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SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES – 71st PLENARY REPORT (PLEN-22-03)

Edited by Dominic Rihan & Hendrik Doerner

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Joint Research Centre

Contact information

Name: STECF secretariat

Address: Unit D.02 Water and Marine Resources, Via Enrico Fermi 2749, 21027 Ispra VA, Italy

E-mail: jrc-stecf-secretariat@ec.europa.eu

Tel.: +39 0332 789343

EU Science Hub

https://ec.europa.eu/jrc

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CONTENTS

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 71st plenary from 14 to 18 November 2022

71st PLENARY REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-22-03)

14-18 November 2022

1. INTRODUCTION

The STECF hold its winter plenary on 14-18 November 2022 in the Centre Borschette, Brussels. The was the 2nd plenary meeting of the newly appointed STECF. The meeting was held as a hybrid meeting.

2. LIST OF PARTICIPANTS

The meeting was physically attended by 23 members of the STECF, one invited expert, and three JRC personnel. Seven STECF members and five JRC personell 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. The STECF members Lisa Borges, Andres Uriate and Nedo Vrgoc were unable to attend the meeting.

3. INFORMATION TO THE PLENARY

Ernesto Jardim did not participate in the discussions on TORs 5.4 and 5.5 due to a potential conflict of interest with his current employment. The details are contained in his Declaration of Interest Form.

Presentation on STECF

The STECF secretariat gave a presentation explaining STECF rules, its work program and procedures, declarations of interest DOIs, report publishing, data issues, and reimbursement procedures. It was highlighted that STECF members are appointed in their personal capacity, as independent experts, and that the STECF advice needs to continue to reflect this legal obligation. STECF members were asked to observe the revised Rules of Procedures of the group and give agreement.

4. STECF INITIATIVES

No STECF initiatives were discussed during the meeting.

5. ASSESSMENT OF STECF EWG REPORTS

5.1 EWG 22-08: Skates and rays management

Request to the STECF

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

Background provided by the Commission

Skates and rays are currently managed under five regional TACs. Each is a general skate and ray TAC including several species (SRX TAC). Historically, ICES has provided biennial catch advice for skates and rays at this very general level. Over the past ten years and more, ICES have been able to provide catch advice at the species level for more and more stocks and has several times advised that generic TACs are not effective management measures for skates and rays. However, there may be practical, legal, scientific or biological issues that complicate the translation of the single-stocks advice into the TAC setting.

The management of skates and rays has been subject to ongoing review and research, including requests to the STECF to evaluate possible changes to TAC setting and alternative management approaches (STECF 15-01, STECF 17-16 (EWG 17-10)).

For the 2021 EU-UK consultations, the EU proposed to maintain the current approach, whereby the mean change in advice across the single stocks is applied to reach a composite TAC figure for the SRX group for a given management area. The UK proposed a different approach, adding up the individual advised tonnages for the relevant management area.

The Parties agreed to work in the EU-UK Specialised Committee for Fisheries (SCF) to agree on a way forward and to consider the various options of translating the scientific advice into the group TAC setting (paragraph 5 (e) of the Written Record of fisheries consultations between the United Kingdom and the European Union For 2021 and 2022). Following a positive conclusion of this work, this should then provide the basis for the approach to calculate the SRX TAC in the annual consultations for 2023. The output of this work should help inform the Commission in its preparation of the engagement in the SCF.

As a second step, a more comprehensive discussion in the SCF should be held on alternative management approaches to the SRX group TAC. This should be coupled with an update of the application of the landing obligation and the possible use of the prohibited species list. The work should be based on the best available science, but also consider the broader management challenges, as well as socio-economic and internal quota allocation issues in the short term for EU member states and fishing fleets. The established EWG should carry out a number of tasks in this regard.

STECF general comments

The working group was held in Brussels, Belgium, 26-30 September 2022. The meeting was attended by 12 experts in total, including 2 STECF members and 1 JRC expert.

STECF considers that the EWG adequately addressed the TORs.

STECF comments

ToR 1 - Appropriateness of the current EU and UK approaches to set the TAC for skates and rays

STECF notes the differences between the two methods used by the EU and UK to set the TACs for skates and rays. When applying the UK method, the stock-specific catch advice is summed to derive the group TAC, whereas applying the EU method, the group TAC is derived from the mean proportional change in advised catch from one year to the next.

STECF notes that the UK and EU methods cannot be directly compared because the EU method is applied to the agreed TACs from the previous year, which are the result of negotiation and over time, may diverge from advised catches.

STECF notes that the EWG collated stock-specific landings data and ICES advice spanning 2016-2021 for skates and rays in the Greater North Sea, Celtic Seas, and Iberian waters ecoregions (the same regions used by the current skates and rays group TAC (SRX TAC)). This provided insights as to whether landings taken as part of the group TAC can be considered sustainable at the stock level. Differences between landings and advice in terms of relative values (landings divided by advice) as well as absolute values (landings minus advice) were presented in tables. In the analysis the rays and skates were also grouped according to species vulnerability and ICES stock category.

For the purpose of the analysis, the EWG defined "overexploited/overexploitation" as stock-specific landings exceeded the ICES advice, while "underexploited/under exploitation" meant stock-specific landings that fell below the ICES advice. STECF notes that the degree of over- or under-exploitation is variable among species, ecoregion, species vulnerability and ICES stock category. In particular, blonde ray as well as several stocks currently assessed by ICES using category 5 and 6 methods, are being overexploited as part of the group TAC. Especially in the Celtic Seas and Greater North Sea ecoregions, overexploitation of other category 5 and 6 stocks is observed.

STECF observes that the assumption of proportional exploitation that is explicitly made when using a group TAC, is unlikely to be valid because of the historical overexploitations demonstrated. It is therefore questionable whether a group TAC will deliver sustainable exploitation of the stocks concerned, regardless of the method used to derive them, because for some stocks the actual landings are not proportionate to the advice.

The EWG presented a simple, theoretical simulation reflecting different stock dynamics to demonstrate the suitability of the EU and UK methods for calculating group TACs. The simulation was run for three separate stocks with 1 category 3 and the other two category 5 and 6. Four scenarios were investigated as follows:

1. A 10% decrease in landings advice for the category 3 stock
2. A 10% increase in landings advice for the category 3 stock
3. The advice for the category 3 stock (A) remained unchanged, whilst a precautionary reduction (-20%) was applied to stocks B and C.
4. Same as case 3, but landings from stock B were 20 times bigger compared to its landings in the third case.

For each case, it was assumed that the landings from each stock during the two-year period following the advice year would be proportional to the landings prior to the advice year. The outcomes of each scenario are summarised in Table 5.1.1.

Table 5.1.1: Theoretical comparisons of the EC and UK methods for calculating group TACs for three separate stocks.

Case	Stock	ICES stock category	Landings year x	Advice year x+1	% advice change year x+1 vs year x	EU method	UK method
1	Stock A	Cat. 3	3000	2700	-10		
	Stock B	Cat.5-6	50	50	0		
	Stock C	Cat.5-6	50	50	0		
	TAC		3100			2997	2800
	% TAC change					-3.333	-9.677
2	Stock A	Cat. 3	3000	3300	10		
	Stock B	Cat.5-6	50	50	0		
	Stock C	Cat.5-6	50	50	0		
	TAC		3100			3203	3400
	% TAC change					3.333	9.677
3	Stock A	Cat. 3	3000	3000	0		
	Stock B	Cat.5-6	50	40	-20		
	Stock C	Cat.5-6	50	40	-20		
	TAC		3100			2687	3080
	% TAC change					-13.333	-0.645
4	Stock A	Cat. 3	3000	3000	0		
	Stock B	Cat.5-6	1000	800	-20		
	Stock C	Cat.5-6	50	40	-20		
	TAC		4050			3510	3840
	% TAC change					-13.333	-5.185

STECF notes that according to Table 5.1.1, the EU method results in an overall lower group TAC than the UK method when the larger stocks (category 3 stocks) show an increasing trend and vice versa when this stock shows a decrease (cases 1 and 2). The result of the EU method on the group TAC compared to the UK method is contrary to the need to apply a reduction or increase on the advised catch. It is applied irrespective of the individual stock sizes or the ICES stock category. Consequently, the precautionary reduction of 20% that is applied every few years for the smaller category 5-6 stocks are partly transferred to the category 3 stocks when category 2 and 3 stocks form part of the combined TAC. Therefore, in setting a group TAC for one category 3 stock and two category 5-6 stocks (case 3 and 4), the EU method will result in a lower TAC than the UK method, unless the previous advice for category 5-6 stocks amounted to more than twice that of the category 3 stock. Such a situation is unlikely in reality because category 3 stocks will usually be larger.

STECF notes that the EWG also presented a simple simulation for the Greater North Sea Ecoregion to provide further clarity on the EU and UK approaches and to demonstrate the variability associated with deriving separate group-TACs by ICES stock category.

Based on this simulation, STECF notes that in contrast to the EU method, the UK method accounts for the mismatch between TAC area and stock area by allocating a representative fraction of the advised tonnage based on the proportion of historic landings in each area. Stocks for which ICES does not provide advice (Rajidae, ICES category 6 stock), are considered by adding an average tonnage (based on recent landings) in the UK method, whereas in the EU method a -20% advice change is applied in the calculations as a precautionary measure.

STECF notes that the simulation results indicate that using the EU method, a split of the groups-TAC by ICES stock category will result in a continuous decline of the category 5 and 6 group TAC over time, because of the application of a -20% precautionary buffer. In addition, a group TAC of only category 3 stocks will fluctuate over time reflecting the average ICES advice change of those stocks.

Regarding the UK method, 3 methods of allocating the total Greater North Sea ecoregion advice to a specific TAC area (SRX/03A-C, SRX/2AC4-C, and SRX/07D) were considered: i) using a historical distribution of the TACs; ii) using an average distribution of the landings over the entire ecoregion or iii) using an average distribution of the landings within a specific TAC area. STECF notes the only difference between the second and the third method is the proportion used to allocate the Rajidae within the TAC area.

Overall, the UK method results in a more variable pattern for both category 3 and category 5 and 6 group-TACs. In the third method, the contribution of Rajidae within the specific TAC area is considered. The changes in advice over time for both category 3 and category 5 and 6 group TACs follow a more similar pattern compared to the second method. The first method seems more precautionary (delivers lower TACs) for category 5 and 6 stocks in TAC areas 3.a and 2a and 4 compared to the second method.

STECF agrees with the EWG conclusion that the potential alternative approach where TACs would be based on the advice for category 3 and category 5 and 6 groupings, is not a good alternative for setting the current group TACs.

In terms of the current approaches used, STECF observes that the EU method is less likely to deliver sustainable exploitation of skates and rays because in deriving a group TAC, differences in stock dynamics and productivity are not taken account. The EU method is also biased by being driven by previous TACs, which reflect both the methodology used and the outcome of negotiation. However, STECF agrees with the EWG that the EU method is straightforward to calculate. It can be consistently applied even with changes in the ICES stock or advice cycle and where large stocks are on the increase, this method is more precautionary for smaller stocks.

STECF observes that the UK methodology, which applies the ICES advice as directly as possible, is also relatively simple to calculate and is also closer to standard practices for setting group TACs (e.g., group TACs for *Nephrops* based on summing advice from different Functional Units). It follows the ICES stock advice more closely because it accounts for the mismatch between TAC area and stock area; and for vulnerable stocks with decreasing survey trends and associated decreasing catch advice, the advice translates directly to the resulting TAC.

STECF agrees with the EWG that while both methods have their pros and cons but neither approach is optimal for management of the exploitation of skates and rays.

ToR 2 - Appropriateness of single species sub-TACs

STECF notes the issues highlighted by the EWG related to the biology and exploitation of skates and rays that need to be considered when setting single-species TACs.

STECF observes the precautionary approach used by ICES for category 5 stocks, results in a decrease in single stock TACs over time. This highlights the need to improve quantitative single-stock advice in order to implement more appropriate TAC management. Such improvements need additional data to be routinely collected in order to fill existing data gaps so that appropriate quantitative assessments can be undertaken.

STECF notes the EWG explored the process and potential outcomes of setting an initial TAC for one stock based upon knowledge of another stock ("Robin Hood approach", ICES, 2020); or based on life-history traits (STECF 15-03, Zhou et al. (2012) and Le Quesne and Jennings (2012)). Undulate ray in the English Channel, was used as an example because landings from this stock were prohibited between 2009 and 2014 and a separate precautionary TAC was introduced from 2015 onwards. The analysis showed the robustness of the estimated catches corresponding to F_{MSY} simulated from life-history traits (natural mortality, intrinsic rate of population increase) for this stock.

STECF notes that applying the "Robin Hood approach", which uses the biomass indices and the length at maturity as a proxy for biological productivity should only be applied if both species are exploited at similar levels relative to their biological productivity proxies and biomass indices. The EWG demonstrated this using thornback ray to estimate the catches of undulate ray. An additional Robin Hood analysis where the landings of blonde ray were derived from the biomass indices and the length at maturity of thornback ray, resulted in lower landings compared to the actual recent landings of blonde ray. Therefore, STECF notes that the different species managed under a group TAC may not always be exploited at similar harvest rates relative to their biological productivities.

STECF observes that the methods to calculate a sub-TAC (separate share of the group TAC for several species) presented by the EWG are potentially useful for stocks that have been subject to protection (e.g., listed as a prohibited species) and require rebuilding. STECF considers that such an approach should be further explored to ascertain its utility and robustness before adopting as an approach for TAC setting.

ToR 3 - Possibility of developing bespoke management plans.

STECF notes that the EWG highlighted separate management objectives for skates and rays should be set out in the existing EU multiannual management plan (MAP) covering the North Sea, Western waters and Iberian waters. Currently, rays and skates are only referred to in these MAPs as by-catch stocks.

STECF agrees with the EWG that it would be appropriate to include some stocks of skates and rays in the MAP as target species, given they are caught in targeted fisheries. However, STECF notes their inclusion in the MAP would not provide an alternative to the current management by TACs and quotas. Essentially, the MAPs set the rules for setting TACs and the need to put in place remedial management measures when a stock falls below biological reference points.

ToR 4 - Progress made in underpinning the exemption to the landing obligation.

STECF observes that one of the items requested under ToR4 ('assessing catch data') was not addressed by the EWG. However, while not being requested, an overview of measures being taken by national Producer Organisations (PO) that are currently being applied was provided. STECF observes the added value of this overview is to inform alternative management measures for skates and rays that may have benefits for management going forward.

<u>Discard survival rates</u>

STECF notes that progress on survival estimates and methods for improving the avoidance, selectivity and survival has been made in relation to the Road Map of skates and rays, that was implemented in 2018 in the NWW, SWW and North Sea.

STECF notes the EWG presented useful tables summarising the studies and research projects regarding observed at vessel mortality (AVM), delayed mortality and indicators of the fish condition in continuation of the review carried out by EWG-17-10. The EWG noted that those

new studies confirm the existing estimates of AVM (0 to 25 % for most species and gears) and delayed mortality (20 to 60% for most species and gears).

STECF agrees that operational measures to increase overall discard survival should aim to reduce air exposure and sorting time as this significantly improves the condition of the fish and leads to lower AVM.

STECF observes that although progress has been made in providing survival information, it is acknowledged that it remains difficult to cover the large diversity in species, gear types and areas subject to the existing exemptions from the landing obligation. While it is useful to make a compilation of the new available information on survivability, it is unclear to STECF whether those studies are sufficiently representative of the range of species and gears to inform and assess requests for exemptions from the landing obligation. STECF emphasises the importance of the critical review framework that is developed by ICES WKMEDS and used by STECF (STECF-22-05) to assess discard survival studies.

STECF notes that the EWG suggested to prioritise discard survival analysis of species shown to be less resilient (e.g., cuckoo ray) and for which rather limited survival information is available. STECF observes that this is appropriate and notes that the Delegated Acts implementing the regional discard plans include a special condition in particular for cuckoo ray to submit additional discard survival information on an annual basis (Commission Delegated Regulation (EU) 2020/2014 and Commission Delegated Regulation (EU) 2020/2015).

SETCF agrees with the EWG that the use of large-scale tag and recapture experiments provides an alternative to traditional survival trials because such methods take account of the effects of predation, which is not accounted for using captive observations. However, such methods rely heavily on sufficient levels of recapture to be useful or alternatively the use of expensive satellite tags.

Methods for improving avoidance, selectivity and survival

STECF observes that although there are ongoing trials to improve avoidance and selectivity using technologies which could influence the particular sensory behaviour of skates and rays in and around fishing gear, limited progress to address this issue has been made since EWG-17-10 in 2017.

Additional management measures

STECF notes that the implementation of minimum landings sizes (MLS) is the measure most applied nationally by some Member States and the UK. These are mainly applied for economic/market purposes and the sizes themselves vary between countries.

STECF observes that the EWG suggested adjusting the MLS towards "length at 50% maturity (L50)". This would potentially help to reduce fishing mortality on juveniles. However, STECF notes that this is only true if the current MLS is less than the L50 for the species concerned. Such an adjustment should also be accompanied by a change in size-selectivity to avoid catching individuals below the MLS. However, STECF notes that improving the size selectivity for skates and rays in towed gear fisheries is very difficult because of their large, flattened body shape. Therefore, it is not clear what value such MLS adjustments have from a management perspective as all they are likely to achieve in practice is increased levels of unwanted catches that under the high survivability exemption can be discarded. Given survival rates for skates and rays are highly variable, it is possible that the implementation of MLS may increase unaccounted mortality of discarded skates and rays below MLS is because a a larger proportion smaller less resilient rays may die on release.

ToR 5 - Transparent criteria for the classification of prohibited species.

STECF agrees with the EWG that there is currently no transparent decision-making procedure on which to include or exclude species from the prohibited species list. This may account for the inconsistencies (including specific species-area combinations and species-gear combinations) between the lists in the Fishing Opportunities regulation and the Technical Measures Regulation (Regulation (EU) 2019/1241).

The EWG summarised the criteria used to classify prohibited species by relevant international conventions/treaties. STECF notes that the criteria used are quite diverse but that such information may be useful in identifying candidate criteria which could be used to classify species in need of protection.

STECF considers that the proposed decision tree proposed by the EWG represents a good starting point to set out a standardised approach to classify protected species in the future. The process outlined by the decision tree suggests a review of every proposed inclusion or exclusion by an independent scientific panel.

Socio-economic impacts

STECF observes that the social and economic impact of different skates and rays' management approaches could not be addressed by the EWG. STECF agrees that it would be important to assess the socio-economic impacts of radically changing the current management approach.

STECF conclusions

STECF concludes that in general, group TACs (SRX TACs) are not optimal for managing the exploitation of skates and rays. STECF concludes that setting single-stock TACs would be a more appropriate management measure than group TACs, particularly given the recent progress towards improved ICES advice for elasmobranch stocks.

STECF concludes that while the use of single-stock TACs is favoured, this may have severe practical implications and limitations to what is possible to implement. It may potentially create more choke species under the landing obligation and there is a risk to misallocate the stock specific TACs due to misidentification of the elasmobranch species.

STECF concludes that the current EU and UK methods for establishing group TACs have pros and cons. Both are relatively straightforward. However, the EU method is less likely to deliver sustainable exploitation of skates and rays because in deriving a group TAC, differences in stock dynamics and productivity are not taken account. The EU method is also biased by being driven by previous TACs, which reflect both the methodology used and the outcome of negotiation.

STECF concludes the UK methodology, applies the ICES advice as directly as possible and is also closer to standard practices for setting group TACs (e.g., setting a group TAC for *Nephrops* based on summing advice from different Functional Units). It follows the ICES stock advice more closely because it accounts for the mismatch between TAC area and stock area and thus may be more appropriate for setting a group TAC.

STECF concludes that the potential alternative approach where TACs would be based on the advice for category 3 and category 5 and 6 groupings, should not be implemented as an alternative for the current group TACs.

STECF concludes that the methods to calculate a sub-TAC (separate share of the group TAC for several species) presented by the EWG are potentially useful for stocks that have been subject to protection and are rebuilding. STECF considers that such an approach should be

further explored to ascertain its utility and robustness before the approach is adopted in TAC setting.

STECF agrees with the EWG that separate management objectives for skates and rays should be included in the existing EU multiannual management plan (MAP) but doing so, does not provide an alternative to the current management by TACs and quotas.

STECF concludes that while significant progress has been made on providing survival estimates for skates and rays to support a high survivability exemption from the landing obligation, large gaps still remain due to the large diversity in species, gear types and areas subject to the existing exemption. Gathering information on less resilient species such as cuckoo ray and exploring the use of other methods such as tag and recapture programmes to provide survival estimates should be prioritised.

STECF concludes that there is currently no transparent decision-making procedure on which to include or exclude species from the prohibited species list. STECF considers that the proposed decision tree proposed by the EWG represents a good starting point to set out a standardised approach to classify protected species in the future. The process outlined by the decision tree suggests a review of every proposed inclusion or exclusion by an independent scientific panel.

5.2 EWG 22-09: Stock assessments in the Western Mediterranean Sea 2022

Request to STECF

STECF is requested to review the report of the STECF Expert Working Group meeting, evaluate the findings and make any appropriate comments and recommendations, especially in regard with the recently adopted EWG 22-11 on the management measures for demersal fisheries in the western Mediterranean Sea.

STECF comments

EWG 22-09 met in hybrid format remotely, and in person in Arona, from 5th to 11th September 2022. The meeting was attended by 21 experts in total, including four STECF members and one JRC expert. One observer also attended the meeting. The objective of EWG 22-09 was to carry out demersal stock assessments and provide reference points and short-term forecast advice for stocks in the Western Mediterranean as defined in the EWG ToRs.

STECF acknowledges that the EWG has adequately addressed the ToRs. STECF notes that the EWG has carefully reviewed the quality of the assessments produced. From the overall stock list of 20 stocks, a total of 18 area/species combinations were evaluated this year (Table 5.2.1). For three of these assessments, models could not be found to provide acceptable forecasts and a biomass index-based advice is given for these stocks.

STECF notes that in 2021, two-year advice was given for two other stocks (i.e., striped red mullet in GSA 5 and Norway lobster in GSA 5). The rationale for this is explained in Section 5 of the EWG report.

STECF observes that the EWG carried out short term forecasts for the 15 accepted age-based assessments and calculated reference points for 12 of these. The remaining three assessed stocks are new assessments this year and they need further evaluation over time before reference points can be calculated.

Table 5.2.1 Summary of the work attempted and basis for advice in 2021 and 2022 assessments. a4a: an age-based assessment method; Index refers to the ICES Category 3 approach to advice for stocks without analytic assessment. * Indicates biomass reference points have been provided

Area	Species	Method 2021	Basis 2022
1_5_6_7	Hake	a4a	a4a*
1	Deep-water rose shrimp	Index 2020	a4a
5_6_7	Deep-water rose shrimp	Index 2020	a4a
1	Red Mullet	a4a	a4a*
5	Striped Red Mullet	Index 2021	Index 2021
6	Red Mullet	a4a	a4a*
7	Red Mullet	a4a	a4a*
5	Norway lobster	Index 2021	Index 2021
6	Norway lobster	a4a	a4a*
8-9-10-11	Hake	a4a	a4a*
8_9_10_11	Deep-water rose shrimp	a4a	a4a*
9	Red Mullet	a4a	a4a*
10	Red Mullet	a4a	Index 2022
9	Norway lobster	a4a	a4a*
11	Norway lobster	Index 2020	Index 2022
1_2	Blue and red shrimp	a4a	a4a*
5	Blue and red shrimp	Index 2020	a4a
6_7	Blue and red shrimp	a4a	a4a*
8_9_10_11	Blue and red shrimp	a4a	Index 2022
8_9_10_11	Giant red shrimp	a4a	a4a*

The main results are summarized in the bullet point list below and in Table 5.2.2. Overall, the assessments indicate that 13 out of the 15 stocks with quantitative advice are being overfished, 4 are being fished close or at F_{MSY}, and 2 are under-exploited. In addition, in 2021, out of the 13 overfished stocks, 8 are behind transition to reach F_{MSY} by 2025 and 5 are ahead of transition (Table 5.2.3).

- Hake in GSA 1_5_6_7: the biomass is stable. Catches should be reduced by at least 57% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is ahead of transition. Reference points are available and SSB in 2021 is estimated to be below BMSY, below B_{pa} and below B_{lim}.

- Deep-water rose shrimp in GSA 1: the biomass is increasing. Catches may be increased by no more than 181% to reach F_{MSY} in 2023. F is already below F_{MSY}. Biomass reference points are not available.

- Deep-water rose shrimp in GSA 5_6_7: the biomass is increasing. Catches may be increased by no more than 197% to reach F_{MSY} in 2023. F is already below F_{MSY}. Biomass reference points are not available.

- Red Mullet in GSA 1: the biomass is increasing. Catches should be reduced by at least 59% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in

2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and above B_{lim}.

- Striped Red Mullet in GSA 5: the biomass is declining. Catches may be increased by no more than 7% to reach F_{MSY} in 2023. Biomass reference points are not available.

- Red Mullet in GSA 6: the biomass is fluctuating. Catches should be reduced by at least 70% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and above B_{lim}.

- Red Mullet in GSA 7: the biomass is increasing. Catches should be reduced by at least 12% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is ahead of transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, above B_{pa} and above B_{lim}.

- Norway lobster in GSA 5: the biomass is declining. Catches should be reduced by at least 30% to reach F_{MSY} in 2023. Reference points are not available.

- Norway lobster in GSA 6: the biomass is declining. Catches should be reduced by at least 83% to reach F_{MSY} in 2023. F_{2021} is < F_{MSY} Transition so progress to F_{MSY} in 2025 is ahead of transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and below B_{lim}.

- Hake in GSA 8-9-10-11: the biomass is increasing. Catches should be reduced by at least 78% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and below B_{lim}.

- Deep-water rose shrimp in GSA 8_9_10_11: the biomass is declining. Catches should be reduced by at least 18% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be above B_{MSY}, above B_{pa} and above B_{lim}.

- Red Mullet in GSA 9: the biomass is increasing. Catches may be increased by no more than 15% to reach F_{MSY} in 2023. F_{2021} is < F_{MSY} Transition so progress to F_{MSY} in 2025 is ahead of transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, above B_{pa} and above B_{lim}.

- Red Mullet in GSA 10: the biomass is increasing. Catches may be increased by no more than 8% to reach F_{MSY} in 2023. Reference points are not available.

- Norway lobster in GSA 9: the biomass is increasing. Catches should be reduced by at least 91% to reach F_{MSY} in 2023. F_{2021} is < F_{MSY} Transition so progress to F_{MSY} in 2025 is ahead of transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and above B_{lim}.

- Norway lobster in GSA 11: the biomass is low fluctuating. Catches should be reduced by at least 27% to reach F_{MSY} in 2023. Reference points are not available.

- Blue and red shrimp in GSA 1_2: the biomass is declining. Catches should be reduced by at least 56% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and below B_{lim}.

- Blue and red shrimp in GSA 5: the biomass is declining. Catches should be reduced by at least 53% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are not available.

- Blue and red shrimp in GSA 6_7: the biomass is increasing. Catches should be reduced by at least 50% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, below B_{pa} and above B_{lim}.

- Blue and red shrimp in GSA 8_9_10_11: the biomass is fluctuating. Catches should be reduced by at least 30% to reach F_{MSY} in 2023. Reference points are not available.

- Giant red shrimp in GSA 8_9_10_11: the biomass is declining. Catches should be reduced by at least 27% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2025 is behind transition. Reference points are available and SSB in 2021 is estimated to be below B_{MSY}, above B_{pa} and above B_{lim}.

Table 5.2.2 Summary of advice and stock status from EWG 22-09 by area and species based on FMSY target for F2023. Stock status is provided as change in Biomass and F from 2019 to 2021 and where reference points are available status above or below Bmsy, Bpa and Blim. (Reference point definitions and calculations are reported in Sections 4 and 6 of the EWG report respectively) Fishing mortality (F) 2021 is estimated F in the assessment. Where SSB at the start of 2023 is estimated to be below Bpa target F in 2023 is a reduced F (Section 4 of the EWG). Catch in 2023 is based on FMSY or reduced F whichever is lower. Change in F is the difference (%) between target F (FMSY) in 2023 and the estimated F for 2021. Change in catch is the difference (%) between catch 2021 and catch 2023. Biomass and catch 2019-2021 are given as an indication of trends over the last 3 years for stocks with time series analytical assessments or biomass indices. Shaded cells are index based.

Area	Species	Method / Basis	Age Fbar	Biomass 2019-2021	Catch 2019-2021	B rel B_{MSY}	B rel B_{pa}	B rel B_{lim}	F 2021	F MSY	Reduced F	Change in F**	Catch 2021*	Catch 2023	Change in catch**
1_5_6_7	Hake	a4a	1-3	stable	stable	below	below	below	1.34	0.41	0.19	-86%	2350	1004	-57%
1	Deep-water rose shrimp	a4a	1-2	increasing	increasing				0.87	0.99		14%	549	1543	181%
5_6_7	Deep-water rose shrimp	a4a	1-2	increasing	increasing	NA	NA	NA	0.64	1.45		127%	1501	4459	197%
1	Red Mullet	a4a	1-3	increasing	declining	below	below	above	1.42	0.61	0.34	-76%	148	61	-59%
5	Striped Red Mullet	Index 2021		declining	declining								79	85	7%
6	Red Mullet	a4a	1-3	fluctuating	declining	below	below	above	1.07	0.31		-71%	1306	397	-70%
7	Red Mullet	a4a	1-3	increasing	fluctuating	below	above	above	0.48	0.47		-2%	432	380	-12%
5	Norway lobster	Index 2021		declining	declining	NA	NA	NA					54	37	-30%
6	Norway lobster	a4a	3-6	declining	declining	below	below	below	0.49	0.17	0.05	-90%	159	27	-83%
8_9_10_11	Hake	a4a	1-3	increasing	stable	below	below	below	0.61	0.17	0.08	-87%	1964	441	-78%
8_9_10_11	Deep-water rose shrimp	a4a	1-2	declining	fluctuating	above	above	above	1.40	1.26		-10%	1784	1465	-18%
9	Red Mullet	a4a	1-3	Increasing	fluctuating	below	above	above	0.54	0.50		-8%	750	862	15%
10	Red Mullet	Index 2022		increasing	stable	NA	NA	NA					302	326	8%
9	Norway lobster	a4a	2-6	increasing	decreasing	below	below	above	0.17	0.11		-34%	927	79	-91%
11	Norway lobster	Index 2022		low fluctuating	declining	NA	NA	NA					42	31	-27%
1	Blue and Red shrimp	a4a	1-2	declining	fluctuation	below	below	below	1.17	0.29	0.15	-88%	118	52	-56%
5	Blue and Red shrimp	a4a	1-3	declining	declining	NA	NA	NA	1.64	0.34		-79%	99	46	-53%
6_7	Blue and Red shrimp	a4a	1-2	increasing	declining	below	below	above	0.85	0.26		-69%	510	257	-50%
8_9_10_11	Blue and Red shrimp	Index 2022		fluctuating	declining	NA	NA	NA					209	145	-30%
8_9_10_11	Giant red shrimp	a4a	1-3	declining	declining	below	above	above	0.77	0.43		-44%	370	270	-27%

* Estimated Catch from 2022 Assessments STECF EWG 22-09 or index based advice.

**Change in F is % change in F 2023 relative to 2021; change in catch % change catch 2023 relative to 2021.

Table 5.2.3 Summary of stock and fishery status by area and species, based on FMSY Transition target for F2023. Recent change gives general change in F and catch over the last three years. F2019 and F_{2021} are both estimated F in the 2022 assessment. F_{2025} is FMSY the target for the end of transition, F_{2019} is the starting point of the MAP. The estimate of progress so far is shown as the F change % 2019 to 2021 and the F status relative to transition with FMSY Transition 2021. Advice for 2023 is based on the FMSY Transition for the next advice year (2023) which is set at a level to reach FMSY in 2025, the change in F and implied by the MAP is the difference (as a fraction) between FMSY Transition in 2023 and the F in 2019 and the most recent year for which there are estimates, F in 2021. Change in catch is from catch 2021 to catch 2023. Shaded cells are index based.

Area	Species	F change	Catch Change	F	F	FMSY Transition	FMSY Transition	Target F 2025	F Change %	F Status 2021	F Change %	F Change %	Catch	Catch 2022	Catch Change
		2019-2021	2019-2021	2019	2021	2021	2023	F MSY	2019-2021	Rel to FMSY Transition 2021	2019-2022	2021-2023	2021	FMSY Transition	2021-2023
1_5_6_7	Hake	declining	stable	1.85	1.34	1.37	0.89	0.41	-28%	ahead transition	-52%	-33%	2350	3442	46%
1	Deep-water rose shrimp	declining	increasing	0.92	0.87	0.94	0.97	0.99	-5%	F below FMSY	5%	11%	549	1521	177%
5_6_7	Deep-water rose shrimp	declining	increasing	1.36	0.64	1.39	1.42	1.45	-53%	F below FMSY	4%	122%	1501	4410	194%
1	Red Mullet	declining	declining	1.62	1.42	1.28	0.95	0.61	-12%	behind transition	-42%	-33%	148	131	-12%
5	Striped Red Mullet		declining										79		
6	Red Mullet	declining	declining	1.14	1.07	0.86	0.59	0.31	-6%	behind transition	-48%	-45%	1306	658	-50%
7	Red Mullet	declining	fluctuating	0.50	0.48	0.49	0.48	0.47	-5%	ahead transition	-4%	0%	432	387	-11%
5	Norway lobster		declining										54		
6	Norway lobster	declining	declining	1.04	0.49	0.75	0.46	0.17	-53%	ahead of transition	-56%	-6%	155	203	30%
8-9-10-11	Hake	stable	stable	0.62	0.61	0.47	0.32	0.17	-2%	behind transition	-48%	-48%	1964	1514	-23%
8_9_10_11	Deep-water rose shrimp	increasing	fluctuating	1.23	1.40	1.24	1.25	1.26	14%	behind transition	2%	-11%	1784	1457	-18%
9	Red Mullet	declining	fluctuating	1.20	0.54	0.96	0.73	0.50	-55%	ahead of transition	-39%	35%	750	1155	54%
10	Red Mullet		stable										302		-100%
9	Norway lobster	decreasing	decreasing	0.30	0.17	0.24	0.17	0.11	-45%	ahead of transition	-43%	4%	927	232	-75%
11	Norway lobster		declining										42		
1_2	Blue and red shrimp	declining	fluctuation	1.41	1.17	1.04	0.66	0.29	-17%	behind transition	-53%	-43%	118	185	56%
5	Blue and red shrimp	declining	declining	2.11	1.64	1.52	0.93	0.34	-22%	behind transition	-56%	-43%	99	103	4%
6_7	Blue and red shrimp	declining	declining	1.09	0.85	0.81	0.54	0.26	-23%	behind transition	-51%	-36%	510	465	-9%

8_9_10_11	Blue and red shrimp		declining										209		-100%
8_9_10_11	Giant red shrimp	increasing	declining	0.71	0.77	0.62	0.52	0.43	8%	behind transition	-27%	-32%	370	318	-14%

STECF considers that for 15 age-based assessments presented in the report, the assessments can be used to provide advice on stock status in terms of F relative to F_{MSY}, and therefore provide catch advice for 2023. For Norway lobster in GSA 11, the assessment presented was not considered suitable for advice and category 3 advice is provided for 2023 and 2024. For blue and red shrimp in GSAs 8_9_10_11, the assessment was unable to reconcile the MEDITS survey and reported magnitude catch in 2018 and 2019 which more than doubled with respect to the years either side. For red mullet in GSA 10 the assessment could not be run due to poor catch sampling in GSA 10 coupled with late, out of sequence survey in recent years. For these two stocks, catch advice has been based on category 3 index advice.

STECF notes that the biomass conservation reference points calculated by EWG 22-03 were endorsed by STECF PLEN 22-02 for 12 stocks. Of the 12 stocks, four were found to be below B_{lim}, four were between B_{pa} and B_{lim} and four above B_{pa} in 2021. STECF considers that these reference points are suitably robust to be used for management purposes.

STECF notes that for stocks with analytical assessments, the EWG has updated the values for F0.1, which is used as a proxy for F_{MSY}. In addition, new biomass reference points have been calculated. STECF considers that, following the evaluation in July 2022 (PLEN 22-02), in order to maintain stability of advice, F and biomass reference points should be used for three years as long as the assessments remain stable (see table 5.2.4 below). Therefore, STECF proposes a practical approach based on a 3-year regime for revision of both biomass and F reference points. In order to spread the workload, four stocks should be evaluated every year starting in 2024.

STECF suggests reference points of the four stocks found to be below B_{lim} should be revised in 2024, since the reference points are more sensitive to new values of SSB and recruitment for these stocks (e.g., for these stocks, new values near to B_{lim} are more likely to be obtained in the near future).

STECF considers that the biomass reference points of the stocks between B_{pa} and B_{lim} should be revised in 2025, and those of the stocks above $B_{pa,}$ in 2026. In addition to this formal three yearly evaluation, the EWG should check biomass and F reference points each year and advise STECF if the assessments have changed significantly.

Table 5.2.4. Proposed schedule for revision of biological reference points

Year for review	Stock list
2024	Hake 1,5,6 and 7, hake 8,9,10 &11, Norway lobster 6, blue and red shrimp 1,2
2025	Red mullet 1, red mullet 7, blue and red shrimp 6 & 7, Norway lobster 9
2026	Red mullet 7, red mullet 9, deep-water rose shrimp 8,9,10 & 11, giant red shrimp 8,9,10 & 11

STECF notes that the primary catch advice is based on the target of F_{MSY} in 2023 (Table 5.2.2). Additional advice associated with the Western Med MAP transition to F_{MSY} in 2025 is also provided (Table 5.2.3). Of the 8 stocks estimated as below $B_{pa,}$ STECF observes that in 2021, five are forecast to be below B_{pa} at the start of 2023 and the catches for these stocks are therefore recommended to be reduced below catch at F_{MSY} in order to increase the likelihood of biomass being above B_{pa} in the short term. The values in Table 5.2.2 include these reductions (Reduced F).

STECF notes that all the assessments are based on short data series and some degree of uncertainty remains. However, STECF considers overall that the values presented in Table 5.2.2 provide robust guidance on the magnitude of changes in F and catches required to reach F_{MSY} by 2023 and those provided in Table 5.2.3 provide guidance for a linear transition to reach F_{MSY} in 2025.

STECF notes that the 15 age-based assessments form the basis of the detailed advice given in section 5 of the EWG 22-09 report. The estimates of F_{lower} and F_{MSY} are considered reasonable estimates that can be expected to be precautionary. STECF considers that they can be used directly in the advice. However, STECF notes that the values of F_{upper} are indicative only; they have not been evaluated as precautionary and should not be used to give catch advice without further evaluation.

STECF observes that the EWG 22-09 report also contains values of F and associated catch options for a linear transition in F to reach F_{MSY} in 2025 in Table 5.2.3. These F transition values do not consider uncertainty in the estimates. They should be considered as indicative to progressing towards F_{MSY} in 2025.

STECF notes that previously stable assessments have seriously deteriorated due to catch sampling data issues particularly in GSA 10, and to some extent, MEDITS survey timing in GSA 9, 10 and 11 (See below). In the case of red mullet in GSA 10, there has been a failure to provide adequate sampling of catch in 2020, 2021 and STECF understands that this is likely to have continued in 2022. The sampling of catch in GSA 10 has been poor across almost all species, and the current sampling is considered seriously inadequate. The failure of the assessment of red mullet in GSA 10 is due to this data disruption. For other species, catch samples from other GSAs have been used to partially offset the problem. Therefore, STECF observes there is an immediate need to ensure sampling of fisheries in GSA 10 is returned to the level foreseen by the Italian National Work Programme (NWP) in 2023.

STECF notes that the MEDITS survey in several GSAs including GSAs 9, 10 and 11 has been delayed from the time slot expected under the MEDITS protocol to much later in the year for the last two years. This is thought to be occurring in other areas as well. The timing of the survey is important for the consistency of the data used in the assessments, and in several cases, is particularly important for the detection of 0 group fish. If the survey is to deliver robust data for fisheries management, then, in cooperation with MEDITS scientists, the Italian administration needs to ensure that the timing of the survey is within the acceptable boundaries proposed in the MEDITS protocol.

STECF notes that the reported landings of blue and red shrimp in GSA 9, 10 and 11 have more than doubled in 2018 and 2019, relative to the years either side. There is no sign of increased abundance in the MEDITS survey. Such an increase seems unlikely without a change in fishing effort. The relevant Member State authorities need to carry out an evaluation at metier, fleet, port and GSA level to identify the reasons for this increase.

STECF notes that for red mullet in GSA 6 there are still some inconsistences between the two sources of official data from the Spanish authorities, landing data reported in FDI, and landings reported in the Med and Black Sea data calls. These inconsistencies need to be understood and resolved.

STECF conclusions

STECF concludes that EWG 22-09 fully addressed all the ToRs. STECF endorses the assessments and evaluations of stock status produced by the EWG. STECF concludes that the results of the assessments provide reliable information on the status of the stocks and on the trends in stock biomass and fishing mortality. For three stocks where the assessment was rejected by the EWG and for two other stocks, advice was provided using ICES Category 3 index advice.

