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SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES – 73rd PLENARY REPORT (STECF-PLEN-23-02)

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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. The Scientific, Technical and Economic Committee for Fisheries held its 73rd plenary from 10 to 14 July 2023.

73RD PLENARY REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-23-02)

10-14 July 2023

1. INTRODUCTION

The STECF held its summer plenary on 10-14 July 2023 in the Centre Borschette, Brussels. The meeting was a hybrid meeting.

2. LIST OF PARTICIPANTS

The meeting was physically attended by all members of the STECF and four JRC personnel. Five STECF members and six JRC personel attended online. Several Directorate General Maritime Affairs and Fisheries (DG MARE) attended parts of the meeting physically or online. Section eight of this report provides a detailed participant list with contact details.

3. INFORMATION TO THE PLENARY

The STECF committee was informed that the Oana Surdu, DG MARE C3 focal for STECF, will leave DG MARE by mid July. Nicolas Sturaro DG MARE C3 will replace her.

Presentation by DG MARE

DG MARE gave a presentation of the EU funded Fishgenome (Improving Cost-Efficiency of Fisheries Research Surveys and Fish Stocks Assessments using Next-Generation Genetic Sequencing Methods) study. provide now the possibility to complement traditional methods and resolve some of these challenges to assist fisheries assessment. The objectives of this project are to test the capacity of a set of novel Next-generation DNA high throughput sequencing HTS methodologies, including Close-Kin Mark-Recapture; RAD-Seq; epigenetic age determination or environmental DNA to support faster and cheaper fish stocks' assessments and biodiversity analyses of marine fish assemblages. STECF agreed to schedule a follow-up discussion with DGMARE on the opportunities arising from the work completed under this study at the next STECF Plenary in November.

4. STECF INITIATIVES

During PLEN 23-01, an open discussion was held on STECF's "way of working". This was a first discussion on identifying any improvements that could be made to STECF. A range of issues were discussed including preparations for plenary, reporting and procedural issues. A follow-up session was held during PLEN 23-02 to continue the discussion from PLEN 23-01. The discussions focused on reporting on Expert Working Groups and on the structure of the Mini Plenary held recently to finalise the advice on the Landing Obligation Joint Recommendations. The Committee will continue discussions in upcoming plenaries.

5. ASSESSMENT OF STECF EWG REPORTS

5.1 WG 23-02: ASSESSMENT AND ADVICE FOR NON-QUOTA STOCKS

Request to the STECF

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

In particular, STECF is invited to express its opinion regarding the future management of the king scallop fishery in the Channel.

STECF general comments

The WG 23-02 focused on the scallop fishery in the English Channel and had as a basis an ad hoc contract providing background information on the management measures for scallop in the English Channel. The WG had three ToRs: discussion on applicable and possible management measures (ToR1), discussion on the possibilities for stock assessment and data availability (ToR2) and overview of social-economic of the fishery (ToR3). The WG met virtually for two days, between 19-20 April.

STECF considers that the WG adequately addressed the TORs and has the following specific comments on the ToRs addressed by WG 23-02.

TOR 1: Following from the ad hoc contract report describe the similarities and differences between the current management measures in EU and UK waters and assess the effects on the fishery of alternative ways such measures might be aligned including the effects of alternative management such as using TACs/catch limits or effort regime.

STECF notes that the WG focused on the management measures already in place in scallop fisheries in EU and UK waters such as ring sizes, closed areas, effort restrictions and TACs. All these options for the management of scallop fisheries, were analysed by the WG and the pros and cons identified.

STECF notes that the WG compared the characteristics of different ring sizes. In French fisheries a ring size of 97 mm limit is used compared to the 85 mm ring size used in Irish and UK fisheries. Based on the information provided, a larger ring size in the French fleet improves size selectivity and does not reduce yield. However, the WG concluded that the different ring sizes in use between areas/fisheries reflects the different growth within their respective habitats.

STECF notes that temporal closed areas have been implemented nationally by France and voluntarily by the UK where fishers have the ability to change gear and target other species. Ireland has not adopted any such closures as the fishery in the Channel is not within the Irish EEZ. Additionally, Irish scallop vessels under national fleet policy are restricted in the species they can target.

STECF finally notes that effort limitations have been implemented by France and they differ by area. Additionally, a national TAC has also been introduced.

TOR 2: The WG shall describe the availability and quality of data to support stock assessments and investigate management scenarios. Discuss and propose ways to address any issues arising

STECF notes that the WG summarised the data currently collected by Member States and the UK. Much of the data, and particularly fisheries independent data, is collected

through national schemes, and the WG noted that currently there is no way of accessing this data. Partial data is shared with ICES WGSCALLOP. This comprises processed data and sometimes presented only in graphical format.

STECF notes that the WG concluded that there is no agreed model for the assessment of stock status currently. As a start point, STECF suggests that suitable assessment models could follow similar approaches as used by France (e.g., harvestable biomass projection from annual surveys) or using ICES guidelines for assessing data-limited stocks (SPiCT, Cmsy+ or length based-assessment). However, there may be scope for more complex modelling approaches (catch at age) if data sources can be integrated.

STECF notes the WG observation that the absence of data sharing agreements between the EU and UK limits the capacity of any WG under the auspices of STECF to carry out quantitative assessments of the stock and/or any proposed management measures.

TOR 3: Provide a detailed overview of the socio-economic importance of the king scallops fishery in the English Channel (fleet size and segments, crew, employment, etc.) based on AER data.

STECF notes that the WG provided an overview of the socio-economic importance of the king scallop fishery in the English Channel. The English Channel is the main area for catches of king scallop in the EU accounting for over 93% of the total landings by Member States. According to the information from the ad hoc contracts, the fishery at EU level employs 461 persons in full time equivalents, with an average annual gross remuneration of about €92,000. It generates almost €64 million in GVA, €21.5 million in gross profits and €10 million in operational profits.

STECF recalls that it has already developed a general protocol to carry out Impact Assessments (IA) of management measures, which could be applied to any proposed management measures for scallop fisheries. This protocol comprises a three-step process (STECF, 2010) as follows:

1) Scoping exercise: In a first meeting experts together with stakeholders and DG Mare representatives define what information should be provided for an IA.
2) Run of the analysis: Experts run the analysis by applying bio-economic models to assess possible impacts. This may also include a data collection exercise or a check of background documents with information on possible impacts.
3) IA meeting: In a second meeting experts prepare the final report for the IA information.

Follow up work from WG 23-02

STECF notes that WG 23-02 proposed the following approach could be taken:

1) Ad hoc contract to collect available social and economic information regarding the fleet segments impacted by limiting access compared to today. This contract should involve French fisheries economists with knowledge of the scallop fishery if possible.
2) Organising a meeting between the chair(s) of the WG with the scallop focus group of the NWWAC to discuss their position on the scallop fishery would be helpful to identify the most important fleet segments.
3) Invite French fisheries economists familiar with the scallop fishery to the next WG meeting.

STECF comments on the process

STECF notes that to carry out a stock assessment and develop a management plan of a shared stock requires the involvement of all parties involved in the fishery and management plan.

STECF observes that all measures currently in place and analysed by the WG are all viable options for the management of scallop fisheries, with pros and cons that are discussed in the WG report.

STECF further notes, as highlighted by the WG 23-02, that ICES already has a WG on scallops that includes EU and UK scientists (WGSCALLOP) and where national data could be shared. STECF observes that WGSCALLOP constitutes the most appropriate existing collaborative framework to deal with future requests in relation to stock assessment.

STECF notes that the environmental impact of the fishery can only be assessed in a limited way. While there is information on the benthic impact of scallop dredges (Eigaard et al., 2016, Løkkeborg, 2005), there is a general lack of bycatch data regarding catch and discards of non-target species.

STECF conclusions

STECF concludes that the management measures already in place in the English Channel scallop fishery, such as limitations on ring size, closed areas, effort restrictions and TACs, are all viable options for the management of the fishery.

STECF concludes that while there is no agreed model for the assessment of stock status currently, harvestable biomass projections from annual surveys or ICES guidelines for assessing data-limited stocks (e.g., SPiCT, Cmsy+ or length based-assessment) provide a good starting point to develop a suitable model.

STECF concludes that using the protocol developed by STECF previously would be the most appropriate way of carrying out an impact assessment of future management measures.

STECF concludes that the ICES WGSCALLOP provides the most appropriate forum where future requests relating to stock assessment of the stocks could be dealt with.

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5.2 EWG 22-03 AND EWG 22-07: ANNUAL ECONOMIC REPORT OF THE EU FISHING FLEET I AND II

Request to STECF

STECF is requested to evaluate the findings of the STECF Expert Working Group in particular 1) on the specific section for the fuel prices and energy consumption indicators of the EU fishing fleets. 2) on the methodology for opportunity cost of capital used on the AER.

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

STECF General comments on the AER report

EWG 23-03 took place virtually from 24-28 April (AER I) and EWG 23-07 took place physically in Ispra from 12-16 June (AER II) in 2023. The EWGs addressed all the TORs.

STECF observes that as in previous years, the AER report includes information on the EU fleet's fishing capacity, effort, employment, landings, income and costs. The reference year for the AER 2023 report is 2021 (year t) with nowcast performance estimates provided for 2022 (t+1) and 2023 (t+2). All monetary values were adjusted for inflation to 2020 constant prices.

STECF observes that the analysis provides a structural and economic overview of the EU fishing fleet, a regional analysis of the EU fishing fleet by major sea basin, outermost regions and by different Regional Fisheries Management Organisations (RFMOs) and a detailed structural and economic overview of each EU Member State fishing fleet.

STECF observes that the comparisons made between the reference year (2021) and the historical time series are now limited to the period 2013 to 2021. This represents a change in comparison with previous years' reports where trend analysis covered the years back to 2008. The reason for shortening of the period is to align the starting point of the annual economic analysis to the implementation of the reformed CFP in 2013. Furthermore, computational constraints, such as incomplete time series data due to either the non-submission or submission of questionable data, make a trend analysis over the entire period 2008-2021 at the EU and regional levels impossible without excluding the Member States fleets that are incomplete. .STECF agrees with this approach and notes that the full time series from 2008-2021 will still be available as a digital annex to the AER report at the JRC and STECF web pages (https://stecf.jrc.ec.europa.eu/reports/economic).

STECF notes that the EWG used 2020 as the base year for the calculations when adjusting nominal monetary values for inflation, same base year as in the AER 2022, but updated compared to AER 2021 when 2015 was used as base. STECF agrees with the EWG that the "reference year" (i.e., the last year for which data are provided by Member States) of the report and the "base year" should be the same.

STECF notes that presenting the last year in the report in nominal values makes it easier to communicate the results to stakeholders, because these numbers are more recognisable to stakeholders than numbers that have been adjusted for inflation, especially when inflation rates are high.

STECF agrees with the EWG that it is challenging for Member States to provide a more recent data reference for the AER analysis (e.g., 2021 is the latest full year for

the report in 2023). STECF notes the recommendation of the Market Advisory Council (MAC) to use more recent data. Even if the process of collecting data is automatised further, this is currently still not possible, given that Member States do not have enough time to provide the more recent data in time for the data call.

STECF notes that an alternative solution for a more up-to-date reporting of the year t+1 (2022 in the AER 2023) was suggested by the EWG. This would require developing a common method for nowcasting the year t+1, which could be used by the Member States. Using a common reporting tool/method in all Member States would allow for a data call that includes a nowcast of the year t+1. Models already used by Member States and the one used in the AER meeting could serve as a starting point for such an analysis. STECF notes that it would still be necessary to perform the nowcasting of year t+2 under the AER EWGs. STECF also notes that nowcasting in such a manner, may require that confidence intervals of the estimations performed are presented in the main report to be able to evaluate the reliability of the mean values obtained. This solution still needs further analysis, and this could be achieved through a workshop facilitated by RCGECON.

STECF observes that for the first time, EWG 23-03/07 used the Data Transmission Monitoring Tool (DTMT) Guidance, version March 2023 updated by the STECF PLEN 23-01 as a means for tracking data issues. The guidance specifies the complete process for the management of the data failures. EWG 23-03/07 focused on the first step of the process that is the filling in issues in the DTMT. The guidance specifies how the data issues should be reported and the fields to be compiled (data requested, issue, issue type, severity and recurring). Furthermore, for the identification of the data issues, the EWG applied the dashboard implemented by the JRC that allow to: visualize the data; inform on the timeliness; identify coverage issues (at Member State and fleet segment level); and report cross checks between data for different variables. In addition, experts were asked to report any additional data issues (in particular, regarding quality aspects) that would have been detected during the analysis and drafting of the text. STECF notes that this process was perceived by the EWG as a major step forward compared to last year's report, which facilitated the data quality checking and saved time, thus allowing more discussions on the results obtained in the AER report rather than on data issues.

STECF notes that the nowcast for 2023 should be interpreted with caution due to the fact that the development in the second half of the year (energy and fish prices, inflation, interest rates etc.) is unknown and highly uncertain. Furthermore, STECF observes that the results of the nowcast were delivered very late and several updates were produced. This delay affected the smooth running of the EWG and the timely delivery of the report. STECF notes that additional efforts should be devoted in the future to ensure that the results of the nowcast is made available before the second EWG meeting. Furthermore, the process to generate the nowcast should be fully integrated into the JRC database.

STECF notes that in order to analyse the economic performance of the EU fleet at the regional level, the economic data provided by fleet segment at the supra-region level should be disaggregated based on effort and landings data. These are provided at the sub-region level (FAO level 3 or 4). However, due to the characteristics of Other Fishing Regions (OFR) and, in particular, the RFMOs, some adaptations from the standard regional disaggregation methodology are required. Over the years, the definitions and criteria used to select fleets for the OFR analysis have changed. However, these criteria are not exhaustively documented. STECF observes that a re-assessment of those criteria, and their description would be necessary to increase the transparency of the whole process and to streamline the content of the report.

STECF observes that the revised EU-MAP (Commission Delegated Decision (EU) 2021/1167, table 8) changed the fleet segmentation for vessels operating in the Baltic Sea. The new segmentation for vessels less than 12 meter are 0-< 8 metres and 8-< 12 metres (previous it was 0-< 10 meter and 10-< 12 meter). STECF observes that only 2 Member States provided economic data according to the revised fleet segmentation. However, this had no impact on the AER, as the Small-Scale Coastal Fishing (SSCF) segment is defined as all vessels using passive gears with a length less than 12 metres.

STECF comments on the specific section for the fuel prices and energy consumption indicators of the EU fishing fleets

STECF observes that the special requests included in the TORs related to fuel prices and energy consumption indicators of the EU fishing fleets in a special section and in the national chapters were addressed by the EWG. This section is centred around the energy transition and the effects of fuel costs on the performance of the EU fishing fleet.

STECF notes in addressing this issue, the fuel use indicators requested in the TOR have been calculated (fuel intensity (FUI), fuel efficiency (FUE)), as well as the short-term and long-term break-even prices of fuel (i.e., the fuel prices that result in gross and net profit being zero, respectively). It should be noted that for the long-term break-even prices, the capital cost has not been considered in the calculation of the net profit. This is because the calculation of this indicator is based on a variable interest rate, which currently are experiencing high fluctuations. This affects the results for this indicator and its interpretation.

The EWG performed fuel intensity data quality checks by comparing the results obtained using the AER data with the available literature on fuel use. STECF notes that they have been performed only for Demersal trawlers and/or demersal seiners (DTS), Beam trawlers (TBB) and Pelagic Trawlers (TM) fishing technologies (e.g., technologies can cover multiple gear types). However, these technologies account approximately for the 75% of the energy consumption of the EU fishing fleet. STECF notes that FUI, FUE and break-even fuel prices were calculated at segment level and as mean national averages. From these quality checks it was also obtained that further aggregation beyond the fleet segments used in the AER was not recommendable. AER uses fleet segments which combine different fishing gears. Aggregating them further will make very difficult to interpret the results obtained and to contrast them with the available literature of fuel use.

STECF observes that based on the quality checks carried out, the EWG observed that vessels are assigned to a segment based on its predominant fishing gear. Even though vessel segments are defined in the data call by a specific fishing gear, different fishing gears can be used by fishing vessels over the course of a year and segments can be merged due to confidentiality. Therefore, the estimations of fuel use in each segment can be difficult to interpret. These effects are more prominent in small-scale fisheries, implying that the calculation of the fuel indicators is less reliable for small-scale fisheries segments.

STECF notes that it might be necessary to validate the quality of the data provided on fuel consumption in the data call through a follow-up analysis by the EWG, because it has been necessary to analyse a combination of AER and FDI data in order to identify the fishing gear used, which is key to be able to compare the results with the available literature on fuel intensity.

STECF observes that AER provides statistical ranges of fuel use intensity (FUI) based on a literature review of the main fishing gears by target species. Literature review of energy use in fisheries demonstrated the reliability of the fuel use intensities

estimated with the AER-FDI combined approach. Information provided with this complementary analysis not only provides valuable information about the reliability of the AER data but also a tool for data quality checks *a priori* that Member States may use to check fuel use before submission using the statistical ranges.

STECF comments on the methodology for opportunity cost of capital used in the AER

STECF observes that issues related to the methodology for calculating opportunity cost of capital were also discussed by the EWGs. When calculating the net profits, the opportunity cost of capital is still computed using a variable interest rate, (i.e., the nominal interest rates of the national 10 years bonds, as a proxy of a low-risk investment). This approach creates some difficulties in interpreting and explaining the results of the analysis to stakeholders. The real interest rates1 can be negative (and actually have been in the past), meaning net profits can be higher than the gross profit.

STECF notes that to avoid such an anomaly, the EWG suggested a new approach built on a fixed nominal interest rate for all Member States. A suggestion for this fixed interest rate is between 3-4%. This range corresponds to the recommendation made by the EU Commission for the choice of discount rate used for Cost-Benefit analysis (Guide to Cost-Benefit Analysis of Investment Projects for Cohesion Policy 2014-2020, December 2014). It also aligns with scientific literature evaluating the choice of discounting rate (Hepburn et al 2009) and scientific articles in the field of fisheries economics (Kempf et al. 2016). With this change nominal interest rates would remain positive, which makes sense from the overall long-term sustainability perspective for the fishing fleet.

STECF observes that the level for the fixed interest rate can change over time, and this should be documented by the EWG. Similarly, the consequences of moving to fixed interest rates for the balance/capacity report should be investigated by STECF.

STECF conclusions

STECF concludes that the EWGs have addressed all TORs and STECF endorses the AER report.

STECF concludes that it is currently not possible to provide data for the report that is more up to date than is collected currently (i.e., t=2021 in the 2023 AER). However, a workshop could be facilitated by RGECON to develop a common method for nowcasting for the year t+1. Such a methodology could be applied by Member States to provide the nowcast for the year t+1 in the yearly data call.

STECF concludes that to increase transparency and to streamline the content of the report, criteria for splitting effort and landings data regionally, and automatically performed by the database, should be further documented.

STECF concludes that an ad-hoc contract is provided for the two chairs of the AER to investigate and document the procedure of allocating fleet segments to the different RFMOs.

STECF concludes that the reference year of the report and the base year used for the calculations should always be the same.

[1] The real interest rate is defined as the nominal interest rate minus the inflation rate

STECF concludes that the revised segmentation for the less than 12 meters in the Baltic Sea should be applied by all concerned Member States as per the revised EUMAP. This will allow a homogeneous and consistent presentation of data.

STECF concludes that due to gear aggregation at the fleet level, the results on fuel intensity (FUI), fuel efficiency (FUE) and break-even prices presented in the AER report should be interpreted with caution especially for small-scale fleet segments. Due to the lack of detailed information on gears in the AER fleet segments, there may be a need for analysing the data used for calculating fuel consumption in more detail to be able to provide more reliable results in the future.

STECF concludes that that a methodological change for calculating opportunity cost of capital using a fixed interest rate would improve the interpretability of results and make the results less dependent on interest rate fluctuation and therefore easier to compare over time.

STECF concludes that the effects of using a fixed interest rate instead of the variable one used currently should be documented in AER 2024. A section covering the choice of interest rate based on economic literature and documentation of the effects of going from a flexible to a fixed long-term interest rate should be included in the 2024 AER report. Furthermore, the consequences for the balance/capacity report should similarly be investigated.

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5.3 EWG 23-05: FDI METHODOLOGY

Request to STECF

STECF is requested to review the report of the STECF Expert Working Group meeting, in particular on:

- The suggested necessary steps by the EWG to transfer the biological data from the Mediterranean and Black Sea data call into the FDI format.
- The necessity of any outstanding points on data methodology needs for the FDI database.

This EWG is linked to STECF EWG 23-10 taking place in September. In case the STECF has points or remarks on preparation that is running in parallel to the PLEN on this other EWG they are invited to note them down.

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 metier 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.

5.4 EWG 23-08: EVALUATION OF THE ANNUAL REPORTS FOR DATA COLLECTION AND DATA TRANSMISSION ISSUES

Request to STECF

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

STECF comments

TOR 1 Evaluation of Member States annual reports for 2022

STECF notes that the 2022 Annual Reports have been the first submitted and evaluated in accordance with Commission Delegated Decision (EU) 2021/1167 and Commission Implementing Decision (EU) 2021/1168.

STECF observes that the evaluation of the 2022 Annual Reports (ARs) was based on the outcome of the pre-screening exercise and supporting documents - the updated evaluation grid, the revised AR assessment guidance, and Data Transmission Monitoring Tool (DTMT).

STECF observes that a two-step pre-screening exercise was carried out, as conducted last year. Member States were asked to address the issues identified by the pre-screeners/EWG and resubmit the ARs before and during the EWG, as necessary.

STECF notes that rules concerning the communication with the Member States prior to the meeting were pre-defined, with all identified issues required to be reviewed by at least two pre-screeners before the issue was sent to the relevant Member States.

STECF observes that prior to the EWG, 26 Member States were contacted for clarification on various AR sections until the first day of the EWG. 22 Member States responded or confirmed receipt of the feedback. During the EWG, 23 Member States were contacted from which all Member States replied, which led to the improvement and finalisation of the assessments. The communication with Member States both prior to and during the EWG was documented for future reference.

STECF acknowledges that the two-step approach with early correspondence with Member States facilitated the efficient evaluation of the ARs.

STECF notes that the quality documents Annexes 1.1 and 1.2 (referenced as QD, Quality Documentation) were not evaluated when the WPs were evaluated and accepted. The EWG had difficulties evaluating the annexes since Member States had only to report if there were deviations or not without providing any detail.

STECF agrees that the current template for QD needs improvement to achieve a consistent evaluation. However, STECF acknowledges that the EWG provided several examples which can be used by Member States as guidance for the future submission of amended QDs.

STECF further notes that the EWG raised some concerns about the overall assessment grid. As no weighting of the sections is applied in the EU overview, the EWG agreed that the overall performance by Member States is only for illustrative purposes. DG MARE and Member States should primarily refer to the assessment of each section in the AR evaluation grid and the Member States feedback.

STECF notes that the EWG considered that the assessment needs to focus on the execution of the WPs rather than on the format of the ARs and that there is a need to enhance the evaluation process to put more emphasis on the quality of the reported data.

STECF notes that during the pre-screening and EWG meeting, experts were asked to provide comments on the evaluation grid, the guidance documents, the AR and WP tables. STECF notes that these comments are provided in electronic Annex 3 - Comments on evaluation grid and guidelines for EWG 23-08. Regarding the EWG suggestions on reporting achievements under bi-/multilateral agreements in the AR, STECF notes that only the Member States having conducted the sampling should report the achievements and the other Member State(s) participating in the agreement should refer to the AR of the Member State responsible for sampling. The AR submission guidance should be amended accordingly to clarify the reporting obligations.

STECF observes that the RCG website (Fisheries Regional Coordination Groups (fisheries-rcg.eu) and the EU DCF website (WP/AR assessment - European Commission (europa.eu)) potentially are two useful platforms to host the updated guidelines.

STECF observes that a revised evaluation grid was provided in electronic Annex 4 – AR Evaluation Grid Template EWG 23-08.

TOR 2: evaluation of Member States transmission of data to end users in 2022

STECF observes that as for the Annual Reports, the Data Transmission (DT) issues were subject to a pre-screening assessment prior to the EWG final assessment. The pre-screeners were requested to complete a first assessment of the issues and prepare draft comments.

STECF observes that there was a total of 278 DT issues, from 5 data calls in 2022 reported by 3 end users in the DTMT. A total of 113 DT issues were related to COVERAGE, 155 to QUALITY and 10 to TIMELINESS.

STECF further observes that out of the 278 DT issues, 48 issues were classified as being dealt with SATISFACTORY, and 47 as UNSATISFACTORY. In addition, 181 issues were assessed as FOLLOW-UP NEEDED because the Member State and end-user comment was either contradictory or the Member State's comment was unclear. Issues that were acknowledged by the Member State to be corrected were also assessed as FOLLOW-UP NEEDED where the Member State stated to submit the corrected data in the following data call.

STECF acknowledges that the EWG highlighted the need to have the DT Issues that are assessed as FOLLOW-UP NEEDED to be properly closed at some point in the process. Currently, they are not checked to assess if the follow-up has been completed.

TOR 3: Examine and comment on the progress and initial products of the DCF IT project to develop the dedicated platform for work plans and annual reports.

STECF acknowledges that during EWG 22-18, the background document with the description of the functional, non-functional, and global requirements for the future DCF platform was thoroughly screened. STECF further acknowledges that majority of the comments given by EWG 22-18 were considered.

STECF considers that the development of the DCF Platform will provide a mechanism by which all the reporting issues will be checked automatically and already fixed by Member States prior to the evaluation. This will allow future EWGs on AR evaluation to focus on the execution of WPs in relation to data quality and data failures.

TOR 4: Examine the updated Italian AR 2021

STECF observes that EWG 23-08 reviewed the AR Table 1E 2021 for Italy. STECF notes that even though the data collection on the eel fisheries had taken place, Italy had failed to properly report it in the 2021 AR. STECF observes that the final EWG judgement was "YES" with no action needed for all the questions under "Anadromous, catadromous data collection in freshwater" (Table 1E, Text Box 1E) in the assessment grid.

STECF conclusions

STECF concludes that the EWG addressed all ToRs appropriately in the given time frame and endorses the report and the related annexes.

Regarding TOR1, STECF concludes that the overall process for the AR evaluation (AR pre-screening and communication with Member States prior to and during the EWG) is efficient as it allows for a significant number of issues being identified and addressed before the end of the meeting.

STECF concludes that there is a need to utilise the outcome from the EWG evaluating the ARs in EWG 23-16 evaluating the forthcoming WPs. This will help to improve the WPs and therefore the ARs. STECF concludes that the whole process needs to be iterative, and Member States should be requested to resubmit amended WPs on the basis of the evaluation of the ARs.

STECF concludes that the Quality Documentation (QD) for all sampling schemes referred to in the biological (Tables 2.2, 2.3, 2.4, 2.5 and 2.6), economic and aquaculture (Tables 5.2, 6.1 and 7.1) sections, introduced in the WPs provide a possible format to progress towards a consistent way of describing all EU-MAP sampling designs and methods. STECF concludes that QDs may be improved by Member States based on EWG feedbacks or other similar QDs of other Member States available on the STECF website.

STECF concludes that the revised evaluation grid should be applied in next year's AR evaluation. However, the AR guidelines should be clarified with respect to several tables, in particular those related to data availability, planned regional and international coordination, recommendations and agreements.

Regarding TOR 2, STECF concludes that the data issues already assessed as "FOLLOW-UP NEEDED" should be resolved on the basis of an ad-hoc contract that will be provided as background document to EWG 23-16

STECF concludes that the revised DTMT will allow for an efficient follow-up of data issues, as there will be new columns included in the DTMT from autumn 2023 onward to document the follow-up process (STECF PLEN 23-01).

Regarding TOR 3, STECF concludes that the DCF platform, that is currently under implementation, will facilitate a proper evaluation of the reporting as well as of the execution of the WPs. STECF suggests that the platform could additionally perform some cross-checks between tables and highlight low achievement levels in comparison with planned sampling intensities.

In this context, STECF concludes that it would be beneficial to establish communication with the relevant Regional Coordination Groups (RCGs) to receive their input on how to evaluate achievements. STECF also concludes these topics should be included in the terms of reference for the forthcoming EWG 23-16 on the evaluation of Work Plans.

For TOR 4 STECF concludes that the updated assessment of the Italian AR 2021 changed the overall assessment of the affected modules from 'Partly' to 'Mostly'.

6. ADDITIONAL REQUESTS SUBMITTED TO THE STECF PLENARY BY THE COMMISSION

6.1 ASSESSMENT OF A SOCIO-ECONOMIC ANALYSIS OF VULNERABLE MARINE ECOSYSTEMS

Background provided by the Commission

The **Deep-sea Access Regulation**[2] is governing access to deep-sea fishing and setting conditions for protecting "Vulnerable Marine Ecosystems" (VMEs) in EU and international waters. The Deep-sea Access Regulation aims to establish a sustainable exploitation of deep-sea stocks while reducing the environmental impact of these fisheries and preventing significant adverse impacts on VMEs, and to improve the information base for scientific assessment, through data collection.

On 15 September 2022, the Commission has adopted the **Implementing Act (EU) 2022/1614** determining the existing deep-sea fishing areas and establishing a list of areas where vulnerable marine ecosystems are known to occur or are likely to occur[3].

The Implementing act is based on ICES advice (final advice in Jan. 2021 and coordinates in Feb. 2022)[4], which aims to balance the protection of VMEs with the continuation of fishing activities under **Scenario 2 – option 1**. A list of **87 areas** where VMEs occur or are likely to occur in EU waters has been established in the Implementing Act, based on the ICES advice. The Deep-sea Access Regulation provides that fishing with all bottom gears shall be prohibited in all listed areas below a depth of 400 meters.

As per article 9(6) of the framework Regulation (EU) 2016/2336, the Commission "*shall review the list annually on the basis of advice received from the Scientific, Technical and Economic Committee for Fisheries and, where appropriate, amend the list by means of implementing acts. The Commission may remove an area from the list provided that it determines, on the basis of an impact assessment and after consulting the competent scientific advisory body, that there is sufficient evidence to indicate that VMEs are not present, or that appropriate conservation and management measures have been adopted which ensure that significant adverse impacts on VMEs in that area are prevented*."

On 18 April 2023, ICES released its second "**Advice on areas where Vulnerable Marine Ecosystems (VMEs) are known to occur or are likely to occur in EU waters**" where it presented 5 updated scenarios taking into account data submitted

[2] Regulation (EU) 2016/2336 of the European Parliament and of the Council of 14 December 2016 establishing specific conditions for fishing for deep-sea stocks in the north-east Atlantic and provisions for fishing in international waters of the north-east Atlantic and repealing Council Regulation (EC) No 2347/2002.

[3] Commission Implementing Regulation (EU) 2022/1614 of 15 September 2022 determining the existing deep-sea fishing areas and establishing a list of areas where vulnerable marine ecosystems are known to occur or are likely to occur.

[4] ICES. 2021. EU Request to advise on the list of areas where VMEs are known to occur or are likely to occur and on the existing deep-sea fishing areas (ref. (EU)2016/2336.).
ICES. 2022. EU request for a Technical Service to provide data output of the ICES 2021 advice on the deep-sea access regulation (ref. (EU)2016/2336) as coordinates for EU waters area only.

by EU Member States in the context of the VMS-VME data call of 2022 (2009-2021)5. The new ICES advice proposes to list more areas for VMEs protection, between 102 up to 115 areas against 87 areas listed in the Implementing Regulation (EU) 2022/1614. Overall, this corresponds to a total area size of 9 752 km2 up to 14 885 km2, compared to 16 419 km2 under the current Regulation.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

STECF is requested to provide an opinion to inform the Commission's possible review of the list of areas, as per Article 9(6) of the Deep-sea Access Regulation (EU) 2016/2336.

