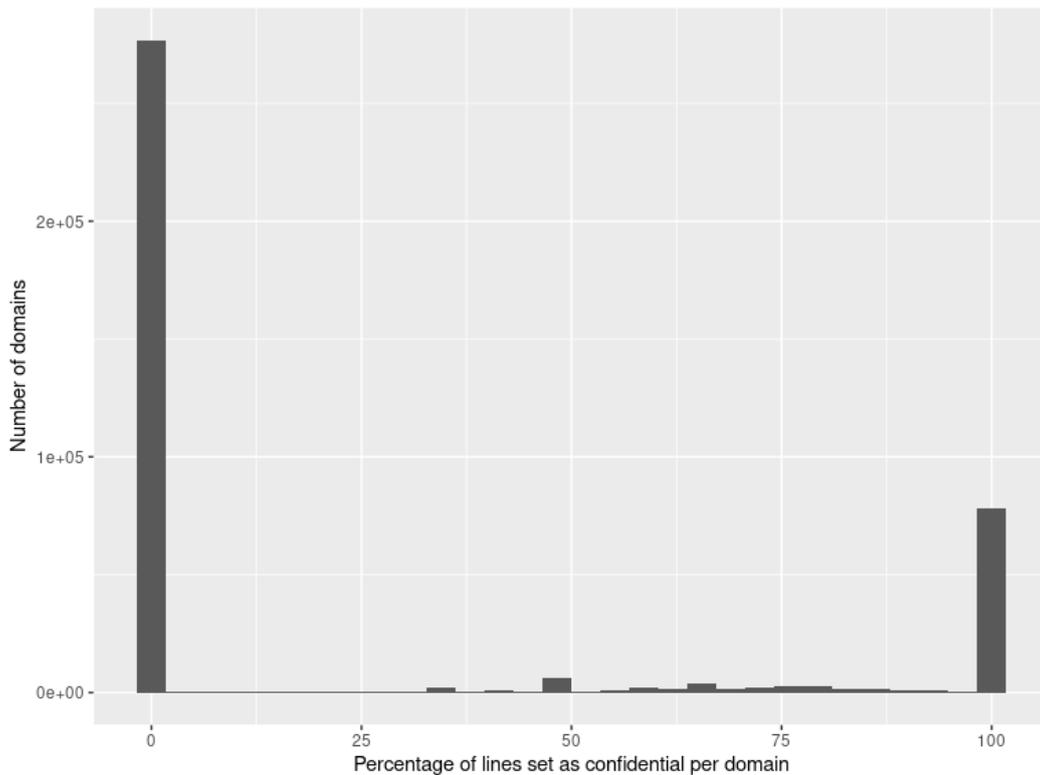


Figure 2.3.4: Confidentiality in the domains in table A.

The EWG extracted and calculated a couple of examples based on data submitted and published. Those examples are presented below. Please note that since Brexit the UK did not report data to

DCF FDI data call, therefore since 2021 the coverage of landings and biological data reduced for stocks and areas exploited by UK fleets.

Example 1: COD all areas

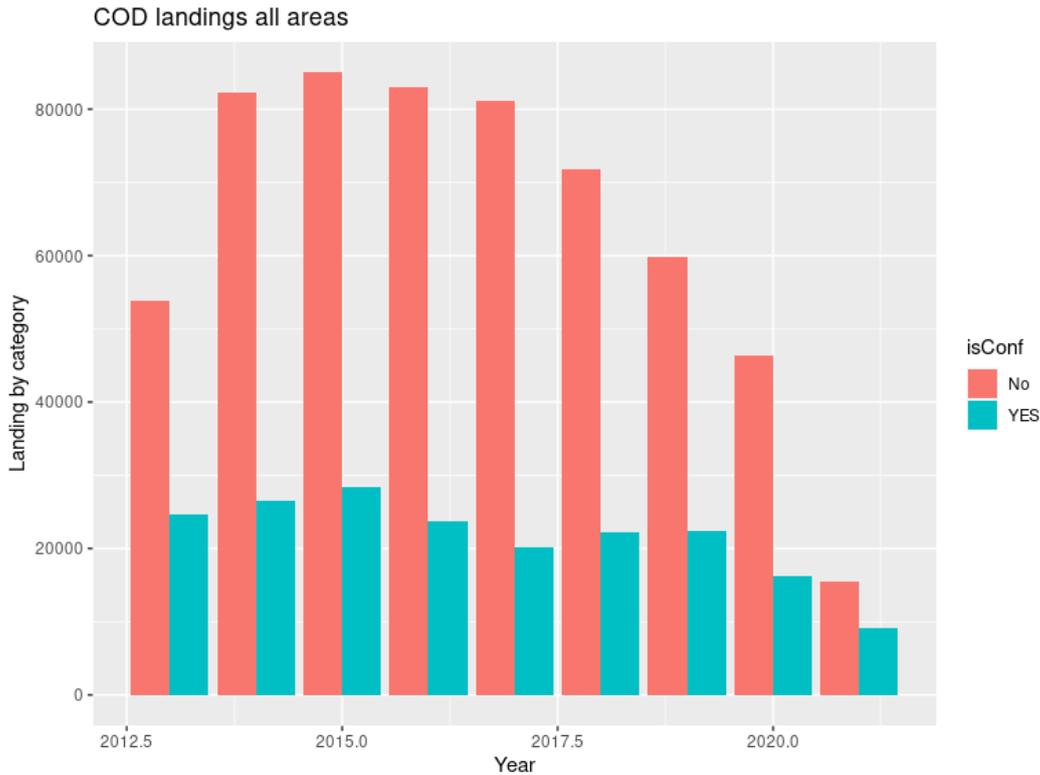


Figure 2.3.5: Impact of confidentiality in the total landed volumes.

Figure 2.3.5 shows that every year around half to a third of cod landings have at least one line declared as confidential in the different domains catching cod. These landings set as confidential are underestimated as by definition, the landing quantities set as confidential are unknown.

