



JRC SCIENTIFIC AND POLICY REPORTS

SCIENTIFIC, TECHNICAL AND
ECONOMIC COMMITTEE FOR
FISHERIES –
55TH PLENARY MEETING REPORT
(PLEN-17-02)

PLENARY MEETING,
10-14 July 2017, Brussels

Edited by Clara Ulrich & Hendrik Doerner

2017

EUR 28359 EN

This publication is a Science for Policy report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policy-making process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

Contact information

Name: STECF secretariat

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

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

Tel.: +39 0332 789343

JRC Science Hub

<https://ec.europa.eu/jrc>

JRC107569

EUR 28359 EN

PDF ISBN 978-92-79-67488-4 ISSN 1831-9424 doi:10.2760/53335

Luxembourg: Publications Office of the European Union, 2017

© European Union, 2017

Reproduction is authorised provided the source is acknowledged.

How to cite: Scientific, Technical and Economic Committee for Fisheries (STECF) – 55th Plenary Meeting Report (PLEN-17-02); Publications Office of the European Union, Luxembourg; EUR 28359 EN; doi:10.2760/53335

All images © European Union 2017

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 hold its 55th plenary on 10-14 July 2017 in Brussels.

TABLE OF CONTENTS

1.	INTRODUCTION.....	4
2.	LIST OF PARTICIPANTS	4
3.	INFORMATION TO THE PLENARY	5
4.	ASSESSMENT OF STECF EWG REPORTS.....	6
4.1	EWG 17-01 and EWG 17-06: Economic fleet data of check to support economic analysis in 2017 and draft AER national chapters and Annual Economic Report of the fleet of 2017.....	6
4.2	EWG 17-02 Methodology EWG in the MED	8
4.3	EWG 17-03 Evaluation of LO joint recommendations	16
4.4	EWG 17-05 Fisheries Dependent Information - Classic.....	40
4.5	EWG 17-07 DCF 2016 Annual reports evaluation & Data Transmission to end users in 2016.....	43
4.6	EWG 17-04 Quality assurance for DCF data	49
5.	ADDITIONAL REQUESTS SUBMITTED TO THE STECF PLENARY BY THE COMMISSION.....	52
5.1	Interspecies flexibility	52
5.2	Irish avoidance programme for picked dogfish	63
5.3	Clarification on STECF Report on Joint Recommendations for Natura 2000 sites under CFP Article 11 (STECF-16-24).....	71
5.4	Eastern Bluefin tuna	77
5.5	Effort regime for Mediterranean demersal fisheries	83
5.6	Management Plan for small pelagics fishery using purse seine net "srdelara" (Republic of Croatia).....	92
5.7	Derogation for 'gangui' trawlers in certain territorial waters of France.....	101
6.	STECF RECOMMENDATIONS FROM STECF-PLEN-17-02.....	115
7.	BACKGROUND DOCUMENTS	116
8.	CONTACT DETAILS OF STECF MEMBERS AND OTHER PARTICIPANTS.....	117

**55th PLENARY MEETING REPORT OF THE SCIENTIFIC,
TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES
(PLEN-17-02)**

PLENARY MEETING

10-14 July 2017, Brussels

1. INTRODUCTION

The STECF plenary took place at the Centre Borschette, Brussels, from 10 to 14 July 2017. The chair of the STECF, Clara Ulrich, opened the plenary session at 10:15h. The terms of reference for the meeting were reviewed and discussed and consequently the meeting agenda agreed. The session was managed through alternation of plenary and working group meetings. Rapporteurs for each item on the agenda were appointed and are identified in the list of participants. The meeting closed at 16:00h on 14 July 2017.

2. LIST OF PARTICIPANTS

The meeting was attended by 22 members of the STECF, five invited experts and four JRC personnel. 13 Directorate General Maritime Affairs and Fisheries (DG MARE) attended parts of the meeting. Section nine of this report provides a detailed participant list with contact details.

The following members were unable to attend the meeting:

1. Haritz Arrizabalaga
2. Michel Bertignac
3. Lisa Borges
4. Massimiliano Cardinale
5. Hazel Curtis
6. Georgi Daskalov
7. Didier Gascuel
8. Hilario Murua
9. Alen Soldo
10. Luc van Hoof
11. Hans van Oostenbrugge
12. Nedo Vrgoc

3. INFORMATION TO THE PLENARY

The STECF was informed on the current state of planning for meetings in 3rd and 4th quarters 2017 and on possible upcoming requests for advice by written procedure.

Meetings 2017:

- EWG 17-11: Stock assessments in the Black Sea 2017 plus associated data preparation meeting: data prep. meeting 7-8 September, EWG 11-15 September, Ispra, Italy, chair: M. Cardinale
- EWG 17-08: Balance / Capacity: 18-22 September, Cyprus, Chair: G. Scarcella
- EWG 17-09: Stock assessments in the Mediterranean Sea 2017- Part I: 23-29 September, Split, Croatia, chair: J. Simmonds
- EWG 17-10: Long-term management of skates and rays: 16-20 October, Brussels, chair: M. Bertignac
- EWG 17-12: Fisheries Dependent Information - new FDI: 23-27 October, JRC-Ispra, chair: S. Holmes
- PLEN 17-03: Winter plenary meeting: 6-10 November (start time: 11:00h), Brussels, chair: C. Ulrich
- EWG 17-13: Evaluation of DCF National work plans amendments for 2018/19: 13-17 November, Hamburg, Germany, chair: C. Stransky
- EWG 17-15: Stock assessments in the Mediterranean Sea 2017- Part II, 27 November – 3 December, venue tbd, chair: J. Simmonds