STECF acknowledges that for the first-time advice was provided based on MSY-biomass reference points for stocks where assessments supported the estimation of such reference points. STECF endorses this approach.

In PLEN 22-02, STECF endorsed the general approach for calculating biomass reference points and concluded that the framework developed and tested should be used by EWGs to estimate biomass reference points for the western Mediterranean stocks. STECF suggests that the F and biomass reference points of the stocks should follow a three yearly revision described above.

STECF concludes that the calculated values should be checked each year and revised if the assessments change significantly.

STECF concludes that previously stable assessments have been disrupted due to failure in collecting sufficient length and biological data from landings and discards in GSA 10, and to some extent to the MEDITS survey timing. This needs to be resolved by the relevant Member State.

5.3 EWG 22-10: FDI

Request to STECF

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

STECF comments

EWG 22-10 met physically from 12-16 September 2022 at Ispra, Italy. The meeting was attended by 30 experts in total, including 5 STECF members and 3 JRC experts. The following STECF observations, comments and conclusions are based on the EWG 22-10 report and on the presentation of the EWG 22-10 outcomes given to PLEN 22-03 by the co-chairs.

STECF considers that the EWG 22-10 fully addressed all their Terms of Reference.

The **Terms of Reference for the EWG 22-10** were:

1 – Review and document completeness of the data set and feedback from Member States on approaches used and problems encountered in responding to the data call.

1.1 As a matter of priority, the EWG is requested to ensure that all unresolved data transmission (DT) issues encountered prior to and during the EWG meeting are reported online via the Data Transmission Monitoring Tool (DTMT) available at https://datacollection.jrc.ec.europa.eu/web/dcf/dtmt. Such issues should be reported in full within 2 weeks of the end of the EWG.

1.2 Review outputs of ad hoc contract 1 that provides the catches, landings and discards, at a level of aggregation corresponding to the fleet, area and gear type as specified in each exemption of each delegated regulation specifying the details of implementation of the landing obligation for 2023.

1.3 Review data quality checks and produce National methodological chapters.

2 – Provide landings and discards data for exemptions in discard plans.

Based upon the previous work and method established in STECF EWG 20-10 and STECF EWG 21-12, and the output of ad hoc contract 1:

2.1 STECF is asked to provide figures for landings and discards in 2021, at a level of aggregation corresponding to the fleet, area and gear type as specified in each exemption of each of the delegated regulations specifying details of implementation of the landing obligation for 2023.

2.2 STECF is asked to assess and if possible, provide percentages of discards estimates below and above MCRS at a level of aggregation corresponding to the fleet, area and gear type as specified in each exemption of each of the delegated regulations specifying details of implementation of the landing obligation for 2023.

2.3 Where there is insufficient discard data for the above task, the STECF is asked to provide **estimated catches** (landings + discards1) for 2021. Only if this is possible and sufficient data is available for such estimation.

[1] 'Discards' are defined here as the fish/crustaceans thrown overboard back into the sea

3 – Review dissemination formats and produce dissemination tables and maps of spatial effort and landings by c-squares

3.1 Discuss results of ToR 2.1 and 2.2 of the EWG 21-10 and ToR 6.1 in EWG 21-12 and agree the format of the Table A and biological data (FDI Tables C, D, E and F) to be publicly disseminated in the future. Discuss the results of the ad-hoc contract 2 of the development for a script to support the dissemination of the data.

3.2 Agree on format of dissemination of refusal rate data

3.3 If GIS technical skills are available in the EWG, produce maps of effort and landings by c-square (to be inserted in the EWG report) for the following regions (as defined in COM-2016-134 for areas other than 'distant waters') and major gear types (as defined in appendix 4 of the data call):

a. Baltic; North Sea; North Western Waters; South Western Waters; Mediterranean and Black Seas; Distant waters

b. Trawls (except beam trawls) with mesh < 100mm; trawls (except beam trawls) with mesh ≥ 100mm; beam trawls with mesh < 120mm; beam trawls with mesh ≥120mm; seine nets; gillnets and entangling nets; dredges; hooks and lines; surrounding nets; pots and trap.

4 – Discuss data submission results following recent changes in the data call and definitions, access feasibility to provide updated time series

4.1. If possible, to explore the possibilities for next years' datacall to request the whole time series with the new metier codes:

4.2 Inclusion of UK EEZ indicator for areas that have a borderline between EU and UK. The FDI data call requested this reporting with EEZ indicator for UK for 2021 in the 2022 data call. The UK EEZ indicator needs to be asked for the whole time series in next years' data call.

EWG 22-10 primarily checked the coverage and quality of data and information submitted under the 2022 FDI data call and responded to specific requests for information regarding discard estimates for specific groups of vessels that may be exempted from the landing obligation in 2022.

STECF observes that the EWG reported a continued improvement in data coverage and quality provided by Member States resulting in a minor number of problems identified by the automatic data checks carried out by the JRC before the meeting.

The following topics were discussed in detail during the PLEN 22-03:

STECF notes that unresolved issues that need to be further addressed by Member States were recorded in the Data Transmission Monitoring Tool (DTMT).

STECF observes that the methodology used in the ad hoc contract (# 2251) to provide data on landings and discards at a level of aggregation corresponding to the fleet, area and gear type as specified in each anticipated exemption contained in the individual discard plans for 2023, was appropriate and identical to the one used in previous years.

STECF observes that the script developed in the ad hoc contract (# 2252) to merge table A containing catch data and the biological tables was appropriate and should be disseminated widely despite requiring some further development.

STECF agrees with the EWG 22-10 conclusions that disseminating the script will help end users to merge table A with the biological tables. It will still maintain the underlying assumptions of the national raising procedures and avoid any false assumptions of length/age composition availability at a very fine resolution. This script is available in Annex 4 of the EWG 22-10 report and should be made publicly available as an electronic annex, noting that the script is still considered to be under development.

STECF observes that a comprehensive set of maps of spatial effort and landings were produced for all fishing regions and major gear types. They were included in Annex 5 of the EWG report and are available at the EU level for public access on the STECF website: https://stecf.jrc.ec.europa.eu/dd/fdi.

STECF agrees with the EWG 22-10 proposal to update the FDI data call to account for the new métier codes agreed by the RCGs, which is managed by the RCG ISSG on Métier and transversal variable issues. This should bring alignment between métier codes used by ICES and STECF. Based on a questionnaire that was conducted during the EWG 22-10, all Member States indicated that it is feasible to resubmit the historical data (2013 – 2021) according to the updated list of métier codes. STECF acknowledge that the outcomes of these new metiers, and the quality of the historical data would need to be assessed and potentially improved during an additional methodology meeting proposed for 2023.

STECF notes the advantage of having the UK EEZ indicator provided in the FDI dataset, avoids potential additional data calls to Member States, (i.e., Non-Quota Species data call). EWG 22-10 concluded that it would be feasible for Member States to provide this information for the full time series (2013- 2021). However, STECF notes that not all Member States use the same approach to identify fisheries within the UK EEZ. Although this methodology is detailed within the national chapters of the EWG 22-10 report, STECF acknowledges that the outcomes of these methodologies, and the comparability of the historical data would need to be assessed and potentially improved during the additional proposed methodology meeting.

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

Since the 2020 FDI data call, no biological data were requested from the Mediterranean and Black Seas. STECF believes that a re-introduction of those data would make the FDI database more valuable in the future. STECF observes that JRC proposed to do a preliminary screening of the scripts already developed by the STREAM (PLEN 21-03) and RDBFIS projects and to report outcomes of this exercise to STECF. STECF agrees that the existing scripts already developed by the STREAM and RDBFIS projects will be screened by JRC to identify if they can be used to transfer the biological data from the Mediterranean and Black Seas dataset to the format used by the FDI database. Based on the outcomes of this preliminary screening, it will be possible to understand if the scripts are mature enough to be used or if there is still the need for an ad hoc contract to address unresolved issues and further development.

STECF conclusions

STECF concludes that the EWG 22-10 appropriately addressed all ToRs defined.

STECF supports the updates to the FDI data call proposed by EWG 22-10 and supports the proposal to request 2022 data and a resubmission of data from 2013-2021 with proposed EEZ indicator and improvements to métier definitions.

STECF concludes that it would be valuable to have 2 meetings in 2023 as in 2021 to follow up on methodological development needed (i.e., EEZ partitioning methodology, review quality indicators submitted, metiers, etc.) and to review progress on comparability between FDI and AER data calls.

STECF concludes that the script to merge the catch data and the biological tables should be published this year along with clear guidance and the development continued in 2023 by the FDI EWG.

STECF concludes that completeness of the FDI database would be significantly improved by incorporating the Mediterranean and Black Sea biological data. Therefore, if the need to have more work done on the already available scripts will be confirmed by the preliminary screening carried out by JRC, STECF reiterates the recommendation of PLEN 21-03 to use an ad hoc contract to translate the Mediterranean and Black Sea data to the FDI format in order to speed up the progress.

5.4 EWG 22-12: Marketing standards: review of fishery criteria and underlying methodologies

Request to STECF

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

STECF comments[2]

EWG 22-12 met in Brussels, from 5-9th of September 2022. The EWG was attended by 22 experts including 4 STECF members along with 1 JRC expert, 2 from DG MARE and 2 observes, who attended the plenary sessions of the EWG. STECF acknowledges that the EWG addressed all of the TORs, noting that further work is needed in this area.

EWG 22-12 is a follow-up of the 2020 EWG 20-05 "*Criteria and indicators that could contribute to incorporating sustainability aspects in the marketing standards under the CMO*", which explored and proposed transparent methods of measuring and communicating some sustainability aspects of fisheries and aquaculture products along the supply chain, based on scientifically sound, simple and verifiable criteria and indicators. EWG 22-12 focused on fisheries, while EWG 22-13, which focused on aquaculture also as a follow-up of EWG 20-05, ran in parallel with EWG 22-12.

EWG 22-12 had the objective to assess and complement the findings of two *ad hoc* contracted expert teams which defined specific indicators and grading for two environmental criteria, respectively (i) impact on the targeted stocks (fishing pressure) and (ii) impact on the seabed. These two criteria were identified by the Commission as key sustainability aspects for fishery products for a potential first stage of the revision of the marketing standards, based on the findings of EWG 20-05. EWG 22-12 also discussed and defined an approach for a third environmental criterion, (iii) impact on sensitive species (understood to be species whose conservation status, including its habitat, distribution, and population size or population condition is adversely affected by pressures arising from human activities, including fishing activities; EWG 22-12 p15.). This criterium was also identified as a priority by DGMARE but, contrary to the two first criteria, no simple quantitative approach already exists, and an operational indicator still needs to be developed.

STECF notes that in relation to the approach proposed by EWG 20-05 (see table 1 below – see explanation and product description in EWG 20-05 report), EWG 22-12 has thus sensibly progressed on three out of the 8 identified indicators, and, more specifically, operationalised the first two (fishing pressure and impact on the seabed), using the 'two systems approach'.

STECF recalls that this 'two systems approach' with two levels of scoring (System 1 and System 2) was developed by EWG 20-05. The rationale behind defining two systems is that data availability differs widely between different fishery and aquaculture products. System 1 uses basic information that is universally available for all types of fishery products, both domestic and imported. System 2 is based on additional information, that is more accurate but that may not necessarily be available for all products. System 2 would allow producers to obtain a more specific, and, in cases, a higher sustainability score. This potentially provides an incentive to producers to share more extensive production information to meet the data requirements of System 2.

[2] Ernesto Jardim did not participate in the discussions on this TOR due to a potential conflict of interest with his current employment. The details are contained in his Declaration of Interest Form.

Table 1. Example of scoring for three contrasted theoretical fishery products placed on the EU market (see products characteristics in the text)

Dimension	Criteria	Product 1	Product 2	Product 3
Environment	Fishing pressure	A	D	A+
	Fisheries management	A	No score	A
	Impact on ETP and sensitive species	A	No score	B
	Unwanted landings and discards	B	D	A
	Impacts on the seabed	D	E	A+
	Impact on marine food webs	B	No score	A
	Carbon footprint	C	E	A+
	Waste and pollution	A+	D	A
Social	Working condition (production)	A+	C	B
Final score		**A or B**	**D or E**	**A+**

Table 1 is extracted from EWG 20-05. The three circles highlight the sustainability criteria investigated in EWG 22-12. The dashed circle suggests that the indicators for the criteria are still under development.

STECF notes that the preparatory work implemented by the two *ad hoc* contracts groups facilitated the work of EWG 22-12 and allowed the EWG to progress further on their findings.

Concerning the current status of the indicators, STECF notes that the indicator on the impact on the seabed has been fully implemented. Indeed, EWG 22-12 provided an updated version of the excel file (control panel in Annex 1) developed by the ad hoc contract supporting the EWG including the revision of gear and habitat scores.

Concerning the indicator on fishing pressure, STECF notes that EWG 22-12 has provided an updated and adjusted version of the decision tree that was drafted in the ad hoc contract. However, the excel file provided by the ad hoc contract still needs to be implemented with the new rules/thresholds identified by EWG 22-12.

This indicator on fishing pressure aims to assess the biological status of the exploited stock based on fishing pressure, biomass or vulnerability of the species. A database with 1393 species for System 1 and 246 for system 2 and an associated online platform for computation has been produced by the ad hoc contract. However, the extended approach proposed by the EWG 22-12 would require gathering additional data (F_{MSY} B_{lim} or their agreed proxies in additional RFMOs) and reshaping the computing calculation in accordance with the extended approach. An evaluation of the coverage as well as a test of the new ranking limits would also be necessary.

STECF notes that regarding the indicator for sensitive species, the EWG found that defining and operationalising this indicator was more complex than for the other two indicators. To progress on this third indicator, EWG 22-12 investigated the feasibility and relevance of defining a sensitive species indicator either a) by gear and sub-area only, based on expert knowledge and intensive literature review, and b) using a risk-based approach in the form of productivity-susceptibility analysis (PSA). The EWG concludes that both approaches are able to provide a rough indicator, but with a likely high proportion of false positives due to lack of precise catch data such as precise data on the gear used and the area of capture: i.e., the methods may give a low score if a global risk of negative impact on sensitive species has been identified for a certain fishery, even if incidental catches do not actually occur. STECF notes thus that the methodology for a criterion for sensitive species needs additional operationalisation and further development.

STECF notes that EWG 22-12 has tested an overall scoring/grading system for the three indicators together. The scoring of the systems 1 and 2 was applied to *Clupea harengus* (Atlantic herring) caught with Midwater otter trawls (OTM) in the Baltic Sea. This combination of species/area/gear was chosen as an example because Herring in Area FAO 27 is among the cases for which the EWG subgroup on sensitive species was able to compute the indicator for the two scoring systems (1 and 2) (Table 17 of the EWG report). For the other two indicators the EWG used the control panel for the seabed and one stock assessment from the Baltic (available online) for the fishing pressure.

STECF observes that this test is very insightful in illustrating the strengths and weaknesses of the two scoring systems, especially in difference of score between System 1 and System 2. System 1 score in this case is clearly lower than the score under System 2.

STECF notes that the two-systems approach creates a valuable option for producers to demonstrate increased levels of sustainability in production. Data under System 1 is widely available whereas System 2 is more case specific and can be much more detailed. In particular, under System 2 additional information on: a) the precise fishing area would improve the indicator on fishing pressure; b) the precise fishing gear would improve the indicator on the impact on the seabed; c) the precise fishing area and gear would improve the indicator on sensitive species. As such, System 2 is expected to act as an incentive to a) supply more information but also b) to adopt more sustainable practices.

STECF notes that the way to compute a single sustainability score, combining several variables into a single score, is still to be agreed upon. The challenge will be to interpret the actual score on a single product, e.g., (i) if it scores green for one criterion, orange for a second and red of a third then what should the final score be? And (ii) if the scores were red for the first criterion, green for the second and orange for the third, would that result in a different final score (i.e., are the separate criterion weighted)?

STECF is aware that different initiatives already exist or are in experimentation in the market in which multiple criteria are reflected on the product, including a final overall sustainability score. However, STECF notes that there are several ways by which this can be achieved and operationalising this will, in the current system, require some additional dedicated work to reach a robust consensus.

STECF observes that the alignment of different scores is not only relevant between different fish products from capture fisheries but a sustainability score of a wild caught fish should be comparable to a sustainability score of fish products from aquaculture. Moreover, STECF understands, the European Commission aims to have a scoring system that will allow direct comparison with other products in the wider market of animal proteins. For example, chicken and fish are substitute products in the perception of consumers. In such a case it is of prime importance that the sustainability label on chicken is comparable to that on fish. STECF notes this is sensible but in practice challenging to achieve.

STECF observes that EWG 22-12 considered that, as the fishing pressure and seabed impact indicators are closer to implementation, compared to the indicator on sensitive species, it may be possible to start using these indicators even though there may be a risk that producers and consumers may be confused by additional indicators coming on stream at a later date along. STECF notes that this is a serious concern.

In addition, STECF notes that, with the indicators for fishing pressure and impact on the seabed being operational, it is important that the communication on the indicators, especially with the fish producers is timely, credible and salient, (hence available on time, trustworthy and relevant) in order to ensure that the designed approach will be technically feasible (especially system 2 which requested additional data) and sufficiently accepted and implemented along the supply chain's stakeholders.

STECF advises, in order to make the scoring system operational, it would be appropriate to develop a simple tool that when a fish producer enters data on species, area and gear, it returns a simple score on the sustainability criteria.

STECF notes that, especially in those cases where producers seek to move from System 1 to System 2, information may not be readily available to them. This may lead to a situation where a geographical spread may occur, between areas with high and low levels of data availability. This may prohibit producers moving from System 1 to System 2, which may result in price differences between products. Those under System 2 are more likely to obtain a price-premium or better market access, compared to products under System 1 which are likely to be relatively cheaper. This may entice consumers to opt for the cheaper, yet less sustainable, alternative.

STECF conclusions

STECF concludes that EWG 22-12 has covered the ToRs and commented and progressed on the information provided under the two *ad hoc* contracts. STECF endorses the report.

STECF concludes that the indicators for fishing pressure and impact on the seabed have been sufficiently developed and operationalised to allow testing this system on a larger number of sea food products including products from outside the EU. STECF concludes that the current database for the indicators can be further expanded (as EWG 22-12 proposed a new decision tree and highlighted that the list of species does not cover all the seafood products currently marketed in Europe) with data on fishing pressure. It is suggested to issue an *ad hoc* contract to carry out this task.

STECF concludes that there is a need for harmonisation between the different possible scoring systems. Suggestions have already been made on the continuity of scoring between Systems 1 and 2 within fisheries products. However, there is also a need to align the scoring for all fish products, be it from fisheries or aquaculture. Moreover, the scoring of fish products should ultimately be in line with the sustainability scores of other animal products such as chicken and beef, noting this will be challenging to achieve.

STECF concludes that further work is required on the sensitive species indicator. Based on the discussions, and the difficulty to operationalise it as described in the EWG 22-12 report, STECF cannot firmly concludes whether actual development and operationalisation of this indicator is actually feasible. In order to progress this discussion, it is advised to issue an *ad hoc* contract (similar to the two issued in preparation of EWG 22-12) using the possible options for a sensitive species indicator, as discussed by EWG 22-12, and to test the candidate indicators with relevant case studies.

STECF suggests convening a follow-up EWG, to progress the application and integration of the work performed in the various *ad hoc* contracts. This EWG should also discuss the next steps in the process of operationalising and expanding the set of indicators, considering the options proposed by EWG 20-05 and other wider societal developments of sustainability indicators on consumer products. In particular, STECF notes the need to consider PEF (product environmental footprint) indicators coming from Life Cycle Analysis.

5.5 EWG 21-13: Marketing standards: review of proposed sustainability criteria / indicators for aquaculture

Request to STECF

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

STECF comments[3]

General observations

EWG 22-13 met in Brussels, from 5-9th of September 2022. The EWG was attended by 13 experts including 1 STECF member along with 2 JRC experts, 2 from DG MARE and 3 observers, who attended the plenary sessions of the EWG. STECF acknowledges that the EWG addressed all of the TORs.

EWG 22-13 was a follow-up of EWG 20-05 "*Criteria and indicators that could contribute to incorporating sustainability aspects in the marketing standards under the CMO*", which took place in 2020. That previous EWG proposed transparent methods of measuring and communicating along the supply chain, selected sustainability aspects of fisheries and aquaculture products, based on scientifically sound, simple and verifiable criteria and indicators.

EWG 22-13 focused only on aquaculture (while EWG 22-12 that was held in parallel focused on fisheries). EWG 22-13 was tasked with (1) developing a globally usable categorization of production system types according to the EU-MAP and FAO classification systems, (2) defining animal welfare criteria and indicators, (3) defining good practices in terms of governance and regulatory requirements to mitigate risks for each production type and criteria and (4) integrating the elements defined in Tasks 1 to 3 into a scoring system based on information on species, production system type and country of origin. These tasks were identified by DGMARE as key steps to define a potential first stage of the revision of the marketing standards for sustainable aquaculture products and follow from the findings of EWG 20-05.

STECF notes that the EWG 22-13 was tasked by DGMARE with addressing only environmental aspects for aquaculture products, to use only Scoring System 1 and focus on identification and description of best practices. System 1 only include publicly available data containing information on the species produced, the technique used and the country of origin.

STECF notes that criteria for environmental sustainability in aquaculture are the first step in determining broader sustainability indicators within aquaculture, wild capture fisheries, and the broader agri-food system, in order to permit appropriate comparisons to be made between them.

Developing a globally usable categorization of production system types and defining the indicators

STEF notes that EWG 22-13 was able to build on preparatory work carried out under an ad hoc contract preceding the launch of the EWG. This preparatory work consisted of a report mapping

[3] Ernesto Jardim did not participate in the discussions on this TOR due to a potential conflict of interest with his current employment. The details are contained in his Declaration of Interest Form.

"*Classification of production systems in aquaculture*". This was a valuable source of information for the EWG.

STECF notes that a classification system based on the EU-MAP and FAO (FAO, CWP-IS/2019/3) covers most of the global production methods. However, in some cases the farming techniques need to be unambiguously defined before a classification system can be applied. This is for example the case of ponds where there can be huge difference in how intensively they are utilised, which has an effect in most of the indicators listed in Table 5.4.1 below. Furthermore, environmental impacts of some production systems need to be collected to inform indicator scoring as the current data resolution (e.g., in seafood LCA studies) is insufficient to assess risks/probabilities of environmental impacts (e.g., impact of nutrients uptake on the carrying capacity for mariculture).

The EWG considered the indicators of environmental sustainability that were suggested by EWG 20-05 (presented in Table 5.5.1). A classification of production techniques that is based on current EU-MAP and FAO classification systems was presented. The production techniques cover global production methods and all indicators that had been suggested. STECF notes though that a small number of combinations of species (e.g., mussels, seabream, sea bass and oysters) and production techniques (e.g., on-bottom, off-bottom rafts and cages) dominate both production and consumption in EU.

STECF notes that there is limited knowledge available for assessing animal welfare and that the current mandatory data is not sufficient for assessing animal welfare in a meaningful way. It considers that there is no need for species-specific indicators. However, metrics, data and classification (i.e., scoring of indicators) are required to be species-specific, or potentially in relevant categorization. Animal welfare indicators for aquaculture species should be based on the Five Freedoms (freedom from hunger and thirst; discomfort; pain, injury, and disease; fear and distress; freedom to express normal and natural behavior) (Keeling et al., 2019; WOAH, 2022).

TABLE 5.5.1 (from EWG 20-05): The selected criteria for aquaculture products and their priorities and feasibility

Table 5.5.1 – EWG 20-05 Indicators	**Priority (A=high)**	**Feasibility Producer**	**Feasibility Data**	**Feasibility Verification**
Effluent management: emissions (in water)	A	B	B	B
Protection of wild populations: escapees	A	D	D	D
Protection of humans: therapeutic treatments	A	A	A	A
Feed: source of marine raw materials	A	B	B	B
Feed: source of agricultural ingredients	A	B	B	B
Solid waste management	B	B	B	C
Interaction with critical habitats and species	A	D	D	D
Non-therapeutic chemical inputs	B	A	B	B
Environmental assessment	A	D	D	C

Area-based management	A	D	D	C
Energy use (on farm, all types)	C	A	A	A
Carbon footprint (farmgate)	A	A	C	C

Defining good practices in terms of governance and regulatory requirements

STECF notes that a list of important components of a regulatory system for aquaculture was prepared, based on guidelines for sustainable aquaculture management, with indications of what best practices are, and what the potential effects of their implementation for the different indicators and production techniques.

STECF notes that best practice guidelines and guidelines for good governance are built on preliminary work from FAO (Draft Guidelines for Sustainable Aquaculture (GSA) - Preliminary copy. 30/09/2022). STECF notes that even though this was only a preliminary report at the time the EWG met, potential subsequent revisions of this FAO study before final publishing would not change the conclusions drawn within the EWG report.

STECF notes that it was difficult to standardise this assessment. Defining what a best practice is can differ between countries and the list should be seen primarily as a source for asking relevant questions about aquaculture regulations. STECF further recognises that focusing solely on the legal and regulatory context to assess good practices constrains the sustainability assessment, risks undervaluing practical implementation challenges and excludes market governance mechanisms that can be equally important in ensuring environmental, social and economic sustainability.

STECF notes that an assessment of the regulatory/legal framework requirements in a country must be combined with an assessment of the actual biological/technological performance of a production system to avoid over-/underestimating the importance of country specific regulatory requirements. Furthermore, regulation and best practice should be seen within a country context (e.g., is food security more important than nutrient emissions and is the nutrient emissions important for the local environment).

STECF agrees that the EWG has indicated that these elements of best practice and governance need to be further investigated, potentially in a future EWG, before they can add value to an overall sustainability indicator.

STECF observes that the social aspect is one of the core pillars of governance, which should have a future consideration regarding the sustainability of aquaculture products. Furthermore, economic aspects are also part of the three-pillar approach and should be equally considered when talking about sustainability.

Understanding the proposed scoring system

STECF notes that the general principle of the system of indicators proposed by EWG 22-13 is based on a relative scoring system, where aquaculture products are assessed across a set of criteria to be relatively more/less sustainable than another aquaculture product (and not other food products).

STECF notes that scoring should be seen as a likelihood that a given combination of species, production technique and production country may pose a higher or lower risk for a given environmental impact, and not as a precise measure of performance. The scoring relies on System 1 only (available data from EUMAP and FAO on species, production technique and country of origin), (i.e., limited and roughly categorized average data). Therefore, it will likely result in underestimating scores for some individual producers and overestimating scores for others within a category. For distinguishing better-practice producers within a category, a System 2 scoring with

fine-scale data is needed in which producers can differentiate their products and improve the scoring (i.e., achieve a higher score if the product is more sustainable).

STECF recognises that, the EWG managed to demonstrate how such a scoring could be undertaken using two of the indicators previously identified, and the main production systems. The indicators were nutrient emissions (*i.e.,* release of nitrogen and phosphorous into waterbodies) and greenhouse gas (GHG) emissions, which were selected because they represent impacts of high environmental relevance and public interest.

STECF observes that the two indicators present contrasting pictures of aquaculture sustainability. Sufficient knowledge is available from aquaculture Life Cycle Assessment (LCA) literature to be able to score the most common aquaculture products on the EU market. STECF further notes that these two indicators are subsequently referred to throughout the report, but this does not imply that other indicators should be excluded from future development of a sustainability indicator for aquaculture or are less important than the two explicitly tested.

The scoring was undertaken along decision trees where each "case" (combination of species and technique) started on the top score and the score was then subsequently reduced a step (or level) for each emission driver that was present. The full scale from A+ to E was used meaning that, the scoring only contains a relative score in between aquaculture products.

Below is Figure 5-2 of the report (see Tables 5-2 and 5-3 for scoring examples on GHG and nutrient emissions, respectively).

A+	Highest score beyond current sustainability standards (Best-performing systems)
A	High score according to current sustainability standards (High-performing systems)
B	Medium-high score according to current sustainability standards (Good-performing systems)
C	Medium score according to current sustainability standards (Medium-performing systems)
D	Medium-low score according to current sustainability standards (Low-performing systems)
E	Low score according to current sustainability standards (Worst-performing systems)

STECF observes that an important point regarding the two selected indicators is that the impact of GHG emissions is global and the local emissions are relatively inconsequential. However, the nutrient emission will have different local impact depending on where and under what conditions and regulations these emissions occur, which is why adding governance, after first assessing the biophysical performance of the species and technology used, is important.

STECF notes that the EWG explored the opportunity to add more information to the scoring in System 1, based on guidelines for best practice of sustainable aquaculture governance and animal welfare. Animal welfare indicators were developed, one in System 1, and several indicators for System 2.

STECF notes that the EWG did not think that an assessment of animal welfare (task 2) is meaningful in system 1. This is due to the fact that the System 1 indicator only contains information on whether any animal welfare legislation explicitly including aquaculture exists in the country of production.

STECF notes that moving from System 1 to 2 requires clear incentives in terms of scoring higher to make improvements for all producers. Otherwise, producers who perform under average in each combination of species, production technique and production country would benefit from the very broad System 1 scoring and will not be incentivised to make improvements or move to System 2.

STECF notes that scoring of emission intensity for the two selected indicators (nutrients and GHG) provides a complementary picture of the biological-technological resource efficiency of the production system, and that adding the assessment of the regulatory system as a separate step is recommended. This is also in line with the Commission desire to have 'governance complementing the sustainability assessment'.

STECF observes that there is a need to further improve the data availability to be able to move to System 2. This information could be provided by market actors, if a wisely designed System 2 could incentivise actors to make data available in return for receiving a better score.

STECF notes that measures terminate at the farm gate, although there is scope to reducing externalities also after this point. Criteria relating to the full supply chain (processing, losses/byproduct use, distribution, transport) should be considered in the future, as these steps can substantially contribute to the overall supply chain environmental impacts, in particular GHG emissions, and can represent important differences between products produced within and outside the EU.

STECF Conclusions

STECF concludes that the EWG were able to adequately address all the TORs including the tasks to (1) develop a globally usable categorization of production system types according to the EU DCF and EU-MAP classification systems, (2) define animal welfare criteria and indicators, (3) define the good practices in terms of governance and regulatory requirements to mitigate risks for each production type and criteria and (4) integrate the elements defined in Tasks 1 to 3 into a scoring system based on information on species, production system type and country of origin.

STECF concludes that scoring the most important species and production systems in terms of consumption in the EU is possible for at least two of the indicators identified, using available data from EUMAP and FAO and then using a stepwise scoring procedure based on the existence or non-existence of important indicator drivers from the literature.

STECF concludes that even though many concrete steps have been identified towards an applicable approach to scoring aquaculture products, there is still a need to develop the concept further (e.g., unambiguous classification of production systems, country level information on regulation and enforcement, inclusion of more indicators) before it eventually can be operationalised. This work could be facilitated by a further working group as a follow-up to EWG 20-13.

STECF concludes that farmed seafood often depends on capture fisheries (e.g., for feed, wild broodstock or in capture-based ranching/fattening) and that the criteria for both fisheries and aquaculture need to be consistent in their scoring.

STECF concludes that the social aspect is one of the core pillars of governance, which should have a future consideration regarding the sustainability of aquaculture products. Furthermore, economic aspects are also part of the three-pillar approach and should be equally considered when talking about sustainability.

STECF concludes the needs for further improving the data availability to be able to move to System 2. This information could be provided by market actors, if a wisely designed System 2 could incentivise actors to make data available for getting a better score in return.

STECF concludes that measures terminate at the farm gate, although there is scope to reducing externalities also after this point. Criteria relating to the full supply chain (processing, losses/byproduct use, distribution, transport) should be considered in the future, as these steps can substantially contribute to the overall supply chain environmental impacts, in particular GHG emissions, and can represent important differences between products produced within and outside the EU.

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5.6 EWG 21-15: Balance /Capacity

Request to STECF

STECF is requested to The STECF is requested to assess the extent to which the STECF Expert Working Group 22-15 delivered on its Terms of Reference. The STECF is in particular requested to assess the following findings presented by the STECF Expert Working Group 22-15 and to formulate its conclusions and recommendations on each of them:

- The assessment of both the status and trends of the balance situation of EU fleet segments in line with the Commission guidelines (COM(2014)545).
- The findings on whether, in accordance with the Commission Guidelines (COM(2014)545), the annual national fleet reports submitted by 31 May 2022 present an appropriate and complete analysis of balance between fleet capacity and fishing opportunity for each Member States' fleet segments.
- The observed discrepancies between the national balance assessments and those carried out by STECF Expert Working group 22-15 and the reasons for those as identified by the STECF Expert Working group.
- The opinions provided for each concerned Member State whether the proposed measures in new or revised action plans submitted with the most recent fleet reports are likely to redress the imbalance in the fleet segments concerned.
- The assessment of the balance situation in the outermost regions, especially in the light of the comments in Section 6.5 of the July 2022 plenary meeting report of the STECF (PLEN-22-02) with regard to the outcomes of the ad hoc STECF contracts carrying out a preliminary comparison of the 2021 EU outermost regions fleet balance reports (ref. STECF 2240 and 2241).
- Provide a summary overview of the action plans (AP) currently implemented by each Member State. The overview should include the year each AP was launched, if it is a renewal or a new one and identify the changes between the current AP and its previous version.

STECF comments

STECF reviewed the report of the EWG 22-15 and notes that all the ToRs were addressed.

Values for the following indicators as specified in The Commission guidelines (COM(2014) 545) are presented for the period 2009-2020:

Biological indicators

- Sustainable harvest indicator (SHI). SHI values are not considered meaningful, if the landing values that are included in the SHI / total landings value ratio is less than 40%. Only meaningful values of SHI are used to indicate whether a fleet segment may be considered to be in or out of balance with fishing opportunities.
- Stocks at risk indicator (SAR).

Economic indicators

- Return on investment (ROI) and/or Return on Fixed Tangible Assets (RoFTA).
- Ratio between current revenue and break-even revenue (CR/BER).

Technical indicators

- The inactive fleet indicators (IV).

- The vessel use indicator (VUR)

STECF notes that, the terms "in balance" and "out of balance" (imbalance) and analogous terms, are used strictly in relation to the criteria given in the Commission guidelines (COM (2014) 545 Final). Such terms are used to indicate a favourable (in balance) or unfavourable (out of balance) situation based on the values computed for specific indicators in relation to the threshold specified for such indicators. Trends in indicator values are expressed over different time-periods, which vary by indicator and Member State (MS). Comparisons between indicator values as computed by the EWG and those in the National fleet reports submitted by Member States by 31 May 2022 are based on the reference year 2020 unless specifically mentioned in the report.

Assessment of both the status and trends of the balance situation of EU fleet segments including the outermost regions.

Table 5.6.1 presents the number of segments in each supra region (North Atlantic Ocean, Mediterranean and Black Seas and Other Fishing Regions) and for each indicator, the number of segments for which an indicator value could be computed for the year 2020. It also includes the numbers of segments that according to the criteria in the Commission guidelines, are indicated to be in balance or out of balance, together with an assessment of the trend of the indicators, as reported by the EWG 22-15.

For the whole EU, out of 585 active fleet segments in 2020, landings in weight and value were available for approximately 87% of them. Of the 585 active fleet segments, a meaningful value for the SHI could be computed for only 30% of them, and a value for the SAR could be computed for 74%. Economic indicator values (CR/BER and RoFTA) were available for 62% of the total active fleet segments, while for RoI this percentage was only 10%. STECF notes that these proportions are similar to those reported for 2019 (PLEN 21-03).

For segments with a meaningful value for SHI, the majority were indicated to be out of balance (55%) and for the SAR, the majority were indicated to be in balance (55%). With regard to each of the economic indicators, a majority of the segments were indicated to be in balance (65%, 64% and 56% for CR/BER, RoFTA and RoI, respectively). Finally, for the segments for which the technical indicator VUR could be computed, half were indicated to be in balance and half out of balance.

In the North Atlantic Ocean (NAO), a meaningful value for the SHI could be estimated for 36% of the 324 fleet segments, with 49% of them out of balance and 51% in balance. The SAR was estimated for 74% of the total segments in the region, 60% of which were indicated to be in balance and 40% out of balance. Economic indicators values (CR/BER and RoFTA) were available for 62% of the total active fleet segments in this area, while for RoI this percentage was 10%. The majority of the fleet segments considering these three economic indicators were indicated to be in balance (66%, 64% and 44% for CR/BER, RoFTA and RoI, respectively). For the VUR technical indicator (available for 81% of the fleet segments of this area), half of the segments were indicated to be in balance and other half, out of balance. Finally, 24% of fleet segments had inactive vessels, and 91% of such segments were indicated to be in balance (proportion of inactive vessels in a segment is less than 10%).

Regarding the trends in indicator values, no trend or no clear trend could be observed in the SHI for almost half (47%) of the fleet segments in the NAO; 26% of the fleet segments had an improving trend, 14% a deteriorating trend, 1% were considered to have a no clear trend and for 6% of the segments, no trend could be calculated. For the three economic indicators, the majority of the segments had a deteriorating trend (59%, 69% and 68% for CR/BER, RoFTA and RoI, respectively). Finally, no clear overall picture could be depicted by the technical indicators as for the majority of the segments (69%), there was no clear trend.

In the Mediterranean and Black Seas (MBS) a meaningful value for the SHI could be computed for 23% of the 205 fleet segments in this region, 74% of which were indicated to be out of balance and 16% in balance. The SAR was estimated for 77% of the total segments in this region, 52% of which were indicated to be in balance and 48% out of balance. Economic indicator values (CR/BER and RoFTA) were available for 65% of the total active fleet segments in this area, while values for

RoI could be computed for only 8%. According to the economic indicator values, the majority of fleet segments were indicated to be in balance (69%, 66% and 82% for CR/BER, RoFTA and RoI, respectively). According to the VUR technical indicator, 42% of the segments were indicated to be in balance and 58% out of balance. Finally, 21% of fleet segments had inactive vessels, and 93% of such segments were indicated to be in balance (proportion of inactive vessels in a segment is less than 10%).

Regarding the trends of the indicators above, for the SHI, the trend was improving for 51% of the fleet segments in the MBS, 15% had a deteriorating trend, 2% a flat trend and for the rest (28%), the trend could not be calculated. For the three economic indicators, an improving trend was observed for 38%, 49% and 35% of the fleet segments, considering the CR/BER, RoFTA and RoI, respectively, while it was deteriorating for 37%, 40% and 12%, respectively. For the majority of the remaining segments there was no clear trend, or no trend could be calculated. Finally, no clear overall picture could be depicted by the technical indicators, as for the majority of segments there was no clear trend (40%), or the trend could not be calculated (30%).

In the Other Fishing Regions (OFR) (which includes the French Outermost regions (OMR)) a meaningful SHI value could be computed for 25% of the 56 fleet segments from this area, with 43% of them indicated to be out of balance and 57% in balance. The SAR was estimated for 66% of the total number of segments, 38% of which were indicated to be in balance and 62% out of balance. Economic indicators values (CR/BER and RoFTA) were available for 46% of the total active fleet segments in this area, while for RoI this percentage was 11%. The majority of the fleet segments considering these three economic indicators were out of balance (54%, 54% and 50% for CR/BER, RoFTA and RoI, respectively). For the VUR technical indicator (with a coverage of 89% of the fleet segments of this area), 68% of the segments were in balance and 32% out of balance. Finally, 30% of fleet segments had inactive vessels, and all such segments were indicated to be in balance (proportion of inactive vessels in a segment is less than 10%).

Regarding the trends of the indicators above, for SHI no clear trend was observed, or it was not possible to obtain a trend for 93% of the fleet segments in the OFR. The remaining 7% of fleet segments indicated a deteriorating trend. For the three economic indicators, the majority of the segments had a deteriorating trend (42%, 73% and 33% for CR/BER, RoFTA and RoI, respectively). An improving trend was assessed for 15%, 15% and 33% of the fleet segments (for CR/BER, RoFTA and RoI, respectively). No trend in the VUR could be calculated for 62% of the fleet segments and no clear trend could be detected for 20% of them. In the case of IV indicator, there was no clear trend for 59% of the segments and it could not be calculated for 12% of them.

STECF further notes that VUR is largely uninformative for small scale and part time fleet segments, because it only shows what proportion of the segment was inactive.