In particular, STECF is requested to review the results of two ad-hoc contracts, prepared to facilitate the final opinion:

1. Step 1.1 – GIS analysis
2. Step 2 – Scenarios for the Socio-economic Analysis

Based on the above, the opinion should be composed of:

- **Analysis of the EU fleet economic performance**: Match the fleet segments with FDI and most recent AER data to analyse the changes in value of landings under existing VMEs closures, under new closures and under re-openings of areas as per ICES advice 2023, with profit indicators (net and gross) and gross value added. Collect findings and recommendations on effort reallocation (scenarios), threshold of landings to rebalance segment, gears specificity and employment dimension, notably estimates of jobs at risk (scenarios). The results of this analysis should be presented by fleet segments, MS and maritime sea basin (if possible).
- **Summary of assumptions and limitations for this analysis** (data resolution, the potential scope for fleets to divert activities to other areas, to adopt alternative sustainable fishing techniques or to benefit from potential spill-over effect of the recovered fish stocks, etc.).
- Potential positive socio-economic value to society in terms of **gains of biodiversity** due to the closures.

Summary of the information provided to STECF

Two reports were made available to PLEN 23-02. One report regarding ad hoc contracts STECF 2314 and 2315, and the second for ad hoc contracts STECF 2326 and 2327.

The first ad hoc contract report (hereafter referred to as Report 1) included a geographical analysis of spatial fishing effort and landings data by fleet segment at c-square level (0.05 x 0.05 degrees). This data was extracted from the EU Data Collection Framework as compiled in the Fisheries Dependent Information (FDI) database in combination with shapefiles of three different lists of coordinates of VMEs areas (provided by DG MARE). DG MARE requested the comparison of three scenarios: Scenario 1 which refers to the Commission Implementing Act and Scenarios 2 and 3 from the latest 2023 ICES advice (called Scenarios C and D in the

5 ICES. 2023. Advice on areas where Vulnerable Marine Ecosystems (VMEs) are known to occur or are likely to occur in EU waters.

ICES advice). All scenarios include a list of VMEs. The first list for Scenario 1 is taken from Commission Implementing Regulation (EU) 2022/1614 and includes the areas currently closed. That list was based on the first ICES advice of 2021 and corresponds to Scenario 2 Option 1 in that advice (ICES 2021); Scenario 1 is hence called "Scenario 2-Option 1" in the Report 1 and in the tables and figures copied below. The two other lists are the scenarios C and D from the most recent ICES advice (ICES, 2023) where:

- Scenario C - Prioritises protection of VMEs where they are known to occur and likely to occur, including C-squares with low VME index where the risk of further Significant Adverse Impact from mobile bottom contacting fishing gears is high, and C-squares with low VME index adjacent to those prioritized for protection.
- Scenario D - Prioritises protection of VMEs where they are known to occur and likely to occur, only where the risk of further Significant Adverse Impact from mobile bottom contacting gears is high.

The approach used to carry out the analysis and a summary of the results are presented in Report 1 while the full datasets resulting from the analysis are provided as an electronic annex. In addition to the main analysis, in Appendix 2 of Report 1, the results of the analysis carried out for Spanish data from the ICES VMS/logbook dataset are also reported. This specific analysis was carried out because the experts found that in the FDI data calls, there was a big discrepancy in the amount of data reported by Spain for deep sea fishing trips before and after 2018.

In the second ad hoc contract report (hereafter referred to as Report 2) the contractor merged several datasets to conduct an economic impact evaluation of the VMEs at the fleet-segmentation level as defined by the STECF Annual Economic Report (AER) dataset. Report 2 is split into two evaluations, each applied to the same three lists of VME scenarios as for Report 1. The two evaluations were:

- An evaluation of the impacted EU fleet segments in terms of GVA, gross and net profits, and the crew engaged in the impacted segments. This also disaggregated the possible socioeconomic impact of each VME in each scenario.
- An evaluation of implications of displacement of fishing effort from the VMEs to surrounding areas or other fishing grounds.

Overview of the results from Reports 1 and 2

Figure 6.1.1 (taken from Report 1) shows a map of areas along the continental shelf with different depth ranges. The red dots represent the currently closed areas assessed in Report 1 as the 87 VME polygons listed in Implementing Act (EU) 2022/1614 (corresponds to Scenario 2 Option 1 in the 2021 ICES advice (ICES 2021)).

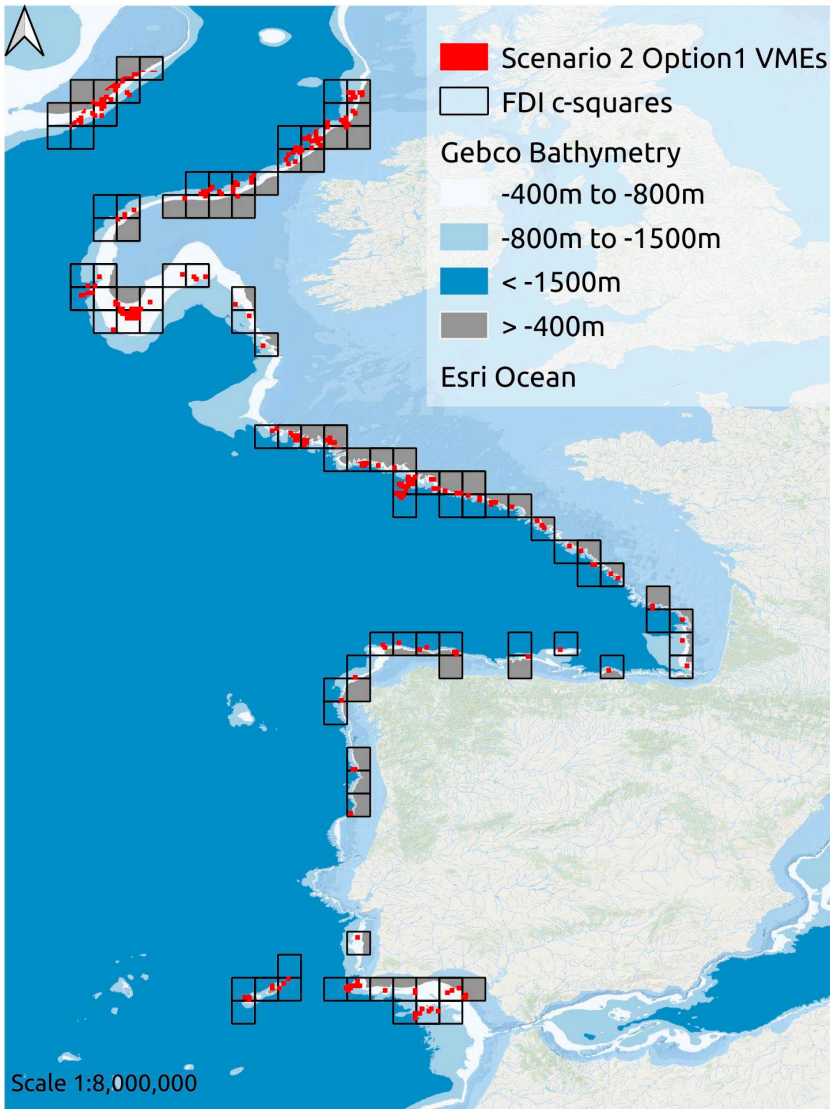


Figure 6.1.1: Map of the list of 87 areas from Regulation (EU) 2022/1614 with c-squares (Taken from Report 1, Page 9).

Report 1

The results of the three scenarios carried out under Report 1, considered information from Germany, Spain, Ireland, France and Portugal and for the periods 2013-2021 and 2018-2021. The dataset used contained 9 gear types for the Scenario 2-option 1 scenario as well as for Scenario C, and 8 gear types for Scenario D (see table 2, page 10 in the Report 1 for the gear types per scenario).

Report 1 indicates that the number of VME areas differs in the three considered scenarios, with 87 VMEs in Scenario 2 option 1, 115 in Scenario C and 104 in Scenario D. The average number of VME areas where the analysis estimated some fishing activity for the whole time-series (2013- 2021) is shown below in Table 6.1.1.

Table 6.1.1. Average number of VME areas where the analysis estimated some fishing activity for the time-series (2013-2021) (Taken from Report 1 – Table 3, page 11)

country code	scenario 2 option 1	scenario C	scenario D
DEU	13	20	19
ESP	63	83	73
FRA	53	66	60
IRL	20	24	19
PRT	18	25	21

Figures 6.1.2 and 6.1.3 show the estimated landings value by country for 2013-2021 and 2018-2021 respectively.

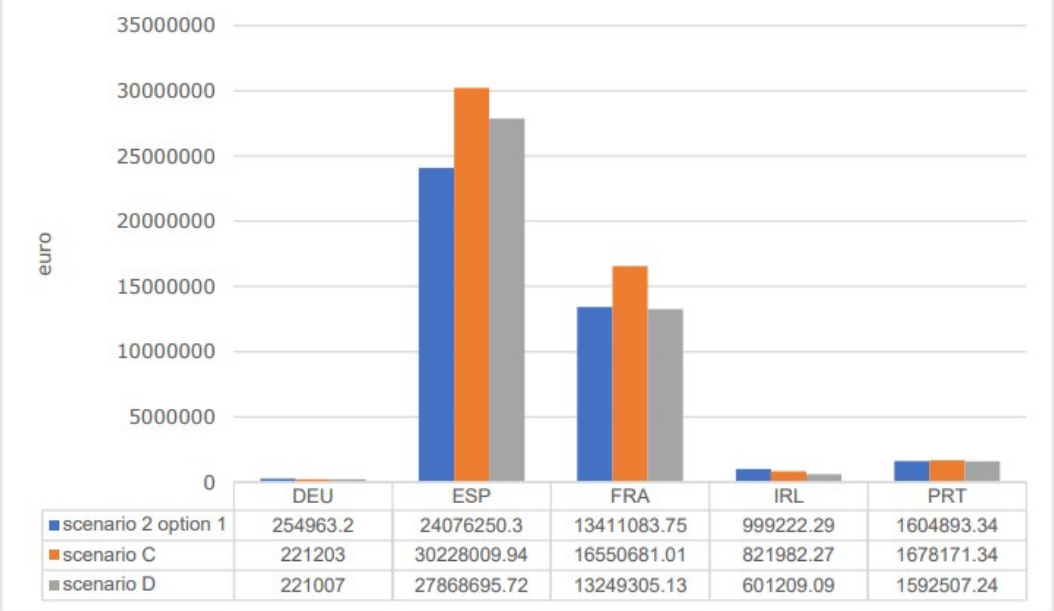
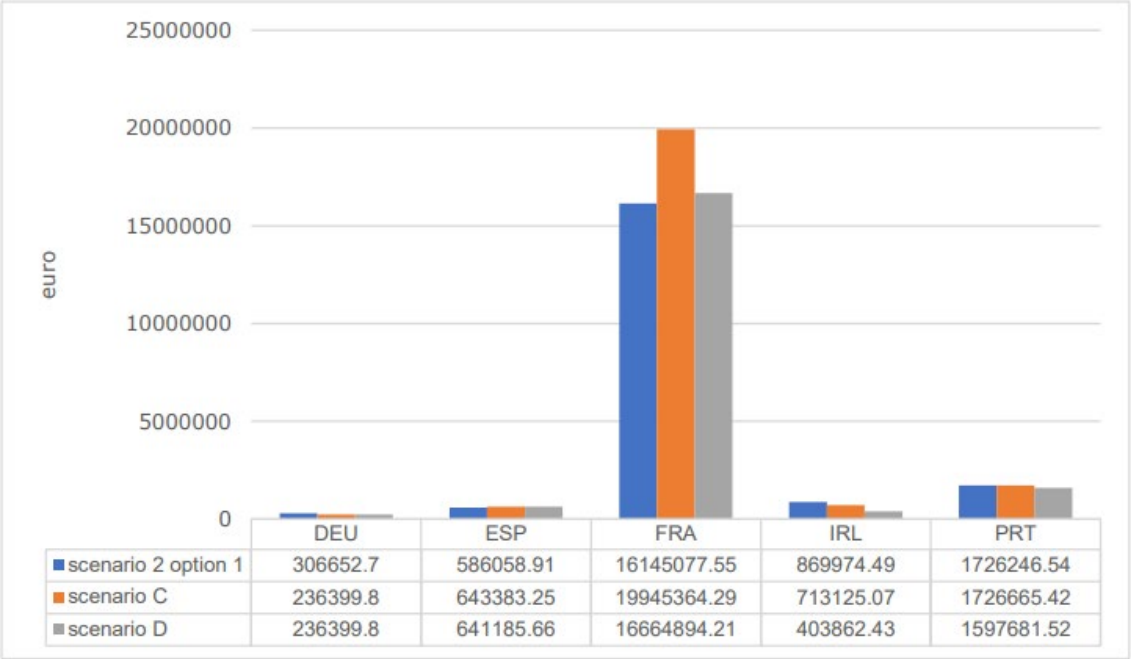


Figure 6.1.2. Estimated landings value average for the time-series (2013-2021) by scenario (Taken from Report 1 – Figure 5, page 13).



	DEU	ESP	FRA	IRL	PRT
scenario 2 option 1	306652.7	586058.91	16145077.55	869974.49	1726246.54
scenario C	236399.8	643383.25	19945364.29	713125.07	1726665.42
scenario D	236399.8	641185.66	16664894.21	403862.43	1597681.52

Figure 6.1.3. Estimated landings value average for the time-series (2018-2021) by scenario (Taken from Report 1 – Figure 8, page 16).

For the period 2018-2021, the assessed data shows that the French fleet seems to be more impacted than the Spanish fleet. However, for the whole period (i.e., 2013-2021) the Spanish fleet is by far the most impacted. According to the ad hoc contract report, this is because of changes in reporting of data after 2018.

Report 2

The main findings of Report 2 show that overall, by analysing the finely spatially resolved data, for all scenarios combined, (i.e., closures implemented in 2022 (NB the same scenario that was referred to as "Scenario 2-Option 1" in Report 1 is here called "Closure2022" in Report 2) and the ICES 2023 scenario C and D), the socioeconomic impact would not exceed 10% of the GVA. For all scenarios combined, the most affected segments would be ESP_DTS_VL2440 and the ESP_DTS_1824 fleet segments, but the results show that these fleets would have a possibility of offsetting the loss of spatial opportunities by displacing the effort toward surrounding areas. Only the closure of a few areas (Gulf of Cadiz under current closures, Aviles canyon under Scenario C and Porcupine Sea Bight under Scenario D) are susceptible to the affects of specific fisheries under the three scenarios. By analysing more aggregated data (the FDI dataset) similar results as in Report 1 are obtained, with the Spanish fleet appearing as the most affected (ca. 7-8% of the GVA), particularly the fleet using the DTS fishing techniques, but also small dredgers (DRB) and longliners (HOK) under ICES Scenario C (See Figure 6.1.4 taken from Report 2).

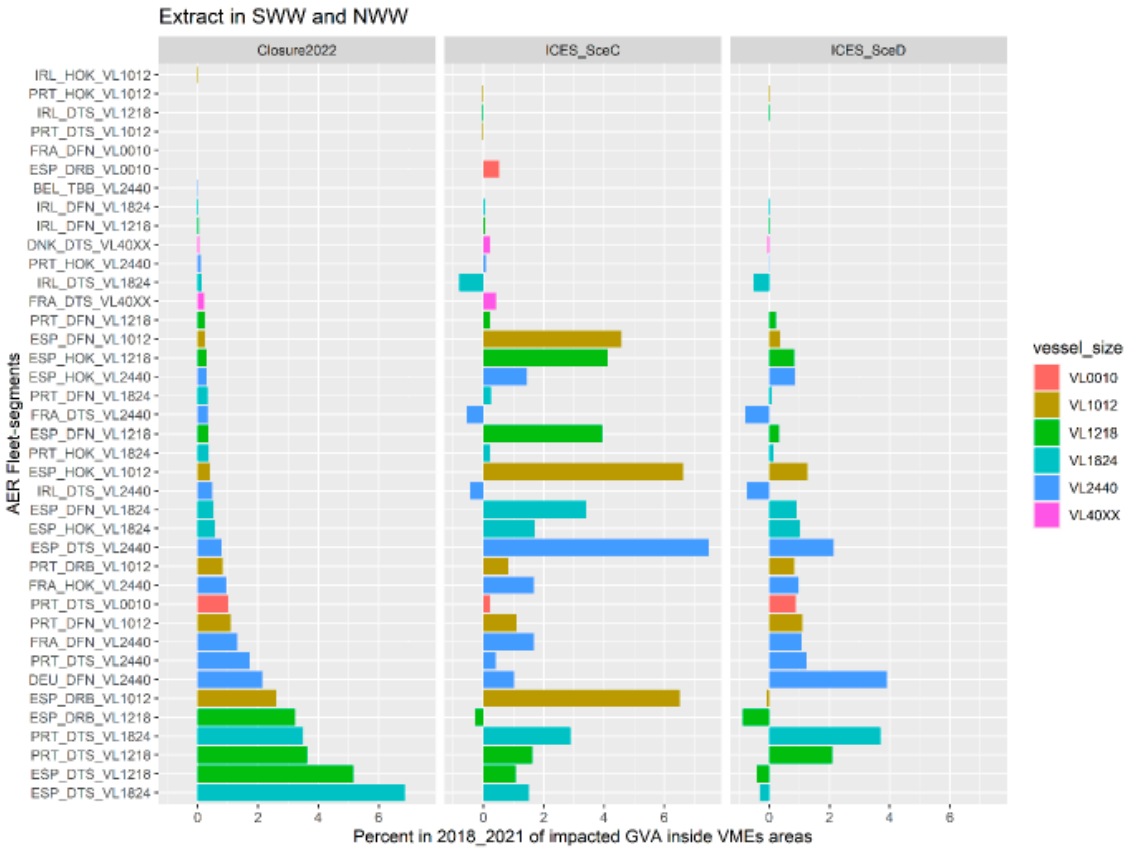


Figure 6.1.4 Percent of the average 2018-2021 fleet-segment GVA impacted by the VMEs by scenario (Closure 2022, ICES Scenario C and ICES Scenario D) and main AER fleet-segments. To obtain these estimates, the fleet-specific GVA has been spatially disaggregated over FDI c-squares and averaged over years, and the average GVA values in impacted FDI c-squares have been multiplied by the ratio of the VMEs surface in the cells over the fishable surface area in each cell (the fishable area is defined by the bathymetry >-800m for bottom fishing, or the entire cell area for longliners and netters, and corresponds to the area where the catch is supposed to have occurred, generating the income from landings). Negative percentages arise from negative GVA values. Taken from Report 2 – Figure 5, page 20.

STECF observations

General comments

STECF observes that the ad hoc contracts used the best available information in the relevant databases at EU level and provided the requested analyses to the extent possible in the short timeframe available to prepare the reports. These studies provide a useful foundation on which to build future work.

As acknowledged in both reports, STECF is aware that there are significant data limitations with the VMS and FDI data used. Therefore, STECF considers that the results presented should not be taken as being the definitive impacts associated with the VME closures. As such, the results should be treated as preliminary and not be overly interpreted.

STECF notes that the reports show what results could be obtained when analysing potential impacts from the data available. However, STECF advises that further work and discussions with stakeholders should be carried out (see below) to assess how far this data analyses reflects the real situation. In this regard, STECF notes that the

methodology used in the ad hoc contracts could also be applied or supplemented by Member States to re-run the analyses with their national data. Alternatively, Member States could be requested to supply such national data to allow STECF to re-run the analysis as part of future assessments proposed.

STECF notes that an analysis of expected environmental impacts of the closures on deep-sea fish stocks, bottom habitats, and infauna was not part of the ad hoc contracts. Report 1 provided a summary of estimated fishing effort and landings in the areas listed in the three scenarios; Report 2, provided a summary of potential loss of landings associated with the closures identified in the three scenarios.

STECF comments on the analysis of the EU fleet economic performance

STECF observes that according to Report 1, for the period 2018-2021, the French fleet seems to be more impacted than the Spanish fleet. However, for the whole period the Spanish fleet is by far the most impacted (see the figures above). STECF notes that the results presented for Spain are highly variable with the average impact per year estimated at between €13.3 million to €16.6 million per year for the three scenarios over the period 2013-2021 compared to €590,000 - €643,000 for the period 2018-2021. According to Report 1, this is due to changes in the methodology and reporting by Spain after 2018.

STECF notes that with the high degree of variability and limitations highlighted in Report 1, notably due to the differences in c-square resolution, STECF cannot comment definitively on the accuracy of the results presented in this report.

STECF notes that for Report 2 the socioeconomic impact would not exceed 10% of the average Gross Value Added (GVA) under all scenarios. Further, STECF observes that Report 2 concludes that the most affected fleet segments across all scenarios would be Spanish trawlers and seiners 18-24 meters (current 87 closures) and 24-40 meters (under Scenario C). The small-scale segments using longlines and bottom set nets would be more affected under Scenario C. However, STECF notes that as the data for longlines and nets is limited (only FDI available, no VMS), so this conclusion should be treated with caution.

STECF notes that in Report 2 it is assumed that there is the possibility of offsetting the loss of fishing opportunities within the VME closures by displacing fishing effort to surrounding areas in the proximity of the VMEs. However, STECF observes that further analyses and discussion with stakeholders on fishing patterns would help in assessing the impacts actually expected of effort displacement on surrounding areas. In deep-sea fisheries due to the slow growth and sedentary nature of the species, many areas are not fished every year or there are gaps of many years between fishing activities in an area.

STECF agrees with the contractor that a slight change affecting GVA may lead to a large change in profitability, given some large-scale fishing vessels with extensive fixed capital assets are engaged in the relevant fisheries.

STECF notes that Report 2 acknowledges that it does not address possible important drivers in fleet dynamics, especially the implications on marine ecosystem productivity where positive impacts from closures may improve catch possibilities around (so-called "spillover effect"), potentially leading to increasing fishing effort in surrounding areas.

STECF observes that Report 2 only considers potential short-term effects and does not assess any long-term dynamics or changes in labour costs and employment in the medium term. This would require additional analyses (see section below on suggested follow-up work).

STECF acknowledges that this was the first time that this type of analysis was conducted for the VMEs. STECF is aware that Article 9(6) of Regulation (EU) 2016/2336 requires a yearly review by the Commission based on STECF advice. Depending on this advice, the list of VMEs may be amended. Therefore, STECF assumes similar analyses are likely to be requested in the future. STECF observes that it is imperative that a more rigorous process be developed for future analyses. STECF has proposed how this might be best carried out (see section below) and this would better inform discussions between Member States, DG MARE and stakeholders on the impacts of the closures.

STECF comments on the assumptions and limitations of the analyses

STECF notes that the two reports list several limitations of the analyses (Report 1, p. 30-31; report 2, p. 52-53). STECF considers that these limitations are significant and may limit the robustness of the conclusions that can be drawn from these studies.

STECF observes that the limitations of the analyses listed in the two reports refer mostly to the data sets used for the analyses, FDI[6] and ICES VMS[7]. These two generic datasets are designed, collected and maintained for various purposes. They are not specifically collated for this VME analysis.

STECF notes that both datasets provide valuable information about the fishing activity of European fleets in terms of effort and landings. However, STECF notes that these datasets differ in terms of coverage of fleets, vessel length classes, spatial and temporal aspects. This difference in coverage results in substantial differences in the value of landings and effort being reported to both data calls (see, for example, table 18 in Report 1). This difference is to be expected as both data calls are designed to support different scientific and advice needs.

STECF observes that the FDI data set contains catch and effort data for all species (targeted or not), in all areas, for all vessel length ranges, for all Member States, from 2013 – 2021. This data is quality controlled annually by the STECF FDI working group (i.e., STECF 2022). Annually the landings totals are compared with Eurostat to test for quality and consistency with official declarations (https://ec.europa.eu/eurostat/web/fisheries/data/database). The effort data reported to FDI are standardised as specified by the Nicosia report and methodology (STECF 2016), and again annually checked by experts for quality, trends and completeness.

STECF notes that the spatial resolution of the FDI data (0.5 x 0.5 degrees, approximately 55 km sq) is too coarse to provide precise estimations of fishing effort and landings at small spatial scale. Report 1 points out that the closed areas do not exactly fit the c-squares for which data is provided (usually the closed areas cover only parts of the c-square, as illustrated in the map above). STECF agrees with the conclusions from Report 1 that "*assuming that fishing effort and landings are constant throughout a c-square of approximately 55 square kilometres might be unrealistic, considering the size of a fishing vessel and the gear used*".

STECF observes that the second main data source, the ICES VMS data, is collected to support the Working Group on Spatial fisheries[8] and any spatial analysis conducted by ICES. This data set corresponds only to a subset of the FDI data, containing a

[6] https://stecf.jrc.ec.europa.eu/dd/fdi

[7] https://data.ices.dk/vms/webservices

[8] https://www.ices.dk/community/groups/pages/wgsfd.aspx#:~:text=The%20Working%20Group%20on%20Spatial,and%20frequency%20in%20European%20waters

smaller list of species, fleets, vessel lengths categories and spatial areas. Coverage over the time series is incomplete for certain countries.

As an issue of particular importance, STECF underlines that there is no standardised list of species that a country must submit to the ICES VMS data call. Currently the VMS data call guidelines do not specify this information (ICES 2023b). For some Member States for example, STECF is aware the submitted VMS corresponds to trips catching between 20 – 30 target species considered commercially important. As such, species caught in VMEs may potentially be omitted from that list, which would mean that the VMS data available would not necessarily encompass all trips taking place in the VMEs. STECF notes that clarification should be sought from ICES on the completeness and coverage of species included in estimation of the landings and effort data submitted to the ICES VMS data call.

STECF notes that although the quality of the VMS data provided to ICES has improved markedly in recent years, a number of potential improvements needed have been flagged by the ICES working group on spatial fisheries (ICES 2022). For example, in 2021, one feature which emerged during the analysis of VMS around the Josephine Seamount was the presence of trips identified from VMS data for which corresponding landings data did not exist (ICES 2022). This data gap creates a risk that potential impacts on VME features could be missed or misinterpreted (ICES 2022).

STECF notes that the VMS data set only contains information for vessels which have a vessel monitoring system. This is only legally required for vessels >12m, with limited data available for small-scale fleets. This data is inconsistent across Member States. This is a standard limitation of VMS-based analyses, although STECF assumes that small-scale effort in VMEs is likely to be limited given that the VMEs are found in waters deeper than 400m, many of them being located offshore and likely to be outside the range of small-scale vessels.

STECF notes thus that the ICES VMS data, although already rather extensive, may not necessarily be the most complete VMS data set available to Member States to perform VMEs analyses. The current analysis could be supplemented based on the full VMS dataset available at the national level.

STECF observes that the fisheries footprints produced by the ICES advice in 2022 are based on VMS plus logbook data and then aggregated at c-squares with 0.05-degree resolution. Therefore, the fisheries footprint resolution is one order of magnitude more precise than the FDI data. Therefore, STECF notes that overlapping the fisheries footprint with the FDI data is indicative of some average pattern but in practice the proportional apportionment method could estimate fishing effort and landings for VMEs without knowing if a Member State effectively fished there (Report 1, p. 30-31).

STECF notes further summaries of data completeness, coverage, and quality, accounting for differences in landings and effort would be required in order to fully describe the data limitations and qualify the impact of these limitations on the results produced in the report. Information on metric differences (i.e., fishing days) andmajor data limitations summarised by WGSFD[9] and FDI[10] should be accounted for in the methodology and summary of results.

[9] https://www.ices.dk/aboutICES/Documents/Resolutions/Science%20EG%20ToRs/HAPISG/2021/WGSFD%20ToRs%202020.pdf

[10] https://stecf.jrc.ec.europa.eu/reports/fdi

STECF notes that by nature, the FDI and VMS datasets describe the fishing activities at the DCF métier Level 6. This is close to what defines "fisheries" (i.e., combinations of a fishing technique used during a specific season for specific target species). Conversely, the AER data used in Report 2 is aggregated at a coarser level (economic fleet segments). This constrained the final resolution of the fleet segment used in the present analyses, even if the AER economic variables have been disaggregated spatially, accounting for the spatial effort distribution per DCF métier Level 6.

Therefore, STECF observes it is not possible to directly link a specific fishing activity from the FDI or VMS data with the exact economic information on, for example, trip level from the AER data. As with all data merging methods, assumptions can be made on how best to partition the information in one data set to the resolution of another. These assumptions would have consequences on the analyses conducted, and these would be best discussed with experts in the frame of an EWG, with final limitations clearly stated in the final report of the EWG.

STECF observes that the majority of the impacted AER fleet-segments engage in several different fisheries which will not be impacted the same way by the VME closures. Some fleet segments are potentially more impacted than Report 2 could show if targeting deep-sea species specifically. However, the report's alignment to the coarser AER fleet segment, averages these individual patterns, which is unavoidable to account for the entire fleet economy and compute profit indicators. In addition, there are inherent uncertainties linked to the method for spatially disaggregating the AER economic variables, as these variables are not spatial by nature. Hence, in Report 2 it is assumed that the travelling or distance-to-coast effect is negligible (one unit of effort of a given fleet segment has the same cost whatever this distance), and therefore only the cost per unit of time effort is considered in disaggregating costs spatially, which in some occurrences might make the possibility for effort displacement overly optimistic.

STECF agrees with Report 2 that, concerning the socioeconomic evaluation, it is not straightforward to translate a change in an economic variable into a short-term or long-term impact on the crew employed or a change in the number of crew employed. Such a relationship is purely hypothetical and has not been applied in Report 2. This could be elaborated to a certain extent in the future by engaging with representatives from the fishing sector to discuss how the sector reacted in practice to the closures of the areas and also compare data from before the closure with data collected after the closure of the VMEs.

STECF notes that Report 2 states that VMS data were not available for longlines and netters during the analysis. For these fleets, the assessment is thus based on the AER data coupled to the FDI dataset on a higher level of resolution. This allowed disaggregating the AER economic variables spatially to a certain extent. Future analysis with VMS should include those fishing techniques specifically.

STECF comments on gains of biodiversity

STECF notes that STECF interprets TOR 3 regarding "*the assessment of potential positive socio-economic value to society in terms of gains of biodiversity due to the closures"* as considering gains from the potential longer-term improvement of catch possibilities for the fishing sector from protecting VMEs. However, this question was not included in the TOR of the ad hoc contracts. They were only requested to look at possible short-term impacts of the closures following the different scenarios and in a static approach based on the most recent catch and effort data.

STECF observes that the question of possible longer-term gains from the protection of VMEs could be further addressed in the proposed follow up process (see conclusions) within STECF. There are available bio-economic models to assess, for

example, the displacement of fishing effort (e.g., DISPLACE[11]). However, due to the limited understanding of the biological/ecological dynamics of the protected biodiversity including analytical stock assessment for deep sea stocks, an application of those kinds of models relies heavily on several assumptions. Nevertheless, a possible EWG in 2024 could analyse the available information and propose an approach to allow for a better assessment of impacts of the closed VMEs in the future.

STECF notes that this ToR could also be interpreted as discussing the provision of ecosystem services from the protection of the VME. Fish as a provisioning service from marine ecosystems is only one possible service to society from the VMEs (e.g., other provisioning or supporting services are important). There are methodologies to assess other services besides provisioning services, but it may go far beyond what is possible to achieve here (see, for example, Austen et al. 2019).

STECF notes that both ad-hoc reports provide insights into fishing patterns in the areas identified in the three scenarios. However, an analysis of impacts of closed areas or other management measures normally would include impacts on stock status. Although the main objective of the closures is the longer-term protection of bottom habitats, the closures may impact the fish stocks in the area, including deep-sea stocks, non-targeted stocks, and their fisheries. Therefore, any future socio-economic impact assessment should consider the impact of closures, and how zero-fishing effort in the areas of the VMEs could potentially impact stock status and resource management in general.