Figure 2.3.6 shows that as not all domains are sampled for length, around half of the landings without confidentiality have a length structure associated.

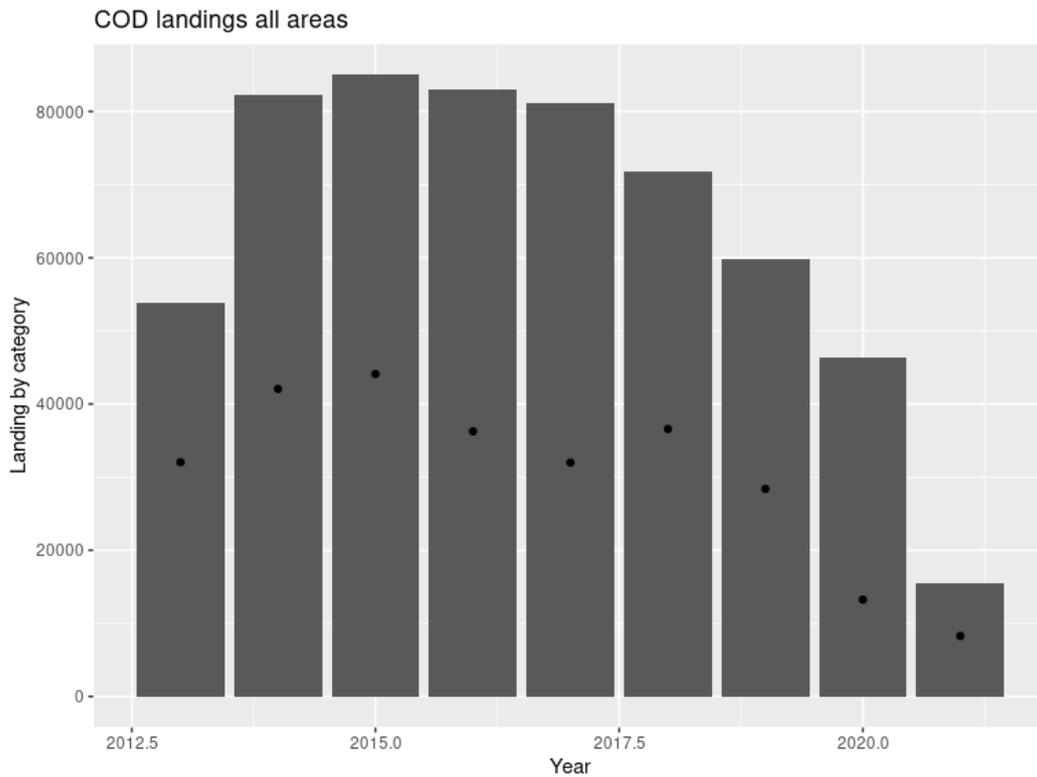


Figure 2.3.6: Comparison of landings without confidentiality in table A (bars) and landings with length structure (points).

Example 2: HKE all areas

Figure 2.3.7 shows that every year around half to a third of hake landings have at least one line declared as confidential in the different domains catching cod. These landings set as confidential are underestimated as by definition, the landing quantities set as confidential are unknown.

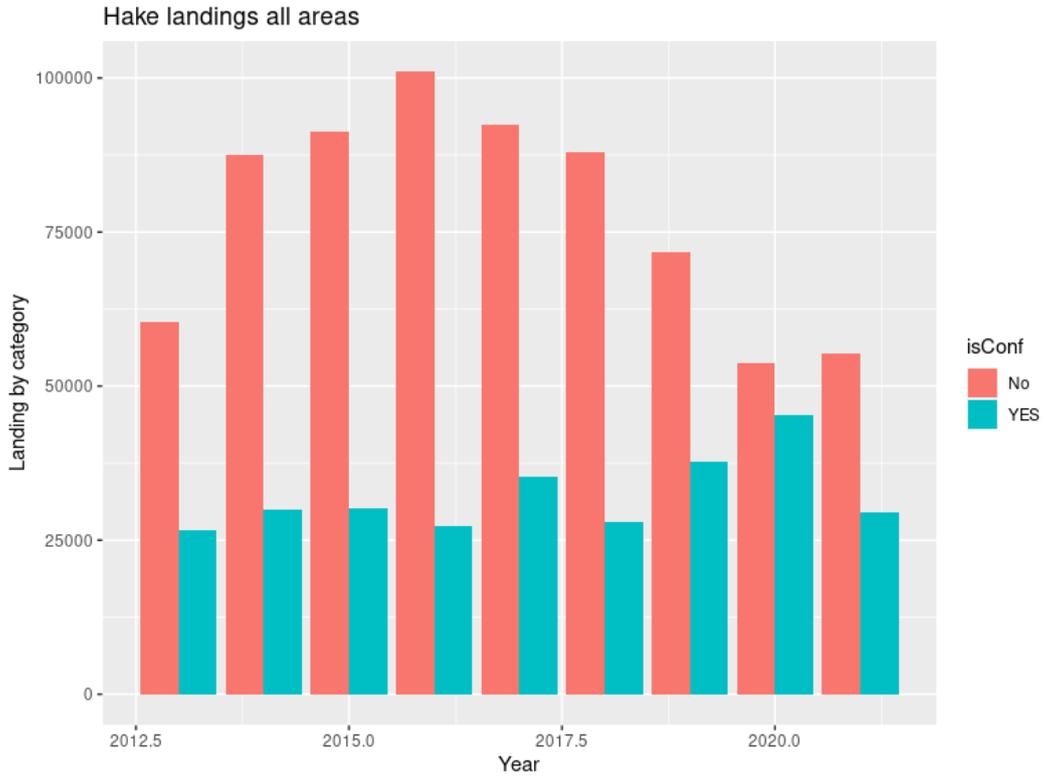


Figure 2.3.7: Impact of confidentiality in the total landed volumes.