Meetings 2018:

- EWG 17-16: Economic report fish processing: 1st quarter 2018, venue tbd, chair: R. Döring
- EWG 17-20: Support to Tuna or tuna like species assessments: 1st quarter 2018, venue tbd, chair tbd
- EWG 17-14: Evaluation and updating the list of mandatory surveys: provisionally scheduled Nov/Dec 2017 will be moved to March-May 2018, JRC/Ispra/Vaarese, chair: D. B. Sampson

Forthcoming written procedures:

1. Top-up tables using FDI data from 2015 and 2016 – will take place after plenary report release / summer 2017
2. Review of work of EWG 17-11: Stock assessments in the Black Sea 2017 – deadline OWP 20 October 2017
3. Review of work of EWG 17-13: Evaluation of DCF National work plans amendments for 2018/19 – deadline for OWP 8 December 2017

4. ASSESSMENT OF STECF EWG REPORTS

4.1 EWG 17-01 and EWG 17-06: Economic fleet data of check to support economic analysis in 2017 and draft AER national chapters and Annual Economic Report of the fleet of 2017

Request to the STECF

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

STECF response

STECF observations

STECF reviewed the 2017 Annual Economic Report on the EU Fishing fleet and notes that the EWG adequately addressed all the ToRs. STECF acknowledges the extensive work undertaken by all personnel involved in the preparation of the 2017 AER by attendance to two EWGs (EWG17-01 and 17-06). The 2017 AER represents the most comprehensive overview of the structure and economic performance of the EU fishing fleets (at EU, regional and Member states' level) and replaces previous AER reports.

The results of the AER 2017 report indicate that the profitability of the EU fishing fleet again increased in 2015 compared to 2014 and is expected to have continued in 2016 and into 2017 mainly because of increased landings and low fuel prices. At the regional level, the profitability of the European fleets is improving in almost all the regions except for the Baltic region where the net profit still shows negative values and after a slight improvement in 2013 and 2014, deteriorated again in 2015. Regarding the other regions, in the Northeast Atlantic, despite the decrease in landings, the overall performance improved as well as in the North Sea & Eastern Arctic region and in the Mediterranean & Black Sea, where 2015 was the most profitable year so far analysed.

The data in this report have undergone extensive data validation procedures by JRC and assessment by the two EWGs. STECF acknowledges that a significant amount of effort is required to carry out quality check and correct the first data uploaded by MS, before and during the first EWG. Data errors observed during the first EWG can be corrected by the MS up to two weeks after the first EWG.

Based on the EWG report, STECF made a number of observations:

The identification and the assessment of data transmission failures should be improved as reported under TOR 5.5.

The quality and coverage of data submitted by Member States has continued to improve, allowing for more accurate and precise observations about the economic performance of the EU Member States' fishing fleets. Overall, the coverage has improved, and in the 2017 AER report only Greece was excluded from the EU overview (due to incompleteness of data series); and only a few fleet segments were excluded due to confidentiality reasons.

STECF acknowledges the positive development in the two EWG's moving from data handling towards more detailed discussions about the applied methodologies and analysis of why observed developments takes place (e.g. main drivers). Some preliminary investigations are provided in the report, including for example discussions on high wage levels in some member states or negative economic performance in the Baltic Sea. Such analyses are expected to be further developed in the future.

As observed in PLEN 16-02, the use of the CPI (Consumer Price Index) to adjust time series for inflation is still a pending issue. CPI is an index compiled using the price development of many goods. However, many of these goods are not directly used in fisheries, thus other indices could potentially be applied, if such are available and applicable.

Many Member States have voluntarily provided information about fleet structure and landings for 2016. This information is used as the basis for the 2016 and 2017 economic projections based on the BEMEF-model, including other types of information as well (e.g. agreed TACs, average fuel prices and first-sale prices).

A thorough description of the BEMEF-model is included in the 2017 AER addressing the some of the limitations raised in PLEN 17-01-report (i.e uncertainty estimates and robustness of outputs given model structure). The possibility of incorporating technical interactions at the metier level was not addressed because not required for the specific needs of the AER.

The approach of using "days at sea" to split fleet segment data by region continues to have some drawbacks. Given that it is based on the assumption that the cost structure, and/or costs per day at sea, are the same for all regions, it can result in inaccurate estimates. Furthermore, it is not within the DCF data possible to make a distinction between how much time is used for fishing and steaming between fishing areas and homeport.

The EWG has considered last years' deviations in the methodologies for calculating some economic indicators across different STECF working groups. Thus, STECF acknowledges that the use and estimation of capital costs in AER 2017 are consistent with the approach used in the report on the Balance between fleet capacity and fishing opportunities (STECF 16-18).

STECF notes that the AER reports have never included any information about the downstream services covering the processing industry and onshore service industries (e.g. shipyards, oil bunkers, gear producers, provision suppliers etc.). STECF observes that the general interest about the downstream services beyond just covering the processing sector is increasing in order evaluate the importance and potential effect on e.g. local communities following changes in the level of activity in the primary fishery.

STECF conclusions

The 2017 Annual Economic Report (AER) on the European Union (EU) fishing fleet provides the most comprehensive overview of the structure and economic performance of EU Member States' fishing fleets prepared up to date. STECF concludes that the report represents a step forward and that the report can provide useful information to managers, policy-makers, as well as other end-users.

STECF concludes that the appropriateness in using the CPI compared to other more specific price/cost indices should be further evaluated.