STECF comments on future process

STECF is aware that the Deep-sea Access Regulation (EU)2016/2336 contains provision for an annual review of the list of VME closures by the Commission based on STECF advice. STECF suggest that the first of these reviews could focus on a list of case studies (possibly considering the VMEs identified in the analyses having the most impact) instead of the full list of areas.

STECF has focused on the limitations of the data used. As the two reports present a static analysis based on current data without projections, STECF proposes a process for additional work in 2024, which could provide a more detailed analysis of short-term impacts as well as, if possible, consideration of medium to longer-term (socio-economic) impacts of the VME closures.

STECF notes that the issuing of the ad hoc contracts to analyse information on possible socio-economic impacts of the closures did not follow the protocol developed by STECF for providing scientific information to allow an impact assessment of management measures (STECF 2010). Following the protocol would require, regarding the assessment of impacts of the closures of VMEs, following these steps:

- DG Mare requests the assessment of possible impacts of the closures of VMEs from STECF
- STECF or DG Mare (in case it is not possible in 2024 under a STECF heading) organises a scoping meeting to clarify i.e. data availability (data not available may require a data call), availability of bio-economic models or other tools to assess economic impacts (the ad hoc contracts could only analyse the losses of landings compared to previous landings from the closed areas); For this

[11] https://displace-project.org/blog/author/admin/

meeting also stakeholders should be invited to give their perspective on the respective closures.

- Experts conduct data analyses before the second meeting – partly or fully done by the ad hoc contracts already,
- STECF organises an EWG with stakeholder participation (to give comments on the results of the analyses) to prepare a report with the results of the analyses which is then reviewed by the plenary.

STECF observes that an important step in this process is the interaction with the fishing sector. This would facilitate discussions on the outcome of the data analysis and the results from the assessment of possible socio-economic impacts. Previous experience has shown such interactions help exploring how realistic the outputs from the models are compared to the actual fishing patterns in the relevant fisheries. It would also provide an opportunity to incorporate additional industry information not considered at an earlier stage.

STECF conclusions

General conclusions

STECF concludes while the results in the contract reports are based on the best data currently available and to the extent possible in the short timeframe available to prepare the reports, they are bound to important limitations and should be treated as preliminary. Furthermore, the outcomes of the analyses are deterministic and uncertainty in the results was not assessed.

STECF concludes that the results presented should not be overinterpreted, as they may not be completely representative of the likely economic impacts of the different scenarios and may not provide a sufficient basis for taking management decisions.

STECF concludes that the methodology of the ad hoc contracts in merging various data from different origins could nevertheless be applied or supplemented by Member States to re-run the analyses with their national data. Alternatively, Member States could be requested to supply national data to allow STECF to re-run the analysis as part of the future assessments proposed.

Analysis of the EU fleet economic performance

STECF concludes that according to Report 2 the socioeconomic impact of all scenarios combined would not exceed 10% of the average Gross Value Added (GVA) and mainly affect Spanish trawlers and seiners 18-24 meter currently and could affect Spanish trawlers and seiners 24-40 meters under Scenario C. However, STECF highlights that this result should be treated with caution as highlighted in Report 2.

STECF concludes that this was the first time that this type of analyses was conducted for the VMEs. Regulation (EU) 2016/2336 requires a yearly review by the Commission based on STECF advice. Therefore, STECF assumes as similar analyses are likely to be requested again in the future to support this, it is imperative that a fully rigorous process be developed.

Assumptions and limitations of the analyses

STECF concludes that the limitations of the analyses performed in the two reports are inherent to the available datasets, FDI, AER and ICES VMS, and to their merging. These three generic datasets are designed, collected and maintained for various purposes. They are not specifically collated for this VME analysis.

STECF concludes that the three datasets provide valuable information about the fishing footprint of European fleets in terms of effort and landings. However, STECF notes that in particular, the VMS dataset differs from the two others in terms of

coverage of fleets, vessel length classes, species included, aggregation level, and spatial and temporal resolution. This difference in coverage results in substantial differences in the value of landings and effort being reported in the data calls.

STECF concludes to fully describe the data limitations and qualify the impact of these limitations on the results would require further analysis of data completeness, coverage, and quality, to account for these differences in landings and effort data.

STECF concludes that there are inherent uncertainties linked to the method for spatially disaggregating the AER economic variables, as these variables are not spatial by nature. Further analyses are necessary to assess impacts of a displacement of fishing effort on other areas.

STECF concludes that it is not straightforward to translate a change in an economic variable into a short-term or long-term impact on the crew employed or a change in the number of crew employed. Such a relationship remains hypothetical.

Gains of biodiversity

STECF concludes that both reports provide insights into current fishing patterns in the areas identified in the three scenarios. However, a full analysis of impacts of closed areas or other management measures would need to also assess medium / long term effects, including expected impacts on stock status and biodiversity.

STECF concludes that the question of possible longer-term gains from the protection of VMEs can be further addressed in the proposed follow up process. STECF concludes that bio-economic models are available to assess, for example, the displacement of fishing effort (e.g., DISPLACE). However, modelling long-term gains would rely on heavy assumptions about biological /ecological dynamics of the protected biodiversity.

STECF concludes that fully assessing the positive socio-economic value to society in terms of gains of biodiversity is a wider question that also may entail other types of ecosystem services thanthan fishing only. A literature review could help to summarise the knowledge from previous valuation studies on this subject.

Future process

On the basis of the limitations and points of discussions listed above, STECF has proposed a process for follow-up work next year regarding the improvement of the analysis of socio-economic impacts, following the protocol agreed in STECF (2010) and including a dedicated Expert Working Group.

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6.2 REVIEW OF AN EXEMPTION FOR BALTIC SALMON

Background provided by the Commission

In October 2021, BaltFish adopted a joint recommendation to extend and prolong the exemption from the landing obligation for certain Baltic salmon fisheries on grounds of high survivability. PLEN 22-03 assessed the initial joint recommendation. Subsequently, BaltFish provided additional information which PLEN 23-01 assessed. Since then, additional information, notably on the level of discards, was provided by Member States concerned. The STECF is requested to assess that additional information.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

STECF is requested to assess the new document provided by Finland and Sweden.

Specifically, the STECF is requested to:

- Comment on the quality of the new evidence and its relation with the information submitted to PLEN 22-03 and PLEN 23-01
- Assess whether this new supporting information affects or changes the conclusions issued by STECF PLEN 22-03 and PLEN 23-01, notably:
    - missing quantitative evidence on the discard rate
    - the relevance of the 8% maximum discard threshold
    - control and enforcement of the exemption
    - quality of the information supplied and need for further supporting information.

Summary of the information provided to STECF

STECF was provided with a letter to the Commission written on behalf of Baltfish by the Fisheries Directors of Finland and Sweden. The letter has the expressed ambition to bring clarity to the points addressed by the Commission in a letter to Baltfish. It also provides some additional information regarding Swedish and Finnish national regulations in place to minimise discarding of salmon. The letter responds to the issues raised by the Commission based on the previous STECF assessments contained in PLEN-22-03 and PLEN-23-01.

The first part of the letter describes national legislation in the two countries and how this relates to the salmon discard rate. Finland has a national ITQ-system, and all landed salmon must be tagged with individual tags corresponding to each individual quota holder. There is also an effort system in place that allows a lower number of gears to be used early in the season when the early arriving, large individuals are most likely to be caught. The permitted number of traps is later increased stepwise to take account of the timing of salmon migrations. A national decree forbids discarding of salmon from trap-nets unless the salmon is undersized or damaged by predators. However, discarding is mandatory if the individual quota is exhausted. The letter points out that the survival exemption is needed to allow for compliance with the national quota management system. Finland points out that no individual salmon quota was exceeded in 2021 or 2022 and that very few salmon therefore were released. Finland acknowledges that some salmon is also caught as bycatch in fisheries for other species such as whitefish but claims that this fishery occurs closer

to the coast than the directed salmon fishery and therefore salmon bycatch is low. Finland reports total salmon discards in the relevant gears of 110 and 92 individuals in 2021 and 2022 respectively. The numbers are based on self-reporting by the commercial fishers (recorded in logbooks).

The letter also reports a suite of Swedish national management measures for Baltic salmon. The main features are the division of the Swedish salmon quota into two sub-quotas - the largest share (75-85%) for the northernmost SD 31, where the salmon populations exhibit a better stock status, and the remaining part to SD 30. Additional measures are also in place to further protect weaker sub-stocks (rivers) exploiting stocks that originate from the stocking of reared smolt. Specific measures listed in the letter include an early summer fishing ban to protect early arriving salmon that ensures a part of the total spawning migration of adult salmon ascend to the rivers before coastal fishing for salmon starts. The early summer ban also means increased opportunities to exploit stocks of reared salmon since these stocks normally ascend to the coastal areas later in the season.

Sweden also reports that in periods when salmon fishing is not allowed and bycatches are expected to be higher, all kinds of trap nets are prohibited in order to avoid bycatch and minimise the number of released salmon. This coastal trap net fishing targeting other species outside the salmon season is therefore only allowed in periods when the probability of catching salmon is expected to be low. Similar to Finland, Sweden argues that the survival exemption is an important prerequisite for the national management measures that aim to protect wild salmon, undersized individuals and allow for the release of salmon bycatch in small-scale trap net fishery targeting other species such as whitefish after the salmon season. Sweden reports that the number of salmon released under the exemption was 256 and 53 individuals for 2021 and 2022, respectively. Like Finland, these numbers are based on logbook records by commercial fishers.

The second section of the letter focuses on evidence of the discard rate. The letter states that the self-reported discards, of approximately 150-350 individuals annually, represents less than 1% total number of salmon caught by the two Member States. Furthermore, Sweden and Finland argue that the discard mortality rate of 13-24% (Ruokonen et al. 2022, 2023), for the app. 350 individuals that were reported as discarded in 2021 would have led to 45-84 dead salmon per year under the exemption. They argue this represents a low impact compared to the benefits of the derogation in ensuring compliance with the national management measures.

Information is also provided about the size-dependent timing of salmon migration (i.e., larger individuals in the beginning of the season with more small individuals later in the season). The same pattern can be seen for wild vs. reared salmon (more wild individuals early in the season and more reared later in the season).

The concluding paragraph of the second section explains that the national regulations aimed at minimising discard rates from Finland and Sweden are to be retained and that the joint recommendation includes a cap of 8 % in order to limit potential negative impact of the exemption on the stock. They argue that this will limit the overall discard rate, and hence the post release mortality. The letter points out that the inclusion of a discard cap as part of the survival exemption, as it is currently in the Commission Delegated Regulation (EU) 2021/1417, will give a maximum discard rate of salmon and hence a maximum potential impact of the exemption from the landing obligation of 8 %, even if the evidence shows a current discard rate of approximately one percent.

The third section (Other issues raised by the Commission or STECF) cover issues that have already been covered by STECF PLEN 23-01. A response to a previous question by STECF on the relevance and possible effects of using an experiment from

2001/2002 as a control to the survival study by Ruokonen et al. (2022, 2023) is provided. Detailed information about control and enforcement of the exemption, including the monitoring of discarded quantities, addressing issues raised by PLEN 23-01 are also provided. The letter emphasises that salmon fishing in both Member States is heavily controlled, both with rigorous inspection of landings, pre-notifications of landings, tagging of salmon in Finland as well as monitoring of closed fishing seasons and limits on the permitted number of trap nets deployed. Infringements of rules are reported to be rare. The same control activities are used to ensure that the 8% threshold of the national quotas that may be discarded/released is not exceeded. This threshold is currently applied to ensure that the discard rate is kept low. This is an additional precaution that Finland and Sweden as part of BALTFISH request to set in order to ensure that only small amounts of salmon are released from trap nets.

Summary of Previous STECF advice

STECF has assessed the request for a high survivability exemption for salmon in PLEN 14-02, EWG 20-04. The most recent request was assessed by PLEN 22-03 and 23-01. A summary of the previous STECF advice is provided below.

A high-survivability exemption for trap-net caught salmon in the Baltic Sea has been in place since 2015 (Commission Delegated Regulation (EU) 1396/2014). After a first prolongation in 2018 (Commission Delegated Regulation (EU) 2018/211), a further prolongation and an extension to the pontoon trap with knotless bag (pontoon-trap KL) was implemented in 2021 (Commission Delegated Regulation (EU) 2021/1417) following a BALTFISH request in 2020. This request was assessed by EWG 20-04. The EWG concluded that mortality in traps, fyke nets and trap nets seemed to be low (STECF PLEN 14-02). Moreover, STECF outlined that quantitative data on pontoon traps were scarce and that the pontoon-trap KL had potential to be gentler for salmon than traditional pontoon traps not fitted with a knotless bag, and, hence, increase survivability of released salmon.

Commission Delegated Regulation (EU) 2021/1417 is due to remain in force until 31st December 2023. It applies to "*salmon caught with fyke nets, pound nets and all other types of trap nets, except pontoon traps without an attached knot-less bag*" (Article 3 of the Delegated Act). Moreover, the delegated act stipulates that "*by 1 May 2023, Member States having a direct management interest shall submit to the Commission additional scientific information allowing an assessment of the representativeness and quality of the discard survival estimate of salmon caught with pound nets and pontoon traps equipped with an attached knot-less bag, including information on the post-release mortality*." (Article 4).

In 2022, BALTFISH formulated a new request for a prolongation of the exemption, and its extension to the pontoon trap without a knotless bag but with a water hold (pontoon-trap WH). This request was assessed during STECF PLEN 22-03. Based on the available evidence, STECF concluded that the data and information provided was too limited to draw meaningful conclusions about pontoon-trap WH. Moreover, STECF concluded that the overall mortality resulting from the exemption could not be assessed in the absence of any quantitative information on the discard rate in the fishery. Understanding the discard rate in the context of the survival estimates is recognised a key aspect in assessing any landing obligation exemption *(*STECF PLEN 17-02*)*. STECF also noted that the discard rate is critical in assessing the relevance of an 8% maximum discard threshold proposed by BALTFISH. STECF also observed that control and enforcement is a key aspect of any landing obligation exemption (STEFC EWG 20-04) and concluded that more detailed information on these aspects would be useful.

In response to these issues, Baltfish submitted additional information that was assessed by STECF PLEN 23-01. This information addressed the lack of information relating to the missing data on pontoon-trap WH. Based on this STECF concluded that the information provided indicated that release mortality from pontoon trap WH is higher than from pontoon-trap KL. While pontoon trap KL mortality rate estimates vary among studies, they suggest that it is likely to be higher than mortality with other types of traps (STECF PLEN 14-02 considered that mortality with trap-nets, fyke-nets is typically less than 10%). The other issues raised by STECF PLEN 22-03 (evidence on discard rates, justification of the 8% limit and control and enforcement of the exemption) were not specifically addressed in the new information provided by Baltfish.

STECF comments

- **Comment on the quality of the new evidence and its relation with the information submitted to PLEN 22-03 and PLEN 23-01**

STECF observes that the information provided in the Baltfish letter aims to respond to the remaining issues raised by STECF, (i.e., mainly evidence on discard rates, justification of the 8% limit and details regarding control and enforcement of the exemption).

STECF considers that the new information is clearly structured in accordance with the requested information and that the letter provides valuable insights into the national management measures implemented by Finland and Sweden in Baltic salmon fisheries. The relationship of these measures and the high survival exemption is also explained.

- **Assess whether this new supporting information affects or changes the conclusions issued by STECF PLEN 22-03 and PLEN 23-01, notably:**

Missing quantitative evidence on the discard rate

STECF observes that the letter presents self-reported (logbook) discards as the best available evidence. The information provided indicates a discard rate of less than 1% of total salmon catches (in all fisheries). Finland and Sweden indicate that they are confident these figures are accurate given the rigorous control in place. Few registered rule infringements are reported.

STECF notes this information. However, given there are multiple incentives and reasons to underreport actual salmon discards despite the management measures in place, the reported discards may be an underestimate. Incentives to discard are apparent including minimal detection risk, as well as high grading incentives coupled to quota availability and price differences between different fish sizes and qualities. STECF observes the comments of ICES WGBAST (2021) that "no accurate estimate of the number of released salmon is available in the Baltic Sea salmon fishery". Also, the stakeholder input on the current JR (reviewed by STECF PLEN 23-01) where one of the central producer organisations put forward "that there are no explicit numbers available (and these are very difficult to obtain) on discard rates". That being said, even allowing for the reported discards being an underestimate, it is likely that the potential effect of the derogation in terms of mortality is low against an observed survival rate of 75-80% of discarded salmon. This is similar to the observations from other trap fisheries, where survivability of discarded fish is typically greater than 75% and discard rates below 5%.

The relevance of the 8% maximum discard threshold

STECF observes that the motivation for the 8% threshold is to cap the maximum discard rate of salmon and hence limit the impact of the exemption. STECF notes the

available data indicates a current discard rate of approximately 1%. The gap between current registered discards and the cap is to future proof the exemption for a situation with higher discard rates according to the letter.

STECF estimates that given the reported mortality of discarded salmon in the gears covered included in the JR (13-24 %) and the maximum discard rate (8% according to the cap in the JR), the overall impact of the exemption is most likely modest. In relative numbers (based on the provided information): If 8% of caught salmon are discarded and 13-24% of them die, the maximum mortality under the derogation is 1.0-1.9% of total catches.

Control and enforcement of the exemption

STECF notes that the main control end enforcement methods used by Finland and Sweden are landing controls, pre-notification of landings and individual tagging of landed salmon (Finland). Various effort limits and closed periods are also in place.

STECF has previously observed that controlling discards under exemptions to the landing obligation is challenging with traditional control methods. This is particularly true for methods that focuses on the landing side of the fishing process, (i.e., the types of control measures mainly listed in the letter from Baltfish).

STECF notes that in order to adequately control the landing obligation (including exemptions) and provide better estimates of actual catches (including discards), direct observations (observers or cameras) onboard are preferable (Uhlmann et al. 2019), noting this can be difficult in this fishery given the size of vessel and operation of the fisheries.

STECF considers the lack of implementation of control measures to adapt to the landing obligation is not unique for the Baltic salmon fisheries.

Quality of the information supplied and need for further supporting information

STECF considers that the new information is of good quality overall and is presented in an accessible and well-structured way. STECF do not see an obvious need for further supporting information given that the previously identified issues have been responded to by Baltfish as comprehensively as could be expected.

STECF conclusions

STECF concludes that the new supporting document adequately addresses the remaining issues identified during STECF PLEN 22-03 and STECF PLEN 23-01.

STECF concludes that the salmon discard rate for the gears covered by the exemption is probably in the lower range in comparison to many other European fisheries although the reported <1% of total catches is likely to be an underestimate. However, even allowing for the reported discards being an underestimate, it is likely that the effect of the derogation in terms of mortality is low against an observed survival rate of 75-80% of discarded salmon. This is similar to the observations from other trap fisheries, where survivability of discarded fish is high (> 75%) and discard rates typically low (< 5%).

STECF concludes that the justification of the 8% threshold is to cap the potential discards of Baltic salmon populations over and above the current reported 1% discard rate in future years.

STECF concludes that the control and enforcement methods used to monitor the exemption are extensive. However, these are likely to not be fully effective in monitoring catches in relation to the landing obligation. The use of methods for direct observation of catches at sea (observers or cameras) is preferable, but STECF understands that this would be difficult given the operation of the relevant fisheries.

STECF reiterates previous conclusions from STECF PLEN 22-03 and 23-01 that the information provided indicates that release mortality from pontoon trap WH is higher than from pontoon-trap KL (24 % and 13 % respectively). While pontoon trap mortality rate estimates vary among studies, existing evidence suggest that it is likely to be higher than mortality with traditional types of traps (STECF PLEN 14-02 considered that mortality with trap-nets, fyke-nets is typically less than 10%).

STECF concludes that the new information is of sufficient quality overall and that additional information will not likely improve or change the STECF evaluation of the requested derogation.

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6.3 ASSESSMENT OF AD-HOC CONTRACT TO ASSESS DATA-LIMITED PARAMETERS FOR THE CALCULATION OF THE INDICATORS TO ASSESS THE BALANCE BETWEEN FLEET CAPACITY AND FISHING OPPORTUNITIES

Background provided by the Commission

The Common Fisheries Policy relies on scientific advice for fish stock management; it also relies on information on the state of fish stocks in the management of fleet's fishing capacity. The way in which the balance between fleet's fishing capacity and the available fishing opportunities is assessed is set out in the Communication from the Commission to the European Parliament and the Council "Guidelines for the analysis of the balance between fishing capacity and fishing opportunities according to Art 22 of Regulation (EU) No 1380/2013 of the European Parliament and the Council on the Common Fisheries Policy" (COM/2014/0545 final). Although assessments are generally available for most stocks in EU waters where TACs are set, this is often not the case for stocks which are not TAC-managed and/or are data limited and thus full analytical assessments are not available. This has led to certain gaps in the coverage of the indicators described in the aforementioned Communication. In particular, frequent data gaps occur for the SHI indicator described in the guidelines.

According to the most recent STECF report (total segments vs segments for which the indicator was calculated) the SHI coverage is the following:

North Atlantic (116/324) 36%

Med and Black Seas (47/205) 23%

Other Fishing Regions and French Outermost Regions (14/36) 39%

Two ad hoc contracts were carried out ahead of PLEN 23-02 to review available proxies or alternative methodologies for calculating F/Fmsy, that could in turn, facilitate reasonable estimations of the SHI indicator for those areas and stocks where full analytical assessments are not available (including: the review a number of key alternative stock assessment methodologies; assess the suitability of such proxies for the purpose of estimating the balance between fleet capacity and fishing opportunities according to the method set out in the Commission Guidelines; provide recommendations and recommend criteria for admitting values from specific model fits to the SHI calculation) and how the annual fleet reports prepared by the Member States using these methodologies can feed seamlessly into the tasks of the EWG 23-13 on Balance Capacity that shall take place in autumn 2023.

The alternative Fmsy calculations are not intended for any purposes other than demonstrating the balance between fleet capacity and available fishing opportunities or propose new or alternative indicators. Furthermore, they are not intended to be used as an alternative where a more accurate value for Fmsy has been provided.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

STECF is requested to review and make any appropriate comments and recommendations on the report and its findings.

Summary of the information provided to STECF

The information provided comprised the report of contract STECF 2347; "Study on the use of data-limited assessment parameters for calculating indicators to assess the balance between fleet capacity and fishing opportunities".

The review includes 5 stock production models, 6 length-based stock assessment methodologies and 3 additional assessment methods. It contains a brief description of each method, the inputs needed, any assumptions, a list of outputs and their applicability (i.e., how such outputs could be used as a proxy for F/F_{MSY}). The information is summarised in Tables 6.3.1. – 6.3.3 below.

Table 6.3.1. Summary of Surplus Production Models (SPMs)

Method	Description	Inputs	Assumptions	Outputs	Applicability
ASPIC	Schaefer model	Time series catch Biomass indices	Catches known without error	B_t, F_t, r, K, q Observation variance F_{MSY}, B_{MSY}, MSY	F/F_{MSY} estimated from the model
SPiCT	Pella-Tomlinson model in continuous time with both observation and process error	Time series catch Biomass indices and/or effort	Generic SPMs assumptions	B_t, F_t, r, K, q, n Observation and process variances F_{MSY}, B_{MSY}, MSY (d and s)	F/F_{MSY} estimated from the model
JABBA	Pella-Tomlinson model with both observation and process error	Time series catch Biomass indices and/or effort	Generic SPMs assumptions	B_t, F_t, r, K, q, n Observation and process variances F_{MSY}, B_{MSY}, MSY (d and s)	F/F_{MSY} estimated from the model
CMSY	Schaefer model	Time series catch Priors on stock depletion, K and r Biomass index	Generic SPMs assumptions	B_t, F_t, r, K F_{MSY}, B_{MSY}, MSY	F/F_{MSY} estimated from the model
BIODYN	Schaefer model	Time series catch Biomass index *Guestimates* of initial depletion, K and r	Catches known without error	B_t, F_t, r F_{MSY}, B_{MSY}, MSY	F/F_{MSY} estimated from the model

Table 6.3.2. Summary of Length-Based Methodologies

Method	Description	Inputs	Assumptions	Outputs	Applicability

LBB	Size-based population dynamics model implemented in a Bayesian framework	Length-frequency data Priors on L_{inf} , M/k (if available)	Stock in equilibrium vBGF	vBGF parameters L_c , F/k, B/B_0 L_{c_opt} , B_{MSY}/B_0 , F/M as a proxy for F/F_{MSY}	F/M as a proxy for F/F_{MSY}
LBSPR	Size-based population dynamics	Length-frequency data L_{inf} and CV L_{inf} M/k Length–weight relationship (a and b) Length at 50% and 95% maturity (L^m_{50} and L^m_{95})	Equilibrium recruitment and fishery Selectivity and maturity follow a logistic curve	F/M Length at 50% and 95% selectivity (L^s_{50} and L^s_{95}) SPR	F/F_{MSY} values can be derived from the model if a target $F_{SPRx\%}$ is defined and considered a proxy for F_{MSY}
LIME	Length-based extension of CC-SRA, relying on age-structured population dynamics	Length-frequency data vBGF parameters Length–weight relationship (a and b) M Length at 50% and 95% selectivity (L^s_{50} and L^s_{95}) Length at 50% maturity (L^m_{50})	Selectivity and maturity follow a logistic curve	Relative R and SSB Current F SPR and YpR	F/F_{MSY} values can be derived from the model if a target $F_{SPRx\%}$ is defined that is considered a proxy for F_{MSY}; alternatively YpR curve can be used to derive values of $F/F_{0.1}$ as proxies for F/F_{MSY}
MLZ	Beverton and Holt mortality estimator	Length-frequency data vBGF parameters M	Stock in equilibrium Full selection (knife-edge selectivity)	Z SPR and YpR	F/F_{MSY} values can be derived from the model if a target $F_{SPRx\%}$ is defined that is considered a proxy for F_{MSY}, alternatively YpR curve can be used to derive values of $F/F_{0.1}$ as proxies for F/F_{MSY}
LBI	Indicators based on the mean length	Length-frequency data Information on life-history to derive (proxy) reference points	Stock in equilibrium Full selection (knife-edge selectivity)	L_{mean} L_{opt}, $L_{F=M}$ if information on L_{inf} and M/k is available	$L_{mean}/L_{F=M}$ as a proxy for F/F_{MSY}

LCA	Size-based population dynamics	Length-frequency data vBGF parameters Length–weight relationship (a and b) M	Stock in equilibrium	Number of survivors at start of each length class F_i (within length class) and F	F/F_{MSY} values can be derived if YpR curve is used to derive values of $F/F_{0.1}$ or F/F_{max} as proxies for F/F_{MSY}

Table 6.3.3. Summary of Other Approaches

Method	Description	Inputs	Assumptions	Outputs	Applicability
SRA	delay difference population dynamics	Time series catch M Depletion in the terminal year	Equilibrium recruitment and fishery Selectivity known	B_t and F_t, and stock productivity proxies for F_{MSY}, B_{MSY}, MSY	F/F_{MSY} estimated from the model
SSS	data limited version of SS mimicking DB-SRA	Time series catch M Depletion in the terminal year Stock productivity (steepness *h*) vBGF parameters LW relationship (a and b)	Constant selectivity, growth and maturity	All outputs from SS Proxies for F_{MSY}, B_{MSY}, MSY	F/F_{MSY} estimated from the model
SAFE	empirical method to estimate F from spatial distribution of the stock and fishery, and techical gear characteristics	Spatial distribution of the stock and fishery Catch efficiency of the gear Escapement rate of species Discard survival rate	Probability of a species presence is related to its density Technical characteristics of the gear constant	Exploitation rate u	Applicable if a (proxy) for F_{MSY} is available from another source

The report also provides a concise description of alternative proxies for F_{MSY}, whether they relate to growth- and/or recruitment-overfishing, together with any caveats/reservations on their utility. This information is summarised in Table 6.3.4.

Table 6.3.4. Summary of proxy Reference Points for F_{MSY}.

Proxy	Description	Growth overfishing	Recruitment overfishing	Caveats

F_{MSY} (SPM)	Directly derived from assessment model (not a proxy)	X	X	Deterministic reference points are likely to be overly optimistic; recommended to use a stochastic approach
$F_{SPR\%x}$	Fishing mortality that results in an SPR of x%	X		Fishing mortality rates resulting in a SPR in the range of 0.2 to 0.4 are considered to be a proxy for F_{MSY} for most fish stocks
$F_{0.1}$	Fishing mortality where the slope of the YpR curve is 10% of the slope in the origin	X		The F corresponding to the maximum of the YpR curve (F_{max}) is too optimistic and does not result to the maximum yield in the long run. Therefore, the more precautionary $F_{0.1}$ is considered to be a better proxy for F_{MSY}
M				Often stated that fishing mortality should not exceed natural mortality, hence M is an upper limit of F_{MSY} Too optimistic in many cases (often 0.8 x M) is used M is difficult to estimate

Based on their findings, the authors propose a number of general recommendations for considering whether data-limited assessment methods and proxy reference points are appropriate for use in computing SHI.

STECF comments

The Sustainable Harvest Indicator (SHI) is one of a suite of indicators used in the assessment of the balance between fleet capacity and fishing opportunities. According to the most recent STECF balance-capacity report (STECF 22-15), STECF notes that the SHI coverage (total segments vs segments for which the indicator was calculated) is as follows:

North Atlantic (116/324) 36%

Med and Black Seas (47/205) 23%

Other Fishing Regions and French Outermost Regions (14/56) 39%

STECF observes under the current Commission guidelines, a meaningful value for the SHI can only be derived if the stocks caught by a fleet segment for which there are available values for F and F_{MSY} (or relevant proxies), make up at least 40% of the total value of the landings of the segment. STECF acknowledges that the absence of meaningful values for the SHI is thus primarily due to an absence of estimates of F and F_{MSY} (or relevant proxies) from stock assessments.

STECF reviewed STECF 2347 contract report which investigates alternative data-limited assessment methods and reference points that might be used to derive proxy values for F/F_{MSY} with a view to using such information in improving SHI coverage. STECF notes that the report provides a concise, comprehensive and informative review of 14 candidate stock assessment methods capable of delivering alternative proxy values for F/F_{MSY}, including sound general recommendations for considering whether data-limited assessment methods and proxy reference points would be appropriate for use in computing SHI. The authors are to be commended for an excellent piece of work, which will serve as a valuable reference document for the STECF, the Commission and Member States.

STECF notes, however, that the findings in the contract report present only a partial response to the proposals given during 2023 spring plenary meeting (STECF PLEN 23-01; Item 7.9) in that they only address the starting point of the proposed process (i.e., which stock assessment models should be added). Other proposed investigations considering the stability of the SHI and any trade-off in stability through scaling up the coverage to include more stock assessments and fleet segments have not yet been undertaken.

STECF notes that absence of F and F_{MSY} (or relevant proxy) estimates is seldom due to lack of knowledge on stock assessment methods themselves, but rather to underpinning data issues that make it difficult to perform robust and trustworthy stock assessment regardless of the method used.

STECF observes that the availability of relevant and reliable data is indeed not a trivial issue and remains acute in some regions, typically where many fleet segments comprise small-scale vessels which catch a large variety of species and land in many small and remote harbours. In such regions, historical data are often deficient, and in spite of important progresses realised in recent years in many places (as also acknowledged over time in the various STECF EWGs dealing with AER, FDI and balance-capacity data), STECF notes that the current availability of stock-specific data still display variable levels of coverage, quality and quantity. Records of data on landings via logbooks or otherwise may still be incomplete; routine independent surveys are still inexistent in some places and highlights simply that the logistical difficulties in obtaining appropriate biological sample data (both in harbour and with onboard observers) have been, and in many cases, still remain extremely challenging. The presence of IUU fishing as in some French outermost regions is another issue jeopardising the reliability of catch estimates. In such data-poor cases, collecting existing and new data from different sources, assessing their quality, selecting the stock assessment method(s) among those presented in the report that would be most appropriate to these available data, and qualifying whether the results obtained are robust enough to be included in the SHI is a complex and time-consuming case-by-case process, requiring scrutiny, transparency and external peer-review as underlined in the ad-hoc report. Therefore, even with the help of the ad-hoc contract report, STECF expects that progresses in obtaining new values for F and F_{MSY} (or relevant proxies) will develop slowly and incrementally.