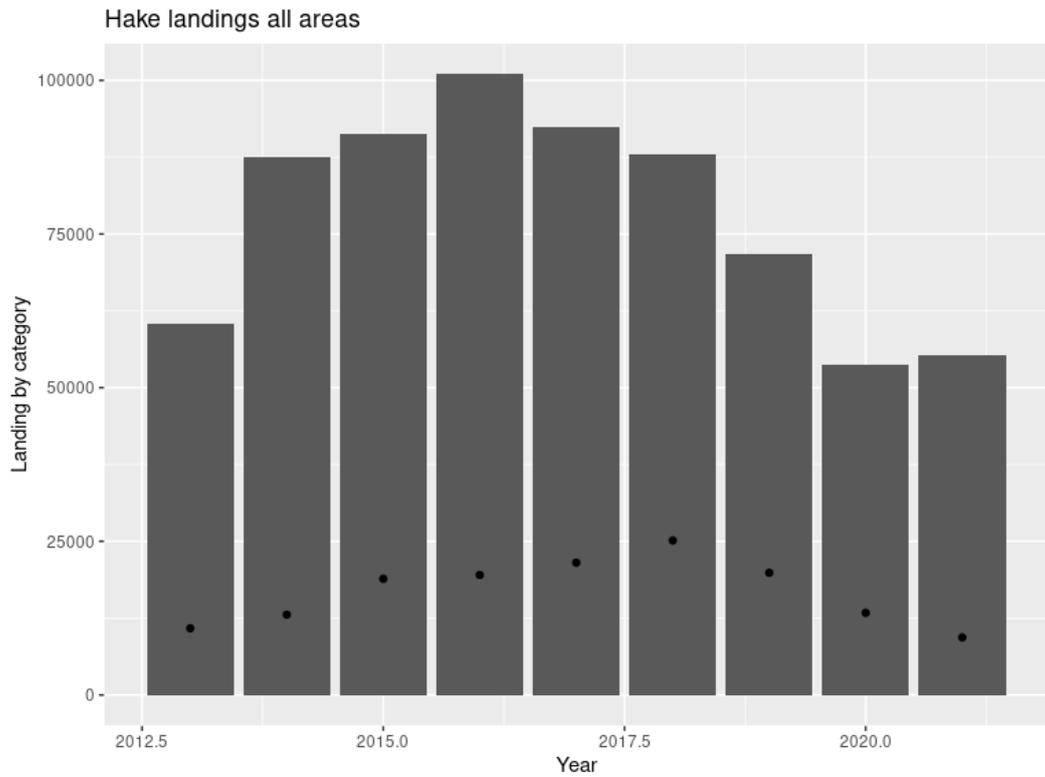


Figure 2.3.8: Comparison of landings without confidentiality in table A (bars) and landings with length structure (points).

Example 3: Haddock all areas

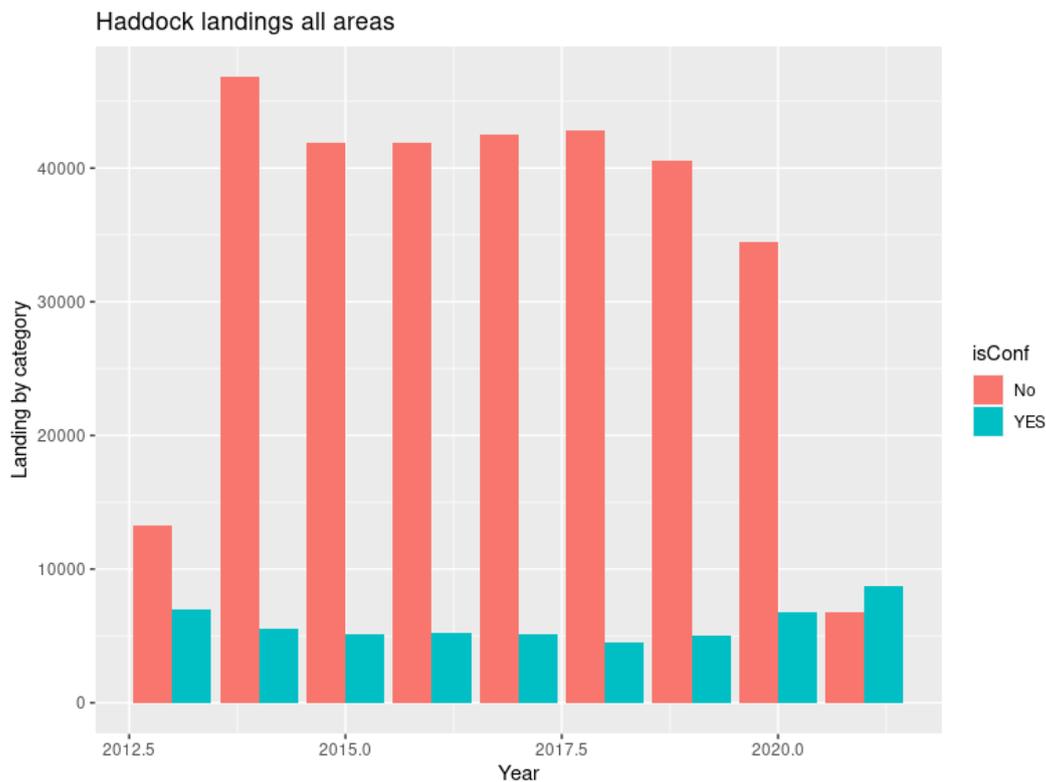


Figure 2.3.9: Impact of confidentiality in the total landed volumes.