Table 5.6.1. Total numbers of fleet segments and by supra-regions as calculated by the EWG 22-15 for the year 2020, together with the numbers of segments for which a value for each indicator could be computed, the numbers indicated to be in or out of balance and their trends

Area			Nº active segments	Indicators						
				Biological		Economic			Technical	
			Total	SHI	SAR	CR/BER	RoFTA	RoI	VUR	IV
EU	**Coverage**	Total	585	**177**	**435**	**360**	**360**	**57**	**507**	**139**
	Balance	In balance		79	239	235	229	32	246	126
		Out of Balance		98	196	125	131	25	261	13
NAO	**Coverage**	Total	324	116	241	200	200	34	261	78
	Balance	In balance		59	144	131	128	15	129	68
		Out of Balance		57	97	69	72	19	132	10
	Trend	Trend deteriorating		14		118	137	23	14	16

		Trend improving		46		39	48	5	20	17
		No clear trend		48		30	2	1	181	34
		Flat trend		1		0	0	0	19	0
		Could not be calculated		7		13	13	5	27	11
MBS	**Coverage**	Total	205	47	157	134	134	17	196	44
	Balance	In balance		12	81	92	89	14	83	41
		Out of Balance		35	76	42	45	3	113	3
	Trend	Trend deteriorating		7		49	54	2	18	9
		Trend improving		24		51	62	6	32	14
		No clear trend		2		17	1	9	78	18
		Flat trend		1		0	0	0	10	0
		Could not be calculated		13		17	17	0	58	3
OFR	**Coverage**	Total	56	14	37	26	26	6	50	17
	Balance	In balance		8	14	12	12	3	34	17
		Out of Balance		6	23	14	14	3	16	0
	Trend	Trend deteriorating		1		11	19	2	2	1
		Trend improving		0		4	4	2	5	4
		No clear trend		8		8	0	2	10	10
		Flat trend		0		0	0	0	2	0
		Could not be calculated		5		3	3	0	31	2

Assessment of if the annual national fleet reports present an appropriate and complete analysis of balance between fleet capacity and fishing opportunity for each Member States' fleet segments

The EWG 22-15 considered that all but two (France and Denmark) fleet reports provide a sound and comprehensive analysis of balance between fleet capacity and fishing opportunities in the Member State. However, only 6 out of 22 fleet reports submitted by Member States were prepared fully in line with the Commission guidelines (Table 5.6.2). The 16 other MS followed the guidelines to varying degrees (reported in Table 5.6.2 as a "No" is in accordance with the CG column). The reasons why, as extracted from the EWG 22-15 report, are listed in Table 5.6.2 below. The specific reasons vary by Member State but can be summarised as follows:

- Use of different fleet segmentation than the DCF as requested by the Commission guidelines.
- Omission of segments (not even capacity data is reported by Member State).
- Calculation of the indicator with data from the year prior to the year the fleet report is submitted (e.g., stock status from the previous year for SHI).
- Lack of available indicators reported (mainly SAR).
- Lack of rationale to explain an "in balance" situation when the EWG calculated indicators show the opposite.
- Not providing an action plan for the segments considered out of balance.

Table 5.6.2. Summary of the assessment made by the EWG 22-15 of whether annual national fleet reports i/ present an appropriate and complete analysis of balance between fleet capacity and fishing opportunities and ii/ follow the Commission Guidelines (CG)

MS	Fleet report provides a sound and comprehensive analysis according to EWG 22-15	Fleet report is in accordance with the CG according to EWG 22-15	Comments provided by the EWG 22-15
Belgium	Yes	Yes	
Bulgaria	Yes	No	The information on how the actions are to be implemented and the expected effect from such measures on overcapacity in the fleet is not described or assessed
Croatia	Yes	Yes	-
Cyprus	Yes	No	SAR indicator values missing.
Denmark	Not stated by the EWG	No	Assessment of the balance between fleet capacity and fishing opportunities is evaluated based on fisheries and vessel length categories. It should be evaluated based on fleet segments to be consistent with the Commission Guidelines
Estonia	Yes	No	SAR was not calculated by the MS; the MS present the values extracted from the STECF JRC web page. Moreover, the biological indicators (SHI and SAR) and economic indicators are not provided for the high seas fleet segment (confidentiality issues).
Finland	Yes	No	Only SHI values were presented but none of the economic or technical indicators requested were presented in the fleet report and no comparison with the indicator values computed by the EWG 22-15 could be made.
France	Not stated by the EWG	No	The MS uses a different fleet segmentation from that of the EWG. There is also some indicators and information missing.
Germany	Yes	Yes	-
Greece	Yes	No	Did not explicitly assess the fleet segments in terms of 'in balance' or 'out of balance' in accordance with the CG.
Ireland	Yes	No	The Irish fleet report uses a different fleet segmentation than the EWG.

Italy	Yes	No	The Italian fleet report uses a different fleet segmentation than the EWG.
Latvia	Yes	No	Missing the SAR indicator.
Lithuania	Yes	No	Missing one DWF fleet segments for which biological indicators seems to be out of balance.
Malta	Yes	No	Does not include biological indicators at the segment level due to data limitations
Netherlands	Yes	No	No information for year 2021 is given and only some information for 2020 is provided.
Poland	Yes	Yes	-
Portugal	Yes	Yes	-
Romania	Yes	No	SHI only available for one segment, while the EWG provided results for six segments.
Slovenia	Yes	No	Methodology to calculate to SAR differs from the one in the CG.
Spain	Yes	Yes	-
Sweden	Yes	No	Different fleet segmentation than the required in the CG.

STECF notes that in the absence of explicit objective criteria to assess whether the fleet report submitted by a Member State provides a sound and comprehensive analysis of balance between fleet capacity and fishing opportunities of all its fleet segments, based on DCF information, in line with the Commission guidelines, the EWG assessment of sound and comprehensive, is inevitably subjective.

Furthermore, the EWG 22-15, as in previous reports, makes a distinction between whether the report presents a sound and comprehensive assessment of balance and whether it is presented in line with the Commission guidelines, hence the distinction is also given in Table 5.6.2.

Discrepancies between the national balance assessments and those carried out by the EWG 22-15.

As requested, for each fleet segment and indicator, the EWG 22-15 compared indicator values as calculated by the EWG and those provided in the Member States' fleet reports (see each National chapter in the EWG 22-15 report and Annex II). A summary of the differences found by Member States and indicators used was prepared by STECF and is presented in Table 5.6.3. The categorisation of the differences in the indicator values between Member States' fleet reports and those calculated by the EWG is based on the following criteria decided by STECF:

- Equal: If the indicator values calculated by the EWG and those provided by the Member State are the same.
- Similar (Sim). If the indicator values calculated by the EWG and those provided by the MS differ, but they indicate the same balance/imbalance assessment.
- Discrepancies (Discr). If the indicator value calculated by the EWG and those provided by the MS differ and they indicate a different balance/imbalance assessment.
- Not Provided (NP): If the indicator value is not provided in the Member State's fleet report.

- Not Comparable (NC): If the fleet segmentation used by the Member State differs to that used by the EWG.

Table 5.6.3. Summary of differences in indicator values between those calculated by EWG 22-15 and the Member States' fleet reports for 2020

	Biological		Economic			Technical		Comments from the EWG 22-15
MS	**SHI**	**SAR**	**CR/BER**	**RoI**	**RoFTA**	**VUR**	**IV**	
Belgium	Sim	Sim	Discr	NP	Discr	Discr	Sim	Discrepancies in CR/BER and RoFTA in one segment. VUR also different in one segment.
Bulgaria	Discr	Sim	Discr	NC	NC	NP	NC	The EWG excluded information on the status of stocks in the Black Sea. The SHI indicators in the MS report are likely based on other target reference points.
Croatia	Discr	NC	Sim	NP	Sim	Sim	Equal	Different list of stocks used to estimate F/FMSY average to be used in SHI calculation.
Cyprus	Discr	NP	Discr	NP	NC	Discr	Equal	The EWG was unable to identify the reasons for discrepancies in SHI and CR/BER.
Denmark	Sim	Sim	Sim	Similar	NP	NC	NC	IV is calculated for 2021 and not for 2020 (EWG). Different methodology for VUR.
Estonia	Sim	NP	Sim	NP	Similar	NC	NC	Different years and different methodology
Finland	Discr	NP	NP	NP	NP	NP	NP	The fleet report has calculated SHI on a stock basis rather than a fleet basis, therefore we are not able to make any comparisons. No values for the rest of the indicators.
France	NC	NC	NC	NC	NC	NC	NC	The French fleet report lists a fleet segmentation that is entirely different to that used by the Expert group. For this reason, there is no possibility to compare indicator values for equivalent fleet segments.
Germany	Discr	Discr	Equal	NP	Discr	Discr	Equal	SHI for one segment and SAR in three segments. For RoFTA and VUR the discrepancies is one segment
Greece	NC	NP	NP	NP	Discr	Equal	Equal	SHI for one segment and SAR in three segments. For Rofta and VUR the discrepancy is only in one segment.
Ireland	NC	NC	Discr	NP	Discr	NP	NP	Since Ireland used EWG 20-11 data for their assessment of SHI and SAR, no comparison was possible. For economic indicators the MS and EWG used different data.
Italy	NC	NP	Equal	NP	Discr	NC	Equal	SHI is provided by GSA and is different from the one used in the EWG. For RoFTA the probable reason for the discrepancies found is that the values in the Italy fleet report were not shown as percentage.
Latvia	Sim	NP	Sim	NC	NP	NP	NC	One segment missing, and a different reference year.
Lithuania	Sim	Sim	Equal	Equal	Equal	Sim	Equal	SAR is not calculated by the MS. Different number of segments assessed.
Malta	NP	NP	Discr	Discr	NP	Equal	Sim	SHI and SAR were not provided for 2020. Discrepancy for two segments for CR/BER, and one for ROI.
Netherlands	Discr	Discr	Equal	NC	NP	Equal	Equal	Discrepancies for SHI were found for 3 fleets, and for SAR for 1 fleet. EWG provided RoFTA, fleet report ROI although values are similar.
Poland	Discr	Discr	Sim	NC	NP	Sim	Sim	Discrepancies for SHI were found for 1 segment, and for SAR for many segments.

								EWG provided RoFTA, fleet report ROI although values are equal
Portugal	NP	NP	Discr	NP	Sim	Discr	Equal	SHI and SAR only provided for the Madeiran fleets and discrepancies were found for the SAR. CR/BER show small discrepancies leading to contradictory assessments when close to the threshold value. VUR discrepancies identified for most segments for unknown reasons.
Romania	Sim	NP	Sim	Sim	NP	Discr	Equal	SAR not provided because Romanian catches below 10% of stock at risk. VUR showed major discrepancies for 2 segments.
Slovenia	NP	Sim	Sim	NP	Equal	Discr	Equal	SHI was not provided because none of the fleet had more than 40% of the value of landings from assessed stocks. Due to a lack of biomass reference points, the definition used for SAR was slightly different than in the guidelines but led to similar assessments. For the CR/BER indicator, MS reported short term profitability for two clusters leading to similar assessments. Discrepancies were identified in VUR for 7 segments (with one or two vessels).
Spain	Discr	Discr	Equal	NP	Equal	Discr	Discr	Discrepancies identified for SHI and SAR leading to contradictory assessments. One segment is missing for RoFTA. Discrepancies were identified for the VUR of three segments and two of the IV.
Sweden	NP	NP	Equal	NP	Equal	NC	NC	SHI and SAR provided for 2019 not 2020. VUR not comparable due to differences in fleet segmentation

STECF notes that for many fleet segments, discrepancies between the SHI values computed by the EWG 22-15 for a given year (in this report the year 2020) and those provided by Member States in their Fleet reports for the same year are likely to occur. Such occurrences arise because the values for F/F_{MSY} used in computing the SHI will in most cases, be derived from the results of stock assessments undertaken at different times. For example, a Member State preparing its fleet report for 2021, which it will submit by 31 May 2022, is likely to base its F/F_{MSY} values for 2020 on stock assessments carried out in 2021. However, the EWG 22-15 derives its F/F_{MSY} values for 2020 from stock assessments carried out in 2022, which is likely to deliver an updated and often different value for F/F_{MSY} for 2020 than in the previous year's assessment.

The assessment of the balance situation in the outermost regions (OMR).

As requested, the EWG has produced an overall assessment of the outermost regions (OMR) fleet segments both at aggregated Member State level, and at fleet segment level. STECF notes that the biological and technical indicators are provided at total fleet segment level, although for the case of the economic indicators, they are provided at clustered segment level. This implies that the total segments for the case of biological and technical indicators is 67, while for the case of the economic indicators the total number of clustered segments is 35. The STECF summary of the EWG 22-15 assessment is presented in Table 5.6.4 (for biological and technical indicators) and Table 5.6.5 (for economic indicators).

Table 5.6.4. Total number of segments in the OMR as calculated by the EWG 22-15, indicated to be in balance and out of balance in 2020, by biological and technical balance indicators.

MS	Fleet Segments	Assessment	SAR	SHI	VUR

	(Total)				
France	35	Coverage	32	7	33
		Out of balance	12	2	16
Portugal	19	Coverage	15	0	19
		Out of balance	2	0	9
Spain	13	Coverage	13	2	13
		Out of balance	3	1	3
Total	67	Coverage	60	9	65
		Out of balance	17	3	28

Table 5.6.5. Clustered number of segments in the OMR as calculated by the EWG 22-15, indicated to be in balance and out of balance, by economical balance indicators.

MS	Fleet Segments (Clustered)	Assessment	CR/BER	RoFTA
France	18	Coverage	16	16
		Out of balance	8	8
Portugal	15	Coverage	15	15
		Out of balance	4	4
Spain	6	Coverage	6	6
		Out of balance	1	1
Total	39	Coverage	37	37
		Out of balance	13	13

STECF notes that while SAR indicator values were available for 90% of the OMR fleet segments, a meaningful value for SHI could only be computed for 13% of them. Meaningful values for SHI were computed for 20% and 15% of the total French and Spanish OMR fleet segments, respectively. No meaningful values for SHI were calculated for any Portuguese fleet segments.

STECF also notes that because meaningful values for SHI could be computed for only a small proportion of the OMR fleet segments, the proportion of segments indicated to be out of balance expressed as a percentage of the total number of fleet segments appears artificially low. The main reason for this low coverage is that the majority of OMR fleet segments are small-scale fisheries catching a large number of species in small quantities, the majority of them being data-limited and not assessed.

STECF PLEN 22-02 had commented that considering some additional national assessments of key stocks may be explored within national laboratories (especially for French OMR). However, if such

assessments have not been validated by the relevant RFMO, they are not available to EWG 22-15. Collecting, validating and including these, may increase the number and proportion of fleet segments for which a SHI value can be computed. However, STECF notes that to substantially increase the proportion will be challenging and that the SHI coverage will remain incomplete.

The main species responsible for the imbalance considering the SHI for French OMR fleet segments were yellowfin tuna, blue marlin; albacore; bigeye tuna and striped marlin. For Spain, the main species responsible of the imbalance were bigeye tuna and Atlantic horse mackerel.

The economic and technical indicators were calculated for the majority of the (clustered) fleet segments (90% and 100%, respectively) of which, according to the Commission guidelines, 35% were found to be out of balance.

Overview of the action plans (AP) currently implemented by each Member State.

In 2022, new APs were presented by Denmark, Portugal and Sweden. In addition, an update of existing APs was provided by Bulgaria, Cyprus, Croatia, France, Germany, Italy, Lithuania, Poland, Romania and Spain. A resubmission of a 2016 AP was made by Malta. The remaining Member States did not submit any new or updated APs.

STECF notes that the EWG has produced a table summarizing the main elements of the APs, for the years 2021 and 2022 which is reproduced below (Table 5.6.6). In particular, the new or revised APs were assessed by the EWG based on the (1) timeframe presented, (2) the precise measures to be implemented and (3) their objectives and targets, for reducing the perceived imbalance in the fleet segments concerned, as requested by the Commission guidelines (appropriately targeted). In 2022, all but Malta's and Italian's AP were considered by the EWG as sufficiently detailed regarding these three requirements. However, in general the information provided was not sufficient for the EWG to quantitatively assess whether such measures would be sufficient to address any perceived imbalance or whether any stated objectives are likely to be met in a defined timeframe.

Table 5.6.6. Summary of action plans submitted in 2021 and 2022 as reported by the EWG

MEMBER STATE	Year*	Action plan presented?	Status	Appropriately targeted? **	Timeframe described	Tools described	EWG comments
Belgium	2021	No	NA	NA	NA	NA	EWG 21-16 comments; The MS considered all segments to be in balance. No action plan presented.
Belgium	2022	No	NA	NA	NA	NA	The MS considered all segments to be in balance. No action plan presented.
Bulgaria	2021	yes	new	yes	yes	yes	How actions are to be implemented and the expected effect from such measures on overcapacity in the fleet is neither described nor assessed. The EWG could not assess if the actions proposed will influence the balance.
Bulgaria	2022	yes	update	yes	yes	yes	The updated action plan (2020) is partly targeted because there is no information about the share of capacity that will be reduced. Two new measures were added to the AP and the information for each fleet segment was updated. However, it is still not clear how the proposed measures will improve the balance of the fleet.
Cyprus	2021	yes	Update	yes	yes	yes	Partial of only some segments. The EWG could not assess if the actions proposed will influence the balance.
Cyprus	2022	yes	Update	yes	yes	yes	An action plan that accompanied with the 2020 fleet report was reviewed by MS. A similar action plan was applied for the DTS VL2440 fleet segment. The measure proposed is the permanent cessation of fishing activities for two trawlers from a segment total of five trawlers on a voluntary basis or with an established restriction on the trawl net's mesh sizes. The time frame is for two years without specific dates.
Croatia	2021	Yes	Update	Yes	Yes	Yes	Objectives not clear, and no quantitative evaluation and timeframe. The EWG could not assess if the actions proposed will influence the balance.
Croatia	2022	Yes	Updated and Strengthened	Yes	Yes	Yes	The action plan clearly sets out the timeframe and the objectives/targets. The direct outcome of the measures innthe AP is not quantifiable.
Denmark	2021	no	-	-	-	-	The MS considers its management system to be well functioning in order to secure a balance.
Denmark	2022	yes	new	yes	yes	yes	Action Plan clear, targeted and limited in time (2022-2023): it provides a detailed plan for Baltic Sea and adjustments to the fleet structure with regard to mitigate the negative effects of Brexit (without precision on this second point). Both terminated by the end of 2023
Estonia	2022	no	/	/	/	/	No action plan proposed by MS. The MS considers its management system to be adequate in order to ensure that the fishing fleet to be in balance with fishing opportunities, with no identified structural overcapacity.
Finland	2022	no	/	/	/	/	No action plan proposed by MS. The MS considers its fishing fleet to be in balance with fishing opportunities, with no identified structural overcapacity.
France	2021	yes	update	yes	yes	yes	An update from the one submitted in 2020. The level of details differs from segment to segment. The EWG could not assess if the actions proposed will influence the balance.
France	2022	yes	update	yes	yes	yes	The AP (2020) was updated with five new segments, and the timeframe was extended to 2023. The length class for one segment was changed. The implentation and progress by measure and segment of the previous AP is provided in Annex 3 of the fleet report submitted in 2022.
Germany	2021	yes	Update	yes	yes	yes	Describes the targets measures and timeframes to be used.
Germany	2022	yes	Update	yes	yes	yes	The updated 2021 action plan proposes specific measures for eight fleet segments which operate in the Baltic Sea region. AP presents a wide range of measures of both a general type applicable for all fleets, as well as specific type to those fleet segments identified as being out of balance. Some of measures are as an ongoing basis from 2015. The measure for permanent cessation of fishing activities is applicable to the 2021-2022 period. In 2022, a provided action plan required the fleet reduce by TM VL2440 segment due to the implementation of a permanent cessation measure.
Greece	2022	no	/	/	/	/	MS considers that certain fleet segments are not in balance with their fishing opportunities. An Action plan is in preparation but was not submitted with the annual fleet report. There is no clear time plan provided by MS.
Ireland	2021	No	-	-	-	-	The MS considers that structural imbalance does not exist, so no action plan is proposed.
Ireland	2022	No	-	-	-	-	Ireland, based on the Irish Fleet Report 2021, considers that structural imbalance does not exist in any of its fleet segments and no action plan is proposed. The Irish view is that the imbalance identified in some fleets in the 2016 report is due to a difference in the rate of interest used in the calculation of the indicators.

MEMBER STATE	Year*	Action plan presented?	Status	Appropriately targeted? **	Timeframe described	Tools described	EWG comments
Italy	2021	Yes	Update	Partly	meframe spe	Yes	EWG 21-16 comments; No comments from the EWG.
Italy	2022	Yes	Update	No fleet segments mentioned	meframe spe	Partly	Updated from at least 2017. Objectives are not specifically targeted at the fleet segments that are not in balance. The action plan describes several measures to be taken to reduce fishing mortality. Of these, only temporary closure periods are explicitly described. The other measures are mostly unfinalised and have not been implemented yet.
Latvia	2021	No	-	-	-	-	Action plan submitted with 2019 fleet report. Timeframe: within the programming period 2014-2020 (with n+ 3 rule). In a case of unavoidable legal and technical constrains or limitations the available measures under next programming period 2021-2027 will be used. The EWG could not assess if the actions proposed will influence the balance.
Latvia	2022	No	-	-	-	-	Ongoing AP provided with 2019 fleet report. MS implemented measure for reducing the capacity in fleet segment DFN 2440 operating in the Baltic Sea through permanent withdrawal from fishing activity of a number of vessels, which were involved in cod fishery in 2014-2018.
Lithuania	2021	Yes	Update	Yes	Yes	Yes	Timeframe: 2021-2023. Update of AP provided with 2019 fleet report. Only for the Baltic Sea fleets but not for the Distant water fleet. The EWG could not assess if the actions proposed will influence the balance.
Lithuania	2022	No	-	-	-	-	Ongoing AP provided with 2020 fleet report. Timeframe: 2021-2023. Two types of measures targeting fleet segments NAO DFN 1012 and NAO DTS 2440 operating in the Baltic Sea - a system of transferable fishing concessions and a scrapping scheme with public compensation for permanent cessation of fishing for reducing overcapacity. No action plan for the distant water fleet segment (OFR TM 40XX).
Malta	2021	yes	resubmitted	no	no	no	Resubmitted the 2016 action plan. More a statement of intent to improve monitoring. The EWG could not assess if the actions proposed will influence the balance.
Malta	2022	yes	resubmitted	no	no	no	Resubmitted the 2016 action plan. No changes and new information about the implementation of the AP submitted in the previous years.
Netherlands	2021	No	-	-	-	-	The MS considers its management system to be well functioning in order to secure a balance
Netherlands	2022	No	-	-	-	-	No rationale for not presenting AP is elaborated in the fleet report.
Poland	2021	yes	Update	yes	yes	yes	Targets, tools and timeframes for the action plan are clearly stated. However, the EWG could not assess if the actions proposed will influence the balance.
Poland	2022	yes	Update	yes	yes	yes	An action plan accompanied with 2020 fleet report was reviewed by MS. An action plan is proposed for eight of the fishing fleet segments which operated in the Baltic Sea region. The action plan includes three main measures which were specified for each segments indentified by MS that were out of balance. A time frame is for three to five years without specific dates.
Portugal	2021	no	-	-	-	-	The MS considers its management system to be well functioning in order to secure a balance.
Portugal	2022	yes	new	yes	yes	yes	Action Plan clear, targeted and limited in time (2022-2023): it targets the fleet HOK > 12m
Romania	2021	yes	update	yes	yes	yes	Seems an update of previous ones. The EWG could not assess if the actions proposed will influence the balance.
Romania	2022	yes	update	yes	yes	yes	Action Plan from 2020 and extended to 2027. The AP targets all 6 fleet segments but the objectives are unclear. The lack of relevant information means that the EWG is unable to assess of the potential effects of the proposed measures
Slovenia	2021	No	-	-	-	-	The MS considered that all fleet segments were in balance.
Slovenia	2022	No	-	-	-	-	The MS considers that all fleet segments are in balance. The EWG does not concur with the assessment. It appears that socio-economic objectives (employment) may have priority over stock conservation
Spain	2021	Yes	Update	Yes	Yes	Yes	EWG 21-16 comments; Objectives well defined but the timeframe not specified. The EWG could not assess if the actions proposed will influence the balance.
Spain	2022	Yes	Update	Yes	Yes	Yes	Updated from 2021. The objectives are clearly defined and the measures to achieve them are described. The objectives are apporpriately targeted to the fleet segments which are not in balance. The AP implies that the targets are to be met by the time the AP expires, but it is not made explicit. Some parts of the AP set for 2021-2023 were met in 2022 and can be considered successful.
Sweden	2021	yes	new	yes	yes	yes	The EWG could not assess if the actions proposed will influence the balance.
Sweden	2022	no	/	/	/	/	AP 2021 is valid until 2023. MS has implemented a measure for reducing overcapacity in fleet targeting cod in the Baltic Sea. MS reported on the progress of AP 2021 implementation in the annual fleet report in 2022.

STECF conclusions

STECF concludes that all terms of reference were successfully addressed by the EWG 22-15.
In most cases, and according to the EWG, most Member States' fleet reports provided a sound and comprehensive analysis of balance between capacity and fishing opportunities. However, STECF concludes that the assessment of whether a Member States' fleet report is sound and comprehensive is rather subjective, and further guidance of how to perform this evaluation should be given by the DGMARE to the EWG, specifying which are the elements of the fleet report that should be included to categorise it as sound and comprehensive.

STECF concludes that many of the Member States' fleet reports were not prepared strictly in line with the Commission guidelines but the extent to which departures from the guidelines, influence Member States' overall assessment of balance in their fleet segments and it varies by Member State.

STECF concludes that according to the criteria in the Commission guidelines (COM (2014) 545) (CG), more than half (55%) of the fleet segments in the North Atlantic Ocean (NAO) for which a meaningful value for the SHI can be calculated, are indicated to be out of balance with fishing opportunities. However, there is an improving trend for many fleet segments. Conversely, the majority of economic indicators are showing fleet segments to be in balance, although, overall, the trends indicate a worsening situation related to the increasing evolution of the main cost items of fleets throughout Member States.

STECF concludes that according to the same criteria, 74% of the fleet segments in the Mediterranean and Black Sea (MBS), for which a meaningful value for the SHI can be calculated (23%), are indicated to be out of balance with fishing opportunities. Again, there is an improving trend for many fleet segments. Conversely, the economic indicators, are showing fleet segments to be in balance with fishing opportunities. Overall, the trends indicate an improving situation.

STECF concludes that according to the same criteria, 57% of the fleet segments in the Other Fishing regions (OFR), for which a meaningful value for the SHI can be calculated, 25% are indicated to be in balance with fishing opportunities. However, for these regions the coverage of the SAR indicator is higher than for SHI (66% of the fleet segments), while according to these indicators the majority of these seem to be out of balance. No reliable assessment of the trends could be made for the majority (93%) of the OFR fleet segments for biological indicators due to a lack of data. For the case of economic indicators, a deteriorating trend or no clear trend was obtained for the majority of the fleet segments.

In the case of the technical indicators, no clear trend can be depicted for the NAO, MBS, OFR and OMR. STECF reiterates the conclusion of PLEN 21-03 that the use of VUR indicator is misleading for small scale segments and/or seasonal fisheries, given that their maximum sea-days is very variable.

STECF concludes that the global coverage of the SHI indicator is limited in all the regions (36%, 23%, 25%, and 13% of the active fleet segments for NAO, MED, OFR and OMR, respectively), which hinders any reliable assessment of the biological balance indicators at overall regional level. STECF concludes that this level of coverage has been rather stable in the recent years, and that full coverage of the SHI indicator is unlikely to happen in all the regions. STECF suggests that the SHI coverage is likely to be lowest for small-scale fisheries in temperate/tropical waters, considering that their landings' portfolio is usually composed of many species, and that for many of these stocks which a stock assessment is unlikely to be available soon due to the lack of data or capacity to carry out such assessments.

STECF concludes that it may be possible for some additional work on stock assessment may be carried out within national labs. Information should be sought from the relevant RFMOs to investigate the likelihood that additional stock assessments of coastal species will be performed in the near future. If that will not happen, STECF reiterates its suggestion from PLEN 22-02 that a dedicated STECF Outermost Regions EWG be conducted in 2023, that could review and make available to the Balance/Capacity EWG any additional existing information on the status of the

coastal stocks that could contribute to improving the SHI coverage for some fleets segments. However, STECF notes that the coverage problem will likely persist for many segments.

STECF concludes that the number of OMR fleet segments for which economic indicators has been computed increased in 2022 compared to 2021. For the French OMRs, nine new fleet segments have been included compared to 2021.

5.7 EWG 21-16: Stock Assessment in the Adriatic, Ionian and Aegean Sea 2021

Request to STECF

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

STECF comments

EWG 22-16 met in Rome, from 17th to 23rd October 2022. The meeting was attended by 19 experts in total with two attending virtually. This included one STECF member and one JRC expert. Two observers also attended the meeting remotely for part of the meeting. The objective of EWG 22-16 was to carry out demersal stock assessments and provide short-term forecast advice for stocks in the Adriatic, Ionian and Aegean Seas as defined in the EWG ToRs.

STECF acknowledges that the EWG has addressed adequately all ToRs except for one low priority stock (Red mullet in GSA 20) for which time and resource constraints meant the assessment was not completed.

STECF notes that the EWG has carefully reviewed the quality of the assessments produced. From the overall stock list of 16 stocks, a total of 15 area/species combinations were evaluated this year (Table 5.7.1). For one of these (Red mullet in GSA 17-18), an assessment model could not be found to provide acceptable results and a biomass index-based advice is given. The EWG carried out short term forecasts for ten of the accepted analytical assessments. The remaining five assessed stocks were new assessments, and they were deemed inherently unsuitable for catch advice (i.e., CMSY for Striped venus clam) or insufficiently stable in the last years to give target catch advice.

STECF notes that the assessments completed for four area/species combinations for the Adriatic stocks (GSA 17-18) by EWG 22-16 can be used to provide advice on stock status in terms of F relative to F_{MSY} and whether these stocks are behind/ahead of transition to MSY in 2026. This applies to stocks under the GFCM 2019 MAP.

STECF notes that for hake in GSA 17-18, the retrospective analysis shows a strong pattern of overestimation of SSB and underestimation of F in each new assessment year. This highlights the need to look again at a new benchmark for this stock.

STECF acknowledges that for sole in GSA 17, the assessment carried out is an update of the 2021 benchmark assessment from GFCM with a survey index correction for 2020 and 2021 to account for incomplete survey implementation. The potential influence of these adjustments on the stock estimates are not considered to affect the quality of the advice.

STECF notes that addressing the ToRs for sole regarding F-based short-term forecasts using the benchmark ensemble approach was not a trivial task. The procedure is approximate in that the EGW opted to provide median values emphasising the most likely estimates of current and future F from the ensemble models for the combined fishing mortality. This would benefit from a more thorough review.

STECF concludes that diagnostics of the Norway lobster (GSA 17-18) assessment improved a lot through the use of the SPiCT package (Pedersen and Berg, 2017; https://github.com/DTUAqua/spict (version 1.3.7 2002-09-06))

STECF recalls that even if stock status for Norway lobster in GSA17-18 is improving thanks to the implementation of the Pomo Pit area closures, management, local biomass and exploitation rates still vary greatly across Norway lobster subareas (Ancona, Kvarner, Pomo/Jabuka Pit and GSA 18).

This suggests that additional protective measures may need to be considered around especially on the Ancona ground and in GSA 18.

STECF notes that the stock assessment for Striped venus clam, for the nine market districts where assessments are available, show stocks exploited at or below an appropriate level. There is insufficient data for assessing the remaining districts. This species is known to be sensitive to short timescale variability due to environmental factors, and the assessments give little information on F year by year. Under these circumstances it seems unlikely that catch forecasts two years ahead will be of practical use, and that local area management, reactive to short term variations in local catch trends, would be preferable to any broad scale control.

STECF notes that the assessments completed for four area/species combinations for the Southern Adriatic and Ionian seas (GSA 18-19-20) stocks by EWG 22-16 can be used to provide catch advice in terms of F relative to F_{MSY}.

STECF notes that the benchmarked Hake stock (GSA 19) has considerable retrospective problems supporting, as in the case of Hake in GSA 17-18, the need for planning a revision of the benchmark.

STECF notes that ToR 4 requested information on the transition to FMSY by 2030 of Giant red shrimp and blue and red shrimps in GSA 18. This stock spans multiple GSAs. STECF acknowledges that it is not possible to provide such advice when there is no management controlling F in the other parts of the stock. In addition, the allocation of catches to a specific GSA is by the landings port rather than the capture location. Therefore, STECF agrees with the EWG that a response in relation to this ToR is not possible.

STECF notes that both Hake stocks in GSA 20 and GSA 22 benefited of the inclusions of small-scale fishery data which improved the quality of assessments especially for Hake GSA22.

STECF notes that an evaluation and comparison of effort data in terms of vessel number and days at sea was carried out on FDI and MED&BS data calls. Although, last 3 years of effort data are only included in the FDI data call, there is still an overlapping period of several years. The comparison for some countries and fleets resulted in inconsistencies between the two data sets.

STECF notes that problems were encountered in assessing two low priority stocks. For Red mullet in GSA20, no work was attempted and red mullet in GSA 19, which was added very late to the ToRs, and for which there was no time to assemble the data prior to the EWG. In contrast, stocks such as Norway lobster and Striped red mullet both in GSA 15-16 benefited from an ad hoc contract that prepared the data. STECF observes that early identification of data issues is critical for an efficient use of EWG resources and time.

Table 5.7.1 Summary of the work attempted and basis for advice in 2021 and 2022 assessments. a4a: an age-based assessment method; Index refers to the ICES Category 3 approach to advice for stocks without analytical assessment.

Area	**Species**	**Method**	**Basis**
		2021	**2022**
GSA 17-18	Hake	SS3	**SS3 STF**
GSA 17	Sole	STF 2021	**SS3 STF**
GSA 17-18	Red mullet	a4a	**Index**
GSA 17-18	Norway lobster	SPiCT	**SPICT+subarea STF**
GSA 17-18-19	Deep-water rose shrimp	a4a	**a4a STF**
GSA 19	Hake	a4a	**a4a STF**
GSA 19	Red mullet	-	XSA **a4a**
GSA 18-19-20	Giant red shrimp	*	**a4a STF**
GSA 18-19-20	Blue and red shrimp	*	**a4a**
GSA7-18	Venus Clam	*	**CMSY (by area)** **No STF**
GSA 15-16	Norway lobster	**	**a4a STF**
GSA 15-16	Striped red mullet	**	**a4a**
GSA 20	Hake	a4a 2020	**a4a STF**
GSA 22	Hake	Index 2020	**a4a STF**
GSA 20	Red mullet	-	-
GSA 22	Red mullet	a4a 2020	**a4a**

* Data evaluated in EWG 22-03

** Data prepared in an ad hoc contract.

- Previous STECF assessment not available and no data preparation prior to meeting

The main results are summarized in the bullet point list below and in Table 5.7.2. Overall, the assessments indicate that 5 out of the 15 stocks are being significantly overfished, 8 are being fished close or at F_{MSY} and 2 are under-exploited. In addition, in 2021, out of the 5 overfished stocks, two are behind transition to F_{MSY} in 2026 the other three are not currently in a MAP (Table 5.7.3).

Stocks under Adriatic MAP with transition to F_{MSY} in 2026

- Hake in GSA17-18: the biomass is increasing. Catches should be reduced by at least 25% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2026 is behind transition.
- Sole in GSA17: the biomass is increasing. Catches may be increased by no more than 26% to reach F_{MSY} in 2023. F is already below F_{MSY}.

- Red Mullet in GSA17-18: the biomass is increasing. Catches should be reduced by at least 21%.
- Norway lobster in GSA17-18: the biomass is increasing. Catches may be increased by no more than 199% to reach F_{MSY} in 2023. F is already below F_{MSY}.
- Deep-water rose shrimp in GSA17-18-19: the biomass is increasing. Catches should be reduced by at least 53% to reach F_{MSY} in 2023. F_{2021} is > F_{MSY} Transition so progress to F_{MSY} in 2026 is behind transition.

Stocks in Ionian Sea with transition proposals to F_{MSY} in 2030

- Hake in GSA19: the biomass is increasing. Catches should be reduced by at least 10% to reach F_{MSY} in 2023. F is already below F_{MSY}.
- Red mullet in GSA19: the biomass is increasing. No catches forecast is provided
- Giant red shrimp in GSA18-19-20: the biomass is fluctuating. Catches should be reduced by at least 28% to reach F_{MSY} in 2023. F should be changed by -7% to transition to F_{MSY} in 2030
- Blue and red shrimp in GSA18-19-20: the biomass is declining. Catches should be reduced by at least 17% to give status quo F in 2023. F can be reduced by 10% in 2023 to transition to F_{MSY} in 2030

Stocks without transition objectives

- No catch advice is provided for striped venus clam, local market district assessments are provided with assessments that give stock status for recent years but given the known dynamics of the stocks catch advice (two years ahead, in 2023) is not provided.
- Norway lobster in GSA15-16: the biomass is declining. Catches should be reduced by at least 65% to reach F_{MSY} in 2023.
- Striped red mullet in GSA15-16: the biomass is increasing. No catches forecast is provided.
- Hake in GSA20: the biomass is increasing. Catches should be reduced by at least 40% to reach F_{MSY} in 2023.
- Hake in GSA22: the biomass is stable. Catches should be reduced by at least 74% to reach F_{MSY} in 2023
- Red mullet in GSA22: the biomass is increasing. No catches forecast is provided.

Table 5.7.2 Summary of advice and stock status from EWG 22-09 by area and species based on **F_{MSY} target for F2023**. Stocks with light grey shading do not have assessments capable of providing catch options at F_{MSY}, and the line is based on F status quo. Stock status is provided as change in Biomass and F from 2019 to 2021. Fishing mortality (F) 2021 is estimated F in the assessment. Catch in 2023 is based on F_{MSY} (or light grey Fstatus quo). Change in F is the difference (%) between target F in 2023 and the estimated F for 2021. Change in catch is the difference (%) between catch 2021 and catch 2023. Biomass and catch 2019-2021 are given as an indication of trends over the last 3 years for stocks with time series analytical assessments or biomass indices. Dark shaded cells are for stocks without assessment and ICES cat 3 index-based advice. Pale grey shaded stocks have unstable assessments, suitable for general stock status by not specific F advice. For these 4 stocks status quo F advice is given.

Area	Species	Method / Basis	Age Fbar	Biomass 2019-2021	Catch 2019-2021	F 2021	F_{MSY}	Change in F**	Catch 2021*	Catch 2023 Based on F_{MSY} or at $F_{status\ quo}$	Change in catch**
GSA17-18	Hake	**SS3 STF**	1-4	increasing	declining	0.39	0.23	-41%	4845	3612	-25%
GSA17	Sole	**SS3 STF**	1-4	increasing	fluctuating	0.18	0.24	32%	1583	2000	26%
GSA17-18	Red mullet	**Index**		increasing	decreasing				3861	3043	-21%
GSA17-18	Norway lobster	**SPICT+subarea STF**		increasing	fluctuating	0.11	0.27	149%	878	2626	199%
GSA17-18-19	Deep-water rose shrimp	**a4a STF**	0-2	increasing	stable	2.41	0.75	-69%	5015	2352	-53%
GSA19	Hake	**a4a STF**	0-4	increasing	fluctuating	0.34	0.21	-37%	522	468	-10%
GSA19	Red mullet	**a4a**	1-3	increasing	stable	0.31	0.51	65%	219	214	-2%
GSA18-19-20	Giant red shrimp	**a4a STF**	1-3	fluctuating	declining	0.83	0.37	-55%	292	210	-28%
GSA18-19-20	Blue and red shrimp	**a4a**	1-3	declining	declining	0.91	0.21	-77%	233	195	-17%
GSA17-18	Venus Clam	**CMSY (by area) No STF**									
GSA 15-16	Norway lobster	**a4a STF**	2-8	declining	declining	0.20	0.10	-50%	148	51	-65%
GSA15-16	Striped red mullet	**a4a**	1-4	increasing	declining	0.34	0.27	-20%	478	651	36%
GSA20	Hake	**a4a STF**	1-3	increasing	fluctuating	0.51	0.24	-53%	881	528	-40%
GSA22	Hake	**a4a STF**	1-3	stable	declining	0.51	0.11	-79%	4214	1094	-74%
GSA22	Red mullet	**a4a**	1-3	increasing	declining	0.21	0.31	42%	1888	2107	12%

Table 5.7.3a Summary of stock and fishery status by area and species, **based on $F_{MSY\ Transition}$ either to 2026 or 2030 (5.7.3b)**. Recent change gives general change in F and catch over the last three years. F_{2019} and F_{2021} are both estimated F in the 2022 assessment. F 2022 is status quo F from 2021. F_{2026} or F_{2030} are F_{MSY} the target for the end of transition, F_{2019} of F_{2022} are the starting point of the plans. For Adriatic stocks (Table 2.3a) the estimate of progress so far is shown as the F change % 2019 to 2021 and the F status relative to transition with $F_{MSY\ Transition}$ 2021. **Advice for 2023** is based on the $F_{MSY\ Transition}$ for the next advice year (2023) which is set at a level to reach F_{MSY} in 2026 or 2030, the change in F and implied by the MAP is the difference (as a fraction) between $F_{MSY\ Transition}$ in 2023 and the F in 2019 or F in 2021. Change in catch is from catch 2021 to catch 2023. Shaded cells in 5.7.3a are index based.