STECF concludes that the methodology on data disaggregation by fishing regions using the days at sea should be further investigated in order to assess its potential bias and inaccuracy, and to consider alternative options to obtain better cost estimates for the different regions.

STECF notes the interest of DG MARE for analysis regarding the downstream services. A process would need to be initiated to identify the purpose of collecting the information, which industries should be in focus, potential approaches for collecting this, and how it can be presented.

4.2 EWG 17-02 Methodology EWG in the MED

Request to the STECF

STECF is requested to review the EWG 17-02 report, to evaluate its findings and make appropriate comments including, where possible, explicit endorsement with respect to the methods and advices provided therein.

In particular, on the basis of the EWG results and STECF is requested:

As regards the Length based Analyses

To provide solutions including shared guidelines, where feasible, on how to overcome the shortcoming identified

As regards the Data Limited Stocks

to provide a reasoned list of Mediterranean data limited stocks that can be regularly assessed with the identified methods over the next 3-5 years

As regards the target stocks and main by-catch associated species for possible future multiannual plans

-To advise on the stocks that should be considered, either as driving the fisheries or as relevant by-catches

-To provide pros and cons of the geographical scope of each possible plan taking into account the content requirements of the multiannual plans, the distribution of the stocks, the dynamics and technical interactions between fleets as well as the scientific knowledge currently available to the scientific community.

STECF response

STECF observations

The working group was held in Arona, Italy, from 5th to 9th June 2017. The meeting was attended by 18 experts in total, including 3 STECF members and 4 JRC experts.

The objective of the Mediterranean Methodology EWG 17-02 was to develop a number of scientific areas to assist in future assessments. The ToRs were partially based on ideas developed from STECF-16-17 (Demersal stock assessments in the Mediterranean Sea). In addition, two review ToRs were added.

TERMS OF REFERENCE GIVEN TO THE EWG:

The STECF-EWG 17-02 was requested:

(1) To collate and review all relevant information of length based analyses (including length slicing to age and choice of biological parameters) used so far in STECF-EWG for Mediterranean stock assessment (STECF 16-22; 16-21; 16-17 and other relevant sources). Consider both the influence on the results of stock assessment and also the influence on MSY reference points. In the light of this review, provide solutions on how to overcome the shortcomings and develop shared guidelines so that further improvements in the estimates of parameters, reference points, stock status and exploitation rates are delivered. The following species are, inter alia, to be considered,: hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*[#]) and deepwater rose shrimp (*Parapenaeus longirostris*).

(2)

i) To apply and compare potential data poor methods to provide MSY advice by taking into account timespan and types of data series available under the DCF. The following stocks are, inter alia, to be considered: blue whiting in GSAs 6 and 9 (STECF 14-17) and hake in GSAs 6, 7 and 9,

ii) for the same stocks, to compare the data poor methods to the existing analytical assessments in order to indicate differences in the quality of the results obtained by the different approaches;

iii) to apply the best available data poor method that resulted from point 2i and 2ii above to the following data poor stocks: blue whiting in GSAs 17, striped red mullet in GSA 11 (tbc).

(3) To carry out a critical review of the stock boundaries for the species and areas listed below. This review shall take into account the latest bioecological and fishery-related information available including, inter alia, recent analyses on the topic supported by DG MARE (see Annexes [X]1). In the light of this review, propose scientifically sound stock units for:

a) anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) in the western Mediterranean Sea (GSAs 5, 6, 7, 8, 9, 10 and 11);

b) common Pandora (*Pagellus erythrinus*), Norway lobster (*Nephrops norvegicus*) and common cuttlefish (*Sepia officinalis*) in the Adriatic Sea (GSAs 17 and 18); and

c) European hake (*Merluccius merluccius*) and red mullet (*Mullus barbatus*[#]) in the Ionian Sea (GSAs 19 and 20).

(4) To advise on the stocks that should be considered, either as driving the fisheries or as relevant by-catches, for possible multiannual plans addressing the small pelagic fisheries of the Western Mediterranean Sea (GSAs 5, 6, 7, 8, 9, 10, 11), the demersal fisheries of the Adriatic and Ionian Seas (GSAs 17, 18, 19, 20) and the demersal fisheries of the Eastern Mediterranean Sea (GSAs 22, 23, 25). For this purpose, the annexes [1], [2] and [3] provide an overview of the main elements that could be considered so far.

The advice shall provide also pros and cons of the geographical scope of each plan taking into account the content requirements of the multiannual plans, the distribution of the stocks, the dynamics and technical interactions between fleets as well as the scientific knowledge currently available to the scientific community. Synoptic overview of the information used in support of the advice shall be reported.

*1 Work to be done through ad-hoc contracts during the first semester of 2017.

red mullet (*Mullus barbatus*) was originally noted incorrectly in the as *Mullus surmuletus* this is corrected here

STECF comments

In relation to each of the Terms of Reference (ToRs), STECF notes the following:

ToR 1 - STECF acknowledges the EWG's exploration of the impact of length slicing to age and choice of biological parameters to the assessment of stock status. STECF notes that in the past there has been considerable variation in the parameter values used for length slicing and for natural mortality for the three important demersal species investigated. STECF analysed the impact of changes in von Bertalanffy Growth Parameters (hereafter VBGP) and M values on the assessment outcomes. While minor changes to the parameters may not have a significant impact, STECF notes that in the cases the assessment outcome is close to the MSY reference point, a change of 0.05 in k (corresponding to a approx. 10% uncertainty around the estimate) could lead to a

different diagnosis of the stock from overexploited to underexploited. In the case of deep water rose shrimp, European hake and red mullet, major differences have been observed in VBGP parameters historically estimated, and these can have a considerable influence on stock assessment.