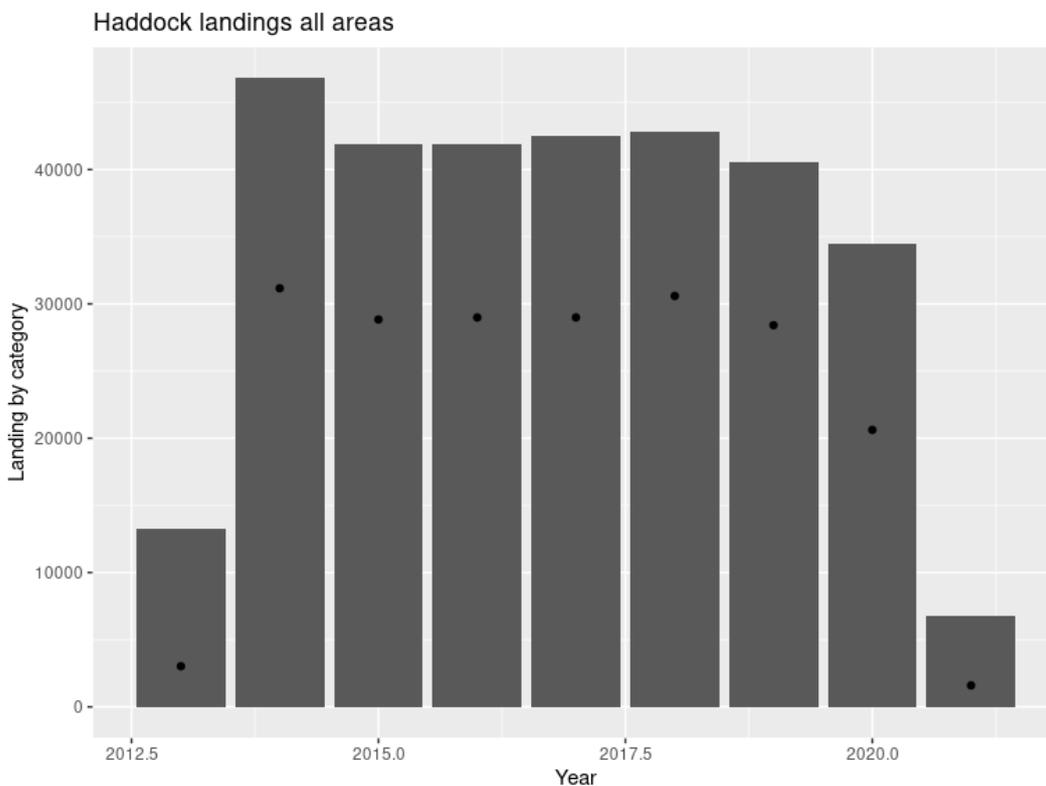


Figure 2.3.10: Comparison of landings without confidentiality in table A (bars) and landings with length structure (points).

Conclusions from the analysis

Length structure is only available for domains in the Table A reported without any confidential lines. Not all domains without confidentiality have length structures associated.

Many domains have SOP problems. As it was not possible to easily track/modify data, it was decided to remove all domains where the SOP have more than 10% difference with the reported landings/discards in the biological tables. The results of comparison were shared with Members States and could be used to improve data submission in 2023.

As SOP is used to partition the landings/discards length/age structures on each strata of a given domain in Table A, SOP problems will result in a reduction of the number of strata that can be linked between table A and biological tables (C-F).

When merging these tables, it should be kept in mind that domains are defined to match the sampling program designs and to ensure that the raising procedures are statistically sound. Raising procedures concern discards estimates, and landings/discards length/age structures. One domain then corresponds to one line in the biological tables (C-F) but potentially to multiple gear/mesh size/quarters in table A depending on the strata aggregation of the sampling design. Merging the catch table and biological tables allows you to define a length/age structure for each line of the catch table but by doing so, the sampling design is no longer followed. The main assumption is that the length/age structure, and discard ratio, are homogeneous within a domain, however this assumption may not reflect the reality of the fishery.

Example of partitioning

Figure 2.3.11 shows the length distribution of one domain for landings and discards (same domain for that particular case), while Figure 2.3.12 shows its partitioning over 2 different métiers and length classes that compose this domain.

These figures show the length structures available in the biological tables.

Figure 2.3.11 shows the impact of the proportioning of the length structures observed at the domain scale over the different stratas in table A. All stratas in a given domain have the same length/age structure and the level of landings are proportioned by the total landings/discards tonages.