Area	Species	F change	Catch Change	F	F	F_{MSY} Transition	F_{MSY} Transition	Target F 2026	F Change %	F Status 2021	F Change %	F Change %	Catch	Catch 2023	Catch Change
		2018-2020	2018-2020	2019	2021	2021	2023	F_{MSY}	2019-2021	Rel to F_{MSY} transition 2021	2019-2023	2021-2023	2021	F_{MSY} Transition	2021-2023
GSA17-18	Hake	Declining	declining	0.55	0.39	0.46	0.37	0.23	-29%	behind transition	-33%	-6%	4845	4690	-3%
GSA17	Sole	Declining	fluctuating	0.30	0.18	0.28	0.27	0.24	-40%	F below F_{MSY}	-12%	47%	1583	2125	34%
GSA17-18	Red mullet		decreasing							Not known			3861		
GSA17-18	Norway lobster	Declining	fluctuating	0.22	0.11	0.24	0.25	0.27	-50%	F below F_{MSY}	14%	128%	878	2437	178%
GSA17-18-19	Deep-water rose shrimp	increasing	stable	1.87	2.41	1.55	1.23	0.75	29%	behind transition	-34%	-49%	5015	3201	-36%

Table 5.7.3.b (shaded entries are for stocks with preliminary assessments and are indicative of magnitude only)

Area	Species	F change 2018-2020	Catch Change 2018-2020	F 2022	F 2021	F_{MSY} Transition 2023	Target F 2030 F_{MSY}	F Change % 2021-2023	Catch 2021	Catch 2023 F_{MSY} Transition	Catch Change 2021-2023
GSA19	Hake	declining	fluctuating	0.34	0.34	0.25	0.21	-5%	522	678	30%
GSA19	Red mullet	declining	stable	0.31	0.31	F already below F_{MSY}	0.51				
GSA18-19-20	Giant red shrimp	declining	declining	0.83	0.83	0.52	0.37	-7%	292	367	26%
GSA18-19-20	Red and blue shrimp	increasing	declining	0.91	0.91	0.44	0.21	-10%			

STECF conclusions

STECF concludes that the EWG adequately addressed all the ToRs.

STECF endorses the assessments and evaluations of stock status produced by the EWG.

STECF concludes that assessment models for hake stocks in GSA 17-18 and GSA 19 (benchmarked by GFCM in 2019) are deteriorating, showing strong retrospective patterns. STECF suggests that a benchmark of both assessments should be considered before the EWG next year.

STECF concludes that for Sole in GSA 17 benchmark assessment there are still some issues to be solved and/or improved (see Section 3 of the EWG22-16 report). Moreover, STECF agrees that to run a short-term forecast (STF) on an ensemble model according to the STECF procedures (F basis) is complex and requires additional work outside the scope of the EWG. STECF suggests an ad-hoc contract to provide methods and tools to extract data and implement the forecast required by DGMARE.

STECF concludes that diagnostics of the Norway lobster (GSA 17-18) assessment improved a lot through the use of the SPiCT package. STECF also notes that one of the main issues detected in the past (observed value higher than the estimated carrying capacity) is now solved. STECF concludes the assessment is now acceptable for advice.

STECF concludes that the Norway lobster stock is now estimated to be above B_{MSY} and F below F_{MSY}. However, the sub-area evaluations indicate that while Pomo/Jabuka Pit has recovered quickly following the area closure, the Ancona and GSA 18 sub areas are estimated to be at historic low biomasses and should be considered for reduced exploitation to avoid local depletion.

STECF concludes that for Striped venus clam, local area management, reactive to short term local population trends, would be preferable to any broad scale control.

STECF concludes that to best perform the tasks that the EWG is requested to carry out under the ToRs, the process in planning the meeting needs to be streamed to have ToRs and stock list concluded by the Summer Plenary. If this is not possible, the stock list should be finalised at that time.

References

Pedersen, M. W. and Berg, C. W. (2017), A stochastic surplus production model in continuous time. Fish and Fisheries, 18(2): 226-243. doi:10.1111/faf.12174

SPiCT package v. 1.3.7 - GitHub - DTUAqua/spict: Surplus Production model in Continuous Time

5.8 EWG 21-17: Economic report on the EU Aquaculture

Request to STECF

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

STECF comments

EWG 22-17 met in Ispra, from 24-28th of October 2022. The EWG was attended by a group of aquaculture economic experts consisting of 29 experts from 19 countries and 3 JRC experts. The Economic Report of the EU Aquaculture Sector is made on a biennial basis. The 2022 report is the eighth of its kind. It provides a comprehensive overview of the latest information available on the production, economic value, structure and competitive performance of the aquaculture sector at the Member State and EU level for the years 2008 to 2020. EWG 22-17 focused on 2019-2020 trends and nowcast, covering the marine finfish, shellfish and freshwater finfish, segments.

Following the 2022 call for economic data on the EU aquaculture, EWG 22-17 was requested to analyse and comment on the economic performance of the EU and national aquaculture sectors between 2008 and 2020, produce a nowcast for 2021-22, analyse the impact of energy price increase on aquaculture sector and socio-demographic characteristic of the sector. It should be noted that this report. EWG 22-17 updated the time-series of the previous 2020 report, updating with data for 2019 and 2020. Additionally, and for the second time, social data on gender, age, education and nationality were provided by the Member States under the EU-MAP and were analysed by the EWG.

STECF acknowledges that the EWG delivered a comprehensive report within two weeks after the meeting and acknowledges the difficulty faced during the meeting due to lack of Spanish data that was not provided during the data call.

STECF observes that the total nominal turnover from the EU aquaculture sector was almost €4.1 and €3.9 billion in 2019 and 2020, respectively. This represents a 3% decline in 2020 in comparison with 2019 data. Even though the overall turnover decreased, the overall EU aquaculture sector experienced an increase in most economic performance indicators in 2020 compared to 2019 for the countries reporting data. The positive development in the economic indicators is driven by the marine finfish segment, whereas the segments freshwater fishes and shellfish, experienced a decline.

STECF observes that an effort has been made to present the development of the entire EU aquaculture sector from 2008 to 2020. The totals and the time trends presented in chapter 2 of the report are based on the data collected under DCF and EU-MAP. This has been supplemented with EUROSTAT and FAO data, estimating missing values to be able to give a comprehensive overview of the EU aquaculture sector. Furthermore, a second attempt to do a nowcast for 2021 and 2022 is provided in the report. However, the nowcast only provides estimates for 2021. Due to the significant increase in energy prices because of the Russian invasion of Ukraine and the aftermath of the Covid-19 pandemic, the EWG found it challenging to estimate the development in 2022 due to the level of uncertainty and without having access to data for this year.

STECF also notes that due to the war in Ukraine, energy prices have been increasing all over Europe, which have affected the aquaculture industry as well as other industries dependent on energy and fuel use. Furthermore, prices on raw material (soy, fishmeal and

oil) have also been affected by the conflict, which means that prices of feed for aquaculture are also influenced. The effects of the energy prices on the EU aquaculture sector have been analysed in a special chapter.

STECF notes that, despite the progress with analysis and a time series of ten years since the first report in 2012, the EWG continues to experience issues with data submission by Member States. STECF notes that the missing data makes the work of the EWG to obtain key performance indicators of the EU aquaculture sector demanding. The key missing information includes:

- Data not provided for 2019-20 by Spain which is one of the main EU producers.
- Important segment information (e.g., oyster production for the Netherlands and several important segments for France).
- Freshwater production and economic data due to DC-MAP thresholds (mostly from landlocked countries)

STECF observes that in order to provide comprehensive and in-depth analysis of the aquaculture sector in the EU, the data sets, submissions and templates for National analysis should be finalised prior to the meeting. Therefore, STECF requests the bureau to discuss potential actions that could improve the process as follows:

1. Explore the possibility to support the work of the EWG through ad hoc contracts to support drafting national chapters before the EWG meeting.
2. Explore the possibility of moving to a two-meeting approach in line with the AER for the fishing fleet. The first meeting would focus on data quality checks and National chapter drafting. This could be a shorter online meeting for 3 days). The second meeting would be used to draft EU overviews, sectoral analysis and the responses to topics of special interest.
3. Facilitate a discussion on the process with the main parties involved (STECF Bureau, DGMARE, JRC) to define the process and responsibilities for the next meeting with the aim to further improve it.

STCEF notes that errors identified in the data submissions during the meeting and inconsistencies in the time series provided as well as re-uploads during the meeting heavily influence the time available for deeper EU and sectoral economic analysis. Most of the report has been written and finalized after the EWG meeting ended, because data for the EU and sectoral overviews was not ready for experts to analyse during the meeting.

STECF notes to streamline quality checks at national level, Member States could use quality checks through developed R scripts they can run before data submission. This is similar to the quality checks developed by C. Ribeiro and A. Motova in 2012-2015 for the Annual Economic Report on the fishing fleet[4] as well as other economic data calls. However, STECF notes that such "R-based" quality checks require maintenance and update prior to each data call.

STECF notes that according to the EWG report, the datasets analysed contains declarations regarding some species with the generic "nei" - not elsewhere included" - where it is not possible to identify to the species or whether more than one species is included in the same group). Examples include Mytilus mussels nei, Clams etc. nei, Venus clams nei, Cupped oysters nei. This is mainly the case for Spain in the FAO dataset and Portugal in

[4] JRC Publications Repository - R quality checks for DCF data submission: Exploratory Data Analysis for Fishing Fleet economic data call. (europa.eu)

the DCF dataset for sea mussel nei. This is believed to be Mediterranean mussels and is analysed as such, because it in fact corresponds to the Spanish and Portuguese production in 2020.

STECF observes that EWG 22-17 for the second time performed an analysis of social-demographic data collected under the EU-MAP for aquaculture. The data collected covers gender, ages, education and nationality of the people employed in the aquaculture sector. The results show that the persons employed in the sector are primarily male (78%) and that the age class 40-65 constitutes about 46% of total employment. Education level shows large differences between Member States as well as types of production technologies used. The majority (82%) of people employed in the aquaculture sector are nationals of their own country, with the remainder rest coming from other EU Member States.

STECF observes that according to EWG 22-17, there is a difference in interpretation of full time equivalent (FTE) jobs submitted by Member States. STECF notes that according to the EU-MAP definitions for aquaculture data collection, the total FTE should include unpaid labour FTE[5]. However currently there is no reference to unpaid labour in the definitions for social data submissions included in the guidance document for the social indicators[6]. In the same document (defining social indicators) there is a requirement that employment data reported in the social data calls should be consistent with the data reported under the aquaculture data call. Therefore, STECF observes that FTE reported under the social data template should include unpaid labour FTEs in line with other calls.

STECF conclusions

STECF concludes that the EWG 22-17 adequately addressed all ToRs including an analysis of the impacts of energy prices on the EU aquaculture sector, the provision of a nowcast for the sector for 2021 and an analysis of the social-demographic data collected under the EU-MAP. Under each national chapter, there is a short summary describing the individual national sectors for each Member States.

STECF concludes that the report provides a good and reliable overview of the economic performance of the EU aquaculture sector. However, the lack of Spanish data, absence of other data due to thresholds and that collection and provision economic data for the freshwater segments is not mandatory, limits the possibilities for an overall EU analysis of the aquaculture sector. It also weakens the conclusions drawn and potentially impacts the nowcast. Furthermore, some data provision issues remain, including non-submission (and continuous submission during the meeting) which reduces the available time that the EWG has to analyse the data and indicators produced.

STECF also concludes that in order to provide comprehensive and in-depth analysis of the aquaculture sector in the EU, the data sets, submissions and templates for National analysis should be finalised prior to the meeting. Therefore, STECF requests the bureau to discuss potential actions that could improve the process.

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[5] Guidance document for the aquaculture - living document Aquaculture - European Commission (europa.eu)

[6] Guidance document for the social variables - living document Social - European Commission (europa.eu)

STECF concludes that Member States should avoid using generic species names 'nei'. To assist Member States, STECF recommends amending the guidance to Member States for the data declaration, to avoid usage of this generic terminology. The use of this term is to a certain extent incompatible with the provisions of Regulation (EC) N° 708/2007 concerning the use of alien and locally absent species in aquaculture[7].

STECF reiterates its conclusion from PLEN 21-01 that, given the importance of the 40-64 age category which represents a high share of sector employees, Member States should split this category to smaller groups and have the possibility to report the split in the data call. STECF advises RCGECON should update the guidelines for social indicators prior to the next data call and disaggregate this age category into 40-54 and 55-64. This will facilitate a more comprehensive analysis of the trends in age within sector labour force.

STECF concludes that in reporting FTEs for the request for social data, unpaid labour should be included as per existing EUMAP guiding documents. Member states should report FTE with unpaid labour in the social data template. STECF advises that RCGECON should update the guidance documents accordingly for Member States making this requirement clearer in the guidance document for the social variables.

7 Council Regulation (EC) No 708/2007 of 11 June 2007 concerning use of alien and locally absent species in aquaculture. OJ L 168, 28.6.2007, p. 1–17.

5.9 EWG 21-18: Revision of Work Plans for data collection and data transmission issues

Request to STECF

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

STECF comments

EWG 22-18 met virtually from 24 to 28 October 2022. The work was conducted by 29 independent experts. Two observers participated in the plenary discussions of the EWG.

STECF notes that EWG 22-18 was requested to:

- evaluate updates to the Member States' (MS) national Work Plan (WP) under the Data Collection Framework (DCF) for the years 2023 and beyond
- evaluate the Regional Work Plan (RWP) submitted by the Regional Coordination Group for the Mediterranean and Black Sea (Med&BS) region, in accordance with Article 10 of Regulation (EU) No 2017/1004
- evaluate Data Transmission issues (DTi) from the 2022 Fleet Economics data call (EWG 22-02) and from the quality checking of MED&BS data and reference points (EWG 22-03)
- finalise the Annual Report assessment grid and guidelines for evaluators comments on the concept document provided by the Commission on setting up a platform for submitting and evaluating the Work Plans and Annual Reports.

Evaluation of Member States' Work Plan updates

STECF notes that 20 MS submitted WP updates for 2023 and beyond (within the multi-annual period 2022-2024(2027). Austria originally did not submit a WP in 2021 but did so for 2023-2025 in October 2022. EWG 22-18 provided the first opportunity to evaluate that WP.

STECF notes that the evaluation sheets (assessment grids) and guidance for evaluators developed by STECF during 2020-2021 were used. STECF observes that the EWG experts also developed and used R scripts to assess the consistencies of table entries. STECF notes that further development and documentation of these scripts, as well as making them available to STECF and MS would improve the quality of the WPs and Annual Reports because they would assist MS in entering consistent information to the WP and AR tables.

STECF notes that MS were requested to reply to the issues identified by the EWG experts during the meeting and this information exchange ("ping-pong") closed out most cases by the end of the meeting, leaving only a few issues that had to be dealt with bilaterally between the Commission and MS.

STECF agrees with the EWG that clearer guidance to the MS on the presentation of updates is needed in order to track future revised versions and to allow easier version control.

STECF observes that the EWG has reported clearly on the MS amendments in the WPs that have been evaluated for each section of the WP. The detailed outcomes of the evaluations are then reported in the evaluation sheets (assessment grid) by each MS allowing clear visibility of the outcome of the evaluations.

Evaluation of the Regional Work Plan

STECF notes that EWG 22-18 was requested to comment on the Regional Work Plan (RWP) for the Mediterranean and Black Sea (Med&BS) region. This was drafted for the first time by the Regional Coordination Group (RCG) for the Med&BS with the technical support of the STREAMLINE[8] and Fishn'Co[9] projects funded under MARE/2020/08. This plan is a non-binding RWP for the year 2023, as a test run for the introduction of a binding RWP planned for 2025-2027.

STECF observes that the EWG identified the sections that are close to being ready for the binding version (e.g., section on fish stomach contents collection and section on recreational fisheries). The EWG also identified sections that need further development (e.g., general section of the text box and generic tables, section on sampling plans for collection of biological data, section on the monitoring of the incidental catches of sensitive species) before being in a format suitable for the RWP.

Evaluation of Data Transmission issues

STECF observes that the EWG evaluated Data Transmission issues (DTi) from the 2022 Fleet Economics data call (EWG 22-02) and from the Quality checking of MED&BS data and reference points (EWG 22-03). EWG 22-02 reported 48 DTi's that were not pre-screened, while EWG 22-03 reported 179 issues that were pre-screened by an independent expert contracted by DG MARE prior to EWG 22-18.

STECF notes that the guidance document for the Data Transmission Monitoring Tool (DTMT) was used in combination with a supporting document (decision tree) proposed by EWG 22-07. This decision tree focused on enhancing data quality, on the data resubmission process and on the ability of MS to provide data for the next data calls. According to this process, the most recurring type of assessment was "follow-up needed". This means that the majority of the issues were not solved during the first round of the evaluation process and need further attention and action by the parties as specified in the STECF comments.

Annual Report (AR) assessment grid and guidance

STECF observes that the 2022 AR will be the first to be delivered by MS according to the revised EU-MAP and to the updated formats. Therefore, the assessment grid and the evaluation criteria need to be revised to be adapted to the updated Annual Report format. STECF notes that EWG 22-18 reviewed the work started by EWG 22-07 on drafting the assessment grid for evaluation of the 2022 ARs and guidance for the evaluators.

STECF notes that these documents are for internal use by STECF, but they also represent a supporting document to MS for the preparation of their ARs.

STECF notes that the revised assessment grid is provided in the electronic annex 2 and the revised guidance is given in the electronic annex 3 of EWG 22-18 report. Final checking and editing are needed before their application in the evaluation process of the ARs by STECF in June 2023.

DCF platform concept

STECF observes that the EWG looked at the "concept document and data checking rules" provided by DGMARE. This document is part of the internal project to develop a web

[8] https://www.streamlineproject.eu/
[9] https://www.fisheries-rcg.eu/fishnco/

platform for the management of the processes related with the submission, evaluation, approval and revisions of WPs and ARs.

STECF notes that the EWG very much appreciated the concept document, as it clearly outlines the needs and the specifications for setting up a DCF platform for submitting and evaluating the work plans and annual reports. STECF notes that EWG provided comments on possible improvements and suggestions.

Revision of the assessment of the Annual Report 2021 of The Netherlands

STECF notes that EWG 22-18 re-assessed a small part of the 2021 AR of The Netherlands, regarding sections 5A and 5B (on Data Quality) and section 6A (Data availability). This was because EWG 22-07 on AR evaluation apparently did not take the MS response and revised AR files into account during the EWG ('ping-pong') in the final EWG comments.

STECF notes that EWG 22-18 provided an updated assessment of the Dutch AR 2021.

STECF conclusions

STECF endorses the outcomes of EWG 22-18 presented during STECF PLEN 22-03. STECF concludes that the EWG has fully addressed its Terms of Reference.

STECF concludes that clearer guidance by the Commission to MS is needed for future multi-annual WP submissions to have a common approach and to better track WP versions. STECF considers that a summary table, clearly identifying sections that have been amended, would simplify the STECF evaluation.

STECF acknowledges that the R scripts developed by EWG experts to assess the consistencies among the table entries are useful tools for both STECF experts and MS when compiling their WPs and ARs. STECF concludes that there is a need for further development of these types of automatic screening. Ideally, these scripts would be made available to STECF experts and to MS together with corresponding guidelines placed on the DCF website. Such scripts could also be integrated in the planned online reporting platform.

STECF concludes that the present non-binding version of the Mediterranean and Black Sea RWP is well prepared and is an important step for the completion of the binding RWP to be proposed by the RCG Med&BS. The present version of the RWP MED&BS should be finalized within the pan-regional ISSG on setting up RWPs which will take over from both Fishn'Co and Streamline projects (grants under MARE/2020/08).

STECF concludes that the DTMT guidance document should be amended by STECF to integrate the supporting document (decision tree) proposed by EWG 22-07. This will avoid overlap with the assessment criteria. The revised guidance document could be prepared and endorsed by the next STECF plenary (March 2023).

STECF further concludes that an additional column 'Follow-Up Responsibility' should be inserted in the DTMT to address the responsibility for the follow-up issues. This responsibility of the follow-up actions may be addressed to MS, DG MARE or the data end-users. STECF concludes that the complete cycle for the assessment of the Data Transmission issues should be scrutinized with the final objective to possibly close the issues for which there is a clear final assessment.

STECF concludes that the revised assessment grid and the revised guidance for evaluators to be used by STECF for the evaluation of ARs for 2022 and beyond should be finalized. STECF suggests that the outstanding work to complete the assessment grid and the guidance document be completed and finally assessed by the next spring STECF plenary in 2023.

STECF concludes that further guidance should be provided for the assessment of quantitative achievements (response and coverage rates) of the economic sections in the

ARs. The STECF 17-11 report (esp. Chapter 2.6) would be a good basis for this work.

STECF acknowledges the work initiated by the Commission for the development of an online reporting platform, in connection with a database, for the planning and implementation of WPs, on both Member States' and regional level.

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

6.1 Joint Recommendation on fisheries management measures for mobile bottom-contacting fishing gears in the Special Areas of Conservation (SACs) of the German EEZ in the Baltic Sea

Background provided by the Commission

The joint recommendation proposes conservation measures to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs' in 5 Special Areas of Conservation (SAC) in the German EEZ in the Baltic Sea. Specifically, the measures entail a year-round exclusion of fisheries with mobile bottom-contacting gears in some areas of the Fehmarn Belt, the Kadet Trench, the Pomeranian Bay with Odra Bank, as well as in the entire SACs of Western Rønne Bank and Adler Ground. These measures intend to contribute to an effective implementation of the Marine Strategy Framework Directive.

Member States presented a first proposal of these measures in 2018 and submitted the final joint recommendation to the Commission in September 2022.

Request to the STECF

STECF is requested to:

1. Review whether the proposed conservation measures minimise the negative impacts of fishing activities on the marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.
2. Review whether the proposed measures contribute towards reaching the site-specific conservation objectives (in relation to the fishing activities as a pressure) for the habitats and species of Community interest addressed in the recommendation and present:

- inside the relevant special protection areas classified under the Birds Directive;
- and/or special areas of conservation designated under the Habitats Directive;
- and/or areas as stipulated under Article 1(2) of Directive 2008/56/EC;
- In undertaking this review, all relevant aspects, including ensuring compliance with the proposed measures, should be considered.

Assess whether the proposed conservation measures would contribute to the objectives under Articles 1(1) and 13(4) of the MSF Directive 2008/56/EC, in particular with the objective of achieving a good environmental status.

Summary of the information provided to STECF

STECF was provided with 6 documents:

1. DE_EEZ_measures_JR_submission_to_COM.docx - JOINT RECOMMENDATION ON FISHERIES MANAGEMENT MEASURES FOR MOBILE BOTTOM-CONTACTING FISHING GEARS IN THE SPECIAL AREAS OF CONSERVATION (SACs) OF THE GERMAN EEZ IN THE BALTIC SEA

2. ANNEX I_JR_N2000 DE Baltic Sea Background Document_final.pdf - Fisheries management measures for mobile bottom-contacting fishing gears in the Special Areas of Conservation (SACs) of the German EEZ in the Baltic Sea. 54pp

3. ANNEX II_JR_N2000 DE Baltic Sea_Process.pdf - Process and results of the negotiation process towards a joint recommendation: Minutes of the consultation meetings including lists of participants
4. ANNEX III_JR_N2000 DE Baltic Sea_Internatl_FishActivities.pdf - International fishing activities (2015-2020) in German waters of the Baltic Sea in relation to the designated Natura 2000 areas and proposed management measures for mobile bottom contacting gears 4th Version.
5. ANNEX IV_JR_N2000 DE Baltic Sea_Coordinates_final.pdf - Geographical coordinates of the measures 1 to 5 of the Joint Recommendation regarding Fisheries Management Measures in the German EEZ of the Baltic Sea.
6. ANNEX V_JR_N2000 DE Baltic Sea_BSAC Consultation.pdf - Consultation of the Baltic Sea Advisory Council (BSAC).

The STECF response below is primarily based on the data and information presented in Annex I. The JR describes the proposed measures and rationale and provides supporting data and information. Annex III gives detailed information on international fishing activities in the German EEZ which is effectively summarized in Annex I. Annexes II and V relate to process and have not been reviewed by the STECF. Annex IV provides the specific coordinates of the proposed exclusion areas to fishing. The accuracy of the coordinates was not checked by the STECF.

Objectives and measures in the joint recommendation (JR)

The Joint Recommendation proposes a series of fisheries management measures to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs' in parts of the Natura 2000 sites specified under the Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC). All sites are located in the German EEZ of the Baltic Sea and are specified as special areas of conservation (SACs) designated under the Habitats Directive. A special protection area (SPA) designated under the Birds Directive (The Pomeranian Bay) forms part of the Pomeranian Bay – Rønne Bank Nature Conservation Area (see below). The location and extent of the areas concerned are given in Figure 6.1.1.

The Fehmarn Belt SAC is located in the western Baltic Sea, about 5 km north of the island Fehmarn. It encompasses an up to 35 m deep strait between Germany and Denmark, through which 70-75% of the water exchange between the North Sea and the Baltic Sea takes place. Due to these particular hydrological conditions, the protected area has a key ecological function for the exchange and distribution of marine species in the Baltic Sea. More information is available at https://www.bfn.de/en/fehmarn-belt-nature-conservation-area

The Kadet trench SAC is about 100 km² in size, is located in the western Baltic Sea about 20 km north of Rostock and about 10 km west of the Darss Peninsula. The Kadet Trench is actually a whole system of trenches cutting into the submarine till ridge of the Darss Sill at depths of up to 32 m. About 70% of the water exchange between North Sea and central Baltic Sea passes through this trench system. Due to aperiodic inflow of saltwater from the North Sea, the area is subject to strong fluctuations in its salinity level. The species-rich benthic communities living here therefore have a relatively high salt tolerance. Some benthic species (e.g. sea anemones) have their eastern distribution limit here and the Trench represents an important migration corridor for harbor porpoise. More information is available at https://www.bfn.de/en/kadet-trench-nature-conservation-area

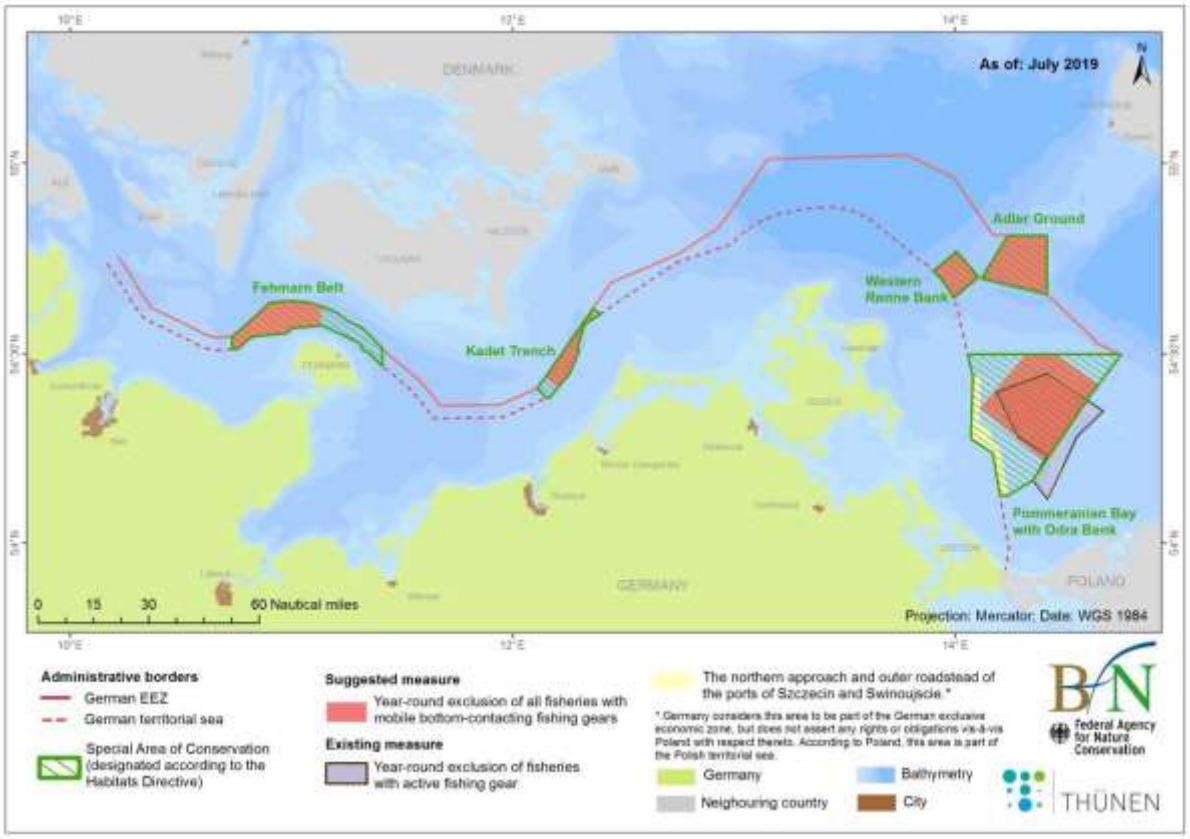

Figure 6.1.1. Natura 2000 sites in the German EEZ in the Baltic Sea designated on the basis of the Habitats Directive and the Birds Directive.

The 2,092 km² Pomeranian Bay – Rønne Bank Nature Conservation Area (NCA) is located about 20 km east of the island of Rügen. It extends from the reefs of *Adler Ground* and *Rønne Bank* in the north and northwest to the seaward border of Germany's coastal waters, where it includes Odra Bank, the largest sandbank in the German Baltic Sea. Every year, the abundance of food in this sizeable, protected area, and its ice-free condition, even in cold winters, attract up to half a million sea ducks that rest here and feed to gain fat reserves for their migration. The interactions within the food web of the Baltic Sea can be observed here in a unique way. The NCA ensures important feeding, resting, reproduction and rearing areas for numerous threatened species ranging from the smallest benthic organisms and migratory fish to endangered seabird species and marine mammals. More information is available at https://www.bfn.de/en/pomeranian-bay-ronne-bank-nature-conservation-area

The measures proposed for the different SACs are as follows:

"Fehmarn Belt" SAC

Year-round exclusion of fisheries with mobile bottom-contacting gears[10] in sandbank and reef areas to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs'.

"Kadet Trench" SAC

Year-round exclusion of fisheries with mobile bottom-contacting gears in reef areas to protect the habitat type 1170 'Reefs'.

"Western Rønne Bank" SAC

Year-round exclusion of fisheries with mobile bottom-contacting gears in the entire SAC site to protect the habitat type 1170 'Reefs'.

"Adler Ground" SAC

Year-round exclusion of fisheries with mobile bottom-contacting gears in the entire SAC site to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs'.

"Pomeranian Bay with Odra Bank" SAC

Year-round exclusion of fisheries with mobile bottom-contacting gears in sandbank areas to protect the habitat type 1110 'Sandbanks'.

More detailed charts showing the specific locations of the areas to be closed to bottom-contacting gears are given in Figures 5-9 of Annex I of the JR.

Control and enforcement

ANNEX I states that the following specific strategies for the control and monitoring of Natura 2000 sites will be laid down and introduced at the same time the protected areas become effective:

- The provisions of Regulation (EU) No 1224/2009 (EU Fisheries Control Regulation) apply to all fishing vessels intending to enter or transit through these specific fishing restricted areas.
- Transit through a fishing restricted Natura 2000 site is allowed for all fishing vessels that are excluded to fish in such areas subject to the following conditions:
    a) all gear carried on board are lashed and stowed during the transit; and
    b) the speed during transit is not less than six knots except in case of force majeure or adverse conditions. In such cases, the captain shall immediately inform the fisheries monitoring centre of the flag Member State which shall then inform the competent authorities of the coastal Member State.

Annex I of the JR also specifies that fishing activity of fishing vessels over 12m length overall within the restricted areas will be monitored by VMS. Furthermore, a 4-nm alarm zone is to be established around the fishing restricted areas and upon entry into the alarm

[10] The specific bottom-contacting gears to be prohibited in each of the areas are beach seines, SB; Danish seines, SDN; Scottish seines, SSC; pair seines, SPR; beam trawls, TBB; bottom otter, trawls OTB; bottom pair trawls, PTB; otter twin trawls, OTT; boat dredges, DRB; hand dredges used on board a vessel, DRH; mechanised dredges including suction dredges, HMD; bottom trawls (in general), TB; nephrops bottom trawls, TBN; shrimp bottom trawls, TBS; seines (unspecified), SX; boat seines, SV.

zone, the VMS reporting frequency is to be increased to 10-minute intervals which is then to be maintained as long as the vessel remains in the fishing restricted area and in the alarm zone.

All fishing vessels with mobile bottom-contacting fishing gears entering the alarm zone or the fishing restricted area must be equipped with a fully functioning VMS system. It will not be allowed to enter such areas without this equipment but fishing within the alarm zone is not subject to restrictions.

For fishing vessels below 12 metres' length overall a Member State may provide that the masters of such vessels flying their flag use any other device or system approved by that Member State, such as the Automatic Identification System (AIS) or a mobile application, allowing the vessel to be automatically located and identified while at sea.

Habitat Monitoring

In accordance with the provisions of Articles 11 and 17 of the Habitats Directive and Article 11 of the Marine Strategy Framework Directive, the JR indicates that monitoring programmes will be developed or are already implemented to assess the effectiveness of the fisheries management measures proposed in the JR. The main aim is to monitor the conservation status of the protected benthic features in the Natura 2000 sites in the German EEZ and to assess the effectiveness of the fisheries management measures in the long-term.

Conservation status of Habitats and reefs

Annex I of the JR lists that the German status report for protected species and habitats under the Habitats Directive for the 2013-2018 reporting period shows that the habitat types 'Sandbanks' (1110) and 'Reefs' (1170) in the German EEZ in the Baltic Sea had Unfavourable conservation status (U1-unfavourable-inadequate).

The JR indicates that the proposed measures are therefore necessary and appropriate and in accordance with Article 6 of the Habitats directive to improve the conservation status in the designated SACs. Furthermore, a German evaluation of the environmental status of the German Baltic Sea was undertaken in 2018 found good environmental status (GES) had not been achieved. Hence, the measures are also aimed to contribute to the effective implementation of the MSFD towards achieving good environmental status in all European waters (*originally by 2020*).

Potential displacement of fishing activity

The JR argues that based on an analysis of international fishing activities (see Figures 6.1.2 and 6.1.3 below) only limited displacement of fishing effort with mobile bottom-contacting fishing gears can be expected away from the areas with proposed measures. This because with the exception of the Fehmarn Belt SAC, only limited fishing with mobile bottom-contacting gears is carried out within the SACs concerned. The JR furthermore argues that given fishing effort with mobile bottom-contacting fishing gears is low in the areas where measures have been proposed, it is considered unlikely that displacement of effort will have a considerable negative impact on the conservation status of habitats and species in the surrounding areas.

STECF comments

The STECF has previously reviewed and given advice on similar requests from the Commission relating to fisheries management measure for Natura 2000 sites in its plenary reports of STECF PLEN 15-01, 17-01, 17-02, 19-01 and 21-01, in the written procedure 19-04 and the STECF EWG 16-24. The advice below follows from this advice.

Proposed measures

STECF notes that the proposed measures for the Western Rønne Bank SAC and the Adler ground SAC relate to the entire area of the SACs. The proposed measures for the *Fehmarn Belt SAC, the Kadet Trench SAC and the Pomeranian Bay with Odra Bank SAC* relate either to sandbank or reef areas within the SACs.

ANNEX I of the JR provides a well-documented description of the main risks arising from mobile bottom-contacting fishing gears for the benthic habitat types 'Sandbanks' and 'Reefs' and their characteristic species. STECF notes that such risks are well documented in the scientific literature and relevant publications are cited in ANNEX I.

Displacement of fishing activity

STECF notes that closing the areas concerned to fishing using mobile bottom-contacting gears may result in the displacement of fishing pressure to surrounding areas in the western Baltic.

In the JR, fishing pressure in the area of the Baltic where the SACs are located is summarised in two main ways:

i) Charts showing that the seabed surface (Figure 6.1.2) and subsurface (Figure 6.1.3) in SACs located in the German EEZ in the Baltic Sea is exposed to different pressure from fishing activity.

STECF notes that Figure 6.1.3 indicates that pressure on the seabed subsurface (sediment depth > 2.0 cm) from mobile bottom-contacting fishing was lower overall (very low to moderate) than pressure on the seabed surface (Figure 6.1.2). Furthermore, it is clear that pressure from mobile bottom-contacting fishing on the seabed subsurface was lower in all SACs than pressures in the surrounding areas. Moderate fishing activity pressure on the subsurface was recorded in the western part of the Fehmarn Belt SAC (Figure 6.1.3). By contrast, no or very low pressure from fishing activity with mobile bottom-contacting fishing gears was recorded in the other SACs.

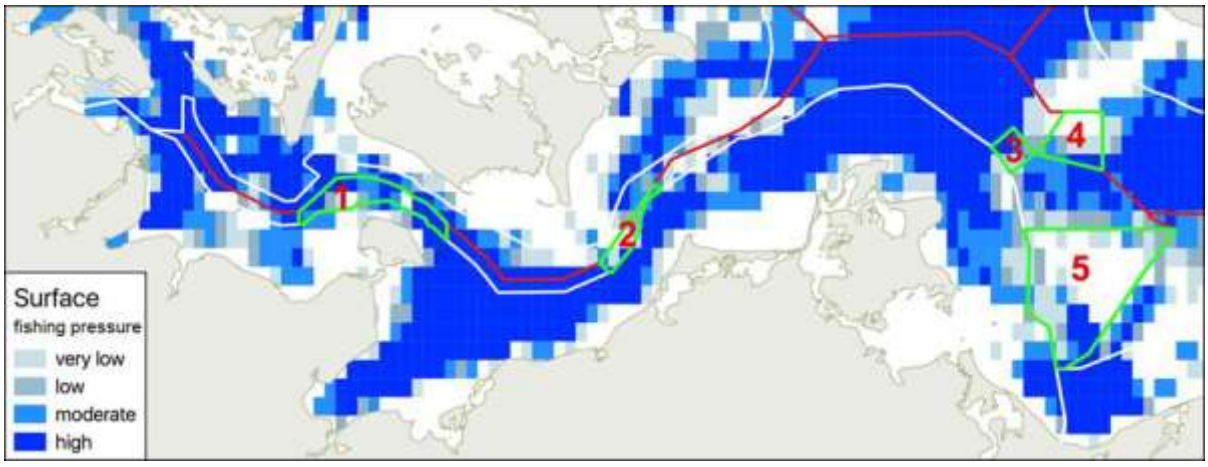

Figure 6.1.2. Fishing activity pressure on seabed surface (sediment depth < 2.0 cm) derived by overlaying frequency of fishing and intensity of fishing with mobile bottom-contacting fishing gears based on ICES fisheries data (VMS data 2011 – 2016). SAC: 1=Fehmarn Belt, 2=Kadet Trench, 3=Western Rønne Bank, 4=Adler Ground, 5=Pomeranian Bay with Odra Bank (Reproduced from Figure 2, ANNEX I of the JR)

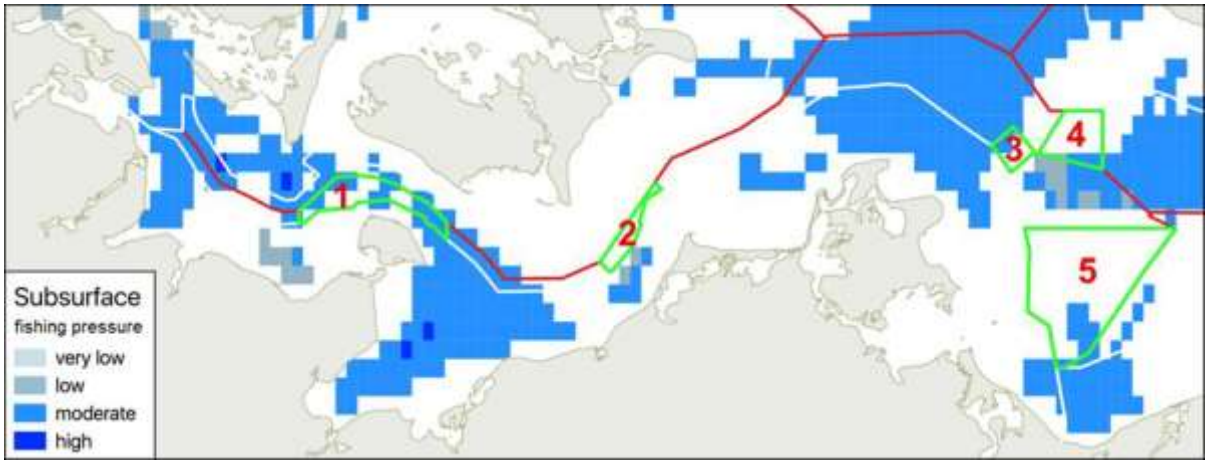

Figure 6.1.3. Fishing activity pressure on seabed subsurface (sediment depth > 2.0 cm) derived by overlaying frequency of fishing and intensity of fishing with mobile bottom-contacting fishing gears based on ICES fisheries data (VMS data 2011 – 2016). SACs: 1=Fehmarn Belt, 2=Kadet Trench, 3=Western Rønne Bank, 4=Adler Ground, 5=Pomeranian Bay with Odra Bank (Reproduced from Figure 3, ANNEX I of the JR)

ii) A summary of the revenues realized in each of the areas concerned compared to the revenues in a surrounding larger reference area (ICES sub-divisions 22 and 24, western Baltic Sea; Table 6.1.1)

Table 6.1.1. Revenues (Euro, percentage) as sum per year and mean over years for fleets fishing with mobile bottom contacting gears for years 2015-2020. First line sum of revenues (Euro) in a reference area (ICES Subdivisions 22 & 24; from STECF database) for the fleets of Denmark, Germany and Poland for vessels with VMS obligation (>= 12m). Revenues in areas of measure are given as Euro and as percentage of total revenues in the reference area. The percentage of the total area of ICES Subdivisions 22 & 24 covered by proposed measures is given in square brackets. Only fishing activities in the past affected by the proposed future measures are considered. *) No sufficiently detailed data available for 2019 and 2020 (reproduced from ANNEX I, Table 1 of the JR).