Furthermore, for many fleet segments a large variety of species are caught, each representing only a small proportion of the total catch of these different fleet

segments. Hence, with the current 40% landings value threshold, it is likely that many species-specific stock assessments would be required to obtain sufficient estimates of F and F_{MSY} (or appropriate proxies), in order to compute SHI values for fleet segments for which meaningful values for the SHI are currently unavailable.

STECF therefore suggests that the effects of lowering the landings value threshold for a meaningful SHI should be investigated with respect to its utility and sensitivity.

STECF conclusions

STECF concludes that the 2347 ad hoc report provides a concise, comprehensive and informative review of 14 candidate stock assessment methods capable of delivering alternative proxy values for F/F_{MSY}, a concise description of alternative proxies for F_{MSY}, and a number of general recommendations whether such methods and reference points are appropriate for use in computing the Sustainable Harvest Indicator (SHI). It will serve as a valuable reference document for the STECF, the Commission and Member States.

In relation to each of the suggestions in the STECF 23-01 report and the concerns elaborated in previous STECF reports with respect to the utility of the SHI (and other balance indicators)[12], STECF concludes that it is not advisable to include alternative proxy values for F and F to derive additional fleet-specific estimates for the SHI without first evaluating the utility and sensitivity of doing so. Hence further work is required in this respect which should also include *inter alia* the following investigations:

- the trade-off between the stability of the SHI indicator and increasing its coverage in terms of stocks and fleet segments.
- the effects of lowering the landings value threshold (currently 40%) for a meaningful SHI on its utility and sensitivity.

STECF concludes that this proposed work would best be undertaken via an ad hoc contract. Given that the 2023 Balance/Capacity Expert group (EWG 23-13) is scheduled to meet in October 2023, there is insufficient time to complete the work and conduct a review by STECF ahead of the Expert group meeting. STECF therefore suggests that, if possible, the work is completed ahead of the Spring 2024 plenary meeting so that any pertinent outcomes can be considered in planning the 2024 Balance/Capacity EWG. The terms of reference for such an Expert Group could be elaborated during the STECF PLEN 23-03 meeting.

Furthermore, STECF considers that it may be possible to develop a version of the SHI to integrate data limited and data rich stock assessment results, or a complementary version based on data limited stocks only. Such an exercise will require a longer time frame but could deliver an indicator better fit for purpose than the current one.

Finally, STECF concludes that poor data remains a hurdle for the proper estimation of F/Fmsy and SHI, and that ongoing efforts to improve the collection of declarative (e.g., logbook data) and biological data in places where they are deficient should be sustained and supported.

[12]STECF report 15-02; sections 2.7, 2.8, 2.9; STECF report 15-15; 3.5.1, 3.6.1, 3.8, 3.9, 3.10, 3.11. STECF report 16-09; 4.2, 4.3, 4.4, 4.5.; STECF report 17-08; 3.4 and ANNEX I; STECF report 18-14; 3.4 and ANNEX I; STECF report 19-13; 3.4 and ANNEX I.

6.4 Withdrawn by DG MARE

6.5 REVIEW OF THE AD HOC CONTRACTS TO FOLLOW-UP ON THE STECF EWG 23-01 CONCERNING CLOSURE AREAS TO PROTECT JUVENILES AND ALL DEMERSAL STOCKS IN THE WESTERN MEDITERRANEAN SEA

Background provided by the Commission

Two ad-hoc contractors were requested to finalise the work started in February 2023 as preparatory work to facilitate the closure areas elements of work of EWG 23-01 (in relation to ToR 2). The work has been conducted based on the complete time series of MEDITS data 1994 to 2021.

The ad-hoc contractors were requested to update the MEDISEH analysis and finalize a short report including details and GIS layers on the spatio-temporal distributions of both, juveniles and spawners, for European hake, Blue and Red shrimp, Red mullet and if possible Norway lobster, Giant red shrimp, Deep-water rose shrimp to be used during the next EWG on the West Med.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

STECF is requested to analyse the results of the ad hoc contracts in terms of quality and level of details for the evaluation of closure areas in the West Med as well as in terms of methodology, in case of future similar work. To help STECF review, background documents including previous work on the topic and STECF EWG 23-01 report are available.

STECF is requested to review and make any appropriate comments and recommendations on the report and its findings, taking into account that as regards the French maturity data in Table C of the DCF, they have not been provided since 2012, i.e., since the MEDITS group added the table E to the format. Thus, at the time, info-maturities were migrated into table C. However, a process of retrieving them in "generic" format should be finalised by next autumn.

Summary of the information provided to STECF

The report of the ad hoc contracts STECF 2301 and STECF 2302 and the report of STECF ref STECF2345_STECF2346 (two reports based on four ad-hoc contracts) were made available to PLEN 23-02.

Additionally, annexes to ad hoc contract STECF 2301 and STECF 2302 containing spatial outcomes of the four GIS layers produced, were also provided. There was one for each of the life stage (recruits or spawned) analysed by species: European hake (*Merluccius merluccius*, HKE) recruits, red mullet (*Mullus barbatus*, MUT) recruits and spawners, blue and red shrimp (*Aristeus antennatus*, ARA) spawners.

Annexes to the ad hoc contract STECF 2345 and STECF 2346 were also provided. These contained spatial outcomes of the three GIS layers produced, one for each of the life stages (recruits or spawned) analysed by species: deep-water rose shrimp (*Parapenaeus longirostris*, DPS) spawners, giant red shrimp (*Aristaeomorpha foliacea*, ARS) spawners, and Norway lobster (*Nephrops norvegicus*, NEP) spawners. The original files and those updated after the second ad hoc contract for inclusion of the uncertainty (CV) fields were also made available.

Supplementary explanations and comparison of Hake recruit results with MEDISEH outputs were made available during the STECF meeting in the form of a short document provided by the contractors who produced the reports.

Summary of the work

Ad hoc contracts STECF 2301 and STECF 2302 were set up for the preparation of STECF EWG 23-01 concerning closure areas to protect juveniles and spawners of the demersal stocks defined in article 11 of the western Mediterranean Sea Management Plan (Regulation (EU) 2019/1022).

The MEDISEH project (Mediterranean Sensitive Habitats MEDISEH) (Giannoulaki et al., 2013) carried out spatial distribution analyses based on MEDITS bottom trawl survey data from 1994-2010. The ad-hoc contractors were requested to extend the MEDISEH analysis for the period 1994-2021.

A short report was provided that included details and GIS layers of the spatio-temporal distributions of juveniles and/or spawners of European hake, Blue and Red shrimp, Red mullet and, if possible, Norway lobster, Giant red shrimp, Deep-water rose shrimp to be used during the next EWG on the West Med.

Shapefiles for the western Mediterranean were generated on the basis of the MEDITS bottom trawl survey data for the period 1994–2021, which is carried out in spring - summer (May-August, though occasionally, it was carried out in late summer-autumn in the Italian GSAs 9-11). It gathers data on benthic and demersal fish and shellfish stocks in a wide depth range from 10 to 800 m (MEDITS-handbook, 2017).

The spatial analysis was subdivided in 3 subareas grouping continuous GSA areas to account for differences in the timing of the surveys and oceanographic heterogeneity (Figure 6.5.1):

- **Balearic** (ESP) (including GSA areas 1-7, where no significant issues in the survey timing were found).
- **Tyrrhenian** (TYR) (GSA 9 and 10, aggregated because of similarities in the survey timing).
- **Sardinia** (SAR) (GSA 11 alone, including a few hauls from the contiguous GSA 8).

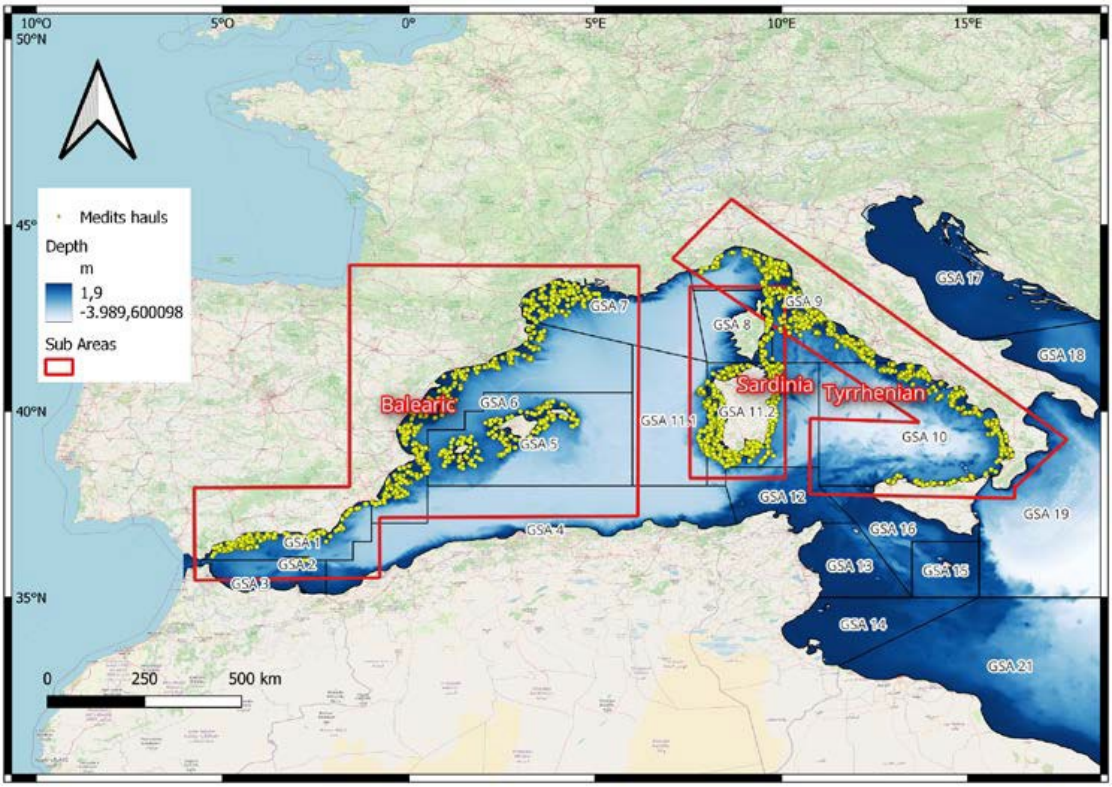


Figure 6.5.1: Subareas designed to model the spatial distribution of spawners and recruits: Balearic, Sardinia and Tyrrhenian. Yellow dots are the fishing hauls from the MEDITS surveys.

The analysis followed the roadmap for identifying and testing the effects of closure areas suggested by PLEN 21-02. The hot spot identification analysis was applied separately in each of the 3 subareas defined and for each year of the time series. A Persistence Index analysis (PI) was then obtained by analysing the time series according to three spatial frameworks:

- PI1: on each sub area prediction, considering the whole modelled time series.
- PI2: (when possible) on each sub area prediction, considering the ten most recent modelled years (actually meaning years 2012 to 2021).
- PI3: (when possible) on the West Med, considering only years common to all the subarea model predictions.

The Indices of Persistence of hotspots (PI1, PI2, PI3) were obtained by counting the number of times a grid cell was identified as a hotspot in all analysed years, and classified at 5 levels: 1 (0-20%]; 2 (20-40%]; 3 (40-60%]; 4 (60-80%]; 5 (80-100%]

Reporting on this basis allowed detailed mapping by subareas (Balearic, Tyrrhenian and Sardinia using PI1, PI2) and for the entire western Mediterranean (PI3) of the spatial distribution of hotspots and their persistence for the species and life stages selected for the analysis.

Given the timing of the MEDITS survey (second and third quarters), it was foreseen that the resulting habitat mapping could not be considered as fully representative of the actual distribution of both nursery and spawning areas in the western Mediterranean, as this depends upon the spawning time and recruiting period by species.

Recruits were considered the "Youngs of the year" (born in the year of sampling). A Von Bertalanffy growth equation was applied to identify the size at which individuals born in the same year of the sampling could have grown to at the time of the survey observation, measured annually. Biological parameters were retrieved from the most updated available stock assessment reports (mostly from STECF EWG 22-09) to fit the Von Bertalanffy growth curves. A t0 correction (+0.5) was applied for those species spawning in summer (following the approach applied by EWG 22-09).

Spawners were considered as the mature part of the stock responsible for reproduction, and the observed maturity stage at the moment of sampling was adopted as a criterium to identify this life stage.

The life stages selected as being best represented in the MEDITS data were spawners for Red mullet, Blue and Red shrimp, Giant red shrimp (1st and 2nd report), Norway lobster (1st and 2nd report), Deep water rose shrimp (2nd report), and recruits for European hake and in the case of Red mullet only for GSAs 9 and 10, with the following justification (Table 6.5.1):

Table 6.5.1: Selected life stage by species for the analysis of the MEDITS survey data and justification provided in the ad hoc contracts, with some comments on the comparisons of the size thresholds used to identify the stages in the MEDISEH project.

Species	Target	Spawners Justification	Recruits Justification
Blue and Red shrimp	Spawners	Survey Covering matching the mature populaiton (in late spring/summer -Cartes et al., 2008)	Not expected to be sampled with MEDITS. Cutoff estimates were in many cases negative, corresponding to surveys carried out in the first half of the year (when the young of the year are not yet born).
European hake	Recruits	Not matched as peak fecundity occurs winter (Recasens et al., 2008), not many spawners expected in MEDITS	Matched. Cutoffs estimated by the MediSeh project were generally higher, even though mostly within the range of the estimation of the present study
red Mullet	Spawners	Red mullet matures in spring–summer, with a peak of spawning activity in May and June (Ferrer-Maza et al., 2015). Spawners were identified almost in all GSAs	MEDITS surveys usually do not match recruits. Cutoff estimates were calculated only when growth parameters were available. Cutoff was very oscillating in GSAs 9,10 and 11 as the survey timing largely changes over years, and recruits were identified almost exclusively in years when the survey was carried out in late summer/fall
Giant red shrimp	Spawners	the gonadic development begins in winter and individuals become sexually mature in the second quarter or summer (e.g.: Politou et al., 2004).	Recruits were not expected in the MEDITS data. Cutoff estimates were in many cases low, corresponding to surveys carried out in the first half of the year (when the young of the year are not yet born). MediSeh project estimates were larger than what estimated in the present document (Fig. 3).
Giant red shrimp 2nd report	Spawners	Idem	Giant Red Shrimp were not found in the MEDITS data due to the timing of the surveys.
Norway lobster	Spawners	it reaches its peak of maturity in late spring/early summer (Orsi Relini et al., 1998). Spawners were identified only using the maturity stage 3	No recruits of Norway lobster were expected in the MEDITS data. MediSeh cutoffs were generally higher than the estimates of the present ad hoc contract (Fig. 3).
Norway lobster 2nd report	Spawners	maturity stages 2c and 2d were added to stage 3 to identify spawners, and so deviating from the work done in February	no recruits of Norway lobster were expected as it reaches its peak of maturity in late spring/early summer
Deep water rose shrimp 2nd report	Spawners	only spawners were identified in most of the regions, with exception of GSAs 7 and 8 where no detailed maturity data were collected.	

The analysis produced detailed and comprehensive files and maps covering the following deliveries as illustrated for red mullet as an example:

1) Growth parameters for the six species and by GSA gathered by the most recent available stock assessment (e.g.: STECF 2022):

Table 6.5.2: Von Bertalanffy growth Models fitted for red mullet and life stages by GSA areas, taken as an example of the growth fitting carried out by species and life stages. Taken from the ad hoc contracts STECF 2301 and STECF 2302.

GSA	English name	3 alpha code	Linf	K	t0	sex	t0 corrected
1	Red mullet	MUT	34.5	0.34	-0.1431	C	N
6	Red mullet	MUT	34.5	0.34	-0.1431	C	N
9	Red mullet	MUT	26.56	0.545	0.17	F	Y
9	Red mullet	MUT	21.55	0.56	0.17	M	Y
10	Red mullet	MUT	30	0.243	-0.62	F	Y
10	Red mullet	MUT	26	0.237	-0.9	M	Y

2) Comparison between cut-offs estimated for recruits in MEDISEH and cut-off estimated in the ad hoc contracts:

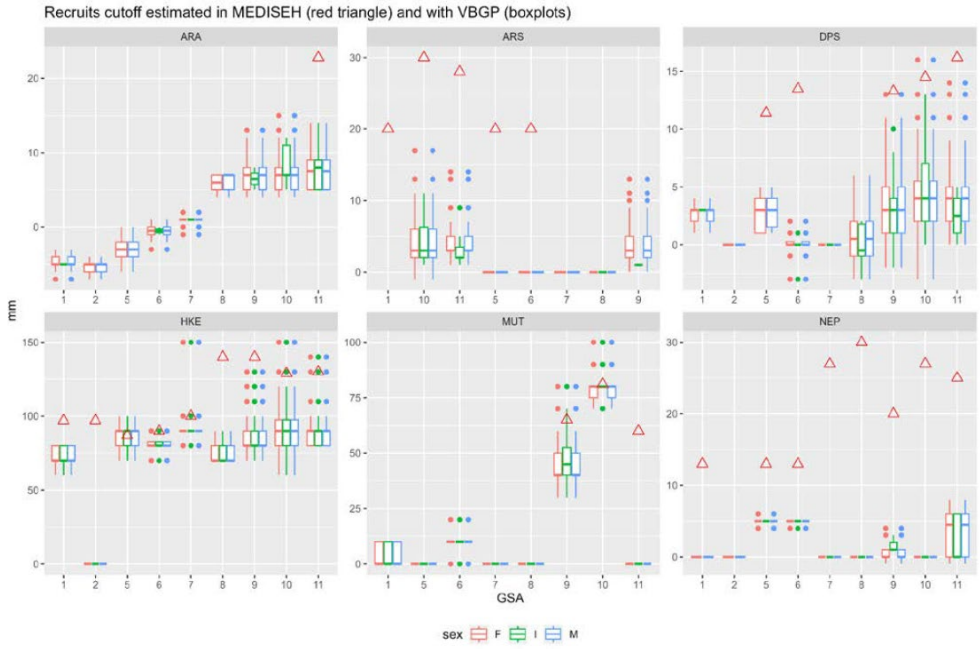


Figure 6.5.2: Comparison between cutoffs estimated for recruits (MediSeh cut-off *vs* von Bertalanffy growth parameters-based cut-off calculated in the present study). Taken from the ad hoc contracts STECF 2301 and STECF 2302.

3) Aggregated length-frequency data for 6 species by life stage and GSA:

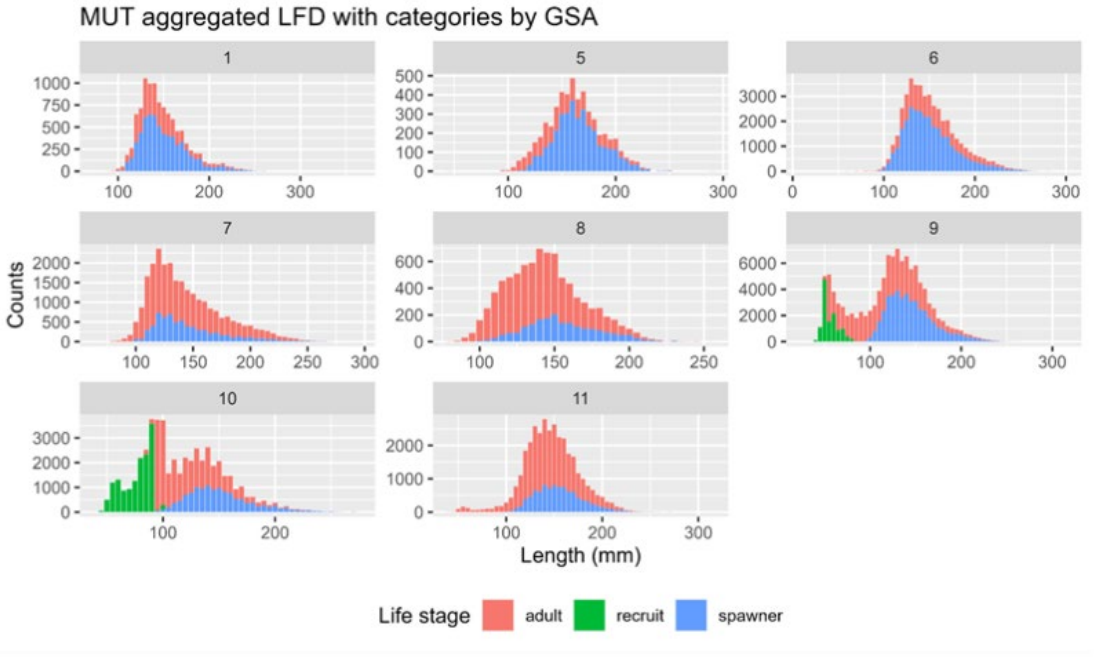


Figure 6.5.3: Aggregated length-frequency data for red mullet, by life stage and GSA. Taken from the ad hoc contracts STECF 2301 and STECF 2302.

4) Final models for the species-life stages density in each of the 3 subareas. Presence-absence and presence model and their predictive power are indicated:

Models fitted and retained for the species/ life stages density (number/km2) as modelled in each of the three subareas, for presence absence and for abundances (given presence) as function of static and/or dynamic covariates and related models with analysis of the fitting, residuals (DHARMa package) and outliers.

Table 6.5.3: Example for Red mullet. Taken from the ad hoc contracts STECF 2301 and STECF 2302.

Species	Life stage	Sub area	Temporal correlation P/A; positive	Presence/Absence model	Positive catch model	Predictive power P/A	Predictive power global
MUT	spawners	ESP	rw; iid	s(depth)	s(bottomT,k=5) + s(depth)	0.65	0.48
MUT	spawners	SAR	rw; iid	s(depth) +bottomT	s(bottomT,k=5) + s(depth)	0.66	0.48
MUT	spawners	TYR	rw; rw	s(depth)	s(bottomT,k=5) + s(depth)	0.77	0.62
MUT	recruits	TYR	rw; rw	s(depth)	s(bottomT,k=5) + s(depth)	NA	NA

5) Grid maps prediction, the hotspot analysis, and identification of persistent hotspots, which ends up with the mapping of persistent hotspots according to their persistence, for the six species and respective selected life stages, by subareas (PI1), for the recent years (2012-2021) (PI2) and over the entire Western Mediterranean GSAs (PI3) and their respective maps of average uncertainty by grid cells.

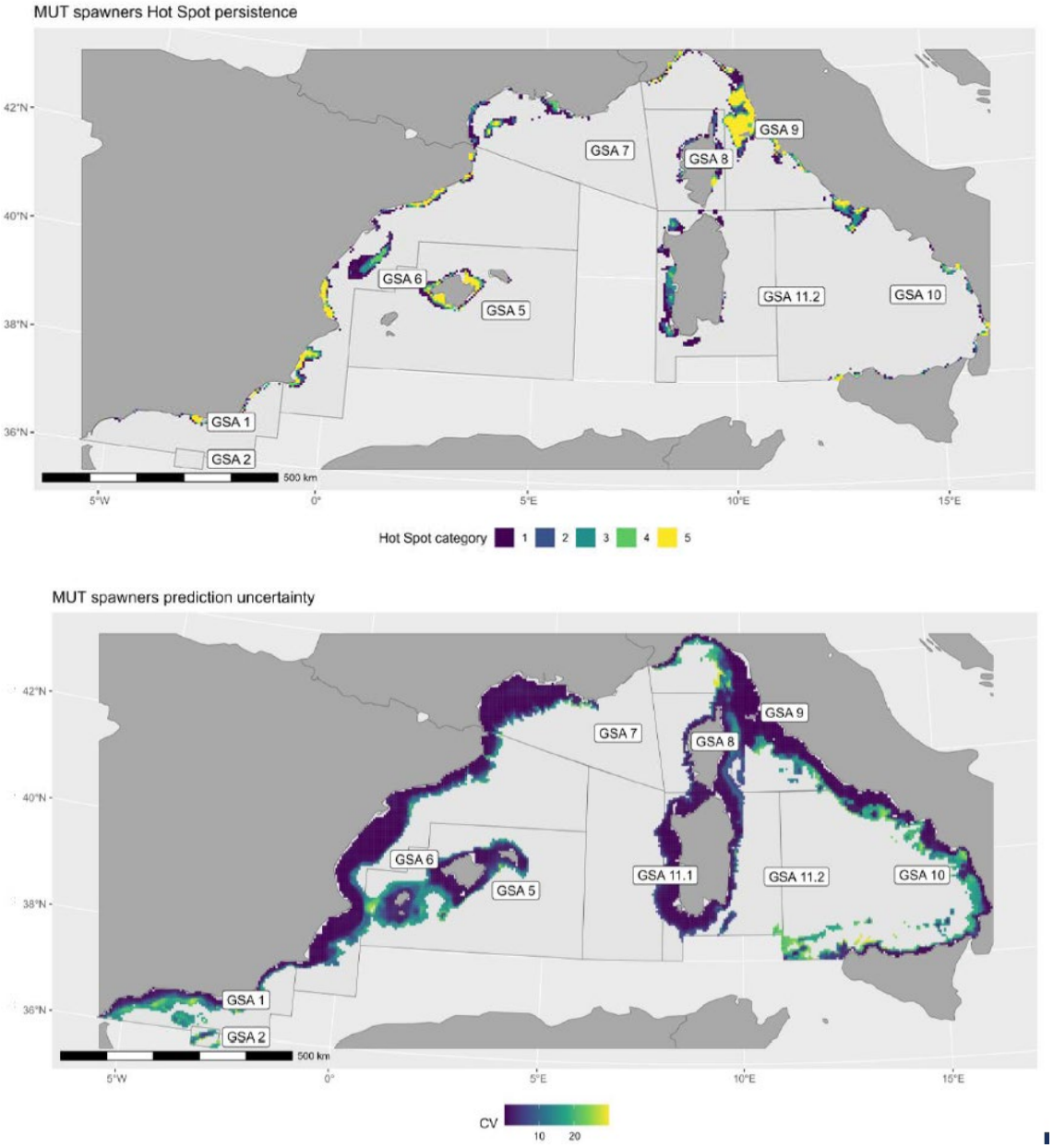


Figure 6.5.4. Upper panel: Persistent spawning areas of red mullet at western Mediterranean level and bottom panel: Average uncertainty at western Mediterranean level. Taken from the ad hoc contracts STECF 2301 and STECF 2302.

The complete set of Spatial outcomes of the GIS layers for the life stages by species were reported in zip files with the *shp files.

STECF comments on the methodology

STECF observes that the modelling approach used was appropriate for the data available. The detailed methodology is provided in section 3 of Ad hoc contract STECF 2301 and STECF 2302 report and in section 2 of Ad hoc contract STECF 2345 and STECF 2346 report.

STECF notes the statistical methodology used is sound, expands on methodologies applied in previous works (Colloca et al. 2015), and considers spatial-temporal autocorrelations. The work applied up-to-date standard statistical methods (Zuur 2009;2017), addressing properly the 0 inflated observations data for spatial density predictions, definition of hotspots, and assessment of their persistence across the series of years (Getis and Ord 1992).

STECF notes that the spatial resolution used (2.5 nm x 2.5 nm grid) was chosen to be in line with the needs of the spatial models used within the western Mediterranean MAP evaluation (ISIS-Fish and SMART). This resolution is a reasonable compromise for this specific case study, but it does not allow the evaluation of any closed area. Indeed, as highlighted in TOR 6.6 to this report, most of the closures designed in GSA 6 are smaller than a single grid cell from the persistence maps.

STECF agrees with the final selection of the best represented life stages by species, which is driven by the time of spawning and recruitment periods in the year by species. In addition, STECF notes that the MEDITS survey does not sample blue and red shrimp juveniles because of the timing of the survey and as juveniles of these species are distributed deeper than 1,000 m (Cartes et al. 2017).

STECF considers that the approach followed in the ad hoc contracts ensures a standardised procedure for application of the same criteria across subareas to identify the spawners and recruit life stages. The definition of life stages is driven by the need of the West Med MAP evaluation EWG 23-01 and 23-11 which used these life stage layers.

STECF notes there are some differences with the analysis made by the MEDISEH project, where for instance some other life stages were retained. Hake spawners were not analysed in the ad hoc contracts, while they were included in the MEDISEH analysis. However, this was possible because MEDISEH modelled mature fish over the length at first maturity (i.e., adults) rather than spawners (Giannoulaki et al. 2013). It is not expected that these changes in criteria for identifying life stages will affect the definition of relative hotspots areas, although it may affect the actual densities predicted over the grids of the maps by subareas.

STECF comments on the results

STECF considers that the ad hoc contracts addressed thoroughly the objectives required for modelling spatio-temporal distributions in EU waters of the Western Mediterranean Sea (GSAs 1-2-5-6-7-8-9-10-11) covering recruits and spawners (whenever possible), for European hake, Blue and red shrimp, Red mullet, Norway lobster, Giant red shrimp and Deep-water rose shrimp, and with proper selection of the life stages best identified by the MEDITS survey.

STECF observes that the analysis produced detailed and comprehensive deliveries including all models fitted by subareas or overall region, for the species/ life stages, grid maps prediction,

hotspot analysis, and identification of persistent hotspots, with mapping of hotspots according to their persistence, by subareas (PI1), for the recent years (after 2012) (PI2) and over the entire Western Mediterranean GSAs (PI3) with their respective maps of average uncertainty (CV) by grid cells.

STECF notes that a complete set of files with spatial outcomes of the GIS layers for the life stages by species are provided, which should support future assessment of the closure areas.

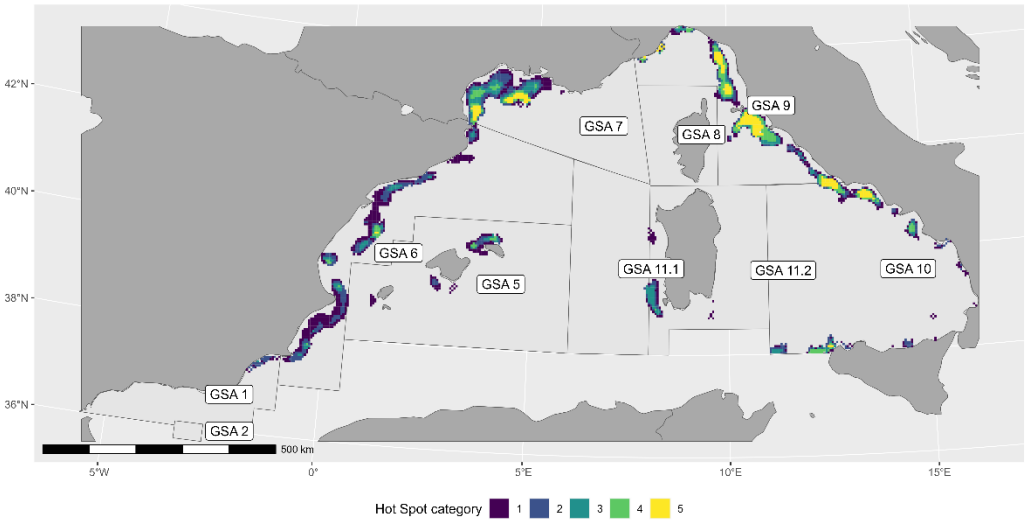
STECF notes that the results produced by the first ad hoc contract were already used by STECF 23-01 which generally endorsed the methods and the results obtained so far. The layers were used but there are some limitations in these layers in areas where they extend beyond the sampling grid of the survey as well as the resolution of the layers when considering small/narrow closed areas (See 6.6 section in this report).