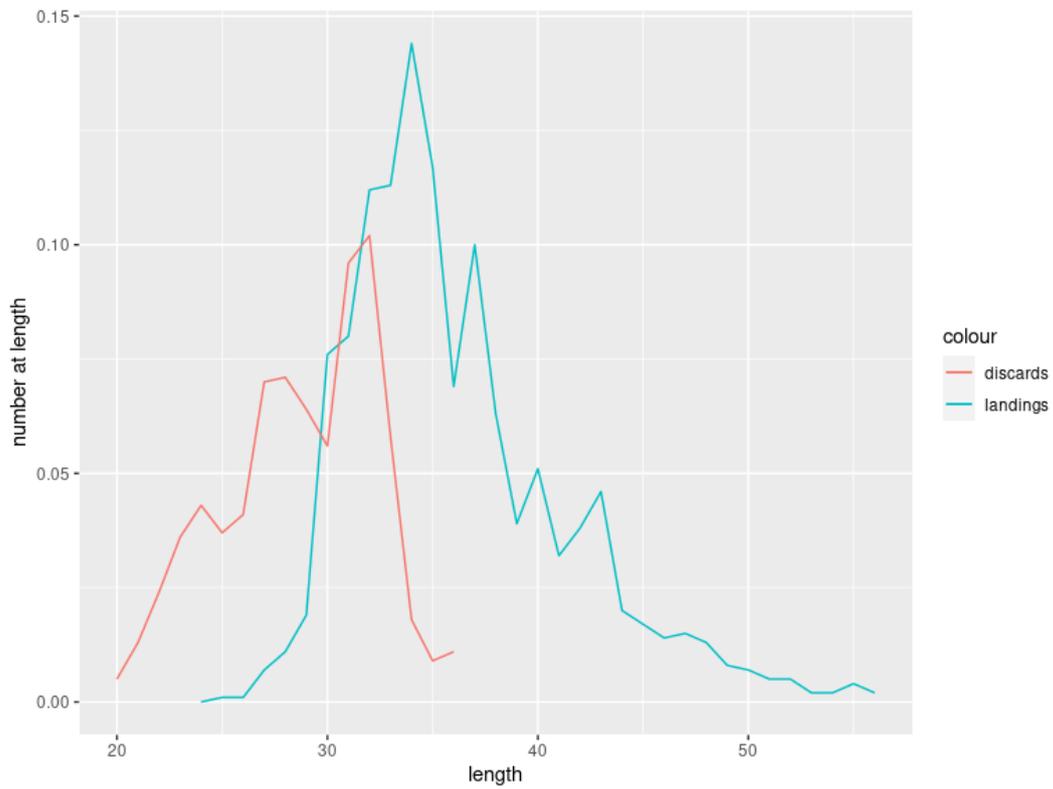


Figure 2.3.11: Result of the partitioning of landings/discards length structure of one domain in several lines in table A.

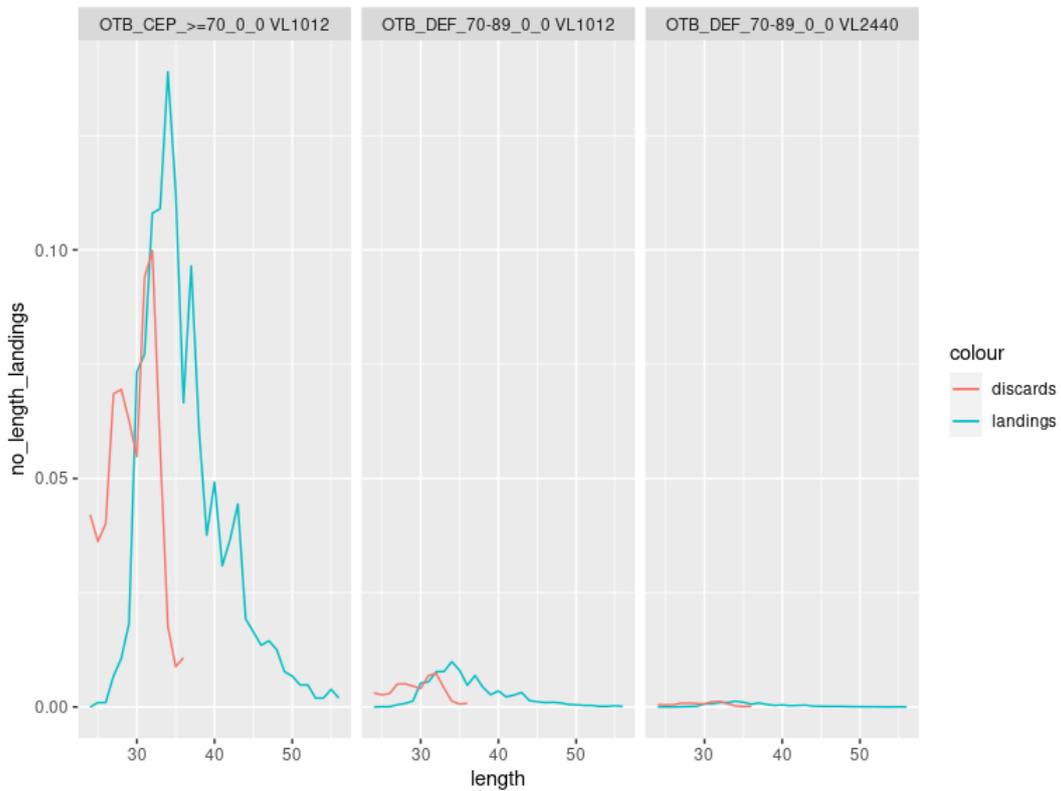


Figure 2.3.12: Result of the partitioning of landings/discards length structure of one domain in several lines in table A.

EWG conclusions

The EWG reviewed the script published with the data disseminated and made updates. The final script is included in the Annex X of this report.

The EWG suggests to re-run the SOP analysis and data checks after 2023 FDI data call to check the data provided.

The EWG reiterates its comments when merging table A and biological tables (C-F). Domains used to report data in tables C-F are defined to match the sampling programs and ensure the raising procedures are statistically sound. One domain corresponds to several lines in table A. Disaggregating the data do not follow the sampling anymore and to do so one needs to make the hypothesis that discard ratio and length/age structures are homogeneous inside a domain which might not be the case.

2.4 Discuss ICES RDBES development progress and its alignment to FDI data call

The purpose of the Regional Database & Estimation System (RDBES) – FDI alignment is to determine if it is possible to populate the FDI tables using the RDBES data. A subgroup consisting of experts on the FDI and the RDBES data went through the tables of each data model and compared the variables. They identified possible issues in populating FDI tables with RDBES data and proposed solutions to these issues, mainly by introducing new fields in the RDBES data model that will eventually facilitate a smooth adaptation of the RDBES to the FDI format. The results were presented and discussed during the ICES Working Group on Governance of the Regional Database and Estimation System (WGRDBESGOV) meeting that took place in November 2022.

During the EWG 23-05, the results of the WGRDBESGOV meeting were presented and a few open issues were briefly discussed:

– SPATIAL RESOLUTION (C_SQUARE)

It was suggested to add a new optional field in the RDBES CL and CE tables that will hold the c-square variable. Additional database checks will be required to ensure the consistency between the ICES rectangle and the corresponding c-squares.

– METIER

In some cases, countries provided the metiér level 6 but not the corresponding gear. The EWG suggested to use the MIS_TARGETASSEMBLAGE (e.g. MIS_DEF_0_0).

– CAPACITY (TABLE J)

It was suggested to add a capacity table in the RDBES data model.

– WoRMS species code

Furthermore, WGRBDESGOV proposed to add to the FDI tables the WoRMS species code (AphiaID) as an extra variable because some species do not have a FAO code associated.