	2015	2016	2017	2018	2019	2020	Mean
Revenues (Euro) in reference area (ICES-SDs 22 & 24)	14,717,711	12,681,170	10,639,160	11,673,483	*)	*)	12,427,881
Revenues in area of measure (Euro)							
Fehmarn Belt	202,392	35,546	32,576	70,664	90,064	100,811	88,676
Kadet Trench	623	-	-	-	12,376	4,625	2,937
Western Roenne Bank	7,861	81	125	969	2,730	37	1,967
Adler Ground	1,093	34,637	24	21,351	366	52	9,587
Pomeranian Bay with Odra Bank	381	4,067	4,990	7,203	12,082	31,177	9,984
Revenues in area of measure (percentage of reference area)							
Fehmarn Belt [0.44]	1.38	0.28	0.31	0.61	*)	*)	0.64
Kadet Trench [0.19]	0	-	-	-	*)	*)	0
Western Roenne Bank [0.21]	0.05	0	0	0.01	*)	*)	0.02
Adler Ground [0.56]	0.01	0.27	0	0.18	*)	*)	0.12
Pomeranian Bay with Odra Bank [1.44]	0	0.03	0.05	0.06	*)	*)	0.04

From the information available in Table 6.1.1, STECF observes that it is evident that total mean revenues from international fishing activities (fleets from Denmark, Germany and Poland) in the SACs concerned was approximately €113,000, amounting to less than 1% of the mean total revenue (€12,427,881) from the surrounding areas of the Baltic (ICES

Subdivisions 22 and 24). STECF notes that the information in Table 6.1.1. indicates the relative importance of the different SACs to the fleets operating in the western Baltic.

The information on fishing activity impacts on the seabed (Figures 6.1.2 and 6.1.3), implies that fishing impacts within the areas designated for closure to mobile bottom-contacting gears, is low compared to the surrounding areas. Furthermore, less than 1% of the value of the international (Germany, Denmark and Poland) catches by bottom contacting mobile gears was taken within the designated areas. Such areas, represent 2.84% of the area of the western Baltic (ICES subdivisions 22-24), whereas only 0.82% of the revenue of the international catches from the western Baltic were taken in the areas by mobile bottom contacting gears. From both of these observations, STECF considers it reasonable to assume that any displacement of fishing activity arising as a result of the closure will be relatively small.

The JR correctly points out that the fishing activity analysis referred to does not take into account fishing activity of under 12 m vessels and it cannot be ruled out that at least part of the fishing effort with mobile bottom-contacting fishing gears might be displaced to neighbouring areas for which no measures on such fishing gears have been established.

STECF notes that effective implementation of the measures as intended will ensure that the impacts of mobile bottom-contacting fishing gears are eliminated from the areas subject to the measures thereby offering enhanced protection from negative impacts.

Regarding areas that may be impacted by displacement of fishing activity, STECF notes that future options may be limited to an area much smaller than the entire Western Baltic. For example, it is expected that from the 1st Jan 2013, a trawl-free zone will be established to exclude bottom trawls and other bottom-dragging gears in the Danish EEZ in ICES subdivision 22 in the area adjacent to the Fehmarn belt (Figure 6.1.4; see https://fvm.dk/fiskeri/indsatsomraader/baeredygtigt-fiskeri/trawlfri-zone-i-baelthavet/)

Figure 6.1.4 Area anticipated to be closed to bottom trawls and other bottom dragging gears from 1 January 2023. Reproduced from https://fvm.dk/fiskeri/indsatsomraader/baeredygtigt-fiskeri/trawlfri-zone-i-baelthavet/).

STECF conclusions

The STECF concludes that the JR is well-specified, clearly described and is accompanied with relevant supporting documentation including details of proposed control, enforcement and monitoring measures.

The main aims of the proposed measures are to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs' in 5 Special Areas of Conservation (SAC) in the German EEZ in the Baltic

Sea by implementing a year-round exclusion of fisheries with mobile bottom-contacting gears in some areas of the Fehmarn Belt, the Kadet Trench, the Pomeranian Bay with Odra Bank, as well as in the entire SACs of Western Rønne Bank and Adler Ground. Such measures are intended to contribute to an effective implementation of the Marine Strategy Framework Directive.

Based on the information provided, STECF considers that the JR represents a positive initiative, that will provide enhanced protection for the reefs and sandbanks in the areas concerned.

The STECF conclusions with respect to each of the items in the request to the STECF are listed below.

1. *Review whether the proposed conservation measures minimise the negative impacts of fishing activities on the marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.*

STECF concludes that the proposed measures if implemented and enforced as intended, will contribute to minimizing the impacts on the seabed structures (reefs and sandbanks) in the specified areas of the SACs concerned and which they are designed to protect. The extent to which such measures will minimise the negative impacts of fishing activities on the wider marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment cannot though be determined.

2. Review whether the proposed measures contribute towards reaching the site-specific conservation objectives (in relation to the fishing activities as a pressure) for the habitats and species of Community interest addressed in the recommendation and present:
    - inside the relevant special protection areas classified under the Birds Directive and/or special areas of conservation designated under the Habitats Directive.
    - and/or areas as stipulated under Article 1(2) of Directive 2008/56/EC;
    - In undertaking this review, all relevant aspects, including ensuring compliance with the proposed measures, should be considered.

STECF concludes that the proposed measures are not specifically intended to protect species in the area designated as a SPA under the Birds directive (Pomeranian Bay) although the exclusion of fishing activity by vessels operating with bottom-contacting mobile fishing gears, may lead to a reduction in impacts on species of Community interest that inhabit the area.

The measures if implemented and complied with as intended, will contribute to the protection of reefs and sandbanks in the German EEZ of the Baltic, by eliminating the impact of bottom contacting fishing gears on such structures. The extent of any such contribution cannot be determined with the information currently available.

With regard to the minimizing negative impacts on the wider marine environment (ref. Article 1(2) of the MSFD), STECF concludes that the measures proposed may lead to fishing activity by vessels using mobile bottom-contacting gears being displaced to areas outside the SACs concerned. Such a displacement is likely to lead to further negative impacts on such areas, but the magnitude and extent of such impacts cannot be predicted with the data and information currently available.

3. Assess whether the proposed conservation measures would contribute to the objectives under Articles 1(1) and 13(4) of the MSF Directive 2008/56/EC, in particular with the objective of achieving a good environmental status.

STECF concludes that the proposed measures if implemented and complied with as intended, may contribute towards achieving GES in subdivision 22-24 of the Baltic by protecting some reef and sandbank habitats from the impacts from mobile bottom-contacting fishing gears. The extent of any such contribution cannot be determined.

6.2 High survivability exemption for Baltic salmon

Background provided by the Commission

In 2020, Baltfish requested the prolongation of and some modifications to an existing exemption to the landing obligation for salmon caught with trap-nets, fyke-nets and pound nets. Following the STECF assessment 2020-04, Commission Delegated Act (EU)2021/1417 was adopted. Baltfish has now requested a modification of this Delegated Act as well as its prolongation to 2024-2026. The new data concerns pontoon traps. The data concerning the other trap-nets is based on previously assessed scientific studies. Delegated Regulation 2021/1417 requires Member States to provide more knowledge to the Commission on the survivability of salmon released from trap-nets certain gears by 1 May 2023 at the latest.

Request to the STECF

STECF is requested to assess the joint recommendation which asks to modify the existing delegated act 2021/1417, and to prolong it until 2026. The STECF should assess:

- the representativeness and quality of the discard survival estimate of salmon caught with these new gears as well as with pound nets and pontoon traps equipped with an attached knot-less bag, including information on the post-release mortality;
- the quality of the information supplied;
- in case of data poor situation, assess what further supporting information may be available and how this could be supplied in the future.

Summary of the information provided to STECF

STECF was provided with a Joint Recommendation from BALTFISH. The JR summarises the context, including historical aspects of the salmon fishery in the Baltic Sea and of the proposed high survivability exemption. It also summarises the main scientific findings that support the proposal and the comments received from relevant stakeholders as a response to a consultation on the JR. Both are appended as annexes. The JR proposes a prolongation of the current high survivability exemption for salmon for all traditional fishing gears, including pontoon traps equipped with a knot-less bag (hereafter called "pontoon-trap KL"), and its extension to pontoon traps without knot-less bag but with salmon directly emptied into a water hold in the fishing vessel (hereafter called "pontoon trap WH").

The pontoon trap (hereafter called "traditional pontoon trap") was developed around the turn of the millennium to reduce seal depredation on catches and have then been widely used in the Bothnian Bay salmon fishery due to their efficiency (Hemmingsson *et al.*, 2008). To empty the trap, the chamber is lifted above the surface and fish are crowded in a plastic (or aluminum/steel) chute where they jump, twist and try to escape before falling into the hold of a fishing boat. To limit the handing of fishes and improve survivability, modifications have been introduced. On pontoon-trap KL (called "Vittjanpåse" in Swedish), a knot-less net bag that is attached to the chute (Figure 3). When lifting the trap, fishes fall into the submersed bag, limiting the air exposure. The knot-less net bag. However, emptying the bag is reported to be un-ergonomic for fishermen (Östergren *et al.,* 2020; BALTFISH JR). With the pontoon-trap WH, when lifted above the surface, fish slide from the chute to the hold in a fishing boat. Details on the different fishing gears can be found in Östergren *et al.* (2020) and Ruokonen et al. (2002a, b).

Four scientific documents were provided to support the request:

- A report from SLU Aqua (Sweden) that summarises the outcomes of different Swedish studies, with a specific focus on the pontoon trap (both traditional and pontoon-trap KL) (Östergren *et al.*, 2020). This document was already provided as a background document to STECF EWG 20-04.
- A scientific article published in Fisheries Research that estimates release mortality from pontoon traps with both traditional and pontoon-traps KL. These estimates are based on a large tag-recapture experiment carried out by Natural Resources Institute Finland (LUKE) in 2020 (Ruokonen *et al.*, 2022a). This experiment also tested pontoon traps WH, but the protocol was not specifically designed to compare pontoon-trap WH with pontoon-trap KL.
- A scientific report summarising the main outcomes of the LUKE tagging experiment from 2020 (subject of the scientific article above) and the main outcomes of a complementary experiment carried out in 2021 (Ruokonen *et al.*, 2022b). This latest experiment aims to compare pontoon-traps WH with pontoon-traps KL.
- A scientific article published in 2006 Fisheries Research that presents estimates of survival of trap net captured and released salmon (Siira *et al.*, 2006). This document was already provided as a background document for a previous exemption request (STECF EWG 20-04).

STECF was also provided with stakeholders submissions to the consultation carried out by BALTFISH. Comments were received from (1) the Federation of Finnish Fisheries Associations, (2) Fischereischutzverband, (3) Baltic Salmon Rivers Association, (4) CCB, FANC, WWF, Fisheries Secretariat, EAA, (5) SFPO. While some stakeholders support the proposal (Federation of Finnish Fisheries Associations, Fischereischutzverband, SFPO), others provided negative feedback (Baltic Salmon Rivers Association, CCB, FANC, WWF, Fisheries Secretariat, EAA)

Summary of rrevious STECF advice

A high-survivability exemption for trap-net caught salmon in the Baltic Sea has been in place since 2015 (Commission Regulations 1396/2014 and 2018/211). A prolongation and modification of this exemption was requested by BALTFISH in 2020. This request was assessed by STECF EWG 20-04.

At that time, STECF recalled its' previous assessment of salmon mortality in traps, fyke nets and trap nets (STECF PLEN 14-02) which had concluded that direct mortality seemed to be low in such gears typically (less than 10%). STECF EWG 20-04 noted that while some studies had been initiated to assess release mortality since 2014, quantitative knowledge was still limited. More specifically, preliminary results suggested data on pontoon-traps was scarce, and that while the pontoon-trap KL bag had potential to be gentler for salmon than traditional pontoon trap (Östergren *et al.*, 2020), results to demonstrate this definitively were sparsely evidenced.

As a consequence, STECF concluded that "*There is insufficient information to determine post-release survival rate of salmon from all of the gears specified in the proposed exemption*."

Following this assessment by STECF, the exemption for salmon based on high survival rates was included in Commission Delegated Act (EU)2021/1417 and is due to remain in force until 31st December 2023. The exemption 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).

STECF comments

STECF recalls that when assessing a landing obligation exemption request for high survival, its assessment of the quality of the supporting survival estimates is based on the critical review framework developed by the ICES WKMEDS (ICES, 2015) and on the ICES guidelines (ICES, 2021a).

STECF observes that since the last STECF assessment (PLEN 20-04), two new Finnish studies (2020-2021) have been carried out, focusing on the release mortality induced by pontoon traps KL and pontoon traps WH (Ruokonen *et al.*, 2022a,b).

STECF notes that no new data was provided alongside the BALFTISH JR for other types of gears (e.g., pound nets). However, STECF understands that pontoon traps are the dominant fishing gear in the fishery (ICES, 2021b; Ruokonen *et al.*, 2022a), e.g., accounting for more than 70% of Swedish landings in 2018 (Östergren *et al.*, 2020).

STECF observes that the two new experiments carried out by LUKE, used standard mark-recapture experiments and a relevant Bayesian model to estimate mean release mortality and associated uncertainty intervals. The number of tagged salmon was significant (491) in 2020, but STECF notes that basic details on the 2021 experiment (such as the number of tagged salmon) was not provided in the report by Ruokonen (2022b).

STECF notes that, contrary to the Swedish salmon release mortality experiments carried out in 2019 (Östergren *et al.*, 2020) and 2001/2002 experiments with traditional trap nets (Siira *et al.*, 2006), no control experiments were carried out to estimate the amount of variability due to natural mortality, tag-loss or tagging-induced mortality (hereafter, these effects will be referred as "background noise"). In the absence of such data, the authors Ruokonen et al. (2022 a,b) have used data from the 2001/2002 control experiment.

STECF suspects that this might lead to bias since release mortality is known to be highly variable and can depend on environmental conditions such as temperature or salmon health status, as acknowledged by the authors themselves. Since water temperature is likely to have increased and health status seems to be deteriorating in recent years (Östergren *et al.*, 2020; ICES, 2021b), using a control experiment from the early 2000's might lead to an underestimation of the background and tagging-induced mortalities. This would in turn result in an overestimation of the release induced mortality. ICES has previously observed that control experiments are a key element of any discard survival experiments (ICES 2021a.

STECF observes that the Finnish studies suggest a release mortality of about 10% for pontoon KL (in 2020: 7% [0-24%] for one-sea-winter salmon, 0% [0-25%] for multi-sea-winter salmon, in 2021: 13% [1-29%]; where figures stand for the mean value and the 90% uncertainty interval). STECF notes this is lower than previous results found by Östergren *et al.* (2020) in the 2019 experiment (27% for pontoon-trap KL, 60% for traditional pontoon trap). Older studies cited by Östergren *et al.* (2020) reported mortalities ranging from 17 to 63% for pontoon-trap KL but these studies suffer from some weaknesses, especially with respect to the way they address background noise. Ruokonen *et al.* (2022a) suggested that several factors could explain the observed discrepancies in mortality estimates:

- A more invasive tagging method (radio-tagged) was used in the Swedish studies that would have increased the level of mortality. However, STECF notes that the control experiments in the Swedish experiment should have limited the bias
- Unfavourable warmer temperature and poor health conditions in the Swedish experiment. Similarly, STECF considers that part of this bias is handled with the estimate of the background noise in the control experiment. Moreover, STECF notes

that water temperature is likely to increase in a context of global warming, and that health status seems to be progressively deteriorating (Östergren *et al.*, 2020; ICES, 2021b), so that those unfavourable conditions may become more frequent. Moreover, STECF observes that part of salmon discard comes from the whitefish fishery (ICES, 2021b), for which salmon is a bycatch, and which takes place after the salmon fishery season and therefore in warmer temperature.

- Gentler handling of the fishes during the LUKE experiment: while this is possible, STECF is not able to quantify how this may have impacted the results.

STECF observes that regarding the comparison between pontoon-trap KL and pontoon-trap WH, the 2020 experiment was not specifically designed to compare the two methods (the two gears were used in two distinct sub-regions), resulting in a "*suboptimal sampling design*" as acknowledged by the authors (Ruokonen *et al.*, 2022a). However, STECF notes that the 2021 experiment was specifically designed to address this question, but the outcomes are not published and the details in the available report are limited. Therefore, STECF cannot conclude on the representativeness of the results about pontoon trap WH.

STECF notes that preliminary results suggest the mortality with pontoon trap WH (in 2020: 11% [0-31%] with only multi-sea-winter salmon, in 2021: 24% [2-48%]) are higher than with pontoon trap KL. STECF observes that according to Ruokonen *et al.* (2022b), while the pontoon-trap KL may enhance survivability, emptying them when crowded with catch may be more difficult and is perceived by fishermen as impractical. While the resulting impact on mortality is not quantified, Östergren *et al.* (2020) observed that if inappropriately used (i.e., "salmon lifted above the water surface in the trap before being released into the net bag prior to landing"), the release mortality from the pontoon-trap KL increases from 27% to 47%, not so far from their results with the traditional pontoon trap (60%).

STECF observes that release mortality estimates from traditional trap nets (i.e., not pontoon trap) based on the 2001/2002 experiments reported by Siira et al. (2006), can be compared with these latest experiments. These previous estimates were based on a large-scale tagging experiment. Estimated released mortality ranged from 7 to 20% depending on salmon batches (weighted mean 9.7% - here we focused on the figure after a single release to be comparable with other studies).

STECF observes that neither Östergren *et al.* (2020) nor Siira *et al.* (2006) provided confidence intervals around their estimates. Therefore, STECF could not assess the statistical significance of differences between studies. Moreover, for comparability reasons with other studies, STECF focused on the comparison of the mean of the mortality posterior distributions from Ruokonen *et al.* (2022), rather than the 90% quantile of those distributions which are discussed in greater detail by Ruokonen *et al.* (2022a).

STECF suggests that it might be worthwhile re-analysing the data from Siira *et al.* (2006) with the model used in Ruokonen *et al.* (2022a) to facilitate and enhance the comparison of traditional trap nets and pontoon traps KL or WH. Overall, results suggest that trap-net release mortality after a single release is of the same order of magnitude as the mean values of Ruokonen *et al.* (2022a, b) with a pontoon-trap KL, and substantially lower than estimates from Östergren *et al.* (2020). BALTFISH considers that the possible higher release mortality with pontoon-trap KL is compensated by a lower depredation by seals in the trap so that total induced mortality might not be so different. No quantitative evidence was provided to STECF to support the significance and impact of this depredation.

STECF observes that Siira *et al.* (2006) showed that cumulative mortality increases after a second or a third capture and release event. The effect of multiple recapture events was not assessed by Ruokonen *et al.* (2022a, 2022b) nor Östergren *et al.* (2020). However, given they were already a rare occurrence in the early 2000's and the fishing pressure has

decreased since then (ICES, 2021b; Ruokonen *et al.*, 2022a), they are likely to remain a rare occurrence.

STECF observed that few data were provided regarding the discarded quantities by the different fisheries (salmon fishery, bycatch fishery) and considers that it impairs the possibility to assess the overall impact of the exemption on the stocks. STECF EWG 20-04 outlined that "*It is vitally important to re-emphasise the need to consider survivability in the context of the discard rate for the fishery seeking an exemption (STECF 17-02)*". While BALTFISH mentioned that discard is limited, ICES (2021b) stated that "*salmon are by-caught to an uncertain but probably large extent*". STECF suggests that additional data on discarded quantities per fisheries (including fisheries not targeting salmon, and accounting for their seasonality) and by salmon types (wild vs reared, one winter at sea versus multiple winters at sea) would provide a more comprehensive image of the impact of the discard exemption.

The Delegated Act states that the exemption "*shall be limited to not more than 8 % of total annual catches of salmon from each Member State's quota of salmon*". However, STECF notes that no rationale was provided to support this 8% threshold. STECF also notes that some stakeholders as part of the consultation process carried out by BALTFISH, pointed out that this 8% limit is difficult to control and enforce. STECF notes that no elements were provided about how the regulation is enforced and controlled and how discards were monitored, while STECF EWG 20-04 had outlined that "*the granting of the exemption should be conditioned on such enforcement measures.*"

STECF observes that salmon catches are highly seasonal, with a first peak of large multi-sea-winter adults (fishes of great importance for salmon populations), followed by a smaller peak of one-sea-winter salmon, and finally bycatches in other fisheries (especially the whitefish fishery). Wild salmon also commence their migration earlier in the year than reared-salmon (Siira *et al.*, 2006). STECF agrees with ICES (2021) that there is a need to better understand and quantify the number of salmon that are landed and discarded by the different fisheries. This is for example required to ensure that the quota is not primarily filled with landed wild multi-sea-winter salmon which migrate earlier, while released salmon are mostly reared, or one-sea-winter salmon, which are caught later and are of lesser importance for the productivity of the stocks.

STECF conclusions

- *the representativeness and quality of the discard survival estimate of salmon caught with pontoon-traps*

STECF concludes that the supporting information is of good quality and follows most of the ICES (2021a) guidelines on carrying out discard survival experiments. However, some missing data (discard rate) and flaws (missing uncertainty estimates, missing control experiment) prevent STECF from drawing definitive conclusions on the pros and cons of each gear and on the overall effect of the exemption on the respective salmon populations.

- *New data on other fishing gears*

STECF concludes that no new data was provided regarding other fishing gears. Therefore, STECF can only repeat previous statements from STECF EWG 20-04 regarding other fishing gears: "*for trap nets, fyke nets, evidence indicates that immediate discard mortality is typically less than 10%, however, PLEN 14-02 could not evaluate whether it is appropriate to assume equivalent mortality rates for creels/pots and pound nets.*"

- *Comparison of discard mortality estimates between different gears*

STECF is not able to draw definitive conclusions given the absence of uncertainty intervals and lack of controls in the older studies. However, results suggest that pontoon traps KL lead to an average release mortality at least as high as traditional traps, and that this mortality may significantly increase in unfavourable environmental conditions.

STECF concludes that, when appropriately used (i.e. "salmon are not lifted above the water surface in the trap before being released into the net bag prior to landing"), pontoon traps KL reduce the discard mortality compared to traditional pontoon trap. However, results suggest that the benefit of using a knot-less bag is significantly reduced if the gear is inappropriately used.

STECF concludes that at present, the availability of relevant data on discard mortality from pontoon trap WH is insufficient to draw any meaningful conclusions.

- *Quality of the information supplied and need for further supporting information*

STECF concludes that to assess the impact of discard mortality on the stock dynamics, survival mortality estimates should be complemented with data on discarded quantities by fisheries (salmon fishery and whitefish fishery) and salmon types (wild vs reared, one winter at sea versus multiple winters at sea). Such data are also required to assess the relevance of the 8% threshold suggested in the BALTFISH JR.

STECF reiterates that regulation and control are key aspects of any landing obligation exemption (STEFC EWG 20-04). Therefore, STECF suggests that more detailed information on these aspects, including on the process to monitor discarded quantities control and enforcement would be valuable. This issue of control was mentioned by some stakeholders during the consultation carried out by BALTFISH.

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6.3 Assessment of the technical annex 7 of the Baltfish JR on Technical Measures to reduce cod bycatch and protect cod stocks

Background provided by the Commission

Baltfish proposed a JR on Technical Measures to reduce cod bycatch and protect cod stocks which suggested the introduction of a Roofless device, a modified T90 and a square mesh codend to reduce the incidental catches of cod in the Baltic Sea. This JR was assessed by STECF in PLEN 21-03. In September 2022, Baltfish submitted changes to annex 7, which detailed the technical specifications of these new gears.

Request to the STECF

Advice and assess whether the management for the purse-seines gears, (a) *lokardara,* (b) The STECF is requested to assess the suitability of changes to annex 7 of the JR on Technical Measures to reduce cod bycatch and protect cod stocks, specifically, the STECF is requested to:

- Comment on the technical specifications described in the new Annex 7 and
- To assess whether the technical specifications in the new Annex 7 are detailed and sufficient for implementation.

Should this not be the case, the STECF is requested to possibly suggest modifications to the new Annex 7.

Summary of the information provided to STECF

STECF was provided with a new version of the gear description annex (Annex 7) to last year's Baltfish joint recommendation on technical measures to reduce cod bycatch and protect cod stocks. This joint recommendation was reviewed by STECF in PLEN 21-03. Additionally, DGMARE provided the implementing act, C(2022)-7280 final, that was introduced on 13 October 2022 and enacted last year´s joint recommendation into EU legislation. The new version of the gear annex proposed by Baltfish is intended to amend the implementing act.

STECF comments

STECF notes that most of the proposed changes to the 2021 joint recommendation by Baltfish are linguistic or structural. However, two changes are more substantial. The first concerns gear I (125 mm Square Mesh Codend; SMC_125), and the second concerns a change of specifications for gear III (the NEMOS/ROOFLESS gear). The other parts of the technical Annex have not changed.

STECF notes that with regards to the proposed change of the SMC_ 125, the 2021 JR proposed a specification that both ends of the square mesh codend had to be extended by so called "net rings" constructed of three rows of 105 mm diamond meshes to connect the codend to the trawl (front) and to the codline (rear). These net rings are currently described in section I(b) of the annex to the implementing act. The current proposal is to simplify the description of net rings construction and mounting (Ib1-7). The current proposal suggests deleting the definition of "net rings" and instead use a joining ratio of the diamond meshes of the trawl to the square meshes of the codend (1 square mesh bar to 2 diamond mesh knots). An identical joining ratio of the square mesh codend to the diamond meshes above the codline is also proposed. It also states that the square meshes shall terminate not more than four meshes from the codline, inclusive of the last hand-braided row of meshes. As the original text defines that the rear net ring (like the front

net ring) shall be 3 meshes long, "excluding the hand-braided row of meshes through which the codline is passed", STECF understands that the current proposal does not change the practical meaning of the legislation.

Concerning the NEMOS/ROOFLESS gear STECF notes that the main change proposed is to define a mandatory size and number of floats to be attached instead of defining their lifting force in kgs (buoyancy) as in the previous technical Annex.

STECF considers that the proposed change to a joining ratio of square to diamond meshes simplifies the legislation compared to the detailed and complicated defintion of the net rings in the previous version of the Annex. It brings the gear description more in line with other EU-legislation and has no impact on the functionality or selectivity of the device.

STECF considers that defining float size and numbers for the NEMOS/ROOFLESS gear option simplifies the legislation for industry and control authorities.

STECF conclusions

STECF concludes that the proposed amendments to the technical specifications are clearer and simpler than the existing definitions included in the current technical Annex. These changes do not reduce the functionality and selectivity of the device.

6.4 Selectivity of hake mixed fisheries in the Western Mediterranean Sea

Background provided by the Commission

Latest assessments show the delayed recovery of hake stocks in the two effort management units of the western Mediterranean Sea.

As concluded in the previous reports from EU projects like Discardless and ImpleMed, additional management measures could be considered to help with the recovery of those stocks, in particular technical measures aiming at reducing the capture of under-sized fish via increases in trawl selectivity for hake.

Request to the STECF

STECF is requested to review ImpleMed and Discardless reports as well as any other recently published study providing a synthesis review as well as results of at-sea trials improving hake selectivity. As biological characterictics (e.g., spawning season, length at first maturity) of hake can vary between geographical subareas, a focus on the various geographical subareas of the Western Mediterranean Sea should be considered.

STECF is also requested to refer to the synthesis review on the length at first maturity and the corresponding minimum conservation reference size (MCRS) of key species in the Western Mediterranean Sea that was evaluated in STECF Summary Plenary 2022.

This review would aim at facilitating the work of STECF PLEN 22-03 on the optimum selective gear, such as width of square mesh-size, for hake-targeting trawlers in the Western Mediterranean. STECF is requested to evaluate the findings and make any appropriate comments and recommendations.

Summary of the information provided to STECF

STECF PLEN 22-03 was provided with two reports from the EU funded projects – DISCARDLESS and IMPLEMED - concerning the selectivity of trawls and containing specific work relating to hake selectivity.

The DISCARDLESS (O'Neill and Mutch, 2017) report compares the selectivity of diamond mesh and square mesh trawl codends, with a specific focus on selectivity tests concerning European hake in the Balearic Islands in the western Mediterranean Sea (GSA 5).

The IMPLEMED (Sbrana, 2022) report covers a series of selectivity trials undertaken in the Mediterranean Sea, specifically in GSA 6, GSA 9, GSA 11 and GSA 17.

Additionally, a review by STECF EWG 22-11, provided a selection of papers on the topic. The response to TOR 6.1 of STECF PLEN 22-02 weas used as background documents.

STECF comments

Maturity and MCRS of European hake in the Western Mediterranean Sea

STECF notes that TOR 6.1 from STECF PLEN 22-02 and Lucchetti et al. (2021) provided information on the length at first maturity (LFM) of European hake (both for females and males) and confirmed that this is similar across GSAs. Values range between 30 cm and 36 cm (with one outlier at 42.5 cm) for females and between 25 cm and 28.8 cm for males, also within the same GSA. Therefore, as reported by STECF PLEN 22-02 the current minimum conservation reference size (MCRS) of 20 cm TL is lower than the LFM of both, males and females, of European hake.

STECF notes that the current codend mesh size used in the trawl fisheries in the western Mediterranean is 50 mm diamond mesh or 40m square mesh. The L50 for hake (50% retention length) for such codends is well below the LFM. To increase selectivity for hake to the LFM would require a significant increase in mesh size or the use of additional selectivity devices/gear modifications. However, even with such gear changes it is unlikely such improvements could be achieved in one step. Therefore, the STECF advice is provided on the basis of being a review of work carried out that will lead to improvements in selectivity for hake, but not necessarily to reach LFM.

Review of selectivity tests on European hake

STECF notes that the IMPLEMED report contains a review of previous selectivity studies from the Western Mediterranean Sea. Specifically, Sola and Maynou (2018) (MINOUW project http://minouw-project.eu/) observed a shift of the modal length from 15 cm to 18 cm total length (TL) of European hake in GSA 6 when testing a 50 mm T90 extension piece with a 40 mm DM in the codend. This was tested against the control gear of 53 mm DM in the extension and a 40 mm DM in the codend).

The literature review of selectivity studies on European hake from 1969 onwards by Bahamon et al. (2021) in the IMPLEMED project showed that only a 50 mm SM codend or a 35 mm sorting grid (SG) would allow the exclusion of individuals of European hake smaller than the 20 cm MCRS. Additionally, Lucchetti et al. (2021) observed that the length at which retention in the codend is 50% (L50) of European hake when testing a 50 mm SM codend increases from an L50 of 14.17 cm TL when using a 40 mm SM, up to 18.6 cm (closer to the 20 cm MCRS).

STECF notes that Maynou et al. (2021) tested a T90 (50 mm SM with 40 mm SM codend) placed at varying positions to the codend and a selective grid (20 mm spacing bars) placed in the extension piece against a control gear with an extension piece constructed with 53 mm DM and 40 mm SM in the codend. Results for the T90 showed a reduction of undersized European hake of 20% when the panel was placed right in front of the codend. The selective grid reduced the amount of undersized European hake by 10% in weight and gave an increase in L50 from 13 cm TL to >20 cm TL.

STCEF notes that Queirolo et al. (2012) shows that selectivity studies on European hake (up to 2010) considered gears with codend mesh size up to 80 mm (either DM or SM) (Figure 6.4.1). The L50 of European hake corresponding to a variation of codend mesh size never exceeds 20 cm TL except for one study with an 80 mm codend were the L50 increased to over 30 cm TL.

STECF notes that a review by Tokac et al. (2018) showed that L50s larger than 20 cm TL are reached with a 65 mm SM codend or with DM codends larger than 69 mm.

The IMPLEMED project

In addition to the review of selectivity studies, several new studies were carried out under the IMPLEMED project. These focused on mesh modifications of the extension and the codend in demersal trawls in GSAs 6, 9 and 11. Results from GSA 11 were not used as the IMPLEMED report states that sample size of trials in this area were too small to be considered robust. Specifically:

- in GSA 6 two main modifications were tested in comparison to the control gear (42 mm square mesh (SM) codend): T90 in the extension (50 mm DM and 40 mm SM codend) and a 52 mm SM codend, which were than combined in a third gear modification (T90 with a 52 mm SM codend).
- In GSA 9, a T90 (44 mm DM) modification in the extension piece and a sorting grid (FLEXGRID) with a 20 mm bar spacing placed in the upper section of the extension piece of the net wer tested against the control gear (40 mm SM codend).

STECF notes that from the test runs carried out during the IMPLEMED project in GSA 6 and in GSA 9, it was observed that the T90 modification in the extension did not reduce the catches of undersized European hake (<20 cm TL) compared to the control net. However, the 52 mm SM codend tested in GSA 6, was observed to reduce undersized (<20 cm TL) hake by almost 75% by weight and increased L50 from 16 cm TL (42 mm SM) to 22.2 cm TL. The sorting grid (FLEXGRID with 20 mm bar spacing) tested in GSA 9 was also observed to significantly reduce catches of undersized hake but did not show any shift in L50. It is not clear why there is a difference between the results of the IMPLEMED trials with the FlexiGRID and the similar trials from the MINOUW project where an increase in L50 was observed for hake with the grid. This may be due to differences in codend construction, sample sizes or differences in methodology used. Generally, grids improve size selection rather than species selection. They tend to give sharp selection of sizes compared to most netting selection devices. The size of fish released can be altered by altering the spacing of the bars (Sistiaga et al., 2016).

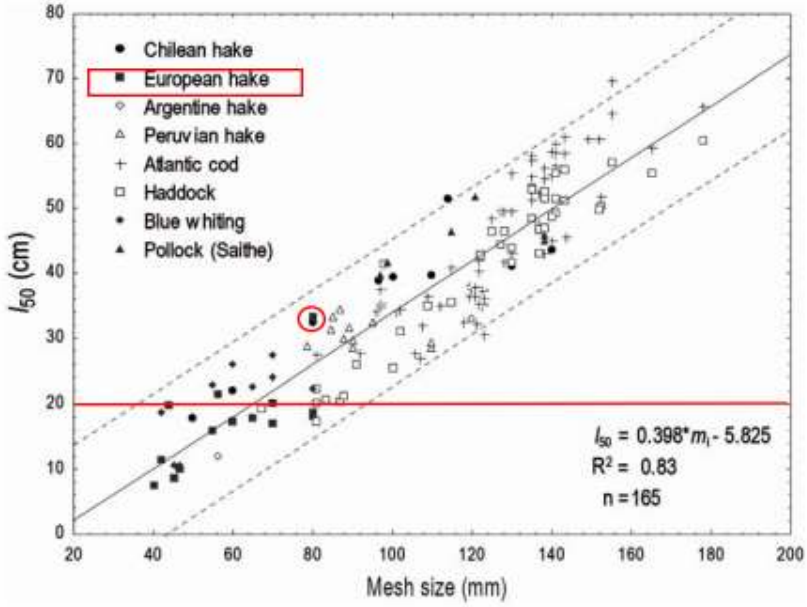

Figure 1. Estimates of l_{50} for some species of the Merlucciidae and Gadidae families as a function of mesh size. Chilean hake: Saetersdal & Villegas (1968); Arana (1970); Gálvez & Rebolledo (2005). European hake: Campos & Fonseca (2003); Campos *et al.* (2003a, 2003b); Deval *et al.* (2007); Lucchetti (2008); Sala & Lucchetti (2010); Tokaç *et al.* (2010). Argentine hake: Rojo & Silvosa (1970); Verazay *et al.* (1992). Peruvian hake: Salazar *et al.* (1996). Atlantic cod: Sakhno & Sadokhin (1982); Netzel & Zaucha (1989); Isaksen & Valdemarsen (1990); Isaksen *et al.* (1990); Hickey *et al.* (1993); Lowry *et al.* (1995); Huse *et al.* (1996); Tschernij *et al.* (1996); Halliday *et al.* (1999); Tschernij & Holst (1999); Blady & Zaucha (2000); Wienbeck & Dahm (2000); Halliday (2002); Madsen *et al.* (2002); Graham *et al.* (2004); He (2007); Grimaldo *et al.* (2008). Haddock: Sakhno & Sadokhin (1982); Robertson & Stewart (1988); Isaksen *et al.* (1990); Reeves *et al.* (1992); Sangster & Lehmann (1994); Halliday *et al.* (1999); Halliday (2002); Graham *et al.* (2004); He (2007); Grimaldo *et al.* (2008). Blue whiting: Campos *et al.* (2003a); Campos *et al.* (2003b); Sala & Lucchetti (2010); Tokaç *et al.* (2010). Pollock (saithe): Smolowitz (1983); Dahm (1998) and Graham *et al.* (2004).

Figure 6.4.1 Review of species of Merluccidae families (among others) as a function of mesh size from Queirolo et al., 2012.

Table 6.4.1 Comparison of reviews and results of studies held in the Mediterranean Sea

	Sola and Mayonu (2018)	Maynou et al. (2021)	Lucchetti et al. (2021)	Tokac et al. (2018)	Bahamon et al. (2021)	IMPLEMED project

Area	GSA 6	GSA 6	Review Mediterranean Sea	Review Mediterranean Sea and northern seas	Review Mediterranean Sea	GSA 6	GSA 9
Control	53DM + 40DM codend	53DM + 40SM codend	40 SM codend	-	-	42 SM codend	40 SM codend
Test I	T90 50DM + 40DM codend	T90 50SM + 40SM codend	50 SM codend	65 SM codend	50 SM codend	T90 50SM + 40SM	T90 44DM + 40SM
Test II	-	Selective grid: 20 mm bar spacing	-	>69 DM codend	Selective grid: 35 mm bar spacing	52 SM codend	Selective grid: 20 mm bar spacing
L50	-	Control: 13 cm Test II: >20cm	Control: 14.17 cm Test I: 18.60 cm	Test I: 25 cm Test II: >20 cm	Test I: >20 cm Test II: >20 cm	Test I: no change Test II: 22.2 cm	Test I: no change Test II: no change
Modal length	From 15 cm to 18 cm	-	-	-	-	-	-
Proportion of <20cm	Reduced	Reduced	-	-	-	Reduction for Test II	Reduction for Test II

Effects observed on other commercial species targeted by mixed fisheries in the western Mediterranean

STECF notes that both gears tested by the IMPLEMED project in GSA 6 and GSA 9 were observed to significantly reduce commercial catches of European hake (>20 cm TL), red mullet (*Mullus barbatus*), deep-water rose shrimp (*Parapenaeus longirostris*) and broadtail shortfin squid (*Illex condeitti*). Specifically, in GSA 6 the L50 of red mullet was observed to increase from 11.5-14.3 cm TL with the control gear to 17.7 cm TL (>MCRS 11 cm TL) with the 50 mm SM codend. Sola and Maynou (2018) reported a reduction of catches of striped red mullet (*Mullus surmuletus*) when introducing the T90 modification and the selective grid. This was estimated to lead to a potential income loss of 18% for the trawling fleet. Lucchetti et al. (2021) observed that the L50 of red mullet increased to between 17.28 cm TL and 18.6 cm TL with the 50 mm SM compared to an average L50 of 13.2 cm TL with the 40 mm SM. As the MCRS of this species is 11 cm, a loss of economic income is likely to result from the use of this gear (Sala et al., 2015).

Forward projections based on selectivity studies

STECF notes that the simulations from the IMPLEMED project with the mixed fisheries bio-economic model BEMTOOL estimated that in GSA 6 only the scenario with a 50 mm SM in the codend would allow to compensate the loss of total landings and total revenues in the medium term (2024) for trawlers compared to the status quo (SQ) scenario. In GSA 9 the FLEXGRID scenario was estimated to produce higher losses (-33% of total revenues) for trawlers than the 50 mm SM (-14% of total revenues) in the medium term compared to SQ.

STECF notes that the modelling results from STECF EWG 21-13 obtained from the mixed fisheries bio-economic models IAM and BEMTOOL showed that increasing selectivity to 50 mm SM would not contribute enough to reach Fmsy for European hake by 2025. It should

be noted that the models used do not consider the potential shift of Fmsy estimates as the selectivity regime changes.

STECF notes that modelling results from STECF EWG 22-11 obtained from the mixed fisheries bio-economic model IAM. These showed that increasing selectivity to a 50 mm SM in combination with significant effort reductions would not lead to reaching Fmsy by 2025 but would allow to reach it by 2030 when combined also with a reduction in vessel numbers in GSA 1-5-6-7. In GSA 8-9-10-11 simulations obtained with BEMTOOL show that current Fmsy for European hake is not reached, in 2025 nor in 2030 if Fmsy is not updated to take cognisance the changes in stocks dynamics following increased selectivity.

Insights from the DISCARDLESS project

STECF notes that one of the outputs from the DISCARDLESS project was the production of a selectivity manual and multiple factsheets on different gear selectivity trials (http://www.discardless.eu/www.discardless.eu/selectivity_manual.html). The manual and factsheet provide some insights on trials carried out across EU waters and fisheries that are relevant to hake selectivity. Relevant reports from the DISCARDLESS selectivity manual are included in the following section as well as under the review of work carried out under the IMPLEMED and MINOUW projects.