STECF observes that while the methodology is technically sound, no global inference can be made on its suitability for all purposes, (i.e., the case specific conclusion is objective-dependent and those using the information should evaluate the case specific suitability).

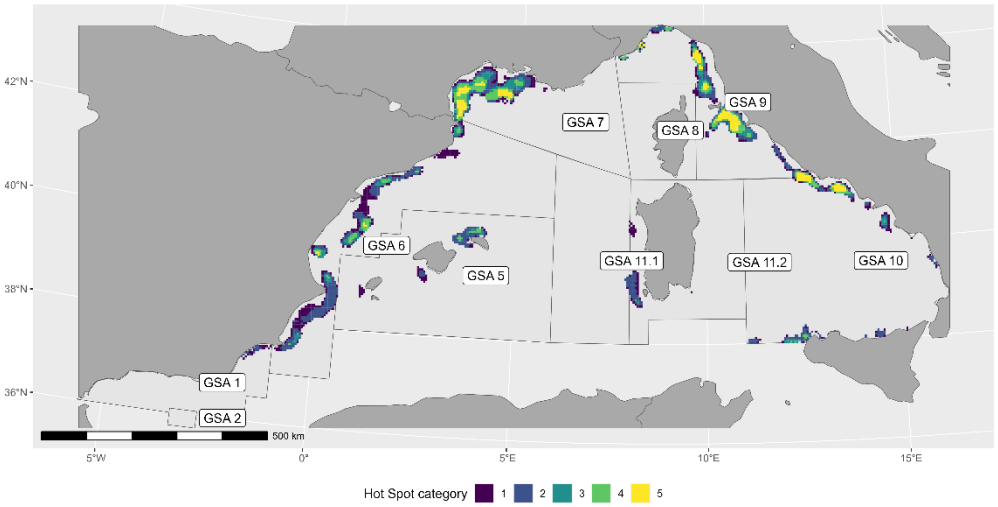
STECF notes that the thorough revision of criteria for defining the life stages and the statistical methods applied led to diverge partly from the previous analysis carried out in MEDISEH project. As an example, during PLEN 23-02 a sensitivity analysis of the implications that the changes in the criteria adopted for the analysis between the original MEDISEH project and the ad hoc contracts was provided by the authors of the ad hoc contract using hake recruits as an example (Figure 6.5.5) (supplementary file accessible in the FTP of the STECF PLEN 23-02, named: follow_up_Plen.pdf).

STECF observes that although the general distribution pattern is rather similar (with the exception of the southern part of GSA 6 and GSA 1 or GSA 8 which were not analysed by MEDISEH), the intensity of the persistency found by MEDISEH are different particularly in GSA 7. In GSA 9 and 10, coherence is higher, and in GSA 11 estimates by MEDISEH show larger hotspots with higher intensity. The two maps are based on different size thresholds used to define the recruits (Figure 6.5.2), years included, modelling framework and relative contribution of density by area (not respected in MEDISEH, in which persistence was calculated separately by GSA). Therefore, the outputs of the two analyses cannot be fully compared.

HKE recruits PI3



HKE recruits PI4



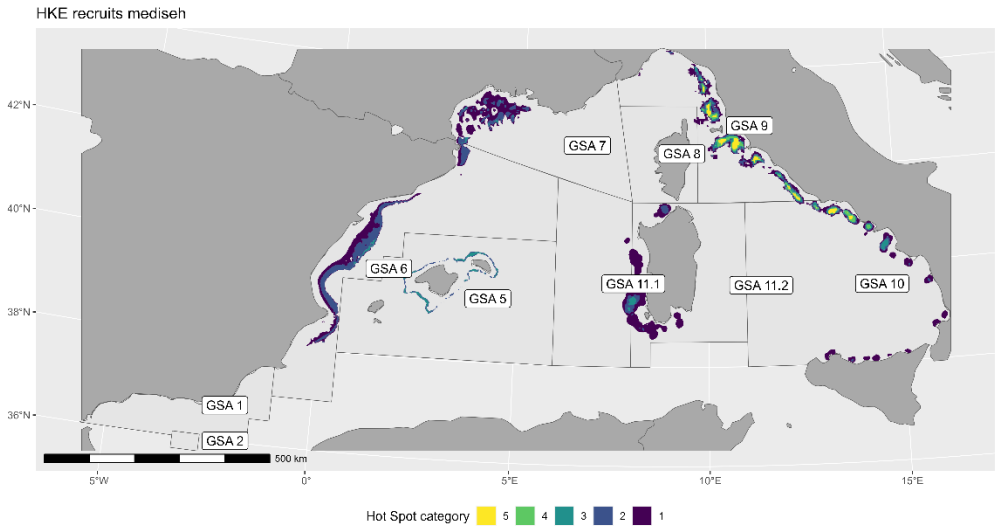


Figure 6.5.5 Persistent areas of Hake recruits at western Mediterranean level Upper panel: until 2021 (based on PI3), Middle panel: selecting only the years included in the MEDISEH analysis (1994-2010) (only differing to the former plot by the omission of years 2011, 2012 and 2019, and Bottom panel: Persistence index estimated in MEDISEH over years 1994-2010.

STECF notes that given the changes in methodologies of the analysis presented in the ad hoc contracts, their results cannot be considered an update of the previous MEDISEH outputs, but a new analysis guided by new criteria and methods applied consistently over all areas which may alter some of the perceptions on the relative density of hotspots (as illustrated here for hake recruits).

STECF observes that the lack of the maturity information for some species in the French MEDITS survey in GSA 7 and 8 (affecting to all species), has restricted the amount of data available for modelling the habitat (P/A) and density models of spawners (as the survey data from these regions was excluded from the analyses of spawners). This led to the exclusion in some cases of predictions over part of the area in the Sardinia subarea. STECF considers that this should not affect the reliability of the hotspot persistence grid maps of spawners over the areas where maturity was available but prevented properly assessing the reliability for the predictions over these GSA 7 and 8 areas where no reporting of maturity was made available since 2012, although CV of predictions in space are available for all species.

As far as the process of retrieving the maturity inputs in "generic" format are expected to be finalised by next autumn they will be available to feed any future analysis of the MEDITS data set. STECF suggests that these layers are not used as a basis to test closed areas for spawners in GSA 7 and 8 until the time series is properly updated and corrected in the official data call. For hake, as far as only the juvenile stage was retained for the analyses, such predictions were not affected by the lack of maturity from these areas.

STECF endorses the suggestions made in the reports for future improvements of these analysis, such as trying to incorporate uncertainty into the identification of hotspots, improving the biological knowledge in time and areas to better discriminate recruits or spawners, or improving/recovering missing information on crustacean maturity.

STECF Conclusions

STECF commends the detailed analysis presented in ad hoc contracts (ref STECF2301_STECF2302 – and ref STECF2345_STECF2346). They covered all the species included in the western Mediterranean Sea Multiannual Management Plan, selecting the life stages which could be best identified according to the timing of the MEDITS survey and spawning and recruitment periods of the species.

STECF concludes that the criteria to define the life stages were suitable for the spatial analysis on the MEDITS data and allowed consistent application across areas. STECF agrees with the final selection of the best represented life stages by species: Hake recruits, red mullet spawners and recruits (just in the Tyrrhenian Sea, GSA 9 and 10) and spawners of blue and red shrimp, deep-water rose shrimp, giant red shrimp, and Norway lobster.

STECF concludes that the statistical methodology is robust: up-to-date standard statistical methods were applied, addressing properly the 0 inflated observations data for spatial density predictions and definition hotspots and assessment of their persistence across the series of years. Furthermore, quantification of uncertainty was included in ad hoc contract 2345 and 2346, after a request from EWG 23-01.

STECF concludes that given the changes in methodologies of the analysis presented in the ad hoc contracts, the results cannot be considered an update of the previous MEDISEH outputs, but a new analysis guided by new criteria and methods applied consistently over all areas which may alter some of the perceptions of the relative density of hotspots.

STECF concludes that the lack of maturity data in GSA 7 and 8 should not affect the reliability of the hotspot persistence grid maps over the areas where maturity was available. However, STECF concludes that it does prevent properly assessing the reliability of the predictions over these GSA 7 and 8 areas where no reporting of maturity was made available since 2012, although CVs of predictions in space are available for all species.

STECF concludes that, unlike for the other GSAs, the GIS layers should not be used as a basis to assess closures for spawners in GSA 7 and 8 until the time series is properly updated and corrected in the official data call.

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6.6 FOLLOW-UP OF EWG 23-01: WEST MED ASSESSMENTS AND CLOSURE AREAS

Background provided by the Commission

In adopting the Western Mediterranean Multiannual Management Plan (West Med MAP), Member States agreed to Article 11.1, alternatively Article 11.2, that aims at protecting juveniles of hake. All three concerned Member States also adopted Article 11.3 and agreed to establish other closure areas by 17 July 2021 and on the basis of the best available scientific advice, where there is evidence of a high concentration of juvenile fish, below the minimum conservation reference size, and of spawning grounds of demersal stocks, in particular for the stocks concerned.

STECF PLEN 23-01 and STECF EWG 23-01 are the latest reviews of the proposals of closures (placement and period) submitted by Spain and determine their efficiency to protect juveniles of hake, as planned in Article 11.2. However, in view of Article 11.3, this review should be expanded to juveniles and spawners of all demersal species covered by the West Med MAP and account for fishing effort displacement.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

STECF is requested to review the closure proposals (placement and period) developed by Spain in Catalonia and determine their efficiency to protect both juveniles and spawners of all demersal species covered by the West Med MAP and accounting for fishing effort displacement. To provide an order of magnitude of the closure efficiency, the proposed closure areas should aim at reducing about 20% of the bycatch of each target species in GSA 6. In case the proposed closures are not meeting this criterion, the EWG is to propose alternative closures (placement and period) for Spain.

Summary of the information provided to STECF

The STECF was provided with four background documents (BG).

- BG1: The first document is a report entitled "*Establishment of reference conditions*" that summarises an underwater video survey carried out in the context of the ECOREST project funded under the EU LIFE programme. Among the 14 closures areas initially planned, images were effectively collected in 7 of them (Núcleo Mars d'Anterra, Bol de Tossa, Área de Interés Pesquero para la Merluza de Roses, Bol de les Bruixes de Blanes, Área de Repoblación de Blanes-Palamós, Merluza de Vilanova, Merluza de Arenys – see Table 6.6.1 and Figure 6.6.1). The other areas were not covered due to restrictions in the number of days at sea following the COVID pandemic as well as adversarial meteorological conditions in September 2022. Most of the closures were implemented in 2021, except Área de Interés Pesquero para la Merluza de Roses (2013), Área de Repoblación de Blanes-Palamós (2017) and Área de Interés Pesquero Rosas-Palamós (2017). Images were also collected for comparison in a control area where fishing is still allowed. In total, 18 hours of images were collected. This footage was analysed to determine environmental characteristics and living organisms, with the aim of constituting a baseline to monitor the progressive evolution of habitats and communities in the future. The report validates the potential use of such video monitoring and indicates further campaigns are planned in the

future to see the evolution in closure areas over time and allow continued comparison with the control area.

- BG2: The second document is a report entitled, "*Fisheries advisory report for the Northern GSA6 2021*". The first part of this document presents the main outcome of a fishery monitoring programme, including information on the spatial distribution of fishing grounds and landings. The second part focuses on the assessment of three permanently closed areas (Área de Interés Pesquero para la Merluza de Roses, Área de Interés Pesquero Rosas-Palamós and Área de Repoblación de Blanes-Palamós, see Tables 6.6.1 and 6.6.1) in Catalan waters that were enforced over the period 2013 and 2017. Using VMS data, the redistribution of fishing effort is explored following the enforcement of the closure areas. The results show that fishing effort has effectively decreased (though not completely disappeared) inside the areas. Results also show that effort reduction in closure areas has not led to an increase in effort at the borders of those zones as would have been expected with a "fishing the line" behaviour. Effort is rather redistributed all over the fishing grounds. Comparing LPUEs in the buffer zones of increasing size around closure areas, the report outlines potential spillover effects for *Mullus* sp. (with LPUEs decreasing with increasing distance from the closure areas). However, no such spillover effects were observed for European hake, Norway lobster and shrimps. The spillover is observed almost immediately after the implementation of the closure areas and remains visible after a year (analysis of LPUEs before the implementation confirms that the spillover is likely due to the closures). The last part of the report presents some stock assessments carried out in Northern GSA 6. for different species (*M. barbatus, M. merluccius, P. longirostris, N. norvegicus, and A. antennatus*) and comparing models. The results are consistent with EWG 22-09.
- BG3: The third document is a report entitled, "*Spatial WMMAP fishing closures effectiveness in GSA 6*". It summarises and updates the results of the first two reports. It confirms the spillover effect for *Mullus spp*. and for other species (*Lepidorhombus boscii*, *Triglidae* sp, *Scorpaena* sp, *Helicolenus dactylopterus*, *Scorpaena* spp, *Zeus faber*) that are not listed in the West Med MAP. It also shows that while permanent closures effectively lead to localised fishing effort reductions, temporary closures have limited benefits. Effort reductions during the closed season are more or less compensated by increases in the open season, so that yearly fishing effort is almost stable after the closure is introduced. Analysing the video campaign and comparing the substrate and the benthic community in different permanent closure areas, the report confirms a progressive recovery of benthic components after the implementation of a fishing ban. There are less visible tracks on the seabed and there are signs of slow-growing sessile species such as soft corals of the genus *Alcyonium* growing in the oldest closure areas (5 to 10 years) compared to more recent ones (1.5 year) or in zones where trawling is still allowed.
- BG4: The last document is a report entitled "*INFORME TÉCNICO DE ASESORAMIENTO DEL ÁREA DE PESQUERÍAS DEL INSTITUTO ESPAÑOL DE OCEANOGRAFÍA (IEO, CSIC)*". It details the outcome of a survey aimed at comparing the structure of the benthic community in and outside closure areas, about 1 year after the implementation of the closures. Tests were carried out in two areas - Cigala de Barcelona (closure 6 – Table 6.6.1 and Figure 6.6.1) and Tarragona areas (closure 11 – Table 6.6.1 and Figure 6.6.1). In both closure areas, biomass and diversity were higher inside the closure area than outside, though the differences were not statistically significant. Further campaigns inside and outside the closure areas will monitor the evolution over time.

Summary of Previous STECF Advice

STECF PLEN 23-01 and STECF EWG 23-01 have previously reviewed the Spanish closure areas, among others in Catalan waters. Regarding the northern part of GSA 6 in which Catalan waters are located, STECF EWG 23-01 noted that limitations in data availability (MEDITS survey only in second quarters + insufficient resolution of VMS data) hindered assessment of the benefits of the closure areas. However, EWG 23-01 suspected that "*it is unlikely that small areas such as those in GSA 6 may have a significant positive effect to reduce the effort on species targeted by Art. 11.3 (European hake, red mullet, deep-water rose shrimp, blue and red shrimps, giant red shrimp, Norway lobster) given species mobility range and the possible spatial extent of the seasonal fish concentration that is larger than the extent of these areas*", and that any local benefits were likely to be "*offset by the spillover effect*".

Apart from the pre-existing closures areas, EWG 23-01 noted that it was not possible to assess the relevance of newly implemented (2023) two-month long closure areas. While much larger than the pre-existing closures, their seasonality was not consistent with available MEDITS data and with the quarterly resolution of available VMS data layers. EWG 23-01 also observed that "*the closed periods alternate spatially so that effort reallocation is likely to occur from closed towards adjacent open areas, at least partially limiting the total effort reduction*."

STECF Comments

- **Characteristics and location of closure areas**

STECF was requested to assess the efficiency of closure areas in Catalan waters. STECF has restricted the analysis to the closure areas located in GSA 6 northwards of 40°20" which corresponds to the southern limit of Catalunya (Figure 6.6.1 – Table 6.6.1). In this area, following from EWG 23-01, PLEN 23-02 could not evaluate the two-month temporary closures enforced in 2023, since their timing is not consistent with available biological data from MEDITS. Closure areas in the region are small, except "Subárea Cataluña". As an indication, using the trawlable grounds described by EWG 22-01, STECF estimates that the surface area of trawlable grounds is about 23,778 km², while the permanent closure areas cover approximatively 765 km² or 3.2% of the area (Table 6.6.1), or 1646 km² if including the temporal closure (6.9% of the area).

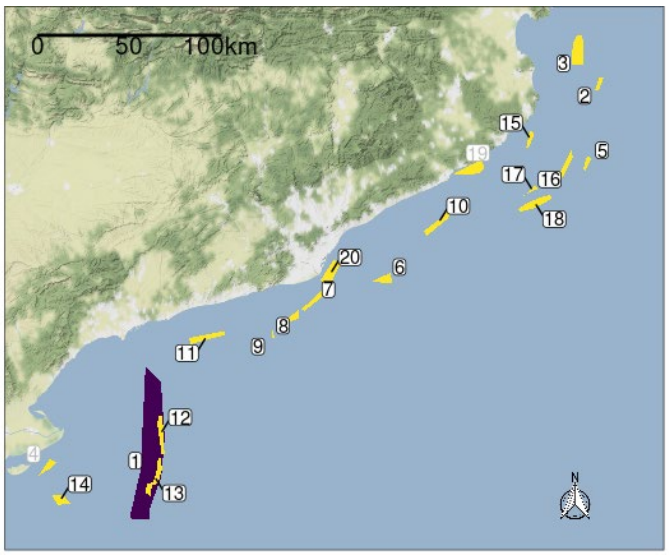

Figure 6.6.1 - Maps of considered closure areas. Yellow polygons stand for permanent closure while the purple polygon stands for a temporal closure. Closures 4 and 19 (written in grey) only affect trawl while closure areas written in black affect all fishing gears.

Table 6.6.1 – Characteristics of the considered closure areas. The surface was computed using R package sf. The surface of an area including a 5km buffer around closure areas was computed, those buffers corresponding to the largest buffers used in background documents BG2 and BG3 to explore the spillover effects around closures areas.

Closure area	**Name**	**Closing year**	**Gear**	**season**	**Surface (km²)**	**Surface with 5km buffer (km²)**
1	Subárea Cataluña	2021	All	May-June	881	1882
2	Área de Interés Pesquero Rosas-Palamós	2017	All	permanent	17	192
3	Área de Interés Pesquero para la Merluza de Roses	2013	All	permanent	93	384
4	Zona de Exclusión Sant Carles de la Ràpita	2021	Trawl	permanent	27	245
5	Cigala de Palamós	2021	all	permanent	14	186
6	Cigala de Barcelona	2021	all	permanent	33	251
7	Merluza de Barcelona	2021	all	permanent	33	279

8	Merluza de Vilanova	2021	all	permanent	23	222
9	Cigala de Vilanova	2021	all	permanent	5	155
10	Merluza de Arenys	2021	all	permanent	57	375
11	Tarragona	2021	all	permanent	55	359
12	Cambrils	2021	all	permanent	49	358
13	L'Ametlla	2021	all	permanent	55	386
14	Barques, La Rápita	2021	all	permanent	36	249
15	Núcleo Mars d'Enterra	2021	all	permanent	19	208
16	Bol de Terra al Vapor de Palamós	2021	all	permanent	38	301
17	Bol de les Bruixes de Blanes	2021	all	permanent	9	195
18	Área de Repoblación de Blanes-Palamós	2017	all	permanent	64	356
19	Bol de Tossa	2021	trawl	permanent	68	352
20	Bol de Port de Barcelona	2021	all	permanent	70	336

- **Evidence of local recovery of benthic habitats and communities within permanent closure areas**

STECF observes that BG1, BG3 and BG4 have delivered useful insights on the recovery of benthic habitats and benthic communities following the enforcement of permanent closures. The video monitoring inside closures areas and in control areas with identification of species, detection of fishing gear tracks, estimation of biomass and biodiversity indices in closure areas and their comparison with control areas, have highlighted progressive recovery of the benthic communities. There are fewer visible fishing gear tracks and increased frequency of long-lived sessile species in closure areas implemented for several years. If carried out on a regular basis, video monitoring should bring new insights on the dynamics of this recovery depending on the closure areas.

- **Evidence of local spillover effects arising for some permanent closures**

STECF observes that the comparison of LPUEs in nested buffer rings of increasing sizes around the closed areas, which was only carried out around the three oldest closures areas, was a relevant approach to detect potential spillover effects. Spillover effects are increases of abundance around closure areas due to migration of individuals from the areas. The LPUE data indicates a spillover effect for *Mullus spp*. (with LPUEs decreasing with the distance from the closed areas, and LPUEs approximatively 3 times higher at the closure area border than at 5000m outwards after 3 to 5 years of enforcement). STECF observes that this spillover is likely restricted to a limited range since LPUE at 5000 m are similar to LPUEs at 3000 m. A spillover effect was also visible for other species that are not listed in the MAP (*Lepidorhombus boscii*, *Triglidae* spp, *Scorpaena* spp, *Helicolenus*

dactylopterus, *Scorpaena* spp, *Zeus faber*) at least in Área repoblación Blanes-Palamós. No spillover effect was observed for European hake, Norway lobster or deep-water rose shrimp. The absence of spillover for those species might be due to various factors including limited mobility (Norway Lobster); general trends in the population masking the spillover effects; the closures areas being too small to allow any detectable increase in biomass inside the closure; or inappropriate location with respect to the distribution of the species or the relevant life stage. According to BG3, the area Área de Interés Pesquero para la Merluza de Roses was primarily designed to protect juvenile hake. Such individuals, which are mostly below MCRS, are not sold in the auction market and as such not well represented in the LPUE data used in BG2 and BG3 because of the lack of juveniles in the landings. In the same closure area, previous studies had reported higher abundance and spillover of hake juveniles (Recasens et al., 2016; Sala-Coromina et al., 2021).

- **Evidence of effort redistribution following the implementation of closures areas**

Regarding the assessment of the effect of closures on MAP target species, BG2 and BG3 have focused on three permanent areas (Roses closure 3, Palamós closure 2 and Blanes closure 18 in Figure 6.6.1. STECF notes that the assessment shows that trawling effort has effectively decreased inside closed areas (despite some limited effort remaining), but there has been no redistribution of effort at the margin of the areas, contrary to what was observed in GSA 7 (STECF EWG 23-01). The VMS data tends to show that, on the contrary, effort was rather reallocated across all the other areas. STECF observes this is an important finding for the construction of a scenario of effort reallocation in any future simulation exercises, as it provides a different assumption from a usual assumption of reallocation along the borders.

STECF acknowledges that caution should be taken when exploring the overall effect of closures areas on the total fishing activity since most closures have been implemented recently (most of them in 2021), periods in which the fleet was partly affected by the COVID-19 pandemics and by the reduction in fishing days arising from implementation of the WestMed MAP.

Regarding Subárea Cataluña, the largest closure area and the only seasonal one, BG3 showed that fishing effort during the open season has increased after the implementation of the closure areas with the net effect that yearly effort has not decreased.

- **Efficiency of closures areas with respect to WestMed MAP objectives: potential issues and way forwards for the spatial simulation**

STECF observes that the background documents have provided evidence of localised benefits inside the permanent closure areas, with recovery of benthic habitats and spillover effects. However, STECF observes that the BG's do not analyse the effect of closure areas at the regional scale with respect to the MAP objectives. STECF considers that this would require spatial simulations similar to that carried out by EWG 23-01 in the French and Italian GSAs. The ISIS-Fish model, which is used to assess the efficiency of closure areas in GSA7 (see EWG 23-01) is now calibrated for the Spanish GSAs and appears to be a good candidate although, currently it accounts only for European hake.

Following EWG 23-01 and using the outcomes of Ad-Hoc STECF 2345 and Ad-Hoc STECF 2346 (intended for ToR 6.5 of this report), PLEN 23-02 overlaid the closure areas with the identified hotspots (Figure 6.6.2). STECF recalls that MEDITS data, on which these persistent hotspots are identified, are representative only for quarter 2. STECF advises caution should be taken when using those data to assess the efficiency of a permanent closure for the whole year (Colloca et al., 2013). Moreover, STECF observes that the sizes of the closure areas are often smaller than the resolution of the updated MEDISEH maps (see ToR 6.5 of this report). This is likely to restrict STECF's ability to assess their efficiency. This is the same for testing the estimation of the closures with ISIS-Fish

which has a resolution of 0.05° x 0.05° (as do the MEDISEH layers), so that most closures would correspond to only one or a few pixels of the model.

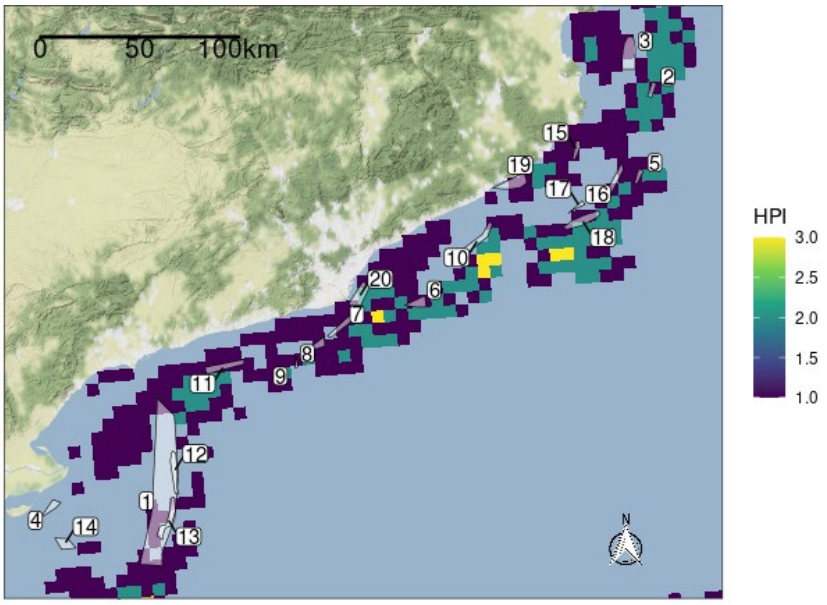

Figure 6.6.2 - Maps of considered closure areas (white transparent polygons) overlaid with identified hotspots (HPI, coloured squares). The HPI (hotspot persistence index) values stand for the number of species and life stages (among ARA spawners, DPS spawners, HKE juveniles, MUT spawners and NEP spawners) for which the square was identified as a hotspot (based on PI1 index in Ad-Hoc STECF 2345 and Ad-Hoc STECF 2346).

STECF observes that BG2 and BG3 show useful high resolution VMS datasets. The maps that show the spatial distribution of fishing effort for the different fleets originating from different fishing harbours (Figure 1A from BG2) appear relevant to define fleet zones in the ISIS-Fish model. Moreover, it might be possible to check whether the locations of the harbour with respect to the newly implemented closure areas are consistent with "effort reallocation from closed towards adjacent open areas" as observed by EWG 23-01. The combined use of VMS data and landing (Figure 1B from BG2) data might also make it possible to estimate the existence of persistent hotspots following the approach developed by Alglave et al. (2022) combining survey and commercial data. This could be used to complement the existing hotspots estimated with MEDISEH, which are mostly representative of the second quarter. To do so, STECF observes it would be worthwhile combining landings data with size composition information in order to separate the different life stages.

STECF considers that the studies on the spillover effect around permanent closure areas (BG2 and BG3) deliver interesting results that could potentially be used to parametrise the spillover in ISIS-Fish. However, results suggest that potential local increases of biomass and spillover effects operate at a very limited distance, with a spatial resolution which will be difficult to consider in ISIS-Fish given its current resolution.

STECF Conclusions

STECF concludes that it was not possible to assess the efficiency of the closures with respect to the objective of the MAP, (i.e., 20% reduction of bycatch). STECF considers that such an assessment would ideally require spatialised simulations to be carried out.

STECF concludes that the ISIS-Fish model is parametrised and calibrated for Spanish waters (although only for the European hake) and could be used for that purpose as is already the case for the French closures. Other tools might also be considered, such as the model used to explore the effect of closure areas in EMU2 (EWG 23-01).

STECF concludes that the new data provided are relevant to parametrise the distribution of fleet activities, construct scenarios of effort redistribution and spillover effects. However, the size of the closures areas is small compared to the resolution of available biological data from MEDISEH and to current ISIS-Fish resolution.

STECF concludes that the small size of the closures hinders the ability to appropriately assess their efficiency. Ideally, any spatial management measures would best consider the resolution of the available data to support their design.

STECF concludes that the results presented tends to support the STECF EWG 23-01 assumption that "*it is unlikely that small areas such as those in GSA 6 may have a significant positive effect to reduce the effort on species*". However, in the absence of model-based evaluations, it is not possible to draw definitive conclusions about the closures' efficiency.

STECF concludes that the VMS data presented can be used to derive fine scale information on the distribution of species and to provide information on seasons not covered by scientific surveys.

STECF concludes it may be possible to follow the approach used by Alglave et al., 2022 (EWG 21-01, ad-hoc contracts 2191, 2192) to derive persistent hotspots. Such persistent areas might then be used to explore the relevance of closure areas and to propose new closures areas, focused on the biology of the MAP target species.

STECF concludes that the analysis and monitoring of closure areas provided has delivered interesting new insights on the effects of closure areas. It has highlighted local recovery of habitats and benthic communities and potential spillovers effect as well as providing new insights that are relevant to feed the simulation model. However, STECF concludes that these local observations of recovery in closure areas of such small sizes do not guarantee that they have an effect at the regional scale to achieve the objective of the MAP, or more generally achieve the protection of the local ecosystem.

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6.7 FOLLOW-UP OF EWG 21-13: WEST MED ASSESSMENTS EVALUATION OF BASELINES

Background provided by the Commission

In adopting the Western Mediterranean Multiannual Management Plan, Member States agreed to:

- Article 7.3.b that states: "*for the second to the fifth year of the implementation of the plan, the maximum allowable fishing effort shall be reduced by a maximum of 30 % during that period. The fishing effort decrease* ***may be supplemented with any relevant technical or other conservation measures adopted in accordance with Union law, in order to achieve the FMSY by 1 January 2025***."
- Article 7.5 that states: "*Where the best available scientific advice shows significant catches of a particular stock* ***with fishing gear other than trawls****, maximum allowable fishing effort may be set for such particular gear on the basis of such scientific advice.*"

STECF EWG 21-01 and EWG 22-02 have looked at the impact of other fishing gear on the fishing mortality of demersal stocks. STECF EWG 22-09 and STECF EWG 22-11 have assessed demersal stocks in the western Mediterranean and evaluated the biological and socio-economic impacts of various management scenarios. However, in view of Article 7.5, this review should be completed, based on work done in STECF PLEN 21-03, with the calculation of a baseline for fishing gear other than trawls (longliners and netters as per STECF EWG 21-01) calculated as the average of fishing days per year, per fleet segment and per Member States between 2015 and 2017, the legal reference period in the western Mediterranean multi-annual management plan. If other data are available, such as length of nets or number of hooks, a baseline for 2015-2017 could also be calculated with those.

To facilitate the work on this ToR, STECF experts could build on existing R scripts developed during PLEN 21-03 for a similar ToR, as well as on figures of catch compositions developed during STECF EWG 22-02 on longliners.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen23012

Request to the STECF

STECF is requested to discuss the elements required to determine a baseline for longliners and netters based on the DCF data in fishing days for the reference period 2015-2017 and, if possible, in lengths of nets and/or number of hooks.

STECF comments

STECF understood the request as discussing tht elements available for defining a scientific basis to calculate effort levels for longliners and netters that will serve as an effort baseline in the West Med MAP (Regulation (EU) 2019/1022, Art. 7.3, 7.4, 7.5; Reference years 2015-2017).

STECF acknowledges that in the West Med, passive gears are mostly operated by small to medium sized vessels (VL0006 to VL1218) operating set longlines (LLS) and gillnets (GNS) and to a lesser extent trammel nets (GTR) and combined gillnets and trammel nets (GTN) (see EWG 22-01).