STECF agrees with the EWG that there is a need for greater consistency in VBGP parameters across stocks of the same species and that EWGs should attempt to base VBGP values on the underlying data where possible (and not on values published in the literature). The EWG suggests calling for the underlying data, the age length keys (ALK) for the stocks for which these are planned in the DCF National Plans. STECF supports the request to include the information in future data calls, and reiterates the need to have data by quarter. In addition, the EWG suggests that the DCF Catch Table should be amended to include a field documenting the method and parameters used for the length to age determination and the range of years used for the VBGP estimation in case of use of a deterministic slicing.

STECF notes that in the case that direct ageing can be carried out (e.g. otolith reading) and the ageing process has been validated and is well documented, an approach based on estimated ages is preferable to slicing. In the case direct ageing is not possible and the species shows rapid and variable growth during the first 1-2 years (e.g. deep water rose shrimp), the use of length based models, ideally based on quarterly data, should be explored.

ToR 2 - STECF acknowledges the EWG's evaluation of stock exploitation indicators (proxies for stock status) suitable for data limited stocks. STECF supports the conclusions that individual indicators are often unbiased but can be noisy indicators of stock status, and therefore supports the view for further development work on use of multiple indicators. STECF supports the request for an ad-hoc contract to develop this work further to explore the basis for the provision of advice using data limited indicators, STECF provide draft background and ToR for the ad hoc contract (annex).

ToR 3 - STECF notes that the proposed ad-hoc contracts to evaluate appropriate species areas considered in ToR 3 were not placed. Given the limited information available (STOCKMED report and a few additional published papers collected during the meeting), STECF agrees with the EWG conclusion that the basis for many stock divisions is weak. STECF is not aware of currently ongoing projects dealing with stock identity, and acknowledges that unless more data become available, population boundaries will remain uncertain. STECF recalls that the STOCKMED project (which finished in 2014) that aimed at the definition of stocks units in the Mediterranean was not conclusive due to a generalized lack of evidence on some aspects useful for stock discrimination such as larval dispersal, connectivity, genetics, and also in detailed fisheries activities as spatial distribution of the fleets (STECF PLEN 17-01). STECF considers that the proposed stock boundaries (Section 2.1.3 of the EWG report) should be used for current assessments and management until better options become available.

ToR 4 - In addressing ToR 4 (the identification of main species and main gears either as driving the fisheries or as relevant by-catches) the EWG built on work performed previously as part of the work on multiannual plans (MAP) (Mediterranean Methods July 2016 (STECF 16-14)) and Landing obligation part 6 from October 2015 (STECF 15-19)). STECF endorses the EWG proposals for inclusion of extra gears (beam trawl, hydraulic dredge, shore and boat seine) in geographical scope in ToRs Annex 1 (GSAs 17, 18, 19 and 20). Regarding the list of species, STECF endorses the conclusions for species list in the three areas' MAPs detailed in the ToR, but notes that some commercially important shellfish species have been previously omitted and should be added to the MAPs: Primarily the addition of one major species (striped venus clam *Chamelea gallina*) in GSAs in ToRs Annex 1; but also the minor changes to 'additional species' lists for areas in Annex 1 and Annex 3 (GSAs 22, 23 and 25) (see Section 2.1.4 of EWG report). STECF

notes that these species have been proposed based on the current catches and the EWG did not differentiate whether the plans should be implemented at national or multi-national level.

As regards the request to STECF to provide solutions including shared guidelines, where feasible, on how to overcome the shortcoming identified in the length-based analyses, STECF notes that the EWG proposed recommendations for future work. These recommendations refer to the need of *i*) coherence of all growth parameters used in the assessments; *ii*) improvement in documenting and defining the growth models and age slicing; *iii*) test where possible age slicing by sex; *iv*) t_0 should be truncated to values between 0 and -0.2; *v*) review the raw age length data, where necessary refitting growth models (section 2.2 in the EWG report).

STECF was also requested to provide a list of Mediterranean data limited stocks (DLS) that can be regularly assessed with the identified methods over the next 3-5 years. This request had not been included in the EWG 17-02 ToRs, and STECF was unable to derive such a list during the Plenary meeting. An initial analysis was carried out by STECF EWG 16-05 in June 2016. However, the evaluation by EWG 16-05 could only investigate the presence/absence of data, not the quality of the information. In order to develop the required list STECF proposes a further work, under an ad hoc contract to assess the availability and suitability of survey data and/or catches. Following this a selection of the most promising DLS can be made. This preliminary list would later be assessed by the EWG and STECF. Draft terms of reference of the ad-hoc contract are proposed in the annex. STECF notes that in addition to this analysis, it is necessary to explore the use of multiple indicators for giving advice for data limited stocks, which should also be done through an ad hoc contract - see above.

STECF conclusions

STECF acknowledges that the EWG has addressed all its terms of reference, which could also be performed thanks to better and more timely coordination on the work need between STECF, JRC and DGMARE.

STECF commends the EWG on its exploration of the impact of length-based factors in assessments and stock status. STECF notes that in the past there has been considerable variation in the parameter values used for length slicing and for natural mortality, so the analyses performed by the EWG were strongly needed to improve the quality of stock assessment.

STECF commends the EWG for its evaluation of stock exploitation indicators (proxies for stock status) suitable for data limited stocks. STECF supports the conclusions that individual indicators are often unbiased but can be noisy indicators of stock status, and therefore supports the view for further development work on use of multiple indicators.