Some relevant conclusions from the DISCARDLESS work include the following:

- The effectiveness of square mesh panels increases the closer these are fitted to the codend.
- A change from a diamond mesh to a square mesh in the codend generally improves the selectivity of round fish but can instead reduce the selectivity of flat fish or elliptical cross-section fish (O'Neill and Mutch, 2017).
- For European hake Zapata et al. (submitted) observed that mean length was 17 cm TL with 40 SM compared to 16 cm TL with 50 DM, while Guijarro and Massuti (2006) observed that moving from a 40 mm DM to a 40 mm SM would increase L50 from 11.6 cm to 15.3 cm TL.
- Within the tests ran in GSA 5, Massuti et al. (2009) observed that a selective grid with a 20 mm bar spacing increased the L50 of hake to 18.9 cm compared to the L50 of 10.9 cm obtained with a 15 mm bar spacing.

Hake Selectivity Studies NWW and SWW

STECF observes that France and Spain have carried research in the Northeast Atlantic in recent years into various gear modifications to improve the selectivity of European hake caught in bottom trawls. Some of this work was funded under the DISCARDLESS project. While this work has primarily been carried out in South-western waters (ICES subareas 8 abd, 8c and 9a) with some selective gear options tested in the mixed demersal fisheries in North-western waters in ICES division 7ghjk, nonetheless the findings may be relevant to the Western Mediterranean given the range of gear options tested. The trials all aim to reduce catches of undersized European hake in Northeast Atlantic from a range of bottom trawl fisheries, where hake is a target or bycatch species. It is important to note that in these waters the MCRS for hake is 27cm and the current regulatory minimum mesh sizes are larger than in the western Mediterranean.

STECF notes that most of the work carried out has been in the form of catch comparison experiments, with comparatively few of the studies providing absolute selectivity data. Therefore, in many cases the results are presented in the form of reductions in undersized fish and marketable catch rather than as changes to L50. The main findings from the trials are outlined below by gear modification/selectivity device in table 6.4.2 below:

Table 6.4.2 Summary of selectivity trials carried out by France and Spain to reduce unwanted catches of hake and other species.

Country	Project Reference	Fishery and Area	Gear Modification/Selective device tested	Type of Experiment	Summary of Findings
ES	RAPANSEL (Velasco et al., 2020)	Megrim and anglerfish bottom trawl fishery in ICES 7j	Test gear: 80mm codend with 3m Square mesh panel of 180 mm positioned in the top sheet, 5 metres from the end of codend Control: 100m diamond mesh codend	Catch comparison using single trawl and the alternate tow method	A 26% reduction in the unwanted catch of hake escaping through the square mesh panel in the codend, with a corresponding loss of 54% of the commercial hake catch above MCRS (27 cm).
FR	CELSELEC (Lamothe et al., 2017)	Mixed demersal trawl fishery in ICES 7g,h	Test Gear: 100mm T90 codend and extension with 120mm square mesh panel Control: 100mm diamond mesh codend with 120mm square mesh panel	Catch comparison using single trawl and the alternate tow method	A 30% reduction of the total discard weight with a reduction of 80% by weight of hake.
FR	REJEMSELEC (Lavialle et al., 2018)	Mixed demersal trawl fishery in ICES 7egh	Test Gear: 100mm diamond mesh codend with a 13m x 100mm T90 panel Control: 100mm diamond mesh codend with 120mm square mesh panel	Catch comparison using single trawl and the alternate tow method	A 69% reduction in hake below MCRS with corresponding loss of hake of 51% between 27-36cm
ES	R/V Emma Barden trials (Cuende et al 2020)	Mixed demersal bottom trawl fisheries in ICES 8b	Test 1: 70mm diamond mesh codend with an 80mm square mesh panel of 2.64m2 and white LED lights attached in the upper	Covered codend	The results showed that the position of LED lights did not significantly affect the

			and lower panel of the extension piece Test 2: 70mm diamond mesh codend with an 80 mm square mesh panel of 4.77 m2 in the upper panel of the extension piece Test 3: 70mm diamond mesh coded with an 80mm square mesh panel placed in the lower panel of the extension piece.		SMP's release efficiency for any species. Hake showed low contact probability for configurations. When the SMP was inserted in the lower panel of the trawl, the release efficiency of the SMP was significantly improved.
ES	DESCAREL (Cuende et al 2020b)	Bottom pair trawlers targeting hake, in ICES VIIIc and IXa	Control: 70mm codend with 120mm Square Mesh Panel mounted in the top sheet of the trawl, in front of the codend Test: 70 diamond mesh coded	Catch comparison using single trawl and the alternate tow method	A 20% reduction in the unwanted catch of hake escaping through the square mesh panel in the codend, with a corresponding loss of 4% of commercial size hake in the size range 27-42cm
ES	DESCARSEL (Valeiras et al., 2014)	Mixed demersal bottom trawl fishery in ICES VIIIc and IXa	Test: 70mm T90 codend Control: 55mm diamond mesh codend	Covered codend	The proportion of undersized hake of below MCRS (27 cm) in the T90 codend was 23%, which represented a 35% reduction compared to the control codend T0 For hake, the L50 with the T90 codend was 22.45 cm (SR = 8.26)

					compared to T0: 19.77 cm (SR = 12.84).
ES	MESEDE (Puente et al., 2021)	Pair bottom trawl fishery, targeting hake and blue whiting in ICES 8c	Test: Shortened codend lastridge ropes by 15% Control: 55m diamond mesh codend	Catch comparison using single trawl and the alternate tow method	No significant differences in the catch of any species
ES	CASELEM (Basterretxea et al., 2021)	Mixed demersal bttom trawl fishery in ICES 8abd	Test: Shortened codend lastridge ropes by 20% Control: 55m diamond mesh codend	Covered codend	L50 for horse mackerel significantly increased from 14.56 cm (13.16- 15.76cm) 20.74 cm (17.31-23.92cm), blue whiting's increased from 22.23cm (20.28- 22.97 cm) to 24.30 (23.05-25.91 cm). Hake results indicated less retention probability of individuals in between 16 and 24 cm length but not statistically significant
ES	SMARTFISH (Cuende et al. 2022)	Mixed demersal bottom trawl fishery in ICES 8abd	Test: Grid section inserted in the lower panel in the aft of the trawl designed to separate the catch into an additional lower codend with LED lights attached No control	Direct observation of modified gear	Results were inconclusive showing that less than 25% of the individuals of all species (hake, megrim, horse mackerel, mackerel and

					anglerfish) passed through the grid and were retained in the lower codend. There was no significant difference when the grid was illuminated or unilluminated.
ES	MENDES (AZTI, 2018)	Mixed demersal and pelagic pair bottom trawl fishery in ICES 8a and 9	Test: 100mm diamond mesh codend Control: 55m diamond mesh codend	Catch comparison using single trawl and the alternate tow method	Reduction in undersized hake (-43%) and blue whiting (-96%) with a corresponding reduction of commercial catches - hake (-8%) and blue whiting (-89%)
ES	MENDES (AZTI, 2018)	Mixed demersal bottom otter trawl fishery in ICES 8c and 9a	Test: 100mm diamond mesh codend Control: 70mm diamond mesh codend	Catch comparison using single trawl and the alternate tow method	Reduction of undersized fish - hake (-100%) and megrim (-90%), with corresponding losses of commercial species - megrim (-83%) and horse mackerel (-72%) but only -2% for hake
ES	MENDES (AZTI, 2018)	Mixed demersal and pelagic otter trawl fishery ('jurelara') in ICES 8c and 9a	Test: 100mm diamond mesh codend Control: 70mm diamond mesh codend	Catch comparison using single trawl and the alternate tow method	Catches of undersized hake (by-catch species in the metier) reduced by 20% with corresponding loses of commercial species -

					horse mackerel (-78%) and hake (- 39%)
ES	MENDES 2 (AZTI,2019)	Mixed demersal and pelagic pair bottom trawl fishery in ICES 8a and 9	Test: 70mm diamond mesh codend with an 80mm square mesh panel placed in the bottom panel Control: 70mm diamond mesh codend	Catch comparison using single trawl and the alternate tow method	A reduction of 16% by weight of hake below MCRS.
ES	MENDES 2 (AZTI, 2019)	Mixed demersal bottom otter trawl fishery in ICES 9a	Test: 60mm square mesh codend Control: 70mm diamond mesh codend	Catch comparison using single trawl and the alternate tow method	A 35% reduction of unwanted catches of hake and horse mackerel.
ES	SelectLUGO (2021)	Mixed demersal bottom trawl fishery in ICES 8c and 9a)	Test: 70mm diamond mesh codend Control: 55mm diamond mesh codend	Covered codend	The 55mm mesh has lower selectivity than the 70mm mesh for hake, where the L50 of the 55mm mesh is 13.5 cm. The 70mm mesh has an L50 for hake of 23.1cm

STECF notes that in the STECF EWG 21-07 report on technical measures, it was estimated that values of Fmsy are updated as selectivity is increased over a stock, suggesting that when a stock is at equilibrium selecting older ages would allow improving the F/Fmsy relationship. The update of Fmsy should be considered when running forward projections accounting for a change in selectivity over a stock. This could potentially allow estimating if an increase in selectivity can potentially compensate for effort reduction.

STECF notes that as shown in STECF 22-09 fishing mortality of European hake in GSA 1-5-6-7 and 8-9-10-11 at age 0 constitutes only a small fraction of the total mortality, as such measures that reduce fishing mortality over this age could potentially not contribute majorly to recovering the stock to MSY levels.

STECF conclusions

STECF concludes that while length at first maturity (LFM) for European hake (both females and males) do show small variations depending on the study reported (30-36 cm for females and 25-28.8 cm for males), these such variations do overlap within the same GSA. STECF concludes therefore that LFM is not significantly different between GSAs.

STECF concludes that the L50 with the current codend mesh size used in the trawl fisheries in the western Mediterranean is well below the LFM. To increase selectivity for hake to the LFM would require a significant increase in mesh size or the use of additional selectivity devices/gear modifications. However, even with such gear changes it is unlikely such improvements could be achieved in one step.

STECF concludes that the T90 modification tested in the western Mediterranean showed a reduction in catches of undersized European hake and an increase in the modal length when used with a diamond mesh codend but not with a square mesh codend. The introduction of a selective grid with 20 mm bar spacing reduced catches of undersized European hake, but increased L50 only in GSA 6 (L50 was also increased with a 35 mm bar spacing). Having a 50 SM in the codend reduced catches of undersized European hake and increased L50 in all the studies reported.

STECF concludes that both a 50 mm SM in the codend and the introduction of a sorting grid (20 mm bar spacing) or a T90 modification were observed to reduce commercial catches of species targeted by the Mediterranean mixed fisheries on the shelf: red mullet, striped red mullet, broadtail shortfin squid, deep-water rose shrimp. The L50 of red mullet was also observed to increase (~18 cm) over the 11 cm MCRS. These effects on other commercial species targeted by the mixed fisheries could cause economic losses to the fleets and will be a dis-incentive to use such gears.

STECF concludes that France and Spain have carried out research in the Northeast Atlantic in recent years into various gear modifications to improve the selectivity of European hake caught in bottom trawls. While this work has been carried out in North-western and South-western waters, nonetheless the findings may be relevant to the Western Mediterranean. Several gears tested including the use of T90 codends and square mesh panels show significant reductions in European hake below MCRS (27cm in NWW and SWW waters compared to 20cm in the western Mediterranean) but with corresponding losses in commercial catch of European hake and other species.

STECF concludes that simulations ran during EWG 21-13 and EWG 22-11 showed that the implementation of a 50 mm SM alone or in combination with strong effort reductions would not allow reaching Fmsy for European hake in the western Mediterranean by 2025. This combination would potentially allow Fmsy to be reached in 2030 in some GSAs. It should be noted that these simulations do not account for any potential shift in Fmsy as selectivity changes are introduced in the models, as was investigated by EWG 21-07.

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6.5 Evaluation of a razor clam management plan in Italian waters

Background provided by the Commission

In 2013, the Common Fisheries Policy (CFP) introduced new elements for conservation such as the target of maximum sustainable yield (MSY) for all the stocks by 2020 at the latest, the landing obligation and the regionalisation approach.

In line with these two Regulations, the plans shall be based on scientific, technical and economic advice and shall contain conservation measures to restore and maintain fish stocks above levels capable of producing MSY. Where targets relating to the MSY (e.g. fishing mortality) cannot be determined, owing to insufficient data, the plans shall provide for measures based on the precautionary approach, ensuring at least a comparable degree of conservation of the relevant stocks.

The plans may contain specific conservation objectives and measures based on the ecosystem approach to achieve the objectives set. In particular, it may incorporate any measure included in the following list to limit fishing mortality and the environmental impact of fishing activities: limiting catches, fixing the number and type of fishing vessels authorized to fish, limiting fishing effort, adopting technical measures (structure of fishing gears, fishing practices, areas/period of fishing restriction, minimum size, reduction of impact of fishing activities on marine ecosystems and non-target species), establishing incentives to promote more selective fishing, conduct pilot projects on alternative types of fishing management techniques.

In accordance with Article 13(2) of Regulation (EC) No 1967/2006 (hereafter the MedReg), the use of dredges is prohibited within 0.3 nautical miles of the coast. At a request of a Member State, derogation from Article 13(3) may be granted, provided that the conditions set in Article 13(5), (8) and (9) are fulfilled.

The Italian national plan for mechanized and hydraulic dredges has been evaluated by STECF in 2019 and the plan is in force since 2019. It has specific provisions for razor clams.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2203

Request to the STECF

STECF is requested to evaluate the current draft management plan in terms of alignment to MedReg and CFP objectives, in respect to the environmental effects and in terms of the "cannellare" fishing gear definition. More specifically, STECF is requested to:

TOR 1. Assess whether the management plan contains adequate elements in terms of:

1.1. The description of the fisheries:

- Recent and historical data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit effort;
- Data on length-frequency distribution of the catches, with particular reference to the species subject to minimum sizes in accordance with Annex IX of Regulation (EU) No 2019/1241;
- An updated state of the exploited resources; and
- Information on economic indicators, including the profitability of the fisheries.

1.2. Objectives, safeguards and conservation/technical measures:

- Objectives consistent with Article 2 of the CFP and quantifiable targets, such as fishing mortality rates and total biomass;
- 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 poor quality of data or non-availability places the sustainability of the main stocks of the fishery at risk; and
- Other conservation measures, in particular measures to fully monitor catches of the target species, to eliminate discards and to minimise the negative impact of fishing on the ecosystem;
- The fisheries have no significant impact on the marine environment.

1.3. Other aspects:

- Quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan.
- If deemed necessary, provide any recommendations and guidance on how to obtain improved scientific/technical supporting material for the plan. This could be done in terms of collection of data, evaluation of the status of the target stocks, evaluation of conservation measures, impact on the marine ecosystem and monitoring programme.

TOR 2. Evaluate if the "cannellara" dredge used in the area covered by the draft national plan is a fully mechanized dredge or it has some hydraulic nozzle/device so that it could fall under the hydraulic dredge definition (MedReg Art 2b).

TOR 3. Evaluate whether, on the basis of TOR 2, the conditions under Art 13.2 ("The use of boat dredges and of hydraulic dredges shall be prohibited within 0,3 nautical miles of the coast.") apply or not and if the conditions for a derogation to the minimum distances and depths (Article 13, paragraphs 5, 8 and 9) are fulfilled:

- There are particular geographical constraints, such as the limited size of coastal platforms or limited fishing grounds;
- The fisheries have no significant impact on the marine environment;
- The fisheries involve a limited number of vessels, with a track record of more than 5 years, 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 fisheries do not operate above seagrass beds of, in particular, *Posidonia oceanica* or other marine phanerogams;
- 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) No 2019/1241 are minimal; and
- The fisheries do not target cephalopods.

Summary of the information provided to STECF

Two versions of the management plan - "*National management plan of mechanised dredge fishery for the razor clam (Ensis minor) in GSA 9 and 10*"were provided. The original Italian document and an English translation.

This document includes some information and data in relation to the following:

- Description of the fishery
- Description of the fishing gear
- Fishing activity in the three areas where the fishery operates (Rome, Gaeta, Naples)
- Biological reference points
- Management measures
- Information on the biology of the target species
- Information on the impact of the razor clam dredgers based on the literature
- Results from scientific surveys; and
- Information on the selectivity of the razor clam dredge.

Previous STECF advice

STECF PLEN 19-01 evaluated the Italian national plan for mechanized and hydraulic dredges in Italian waters, in force since 2019[11]. This plan applied to mechanized and hydraulic dredges used in the fisheries in the Adriatic and Tyrrhenian Seas, for venus clam (*Chamelea gallina*), razor clam (*Ensis spp.*) and smooth clam (*Callista chione*).

STECF PLEN 19-01 concluded that for the razor clam fishery in the Tyrrhenian Sea, relevant information on length frequency distributions was missing from the management plan.

STECF had noted that the surveys conducted in 2017 and 2018 in Napoli, Gaeta and Roma provided knowledge on the current status of razor clam. This indicated that, according to the proposed reference points based on densities of commercial sized individuals, this stock was heavily overexploited.

STECF noted that data should be collected to understand the relative importance of the target species in the total catch, in all areas where the species was exploited. This information is required to assess whether the fishing gear is selective regarding the target species and indicate the extent the fishery impacts on bycatch species as well as benthic habitats.

STECF also concluded that the management plan would benefit from the inclusion of historic data series on catches, effort and CPUE in the different districts where the species is exploited.

STECF concluded that the proposed reference points are not used for ensuring catches consistent with a biologically sustainable exploitation as they are exclusively based on socio-economic elements.

[11] Piano di gestione nazionale per le attività di pesca con il sistema draghe idrauliche erastrelli da natante così come identificati nella denominazione degli attrezzi di pesca indraghe meccaniche comprese le turbosoffianti(HMD) e draga meccanizzata (DRB)

STECF comments

STECF has evaluated the management plan (MP) submitted by Italy for the targeted dredge fishery for razor clams according to the TORs:

TOR 1. Assess whether the management plan contains adequate elements in terms of:

1.1. The description of the fisheries:

- *Recent and historical data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit effort;*

STECF observes that only partial information and data has been provided on recent and historical catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit effort. The information and data supplied is not consistent between the main fishery regions (i.e., Rome, Gaeta and Naples).

STECF notes that in the management plan, it is indicated that historical catch data for razor clam are only partially available. However, recent data on the fishery are also largely missing for some areas, and most time series presented in the plan are short and truncated.

STECF observes that partial data on landings, number of active boats, kg/year/boat, months of fishing closure, total fishing days, fishing days/year/boat and kg/day/boat, by district, (i.e., Rome, Gaeta and Naples), are provided over the period 2017-2021 for Rome; partially provided for Gaeta in the period 2016-2019; and provided for Naples for the period 2013-2021. The characteristics of the dredger fleet is given for Lazio and Campania (number of vessels and mean values of GT, kW, crew number).

STECF notes that, although the number of dredgers has remained the same since 2015, the number of active vessels as well as the duration of closures in place in the fishery have changed over the years. In Rome, the number of active vessels was 5, 14 and 15 in 2017, 2018 and 2019-2021 respectively. Fishing activity increased from 334 total days in 2017 to 1350 total days in 2021, with the number of fishing days per vessel being 90 days in 2021. In addition to the increase in active vessels, the duration of closures also decreased, from 4.6 and 5.1 months in 2017 and 2018 respectively, to 2 months in 2021 (Table 11 in the MP).

In Gaeta the razor clam fishing is carried out by 3 vessels, with closures between 4 and 6 months in 2017-2019 (Table 12) with the average number of days per vessel being 46 days in 2018. In Napoli the number of active vessels and the duration of closure has shown large interannual variations in the period 2014-2021 (Table 13). Vessels fished on average 26 days per year in 2021.

STECF observes that this implies an increase of total fishing pressure in Rome in 2019-2021 (the number of fishing days between 1343 and 1472, much higher than in 2017 and 2018). In Gaeta the number of fishing days is available only for 2017 and 2018, 220 and 138 respectively; and in Naples the number of fishing days displayed a decreasing trend, with large inter-annual variations from 742 in 2013 to 179 in 2021.

In the absence of relevant spatial data, STECF is unable to assess the distribution of fishing effort in the three regions over the various banks. Additionally, STECF observes that catches from the razor clam fishery display a marked seasonality. At the end of the fishing closure period at the end of May, the number of razor clams fished is extremely high (Vasopollo 2020).

STECF notes that the implementation of the existing management plan in place since 2019 potentially allowed for the collection of good quality data that would have supported the new plan. Specifically, vessels are equipped with a position system, which would provide spatial data on the distribution of fishing effort and the production by areas. Information on the composition of the total commercial catch by species and LFD of the commercialized

razor clam along the fishing season could have been collected while, information on the impact of dredge on the bottom could also have been collected. However, STECF notes that despite the opportunities provided by the existing management plan, data and information on the fishery is only partial.

- *Data on length-frequency distribution of the catches, with particular reference to the species subject to minimum sizes in accordance with Annex IX of Regulation (EU) No 2019/1241*

STECF notes that Length Frequency Distributions (LFDs) are not presented for the commercial catch. The only data presented in the MP comes from annual scientific surveys using a commercial dredge conducted in depths between 1.5m and 4m. These surveys are carried out when the fishery is closed. The surveys are supplemented by data collected from a net sampler (a steel frame and a nylon net with mesh of 14 mm opening, 40 cm in length, 18 cm in height and a thickness of 1 cm) fixed inside the dredge to retain juveniles. Length Frequency Distribution data (LFD) collected from the net sampler provide data on the sizes of razor clams that are not retained by the commercial dredge. They provide indications of the strength of the next recruitment into the population.

STECF notes that density values of commercial biomass (>80 mm) of razor clam are presented from the surveys conducted in the period 2017-2020 in Gaeta and Napoli and in 2018-2019 in Rome, on board commercial dredgers.

STECF notes that the sampling scheme is distributed equally along the coast and provides razor clam abundances on these transects only. No analysis of the commercial data is provided, although the management plan in place since 2019 provided an opportunity to collect wider geo-localized catch information.

STECF notes that the length-frequency distributions (LFDs) collected from the annual surveys are only provided for the period 2017-2020. The LFDs from the surveys show that the abundance and presence of large individuals has decreased in the period 2017-2020 in all three districts, Gaeta, Napoli and Rome (for Rome data is only available for 2018 and 2019). Furthermore, the proportion of the catch that is marketable (i.e., greater than 80 mm) consists of a single mode, indicating that exploitation is fully dependent on strong recruitment. STECF observes that these observations point to resource overexploitation.

- *An updated state of the exploited resources;*

STECF notes that density reference values of the commercial fraction of the catch are used to define the state of the resource as the landings cannot be used as an indicator of population abundance because the fishing is subject to restrictive rules on activity (i.e., closures, limitations on fishing days per week, daily hours at sea). As defined in the MP, Densities of >15 g/m^2, 8-10 g/m^2 and <8 g/m^2 correspond to "Good management level", "Attention level" and "Fishing ban level". These were first set in 2015 and represent threshold values below which fishing activity should be suspended, and optimal values which will ensure sustainable economic returns.

STECF notes that no updated information on razor clam commercial density for 2021 has been presented in the management plan. STECF observes that the density values presented for the most recent years in Gaeta and Napoli are reported to be <8 g/m^2. This equates to the level at which the fishery should close in these areas and indicates very low level of razor clam abundance.

STECF notes that the situation in Rome in 2019 was different, where the density for the commercial razor clam (≥80 mm) was above the threshold of "Good management level" STECF notes the very high interannual variability in commercial razor clam density in this district, from 1.8 g/m^2 in 2018 to 57.6 g/m^2 in 2019.

STECF notes that maps are presented showing razor clam abundance (n/m^2) as estimated from the surveys conducted in 2018 and 2019 in Rome and in 2017 to 2020 in Gaeta and Napoli. These maps allow identifying where the species concentrate in a general way in the sub-areas within each district. However, since the reference points are expressed as g/m^2, it is not possible to understand from the maps the sub-areas which would correspond to "Good management level", "Attention level" and "Fishing ban level".

STECF observes that there is not enough information provided to assess the actual exploitation level on the stock with regards to FMSY. The fact that the densities reported are below the fishing ban level in two of the three regions suggests the stock is heavily overexploited in at least these two regions.

- *Information on economic indicators, including the profitability of the fisheries*.

STECF notes that information provided on economic indicators is limited to the annual mean price per kg (€/kg) and overall revenues (€*1000) for the three districts combined over the period 2017-2021 (Rome, Gaeta and Naples). No monthly analyses on prices are presented, although it is indicated that the prices fluctuate during the year and according to the MP, the decision on the fishing activity for razor clams is based solely on price.

STECF notes that, according to the MP, one of the objectives at the level of local (consortia) management is to have a profitable fishing activity even when the resource is not abundant (i.e., low mean density values). This seems to be based on the assumption by the consortia that the resource abundance is different within the whole fishing area and in some specific sub-areas, the abundance may be at a sufficient level to allow fishing in line with the defined density thresholds.

STECF observes that no data is provided in the MP to support this management strategy and STECF considers it to be high-risk given the density reference values suggest the stock is overexploited in two of the three main fishing regions and intensifying fishing in smaller sub-areas is only likely to make the situation worse.

1.2. Objectives, safeguards and conservation/technical measures:

- *Objectives consistent with Article 2 of the CFP and quantifiable targets, such as fishing mortality rates and total biomass;*

STECF notes that there are no clear objectives for the fishery and the only safeguards in place are the density reference points set. These reference points are supposed to trigger closures of the fishery when they are below 8 g/m^2. However, there is no information in the plan to suggest these closures are enforced and in fact, as the consortia in the individual regions have the authority to open the fishery in smaller sub-areas, they would seem sub-optimal for management purposes in protecting the stock.

STECF observes that no explanation is provided as to how the density reference points have been estimated, although it is commented that are based on the biological characteristics of the species and economic considerations. STECF cannot assess whether they are appropriate to the fishery or precautionary.

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

STECF notes that measures including daily razor clam limits of 100 kg/boat, fishing 4 days per week and five hours at sea per day are in place in the fishery. However, the daily catch does not reflect the abundance of the resource but is linked to market prices and the volume of commercial clams available. Therefore, it is not possible to assess whether these measures are effective or not. There is also no information in the plan as to how these are monitored.

STECF notes that, according to the MP, the duration of closures triggered by low density values, can be extended beyond the two-month mandatory period in the spring-summer

months. The extension to the closure is agreed at consortia level and depends on the observed densities at the end of the fishing season.

STECF notes that the objective of these measures is to control fishing effort. However, STECF observes that the decision-making process is not clear and is compromised by the consortia being allowed to allow fishing activity in sub-areas within the wider area to keep the fishery open.

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

STECF notes that "adaptive management" is foreseen in the management plan in that if a consortium identifies sub-areas with densities lower than the reference point, this sub-area will be closed to fishing within 15 days. Bi-monthly monitoring is also carried out when the density of commercial biomass falls within the "attention level". However, no information is provided on the extent of previous fishing closures triggered or on the re-opening procedure.

STECF notes that, while it is stated in the report that the reference points represent threshold values below which fishing activity should be suspended, it is clear fishing activity continues even when density values fell below the fishing ban level. It is unclear the way these threshold values have been considered when implementing the temporal closures. Therefore, STECF considers these measures are inefficient as they do not stop fishing, even when the densities recorded are below the threshold level to trigger closure of the fishery.

STECF notes that the MP allows for "compensation areas" (i.e., areas with no fishing activity for razor clam to reproduce), that can be exploited on a rotating basis. However, the procedure for designating such areas is not clear. STECF observes allowing such fishing activity in spawning areas seems likely to be detrimental to the stock.

- *Other conservation measures, in particular measures to fully monitor catches of the target species, to eliminate discards and to minimise the negative impact of fishing on the ecosystem*

STECF notes that no details are provided on how catches of the target species are monitored. The MP indicates that each consortium will work with a scientific institute, whose task will be monitoring the situation of the resource and to highlight possible situations that could compromise the resource and the fishing activities. The consortium management decides on the maximum quantities that can be fished, but no explanation is given on how this amount is decided, nor on how the daily catches by vessel are monitored.

STECF notes that only limited measures are in place to eliminate discards and to minimize the negative impacts on the ecosystem. The data provided in the plan indicates that the dredge is not selective as 54% of the catch is undersized. Discarding of undersized individuals is carried out through manual grading. STECF observes that given the design of the dredge and the operation of the fishery, smaller razor clams are likely to suffer shell damage that is likely to cause mortality or growth limitations.

STECF notes that vessels are equipped with position detection systems, which provides spatial data but there is no evidence to suggest this information is being used to monitor the fishery.

- *The fisheries have no significant impact on the marine environment.*

STECF observes that there is evidence that the fishery does impact on the marine environment. Even though razor clams frequent shallow water habitats characterized by

communities of well-adapted species to environmental disturbance, when fishers localize a patch of *Ensis*, they cross the area multiple times which may result in short to medium term impacts (Vasapollo et al 2020). Vasapollo et al. (2020) concluded that even if the benthic community is typical of a moderately disturbed environment, the effects of fishing on the community structure are still discernible over and above the natural variation.

STECF notes in the management plan it is reported (without citation), that the furrows left by the dredges used in the fishery have an average depth of 5-15 cm and can penetrate even deeper (>20 cm). The width of these furrows is 3 m (the width of the dredge).

STECF notes that according to studies cited in the management plan, conducted in the Adriatic on the impacts of hydraulic clam dredgers, the benthic community will recover within six months. Morello et al (2006) observed that macrobenthic community recovery in response to different intensities of fishing activity was in some cases within two months. However, according to Morello el al. (2005), in the short term the impact seems important especially on razor clams.

Data are presented in the management plan from a study conducted in 2017. According to this survey on board professional vessels using a net sampler, the number of species collected was 53 in Gaeta, 44 in Napoli and 22 in Rome. About the habitat affected by the dredge, the only provided information is that that razor clam has a limited distribution range that goes from the coast up to 5 - 6 meters deep, on seabeds with fine superficial sands and almost no mud.

STECF notes that the fishing area for razor clams present a high biodiversity index up to 54 taxa (Vasopollo, 2020), where the effect of hydraulic dredges in the Tyrreanean consortiums areas lead in modification of the benthic community's composition during the year. Although Vassopollo does not conclude whether the origin of the stressing factor is linked to anthropogenic activity, there is literature that supports that the benthos, and the function it provides in such areas is very sensitive to such impacts. Additionally, natural systems that might serve as baselines to evaluate these impacts may have virtually been eliminated making assessment of the extent of impacts difficult (Simon & al, 2002, Urra & al 2017).

STECF notes that impact of the fishery should be presented in relation to the habitat especially where protected areas are in place (such as Natura 2000 sites along the coast) and may be of concern due to the trituration effect of hydraulic dredges.

1.3. Other aspects:

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

STECF notes that monitoring is carried out annually (surveys to estimate the resource abundance and size structure) and continuously at district level by the consortia during the fishing season. The quantifiable indicators for the monitoring and assessment of progress in achieving the objectives of the plan are the observed densities and the implemented reference points. It is at consortium level that the decision on whether the fishing activity will continue or not on sub-areas where the resource density may be higher than the district mean density abundance. However, STECF observes that due to the limited information in the plan, it is not clear whether this monitoring is effective or not.

- *If deemed necessary, provide any recommendations and guidance on how to obtain improved scientific/technical supporting material for the plan. This could be done in terms of collection of data, evaluation of the status of the target stocks, evaluation of conservation measures, impact on the marine ecosystem and monitoring programme*.

STECF observes that razor clam is the main target of the fishery, but other species with commercial interest are fished along with razor clam (e.g., *Donax trunculus, Chamelea gallina, Solen marginatus*). Information on this bycatch should be provided as it will help

to understand the reliance on bycatch species to the total incomes at the vessel level from the fishery.

STECF response to TOR 2

TOR 2. *Evaluate if the "cannellara" dredge used in the area covered by the draft national plan is a fully mechanized dredge or it has some hydraulic nozzle/device so that it could fall under the hydraulic dredge definition (MedReg Art 2b).*

STECF observes that the "*cannellara*" dredge used in the razor clam fishery is defined as a blade dredge. However, the information provided in the plan is unclear regarding the actual characteristics and operation of the dredge. Based on the limited description of the gear in the report, "*cannellara*" would seem to be a mechanized dredge but without a hydraulic system. However, STECF notes there is other information in the plan that suggests this is not the case and the dredges used commonly are in fact hydraulic dredges.

STECF notes that Fig.17 in the plan - *detail and dimensions of the net sampler and detail of the catch* - has been taken from Vasopollo et al (2020). This report is entitled, "*Impact on Macro-Benthic Communities of Hydraulic Dredging for Razor Clam Ensis minor in the Tyrrhenian Sea*" which suggests the dredges used are hydraulic dredges.

Additionally, STECF notes that a representation of a razor clam dredge is presented in the report (Fig.10, adapted for Lucchetti and Sala, 2012). This corresponds to a mechanized dredge. However, STECF notes that the figure in the plan seems to be modified from the figure contained in the Luchetti and Sala paper. In the original figure the dredge system includes a hydraulic hose connected to the dredge with a water pump (i.e., a hydraulic dredge). However, this hose is missing in the diagram in the plan.

STECF notes in previous management plans the number of dredgers targeting razor clam in the Tyrrhenian and the type of dredge being used was defined. According to the new plan, the fleet targeting razor clam in the Tyrrhenian consists of 38 vessels "*cannellare*" (4 in Gaeta, 14 in Napoli and 20 in Roma), as detailed in Annex 1 of the plan. STECF notes this is the same number of vessels, defined as hydraulic dredgers, that were mentioned in the management plans of 2014, 2015 and 2019.

STECF notes that it is indicated in the plan that sampling under the annual scientific surveys is carried out on board on commercial dredgers fishing boats. In the text is states that, "*the end of the haul coincided with the shutdown of the water pump*"(p.38). This further implies that the commercial dredges used in the fishery are equipped with a hydraulic system.

STECF observes that based on the information provided in the management plan it is unclear whether the dredges clam are fully mechanised dredges. STECF notes though that as the number of vessels per district defined as hydraulic dredgers in the previous management plans, has not changed in the period 2015-2019, and these numbers are the same as those listed in Annex I of the submitted management plan, it is likely that they are all hydraulic dredgers.

STECF observes that having a clear distinction between fully mechanized dredges and hydraulic dredges is a basic requirement since it is the use of boat dredges and of hydraulic dredges that, according to the MedReg are prohibited within 0,3 nautical miles of the coast. Such a prohibition would not apply to strictly mechanized dredges based on dredge definition and hydraulic dredge definition. Therefore, to establish which rules should apply, Italian authorities should clarify the actual dredges being used in the fishery.

STECF response to TOR 3

TOR 3. Evaluate whether, on the basis of TOR 2, the conditions under Art 13.2 ("The use of boat dredges and of hydraulic dredges shall be prohibited within 0,3 nautical miles of

the coast.") apply or not and if the conditions for a derogation to the minimum distances and depths (Article 13, paragraphs 5, 8 and 9) are fulfilled:

- *There are particular geographical constraints, such as the limited size of coastal platforms or limited fishing grounds;*

STECF notes that razor clams have a limited distribution range ranging from the shoreline line up to 5 - 6 meters depth, in in grounds with fine sand and almost no mud. To this extent, the fishery is constrained geographically.

- *The fisheries have no significant impact on the marine environment;*

The razor clam fishery has important impact on the marine environment. This question is answered in ToR 1.

The fisheries involve a limited number of vessels, with a track record of more than 5 years, and do not contain any increase in the fishing effort;

STECF notes that the number of vessels (38) involved in the razor clam fishery has essentially remained the same since 2014, although in the previous management plans these vessels were referred to as hydraulic vessels. Nevertheless, the number of active vessels is lower than 38 and it can change from year to year, as also the number may change during the duration of any closures. This means that the fishing effort in terms of fishing days may also change.

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

STECF considers that the fishery cannot be undertaken with any other gear than a dredge at the commercial level, noting the lack of clarity highlighted in TOR 2 about which type of dredge is used in the fishery.

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

STECF notes that the razor clam fishery is subject to a management plan. Monitoring of daily catches is done at consortia level, although this information is not presented in the management plan. Annually, during the closure months, surveys are conducted to know the abundance of the resource at the end of the fishing season. STECF considers this partially fulfils the monitoring of catches as per Article 23. However, STECF observes that this does not mean that catches are constrained or that the management plan is effective, it simply means there is a plan in place.

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

STECF notes that as the species inhabits fine sand bottoms it does not impact on seagrass beds.

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

STECF observes that based on the information provided, the razor clam fishery does not interfere with other fishing activities.

- *The fisheries are regulated in order to ensure that catches of species mentioned in Annex IX of Regulation (EU) No 2019/1241 are minimal;*

STECF observes that according to the information provided the survey results presented that there are quantities of venus clam (*Chamelea gallina*) retained by the gear. This is the only Annex IX species that would appear to be bycaught in the fishery.

- *The fisheries do not target cephalopods.*

STECF observes there are no reported catches of cephalopods and given the location of the fishery it is highly unlikely there is any catch of cephalopods at all in the fishery.

STECF conclusions

STECF concludes that the management plan contains some elements required, but important information is missing (e.g., spatial data), incomplete (e.g., catch, effort and survey data) or unclear (e.g., details of the gear being used). The data provided in support of the management plan is not sufficient to provide an informed quantitative assessment of its potential impacts.

STECF cannot conclude whether previous management plans have been effective or not in ensuring the razor clam stocks are exploited sustainably, and monitoring of the fishery seems quite limited.

STECF concludes that there is evidence that the fishery does impact on the marine environment. However, the extent and the duration of such impacts is unclear.

STECF concludes that the density reference points in two of the three main regions are below the threshold to trigger closure of the fishery, but fishing seems to continue at the same level due to the mechanisms within the plan to allow fishing in sub-areas. Given the new plan is largely the same, it is unlikely that this will improve the situation.

STECF concludes that from the information in the management plan, STECF cannot ascertain whether the "*cannellara"* dredge used in GSAs 9 and 10 is fully mechanized or hydraulic. Therefore, given the differences in the Regulation within 0.3 nm regarding the type of dredge being used, STECF concludes that it essential for the Italian authorities to clarify the gear characteristics onboard each vessel operating in the fishery.

STECF concludes that socio-economic information should be provided, because the management plan provides only basic economic data on price and revenue.

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6.6 Renewal of the Derogation for "Volantina" demersal otter trawls in the territorial waters of Slovenia

Background provided by the Commission

In accordance with Article 13(1) of Regulation (EC) No 1967/2006 (hereafter, the MedReg), the use of towed gears is prohibited within 3 nautical miles of the coast or within the 50m isobath where that depth is reached at a shorter distance from the coast. At a request of a Member State, derogation from Article 13(1) shall be granted, provided that the conditions set in Article 13(5) and (9) are fulfilled.

In addition, a general condition for all derogations is that the fishing activities concerned are regulated by a management plan provided for under Article 19 of the MedReg. Under this provision, Member States are expected to adopt management plans for fisheries conducted by trawl nets, boats seines, shore seines, surrounding nets and dredges within their territorial waters.

Commission Implementing Regulation (EU) 2017/2383 granted a derogation to Article 13(1) of the Mediterranean Regulation for "volantina" demersal otter trawls in the territorial waters of Slovenia. This derogation applies until 27 March 2020. This derogation was extended by (EU) 2022/511, based on a new national management plan adopted by Slovenia on 18 August 2021 and which will expire on March 2023. Slovenia has submitted a request to further prolong this derogation after its expiry on 27 March 2023 and has submitted a monitoring report as a supporting document.

Background documents are published on the meeting's web site on: https://stecf.jrc.ec.europa.eu/plen2202

Request to the STECF

STECF is requested to evaluate the new information provided, while considering the national management plan adopted in 2021 and to confirm its opinion of 2019 in light of the updated information. More specifically, STECF is requested:

TOR 1. On the basis of the monitoring report (Study "Structure of bottom trawls of the volantine type" 2020 and 2021 report) and of the national management plan adopted by Slovenia in 2021, to evaluate whether the following conditions concerning the derogation to the minimum distances and depths (Article 13, paragraphs 5 and 9) are fulfilled:

- There are particular geographical constraints, such as the limited size of coastal platforms or limited fishing grounds;
- The fisheries have no significant impact on the marine environment;
- The fisheries involve a limited number of vessels, with a track record of more than 5 years 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 fisheries do not operate above seagrass beds of, in particular, *Posidonia oceanica* or other marine phanerogams;

- 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) No 2019/1241 are minimal, and
- The fisheries do not target cephalopods.

TOR 2. Evaluate the 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);

TOR 3. Evaluate the implementation report of the current derogation and any additional documents provided to support the Slovenian request to renew the derogation.

Summary of the information provided to STECF

One document was provided to STECF, entitled: "Structure of bottom trawls of the volantina type" 2020 and 2021 report'. This is a report of a study carried out in 2020-2021 by FRIS (Fisheries Research Institute of Slovenia). It was provided at the request of the European Commission to report on the monitoring catches with 'volantina' type bottom trawls. The main objective of this study was to obtain data on the catch composition of 'volantina' type bottom trawls in the strip between 1.5 and 3.0 nautical miles from the coast. Additionally, the report contains some new analyses to demonstrate that the 'volantina' fishery is geographically constrained not only due to the limited extent of the Slovenian territorial waters but also by existing administrative rules applying in the area.