While STECF acknowledges that bottom trawlers are the main contributors to fishing mortality for the hake and red mullet target stocks of the demersal fisheries in the Western Mediterranean, in some cases, passive gears can contribute considerably to fishing mortality. Red mullet in GSA1 where GTR accounts for 27% to fishing mortality or, in EMU2, the case of hake where 24% of fishing mortality come from GNS. For red mullet, in GSA 10, 22% of fishing mortality is generated by GTR (see details of previous STECF analyses in EWG 21-01).

STECF notes that, in order to investigate whether fishing mortality is correlated with fishing effort expressed in fishing days, EWG 22-11 plotted the partial F - standardized effort (in fishing days) relationship for longlines and set nets. However, STECF concluded that such relationships were not informative for these gear types in the West Med and at that level of data aggregation.

STECF believes that the absence of any correlation for passive gears likely results either because such average relationships do not exist, or because the effort metric is disconnected from the fishing operations of vessels deploying these gear types. STECF perceives that it is likely a combination of these two factors.

STECF observes that fishing effort is declared and collected in days at sea and fishing days in the FDI and AER databases. STECF recalls that fishing days as an effort metric usually is relevant for characterising trawling activities but is much less appropriate to measure the effective fishing effort of passive gears on fished stocks. Indeed, fishing effort for netters is best described by the number of nets set during a trip, the length of these nets and the time those nets typically are deployed for (i.e., "soak time") when targeting a specific assemblage of species in a given area. Fishing effort for longliners and vessels deploying hooks is best described by measuring the typical number of fishing lines set during a trip, the length of the lines, the number of hooks per metre of fishing line and the soak time (McCluskey and Lewison, 2008).

STECF notes that if the 'Nicosia methodology' for effort estimation (STECF 2016) is followed, as requested by the FDI data call, it can provide a proxy for effort in static gears for vessels with electronic logbooks. However, it must be noted that longliners and netters in the West Med are mostly represented by vessels below 12 m (Loa), for which electronic logbooks are not mandatory (Council Regulation EC No 1224/2009). Therefore, issues still remain when trying to calculate fishing effort for small-scale fisheries. Methodology to deal with this is being dealt with by the Intersessional Subgroup on Small-scale Fisheries (ISSG SSF) of the Regional Coordination Group NANSEA and Baltic. Even when estimated correctly fishing days is still an underestimation of soak time.

STECF observes that due to the nature of passive gears, which are set at sea for a certain period (soak time) during which the vessels may return to harbour, a baseline of the fishing effort expressed as fishing days potentially risks incentivising what is called "input substitution", (i.e., changing the behaviour of fishers by increasing the number of hooks, the length of set nets and/or the soaking time etc.).

STECF acknowledges the efforts made by PLEN 22-03 in the collection of information from scientific literature, which indicated that the setting of demersal longlines, the associated number of hooks and soaking time are very variable, depending on the targeted species. PLEN 22-03 also showed there is no direct relationship between the number of hooks and the vessel length, and setting a meaningful baseline would require having data available from a representative sample of individual boats operating in a specific fishery.

Therefore, PLEN 22-03 suggested to take into consideration an additional data call to establish the number of passive gears typically deployed per GSA. However, STECF does not know to what extent

these data exist in national logbooks or whether they are routinely recorded by on board observer sampling catches.

STECF suggests that information on the number of hooks should be collected according to the GFCM DCRF guidelines (GFCM Data Collection Reference Framework 2018 manual, Appendix F- Fishing effort measurement, page 145).

STECF observes that an additional source of uncertainty for measuring effort of longliners, and netters is to identify which boats target hake or red mullet during their fishing activities. STECF notes that set longlines and set nets targeting hake and red mullet cannot be differentiated from the same gears targeting other species (e.g., *sparids*) in the FDI and in the AER databases, nor likely in national logbooks. This is because boats using passive gears are largely polyvalent in nature (i.e., use multiple gears). Hence, sourcing data that would differentiate LLS, GNS, GTN and GTR from other passive gears at an individual vessel level is needed.

Taking into consideration all the limitations highlighted above and following the request of advice from DG MARE, STECF has calculated the baseline as the average fishing days of longliners and netters by fleet segment (reference years 2015-2017) (Table 6.7.1). These data have been extracted from the FDI database (Table G). STECF notes that those gears (LLS, GNS, GTR and GTN) are often associated with "Fishing techniques" which are not consistent with passive gears, such as dredges and purse seines. In order to evaluate the importance of each combination country/GSA/gear/vessel length on the species concerned by the West Med MAP, the average percentage of catches related to hake and red mullet has been also reported for the reference year 2021 (FDI data, Table A). STECF did not consider the four crustacean species as they are not targeted by netters or longliners.

Table 6.7.1. Fishing days of longliners and netters by Country, Effort Management Unit (EMU), Geographical Sub-area (GSA), gear type (LLS set longlines, GNS set gillnets, GTR trammel nets and GTN combined gillnets and trammel nets), vessel length and the relative baseline (average fishing days of years 2015-2017, FDI database – table G) and the landings of the combination gear/vessel length (tonnes).

Country	EMU	GSA	Gear type	Vessel length	Baseline fishing days	Landings by fleet
ESP	1	1	GNS	<12m	3611	79.0
ESP	1	1	GNS	>=12 and <18m	88	4.8
ESP	1	1	GTN	<12m	1	1.1
ESP	1	1	GTN	>=12 and <18m	126	6.4
ESP	1	1	GTR	<12m	8168	437.8
ESP	1	1	GTR	>=12 and <18m	448	65.2
ESP	1	1	GTR	>=18 and <24m	5	0.0
ESP	1	1	LLS	<12m	1374	16.7
ESP	1	1	LLS	>=12 and <18m	299	36.9
ESP	1	1	LLS	>=18 and <24m	2	0.4
ESP	1	2	GTR	>=12 and <18m	84	10.9
ESP	1	2	LLS	>=12 and <18m	88	10.9

Country	EMU	GSA	Gear type	Vessel length	Baseline fishing days	Landings by fleet
ESP	1	5	GNS	<12m	3025	48.0
ESP	1	5	GNS	>=12 and <18m	3	0.1
ESP	1	5	GTR	<12m	9990	284.0
ESP	1	5	GTR	>=12 and <18m	2	0.2
ESP	1	5	LLS	<12m	1786	25.8
ESP	1	5	LLS	>=12 and <18m	20	4.3
ESP	1	5	LLS	>=18 and <24m	5	0.0
ESP	1	5	LLS	>24m	1	0.0
ESP	1	6	GNS	<12m	15605	101.5
ESP	1	6	GNS	>=12 and <18m	1581	104.4
ESP	1	6	GNS	>=18 and <24m	0	0.0
ESP	1	6	GNS	>24m	1	0.0
ESP	1	6	GTN	<12m	66	70.5
ESP	1	6	GTN	>=12 and <18m	14	0.3
ESP	1	6	GTR	<12m	32273	1452.3
ESP	1	6	GTR	>=12 and <18m	6076	317.4
ESP	1	6	GTR	>24m	2	0.0
ESP	1	6	LLS	<12m	6246	202.4
ESP	1	6	LLS	>=12 and <18m	1705	46.1
ESP	1	6	LLS	>=18 and <24m	22	0.0
ESP	1	6	LLS	>24m	18	0.0
ESP	1	7	LLS	<12m	3	3.1
ESP	1	7	LLS	>=12 and <18m	105	7.6
ESP	1	7	LLS	>=18 and <24m	38	0.0
FRA	1	7	GNS	<12m	28947	898.2
FRA	1	7	GNS	>=12 and <18m	223	1.7
FRA	1	7	GTN	<12m	4070	199.4
FRA	1	7	GTN	>=12 and <18m	3	0.0
FRA	1	7	GTR	<12m	35733	1206.0
FRA	1	7	GTR	>=12 and <18m	248	0.9
FRA	1	7	LLS	<12m	5471	0.0
FRA	1	7	LLS	>=12 and <18m	36	0.0
FRA	1	8	GNS	<12m	1886	25.5
FRA	1	8	GTN	<12m	351	4.0

Country	EMU	GSA	Gear type	Vessel length	Baseline fishing days	Landings by fleet
FRA	1	8	GTR	<12m	13343	158.1
FRA	1	8	LLS	<12m	1608	40.7
ITA	2	9	GNS	<12m	38787	1111.3
ITA	2	9	GNS	>=12 and <18m	2671	27.6
ITA	2	9	GTR	<12m	73596	1498.0
ITA	2	9	GTR	>=12 and <18m	1637	9.5
ITA	2	9	LLS	<12m	2088	924.1
ITA	2	9	LLS	>=12 and <18m	418	81.2
ITA	2	10	GNS	<12m	54867	0.7
ITA	2	10	GNS	>=12 and <18m	1501	305.0
ITA	2	10	GTR	<12m	105671	20.8
ITA	2	10	GTR	>=12 and <18m	1044	0.0
ITA	2	10	LLS	<12m	26544	958.3
ITA	2	10	LLS	>=12 and <18m	3616	45.6
ITA	2	10	LLS	>=18 and <24m	6	0.0
ITA	2	11	GNS	<12m	20338	88.0
ITA	2	11	GNS	>=12 and <18m	931	1.4
ITA	2	11	GNS	>=18 and <24m	1	16.4
ITA	2	11	GTR	<12m	54433	778.6
ITA	2	11	GTR	>=12 and <18m	4572	113.6
ITA	2	11	GTR	>=18 and <24m	18	1084.8
ITA	2	11	LLS	<12m	4549	55.8
ITA	2	11	LLS	>=12 and <18m	740	154.2
ITA	2	11	LLS	>=18 and <24m	2	105.5

STECF notes that in most cases both hake and red mullet are caught in small volumes by longliners and set netters, representing limited percentages of total catches (see details in STECF PLEN 21-03.

STECF Conclusions

STECF concludes that, in the absence of alternative data, a baseline in fishing days for longliners and netters based on the DCF data (reference period 2015-2017) could be calculated from the FDI database, but STECF underlines that other variables would be more relevant descriptors of the actual effective fishing effort of passive gears.

STECF was also requested to investigate the possibility to calculate a baseline in lengths of nets and/or number of hooks based on available data. However, STECF concludes that neither FDI nor

AER data include data on these metrics which are not compulsory to report in logbooks, and STECF was thus unable to perform such a calculation.

Further, STECF concludes that the estimation of soak time for longlines and set nets could help to better understand the gear behaviour and likely make the effort estimation much more precise. However, STECF does not know to what extent these data exist in national logbooks or whether they are routinely recorded by on board observer sampling catches. STECF suggests specific data collection programmes may be needed to gather this information, if not already routinely recorded.

References

McCluskey S.M., Lewison R. 2008. Quantifying fishing effort: a synthesis of current methods and their applications. Fish and Fisheries 9(2): 188-200.

6.8 REVIEW OF A NATIONAL MANAGEMENT PLAN FOR BOAT SEINES IN CERTAIN TERRITORIAL WATERS OF SPAIN (BALEARIC)

Background provided by the Commission

In November 2021, the Spanish Administration transmitted a scientific study, supporting elements and video data in relation to the derogation from Council Regulation (EC) No 1967/2006 as regards the minimum distance from the coast and the minimum sea depth for boat seines fishing for transparent and Ferrer's gobies (Aphia minuta and Pseudaphia ferreri) and Lowbody picarel (Spicara smaris) in certain territorial waters of Spain (Balearic Islands). STECF experts in Spring Plenary 2022 evaluated that information.

In January and June 2023, the Spanish Administration provided updated monitoring reports of the boat seine fisheries in certain territorial waters of Spain (Balearic). The current derogation will expire on 30 April 2023.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

Based on STECF assessment in spring 2022, the one in spring 2023 and on the additional supporting documents sent by Spain in June 2023, STECF is requested to review and make any appropriate comments and recommendations on the monitoring and reporting associated to the on-going management plan for the boat seine fisheries in Balearic waters and make recommendation for a new management plan.

In particular, STECF is requested to:

TOR 1. Advise and assess how the management plan could adequate elements in terms of:

1.1. The description of the fisheries

- Biological characteristics and state of the exploited resources with reference in particular to long-term yields.
- Description of the fishing pressure and measures to accomplish a sustainable exploitation of the main target stocks.
- Data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit-effort (or CPUE).
- If possible, catch composition in terms of size distribution.
- Information on the social and economic impact of the measures proposed.
- Potential impact of the fishing gear on the marine environment with particular interest on protected habitats (i.e., seagrass bed, coralligenous habitat and maërl bed);

1.2. Objectives, safeguards and conservation/technical measures

- Objectives that are consistent with the objectives set out in Article 2 and with the relevant provisions of Articles 6 of CFP Regulation and quantifiable targets, such as fishing mortality rates and total biomass.

- Objectives for conservation and technical measures to be taken in order to achieve the targets set out in Article 15 of Regulation (EU) No 1380/2013, and measures designed to avoid and reduce, as far as possible, unwanted catches.
- Measures proportionate to the objectives, the targets and the expected time frame.
- Safeguards to ensure that quantifiable targets are met, as well as remedial actions, where needed, including situations where the deteriorating quality of data or non-availability places the sustainability of the main stocks of the fishery at risk.
- Other conservation measures, in particular measures to gradually eliminate discards, taking into account the best available scientific advice or to minimise the negative impact of fishing on the ecosystem.

1.3. Other aspects:

- Quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan.

TOR 2. Evaluate whether the following conditions set by the MEDREG and Regulation (EU) 2019/1241 are fulfilled:

2.1 Derogation to the distance from the coast (Article 13 – Paragraphs 5, 9 and 10)

There are particular geographical constraints, such as the limited size of the continental shelf along the entire coastline:

- The fisheries have any significant impact on the marine environment.
- The fisheries involve a limited number of vessels and do not contain any increase in the fishing effort.
- The fisheries cannot be undertaken with another gear.
- The fisheries are subject to a management plan and carry out a monitoring of catches as requested in Article 23.
- The vessels concerned have a track record of more than 5 years.
- The fisheries do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets.
- The fisheries are regulated in order to ensure that catches of species mentioned in Annex IX of Regulation (EU) 2019/1241 with the exception of mollusc bivalves, are minimal.
- The fisheries do not target cephalopods.

2.2 Derogation to the minimum mesh size (Article 9, paragraph 7)

- The fisheries are highly selective and have a negligible effect on the marine environment; and
- The fisheries do not operate above seagrass beds of, in particular, Posidonia oceanica or other marine phanerogams.

Summary of the information provided to STECF

STECF received six supporting documents as listed below:

1) "INFORME DE LA PESCA CON ARTES DE TIRO TRADICIONAL EN AGUAS DE LAS ISLAS BALEARES - CAMPAÑA 2022-2023"

This report presents results from the monitoring of the boat seine fishery for transparent Ferrer's and Crystal gobies (*Aphia minuta*, *Pseudaphya ferreri* and *Crystallogobius linearis*) and the boat seine fishery for picarel (*Spicara smaris*) in certain territorial waters of Spain (Balearic Islands) during the 2022–2023 fishing season. STECF recalls that the reports for the 2019-2020 and 2020-2021 fishing seasons were examined previously by STECF PLEN 22-01 while the report for the 2021-2022 season was evaluated by PLEN 23-01. STECF also notes that the new (2022–2023) report is largely based on data from daily catch reports provided by the skippers of the vessels involved in the fishery.

2) "Anexo I: Estudio de los parámetros biológicos de crecimiento de la especie and Anexo II: Experimentos de supervivencia de la especie"

This document provides results for Picarel (*S. smaris*) growth rate analysis and the survival rate for Picarel and other two by-catch species caught with gerretera gear (*Trachurus mediterraneaus* and *Boops boops*) based on data gathered during the fishing season 2016-2017.

3) Anexo 3_Localizaciones fuera de la pradera.

A map showing positions of the hauls carried out outside Posidonia beds.

4) Anexo 4_Localizaciones dentro de la pradera.

A map showing positions of the hauls carried out over Posidonia beds.

5) DECRET 19/2019, DE 15 DE MARÇ, PEL QUAL S'ESTABLEIX EL PLA DE GESTIÓ PLURIINSULAR PER A LA PESCA AMB ARTS DE TIRADA TRADICIONALS EN AIGÜES DE LES ILLES BALEARS1

The Spanish Decree 2019 authorising the earlier version of the Management Plan.

6) Decret 15/2022 de 16 de maig, pel qual s'estableix un Pla de Gestió per a la Pesca Professional Artesanal a les Aigües Interiors de les Illes Pitiüses i es modifica el Decret 38/2018, de 16 de novembre, pel qual s'estableix la Reserva Marina de la Punta de sa Creu i s'hi regulen les activitats d'extracció de flora i fauna marina i les activitats subaquàtiques

The Spanish Decree 2022 authorising the current Management Plan

Of these documents, the first report ("INFORME DE LA PESCA CON ARTES DE TIRO TRADICIONAL EN AGUAS DE LAS ISLAS BALEARES - CAMPAÑA 2022-2023") is the most relevant and the information included is summarised below:

A. <u>Boat seine fishery for transparent and Ferrer's gobies (jonquillera)</u>

This fishery is carried out in Mallorca. The target species covered by the management plan are the gobiids *Aphia minuta* and *Pseudaphya ferreri* (target species), and two frequently associated species *Crystallogobius linearis* (Gobiidae) and *Gymnamodytes cicerellus* (Ammodytidae).

During 2022–2023, under the Management Plan, fishing was allowed from 15 December to 30 April. The number of authorised vessels was 27 and the number of authorised landing ports was 12. Catch limits (daily catch quotas) were set at 30 kg per vessel per day for *Aphia minuta* and 50 kg

per vessel per day for *Pseudaphya ferreri*. An annual quota of 20 tonnes was set for the fishery. Minimum average monthly catch/day/vessel threshold limits have also been set (estimated from the first quartile of the historical catch data and updated annually). These are shown in table 6.8.1.

Table 6.8.1: Minimum Average monthly catch/day/vessel thresholds for the 2022-2023 fishing season in kg/vessel/day

Month	**Monthly threshold - *A. minuta* + *P. ferreri* (Kg/vessel/day)**
December	15.29
January	22.39
February	23.31
March	20.31

STECF notes that in the 2022–2023 fishing season, average monthly catch/day/vessel were higher than the threshold values set except in January, when the minimum catch threshold was not reached (see Figure 4 in the Report provided).

STECF observes that the time series of fishing days (declared in the catch reports of vessel skippers) and the total number of vessels that landed the target species are presented graphically in the report. There was an increase in effort in term of fishing days compared to the 2021-2022 fishing season, with 55 more days registered. In 2022–2023, the total number of fishing days was 333. Only 11 out of 27 authorised vessels fished for gobies.

Regarding catches of the target species, STECF notes that data for the last five fishing seasons are presented. Typically, January and especially February are the months with highest yields. However, 2022-2023 was an exception, with February and March having the highest catches. For the entire fishing season, the total catch of the target species was 10,029 kg (8,274 kg *P. ferreri* and 1,755 kg *A. minuta*).

STECF notes that according to the information presented in Table 5 of the report the target species (*A. minuta* and *P. ferreri*) accounted for 90% of the total catches.

The authorised vessels declared 820 fishing hauls in total (with 27 hauls deemed as incomplete). The average yield per haul was 1.6 kg for *A. minuta* and 8.7 kg for *P. ferreri* respectively.

STECF notes that in the last season, more *A. minuta* were caught compared to the previous seasons. According to the information provided this is likely due to the lower temperatures in March. The catch of *P. ferreri* was also higher than in the previous season (up 5%), corresponding to increased effort, which also increased by around 5%.

STECF observes that in the 2022–2023 report, information is provided on the position and depth of the hauls (declared by the skippers). In the report, the positions of the 1,442 hauls have been superimposed on a map of *Posidonia* beds, and STECF notes that some of the fishing operations appear to be located over *Posidonia* beds.

The positions have been registered using a tracking recording system ("green box"). STECF observes that the data correspond to only three vessels, which were the only ones that had the

green box operating during the season. However, in the report provided by the Spanish Authorities, it is stated that the whole fleet should have a "green box" installed and operating by next year.

The contour of the Posidonia meadows is very irregular, and the boats look for the sandy bottom areas at the edges of the meadows. STECF notes that the distribution of the hauls shows tows are concentrated around the edges of the Posidonia meadows. Some 9% of fishing operations were performed over the Posidonia meadows (127 out of 1442). These hauls were all close to the edges of the meadows.

STECF notes that the boat seine fishing was not conducted in the Bays of Pollença and Alcúdia where interactions with *Posidonia* had been detected previously (*Decreto 19/2019, de 15 de marzo, por el que se establece el Plan de Gestión Pluriinsular para la Pesca con Artes de Tiro Tradicionales en aguas de las Illes Balears*). In the report it is stated that no boats carried out any hauls in the Bay of Alcúdia. However, the maps provided in the Annexes 3 and 4 do in fact show hauls located in this Bay.

STECF notes that some economic data is presented taken from the Fisheries Traceability System (TRAZAPES) of the Ministry of Agriculture, Fisheries and Food. The total revenues from the fishery (€183,082) were higher than the two previous years. Some discrepancies are still described in the report between the TRAZAPES platform (data from sale notes) and the data reported in the catch reports of skippers (e.g., only 89% of fishing trips are reported in the skippers' reports for *P.ferreri*).

STECF notes that monthly average prices and first sale revenues are also presented for the last five fishing seasons. The price of *A. minuta* fluctuated between €31/kg (in March and April) and €82/kg (in December), while for *P. ferreri,* prices ranged between €13/kg (in March) and €26/kg (in January)

B. Boat seines fishing for picarel (*Spicara smaris*)

STECF notes that the authorised boat seine fleet targeting picarel is based on the islands of Ibiza and Formentera. The fishing season is permitted from November to April but was delayed until December in the last season.

An annual quota of 30 tonnes has been set in recent years (800 kg/boat/week). Like the goby fishery, minimum average monthly catch/day/vessel threshold limits have been set, which, for the 2022-2023 period, are shown in Table 6.8.2.

Table 6.8.2: Average monthly catch/day/vessel thresholds for the 2022/2023 fishing season in kg/vessel/day

Month	**Average monthly CPUE threshold (kg/vessel/day)**	**Average monthly CPUE (kg/vessel/day)**
December	94.48	101.38
January	103.82	153.15
February	86.91	130.47
March	92.52	83.00
April	72.02	208.80

STECF notes that in the 2022-2023 season the CPUE threshold values was not reached in March, which resulted in a reduction of fishing effort of 4 days in the following month based on the management plan. Total fishing effort for the season was 118 fishing days with 3 boats participating in the fishery.

STECF notes that according to the data collected, a total of 14,126.25 kg of the target species was caught, with the highest catches in the month of February with 5,088.5 kg (see "INFORME DE LA PESCA CON ARTES DE TIRO TRADICIONAL EN AGUAS DE LAS ISLAS BALEARES - CAMPAÑA 2022-2023" - Table 12).

STECF notes that the most common discarded species were *Boops boops* and *Trachurus mediterraneus*. These two species represent about 8% of the total catches. Other commercial non-target species are *Zeus faber*, *Mullus surmuletus*, *Euthynnus alleteratus*, *Uranoscopus scaber, Pagellus erythrinus* and *Seriola dumerili*. The total amount of these species accounted for less than 1.5% of the total catches. Finally, about 0.25% was represented by Cephalopods.

STECF notes that no results are provided about the impact on the benthos and marine environment. Indeed, only a table listing the haul positions (in total 15) and the corresponding fishing days associated is provided in the report.

STECF notes that some limited economic data (revenues, prices) are reported concerning picarel caught in the Balearic Islands. Indeed, only the total income of €53,586.01 is reported.

STECF observes that fishing mortality estimates from a length assessment analysis (Lbar) are reported (F/M = 0.63). According to the report, this results a sustainable level of exploitation. However, STECF reiterates that this conclusion should be interpreted carefully given that the catches of bottom trawlers are not included in the analysis.

STECF comments

STECF notes that the data presented in the 2022 – 2023 report include information mainly gathered from the daily catch reports of skippers and the Fisheries Traceability System (TRAZAPES) platform of the Ministry of Agriculture, Fisheries and Food. Other than this, there is no new information provided.

STECF recalls (from STECF PLEN 23-01) that the current management plan (2019-2022) foresees onboard inspections to monitor fishing operations, assess the impact on the marine environment (presence of marine phanerogams, algae and other benthic organisms), and collect data on catches of target and non-target species as well as samples for biological analysis. No such onboard data has been presented in the 2022-2023 report (bycatches, discards, size compositions) particularly regarding species of Annex IX of the Mediterranean Regulation.

STECF observations on a new management plan

STECF acknowledges that the current derogations from the MEDREG expired on 30 April 2023. Therefore, an updated Management Plan (MP) is expected to be submitted by the Spanish authorities. Previous evaluations of the current MP (STECF PLENs 19-03, 20-01, 22-01, 23-01) focused on aspects such as:

- Monitoring of the plan, particularly with regard to bycatch of Annex IX species and discards.
- Effects of fishing operations on sensitive habitats such as *Posidonia* beds.
- Assessment of the status of target species; and

- Measures to restrict the fishing effort, such as the daily and annual catch quotas and the monthly CPUE thresholds.

Monitoring of the plan

STECF reiterates that all data should be consistently collected, analysed and reported in order to adequately monitor the effectiveness of the management plan. This includes catch of all species, size compositions, discards and socioeconomic data.

Impacts on Posidonia

STECF notes that the present report confirms that the gobiids boat seine fishery in Mallorca takes place very close to areas with *Posidonia oceanica* meadows (see Annexes 3 and 4 in the documents list submitted by Spain). There is provided evidence of hauls over Posidonia meadows (although shown to be taking place only at the edge) contrary to what is stated in the management plan. However, the maps provided are not a very high resolution (for example could be better having bigger maps zooming on each Bays) resulting very difficult to separate the hauls carried out over the Posidonia beds from the others in the same fishing areas. Therefore, the possible effects of the gobiid fishery on *Posidonia* continue to be a concern for the boat seine fisheries in the Balearic Islands. This has been highlighted previously by STECF PLEN 19-03, PLEN 20-01, PLEN 21-01 and PLEN 23-01. It is still not clear how many hauls are carried out on the edges or over the *Posidonia* meadows as the maps provided are not at a sufficient resolution to provide definitive evidence.

STECF also notes that in the report there is a statement regarding the monitoring of the interaction with *Posidonia*. STECF noted that according to the Spanish Authorities statement in the Report provided the self-declarations have proved unreliable, the Spanish authorities have committed to fitting all vessels with vessel monitoring systems ("green boxes"), which will provide accurate spatial information. The Spanish authorities have acknowledged that for future MPs, a monthly map of the positions will be made available to detect possible infringements and report to the Co-Management Commission.

STECF observes that, as a minimum, the degree of spatial overlap between the boat seine fishing grounds and areas covered by *Posidonia oceanica* should be estimated every time the plan is updated. This is needed to provide assurance that the provisions of article 4.5 of MEDREG are being satisfied. With the current information it is not possible to calculate the percentage of Posidonia beds impacted by the fishery.

Finally, STECF recalls that Article 1.2 of Decree 19/2019, of March 15th states: "*The scope of application of this Decree is the internal waters of the coast of the Balearic Islands, with the exception of the areas of the bays of Pollença and Alcúdia, where interaction with Posidonia was detected*". However, STECF notes that fishing operations in these areas still seems to have occurred during the 2022-2023 fishing season (Annexes 3 and 4).

Stock assessments

STECF notes that in the report, arguments against the use of surplus production models (ASPIC) are provided. According to the report such models are not considered appropriate for this fishery because they are most appropriate for species that are large, long-lived and much more independent of environmental fluctuations compared to the species involved in this fishery (Prager 2004). In the report, it is stated that the results obtained by Quetglas et al. (2016) in using ASPIC were clearly contradictory to the situation of the fishery in which effort is only decreasing. This assessment showed fishing mortality was seven times higher than FMSY, which the Spanish authorities argue is highly unlikely. Moreover, the analysis of historical data carried out in the

previous MP showed that correlation with environmental factors (e.g., Sea Surface Temperature) explained fishery performance better than effort or catches.

STECF notes that for Picarel, the report includes fishing mortality estimates (from a length assessment analysis L_{bar}). These should be considered with caution, especially as the species is also caught by other gears and fisheries (e.g., bottom trawling) and not just in this fishery.

STECF conclusions

STECF concludes that the report submitted by the Spanish authorities summarising the 2022-2023 MP fishing season does not provide any new information about onboard inspections to monitor fishing operations, assess the impact on the marine environment or collect data on catches of target and non-target species as well as samples for biological analysis.

STECF concludes that the lack of onboard observations is not in line with the MP which requires the deployment of onboard observers and port sampling to collect biological data from the fishery and monitor impacts on the marine environment.

STECF concludes that in updating the management plan a particular emphasis should be given to the onboard monitoring and reporting of catch and size compositions (catches of all species, discards, presence of marine phanerogams, algae and other benthic marine organisms, etc.). Currently information is provided from self-declarations rather than direct observations.

STECF concludes that the impact of the fishing activities on the *Posidonia* meadows can still not be evaluated. Further evidence supporting the impact of the boat seines on *Posidonia* beds (e.g., more detailed maps showing hauls position, evaluation in term of percentage of the area Posidonia beds impacted by the fishing activities, etc.) representative of the standard fishing operations should be collected in the next MP. The commitment to put in place vessel monitoring systems onboard all vessels in the fishery would be a positive step for monitoring impacts on Posidonia.

STECF concludes that in the next MP, improvements in the stock assessment evaluation for Picarel (*S. smaris*) including the trawlers catches and further analysis of the environmental effects on the gobiids population dynamics would be beneficial.

References

Prager, M. H. 2004. User's manual for ASPIC: a stock production model incorporating covariates (ver. 5) and auxiliary programs. NMFS Beaufort Laboratory Document BL-2004-01, 25pp

Quetglas A, Merino G, Ordines F, Guijarro B, Garau A, Grau A, Oliver P, Massutí E. 2016. Assessment and management of western Mediterranean small-scale fisheries. Ocean & Coastal Management 133: 95-104.

6.9 Withdrawn by DG MARE

6.10 JOINT RECOMMENDATION INLCUDING A MANAGEMENT PLAN FOR SARDINE FRY FISHERY IN ITALY (LIGURIA)

Background provided by the Commission

On 23 March 2023, the Italian Administration has expressed its intention to re-launch a traditional fishery carried out in the Italian waters of the Ligurian Sea (GSA 9) for boat seines targeting sardine fry As this is a new request of derogation from Regulation (EC) No 1967/2006 article 9/13 in terms of distance and minimum depth from the coast in the Ligurian Sea (GSA 09) as well as derogations from Reg. 2019/1241 Annex IX part. B "Mesh sizes" and the Minimum Conservation Reference Size (MCRS) for Sardina pilchardus, Italy, in the context of regionalization has subsequently submitted a Joint Recommendation on 14 June 2023 on the subject. A management plan supports the request for derogation.

Following Article 18 of Regulation (EU) n. 1380/2013, the Italian Member State is proposing a Joint Recommendation (JR) for a new Management plan on Sardine fry fisheries (Sardina pilchardus) in GSA 9 that applies only to Italian territorial waters and to the Italian fleet.

Italy, as the single Member State with a direct management interest in this fishery, developed the proposed Management plan that involves only the Liguria region. This type of fishing activities has a great historical and cultural value for the area. It represents a traditional fishing technique from which derives typical Ligurian products.

The procedure that led to the development of the proposed Management plan is described as follows. The Central Administration following the request from the Liguria Region received in 2020, applied the provisions set out in Article 25 of the Reg. (EU) n.1241/2019 "Scientific research" which provides, in par. (e) that the activities having this purpose have to be conducted by a maximum of 6 vessels and that the product of this fishery cannot be marketed.

Italy has communicated this intention to the European Commission and, following the designation by the regional administration, and the list of authorized vessels thereof in compliance with the provisions of the afore mentioned article of the TMR Regulation.