Regarding the request to provide pros and cons of the geographical scope of each possible MAP, STECF notes that the main issue, the stocks configuration, remains uncertain. There is hardly any new information on stock boundaries existing in addition to that collected during the STOCKMED project. In order to advance knowledge on stock boundaries, it is necessary to initiate new data collection (such as tagging, genetic etc.) that can generate new information on stock identity and distribution.

STECF proposes two ad hoc contracts, one to evaluate the quality of the DCF data, which will allow the elaboration of a list of data limited stocks that can be assessed, and the second one to explore the use of multiple indicators for giving advice for data limited stocks.

Annex

AD-HOC contract to evaluate quality of DCF data for data limited information.

The purpose of this is to obtain summary information to be used to identify stocks with promising or unpromising data for future work. The objective would be to check for consistency of data in terms of availability and sampling and the potential for significant changes in time, that might provide useful signals. The proposal is to concentrate on demersal data for stocks of general interest. Two types of DCF data should be evaluated, survey data and catch data.

- 1) Survey evaluation** -MEDITS survey by species by GSA presented on no more than one page per species/ GSA this should be based on annually tabulated summary data in a simple data frame (in R) and then output in plots on a single page, combined with some overall statistics for the data set for a species in a GSA.

Annual summary stats for each species for each year calculate and tabulate and plot.

DCF calls for TA file (hauls), TB (catch by species and haul), TC (length, sex and maturity by target species). Analysis on biomass and density indexes should be possible for all the species caught during the survey (based on the TB file in the DataCall) while the length analysis can be carried out only for target species (TC file in the DataCall). For example in TB file GSA9 for year (2015) reported data for 270 species and for 63 in TC file and obviously not for all these species we have enough information to do anything. The following should be stored in a data frame and plotted

- Total number of trawl stations by year
- Proportion of positive stations by year
- Mean and CV of (standardised) catch abundance (including zero values) by year
- Mean and CV of (standardised) catch weight (including zero values) by year
- Min. max and mean day in year of survey data by year (or 5,50,95%)

For species with length data (TC data file):

- 5, 50 and 95% on fish length caught by year.
- Mean and CV of (standardised) mature catch abundance (including zero values) by year
- Mean and CV of (standardised) mature catch weight (including zero values) by year

Age based evaluation based on deterministic length slicing using VBGF from the Data Call biological file. In addition in for a limited number of species and limited years age data has been collected since 2012 for some target species (Hake, Red mullet, Striped red mullet) and stored in TE MEDITS file. This should be used if available:-

- Matrix plot of n at age a in year y with n at age $a+1$ in year $y+1$

Series Summary statistics across all years

- Autocorrelation coefficient on mean abundance (1st order)
- Autocorrelation coefficient on mean catch weight (1st order)
- Autocorrelation coefficient on mean time (1st order)
- Fraction of years with the mean abundance outside median of mean values $\pm 2CV$
- Fraction of years with the mean biomass outside median of mean values $\pm 2CV$

For Multiple GSAs

In addition to single GSA the following combinations should also be presented:

1,5,6, 7,8,9, 10,11, 15,16 17-18, 20,22,23.

Notes :

MEDITS is a standardized survey based on random sampling stratification with hauls number by strata allocated based on the surface of the strata (see MEDITS handbook) <http://www.sibm.it/MEDITS%202011/principaledownload.htm>.

The TA file contain hauls information including distance covered and horizontal net open so we can estimate swept area by haul. For all the GSA JRC has the stratification scheme by strata and stratum so we can compute the abundance and biomass index by square kilometre.

Having the stratification surface we can combine across GSAs.

The issue that will arise dealing with some GSAs in which MEDITS time series is different (e.g. GSA17 ITALY, CROATIA and SLOVENIA) for which some extra assumptions may be needed (maybe assuming some kind of proportion for missing year based on the years in which we have data).

Additionally, in some areas (16 and maybe 18), the random stratified design has been violated with the addition of a new area of sampling after 10 years of survey. So in these cases a statistical standardization with GLMs would likely be more appropriate.

2) 2 Catch evaluation - by species by GSA presented on no more than one page per GSA

Quality of fleet segment sampling by year using whatever fleet segmentation has been delivered by MS. It is known that for some areas the metier (as combination of gear, fishery and mesh size) is not clearly reported in the data, so the data should be analysed in the best way

- No of different fleet segments or metiers reporting catch by year
- Fraction of catch with samples (sum of catch with samples/total)

For species with length data and if applicable growth data:

- 5, 50 and 95% on fish length caught by year.
- Matrix plot of n at age a in year y with n at age $a+1$ in year $y+1$ from commercial catch

AD HOC contract for developing advice for stocks without survey time series and only a short time series of commercial catch at length data.

Background

There is a need to improve understanding of the utility of simple annual indicators based on catch at length data. The EWG 17-02 has examined LB-SPR, VIT and Lmean/LFeM for existing assessment data in order to obtain year by year estimates of indicators exploitation, proxies for F/F_{MSY} . Some of these approaches require ancillary information such as VBGP, L-W, Terminal F, M, Maturity ogive, to run. It seems that Lmean/LFeM is unbiased but very noisy indicator of stock status but it is not directly suited for management advice on its own. It's possible that by adding other indicators the noise

might be reduced and the advice may be more reliable. The limited exploration of VIT and LB-SPR carried out by EWG 17-02 suggests that these methods may also give useful indicators of exploitation rate. An AD HOC contract is needed to take this the next step onwards. The JRC has a database of assessment results and assessment stock objects, this should be used to calculate stock exploitation indicators to be compared with assessed annual values of $F/F_{0.1}$. This has already been done for the length indicator L_{mean}/L_{FeM} . Some of the other approaches require ancillary information such as VBGP, L-W, Terminal F, M, Maturity ogive, for this study these are available from the assessment files, and could mostly be obtained for data poor stocks, if the methodology appears useful. The purpose of this exercise is to complete the analysis for other indicators, to build a better understanding of the use of multiple indicators.