A. Data on the catches of 'volantina' trawls in the 1.5-3.0 nautical miles zone

Data are presented on the catch composition of 'volantina' from five fishing operations carried out in the 1.5 – 3.0 NM zone onboard two authorized trawlers on 26.05.2020 (n=1), 03.11.2020 (n=2) and 04.03.2021 (n=2). In total, these fishing trials represented 9 hours of fishing and a summed catch of 260 kg.

The catch included 38 commercial species, mostly *Sardina pilchardus* (33.83% in total weight), *Merlangius merlangus* (17.93%), *Pagellus erythrinus* (11.23%) and *Spicara flexuosa* (10.34%). Each of the other species caught accounted for less than 5% of total catch. The discarded proportion of the catch was 40% and included mostly *Sardina pilchardus* (41.98%) –damaged specimens, *Spicara flexuosa* (23.65%) -juveniles- and *Pagellus erythrinus* (11.06%) -juveniles. In terms of landings, the species (declared by the skippers) to be targeted by the 'volantina' fishery (whiting, *Merlangius merlangus*) ranked first (29.34% in total weight), followed by European sardine *Sardina pilchardus* (28.42%), common pandora *Pagellus erythrinus* (11.35%) and European squid *Loligo vulgaris* (6.95%). The share of cephalopods (*Sepia officinalis*, *Alloteuthis media*, *Loligo vulgaris* and *Eledone moschata*) was 6.56 in catches and 10.82% in landings. The report also provides separate length frequency distribution (LFDs) for whiting from the landed and discarded catch.

In total, 12 species contained in Annex IX of Regulation (EU) 2019/1241 were caught during the observed fishing operations, accounting for 58.30% of total catches in weight. Excluding sardine, the share of the remaining Annex IX species (n=11) was 24.50%. Catches of juveniles of Annex IX species were mostly negligible (0-1%) except *Pagellus acarne* (98% juveniles), *Trachurus mediterraneus* (47%) and *Pagellus erythrinus* (17%). These three species represented 1.57%, 5.31% and 11.23% of the total catches in weight. Overall, the proportion of juveniles by weight was 2.7% of the total commercial catch.

B. Analysis of geographical constraints

The main geographical restriction on the use of bottom trawl nets is the small size of Slovenia's fishing area (214.1 km^2). The derogation from Article 13(1) of MEDREG allows fishing in an area of 129.5 km^2, which is 52.3 km^2 larger than the area without the

derogation to use the volatina trawl. In the report, an analysis of the spatial distribution of fishing effort based on VMS data is presented showing that (a) trawling is more intense in the north-eastern part of the Slovenian fishing area, and (b) the area between 1.5 and 3.0 nautical miles from the coast which accounted for 54.06 % of estimated fishing effort in 2020 and 2021.

In addition to the limits on the available fishing area, Slovenia has established (Official Gazette of the Republic of Slovenia Nos 87/08, 11/10) a zone within the 1.5-3 NM strip, labelled 'corridor' (shown in Figure 5 of the report). During nighttime, fishing with active fishing gears is permitted only in this 'corridor'. Outside of it, fishing is permitted only where the skipper ensures that there is no risk of encountering passive fishing gears.

Furthermore, there is a traffic separation scheme in the area defining the direction of navigation for cargo ships and tankers in the Gulf of Trieste (shown in Figure 6). Fishing with bottom trawls is permitted in the traffic separation zone provided that fishing vessels do not obstruct the navigation of ships in the traffic separation zone while fishing. These 'administrative restrictions' (the 'corridor' + traffic separation scheme) combined restrict trawling activity in the relevant area. GIS calculations are presented in the report showing that because of them, bottom trawling is currently restricted in 88% of the available fishing area during the night and in 56% of the fishing area during the day. Without the derogation (i.e., fishing only outside the 3NM), trawling would be restricted in 100% of the fishing area during the night and 60% during the day.

STECF comments

TOR 1. Evaluation of conditions concerning the derogation from the minimum distances and depths

- There are particular geographical constraints, such as the limited size of coastal platforms or limited fishing grounds

STECF notes that the information provided in the previous evaluations of the Slovenian plan (PLEN 13-01; PLEN 16-02; PLEN 17-01; PLEN 19-03; and PLEN 20-02) and the report of the 2020-2021 period provided to PLEN 22-03 is sufficient to conclude that this condition has been met by Slovenia.

- The fisheries have no significant impact on the marine environment

STECF recalls its conclusion from the evaluation of the Management plan in PLEN 20-02 which stated that "*The strip 1.5-3.0 NM exploited by the "volantina" fishery is characterized by muddy grounds. Maps are provided to support that the fishery is not performed on sensitive habitats. There is evidence that the impact of "volantina" fishery on seabed habitats is negligible.*" STECF considers this is still the case.

STECF notes that discards rates presented in the 2020-2021 report are quite high (40% of the catches in weight were discarded in the onboard samplings of 2020-2021). *The fisheries involve a limited number of vessels, with a track record of more than 5 years and do not contain any increase in the fishing effort*

STECF observes that the number of vessels authorized to use the "volantina" trawl is limited to twelve. These vessels have a long track record in the fishery. There is also no evidence of any increase in fishing effort. Therefore, STECF observes this condition has been met.

- *The fisheries cannot be undertaken with another gear*

According to the MP examined by PLEN-20-02 and adopted by the Slovenian authorities in August 2021, the use of the "tartana" demersal trawl is prohibited in the stretch from 1.5 to 3 miles from the coast. The "tartana" demersal trawl is a heavier demersal otter trawl than the "volantina") and is designed to catch cuttlefish (*Sepia officinalis*) and musky octopus (*Eledone moschata*). STECF notes that the "volantina" trawl has a higher vertical

opening and is rigged to have lighter bottom contact and target species swimming higher in the water column such as whiting. STECF cannot definitely conclude 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 "volantina" fishery in Slovenian waters is subject to a management plan (adopted for the first time in November of 2013) and monitoring of the catches is carried out routinely. According to the evaluation of the MP in PLEN-20-02, STECF observes that this condition continues to be met.

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

No new information is provided in relation to seagrass beds. However, STECF recalls its conclusion from the evaluation of the MP in PLEN 20-02: "*... that information provided on Posidonia spatial distribution shows that this condition has been fulfilled*."

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

STECF notes that the information provided in the MP and the report of the 2020-2021 period is sufficient to conclude that otter trawl fisheries in Slovenia do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets. It is explained that Slovenia has established a corridor within which a temporal schedule for fishing with demersal trawls and different types of bottom-set nets has been prescribed; fishing with towed fishing gears is only allowed during the night in this corridor.

- *The fisheries are regulated in order to ensure that catches of species mentioned in Annex IX of Regulation (EU) No 2019/1241 are minimal*

STECF notes that according to the data provided in the 2020-2021 report, the "volantina" fishery in the 1.5 – 3 NM zone is multispecies, and a large part of the catch is composed of species listed in Annex IX of Reg. (EU) 2019/1241 (see above). The same conclusion has been reached in PLEN 20-02 after examining catch data from onboard sampling carried out in 2018.

STECF recalls its comment from PLEN 20-02: "*It cannot be considered that the condition that demersal fisheries are regulated in order to ensure that catches of these species are minimal is fully met. Nevertheless, STECF notes that given the limited size of the Volantina fishery, these catches of species mentioned in Annex IX of Regulation (EU) 2019/1241 sum up to a total volume of a few tens of tonnes, which represent only a very small amount of the total catches of these species in the area.*"

- *The fisheries do not target cephalopods*

STECF notes that, according to the new information presented in the 2020-2021 report, cephalopods are a valuable bycatch of the "volantina" fishery in the 1.5 – 3 NM zone (6.56% of catches and 10.82% of landings). However, STECF cannot say that the fishery targets cephalopods. STECF notes as above (see also PLEN 20-02) that given the limited size of the "volantina" fishery, the respective catches of cephalopods most likely represent only a very small amount of the total catches of these species in the wider northern Adriatic (GSA 17).

TOR 2. Evaluate the 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)

See STECF response to points 2 and 6 of TOR 1 (above).

TOR 3. Evaluate the implementation report of the current derogation and any additional documents provided to support the Slovenian request to renew the derogation

As described above, Slovenia submitted a document entitled "Structure of bottom trawls of the volantina type 2020 and 2021 report'. This report contains data collected under the framework for implementation of the derogation for "volantina" in the strip between 1.5 and 3 nautical miles from coast in 2020 and 2021.

The document is comprehensive and provides new information on:

- Catch composition

- Fishing effort

- Data on retained/discarded share by species

- The share and composition of juvenile organisms listed in Annex IX of Reg. (EU) 2019/1241.

STECF conclusions

STECF acknowledges the new information provided by the Slovenian authorities for the 2020-2021 period to support the MP.

STECF concludes that most of the conditions to justify the renewal of the MP have been met.

STECF concludes that the proportion of catches of species mentioned in Annex IX of Regulation (EU) 2019/1241 remains substantial. However, as previously advised by STECF, given the limited size of the "volantina" fishery, these catches sum up to a total volume of a few tens of tonnes, which represent only a very small amount of the total catches of these species in the area.

STECF concludes that, although it is uncertain whether cephalopods are targeted by the fishery, the proportion of the catch made up of cephalopods is relatively high (around 7% in catches and 11% in landings). However, STECF concludes that the catches of Annex IX and cephalopod species in Slovenian waters represent a small fraction of total catches of these species in the North Adriatic.

6.7 Follow-up of EWG 22-11: West Med management in terms of fishing effort and fishing closures

Background provided by the Commission

In adopting the Western Mediterranean multi-annual 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 22-11 have assessed the impact of other fishing gear on the fishing mortality of demersal stocks, especially European hake. In view of Article 7.5, this assessment should be completed with the calculation of a baseline for longliners catching hake calculated as the average number of hook per vessel per day as well as number of hooks 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.

Request to the STECF

In view of providing an advice on additional measures to speed up the recovery of hake stocks in the West Med, STECF is requested to:

- determine a baseline in number of hooks for longliners targeting hake, based on available data;
- determine the monthly pattern of hake spawners aggregation in each GSA of the Western Mediterranean.

Summary of the information provided to STECF

- ***STECF-EWG-21-01 on management measures for demersal fisheries in the western Mediterranean Sea. 1-5 March 2021***

EWG-21-01 calculated conversion factors that are important to weight effort units when allowing transfer of effort allocation between fleet segments. Specifically, the EWG ran their analyses both at the FDI aggregation level (country, GSA, gear type) and on a disaggregated basis at trip level. While the analysis on FDI was inconclusive to provide factors significantly different from a conversion factor of "1", STECF observes that the analysis carried out with VMS and logbook data for the French trawl fleet in GSA 7 successfully estimated the conversion factors at gear level, fleet segment level and gear-fleet segment level. All conversion factors were statistically different to "1", suggesting that larger vessels are more efficient than small vessels. Gear type (e.g. twin rig otter trawls (OTT) vs. single otter trawl (OTB)) was also observed as a factor explaining large differences in fishing power. However, no attempt to produce conversion factors for netters and longliners was performed by EWG 21-01.

The EWG found that bottom-set gillnets and trammel nets (GNS and GTR) are responsible for 14% and 32% of hake catches in EMU1 and EMU2, respectively. Longlines (LLS) contribute 1% of hake catches in EMU1. This was a decrease from 10% for longline hake catches reported by EWG 21-01. This is likely due to a reduction in large spawning hake that are targeted by longliners.

In the case of hake mortality, bottom-set gillnets and trammel nets accounted for 8% of fishing mortality in EMU1 and 24% of fishing mortality in EMU2 and longlines accounted for 4% in EMU1. The relatively higher contribution of longlines to the overall fishing mortality of hake reflects the age composition of the catches toward larger, older hake.

EWG 21-01 proposed management measures for GTR, GNS and LLS based on a proportional reduction of the partial F to the average across either all fished ages or ages that contribute to Fbar. Considering that these gears contribute mostly to fishing mortality for older ages, if the reduction of fishing mortality is aligned with the spawning seasons of hake, it is expected that the management measures would contribute to protecting spawners.

- ***STECF-EWG-22-11 Fishing effort regime for demersal fisheries in West Med. 26 September 2022 --- 30 September 2022***

EWG 22-11 was able to update the analysis of the linear relationship between fishing mortality and fishing effort of the West Med fleet segments. For hake, a linear relationship with single boat bottom trawls (OTB) was observed in several cases (Figures 6.7.1 and 6.7.2) when aggregated over the entire EMU distribution area, but this relationship does not hold at the GSA level. No relationship was found for longlines (LLS), trammel nets (GTR) or for bottom-set gillnets (GNS) despite recent data showing increased proportions of fishing mortality stemming from fishing gears other than trawlers.

Additionally, EWG-22-11 observed that in GSA7, the French OTB fleet >18m showed a decrease in fishing days counteracted by an increase in effort in other of corresponding fleet segments (i.e. French OTT segment), illustrating a likely shift towards more efficient gear types when fishing effort is restricted. The EWG highlighted the need to have data at the fishing trip (VMS data) level when estimating conversion factors to sharpen the analysis and better track the fine-scale dynamics of the fishery.

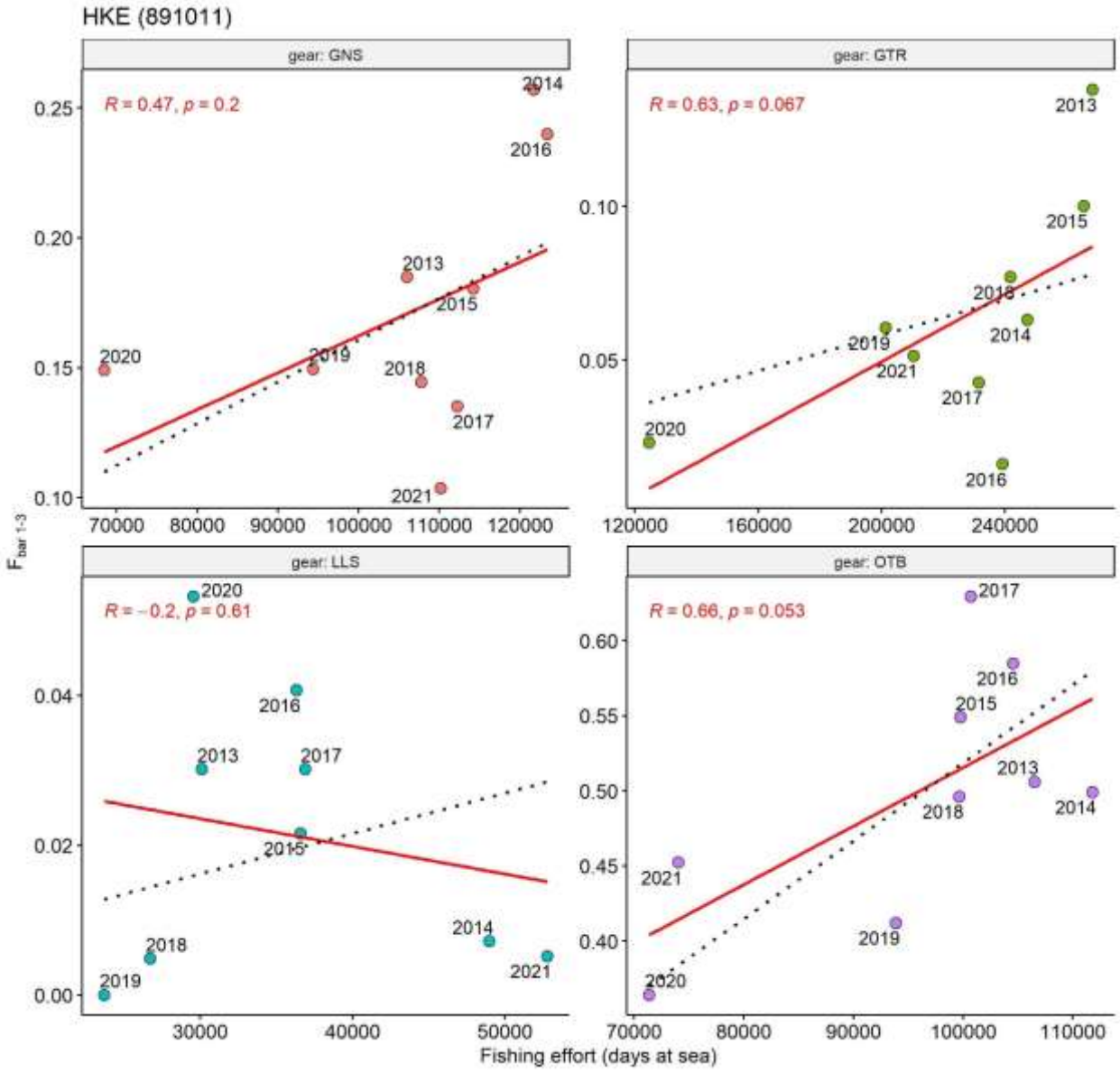

Figure 6.7.1. Extracted from STECF-EWG-22-11. Partial Fishing mortality-Effort relationships for the HKE EMU2-GSAs 8,9,10,11. (doted line shows the relationship forced to pass the 0).

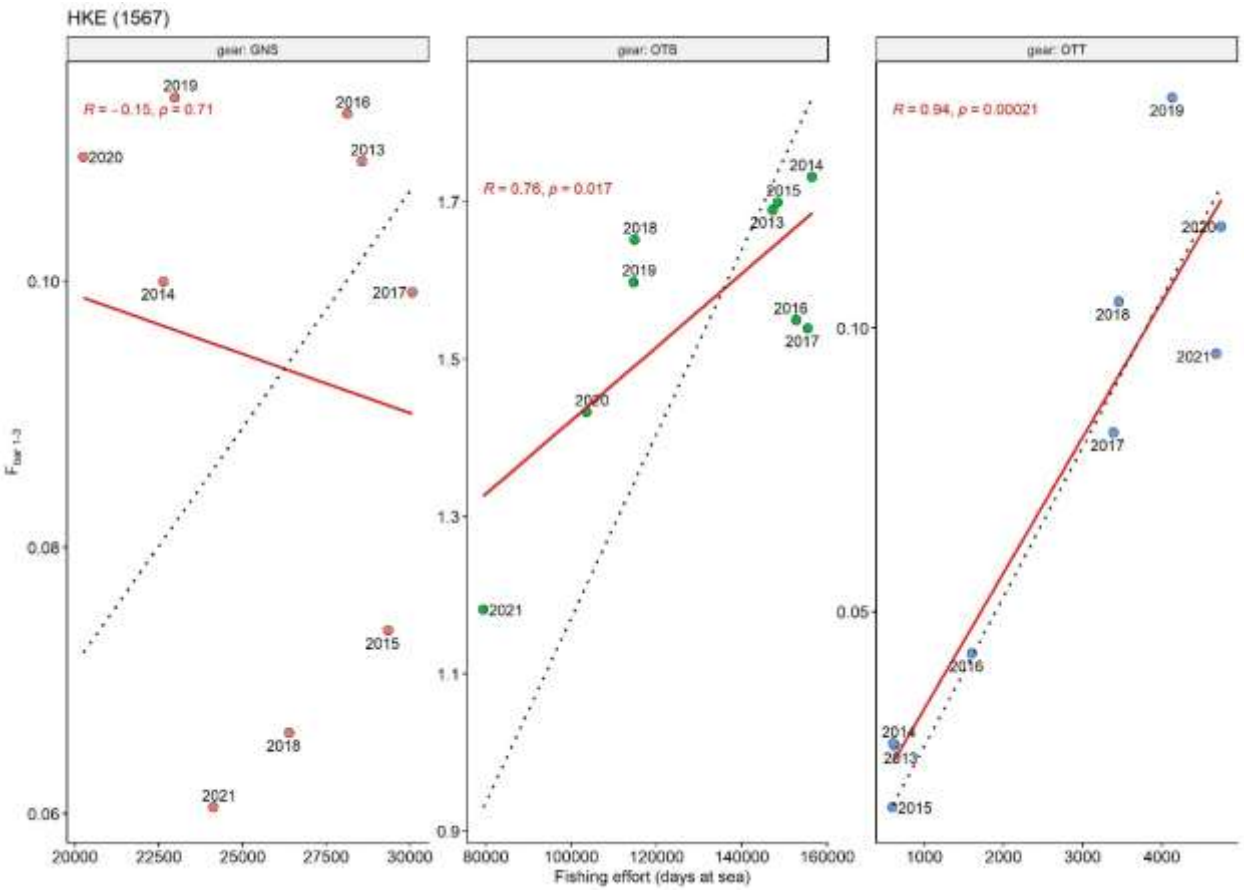

Figure 6.7.2. extracted from STECF-EWG-22-11; Partial Fishing mortality-Effort relationships for the HKE EMU1-GSAs 1,5,6,7

STECF comments

1. Determine a baseline in the number of hooks for longliners targeting hake based on available data

STECF understood the request as finding a scientific basis to calculate effort levels for longliners that will serve as an effort baseline in the West Med MAP, noting that in 2021, longline activity represented only 1% of the catch volume and 4% of the fishing mortality applied to the West Med hake stocks (see EWG 22-11).

STECF notes that such a baseline could be obtained by applying an equivalent standardisation method as was performed for trawlers (see EWG-21-01). The standardisation procedure is used to measure the relative fishing power of catching different species in different GSAs, and further deduces more meaningful relationships between fishing mortality F and Effort for longliners (see EWG-22-11). The exercise required is to plot the partial F-standardized Effort relationship for longliners that would underlie how much effort should be reduced to obtain a given percentage reduction in F, or alternatively, how much of a reduction in F would result from a fixed reduction of effort.

EWG-22-11 concluded that such relationships are not informative for these gear types, while on the contrary it was found that in some cases lower F originating from trawling activities is linked to the annual effort reduction imposed by the west Med MAP. The absence of such a signal for longliners likely results either because such relationships do not exist (or an increase in catchability counteracts a reduction in effort); or because the

effort metric is disconnected from the concrete operation in practice deployed by vessels using these gear types; or finally because the contribution of longliners to F on older hake ages might be so low that the noise is larger than the signal. STECF observes that it is likely a combination of these factors.

STECF observes that fishing effort is declared and collected in days at sea or fishing hours and collated within the FDI and AER databases. STECF recalls that such 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. "soaking time") when targeting a specific assemblage of species in a given area. Fishing effort for longliners and vessel deploying hooks is best described by measuring the typical number of fishing lines set during a trip, the length of the lines, and the number of hooks per metre of fishing line.

Taking all of these factors into account, STECF was requested to determine a baseline in the number of hooks for longliners targeting hake based on available data. However, STECF notes that neither FDI nor AER data have these data, or any other metrics appropriate to measure the fishing effort of longliners (and netters). Hence, there is no data available to STECF to be able to answer the request for advice.

To investigate this further, STECF collated information from scientific literature (Table 6.7.1), which indicated that the setting of demersal longlines, the associated number of hooks and soaking time are very variable, depending on the targeted species. There are no direct relationships between the number of hooks and the vessel length, and setting a baseline would require having data available from a representative sample of individual boats operating in a specific fishery.

Table 6.7.1. Some information available in the scientific literature about setting demersal longlines in the Med.

Laneri et al. 2010	Spanish longlines	"Bottom longlines differ widely in their characteristics according to the target species, namely hake Merluccius merluccius, common sea bream Pagrus pagrus, red sea bream Pagellus bogaraveo, toothed bream Dentex dentex, and dusky grouper Epinephelus marginatus." "The number of hooks set per fishing operation ranged between 50 and 2650 (median of 460)."
Mytilineou et al. 2013	Greek longlining in Ionian Sea (experimental)	"Each long line was 3 km long and equipped with 500 hooks. Distance between snoods was 5.5 m and snood length was 2.5 m. Soak time, always during daytime, lasted 4–5 h. Fresh sardine was used as bait. Two hook sizes were employed, No. 7 (used in hake LL fishery) and No. 9 (used in blackspot sea bream LL fishery)."
Cortés et al. 2017	Spanish commercial	"The fishing grounds of the medium-scale demersal vessels stretched from 1.5 to 36 nautical miles (n miles) offshore (mean ± SD =

	demersal small longliners	8.7 ± 3.4), at depths between 22 and 549 m (mean ± SD = 271.7 ± 112.9). They manually set from 338 to 4800 hooks (1888 ± 731) per fishing day at 1.2 to 10.5 knots (5.04 ± 1.58).”

STECF suggests thus to fill such a gap and because the number of hooks cannot be directly deduced from the number of vessels and the number of fishing days, a data call to establish the amount of gear typically deployed should be discussed with DG Mare. However, STECF does not know to what extent these data exist in national logbooks or whether they are routinely recorded by onboard observer sampling catches.

STECF understands 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), noting though that the guidelines state that “should this information not be available, “fishing days” may be used as activity unit upon approval by relevant GFCM subsidiary bodies on a case-by-case basis”.

Additionally, STECF notes that data regarding fishing line length and soaking time is not available. STECF suggests that fishing tracking machine learning algorithms could be used on VMS data (and/or AIS data for small vessels not equipped with VMS) to classify passive gear activity and measure more suitable effort metrics by distinguishing fishing locations and soaking time. However, the effects of saturation and interspecific competition for hooks make the time fished not a good indicator of true effort, and risks overestimating effort or underestimating catch rate (Hubert and Fabrizio 2007).

STECF observes that an additional source of uncertainty for measuring the effort of longliners is to identify which boats use hooks and demersal lines during their fishing activities. STECF remarks that set longlines cannot be differentiated from other passive gears in the FDI and in the AER databases, and likely not in national logbooks, because the boats with passive gears are largely polyvalent in nature (i.e. use multiple gears). Hence, sourcing data that would differentiate set longliners from other passive gears starting from an aggregation of individual vessel data is needed. While longliners contribute to the removal of adult hake, there is no indication that they solely target hake in the west Med (Figure 6.7.3).

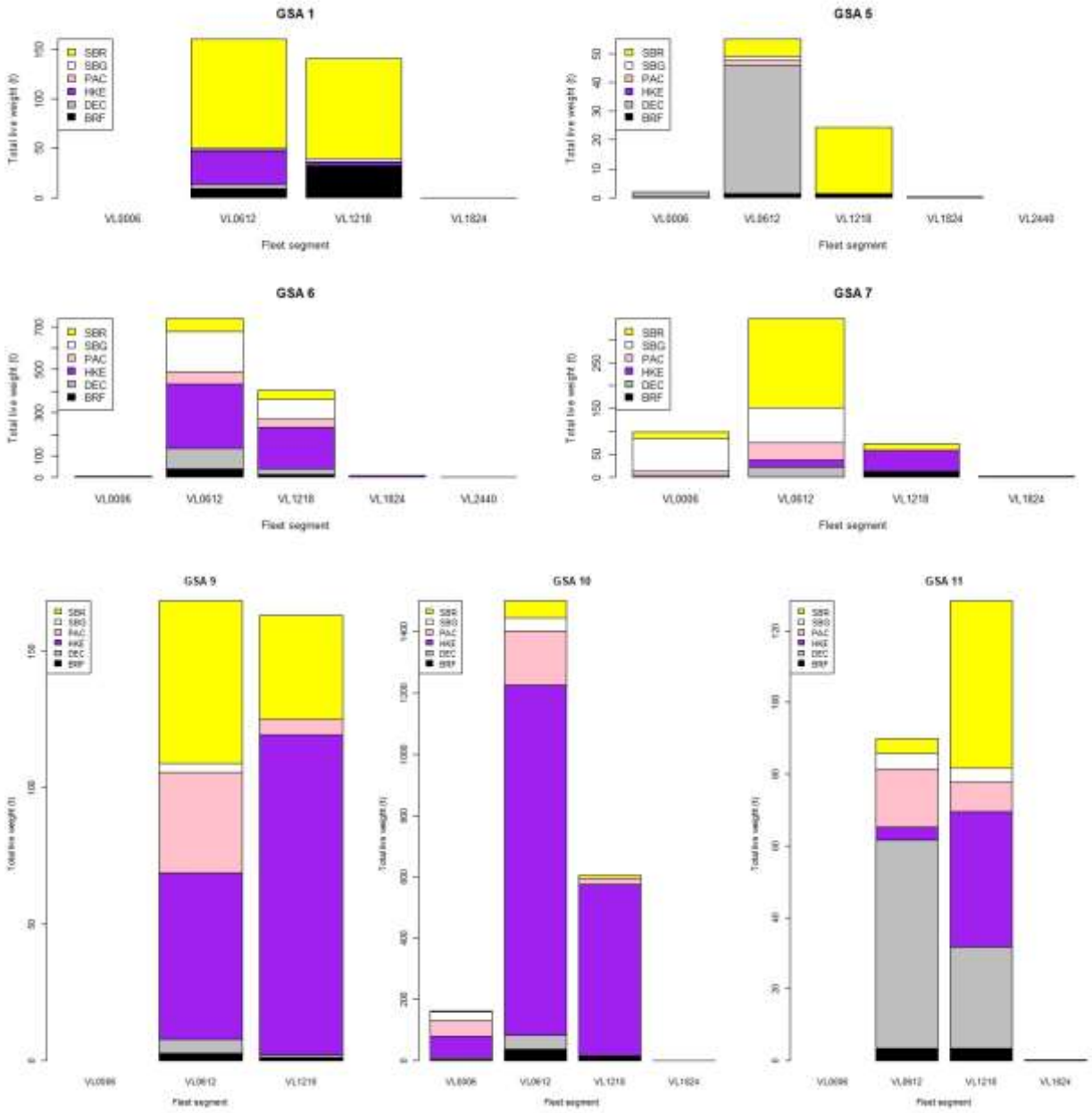

Figure 6.7.3. Cumulated longliners landings between 2014 and 2021 split per species, vessel size categories and GSA belonging to the west Med area. HKE: hake, SBR: Blackspot seabream, SBG: Gilthead seabream, PAC: Common pandora, DEC: Common dentex, BRF: Blackbelly rosefish. Source: FDI data.

2. Determine the monthly pattern of hake spawners aggregation in each GSA of the Western Mediterranean

In the absence of specific supporting documentation provided to STECF to show evidence of adult hake aggregation in the West Med area, STECF extracted relevant information from previous EWGs and complemented it with a short literature review (see Table 6.7.2). STECF focused on finding seasonal information that could help identify a period demonstrating a peak for hake spawning activity, preferably on a monthly time step basis.

STECF observes that such an identification should be based on the best available data, ideally standardised and randomly stratified scientific survey data. STECF has previously issued guidelines for conducting fish hotspot and persistence analyses (see PLEN 21-01 ToR 6.4). These guidelines stipulate the need for basing such investigations on scientific survey data, as commercial data, although it has extensive spatial coverage, is likely biased by the "preferential sampling" of fishers choosing their fishing grounds based on personal decision and strategy (i.e. depending on mobility range, economic interests and constraints, etc.).

STECF notes that the only trawl survey of demersal species in the Mediterranean is the MEDITS survey. Spawning peaks and MEDITS trawl survey timing do not match for certain species (e.g., hake, MEDISEH, 2013). Hence, the existing survey data in the West Med does not cover full-year spatial abundance dynamics. Hake spawners' low catchability with the MEDITS gear is also an issue as the survey mostly targets juveniles. Therefore, to identify spawner aggregations, other types of data are likely needed. The MEDITS survey is physically restricted to areas suitable for bottom trawling, whereas the spatial distribution of many stocks covers a mosaic of habitat types. In these cases, it would be advisable to evaluate the possibility of adopting alternative survey methods.

STECF recalls that combining survey and commercial catch data to identify hotspots has been applied in several contexts. For example, such an approach has been undertaken in the Celtic Sea (PLEN 21-03 ToR 5.8 reporting on EWG 21-18). Both fisheries-independent and fisheries-dependent data were used to provide complementary information to address the limitations in coverage of the scientific survey data. Such an approach has also been investigated for the Adriatic Sea (STECF EWG 19-02). For the West Med, analysing geo-referenced catch data from passive gears (e.g., onboard observers, VMS, AIS, logbooks) has been suggested in line with a potential roadmap reported by EWGs for identifying the spawning aggregation hotspots (e.g., for hake). However, STECF observes that for such studies to be comprehensive, they require dedicated work beyond what can be achieved during a STECF Plenary meeting.

Results of literature review

The outcomes from a Scopus extraction (16 papers, Table 6.7.2) provide some information about spatial aggregation for juvenile hake. These are all based on analysis of scientific survey data. However, none of these studies provide evidence of hake spawning aggregations, and the available individual haul data from surveys is aggregated annually, making intepretating seasonality patterns difficult.

STECF observes that one way forward is to assume that during the peak of the spawning period of the species, the fishing grounds exploited by the commercial fleets represent a proxy for spawning aggregations, noting the limitations and potential bias inherent in commercial data. However, the scientific studies screened by the STECF noted that hake spawning is said to occur all year round, and in the Mediterranean basin, hake is considered a partial spawner with a very long reproductive period with multiple peaks throughout the year (e.g. Reñones et al. 1995, Recasens et al. 1998, Al-Absawy 2010, Carbonara et al. 2019). Incidentally, STECF notes that regardless of the biology of the species, any study may struggle to detect fish spatial aggregations in a situation where the stock is heavily over-exploited (see ToR 5.2 this plenary).

STECF found a single study (Druon et al. 2015) that inferred the timing for spawning by modelling using reverse calculation. The study deduced from the MEDITS survey data that bottom settlement for hake is likely to start in September– October of the previous year for the largest sampled recruits, and to last until March–April for the smaller ones. Considering the information on variable growth rates and duration of life stages, the study integrated the preferential hake habitat and time window for juveniles by considering the environmental conditions that were effectively experienced by most of the sampled recruits. Hake has a reproductive strategy that leads to many eggs released at sea all year,

along with large mortality of eggs and larvae, leading to a widespread diffusion of larvae in the Med. However, the habitat favourable to a successful settlement is limited. A reverse calculation helps define the spawning period (Table 6.7.2, August to November) in the previous year that led to those juveniles that migrate into favorable habitats (increasing from December to May, Figure 6.7.4, extracted from Druon et al. 2015).

STECF also notes the study by Carbonara et al. 2019 that, confirms the most probable spawning peak in the GSAs belonging to the west Med to occur between August and September, and possibly another peak during December-March in eastern areas of the west Med (Table 6.7.3).

Recasens et al. (1998) found a similar pattern to Carbonara et al. They found that reproductive activity was noted practically throughout the year with its most pronounced spawning peak in the autumn. Most fish <37–40 cm were males and >46 cm were females. Specimens occurred between 50 and 750 m depth, although density was low at >400 m. Adults were found at all depth strata studied. Recruits and juveniles were limited to inshore waters <400 m, most were found between 100 and 200 m. Spring and summer were the preferred seasons for recruitment, although for both seasons there was some interannual variation. Adult distribution also varied, according to the season. Young adults were spread over the entire depth range, with the biggest ones concentrated at the edge of the shelf (150–350 m), especially in autumn and winter. The main spawning peak coincided with this concentration of adults suggesting that spawning occurred in autumn/winter at the edge of the shelf.

Table 6.7.2. The outcome of a literature query extraction applied to the Scopus database seeking articles published after 2007 and with the article Abstract containing "hake" or "merluccius" and "fish aggregation" or "nurseries" or "juvenile aggregation" or "spawner aggregation", or variants.

Reference	Outcome (Spatial)	Outcome (Seasonal)
Abella et al. 2008	In the Ligurian Sea, the nursery areas are spread along a narrow strip within the depth range 100 to 250m and show several zones with higher densities. In the northern part, the areas with higher concentrations were located along the Levantine Riviera and close to the Portofino Hill, off La Spezia towards the east, and, in the southern areas, they were located north of the Gorgona Island and south of Livorno. The extent of nurseries is reduced in spring, mainly in the southern part, when the lowest densities are recorded	See the discussion about timing outside the survey period i.e. a larger band i.e. 50-250m
Bartolino et al. 2009	Hake showed a stable pattern of depth preference in the 6-year dataset examined. Small hake had the greatest preference for depths of 170–220 m and appeared to move slightly deeper when they reached 10 cm total length. Larger hake persisted on the continental shelf with a preference for water 70–100 m deep, especially when they reached 18–20 cm long. The length at migration was defined as the length at which the minimum depth preference was shown, and it ranged between 13.2 and 15.8 cm depending on the year.	None
Cantafaro et al. 2017	The results revealed that reserve storage in the liver appears to be maximized for juveniles living on the shelf break, between 120 and 170 m depth, with bottom temperature and current speed not exceeding 14 °C and 0.04 m s−1. According to modelling results, optimal environmental	None

	conditions for juvenile European hake are often associated with high fish densities. The best-conditioned juveniles were indeed found in highly dense patches, where density-dependent factors, such as competition for food, do not affect lipid accumulation	
Carbonara et al. 2019	None	Review of possible hake spawning peak period per GSA (see Table 6.7.3)
Colloca et al. 2009	Most persistent nursery areas cover about 5% of the study areas, including about 39% of hake recruitment (averaged over 10 yr).	
Colloca et al. 2015	The threshold size of hake recruits ranged between 8.5 and 14.5 cm in total length (TL). Nursery areas were mostly found between 100 and 250 m in depth, with a patchy distribution along the shelf break. Along the Spanish coast, the largest nurseries were identified between the Ebro River delta and Cape Nao between 150 and 250 m depth	None
Druon et al. 2015	Hake nurseries require stable bottom temperature (11.8–15.0 C), low bottom currents (<0.034 m s 1) and a frequent occurrence of productive fronts in low chlorophyll-a areas (0.1–0.9 mg m 3) to support successful recruitment. These conditions mostly occur recurrently in outer shelf and shelf break areas.	Using a mean growth estimate of 1.25 cm month 1, which is the most commonly reported value for important nurseries, hakes from 8.5 to 13 cm TL (first and third quartiles of all GSAs from survey) collected mostly in June-July (74% of hauls) were born 6.8 to 10.4 months earlier, i.e. from July–August [SPAWNING] to November–December of the previous year (see Table 6.7.2) Based on this, the study estimated that bottom settlement for hake sampled during MEDITS surveys started in September– October of the previous year for the bigger sampled recruits to last until March–April for the smaller ones. Considering the above elements on variable growth rates and duration of life stages, we integrated the preferential habitat from February to June in order to take into account the environmental conditions that were effectively experienced by most of the sampled recruits.
Fanelli et al. 2018		*M. merluccius* showed a clear ontogenetic shift in its diet with juveniles (70–160 mm total length (TL)) mostly relying on mysids and euphausiids, and adults ([160 mm TL) chiefly consuming larger prey, such as pelagic fish and decapods.
Garcia-De-Vinuesa et al 2018	Discard analysis by species revealed the existence of two especially productive but vulnerable Mediterranean habitats. The results show that specimens below the MCRS were often captured in crinoid aggregation habitats, bottoms with maërl and muddy bottoms that were identified as nursery habitats of commercial species, e.g. *Merluccius merluccius*, *Pagellus spp.* and	None

	Mullus spp. VMS data showed considerable fishing pressure on areas with maërl and muddy habitats during the recruitment periods of these and other commercially relevant species.	
Garofalo et al. 2011	Recruits were distributed over a wide bathymetric range (50–600 m) with a concentration peak at 250m depth.	None
Hidalgo et al. 2019	hake trawl fisheries in the Mediterranean Sea are mainly sustained by the exploitation of juveniles (Colloca et al. 2013, Ligas et al. 2015, STECF 2015). Mature adults are mainly caught by netters and longliners, because less available to bottom trawl gears (thanks to spawning refugia; Colloca et al. 2013, Caddy 2015 and references therein)	None
Izquierdo et al. 2021	Among all the environmental variables analyzed, bathymetry was the most important. The preferential habitat of recruits was found to be within a bathymetric range of 120–200 m. with a constant optimum range between 140 and 200 m. The same bathymetric range for hake at age 0 along the shelf break was identified by the authors Colloca et al. (2015) in Mediterranean nurseries.	None
Paradinas et al. 2015	High occurrence and abundance, mainly along the shelf break and the upper slope of the Spanish Mediterranean coast. Hake recruitment showed an occurrence peak at between 40 and 180m depth. Peak abundance to occur at approximately the 80 to 180 m depth strata.	None
Pennino et al. 2019	The preferential habitats identified for the hake recruits are areas within a bathymetric range of 120–200 m, with 15–16°C of Sea Surface Temperature, a Chl-a concentration of 0.8–1.2 mg/m3	None

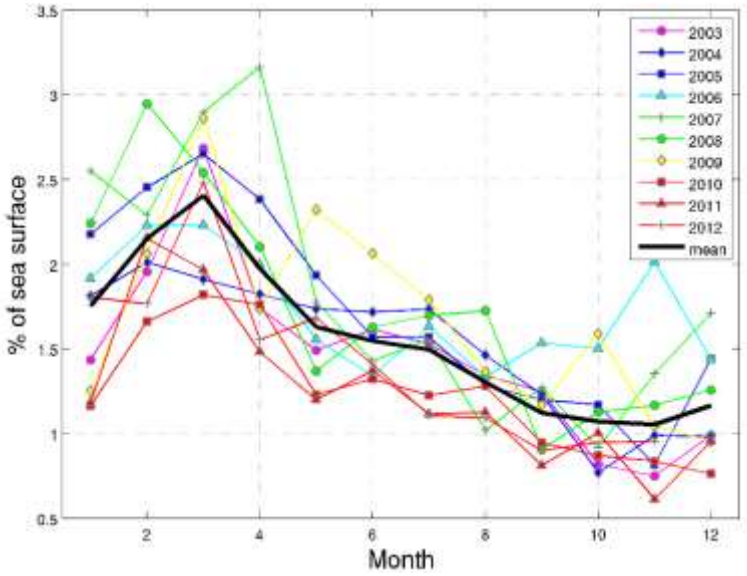

Figure 6.7.4. Extracted from Druon et al. 2015; Monthly variability of the surface habitat of the Mediterranean Sea (in %) favorable for 0-group hake (2003-2012, MODIS-Aqua sensor)

Table 6.7.3. Extracted from Druon et al. 2015; Estimated stages of hake recruits sampled by MEDITS campaigns. The most relevant habitat for the collected recruits was defined to be from February to June (in bold).