The Liguria Region, with the support of the partner scientific body, started this "Scientific research" activity in 2020, and the trial will end in 2023. The data deriving from this research activity made it possible to develop the management plan referred to in Annex A of the JR.

Italy involved in this process also the MEDAC which endorsed the management plan (ANNEX B - MEDAC Ref.:98/2023 advice on sardine fry fisheries GSA9). After the entry into force of the new Technical Measures Regulation (Regulation (EU) 2019/12419) Member States have the possibility to develop joint recommendations that can be used to amend certain regional baseline selectivity standards through the Commission empowerment to adopt delegated Acts on the basis of these joint recommendations. This permits the tailoring of detailed and technical rules so as to take into account regional specificities.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

In particular, STECF is requested to:

TOR 1. Advice and assess whether the new management plan (Annex A) for boat seines targeting sardine fry in the waters of GSA 9 (Ligurian Sea, Italy) complies with the conditions set out in Art 19 of MedReg, is aligned to the CFP and contain adequate elements in terms of:

1.1. The description of the fisheries

- Biological characteristics and state of the exploited resources with reference in particular to long-term yields.
- Description of the fishing pressure and measures to accomplish a sustainable exploitation of the main target stocks.
- Data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit-effort (or CPUE).
- Catch composition in terms of size distribution, with particular reference to the percentage of catches of species subject to minimum sizes in accordance with Annex IX of Regulation (EU) 2019/124113.
- Information on the social and economic impact of the measures proposed.
- Potential impact of the fishing gear on the marine environment with particular interest on protected habitats (i.e., seagrass bed, coralligenous habitat and maërl bed);

1.2. Objectives, safeguards and conservation/technical measures

- Objectives that are consistent with the objectives set out in Article 2 and with the relevant provisions of Articles 6 of CFP[14] Regulation and quantifiable targets, such as fishing mortality rates and total biomass.
- Objectives for conservation and technical measures to be taken in order to achieve the targets set out in Article 15 of Regulation (EU) No 1380/2013, and measures designed to avoid and reduce, as far as possible, unwanted catches.
- Measures proportionate to the objectives, the targets and the expected time frame.
- Safeguards to ensure that quantifiable targets are met, as well as remedial actions, where needed, including situations where the deteriorating quality of data or non-availability places the sustainability of the main stocks of the fishery at risk.
- Other conservation measures, in particular measures to gradually eliminate discards, taking into account the best available scientific advice or to minimise the negative impact of fishing on the ecosystem.

1.3. Other aspects

13 Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005

14 Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC.

- Quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan.

TOR 2. Evaluate whether the following conditions set by the MEDREG and by TMR (Regulation (EU) 2019/1241) are fulfilled:

2.1 Derogation to the distance from the coast (Article 13– Paragraphs 5 and 9)

- There are particular geographical constraints, such as the limited size of the continental shelf along the entire coastline.
- The fisheries have any significant impact on the marine environment.
- The fisheries involve a limited number of vessels and do not contain any increase in the fishing effort.
- The fisheries cannot be undertaken with another gear.
- The fisheries are subject to a management plan and carry out a monitoring of catches as requested in Article 23.
- The vessels concerned have a track record of more than 5 years.
- The fisheries do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets.
- The fisheries are regulated in order to ensure that catches of species mentioned in Annex IX of Regulation (EU) 2019/124115 with the exception of mollusk bivalves, are minimal.
- The fisheries do not target cephalopods.
- The fisheries do not operate above seagrass beds of, in particular, *Posidonia oceanica* or other marine phanerogams.

2.2 Derogation to Annex IX part. B "Mesh sizes" of Reg. 2019/1241:

The technical measures adopted in the Joint Recommendation, expressed by Italy in line with TMR Art 15(2), meet the conditions outlined in Art 15(4-5) of that regulation.

- The fisheries are highly selective and have a negligible effect on the marine environment; and
- The fisheries do not operate above seagrass beds of, in particular, Posidonia oceanica or other marine phanerogams.

2.3 Derogation to the Minimum Conservation Reference Size (MCRS) for *Sardina pilchardus* as reported in Annex IX (A) of Reg. (EU) n.1241/2019 and fulfillment of the two conditions listed in footnote 4 of Annex IX part A of TMR:

[15] Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005

- the existence of a national management plan *sensu* Art 19 of MedReg (covered by TOR 1) and

- ensuring that the stock of sardine is within safe biological limits.

Summary of the information provided to STECF

As outlined in the Background above, STECF received three documents:

"Joint Recommendation of the Italian Member State Management plan on Sardine fry fisheries in the Italian territorial water (GSA 9)"

with

Annex A: "Management plan for sardine (*Sardina pilchardus*) fry fishery with boat seines in Liguria (GSA 9)"

and

Annex B: "ANNEX B - MEDAC Ref.:98/2023 advice on sardine fry fisheries GSA 9"

The management plan contains detailed data and information covering the period when the sardine fry fishery was still allowed (up to and including 2010). It also contains information from after the closure of the fishery (from 2011 onwards). This consists of data collected through scientific surveys in 2012-2013 and 2020-2022 which are also analysed and presented (yields, by-catches, location of haul sites). Data from national and international projects of fisheries data collection (Data Collection Framework, DCF) and from previous published scientific papers are also included in the analysis.

A list of the data presented is given below:

- time series of sardine fry landing data (1995-2010).
- data on catches, yields, fisheries and by-catches of sardine fry from the 2010 official commercial fishing surveys and scientific surveys carried out in 2012-13 and 2020-22.
- official data on sardine landings from 1972 to 2021.
- official data from the MEDITS scientific survey from 1994 to 2021 and from the MEDIAS survey in 2009, 2011, 2014-2021.
- socio-economic data.
- data on the technical characteristics of sardine fry fishing boats.

The data has been exhaustively analysed by the Italian administration to describe the sardine fry fishery in Liguria (technical characteristics of the gear, fishing technique, fishing positions, fleet, effort, landings, CPUEs, bycatches, size distributions) and to provide assessments of the sardine stock in GSA 9 as well as socioeconomic evaluations of the sardine and sardine fry fisheries.

Finally, the management measures included in the plan, which would apply for 3 years (2024-2026) are also described in detail.

STECF comments in relation to each element outlined in the ToRs

TOR 1.1. The description of the fisheries

- *Biological characteristics and state of the exploited resources with reference in particular to long-term yields*

The biology of *Sardina pilchardus* is fully described for both the larval and adult stages (morphology, geographic and bathymetric distribution, habitat, reproduction, recruitment, diet, growth). The size of sardine fry exploited by commercial fisheries ranges from 10 to 40 mm total length (TL), most commonly from 25 to 35 mm TL.

In Liguria, adult sardines are caught with purse seines. Anchovy is the main target species intended for human consumption, whereas sardine is traditionally not targeted and is only exploited in periods when anchovy is scarce. For sardine fry, a specific gear called "sciabegotto" or "bianchettara" (boat seine) was used by small boats in coastal waters before the implementation of the MedReg.

The most recent assessment of the sardine stock in GSA 9 is presented from the final report of the Scientific Advisory Committee on Fisheries (SAC-GFCM) 2022 with data up to 2020 (SPiCT model). According to this assessment, F/Fmsy=0.19 and B/Bmsy=1.49. The stock has been recovering in recent years with biomass increasing above the sustainability reference point (B/Bmsy) from 2015 onwards. At the same time, fishing mortality (F) has dropped considerably from 2011 onwards with a concurrent decrease in catches.

In the management plan, an updated assessment is presented, using data up to 2021. A JABBA biomass dynamic model, which is a Bayesian State-Space Model, was applied with results very similar to the GFCM assessment mentioned above. According to the report provided, the B/Bmsy was 1.44, (CI: 0.76-2.26) and F/Fmsy was 0.23 (CI: 0.11-0.44).

The biomass dynamic model with a Schaefer production function was subsequently applied to predict the impact on the sardine stock in GSA 9 of a potential increase in catches. For forecasting purposes (2023 to 2027), six different scenarios were tested, with total allowable catch ranging from 1,000 tonnes to 6,000 tonnes. In 2021, the catch was 1,958 tonnes. The predicted median B/Bmsy value did not fall, under any of the scenarios, below 1; similarly, F/Fmsy did not rise, under any of the scenarios, above 1. However, the uncertainty values obtained for the predictions exceeded 1, both for B/Bmsy and for F/Fmsy. This did not happen when the scenarios were limited to a maximum catch of 3,000 tonnes, which is slightly above the maximum catch level recorded from 2016 to 2021 (i.e., 2019 = 2,773 tonnes).

Finally, in the management plan, all available length frequency, length-weight data as well as data from otolith readings were compiled and analysed to provide the best possible estimates of growth parameters and updated length-weight relationships. The objective was to apply an age-structured assessment model (a4a), and subsequently to use this model to develop forecasts for scenarios in which the catches of age class 0 ("bianchetto") would increase to attain the commercial quantities recorded before the closure of the sardine fry fishery in 2011. However, cohort consistency was lacking between ages, (i.e., cohort tracing based on age classes was not possible, for both the catch and the MEDITS data), and therefore, the sardine stock in GSA 9 could not be assessed by applying an age-structured model.

- *Description of the fishing pressure and measures to accomplish a sustainable exploitation of the main target stocks*

In the last official fishing season (2010), the Ligurian fleet with valid licenses to fish for sardine fry consisted of 70 boats; According to the MP currently, 59 of these fishing boats are still in operation in other fisheries (gillnets, longlines, trawls, surrounding nets - see Table 5.2.1.1 in p. 83). They are small boats with a mean length of 7 m, mean gross tonnage 1.7 and mean engine power 31.3 kW.

In the period 1995 to 2010, when the fishery was open, the mean annual percentage of active vessels (with at least one fishing trip during the fishing season) was 54%. The sardine fry fishery was practiced by all authorised boats over the 1995-2010 period (70 boats), although not on a continuous basis in all years. The number of fishing days per boat was highly variable during this period ranging from 1 to 73 days per season. The average number of fishing days per fishing season was 19.3 days/boat. The main fishing season (highest number of fishing days) occurred in February and March (when the highest catches were recorded).

- *Data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit-effort (or CPUE)*

In the period 1995-2010, data on landings recorded on catch reports were only available for the Genova and Savona districts. These landings accounted for >80% of vessels with a valid license for sardine fry fishing. Total sardine fry catches per season ranged from 811 kg to 8,274 kg in the district of Genova, with average yield equal to 5.1 kg/day/boat, whereas they ranged from 312 to 12,592 kg in the district of Savona, with average yield equal to 15.1 kg/day/boat. Overall, the combined time series (Genova+Savona) exhibited large interannual fluctuations in catches (and the number of fishing days per season) but with no detectable trends in average values during this 16 years period. The same is true for average annual CPUEs (kg/day/boat) (overall mean (1995-2010): 8.3 kg/day/boat).

In the last fishing season in 2010, scientific surveys were carried out through direct observation of daily landings and directly on-board fishing boats in four Ligurian fisheries (Sestri Levante, Loano, Alassio and Sanremo). This monitoring activity recorded 59 fishing days overall (476 hauls in total) over two months (15 February-15 April). Tts results are presented, including CPUEs expressed as kg/day/boat and catch/haul, and show that part of the variability in catch/day/boat is due to the number of hauls per day. The yield per haul (kg/haul) appears as a better abundance index than CPUE per day for this type of fishing.

The CPUEs recorded during the experimental surveys of 2012-2013 (17 fishing days, 4 hours per day) and 2020-2022 (208 fishing days, 4 hours of fishing) are also analysed and presented although it is argued in the MP that these CPUEs especially those of the 2020-2022 survey might be biased for several reasons (e.g., only 6 boats, few hours of fishing, the fishers could not sell their catch etc.) in comparison to the 2010 survey when the fishery was still open.

An analysis of by-catches is presented from the 2010 fishery, as well as from the 2012-2013 and 2020-2022 scientific surveys which was based on two approaches: (a) a quantitative approach, based mainly on the observations carried out by scientists on board, and (b) a qualitative approach, based on the analysis of logbooks and pictures taken by the fishers at the end of each haul, (i.e.,) when the codend was opened (only in the scientific surveys conducted in 2020-22).

From the qualitative survey, considering only the logbook records and the analysis of the pictures taken after each haul (2020-2022), 26 different by-catch species were identified (24 bony fishes and 2 Cnidaria) in 88 fishing days, out of a total of 208 days when at least one haul had been attempted. This implies that no bycatch was recorded in 58% of the observed hauls. The most frequently caught species were: Mediterranean horse mackerel (*Trachurus mediterraneus*), red mullet (*Mullus barbatus*), striped seabream (*Lithognatus mormyrus*) and anchovy (*Engraulis encrasicolus*). Among other species, individuals from the family Sparidae (i.e., *Pagelus erythrinus*, *Diplodus* spp., *Sarpa salpa*, *Pagellus acarne*, *Boops boops*) were caught sporadically.

The quantitative data from the onboard surveys are summarized in Table 6.10.1.

Table 6.10.1. Weight specific percentages of sardine fry catches and bycatches, separated into adults and juveniles, during onboard surveys (quantitative approach). Percentages of Annex IX species, separated into adults and juveniles, as well as cephalopods are also presented. This Table was made by STECF based on the data presented in the Management Plan.

0nboard survey	**N of trips**	**% sardine fry**	**% bycatch -adults**	**% bycatch - juveniles**	**Main bycatch species**	**Species of Annex IX - adults**	**Species of Annex IX - juveniles**	**Cephalopods**
2010	8	88.8	10.8	0.4	*Spicara maena*, *Aphia minuta*	*Trachurus mediterraneus* (**<0.01%**), *Mullus barbatus* (**<0.01%**), *Diplodus annularis* (**<0.01%**), *Engraulis encrasicolus* (**<0.01%**),	*Pagellus acarne* (**<0.01%**)	**<0.001%**
2012-2013	17	95.1	3.6	1.3	*Sarpa salpa*, Mugilidae, *Boops boops*, *Atherina boyeri*	*Trachurus mediterraneus* (**<0.01%**), *Mullus barbatus* (**<0.01%**), *Diplodus annularis* (**<0.01%**), *Engraulis encrasicolus* (**<0.01%**), *Sardina pilchardus* (**<0.01%**), *Pagellus acarne* (**<0.01%**)	*Engraulis encrasicolus* **(<0.01%**), *Lithognathus mormyrus* (**<0.01%**), *Pagellus acarne* (**<0.01%**)	**<0.001%**
2020-2022	15	89.9	9.4	0.7	*Mullus barbatus*, *Trachurus mediterraneaus*, *Engraulis encrasicolus Diplodus annularis*	*Trachurus mediterraneus* (**<0.02%**), *Mullus barbatus* (**<0.02%**), *Diplodus annularis* (**0.01%**), *Engraulis encrasicolus* (**0.01%**), *Sardina pilchardus* (**<0.01%**) *Diplodus sargus* (**<0.01%**), *Pagellus erythrinus* (**<0.01%**)	*Trachurus mediterraneus* (**0.01%**), *Engraulis encrasicolus* (**<0.01%**), *Lithognathus mormyrus* (**<0.01%**), *Pagellus acarne* (**<0.01%**),	**0%**

The average catch of sardine fry ranged from 89-95% and the bycatch of juvenile fish from 0.4 to 1.3%. The most frequently caught Annex IX species were *Trachurus mediterraneus*, *Mullus barbatus, Diplodus annularis* and *Engraulis encrasicolus* but in very low quantities. The catch of juveniles of Annex IX species was also very low (generally <0.01% for each species). The catches of cephalopods were negligible.

- *Catch composition in terms of size distribution, with particular reference to the percentage of catches of species subject to minimum sizes in accordance with Annex IX of Regulation (EU) 2019/1241[16].*

The length distributions of sardine fry are presented from the scientific surveys made in 2010, 2012-13 and 2020-22 and compared with literature data available from 1996-97. All information available shows that during the season (from January to April) the mean length of larvae increases, and an increasing number of cohorts can be distinguished in the length frequency distributions. The estimated length-weight relationship from the 2020-22 survey suggests that 1 kg of product (sardine fry) may contain, on average, more than 9,000 individuals in February and approximately 4,000 individuals in April.

Regarding bycatch of juveniles, the length-frequency distributions of the most represented species in terms of abundance, recorded during the on-board survey of 2012-2013, are presented.

- *Information on the social and economic impact of the measures proposed.*

There is economic information provided in the plan concerning both the adult and larval fisheries. Catches and revenues of the sardine purse-seine fisheries as well as price evolution of adult sardine (Euro/kg) are presented for the period 2003-2020. The sales price of adult sardines increased sharply from an average of €1/kg (2003-2019) to approximately €2.5/kg in 2020 when, due to the COVID pandemic, the catches of most fish species declined sharply.

Socioeconomic data are also presented for three seine netters in the Ligurian Sea for the period 2018-2019 (i.e., after the closure of the sardine fry fishery in 2011). Average daily revenues (fluctuating between €144 and €483) and ex-vessel prices (between €19.9 and €40.2/kg) from the sardine fry fishing in GSA 9 for the years 2004-2009 are provided in the MP. Estimates of daily and yearly revenues are also provided for the 2009 fishing season.

A survey was also conducted in 2020-22 using questionnaires (n=6) distributed to fishers who, in the past, were engaged in sardine fry fishing. The main findings of this survey indicate that the mean fishers' age is now higher than before the fishery closure (50% of them are over 60 years of age).

- *Potential impact of the fishing gear on the marine environment with particular interest on protected habitats (i.e., seagrass bed, coralligenous habitat and maërl bed);*

[16] Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005

In the Management Plan, the technical characteristics of the gear used in sardine fry fishery (the boat seine "sciabegotto" or "bianchettara") as well as the fishing technique are described in detail. There are several arguments in the text explaining that the gear and its operation have limited impacts on the marine environment:

… "*Buoyancy from the headrope allows the net to lift up to heights ranging from 7 and 10 m, thus skimming the seabed and avoiding mechanical digging. This prevents entanglement and, especially, entrapment of vegetal debris, which would require lengthy cleaning of the final commercial product.*"

… "*…an echo sounder is used to locate sardine fry schools: when the signal detects quantities estimated to be sufficient, the seine is deployed to surround the school. As a result of targeted search and of the special fishing method, catches are virtually monospecific.*"

… "*…areas known for being ideal for this type of fishing … (are) characterized by a special seabed topography (mainly shallow sandy seafloor) and by particular hydrodynamics, that allow huge quantities of sardine fry to accumulate.*"

… "*The whole fishing operation, from encircling to hauling of the codend, may last from 15 to 45 minutes, depending on the gear size and on the hauling method (by mechanical winch or manual). Such a tight schedule allows also non-target species (by-catches) to get on board alive and to be released apparently unharmed*."

In the management plan, georeferenced data of haul sites (latitude and longitude) collected during the scientific surveys of 2010, 2012-13 and 2020-22 (a total of 443 hauls) were used to produce maps showing fishing positions in relation to *Posidonia* beds and coralligenous habitats. According to the maps presented, most hauls were set outside the Posidonia meadows. However, the locations of some hauls are along the periphery of the mapped Posidonia meadows (e.g., in the area Genova – Camogli). It is stated that: "*This is because these limits are actually irregular, since seagrass beds are often fragmented and, along their edges, they frequently consist of a mosaic of living P. oceanica and dead matter.*"

Furthermore, it is stated that: "*The technical characteristics of the boat seine, which is designed to provide greater buoyancy to the net, are such that, even in the presence of marine phanerogams, the gear glides on or skims the tips of the seagrass. As outlined in the by-catch chapter, further evidence of this is the complete absence of species commonly found in benthic communities (crustaceans, echinoderms, sponges, gastropod molluscs)*".

TOR 1.2. Objectives, safeguards and conservation/technical measures

- *Objectives that are consistent with the objectives set out in Article 2 and with the relevant provisions of Articles 6 of CFP*[17] *Regulation and quantifiable targets, such as fishing mortality rates and total biomass*.

Two biological reference points are specified that will be used to trigger management actions, if needed:

[17] Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC.

1. A Limit Reference Point (LRP) for each fishing season, set at 5.8 kg/day/boat. This threshold value was defined based on the average annual CPUE values of the 1995-2010 period (when the fishery was still open). It represents the 40th percentile of the 1995-2010 average CPUE series. The 40th percentile was chosen as being a more precautionary limit compared to the 25th percentile already used in the past for the MP for the boat seine fishery targeting transparent goby (*Aphia minuta*) in GSA 9. The average CPUE (kg/day/boat) would be calculated at the end of February (only in the first year of implementation of the plan) and at the end of each fishing season ('short-term check').
2. The reference points B/Bmsy and F/Fmsy are set as targets for the sardine stock in GSA 9 and will be calculated at the end of the calendar year of each fishing season ('long-term check').

The plan also contains several other measures to control the fisheries:

- Fleet limitation: The overall number of boats involved in the sardine fry boat seine fishery should not exceed the number set out in the MP (n=59), as per the list provided in Annex I of the MP. This list was derived from the list of authorized boats fishing in 2010/2011. In the event of one or more authorized vessels ceasing fishing, they may be replaced, provided that the current capacity in terms of number of boats, gross tonnage (GT) and engine power (kW) as stated in Annex I does not increase.
- Gear use restrictions: During the sardine fry fishery, boats will be prohibited from keeping on board any gear other than the gear stated in the sardine fry fishing permit.
- Limitations of fishing capacity: Authorization for sardine fry boat seine fishery will be granted exclusively to boats with gross tonnage <5 GT and engine power <100 kW.
- Limitation of the fishing season: Sardine fry boat seine fishery may be conducted exclusively from 15 January to 31 March each year (excluding public holidays and the days before). The maximum number of trips shall be 40 days per boat per season.
- Limitation of fishing hours: The authorised boats may fish exclusively during daytime, from sunrise to sunset. Fishing shall be prohibited during nighttime and with light fishing attractors.
- Limitation of daily catches: The authorised boats will be allowed to catch a maximum daily quantity of 30 kg/boat.
- Prohibition of catching transparent goby: Catching, retaining on board and landing of transparent goby (*Aphia minuta*) shall be prohibited.
- Restrictions on fishing gear size: The length of the net (head rope length) shall not be greater than 400 m and shall be rigged with positive buoyancy, so as to prevent or minimize impact with the seabed.
- Restrictions on mesh size: The minimum mesh size shall not be smaller than 3 mm.
- Restrictions on fishery area: Boats may fish within 3 miles from the coastline of the maritime district they are registered in and of the neighbouring districts, limited to those within the Maritime Directorate they are registered in.

- *Objectives for conservation and technical measures to be taken in order to achieve the targets set out in Article 15 of Regulation (EU) No 1380/2013, and measures designed to avoid and reduce, as far as possible, unwanted catches*.

There are restrictions on by-catches and non-target species. According to the plan, "*any by-catches that may be retained on board and subsequently landed shall not exceed 10% in weight of sardine fry catches and shall be recorded in the logbook. Any other by-catches of juveniles of other species and of individuals caught live and unharmed shall be released. Spot checks will be carried out to verify the species found in by-catches*".

- *Measures proportionate to the objectives, the targets and the expected time frame.*

According to the Plan, the reference points mentioned above (CPUE threshold for sardine fry and biomass and fishing mortality targets for the adult stock) will be used to take actions if the status of the sardine fry and/or the sardine adult stock is deteriorating.

- *Safeguards to ensure that quantifiable targets are met, as well as remedial actions, where needed, including situations where the deteriorating quality of data or non-availability places the sustainability of the main stocks of the fishery at risk.*

The following corrective measures are described in the Management Plan:

- In the first year if the mean monthly CPUE (end of February) falls below the LRP, (i.e., below 5.8 kg/day/boat), "*corrective management measures will be implemented to correct the number of total/weekly fishing days or, alternatively, the fishing hours*".
- If the mean annual CPUE falls below the LRP, (i.e., below 5.8 kg/day/boat for two consecutive fishing seasons), "*corrective management measures will be implemented before the start of the following fishing season, such as the reduction of the fishing effort in terms of length of the season (total number of days) or of fishing hours*".
- The same corrective management measures will be implemented if the B/Bmsy and F/Fmsy targets for the sardine stock in GSA 9 are not satisfied.

Suspension of the sardine fry fishery

- If the mean annual CPUE is not above the limit reference point for three consecutive years, sardine fry fishing will be suspended for an entire fishing season.
- If the B/Bmsy and F/Fmsy targets for the adult sardine stock are not satisfied for two consecutive years, sardine fry fishing will be suspended for an entire fishing season.

- *Other conservation measures, in particular measures to gradually eliminate discards, taking into account the best available scientific advice or to minimise the negative impact of fishing on the ecosystem.*

According to the plan, the sardine fry fishery will be prohibited above protected habitats (marine phanerogams) including above *Posidonia oceanica* meadows.

TOR 1.3. Other aspects

- Quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan.

It is stated that assessment of stock levels and fishery management shall be carried out in such a way as to enable timely intervention via appropriate "corrective measures" whenever the CPUE falls below the Reference Points.

An extensive monitoring program is foreseen including biological sampling of both juveniles and adults, onboard sampling, daily recording of catches and haul positions by the skippers. This data will be sent in real time to the authorities responsible for the monitoring, through an electronic sampling system (mobile application for Android and iOS) that will be developed.

TOR 2.1 Derogation to the distance from the coast (Article 13– Paragraphs 5 and 9)

- *There are particular geographical constraints, such as the limited size of the continental shelf along the entire coastline.*

As explained in the plan, the continental shelf is narrow, particularly in the Central-Western Ligurian Sea, and this fishing technique is carried out within a short distance from the coast (10-100 m), where the sardine fry is more concentrated during the winter season.

- *The fisheries have any significant impact on the marine environment.*

According to the information provided, the fishery is very selective and the bycatch of juveniles of other fish species is very low. It is argued that the gear has a high buoyancy and that the gear operation above *Posidonia* beds, if that ever happens, may only skim but not damage the *Posidonia*. The information provided (e.g., maps) also shows negligible overlapping between fishing operation and Posidonia beds.

- *The fisheries involve a limited number of vessels and do not contain any increase in the fishing effort.*

The number of boats to which the Management Plan applies is 59. These boats are derived from the list of authorized boats in the 2010 fishing season, the last time the fishery was open. According to the MP, the fishing capacity in terms of number of vessels, total GT and total KW will not increase.

- *The fisheries cannot be undertaken with another gear.*

The Plan states that the fisheries cannot be undertaken with another gear.

- *The fisheries are subject to a management plan and carry out a monitoring of catches as requested in Article 23*

The management plan is the subject of this evaluation and includes detailed monitoring measures as described.

- *The vessels concerned have a track record of more than 5 years.*

According to the information presented, it is not altogether clear whether all vessels meet this condition. The only information provided states that almost half of the fleet (70 vessels) was inactive in each fishing season. Additionally, during the last 13 years (with the exemption of the vessels that participated in the experimental fisheries - 6 vessels in 2020-2023), the vessels involved have participated in other fisheries.

- *The fisheries do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets.*

The plan indicates that the sardine fry fishery does not interfere with vessels using static gears due to the targeted nature of the fishery (using echosounders to locate sardine fry), the small dimensions of the seine nets used and the short durations of fishing operations.

- *The fisheries are regulated in order to ensure that catches of species mentioned in Annex IX of Regulation (EU) 2019/1241[18] with the exception of mollusk bivalves, are minimal.*

The Management Plan permits the landing of bycatch up to a limit of 10% of the corresponding catch of sardine fry. STECF notes the bycatch that can be landed most probably includes species of Annex IX (see Table 6.10.1). It is also stated that by-catch of juveniles of other species and of individuals caught alive and unharmed are to be released.

According to the information presented, the fishery is highly selective with bycatch generally lower than 10% and a very low catch of juveniles of other fish species.

- *The fisheries do not target cephalopods.*

According to the data presented from onboard surveys, the catch of cephalopods is negligible.

- *The fisheries do not operate above seagrass beds of, in particular, Posidonia oceanica or other marine phanerogams.*

According to the maps presented (location of 443 fishing hauls in relation to mapped Posidonia beds), the majority of fishing hauls have been carried out outside areas covered by Posidonia. However, in some areas (Genova – Camogli and Moneglia – Levanto), some individual hauls are shown to be located on the periphery of mapped *Posidonia* beds.

TOR 2.2 Derogation to Annex IX part. B "Mesh sizes" of Reg. 2019/1241:

- *The fisheries are highly selective and have a negligible effect on the marine environment.*

As mentioned above, according to the information presented, the fishery is highly selective, the catch of juveniles of other fish species is very low (see Table 6.10.1) and the effects on *Posidonia* and other sensitive habitats will be most likely limited.

TOR 2.3 Derogation to the Minimum Conservation Reference Size (MCRS)

- the existence of a national management plan *sensu* Art 19 of MedReg (covered by TOR 1) and

A Management Plan will be in place if the derogation is granted.

- ensuring that the stock of sardines is within safe biological limits.

According to the most recent assessments presented in the plan, the stock of sardines in GSA 9 is currently within safe biological limits. In addition, the MP foresees that the fry fishery should close for an entire fishing season if the sardine stock in GSA 9 is evaluated to be below Bmsy and/or above Fmsy for 2 consecutive years.

STECF comments

STECF acknowledges the effort made to collect and use all data available and exhaustively analyse them in order to provide the most up-to-date and complete information on the sardine fry fishery and support the proposal for a management plan and the request for derogations. STECF also notes

[18] Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005

the attempts made to introduce robust management measures into the plan as well as the introduction of reference points to manage the fishery.

STECF notes that, according to the information presented, the variability (regional, monthly and interannual) of CPUE values of the sardine fry fishery is very high and depends on various factors. These are not necessarily related to the abundance of adult stock or the reproductive output in the current spawning season. Other factors, such as the number of hauls carried out on each fishing trip (in the case that catch/day/boat is used as CPUE) as well as the availability of the resource inside the traditional, coastal fishing areas of Liguria are also important. The latter depends heavily on meteorological and hydrodynamic factors that determine the advection of eggs and larvae and the formation of larval schools within these coastal fishing grounds.

STECF also notes that, in contrast to the transparent goby, which has a one-year life cycle, the CPUE of larval sardine cannot be considered to reflect the abundance of the population but rather the strength of upcoming recruitment. However, the sardine stock in GSA 9 has an extended distribution and presumably extended spawning grounds. The high or low concentration of larval schools locally in the traditional fishing grounds of Liguria may not necessarily be indicative of the strength of upcoming recruitment in the entire GSA 9.

STECF considers that while CPUE thresholds alone will not ensure that overexploitation of the population will be avoided, the proposed threshold of 5.8 kg/vessel/day would at least provide a basis for restricting catches. Furthermore, the MP includes the additional precautionary safeguard to close the larval fishery if the results from stock assessments indicate that B<Bmsy and F>Fmsy. Therefore, STECF considers that the proposed MP represents a pragmatic attempt to implement measures that will allow the larval sardine fishery to re-open. A further potential safeguard would be to introduce a total catch limit on the amount of larval sardines that may be taken in the fishing season. In the absence of any additional relevant data and information, STECF suggest that a suitable candidate limit could be placed close or around the average landings over the period 1995-2010 when the fishery was open (~6 tonnes), to maintain exploitation levels at the same levels as previously.

STECF notes that the annual catches of sardine fry over the last 16 years of authorised fishing (1995-2010) ranged from 1.1 tonnes to as much as 20.9 tonnes (page 54 of the MP). STECF also notes that the proposed combination of number of vessels and effort/catch restrictions (59 vessels × 40 days/boat/season × maximum daily catch 30 kg/boat) is not restrictive for the fishery, because it theoretically allows for a maximum of 70.8 tonnes of larvae to be extracted annually. STECF therefore considers that the implementation of a limit on the annual catch of sardine fry as mentioned above would be more precautionary.