ToR

For a maximum of 10 years per stock (using whichever years are available for 2004 to 2013) for the listed assessed stocks from 2016 in the table below carry out the following.

- 1) Using existing JRC archived stock objects carry out further analyses to derive the annual indicators of F/F_{MSY} from VIT
- 2) Using existing JRC archived stock objects carry out further analyses to derive the annual indicators of exploitation rate from LB-SPR by stock and by year.
- 3) Tabulate these with existing L_{mean}/L_{FeM} values and existing assessment estimates of $F/F_{0.1}$ for all the stocks and assessed years .
- 4) Other methods could be added here if applicable to single year LF commercial catch data

Species	GSA	Linf
MUR	9	32.0
NEP	6	74.1
NEP	9	74.1
NEP	11	74.1
DPS	1	45.0
DPS	9	38.3
DPS	10	43.0
ANE	6	19.0
ANE	9	17.0
ANE	17_18	19.4
PIL	6	25.0
PIL	17_18	19.8

Provide:

- 1) The R scripts to carry out the analyses and
- 2) a data frame with, input data used and collated results of all methods and assessment results
- 3) Explore the relationships between single / multiple indicators and the assessed values, and evaluate and propose the best weighting of these indicators to most closely indicate stock exploitation status.
- 4) Provide a report of the analyses carried out and results obtained.

4.3 EWG 17-03 Evaluation of LO joint recommendations

Request to the STECF

STECF is requested to review the report of the STECF Expert Working Group meeting and the additional information received from the Regional Groups after the EWG, evaluate the findings and make any appropriate comments and recommendations.

STECF Response

Background of the EWG 17-03

The report of the Expert Working Group 17-03 (STECF EWG 17-03) represents the findings of the meeting convened to review the joint recommendations (JR) from Member States regional groups for the implementation of the landing obligation (LO) in 2018. Joint recommendations for discard plans represent the agreement among Member States (MS) cooperating regionally on the elements for the preparation of Union law (Commission delegated act) in accordance with Article 15.6 of the Common Fisheries Policy. These elements are: definitions of fisheries and species; *de minimis* and high survivability exemptions; fixation of minimum conservation reference sizes; additional technical measures to implement the landing obligation; and the documentation of catches. EWG 17-03 reviewed the new or amended joint recommendations from the North Sea, North-western waters (NWW), South-western waters (SWW) Baltic Sea and Western Mediterranean. EWG 17-03 also carried out an analysis of the progression in implementing the landing obligation, following the terms of references.

STECF EWG 17-03 was requested to:

1. Screen any changes in the defined fisheries to be subject to the landing obligation in 2018 for potential anomalies which may create difficulties for managers and fishermen.
2. Review the supporting documentation underpinning exemptions on the basis of high survivability in respect of:
 - Exemptions agreed for 2017 on the basis of high survivability where there was a requirement for further information to be supplied.
 - New exemptions based on high survivability. In data poor situations, assess what further supporting information may be available and how this be supplied in the future (e.g. survival studies, tagging experiments).
3. Review the supporting documentation (biological, technical and/or economic) for the *de minimis* exemptions on the basis that either increasing selectivity is very difficult to achieve, or to avoid handling unwanted catches would create disproportionate cost in respect of:
 - *De minimis* exemptions agreed for 2017 where there was a requirement for further information to be supplied.
 - New *de minimis* exemptions. In data poor situations, assess what further supporting information may be available and how this could be supplied in the future (e.g. discard data collection, selectivity studies).
4. Review whether there is sufficient information to support proposed minimum conservation reference size(s) that deviate from existing minimum landing sizes, and whether they are consistent with the objective of ensuring the protection of juveniles.

5. Review the supporting documentation provided for technical measures aimed at increasing gear selectivity for reducing or, as far as possible, eliminating unwanted catches.
6. Where Joint recommendations have not been put forward by the Member States for relevant sea basins, STECF will need to provide input on the preparation of discard plans.
7. In addition, EWG 17-03 was asked to evaluate additional requests on the following:
 - A *de minimis* request for combined species under the landing obligation for vessels using bottom trawls > 80mm in the Celtic Sea and the English Channel (NWW)
 - Additional scientific information provided by France, supporting the survivability exemption from the landing obligation for Norway lobster provided caught in the Bay of Biscay by bottom trawling (SWW).

STECF observations

There is a large number of JRs analysed by the EWG 17-03. The STECF response is therefore structured as follows: General observations first, then observations on ADRIATICA and SUDESTMED joint recommendations (sent to STECF plenary and not reviewed by EWG 17-03), STECF comments on the EWG 17-03 report when NO new information is available, and STECF comments on the EWG 17-03 report when SOME new information is available to the PLEN STECF 17-02

Regarding the ADRIATICA and SUDESTMED JR, STECF underlines that JR that are dealt with by plenary cannot receive the same amount of scrutiny and consistency check than those addressed in the dedicated EWG. STECF emphasises that JR should be submitted in time for the EWG.

STECF general observations

STECF acknowledges that the EWG 17-03 has addressed all the Terms of Reference.