The EWG 23-05 considers that it might be useful to add two new columns in FDI table A: AphiaID (Optional) and Scientific Name (Optional) keeping the SPECIES column in the FDI as it is now (FAO species code).

The reason behind adding two more fields for the species is that the scientific name is not sufficient to identify the species. To harmonize the names used among Member States, there will be a need of a species list, not only because the scientific name is dynamic but also because the naming can have typing differences/errors for the same denomination (e.g., *Trachurus spp./Trachurus sp, Eledone cirrosa/Eledone cirrhosa*). To facilitate the data submission a species list by FAO code/Aphia ID/Scientific name should be established and become available to the data providers via an official channel (e.g., ICES). Furthermore, this species list should be maintained and updated regularly when changes in the nomenclature occur.

Finally, it should be noted that even though the initial work to align the RDBES data model with the FDI data structure was beneficial, the provision of FDI data from the RDBES data model is not finalized yet because there are several critical milestones that need to be completed by the Member States before this can be achieved. Although there are a number of platforms and tools provided

by ICES (i.e. WGRBDES-EST2, WKRaise&TAF2, WKRaise&TAF-Flow), there will be a need for investment from DCF framework and the European Commission to provide additional support to facilitate the provision of FDI data from the RDBES (e.g. a common Git repository). Considering that, at this stage of development, the RDBES estimation process is not yet fully mapped out and it is not possible to produce the FDI biological tables (C, D, E, F, K), as well as provide the discard estimates in table A. It is, however, beneficial to keep track of the RDBES progress and continue this work when the RDBES data are fully integrated in the stock assessment process.

3 REFERENCES

Scientific, Technical and Economic Committee for Fisheries (STECF) – Fisheries Dependent - Information – FDI (STECF-21-12). EUR 28359 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-45887-6, doi:10.2760/3742, JRC127727.

Scientific, Technical and Economic Committee for Fisheries (STECF) – Fisheries Dependent Information FDI (STECF-22-10). Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/154294, JRC132080.

Scientific, Technical and Economic Committee for Fisheries (STECF) – Fisheries Dependent - Information – FDI (STECF-19-11). Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-14096-2, doi:10.2760/230618, JRC119066.

Castro Ribeiro, C. et al. (2016) Report of the 2nd Workshop on Transversal Variables. Nicosia, Cyprus. 22-26 February 2016. A DCF ad-hoc workshop; EUR 27897; doi:10.2788/042271.

Cochran, W.G. (1977) Sampling Techniques, 3d ed.; Wiley Series in Probability and Mathematical Statistics; Wiley: New York, NY.

Vigneau, J. (2023) Raising procedures for discards: Sampling theory.

Efron, B., Tibshirani, R. and Tibshirani, R.J. (1994) An introduction to the bootstrap. Chapman & Hall/CRC. <https://doi.org/10.1007/978-1-4899-4541-9>.

Boos, D. and Stefanski L. (2010) Efron's Bootstrap, Significance, Volume 7, Issue 4, Pages 186–188, <https://doi.org/10.1111/j.1740-9713.2010.00463.x>.

4 CONTACT DETAILS OF EWG-23-05 PARTICIPANTS

¹ - Information on EWG participant’s affiliations is displayed for information only. In any case, Members of the STECF, invited experts, and JRC experts shall act independently. In the context of the STECF work, the committee members and other experts do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members and experts also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting’s website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: <http://stecf.jrc.ec.europa.eu/adm-declarations>

| STECF members | | |
|----------------------|--|--------------|
| Name | Affiliation¹ | Email |
| Mannini, Alessandro | CNR IRBIM Ancona, Largo Fiera della Pesca, 260125 Ancona ITALY | |

| | | |
|---|---|-------------------------------------|
| Moore, Claire | Marine Institute, Rinville, Oranmore, Galway, Ireland | claire.moore@marine.ie |
| Motova-Surmava, Arina (EWG co-chair) | Sea Fish Industry Authority, 18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS, UK | arina.motova@seafish.co.uk |
| Nimmegeers, Sofie | Flanders research institute for agriculture, fisheries and food, Belgium | sofie.nimmegeers@ilvo.vlaanderen.be |

| Invited experts | | |
|---------------------------|--|--------------------------|
| Name | Affiliation¹ | <u>Email</u> |
| Adamowicz, Maciej | National Marine Fisheries Research Institute | madamowicz@mir.gdynia.pl |
| Avdic Mravlje, Edvard | Fisheries research institute of Slovenia | edoavdic@gmail.com |
| Cañas, Lucia | Instituto Español de Oceanografía | lucia.canas@ieo.es |
| Cano, Suzana | Direção Geral de Recursos Naturais, Segurança e Serviços Marítimos | sfcano@dgrm.mm.gov.pt |
| Carlshamre, Sofia | Swedish University of Agricultural Sciences | sofia.carlshamre@slu.se |
| Demaneche, Sebastien | IFREMER | sdemanec@ifremer.fr |
| Egekvist, Josefine | Technical University of Denmark, Institute of Aquatic Resources | jsv@aqua.dtu.dk |
| Fernandes, Ana Cláudia | Instituto Português do Mar e da Atmosfera (IPMA, I. P.) | acfernandes@ipma.pt |

| | | |
|---------------------------------|--|-----------------------------------|
| Ioannou, Myrto | Department of Fisheries and Marine Research | mioannou@dfmr.moa.gov.cy |
| Jakovleva, Irina | Fisheries Service under MoA | irina.jakovleva@zuv.lt |
| Kavadas, Stefanos | Hellenic Centre for Marine Research (HCMR) | stefanos@hcmr.gr |
| Molla Gazi, Karolina | Wagenignen Marine Research | karolina.mollagazi@wur.nl |
| Nicheva, Simona | Executive agency for fisheries and aquaculture | simona.nicheva@iara.government.bg |
| Tičina, Vjekoslav | Institute of Oceanography and Fisheries | ticina@izor.hr |
| Vermard, Youen | IFREMER | yvermard@ifremer.fr |
| Zanzi, Antonella (EWG co-chair) | Independent expert, Varese, Italy | antonella.zanzi@gmail.com |