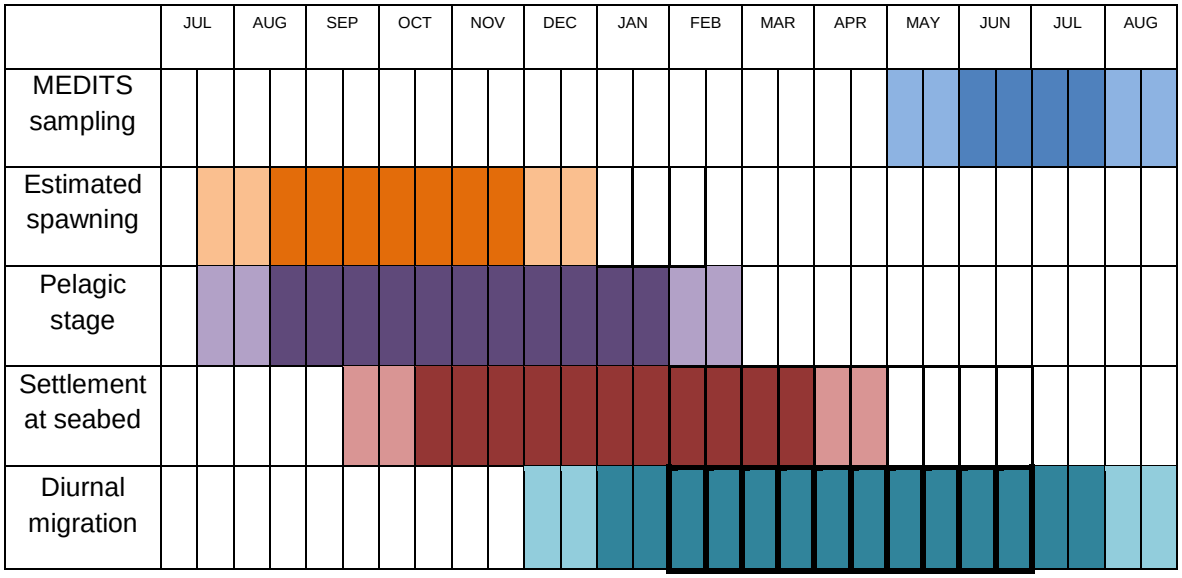

Table 6.7.4. Extracted from Carbonara et al. 2019: Spawning period of Merluccius merluccius *females in different Mediterranean areas*

Area	GSA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Method	References
Algerian Coast	4	■	□	□	□	□	□	□	■	■	□	□	□	GSI	Bennoui et al. (1998)
Balearic islands	5	□	□	■	□	■	□	□	■	■	□	□	■	GSI-Maturity stages	Reñones et al. (1995)
Catalan coast	6	□	□	□	□	□	□	□	■	■	■	■	■	GSI	Recasens et al. (2008)
Northern Tyrrhenian	9	□	□	□	□	□	■	□	□	□	□	□	□		
Central Tyrrhenian	9	■	■	□	□	□	□	□	■	■	□	□	□	Back-calculated hatch-date	Belcari et al. (2006)
Central Tyrrhenian	9	□	■	■	□	■	□	□	□	■	□	□	□	GSI	Biagi et al. (1995)
North Tunisian coast	12	■	□	□	■	□	□	■	■	■	■	□	□	GSI-Maturity stage	Khoufi et al. (2014)
Central Adriatic	17	□	■	■	□	□	□	□	■	■	□	□	□	Back-calculated hatch-date	Ameri and Morales-Nin (2000)
Croatia	17	■	■	■	□	□	□	□	□	□	□	□	■	NA	Dulčić et al. (2005)
Southern Adriatic	18	■	■	■	□	□	□	■	■	■	□	□	□	Maturity stages	Ungaro et al. (1993)
Central Aegean Sea	22	□	□	□	■	□	□	□	□	□	□	□	□	Maturity stages	Soikan et al. (2015)
Egyptian coast	26	■	■	■	■	■	■	□	□	□	□	□	□	GSI-Maturity stage	Al-Absawy (2010)
Southern and central Tyrrhenian	10	■	■	■	□	□	□	□	■	■	□	□	□	GSI-Maturity stages	Present study
Sardinia	11	■	■	□	□	□	□	□	□	□	□	□	■		
Southern Adriatic Sea	18	■	□	□	□	□	□	□	■	■	□	□	□		
Western Ionian Sea	19	■	□	□	□	□	□	□	■	■	□	□	■		

□ reproductive period
■ spawning peak

STECF conclusions

1. Determine hook and lines baseline effort in the west Med MAP context

STECF concludes that there is no data available to be able to answer the request for advice on establishing a baseline in the number of hooks for longliners targeting hake in the West

Med. Neither FDI or AER databases have the relevant fishing effort metrics to estimate fishing effort by longliners on the hake stock in a meaningful way. A data call to collect the relevant effort metrics on these specific fleet segments may be required.

STECF concludes that the west Med hake is not the only current target of longliners in the West Med. Therefore, the overall fishing capacity and fishing effort by the fleets involved are to some extent disconnected from the fishing pressure exerted on the hake, noting that longliners targeting other species may also catch hake as a bycatch.

2. Determine locations and timing of spawning hake aggregations

STECF concludes that it remains challenging to demonstrate the existence of adult hake aggregations in the West Med, as concluded by STECF PLEN 21-03. The aggregations or "hot spots" that have been identified by previous scientific studies are primarily areas where juvenile hake aggregate ("nursery areas"). STECF concludes that there is no evidence in these studies for aggregations of spawners, given adult hake are found over a wide depth range, mainly on the upper slope, from 200 to 500 m depths.

STECF concludes that with the best knowledge available, mitigation of fishing pressure on spawners with closed areas may only benefit adult hake if a temporal (and not spatial) closure is implemented during the most likely spawning months. STECF concludes that, based on a few studies identified, the peak in hake spawning is most likely to occur between August to November, up to February, in the western areas and likely from January to March in Sardinian and Tyrrhenian waters.

STECF concludes that with the current absence of appropriate datasets, additional scientific evidence investigating the spatial distribution of adult hake during the most likely spawning months could be obtained from a specifically dedicated survey targeted towards adult fish spatial distribution. Additionally, a more robust analysis of commercial data may also provide some insights into aggregations.

STECF concludes that additional modelling and data analysis methods have helped predict juvenile or spawning distributions and periods for the demersal species based on the ecological niche theory linking species distribution to environmental drivers (e.g., Druon et al. 2015). STECF acknowledges that such drivers of demersal species distribution are also described in the MEDISEH report by GSA and could be used to predict future distribution whenever the drivers would change at the scale of the West Med basin.

STECF concludes that identifying aggregations of specific life stages, like spawners, for stocks heavily over-exploited can be misleading. As exploitation reduces and the stock biomass increases, new aggregations will appear as the population redistributes through the available space, and the relationship between areas of aggregations may change.

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

7.1 Preparation of EWG 23-01 – West Med MAP preliminary work for autumn advice

Request to the STECF

STECF is requested to further discuss and advise on the content and organisation of this EWG likely to be organised in the Spring 2023 (as done in 2021 and 2022). The Plenary should revise the ToRs and give indication of the composition of the EWG.

STECF comments

STECF notes that DG Mare provided a first draft for the TORs for the EWG in Spring 2023 (provisional dates 27.03.-03.03.2022). The draft TORs include a TOR on the continuation of the development of socio-economic assessments of the measures from the West Med MAP and a TOR on area closures submitted by the Member States. STECF discussed both proposed TORs and provided comments to DG Mare (see also proposed TORs below).

STECF observes that in the EWG 22-11 on the West Med MAP it was proposed to harmonize the economic indicators the different models provide to evaluate the MAP. STECF concludes that this harmonization should be done during the EWG in Spring 2023 so that the modelers can implement that in their models for the EWG in autumn.

STECF concludes that the MEDISEH analysis should be updated before this EWG with the most recent data (up to 2021 at that stage).

STECF observes that although the EWG in spring 2022 developed scenarios to be analysed during the EWG in autumn, DG Mare provided a new set of scenarios shortly before the EWG 22-11. The EWG was subsequently not able to fully implement and run the scenarios with all available models. STECF notes that if the EWG 23-01 is again tasked to develop scenarios for the autumn's assessment, such scenarios should be prioritised and any scenario requested after the EWG should be treated as experimental and given a lower priority.

STECF proposes the following TOR for EWG 23-01:

TOR 1: STECF is requested to continue the socio-economic development of the evaluation of management measures of the West Med MAP in both West Med management units. For this, it should be discussed how far a socio-economic assessment would be possible by conducting a scoping exercise with the development of a roadmap. STECF should investigate if in 2023 it could be feasible for the EWG to provide limited economic information on the changes in the short period (i.e., one/two years) in profitability due to estimated future effort levels.

STECF is requested to discuss as part of the roadmap a longer-term approach to evaluate the West Med MAP. This includes the possibility and necessity to expand the bio-economic models to the whole area. The models should then also include a spatial component to assess distributional effects of implemented management measures. Those models should allow the socio-economic assessment of measures following from the West Med MAP and to show trade-offs between different management measures. The EU Member States

affected by the management plan should then discuss possible mitigation and adaptation measures for the fishing sector.

TOR 2:

For the harmonization of the economic indicators provided by the models applied to evaluate the West Med MAP, the EWG is requested to:

- provide a matrix of model assumptions for the economic component of the models
- propose a list of indicators those models shall provide for the second EWG meeting in 2023.

TOR 3: STECF is requested to comment on possible fishing effort displacement arising from additional closures proposed by Member States. Time permitting, the EWG may also parameterize the models to evaluate the effects of the proposed closed areas. For each GSA, in case the closures proposed by Member States are not reducing the total catch of the stocks targeted by the MAP by 20% (following EWG 22-01), based on data availability, the EWG is requested to propose recommendations for designing alternative closures. This should be done based on criteria described in EWG 22-01 and using the MEDISEH outputs updated by an ad-hoc contract.

7.2 Information on the upcoming report on the West Med MAP results and impacts

Request to the STECF

STECF is requested to discuss the timing and content of the above referenced report. STECF is requested to comment on the existing timeline of the EWG working on the West Med MAP and their content outline as well as to plan and specify the needed preparation for the upcoming work, such as the collection of additional data.

Background

In July 2024, the Commission must report to the European Parliament and to the Council on the results and impact of Regulation (EU) 2019/1022, the Western Mediterranean multi-annual management plan for demersal stocks (West Med MAP). According to the Regulation, the report should consider the impact of the plan on the stocks concerned and the fisheries exploiting those stocks. It should document progress on the achievement of the objectives set out in Article 3 of the West Med MAP.

STECF comments

STECF suggests that the report should include the developments in the main areas as follows:

The implementation of the fishing effort regime

The main objective and legal obligation of the West Med MAP is to achieve fishing mortality securing Maximum Sustainable Yield (F_{MSY}) for all demersal stocks by 1 January 2025. The progress for the relevant stocks and fisheries can be evaluated based on the STECF assessments carried out for the relevant stocks annually by a dedicated EWG "*Stock assessments in the Western Mediterranean Sea*". The 20023 EWG will provide updated results in October of 2023, and the stock status of each stock should be assessed related to MSY reference points, and in particular to F_{MSY} and $F_{MSY\text{-}transition}$ as well as to conservation and limit reference points (Bpa and Blim, respectively).

The West Med MAP sets fishing opportunities in terms of maximum allowable fishing effort to achieve fishing mortality at MSY yield on a progressive, incremental basis by 2020 where possible, and by 1st January 2025 at the latest. The effect of this regime on the fishing effort are regularly assessed by a dedicated STECF EWG "*Evaluation of the fishing effort and catch regime for demersal fisheries in the western*". The EWG 2023 meeting will provide the most updated analysis of the effect of the fishing effort regime for the three years of MAP implementation (2020-22).

Efforts and achievements towards the elimination of unwanted catches and the implementation of the landing obligation

Although there are many reasons for discarding, the reduction of unwanted catches in the Western Mediterranean has been quite extensively investigated. There are several experimental initiatives to improve selectivity, especially for hake, most of these experiences being performed under the Project IMPLEMED (IMPLEMED, 2019) and MINOUW (Maynou et al. 2016). The most suitable strategies to reduce the unwanted catches are to improve the selectivity and to establish closure areas to protect undersized fish. Some of results of these studies are reported are in ToR 6.4. of STECF PLEN 22-03.

However, it is clear that so far, the results of these studies have not been adopted by the concerned fleets to any degree. Following the implementation of Regulation (EU) 2019/1022 (West Med MAP), Member States proposed closures that were assessed by STECF PLEN 19-03. The West Med MAP includes the possibility of establishing additional closure areas where this should result in a reduction between 15% and 25% in the by catch of juveniles and spawners of each stock covered by the West Med MAP. The efficiency of the existing closures and additional closures proposed by Member States to protect juveniles and spawning aggregations was evaluated in several STECF meetings (EWG 21-01, PLEN 21-02, EWG 21-13, PLEN 21-03, EWG 22-01, PLEN 22-02). The STECF EWG in 2023 dedicated to the "*Evaluation of maximum catch limits and closure areas in the Western Mediterranean*" should include the assessment of the closure areas adopted in French (Dec 2019), Italian (Aug 2020) and Spanish (May 2020 & Dec 2021) national legislations. The outputs of this EWG will provide an update assessment of the impact of these closure areas in reaching the objectives of the West Med MAP.

In the case of the Mediterranean Sea, all species with a Minimum Conservation Reference Size (as listed in Annex IX Part A of Regulation (EU) 2019/1241) are subject to the landing obligation (LO). However, de minimis and high survivability exemptions have been in force until the end of 2020 for small-pelagic species and until the end of 2023 for demersal species. The MedBLand[12] project has aimed at improving the understanding of the implementation of the landing obligation by mapping, assessing and evaluating the management measures and their impact on the development of the discard rates in the Mediterranean. The conclusions contained in MedBLand Project' s Final Report (European Climate, Infrastructure and Environment Executive Agency, 2022) provide an evaluation of the results of the implementation of the LO in this area until 2021.

The main conclusions based on the responses to the questionnaires which provided useful indications on the implementation of the landing obligation were as follows:

- The overall impression from control bodies, is that for the moment the level of enforcement of control and data registering is rather low: very likely it is the effect of the "de minimis" mainly for the disproportionate cost exemptions to the LO still in place, that actually allowed to continue the previous operative fishing practices. Criticisms emerged on the inertia of Member States and the fishing sector to implement and enforce efficient tools for ensuring control as REM.
- In the case of the processing of discards, about 50% of the respondents reported an interest in producing or using products from fish discards. About 60% of them reported that LO provisions can have a positive effect in reducing discards. They reported that discards can represent a source of food for aquaculture or pet food and that can be framed in a form of circular economy. On the other hand, they reported that there are still many problems that prevent the implementation of this process, such as the lack of efficient structures and capillary organisation throughout the territory for the disposal, storage and processing of discards, as well as the need of regular and sufficient volumes and the fragmentation of the fleets in dozens of landing points.
- As concerns the possible use of discards for "not direct human consumption", the majority of the respondents reported that currently in their own countries there are no structures processing discards from fisheries. The presence of plants processing fish sub-products (producing fertilisers, fish meal, fish oils) were reported, but this

[12] https://cinea.ec.europa.eu/publications/synthesis-landing-obligation-measures-and-discard-rates-mediterranean-and-black-sea_en

was limited to sporadic cases, and they use mainly by catch species and trimmings, not discards from LO.

The ecosystem-based approach to fisheries management, and the fulfilment of the Marine Strategy Framework Directive (MSFD) descriptors

The ecosystem-based approach to fisheries management, to minimise negative impacts of fishing activities, can be assessed against the objective of achieving the good environmental status, as required by the Marine Strategy Framework Directive 2008/56/EC (MSFD). The West Med MAP aims to ensure that the conditions of descriptor 3 (exploited stocks) are fulfilled. This can be measured through the current stock status taken from the assessments. The other relevant MSFD descriptors for fisheries management are descriptors 1 (Biodiversity), 4 (Food webs), 6 (Sea-floor integrity) and 10 (Marine litter) are less easy to report on. The latest assessment of the implementation of MSFD was performed in 2018 by EU Member States, before the West Med MAP implementation. Without an update assessment of those descriptors, it will be challenging to evaluate the potential contribution of the MAP on achieving the Good Environmental State in these descriptors. Up to date information on these descriptors may need to be requested from Member States to provide input to the Commission report.

The impact of recreational fisheries

The impact of recreational fishing on the fishing mortality of the stocks covered by the West Med MAP has been evaluated in 2021 during EWG 21-01, and the conclusions of this analysis could usefully be included in the report.

Other relevant socio-economic aspects

In the preamble to the West Med MAP the purpose of promoting a fair standard of living for those who depend on fishing activities, bearing in mind coastal fisheries and socioeconomic aspects is highlighted. STECF considers that the effect of the West Med MAP on these aspects should be considered in the report. STECF proposes to perform a descriptive analysis of the trends in the social and economic variables (e.g., economic performance indicators, the fleet capacity, employment, wages and labour productivity) based on the data compiled by the EWG reporting Annual Economic Reports on Fishing Fleet 2020-23 for France and Spain. In the case of Italy, the economic data disaggregated for GSA9-10-11 are provided to EWGs dedicated to MAP evaluation.

Future approaches could include the development of value chain analyses, which have been successfully applied in other case studies (e.g., Christensen et al. 2014), and which first steps are being taken in some areas of the Mediterranean Sea (Ortega and Coll, 2022). STECF considers that the development of a value chain analysis assessment for the fisheries in the West Med could be discusses in the framework of the next STECF EWG "Economic Report on the fish processing industry". The Market Advisory Council may also be a useful source of information on supply chains relevant to the West Med MAP.

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7.3 Preparatory discussion on the 2023 EWG on the evaluation of joint recommendations on the landing obligation

Request to the STECF

On the basis of the draft ToR for the EWG 2023 provided by the Commission, the experience of previous EWGs on this topic and building upon the recommendations given in the previous EWG reports, the STECF is requested to prepare next year's EWG.

More specifically, the STECF is requested to:

- Recommend and conclude on the template necessary for such a full review. The STECF stressed in EWG 22-05 that it is vital that Member States and the Advisory Councils understand what information is needed to support such review and to allow the STECF to carry out a meaningful evaluation.
- Advise and conclude on the possibility of needing two EWGs in 2023 for this ToR and consider this in the overall planning to the work programme of the STECF – the two EWGs would need to take place before the summer (July); the joint recommendations being expected on 1 May 2023.
- Recommend specific STECF members to join the various Member States Regional Groups in February or March 2023 for an in-depth discussion on the previous STECF assessment on the delegated regulations specifying the details of implementation of the landing obligation and the upcoming 2023 evaluation regarding the data required and the template produced. Discussions would need to take place in the:
    - Scheveningen Group
    - North Western Waters Group
    - South Western Waters Group
    - Adriatica
    - SudestMed
    - PescaMed
    - Black Sea Member States
- Recommend any other points.

Background

The Commission requests the STECF every year to evaluate the joint recommendations submitted that year on the landing obligation and technical measures (STECF EWG 22-05, this year). This item is to prepare next year's exercise as joint recommendations are expected as well as the request to the STECF to carry out a full review of the exemptions in place. This review could help determine whether they need to be amended or are still required, given likely changes in catch patterns, gears used, vessels involved and the uptake of the exemptions.

After consulting the relevant Advisory Councils, Member States cooperating at sea-basin level may provide the Commission with joint recommendations requesting exemptions from the landing obligation. Where the STECF's advice is positive, the Commission adopts delegated acts implementing these joint recommendations into EU law, in accordance with

Article 15(6) of the Common Fisheries Policy[13] (CFP). Where there is no multiannual plan for the fishery in question, article 15(6) of the CFP empowers the Commission to adopt delegated acts laying down on a temporary basis specific discard plans containing the exemptions. The six potential elements that can be contained in a discard plan are the following:

- definitions of fisheries and species;
- provisions for survivability exemptions;
- provisions on de minimis exemptions;
- the fixation of minimum conservation reference sizes;
- additional technical measures needed to implement the landing obligation, and
- the documentation of catches.

The STECF has reviewed the joint recommendations prepared by the regional groups of Member States annually for 2014-2018 on fisheries subject to the landing obligation in the subsequent year. The implementation of the landing obligation has entered fully into force as of 1 January 2019. STECF is requested through this working group to review and evaluate the Member States' joint recommendations in full as all the joint recommendations are requesting exemptions for a new delegated Regulation to enter into force as of 2024.

STECF comments

STECF recalls that EWGs 19-08, 20-04, 21-05 and 22-05 that evaluated the joint recommendations on the (exemptions of the) landing obligation, concluded that it would be timely for the Member States Groups and the Commission to review exemptions that have been in place since the introduction of the Landing Obligation. STECF notes there are more than 100 such de minimis and survivability exemptions in place across the different EU sea basins. While some of these exemptions are time limited or have specific annual reporting requirements, there are others which have been in place for a considerable amount of time with no recent assessment.

Related to this, STECF notes that the discard plans that set out the multiple exemptions in the Western Waters (North Western waters and South Western waters), North Sea, the Mediterranean and Black Sea will expire at the end of 2023. Therefore, STECF understands that joint recommendations need to be submitted by the Member States Regional Groups and then transposed by the Commission into Delegated Acts to remain in force for 2024 and beyond.

Additionally, STECF notes that EWG 22-05 highlighted that the catch information presented lacks consistency. In many cases it relates to different years, much wider areas than covered by the exemption or is not presented as absolute estimates but as percentages of overall catch information for the relevant fishery. Therefore, STECF reiterates that it is essential to carry out a review of the exemptions that the quality and consistency of catch data provided to support exemptions is improved. Such data is important to understand the relationship between the level of potential discards under the requested exemptions and the actual level of unwanted catches in the relevant fishery and for the relevant stocks. This will allow STECF to make an assessment as to the level of risk

[13] 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. OJ L 354, 28.12.2013, p. 22.

of discards allowed under exemption will potentially have on the stats of the stock or stocks involved.

STECF considers that the data included in the FDI database, as well as ICES stock assessment data are the best sources of data for Member States to support the relevant exemptions. However, STECF acknowledges, as advised by EWG 21-12 that providing reliable and robust estimates of catches, (i.e., landings and discards for fleets) that are granted exemptions from the landing obligation is problematic. For many of these fleets, estimates are unavailable, because Member States are not obliged to sample these metiers according to the national DCF sampling plans. For those fleets where discards have been sampled, the achieved sampling coverage is often much lower than required to provide a robust estimate of the true discard fractions at the level of disaggregation requested by FDI.

STECF observes that in order to assist Member States, templates have been developed for the submission of catch data to support de minimis and high survivability exemptions. These are updates of the original templates developed by EWG 16-06. Member States should populate these templates to the extent possible.

De Minimis

Country	Exemption			Total Landings	Total Unwanted Catch	Total Catch for the stock	Discard Rate for the stock	Landings for the relevant fleet/metier	Total unwanted catch for the relevant fleet/metier	Total Catch for relevant fleet/metier	Discard Rate for the relevant fleet/metier	Unwanted catches reported against exemption
	Species	Area	Gear Type									

High Survivability

Country	Exemption			Total Landings	Total Unwanted Catch	Total Catch for the stock	Discard Rate for the relevant stock	Landings for the relevant fleet/metier	Unwanted catch for the relevant fleet/metier	Total Catch for relevant fleet/metier	Discard Rate for the relevant fleet/metier	Estimated discard survival rate from provided studies/representative studies (included reference)
	Species	Area	Gear Type									

STECF observes that it would be useful for the review process to develop a checklist of what information is needed, which Member States can refer in submitting their joint recommendations and that the EWG groups can use as a checklist for the evaluation process.

STECF requires the following information to evaluate de minimis exemptions:

- Description of the problem – why is the exemption needed?
- Detailed catch and fleet data for the stock and the fishery the exemption applies
- Indication of uptake
- A review of existing supporting studies/literature reviews provided for the exemption in the past
- Where relevant, cost estimates for handling and landing the unwanted catches for possible de minimis requests based on disproportionate costs
- Impact/risk of the exemption in the context of the fishery
- New information or studies that may be available
- Planned research to support the exemption

STECF requires the following information to evaluate high survivability exemptions:

- Description of the problem – why is the exemption needed?
- Detailed catch and fleet data for the stock and the fishery the exemption applies
- Survivability estimates in the context of the discard rate in the fishery
- A review of existing supporting studies/Literature reviews provided for the exemption in the past
- New information or studies that may be available
- Planned research to support the exemption

STECF observes that it would be advisable to hold two EWGs in 2023. Based on the spread of exemptions for review, STECF suggests having one EWG to deal with exemptions from the Western Waters and the North Sea, and the other EWG for the Mediterranean (Adriatica, SudestMed and Pesca Med) and the Black Sea. Identification of chairs and co-chairs for these EWGs. This should be discussed at the STECF Bureau in December.

STECF notes that further discussion is needed to identify STECF members to join the various Member States Regional Groups in February or March 2023 for an in-depth discussion on the previous STECF assessment on the delegated regulations specifying the details of implementation of the landing obligation and the upcoming 2023 evaluation regarding the data required and the template produced as discussed above. The STECF chair has indicated that he will join the North Sea and South Western Waters, but due to conflict of interest he would be unable to join the North Western Waters Group. STECF members to cover the other regional groups need to be identified urgently given these meetings will happen in early 2023.

7.4 Preparatory discussion on EWG 22-19 - Implementation of the Technical Measures Regulation

Request to the STECF

STECF is requested to discuss and advise on any pending element regarding the organisation of this EWG, based in intersessional discussions, including confirmation of the co-chairs, dates and location venue.

STECF comments

STECF continued the discussions, (summarised in PLEN 22-01) and during intersessional meetings following the Plenary.

STECF notes that the EWG 22-19 was postponed from the dates mentioned in PLEN 22-02 dates and will be arranged as a physical meeting at JRC/Ispra from 23 to 27 of January 2023, chaired by D. Valentinsson and P. Vasilakopoulos.

The following draft ToRs for EWG 22-19, presented by DG MARE were agreed at the PLEN 22-03 meeting:

1) Identify the ages and sizes at which fish (as per Annex XIV of the TMR) would need to be caught to optimise yield and reduce the catches of juveniles as far as possible, building upon the relevant work of STECF-21-07. Prioritise stocks where the highest gains can be achieved.

2) Identify the fishing gears corresponding to the optimum age and size of each of the stocks in (1).

3) If feasible, identify possible operational changes needed to realise the transition to higher yields. Identify the technical support required to assess at the regional level, the potential socio-economic implications of fisheries-based transition plans for improving yields.

STECF 22-03 further discussed the data requirements, organisation, and identified the competences needed in relation to the draft ToRs.

STECF notes that in an attempt to ensure participation by experts with the skills necessary to respond to the ToRs to the EWG 22-19, the STECF requests that the co-chairs personally approach such experts aiming to secure their participation at the earliest opportunity.

7.5 Update of the CFP monitoring protocol

Request to the STECF

On the basis of the 2022 CFP monitoring report and the ad-hoc work done by the JRC, make appropriate methodological recommendation for the monitoring of fish stocks in relation to the MSY objectives of the CFP.

Inform on progress in developing common indicators for all EU waters, i.e. for both the Northeast Atlantic stocks and the stocks in the Mediterranean Basin.

Background

STECF PLEN 22-01 evaluated a proposal from JRC to update the CFP monitoring protocol and suggested the following work to be conducted inter-seasonally:

1. Apply the new SSM approach to the final 2022 dataset and produce a report with the same structure as the EWG STECF-Adhoc-22-01 report.
2. Update the protocol based on the new SSM approach (using the means standardised SSB approach and the new reference year to be proposed by JRC as preferred option).
3. Present a document with alternate figures to convey the results more intuitively and to convey the increased information provided by the SSM approach to aid interpretation.
4. Conduct further analysis to evaluate the underlying causes for historical changes in the indicators by disentangling the effects of (1) historical assessment bias, (2) changes in the dataset in terms of stock composition and (3) the retrospective bias of the model.
5. Analyse the feasibility to update the current sampling frame and present (if possible) a comparative analysis of the implications for the model-based indicators.

STECF PLEN 22-01 had suggested this work could be presented for discussion and approval in STECF PLEN-22-03, so that the new methodology could be readily applied in 2023.

JRC presented work for points 1, 2, 3, partially for point 4 and a roadmap for point 5.

STECF comments

STECF acknowledges and commends the work carried out to date by the JRC in developing a new model (SSM, state-space model) to compute the model-based indicators for the monitoring of the CFP as an alternative to the GLMM (generalised linear mixed model) currently in use.

STECF observes that based on the presentations given at PLEN 22-01 and PLEN 22-03 by the JRC modellers it is apparent that both models generate similar trends with the largest differences corresponding to years with missing data. STECF considers this is highly positive given they are based on different underlying assumptions.

STECF reiterates the conclusion of PLEN 22-01 that the Bayesian SSM model presents an improvement in aspects related with predicting missing values and forecasting recent years, as described in STECF-Adhoc-22-02. While the GLMM approach had a limited ability to account for missing values, the SSM approach accounts for the partial dependence between an estimate at t+1

and the estimate at t and can predict stock specific trends providing robust and reliable estimates, as shown in the sensitivity analysis reported in STECF-Adhoc-22-22.

STECF observes that based on the technical discussions held at PLEN 22-03, several issues were identified that require further testing of the new model before STECF before taking a final decision to replace the current protocol. STECF notes that further investigations would help fully understand the effects of some of the assumptions made by the Bayesian SSM on the indicator outcomes, for example sensitivity to the priors (observation error variance component), effects of predictions, effect of fixing one component of observation error variance and effect of time block options. The final list of tests to be performed will be agreed by STECF PLEN 23-01.

STECF notes that the technical discussions during PLEN 22-03 have reflected that changing an established statistical protocol is not a straightforward decision to make. The benefits brought by the new method proposed must be carefully weighed against the risks of potential unforeseen and unexplained model outcomes when the protocol is run in 2023 on a new dataset. STECF considers therefore that additional robustness testing conducted by JRC would be advisable, to gain full confidence that the model change will not affect the key message regarding the global status of EU fish stocks and the trends of progress towards CFP objectives. Therefore, STECF request the JRC use the existing GLMM protocol to generate the results for the 2023 CFP Monitoring report.

STECF considers in principle to change the prediction approach from the present (setting the missing final year of the analysed time-series equal to the last available) to JARA's approach of assuming a consistent autocorrelated trend with available input data backwards and forwards. The further investigations planned will help in STECF's considerations of this point.

PLEN 22-03 discussed the option of running both the GLMM and JARA plus some JARA robustness tests this year. This could then be discussed at PLEN 23-01 and a decision to which model output to include in the final CFP report. However, STECF notes that the JRC do not have the necessary capacity and suggested a more realistic timeline to complete this request would be PLEN 23-02.

STECF considers that changes to presentation of results and verification of NEA's sampling frame should be taken forward as these are positive changes for the CFP monitoring report.

STECF notes that in relation to the TOR regarding developing common indicators for all EU, these will be computed in 2023 using the existing GLMM protocol, as was done in 2021 and 2022.

8. CONTACT DETAILS OF STECF MEMBERS AND OTHER PARTICIPANTS

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

*STECF members marked with an asterix did not attend the meeting.

Name	**Affiliation**[1]	Email
Bastardie, Francois (rapporteur)	Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitorvet, 2800 Kgs. Lyngby, Denmark	fba@aqua.dtu.dk
Borges, Lisa*	FishFix, Lisbon, Portugal	info@fishfix.eu
Casey, John (rapporteur)	Independent consultant	blindlemoncasey@gmail.com
Coll Monton, Marta	Consejo Superior de Investigaciones Cientificas, CSIC, Spain	mcoll@icm.csic.es
Daskalov, Georgi	Laboratory of Marine Ecology, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences	Georgi.m.daskalov@gmail.com
Döring, Ralf (rapporteur)	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Economic analyses Herwigstrasse 31, D-27572 Bremerhaven, Germany	ralf.doering@thuenen.de
Drouineau, Hilaire (rapporteur)	Inrae, France	hilaire.drouineau@inrae.fr

Name	**Affiliation**[1]	Email
Goti Aralucea, Leyre	Thünen Institute of Sea Fisheries - Research Unit Fisheries Economics, Herwigstrasse 31, D-27572 Bremerhaven, Germany	leyre.goti@thuenen.de
Grati, Fabio	National Research Council (CNR) – Institute for Biological Resources and Marine Biotechnologies (IRBIM), L.go Fiera della Pesca, 2, 60125, Ancona, Italy	fabio.grati@cnr.it
Hamon, Katell	Wageningen Economic Research, The Netherlands	katell.hamon@wur.nl
Ibaibarriaga, Leire	AZTI. Marine Research Unit. Txatxarramendi Ugartea z/g. E-48395 Sukarrieta, Bizkaia. Spain.	libaibarriaga@azti.es
Jardim, Ernesto (rapporteur)	Marine Stewartship Council MSC, Fisheries Standard Director FSD, London	ernesto.jardim@msc.org
Jung, Armelle	DRDH, Techopôle Brest-Iroise, BLP 15 rue Dumont d'Urville, Plouzane, France	armelle.jung@desrequinsetdeshommes.org
Ligas, Alessandro (rapporteur)	CIBM Consorzio per il Centro Interuniversitario di Biologia Marina ed Ecologia Applicata "G. Bacci", Viale N. Sauro 4, 57128 Livorno, Italy	ligas@cibm.it; ale.ligas76@gmail.com
Mannini, Alessandro (rapporteur)	Self employed, Genova, Italy	alesman27kyuss@gmail.com
Martin, Paloma	CSIC Instituto de Ciencias del Mar Passeig Marítim, 37-49, 08003 Barcelona, Spain	paloma@icm.csic.es
Moore, Claire (rapporteur)	Marine Institute, Ireland	claire.moore@marine.ie
Motova -Surmava, Arina (rapporteur)	Sea Fish Industry Authority, 18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS, U.K	arina.motova@seafish.co.uk

Name	**Affiliation**[1]	Email
Nielsen, Rasmus (rapporteur)	University of Copenhagen, Section for Environment and Natural Resources, Rolighedsvej 23, 1958 Frederiksberg C, Denmark	rn@ifro.ku.dk
Nimmegeers, Sofie (rapporteur)	Flanders research institute for agriculture, fisheries and food, Belgium	Sofie.Nimmegeers@ilvo.vlaanderen.be
Pinto, Cecilia (vice-chair, rapporteur)	Università di Genova, DISTAV - Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Corso Europa 26, 16132 Genova, Italy	cecilia.pinto@edu.unige.it
Prellezo, Raúl (vice-chair, rapporteur)	AZTI -Unidad de Investigación Marina, Txatxarramendi Ugartea z/g 48395 Sukarrieta (Bizkaia), Spain	rprellezo@azti.es
Raid, Tiit (rapporteur)	Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallin, EE-126, Estonia	Tiit.raid@gmail.com
Rihan, Dominic (chair)	BIM, Croftn Road, Dun Laoghaire, Ireland	rihan@bim.ie
Sabatella, Evelina Carmen (rapporteur)	National Research Council (CNR) – Institute for Research on Population and Social Policies (IRPPS), Corso S. Vincenzo Ferreri, 12, 84084 Fisciano, Salerno, Italy	evelina.sabatella@cnr.it
Sampedro, Paz (rapporteur)	Spanish Institute of Oceanography, Center of A Coruña, Paseo Alcalde Francisco Vázquez, 10, 15001 A Coruña, Spain	paz.sampedro@ieo.es

Name	**Affiliation**[1]	Email
Somarakis, Stylianos (rapporteur)	Institute of Marine Biological Resources and Inland Waters (IMBRIW), Hellenic Centre of Marine Research (HCMR), Thalassocosmos Gournes, P.O. Box 2214, Heraklion 71003, Crete, Greece	somarak@hcmr. gr
Stransky, Christoph	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Herwigstrasse 31, D-27572 Bremerhaven, Germany	christoph.stransky@thuenen.de
Ulrich, Clara	IFREMER, France	Clara.Ulrich@ifremer.fr
Uriarte, Andres*	AZTI. Gestión pesquera sostenible. Sustainable fisheries management. Arrantza kudeaketa jasangarria, Herrera Kaia - Portualdea z/g. E-20110 Pasaia – GIPUZKOA (Spain)	auriarte@azti.es
Valentinsson, Daniel (rapporteur)	Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden	daniel.valentinsson@slu.se
van Hoof, Luc (rapporteur)	Wageningen Marine Research Haringkade 1, Ijmuiden, The Netherlands	Luc.vanhoof@wur.nl
Velasco Guevara, Francisco	Spanish Insitute of Oceanography - National Research Council, Spain	francisco.velasco@ieo.csic.es
Vrgoc, Nedo*	Institute of Oceanography and Fisheries, Split, Setaliste Ivana Mestrovica 63, 21000 Split, Croatia	vrgoc@izor.hr

*STECF members marked with an asterix did not attend the meeting.

Invited experts

Name	Address	Email
Johnston, Graham	Marine Ireland	Graham.Johnston@Marine.ie
Simmonds, E. John	Independent consultant	e.j.simmonds1@gmail.com
Zanzi, Antonella	Independent expert	Antonella.zanzi@gmail.com
Ziegler, Friederike	Bioeconomy and Health, Department Food and Agriculture, Unit Sustainable consumption and production, RISE Research Institutes of Sweden, Frans Perssons Väg 6, Box 5401, SE-402 29 Göteborg, Sweden	friederike.ziegler@ri.se

JRC experts		
Name	Address	Email
Gras, Michael	DG Joint Research Centre JRC	Michael.gras@ec.europa.eu
Hekim, Zeynep	DG Joint Research Centre JRC	hekim.zeynep@ec.europa.eu
Guillen, Jordi	DG Joint Research Centre JRC	Jordi.guillen@ec.europa.eu
Konrad, Christoph	DG Joint Research Centre JRC	Christop.konrad@ec.europa.eu
Kupschus, Sven	DG Joint Research Centre JRC	Sven.kupschus@ec.europa.eu
Vasilakopoulos, Paris	DG Joint Research Centre JRC	paris.vasilakopoulos@ec.europa.eu
Virtanen, Jarno	DG Joint Research Centre JRC	Jarno.virtanen@ec.europa.eu

European Commission		
Name	Address	Email
AIRA MARTIN, Maria	DG MARE, C1	Maria.AIRA-MARTIN@ec.europa.eu
BEZINOVIC SOSTAR, Lana	DG MARE, A.2	Lana.BEZINOVIC-SOSTAR@ec.europa.eu
Calvo, Angel	DG MARE, A.4	angel-andres.calvo-santos@ec.europa.eu
Doerner, Hendrik	DG Joint Research Centre JRC, STECF secretariat	Stecf-secretariat@jrc.ec.europa.eu
Dragon, Anne-Cécile	DG MARE, D1	anne-cecile.dragon@ec.europa.eu
HEINEN Gerd	DG MARE, A4	Gerd.heinen@ec.europa.eu
JOLLY, Laurene	DG MARE, A4	Laurene.jolly@ec.europa.eu
KOPP, Antoine	DG MARE, C1	Antoine.kopp@ec.europa.eu
KOSTOPOULOU Venetia	DG MARE, C3	venetia.kostopoulou@ec.europa.eu
LEOCADIO Ana	DG MARE, C5	Ana.LEOCADIO@ec.europa.eu
LINDEBO, Erik	DG MARE, C5	Erik.lindebo@ec.europa.eu

OSIO, Giacomo Chato	DG MARE, D1	Giacomo-Chato.OSIO@ec.europa.eu
PATTERSON Kenneth	DG MARE, D3	Kenneth.patterson@ec.europa.eu
PERALTA BAPTISTA, Ana	DG MARE, A4	Ana.PERALTA-BAPTISTA@ec.europa.eu
RANSHUYSEN Evelien	DG MARE, D.3	Evelien.RANSHUYSEN@ec.europa.eu
STAMOULIS Antonios	DG MARE, D.3	Antonios.STAMOULIS@ec.europa.eu
STERCZEWSKA Monika	DG MARE, C.3	Monika.STERCZEWSKA@ec.europa.eu
SURDU Oana	DG MARE, C3	Oana.SURDU@ec.eurpa.eu

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