STECF observes that the EWG is of the opinion that the quality of the preparation of the joint recommendations has improved, including:

- the completion of new high quality survival experiments, considering differences in survivability related to seasonality and following *ICES guidelines for conducting survival experiments* based on ICES WKMEDS (Catchpole et al.);
- Member State Regional Groups have used the templates developed by STECF in 2016 to supply fisheries and fleet descriptors.

Regarding the request to suggest additional information in data poor situations, EWG 17-03 provided information on potential studies/projects that could be used to justify the requested exemptions. For example, the EWG referred to the Solemon project regarding the survivability of common sole; ADRIATICA sent two reports of this project for STECF consideration during the Plenary meeting, and STECF reviewed it (see Table 4.3.6 for details). However, other studies/papers may exist that could be used by MS to support the requested exemptions. STECF encourages MS to systematically investigate potential studies and existing scientific articles, and review their main findings before any request is sent out to the EWG.

Notwithstanding these progresses in analyses and reporting, STECF notes that many challenges remain in implementing the landing obligation fully:

- Currently 97 out of 174 stocks subject to LO (excluding the Med) will be covered in discard plans in 2018 if all JR are implemented. This means that 77 stocks (45%) will have to be brought under the LO at the beginning of 2019.
- Survival experiments do not cover all complex "situations" and therefore many gaps of knowledge remain regarding differences in survival rates concerning different areas, seasons & temperature, handling practices, habitat (discarding bottoms), experimental conditions vs commercial conditions, etc.;
- The subjective nature of the conditionalities for exemptions (high survival, disproportionate costs, *de minimis* & economic data) means that the observations and conclusions are based on many assumptions;
- Many of the requests for *de minimis* exemptions remain of a "national nature" rather than regionally focused;
- While many regional groups use the template developed by STECF, there are still limitations in the information provided (landings, fleets, speculative assumptions). Often information is provided for one fleet but not for other fleets using similar gears and which would be also affected. In these cases, further clarification may be required;
- There is a need to improve the collection of catch documentation data as highlighted by STECF PLEN 17-01 and by EWG 17-03. The joint recommendations would benefit from containing provisions that strengthen data collection in this respect. Progressive implementation of innovative monitoring measures, e.g. remote electronic monitoring and CCTV is still absent;

STECF reiterates the position of the EWG 17-03 that when using the provisions of the *de minimis* under Article 15, the requirements of Article 2 of the Common Fisheries Policy (CFP) to fish at F_{MSY} can only be met if the *de minimis* discard quantities are deducted from the agreed catch opportunity (TAC) arising from F_{MSY} based advice.

STECF also supports EWG 17-03 point of view that article 15.5(c)(ii) states that where continued discarding is permitted through the application of *de minimis* provisions, whilst these catches "shall not be counted against the relevant quotas"; however, all such catches should be fully recorded.

STECF observations on ADRIATICA and SUDESTMED joint recommendations

STECF notes that after the completion of EWG 17-03, two joint recommendations were received from the Member State regional groups in the Mediterranean:

- For the Adriatic Sea EU Member States (ADRIATICA) (Discard Plan for Certain Small Pelagic Fisheries in the GFCM/GSAs 17 and 18 (2018) and the accompanying letter (dated 03-07-2017));
- For certain small pelagic fisheries in the South Eastern Mediterranean Sea GFCM /GSAs 15, 16, 19, 20, 22, 23 and 25 (SUDESTMED).

STECF notes that the ADRIATICA JR states that it is necessary to put in place a new discard plan for the small pelagic fisheries, in order to ensure that the existing measures remain in place for an additional three year period or until a relative multiannual plan is approved. The JR states that the discard management plan will be implemented in GFCM GSAs 17 (northern Adriatic) and GSA 18 (southern Adriatic).

STECF notes that in addition to the objectives, the definitions, the duration and the areas covered, the JR also includes two general principles that:

- a) any technical, control or compliance measures adopted for the pelagic fisheries in the Adriatic Sea be efficient, proportional, and enforceable upon all vessels operating under this discard plan.
- b) increased selectivity, where possible, is the most desirable way to deliver compliance with the landing obligation

STECF notes however that there is no indication or any detail within the JR as to how these principles will be met.

In the accompanying letter from ADRIATICA, it is stated that "*Relating to the high survivability exemption in purse seine fisheries when the catch is released before the purse seine is closed, we consider that as in the Mediterranean Sea this practice is not forbidden by the technical measures regulation, there is no sense of asking for a high survivability exemption*". STECF highlights that this describes the process of slipping. 'Slipping' occurs when fish are intentionally released from fishing gear before being brought on-board, and before the purse seine is closed. While STECF acknowledges that this practice is not prohibited in the Mediterranean, 'slipped' catches of regulated species are essentially discards and therefore subject to the Landing Obligation. Following Article 15(1) of Basic Regulation (EU) No 1380/2013, regulated species must be landed unless exemptions are granted. Therefore, STECF points out that catches taken by purse seine vessels, even before the purse seine is closed, can only be released if an exemption from the Landing Obligation has been granted.

Existing Commission Delegated Regulations for the NWW, SWW and the North Sea define survivability exemptions for slipped catches from purse seines (Regulations (EU) 1393/2014, (EU) 1394/2014 and (EU) 1395/2014 These Delegated Regulations authorise catches to be slipped where the following conditions are met:

- the catch is released before a defined percentage of the purse seine is closed ('the point of retrieval');
- the purse seine gear is fitted with visible buoys clearly marking the limit for the point of retrieval;
- the vessel and the purse seine gear are equipped with an electronic recording and documenting system monitoring when, where and the extent to which the purse seine has been hauled for all fishing operations.