| JRC experts | | |
|--------------------|--------------------------------|-------------------------------|
| Name | Affiliation¹ | Email |
| Hekim, Zeynep | Joint Research Centre | hekim.zeynep@ec.europa.eu |
| Garbossa, Silvia | Joint Research Centre | silvia.garbossa@ext.ec.europa |

| European Commission | | |
|----------------------------|--------------------------------|--------------|
| Name | Affiliation¹ | Email |

| | | |
|---------------|-------------------|------------------------------------|
| Hekim, Zeynep | STECF secretariat | jrc-stecf-secretariat@ec.europa.eu |
|---------------|-------------------|------------------------------------|

| Observers | | |
|----------------------|---|------------------|
| Name | Affiliation¹ | Email |
| Kjems-Nielsen Henrik | International Council of the Exploration of the Sea | henrikkn@ices.dk |

ANNEXES

ANNEX 1

Table A.1.1: Summary table of methods used by Member States to provide discard estimates (from EWG 21-10).

| Country | Raising variable in discard estimation | Methods for partitioning discards | Methods for partitioning discards without landings | Variables defining domain |
|-----------|--|---|---|---|
| Belgium | Landings of the same species. | Proportionally to the landings of the same species. | Discards without landings are not included. | Year/quarter, metier and sub-region. |
| Bulgaria | NA | Only zeros provided (Both official and scientific discards) | NA | NA |
| Croatia | NA | Only official discards were provided in Table A. | NA | NA |
| Cyprus | Landings of the same species | Proportionally to the landings of the same species (but usually no need for partitioning) | NA | Year/quarter, métier (only one region). |
| Denmark | Landings of all species for most. Number of trips for a few. Landing of same species for Nephrops. | Proportionally to the total landings of all species | Proportionally to the total landings of all species | Quarter, fishery (group of métiers) and sub-region. |
| Estonia | NA | Only official discards were provided in Table A (only zeros provided). | NA | NA |
| Finland | NA | Proportionally to the landings of the same species by gear. | NA, the fishing gear is known from the logbook even if there are no landings. | Year/quarter/metier/rectangle |
| France | Landings of the same species | Proportionally to the landings of the same species by "year*quarter*sub-region and gear type" | NA | Domain are provided in line, as far as possible, with the strata retained by expert to do stock assessment analysis (e.g., ICES stratum). |
| Germany | Landings of the same species. For species without landings, landings of all species. | Proportionally to the landings of the same species. | Proportionally to landings of all species. | Year/quarter, subarea for North Sea, subregion for Baltic Sea, gear, mesh size. |
| Greece | Landings of the same species. | Proportionally to the landings of the same species. | Discards without landings are not included. | Year/quarter, sub-region, métier, vessels length category. |
| Ireland | Effort | Proportionally to the landings of the same species. | Proportionally to the effort (days at sea). | |
| Italy | Landings of the same species | Proportionally to the landings of the same species. | NA | Year/quarter, subregion, métier lvl 6. |
| Latvia | Landings of the same species | Proportionally to the landings of the same species. | Discards without landings are not included. | Year/quarter, subregion, metier |
| Lithuania | Number of trips | Proportionally to the landings of the same species. | Proportionally to the number of trips | Year/quarter, sub-region, métier. |
| Malta | | No methodologies were provided | | |
| Poland | Landings of the same species | Proportionally to the landings of the same species. | Discards without landings are not included. | Year/quarter, subregion, group of métiers. |
| Portugal | Fishing effort (fishing duration/number of trips) | Proportionally to the landings of the same species. | Discards without landings are not included. | Year/Metier lvl5 |
| Romania | | No methodologies were provided | | |
| Slovenia | Landings of the same species | Landings of the same species | NA | Year/quarter, subregion, metier |

| | | | | |
|------------------------|--|--|---|---|
| The Netherlands | Effort (kWd) or landings per species. | Proportionally to the variable used for the raising. | Included but not partitioned. Total discards with no landings are assigned to one row (per domain and species). | Year/quarter, division/subarea and métier. |
| UK - Scotland | | No methodologies were provided | | |
| UK – England and Wales | Landings of the same species or effort (days at sea) | Proportionally to the landings of the same species. | Proportionally to the effort (days at sea). | For demersal trawls and beam trawls: Quarter, sub-region, métier lv4, mesh size. For passive and pelagic gears: Quarter, sub-region, métier lv4. |
| Spain | Effort (number of trips) | Proportionally to the landings of the same species. | Included but not partitioned. Total discards with no landings are assigned to one row (per domain and species). | Year/quarter, area according to sampling unit, métier |
| Sweden | Effort or landings of target species. | Proportionally to the variable used for the raising. | Proportionally to effort or landings of target species. | Year/quarter, group of métiers and sub-region. |

Table A.1.2: Summary table of methods used by Member States to allocate spatial information (from EWG 21-10).

| Country | Methodologies used to provide spatial landings/effort data in tables H and I of the FDI data call (concerns past submissions) | | | | | |
|----------|---|--|--|---|--|--|
| | Spatial data notation used in FDI data: rectangle / c-square / rectangle and c-square | Source of spatial information for the large-scale fleet: logbooks / VMS / logbooks+VMS | Is the small scale fleet data included?: yes / no / not applicable | Source of spatial information for the small-scale fleet: official declarative forms / approximation / off. decl. forms or approx. | Method used for the approximation of fishing location of the small-scale fleet | Comments |
| Belgium | rectangle | logbooks | not applicable | | | The Belgian fleet has no registered fishing vessels of < 10m LOA |
| Bulgaria | rectangle | logbooks+VMS | yes | official declarative forms | | Only in case the rectangle was not filled by the owner of the small-scale fleet vessel, the catch was allocated based on the landing port |
| Croatia | rectangle | logbooks+VMS | yes | official declarative forms | | In case coordinates are not available, GFCM statistical rectangles are translated from Croatian fishing subzones on the basis of percentage of catch in each Croatian fishing subzone. |
| Cyprus | rectangle | logbooks | yes | approximation | Based on the port of landings | |
| Denmark | rectangle | logbooks | yes | approximation | Main rectangle by harbour, gear type and vessel length group. If this doesn't exist then rectangle closest to harbour. | For the 2021 data call, ICES rectangles from Danish vessels not reporting logbooks have been estimated. |