STECF notes that the "corrective measures" to be taken in case the management targets are not satisfied for one or two consecutive years are not specified in the management plan. STECF considers that the exact management actions to be taken should be pre-defined and specified quantitatively by the MP, and not left to be decided once the situation deteriorates.

STECF notes that available assessments presented in the plan suggest that additional catches of sardine stock in GSA 9 could be envisaged. However, STECF reiterates its warning from STECF PLEN 20-02 that there is evidence across several sardine stocks (including Bay of Biscay, Catalan Sea, Gulf of Lions, Adriatic Sea, Sicilian channel) that recent climatic changes have had a negative impact on sardine growth, body condition and longevity with potential consequences on sardine population dynamics. Thus, any additional fishing pressure from the re-opening of the sardine fry fishery should be considered with caution. The range of uncertainties around the actual impact that a reopening of the fry fishery would create on the sustainability of the stock and on the achievement

of the Common Fisheries Policy objectives needs to be thoroughly investigated in the future, using, for example, quantitative management strategies evaluation.

STECF notes that, based on the information presented, the fishery is highly selective with bycatch generally lower than 10% and a very low catch of juveniles of other fish species, has negligible catches of cephalopods, cannot be carried put with other gears and does not interfere with other fisheries.

STECF notes that according to the information provided, the fishery is very selective and the bycatch of juveniles of other fish species are very low. It is argued that the gear has a high buoyancy and that when the gear is operated above *Posidonia* beds, it may only skim but not damage the *Posidonia*. STECF perceive these arguments to be sensible, suggesting that the gear is rigged to fish with minimal bottom contact; however, without detailed information and rigging diagrams, STECF cannot verify this.

STECF notes that, according to the maps presented, most hauls were set outside the Posidonia meadows. However, the locations of a small number of hauls are along the periphery of the mapped Posidonia meadows (e.g., in the area Genova – Camogli). Given no other information (e.g., video footage), STECF is unable to evaluate fully whether *Posidonia* meadows are affected and how, when fishing operations may happen over them. STECF notes that since observers were onboard during the scientific surveys, information on the presence of phanerogams (e.g., Posidonia leaves) in the catch, if any, should have been collected and presented. Nonetheless, STECF considers that the overlap of fishing sites with *Posidonia* meadows will most likely be low, but should be closely monitored, as foreseen in the MP.

STECF is unable to evaluate if all the 59 vessels concerned and which were authorized to fish before 2011, had practiced the fishery for more than 5 years, since, according to the information presented, almost half of the fleet was inactive in each fishing season. STECF also notes that during the last 13 years (with the exemption of the vessels that participated in the experimental fisheries - 6 vessels in 2020-2023), the fleet previously involved in the sardine fry fishery practiced other types of fishing.

STECF conclusions

STECF acknowledges the effort made to collect and use all data available and exhaustively analyse them to provide the most up-to-date and complete information on the sardine fry fishery and support the proposal for a management plan and the request for derogations.

STECF concludes the proposed MP for the management of the fishery for sardine fry represents a pragmatic and precautionary attempt to restrict the fishery for sardine fry which has been closed since 2011.

However, STECF concludes that the proposed combination of measures (number of vessels, daily vessel quotas, maximum number of days at sea per vessel per fishing season) is not restrictive for the fishery.

STECF concludes thus supplementing the MP with an annual limit on fry catches would provide an additional safeguard. A suitable candidate catch limit could be placed close or around the average landings over the period 1995-2010, when the fishery was open (~6 tonnes).

STECF considers that the exact management actions to be taken in case the management targets are not satisfied should be pre-defined and specified in a quantitative manner in the MP, and not left to be decided once the situation deteriorates.

6.11 REVIEW OF AN EXEMPTION FOR ATLANTIC HALIBUT

Background provided by the Commission

This Scheveningen Group proposed a joint recommendation (JR) containing measures for Atlantic halibut (*Hippoglossus hippoglossus*) during the spawning period in the Skagerrak and Kattegat, ICES division 3a, by amending Regulation (EU) 2019/1241 that establishes a framework for technical measures for the conservation of fisheries resources and the protection of marine ecosystems.

The stock of Atlantic halibut in the Northeast Atlantic is still not assessed by ICES, as it is considered to be depleted since several decades and does not show signs of recovery. However, this species still concentrates during the spawning season in the Skagerrak, which might indicate that spawning of the putative Skagerrak-Kattegat component still exists.

Management measures for Atlantic halibut have been discussed between EU and Norway in the consultations regarding the Skagerrak and Kattegat. In the 2023 Agreed Record of those consultations, the EU considered introducing an EU-level seasonal closure for this species.

Following those consultations and the scientific evidence provided in this JR, the Scheveningen Group recommends establishing a closed fishing season for Atlantic halibut in the Skagerrak and in the Swedish EEZ of the Kattegat, to apply for both commercial and recreational fisheries from 20 December to 31 March.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2302

Request to the STECF

STECF is requested to assess the present JR submitted by the Scheveningen Group.

Specifically, the STECF is requested to:

1. Comment on the appropriateness of the proposed closure spatially and temporally in protecting spawning halibut.
2. Comment on the potential combined effects of this EU-level seasonal closure and the existent Norway prohibition to fish halibut during the spawning season, in terms of protection of the species.

Summary of the information provided to STECF

STECF was provided with a Joint Recommendation from the Scheveningen Group concerning regional technical measures for Atlantic halibut in Skagerrak and Kattegat (27 June 2023). Two supporting Annexes were also provided.

Annex 1. Belgrano, A., Cardinale, M., Lövgren, J., Sköld, M., Michalsen, K. Proposal for the protection of the Atlantic Halibut (*Hippoglossus hippoglossus*) stock in the Skagerrak. A Joint Memorandum by the Institute of Marine Research, Swedish Board of Fisheries and the Institute of Marine Research, Norway. 2010, updated 2014.

Annex 2. Cardinale, M., Sköld, M., Hjelm, J., Wikström, K. 2022. Atlantic Halibut (*Hippoglossus hippoglossus*) in the Skagerrak and Kattegat. Department of aquatic resourses (SLU Aqua) Institute of Marine Research, Sweden.

The Joint Memorandum from 2010/2014 (Annex 1), provides an overview of general knowledge on Atlantic halibut ecology. This includes information on tagging experiments which provide insights on the distribution pattern and spawning behaviour. Information on the state of the stock, based on long-term catch data is also provided. The document details the relevant halibut fisheries by Sweden, Norway and Denmark in ICES Division 3a and management measures at national and international level in place at the time of the document. Additionally, the Memorandum includes a proposal for a ban on fishing for Atlantic Halibut and a seasonal closure (20th December to 31st March) to all fisheries catching Atlantic Halibut in areas where the species are known to aggregate to spawn. The proposed areas for the ban were at the depths between 200 – 400 m of the slopes of the Norwegian Deep in the Skagerrak.

Annex 2 (an advice memorandum by the Institute of Marine Research of the Department of Aquatic Resources of the Swedish University of Agricultural Sciences (SLU Aqua), is essentially an update of Annex 1 that summarises the developments in the Atlantic halibut fishery in the Skagerrak/Kattegat area. The document also includes an updated proposal to put in place a ban on all fishing for halibut until new information is available. The proposal recommends that all by-caught Atlantic halibut should be immediately released at sea, and all fisheries (bottom trawls >90 mm and 35 mm shrimp trawls with grid and tunnel) able to catch Atlantic halibut should be prohibited from 20th December to 31st March in the same putative spawning area as suggested in Annex 1 for the years 2010 and 2014. The Joint Recommendation clarifies that this proposal in Annex 2 is not related to the closure proposed in the JR and therefore was not considered by the STECF.

STECF comments

General Comments

STECF observes that Atlantic halibut is classified as an endangered species and is included in Red List of Threatened Species by the IUCN. According to the IUCN guidelines, "*Any species listed under these categories is considered highly vulnerable and under risk of total extinction in the wild and should therefore be protected*".

STECF notes that only limited information on the stock status of Atlantic halibut and its developments is available since the stock is not assessed by the ICES, with no specific management measures in place at Union level.

STECF observes that based on the evidence provided such as landing information stretching back to the 1700s, the stock of Atlantic halibut has declined substantially during the last century and has been regarded as depleted for some time. Cardinale et. al., 2014 reported that reconstructed catch per unit of effort data from the Swedish longline fisheries from 1859 to 1962 indicate that the stock has probably declined by more than 90% from the end of the 1800s to the period just after the WWII.

STECF agrees with the general perception that Atlantic halibut in the area is depleted or at historical lows. Therefore, there would seem a critical need to reduce the fishing mortality of halibut and to consider management measures to restore the stock. As halibut is a non-quota species, STECF considers that other measures directed towards maintaining/increasing the reproductive potential of the stock by protecting the spawning stock, at least during the peak of the spawning period, are important.

STECF observes from the evidence provided in the Annexes to the Joint Recommendation, higher catches of halibut are reported during the spawning season, suggesting the presence of spawning aggregations of Atlantic halibut and confirms the relevance of the Division 3a as a putative reproduction area.

STECF notes that Annex 2 links the increased catches during the spawning season in recent years to targeted fishing operations on local spawning aggregations by some vessels.

STECF further observes that tagging experiments along the coast of Norway have shown that Atlantic Halibut is very territorial and that migrations are rare (Michalsen & Høines 2009). The experiments also demonstrated that mature Atlantic Halibut return to the same spawning site over repeated spawning seasons (Jakupsstovu and Haug, 1988), suggesting the existence of genetically distinct populations within the distribution area (McCraken, 1958). If this is the case, extensive fishing in a specific area is likely to have large effects on the population structure for that local population. Improved knowledge on the seasonal halibut distribution and population structure is critical for a reliable understanding of stock status and for monitoring the effectiveness of future management of this species. Without a reliable assessment of the stock status it will be difficult to understand whether the management measures are working or not.

Comments on the appropriateness of the proposed closure spatially and temporally in protecting spawning halibut.

STECF observes that the first record of the occurrence of Atlantic Halibut larvae in the deep-water of the Skagerrak was reported in 1992 (Bergstad & Gordon 1993). Spawning occurs between December and March and in Norwegian coastal waters at a depth between 300-700 m with a temperature and salinity ranging respectively between 5-7 °C and 34.5-34.9 PSU (Haug 1990). Halibut eggs are planktonic and bathypelagic floating at depth ranging from 54 to 200 m (Blaxter et al. 1983). Spawning in Norwegian waters occur between December and March with peak season between January/February (Haug 1990).

STECF further observes on the basis of catch information that was made available with the Joint Recommendation, that the highest catches of mature halibut in the area have been reported within the putative spawning period and in the supposed spawning areas in the deeper parts of the Skagerrak (app. 200-400m).

The spatial analysis of Swedish VMS data of the fishing trips with halibut landings recorded in 2010, show that that the fishery took place around the border of the Swedish and Norwegian economic zone. Based on trawl set positions from Swedish logbooks, fishing grounds of Atlantic halibut were located around the Norwegian deep in the central Skagerrak in 2008 and 2009. The VMS information also reveals that the spatial distribution of mixed shrimp and fish fishery essentially overlaps with the main area of halibut catches. However, STECF notes that no information on bycatch of halibut in the shrimp and mixed fish fishery has been provided in the Annexes. STECF observes that allowing any by-catch on this severely depleted stock could have a deleterious effect on the ability of the stock to recover.

STECF observes that the recent trends in landings show no significant changes in the last decade. Atlantic halibut is still landed in the Skagerrak-Kattegat region mainly by Danish vessels (around 70%) and to a lesser extent by Norwegian and Swedish fleets in eastern Skagerrak area.

STECF observes that the Scheveningen Group recommends the introduction of a closed fishing season for Atlantic Halibut in the Skagerrak and in the Swedish EEZ of the Kattegat which is spatially and temporally coherent with the location of putative spawning area and the peak of the spawning period of that species in the Division 3a. Such a proposal is also in line with existing Norwegian and Swedish legislation.

STECF notes that the western part of the Kattegat (waters inside the Danish EEZ) is not included in the proposed seasonal closure area. In the absence of detailed information on the location of the Danish catches, and considering the preponderance of catches by Danish vessels, STECF cannot

assess whether limiting the closure to the Skagerrak and Swedish side of Kattegat would cover the full aggregation area of spawning halibut or whether the closure should be extended to the entire Division 3a.

Although STECF understands that the area is probably too shallow to contain suitable spawning habitats for halibut, STECF considers that the inclusion of this area could improve the overall effectiveness of the measure by reducing the risk of area misreporting.

STECF also notes that the supporting information provided is rather limited and notes that the spatial and catch information available in the Annexes to the Joint Recommendation originate mostly from the Swedish fishery. STECF therefore stresses that knowledge of relevant fisheries from all parties involved would allow a more comprehensive assessment of the potential effects of the proposed spatial/temporal management measure. STECF agrees with the conclusion of Annex 2 that data from all fisheries in the Skagerrak-Kattegat area catching Atlantic halibut over the last 15 years should be collated.

Comment on the potential combined effects of this EU-level seasonal closure and the existent Norway prohibition to fish halibut during the spawning season, in terms of protection of the species.

STECF observes that Sweden and Norway have taken steps to protect the spawning aggregations of the Atlantic Halibut in the Division 3a for a long time period. At present the national management measures are the following:

In Norway the regulation currently in place to protect Atlantic Halibut prohibits the marketing of fish less than 80 cm in length, and fishing is prohibited between 20th December to 31st March with the exception for longline in areas North of 62°N.

In Sweden, the prohibition to retain on board, land and market Atlantic halibut in the Skagerrak and Kattegat during the spawning season between 20th December to 31st March was adopted in 2010.

STECF observes that the proposed EU-level seasonal closure is coherent with measures currently in place in Norway and Sweden.

STECF is not in the position to fully assess the potential combined effect of the proposed EU-level closure in terms of protection of the species since the Scheveningen group's proposed seasonal closure covers the Skagerrak and only part of the Division 3aS (the Kattegat) (Swedish EEZ).

STECF notes that the proposal aims to coordinate the conservation measures by EU and Norway and considers that the proposal, if implemented would most likely enhance the protection of the Atlantic halibut stock.

STECF also considers that the proposal, if implemented will create a level playing field for vessels of all nationalities with access to the Skagerrak. A level playing field would reduce the incentive to misreport catches in transboundary fisheries which are common in the area.

STECF conclusions

STECF concludes that based on the information available, the stock of Atlantic Halibut has declined substantially during the last century and is now regarded as depleted.

STECF concludes that in an attempt to rebuild the stock there is an urgent need to reduce the fishing mortality through management measures and also put in place a reliable stock assessment to allow monitoring of whether the proposed measures are effective or not.

STECF concludes that the closed fishing season for Atlantic Halibut in the Skagerrak and in the Swedish EEZ of the Kattegat from 20th of December to 31st of March recommended by the Scheveningen Group is spatially and temporally coherent with the location of putative spawning area and covers the assumed peak of the spawning period of that species in the Division 3a.

STECF concludes in the absence of detailed information on the location of the Danish catches, and considering the preponderance of catches by Danish vessels, STECF cannot assess whether limiting the closure to the Skagerrak and only the Swedish side of Kattegat would cover the full aggregation area of spawning halibut or whether the closure should be extended to the entire 3a.

STECF concludes that albeit the western Kattegat is probably too shallow to contain suitable spawning habitats for halibut, the inclusion of this area could improve the overall effectiveness of the measure by reducing the risk of area misreporting.

STECF concludes that the proposed seasonal closure is coherent with the respective measures currently in place in Norway and Sweden. However, STECF is not in the position to fully assess the potential combined effects of the proposed EU-level closure in terms of protection of the species since the closed area proposed by Scheveningen group covers only part of the Division 3a (Swedish EEZ).

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7. ITEMS/DISCUSSION POINTS FOR PREPARATION OF EWGS AND OTHER STECF WORK

7.1 PREPARATION OF EWG 23-11: FISHING EFFORT REGIME FOR DEMERSAL FISHERIES IN THE WEST MED

Request to the STECF

STECF is requested to discuss the organisation of this EWG, clarify the workflow and discuss the draft ToRs. The discussion should be conducted having in mind the preparatory discussions conducted during STECF PLEN 22-03 and STECF PLEN 23-01 on the short- and long-term steps to secure best available scientific advice for the West Med MAP implementation.

STECF response

STECF has discussed the final TORs for EWG 23-11 which report the final scenarios that will be run during the EWG. Twelve scenarios are requested, which STECF considers a high number. Therefore, STECF considers priority scenarios should be identified. STECF PLEN 23-01 suggested that to the extent possible, single management measure scenarios could be performed.

Due to the high number of scenarios requested no additional scenarios will be added by STECF, therefore single management measures will be tested solely from 2023 onwards following the scenarios requested by DGMARE.

STECF notes that a table summarising socio-economic indicators has been requested by DG MARE. EWG 23-01 defined a list of indicators to be provided during EWG 23-11 and suggested a "traffic light" approach attributing a colour to each indicator value according to the lower and upper thresholds identified during EWG 23-01.

STECF notes that EWG 23-01 suggested that socio-economic indicators should be presented by country and by fleet segment to be meaningful, therefore it is recommended to use the table format developed by EWG 23-01.

STECF notes that STECF PLEN 23-01 (TOR 5.3) agreed to a road map for the economic assessment in a three-step process:

1. A scoping exercise with representatives of the Member States which took place during the EWG 23-01.
2. A meeting with stakeholders in the middle of 2023 to discuss their perception and experience of the socio-economic consequences of measures of the West Med Plan. This will help in the conditioning of the different models.
3. Carry out the socio-economic assessments during EWG 23-11 (see also ToR 7.5 of this report with the draft ToRs for EWG 23-11).

STECF notes that unfortunately step 2 cannot be done due to difficulties in coordinating with the representatives of the fishing industry through MEDAC. As an alternative, representatives of the fishing industry for each Member State might be invited to participate as observers to EWG 23-11 to be able to have their feedback on the EWG results. It should be noted though, that it will not be possible to consider the perception and experience of stakeholders with the West Med MAP, while

conditioning the models. However, follow up work in 2024 may be an option to integrate this type of information into the assessment of socio-economic impacts.

7.2 PREPARATION OF EWG 23-15: IMPLEMENTATION OF THE TECHNICAL MEASURES REGULATION

Request to the STECF

STECF is requested to discuss the organisation of this EWG, clarify the workflow and discuss the draft ToRs.

STECF comments

EWG 23-15 will build on the work, and findings, of EWG 21-07 and EWG 22-19. The work of EWG 23-15 will focus on the stocks identified in EWG 22-19 for which changes in technical measures can provide gains in terms of yield and protection of juveniles. EWG 23–15 will explore the application of bio-economic modelling to identify possible operational changes needed to realise the transition to higher yields. It will also identify the technical support required to assess at the regional level, the potential socio-economic implications of fisheries-based transition plans for improving yields.

EWG 23-15 will rely on the literature review produced as part of an ad hoc contract synthesising the current knowledge on the socio-economic implications of changes in technical measures. This review would provide context and support for the analysis to ensure meaningful conclusions can be drawn from the findings of the model applications in EWG 23-15. This ad hoc contract will be launched during September to report in advance of the EWG.

The experts invited to attend EWG 23-15 (economists, mixed fisheries stock assessors, modellers, and gear specialists) will, where possible, use the data provided by the contractors (the contractors will be invited to the EWG) to implement a number of test cases of fisheries-based transition plans to inform future research goals and advice needs. The literature review will also enable EWG 23-15 to put the model results into the broader context of the implementation of technical measures.

EWG 23-15 is considered a scoping meeting and should involve stakeholders particularly the Advisory Councils (ACs). The relevant ACs will be contacted and invited as observers to the EWG meeting. A dedicated session will be organised during the EWG to gather industry perspectives.

The findings from this EWG will feed into further additional technical measures expert working groups with longer term goals such as (but not limited too): 1) Explore how increased yields of hake (i.e., Atlantic northern hake stock) can be achieved, what long-term benefits and costs could be attained; 2) Identifying alternative pathways of gears changes to increase the size-selectivity of mixed fisheries and impacts of fishing gear diversification;3) Assess, for each sector, likely costs and benefits associated with the progressive changes over time.

For this reason, EWG 23-15 will discuss the direction of future work, additional data/tools, stakeholder engagement, and advice needs. The EWG will need to consider the socio-economic barriers and implications to implementing technical measures changes. The outcomes of EWG 23-15, and future technical measure expert working groups, aligns with ongoing work at ICES WGMXIFSH-Methodology (ICES 2023a), and in a number of national labs, where bio-economic models have been under production for some time, and are considered an important tool for future advice needs. This has been where the working group on mixed fisheries methodology have been progressing work on the development of bio-economic models for a number of years. As momentum in this field of research grows, end users of the ICES mixed fisheries advice have identified bio-economic models as an important tool to deal with future management needs (ICES 2023b).

It is planned to hold EWG 23-15 meeting remotely, however an in-person meeting would be preferable to ensure active engagement and collaboration among the very diverse skill set of experts who will attend. The draft ToRs were discussed at PLEN 23-02 with DG MARE and will be published on the meeting webpage once finalised.

References

ICES 2023a. Report of the Working Group on Methods on Fish Stock Assessments (WGMG).

ICES 2023b. Second scoping workshop on next generation of mixed fisheries advice (WKMIXFISH2). ICES Scientific Reports.

7.3 PREPARATION OF EWG 23-17: SOCIAL DATA IN EU FISHERIES

Request to the STECF

STECF is requested to discuss the organisation of this EWG, the organisation of any ad-hoc contracts, clarify the workflow and discuss the draft ToRs.

During the STECF PLEN 23-02, the STECF, JRC and DG MARE is requested to further solidify the way forward on the two possible options opted for presentation of social data. STECF notes that EWG 22-14 identified two possible options for the presentation of the social data currently collected in the frame of EUMAP table 9. The social variables could be presented in one single report dedicated to the social variables of the three sectors (fisheries, aquaculture, and processing) to be prepared once every three years, or in separate sections included in the Economic Reports for each sector (as is currently the case).

In both options, the presentation of social data could be delivered once every three years because, according to the EUMAP, social data should be collected every three years. STECF notes that for both options to present social data (as separate sections in the economic reports or in a standalone social report) additional input is required. If the approach of publishing social data in the AER is chosen, the structure of the social chapter and appropriate content in each of the economic reports should be further detailed, clarified and/or revised. If a standalone document is to be developed the social data call structure, data presentation, the format of the report and additional sources of data need to be developed further. STECF notes that while both options have their advantages and disadvantages in the longer term, the standalone option may be more appropriate over time as more social data can be collected and more social information can be provided together with the variables from EU-MAP Table 9.

STECF comments

STECF considers the draft ToRs of the ad hoc contract in support of EWG 23-17 to be finalised. These ad hoc contracts will deliver two further examples of the National Profiles – for Denmark and Spain. STECF notes that it would be preferable for two separate ad hoc contracts, one for each country rather than one single contract for completion of the National Profiles.

STECF considers the ToRs for the EWG 23-17 are appropriate. These should now be posted on the STECF meetings page before the EWG.

STECF notes that the work of EWG 23-17 hinges crucially on the timely and appropriate delivery of:

- The two additional National Profiles.
- The planned scoping exercise with policymakers and advisory bodies (including Advisory Councils) by DG MARE. This will scan for the questions that need to be answered with the data collected and help determine the specific policy relevance of individual concepts and indicators.
- The results of the online survey regarding implementation of article 17 of the CFP, transmitted to Member States in the summer of 2023.

STECF proposes the week starting October 16th as a candidate week for the EWG, provided all of the additional data and information can be made available prior to the meeting.

PLEN 23-01 discussed two possible options for presentation of social data - as a stand-alone tri-annual report or as part of the Annual Economic Report every three years. STECF suggests adopting the first option, given the extensive content, scope and complexity of the AER. Included the social data in the AER would it afford it lower visibility than when produced as a stand-alone report. In addition, dealing with this data in a separate meeting will likely accommodate a higher availability of social science expertise.

STECF notes that in order not to make the process of the required data call overly cumbersome, it is suggested to keep the call for the social data once every third year as part of the corresponding economic data calls.

7.4 CFP MONITORING

Request to the STECF

Presentation of the 2023 model-based indicators derived with the proposed new modelling framework implemented in the R-package JARA. Comparison with the results published in the CFP monitoring report STECF-adhoc-23-01, STECF-adhoc-22-01 and presented at PLEN-22-03. Presentation and discussion of model output diagnostics as mentioned in PLEN-22-03.

STECF comments

STECF recalls that currently the model-based indicators to assess the progress in achieving MSY objectives in line with the Common Fisheries Policy are based on a generalized linear mixed model (GLMM) as described in the most recent CFP monitoring protocol version (Jardim et al., 2019; EWG STECF-18-15). In 2022, the JRC presented an alternative approach based on a Bayesian State-Space Model (SSM, STECF-Adhoc-22-02) implemented in the R-package JARA (Winker et al., 2023). STECF PLEN 22-01 and PLEN 22-03 considered the Bayesian SSM approach and concluded that potentially this model could replace the GLMM approach due to several methodological improvements but suggested additional inter-seasonal work before its adoption.

The latest work presented at STECF PLEN 23-02 made a comparison between the GLMM and SSM approaches for the 2022 and 2023 model-based indicators (F/F_{MSY} and B/B_{2003} in the North-east Atlantic and in the Mediterranean and Black Seas) in terms of accuracy and historical retrospective trends. Following the suggestions made by STECF PLEN-22-03, sensitivity to the prior distributions, effects of predictions, effect of fixing one component of observation error variance and effect of time block options were also analysed and presented to the plenary. STECF acknowledges all the work done by JRC to complete all the additional tests suggested.

STECF reiterates the conclusions of PLEN 22-01 and PLEN 23-02 that the Bayesian SSM model represents an improvement regarding the ability to handle missing values and forecasting recent years and that it might suit better to the characteristics of the data derived from single-stock assessment models. However, STECF notes that the new methodology also entails changes in the underlying assumptions and thus, some of the current model settings need to be revised to be appropriate for the annual CFP monitoring exercise carried out.

Based on all the analyses presented, STECF has identified the following issues:

1) The fixed input observation variance (denoted as σ^2_{fix}) is set so to correspond to a CV of 5%. However, the model-based indicators have been shown to be dependent on this assumed value. A leave-one-out analysis for fixed input observation variance values ranging between 0.01 and 0.2 indicated that the lowest mean squared error (MSE) was obtained for a value of 0.1 (Table 7.4.1). This suggests that 0.1 could be more appropriate than the currently used 0.05 value. However, the number of iterations and the number of cases analysed (only F/F_{MSY} in the North-east Atlantic) were restricted by the computational time. STECF suggests these analyses are completed to select the best value for the fixed input observation variance parameter.

Table 7.4.1. Mean squared error (MSE) corresponding to different observation errors for the F/F_{MSY} indicator in the North-east Atlantic. The number of data subsets used in the leave-on-out analysis are given in the "Iterations" column.

Observation Error	Iterations	MSE
0.01	250	0.0818
0.05	250	0.0826
0.1	250	0.0796
0.2	250	0.0881

2) Many stock assessments in the Mediterranean and Black Seas do not extend back to the beginning of the time series in 2003. The Bayesian SSM allows to infer the individual stock trajectories for these years based on the overall trend of the corresponding time block at the cost of increasing the associated uncertainty. This uncertainty is then translated into a larger uncertainty of the CFP monitoring indicators, as shown for instance by the larger coefficient of variation of the F/F_{MSY} indicator in the Mediterranean and Black Seas from 2003 to 2009. While STECF considers the stock-trajectories inferred by the Bayesian SSM could be potentially used for the calculation of the CFP monitoring model-based indicators, for consistency with the current protocol, the missing values for these initial years should not be used.

3) In some instances, the stock assessment results are missing for the most recent year(s) of the CFP monitoring. This occurs more often in the Mediterranean and Black Seas where the GFCM assessment time frames are different from the ICES ones used for the North-east Atlantic. For the 2023 CFP monitoring, 1 stock in the North-east Atlantic lacked data for 2021, whereas 23 and 4 stocks in the Mediterranean and Black Seas lacked 1 year (2021) and 2 years (2020-2021) of data respectively. STECF considers that at present the Bayesian SSM should best be used to make inference one year ahead for each stock trajectory, because of the increase of uncertainty when inference years are added. Therefore, the model-based CFP monitoring indicators will continue to follow the current protocol, (*e.g.* in 2024 the indicators will be up to 2022 in the North East Atlantic and 2021 in the Mediterranean and Black Sea). STECF acknowledges the value of extending the monitoring of the CFP one more year in the Mediterranean and Black Seas, as it could provide valuable information for the implementation of the Western Mediterranean Multiannual Management Plan among others. This could be achieved, either by removing the few stocks with missing data for more than 1 year and then making inference for one year for the rest of the stocks or accepting making inference for more than one year. None of the options have been explored in detail, and STECF suggests them to be included as experimental indicators until they are fully tested, as done since STECF 19-04 for other exploratory indicators.

4) The presented accuracy analyses showed that the model-based indicators were closer to the nominal geometric mean than to the nominal median. STECF notes that this is an expected characteristic of the model-based indicators since they are computed as the geometric mean of the indicators from the individual stock trajectories. STECF suggests that the 2024 CFP monitoring exercise include some narrative explaining the relative effects on the indicators value of the change in methodology overall compared to the effects coming from the new dataset.

5) Sensitivity analyses to study the effect of the length of the time blocks (number of years) on the autocorrelated estimates showed that the model-based indicators did not change for values larger than 2. Therefore, STECF considers it adequate to continue using time blocks of 3 years for the F/F_{MSY} and 5 years for the B/B_{2003} indicators. This may need to be revisited in case a change in the trends is apparent in recent years' data.

6) One of the features of the Bayesian SSM approach is the ability to represent uncertainty. Given that the new model can be used to predict missing values and forecasting recent years, STECF recalls the importance of visualising the uncertainty associated to each model-based indicator and suggests the figures produced for the CFP monitoring include the corresponding confidence intervals.

STECF conclusions

STECF concludes that the Bayesian SSM model implemented in JARA could replace the GLMM for the 2024 CFP monitoring. This will require an updated protocol based on the Bayesian SSM approach to be presented to and approved by STECF PLEN-23-03. Further, to ensure the model transition does not affect the conclusions regarding the progress towards CFP objectives when the protocol is run on a new dataset, STECF suggests that the first year of application of the Bayesian SSM, the CFP model-based indicators are also computed and compared to the GLMM approach.

Finally, as previously noted by STECF PLEN 22-03, STECF emphasises that the model change has not been a straightforward decision to make. Beyond technical considerations, reflected by the extensive tests conducted, additional aspects like robustness, stability, or impact on the conclusions for the CFP monitoring have been considered. Therefore, the process has been longer than initially expected. STECF suggests the frequency of methodological changes should be kept to a minimum to ensure stability and facilitate interpretation of the CFP indicators.

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Winker, H., Sherley, R. and Pacoureau, N. 2023. JARA: Just Another Redlist Assessment. R package version 1.1.3.

7.5 PREPARATION OF EWG 23-12: STOCK ASSESSMENT IN THE ADRIATIC, IONIAN AND AEGEAN SEAS

Request to the STECF

STECF is requested to clarify the workflow of this EWG and discuss the draft ToRs. The discussion should be conducted with the aim to have final agreed ToRs for the EWG by the end of the PLEN 23-02 meeting, ready to be published on the STECF/EWG website.

Background provided by the Commission

STECF was provided with a draft of the proposed Terms of Reference for EWG 23-12 to discuss at STECF Bureau level.

STECF comments

STECF discussed the draft ToRs for EWG 23-12. These will be published on the registration page for EWG 23-12 once finalised.

STECF considers as fundamental the support of GFCM to access relevant stock objects, scripts and input data in due time. This would allow EWG 23-12 updating the benchmark assessments, as well as other assessments agreed at GFCM level.

8. CONTACT DETAILS OF STECF MEMBERS AND OTHER PARTICIPANTS

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