| | | | | | | |
|-----------------|------------------------|--------------|-----|--|--|--|
| Estonia | rectangle | logbooks | yes | official declarative forms | | |
| Finland | rectangle | | yes | official declarative forms | Fishing location is registered in the landing declaration. | The catch and effort of small-scale fleet is reported by official coastal fishing journal or landing declaration. |
| France | rectangle and c-square | logbooks+VMS | yes | off. decl. forms or approx. + on-site sampling | | Spatial information is completed by the on-site sampling for fishing fleets not covered by the declarative data (logbooks, monthly declarative forms). |
| Germany | rectangle | logbooks | yes | official declarative forms | | |
| Greece | rectangle | logbooks+VMS | no | | | Spatial effort data concerning SSF will be uploaded in 2021. Spatial landings allocation method is under evaluation. |
| Ireland | rectangle | logbooks | yes | approximation | Based on the port of landings | Where VMS is not available, centre of declared ICES division is provided. Usually close of port of landings |
| Italy | rectangle | logbooks+VMS | no | | | For the 2021 data call, spatial landings allocation method for SSF is under evaluation. |
| Latvia | rectangle | logbooks | yes | official declarative forms | | |
| Lithuania | rectangle | logbooks | yes | official declarative forms | | No information available |
| Malta | | | | | | |
| The Netherlands | rectangle | logbooks | yes | official declarative forms | | |
| Poland | rectangle | logbooks+VMS | yes | official declarative forms | | |
| Portugal | c-square | logbooks | yes | approximation | Based on the port of landings | |
| Slovenia | rectangle | logbooks | yes | official declarative forms | | |
| Spain | rectangle | logbooks+VMS | yes | official declarative forms or approx | Based on the port of landings | When there is no congruent statement in the logbook, VMS is used to check this (in cases where vessels have VMS). |
| Sweden | rectangle | logbooks | yes | official declarative forms | | |
| United Kingdom | rectangle | logbooks+VMS | yes | official declarative forms + approximation | Estimates of associated fishing effort entered alongside sales | VMS information is only used for the large-scale fleet when ICES rectangle information is unavailable such as for |

ANNEX 2

| | Partition biological data | Metier definition | Spatial allocation of landings | Effort calculation | | | | Quality indicators CV/CI |
|-----------|---|---|---|---------------------------|--------------------------|---|-----------------------------------|--|
| | method | new metier list (introduced in 2023) | except UK EEZ indicator (introduced in 2022) | method | fecR package used | Maintenance fecR package requested | Nicosia principles applied | introduced in 2022 |
| Belgium | no change | no issues | no change | no change | yes | yes | yes | not calculated |
| Sweden | no change | no issues | no change | no change | yes | yes | yes | not calculated |
| Portugal | no change | no issues | no change | no change | no | yes | | calculated but not submitted |
| Slovenia | no change | | no change | no change | no | | yes | |
| Poland | no change | no issues | ICES rectangles or c-square depending on the area | no change | no | | yes | Several approaches to calculate quality indicators has been tested |
| Spain | no change | no issues | no change | no change | no | | yes | calculated for ICES areas but not submitted |
| Ireland | no change | no issues | no change | no change | yes | yes | yes | calculated |
| France | no change | no list for OFR small-scale fleets | no change | no change | no | | yes | |
| Denmark | no change | no issues | If the ICES rectangle and area are not matching, it is corrected based on VMS data. For vessels without logbooks an estimate is made based on AIS/VMS/BB data if available or harbour default | no change | no | yes | yes | not calculated |
| Cyprus | no change | no issues | no change | no change | no | | | not calculated |
| Greece | no change | | no change | | no | | | |
| Lithuania | Proportionally to all landings for flounder | Not always possible to follow the list for small scale fisheries target species | no change | no change | yes | yes | yes | not calculated |

| | Partition biological data | Metier definition | Spatial allocation of landings | Effort calculation | | | | Quality indicators CV/CI |
|-------------|----------------------------------|--|---|---------------------------|--------------------------|---|-----------------------------------|---|
| | method | new metier list (introduced in 2023) | except UK EEZ indicator (introduced in 2022) | method | fecR package used | Maintenance fecR package requested | Nicosia principles applied | introduced in 2022 |
| Netherlands | no change | Metier is assigned to the fishing sequence level, instead of trip. | no change | no change | no | | yes | Issue with providing the CV and CIs on the FDI domain level |

LIST OF ELECTRONIC ANNEXES

Electronic annexes are published with the report on the STECF web site.

List of electronic annexes documents:

EWG-23-05 – Annex 3 – Updated Script to merge biological data with catches data

LIST OF BACKGROUND DOCUMENTS

Background documents are published on the meeting's web site on:

<https://stecf.jrc.ec.europa.eu/web/stecf/ewg2305>

List of background documents:

EWG-23-05 – Doc 1 - Declarations of invited and JRC experts (see also section 3 of this report – List of participants)

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696,
- via the following form: european-union.europa.eu/contact-eu/write-us_en.

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

Open data from the EU

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

STECF

The Scientific, Technical and Economic Committee for Fisheries (STECF) has been established by the European Commission. The STECF is being consulted at regular intervals on matters pertaining to the conservation and management of living aquatic resources, including biological, economic, environmental, social and technical considerations.

Science for policy

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society



EU Science Hub

joint-research-centre.ec.europa.eu



@EU_ScienceHub



EU Science Hub - Joint Research Centre



EU Science, Research and Innovation



EU Science Hub



@eu_science