STECF notes that the JR requests a *de minimis* exemption of up to 5 % of the total annual catches of species subject to minimum sizes in the small pelagic mid-water trawl and purse seines fisheries. This percentage is different from the exemptions currently included in the Regulation (EU) 1392/2014 which state:

-in the northern Adriatic Sea, up to 5 % of the total annual catches of species subject to minimum sizes in the small pelagic mid-water trawl and purse seines fisheries;

-in the southern Adriatic and Ionian Sea: (i) up to 3 % of the total annual catches of species subject to minimum sizes in the small pelagic purse seines fisheries; and (ii) up to 7 % in 2015 and 2016 and up to 6 % in 2017 of the total annual catches of species subject to minimum sizes in the small pelagic mid-water trawl fisheries.

In particular, STECF notes that the JR *de minimis* request (5%) implies an increase from the 3% threshold given in the Delegated act in the case of small pelagic purse seines fisheries in the southern Adriatic.

STECF notes that there is no justification for this change in the *de minimis* volumes included in the JR, and that the current discard rates are not indicated, so STECF cannot comment on this change.

STECF notes that the JR from the SUDESTMED HLG is very similar to the Adriatic and Western Mediterranean plans. The JR states that the discard management plan will be implemented in GFCM GSAs 15, 16, 19, 20, 22, 23 and 25 of the South Eastern Mediterranean Sea.

STECF notes that regarding the species and fisheries covered, the JR states the specific discard plan will be applicable to pelagic fisheries subject to minimum conservation reference size in South Eastern Mediterranean (GFCM GSAs 15, 16, 19, 20, 22, 23 and 25). GSA 18 (southern Adriatic Sea) is not included in the JR because it is included in the ADRIATICA JR.

STECF further notes that the JR includes GSA 25 (Cyprus) which was not included in article 2 (definitions) of Regulation (EU) No 1392/2014.

STECF notes, as with the Adriatic plan, there are differences in the *de minimis* exemption requested in the new JR compared to the existing Regulation. The new JR requests a *de minimis* exemption of 5% for small pelagic fisheries in the South eastern Mediterranean whereas Regulation (EU) 1392/2014 states that:

-in the southern Adriatic (GSA 18) and Ionian Sea (GSA 19, 20 and 21), (i) up to 3 % of the total annual catches of species subject to minimum sizes in the small pelagic purse seines fisheries; and (ii) up to 7 % in 2015 and 2016 and up to 6 % in 2017 of the total annual catches of species;

-in the Malta Island (GSA 15) and South of Sicily (GSA16): (i) up to 3 % of the total annual catches of species subject to minimum sizes in the small pelagic purse seines fisheries; and (ii) up to 7 % in 2015 and 2016 and up to 6 % in 2017 of the total annual catches of species subject to minimum sizes in the small pelagic mid-water trawl fisheries, set out in point 4 of the Annex;

-in the Aegean Sea (GSA 22) and Crete Island (GSA 23), up to 3 % of the total annual catches of species subject to minimum sizes in the small pelagic purse seines fisheries set out in point 5 of the Annex.

In particular, STECF notes that the JR *de minimis* request (5%) implies an increase from the 3% threshold given in the Delegated act in the case of small pelagic purse seines fisheries in (i) the Ionian Sea, (ii) the Malta Island and South of Sicily and (iii) the Aegean Sea and Crete Island.

STECF notes, as with the Adriatic plan, that there is no justification or supporting information to explain the difference in *de minimis* requested, and that the current discard rates are not indicated, so STECF cannot comment on this change...

STECF comments on the EWG 17-03 report when NO new information is available

For the case of the Baltic Sea (Table 4.3.1) and North-Western Waters (Table 2) and Pelagic plans (Table 3), STECF notes that no additional information has been submitted after the EWG. STECF comments are summarized in Table 4.3.1, 4.3.2 and 4.3.3, respectively.

Some new information has been provided for some South-Western Waters (SWW), North Sea, Mediterranean and Black Sea fisheries, so the discard plans for these regions are treated further below (Tables 4.3.4 to 4.3.8).

Table 4.3.1. Main findings of the STECF EWG 17-03: **Baltic Sea**.

High Survivability	
Fishery	Cod, plaice and salmon caught with trap-nets, creels/pots, fyke-nets and pound net
Main findings of the EWG 17-03	Existing exemption extended to include plaice. Fleet and fishery descriptions are incomplete. Reference only to 4 German vessels but EWG aware that many other countries participate in these fisheries. Supporting study is rather limited and more detailed information would be useful to assess the representativeness and quality of the discard survival estimate attained. However, the fishing gears used are relatively benign and all available information indicates mortality of discarded fish is likely to be low in such fisheries.
Comments STECF PLEN 17-02	STECF notes that no additional information on the fleets from other Member States has been provided. STECF is unaware as to whether this information was requested by the Commission.
MCRS	
Fishery	Baltic Cod
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Technical measures	
Fishery	Modifications to T90 codend
Main findings of the EWG 17-03	New. Proposal to derogate from existing technical measures regulations allowing the use of a modified T90 codend. Results from a series of catch comparison experiments provided which show the modified codend to provide positive benefits in terms of reducing unwanted catches of cod below mcrs. New codend has a smaller mesh size, larger number of meshes in the codend circumference and is longer. Two of these changes intuitively would be expected to decrease selectivity. Therefore if the derogation to allow the use of this modified gear is granted then it should be conditional on further experimentation to demonstrate that the presented results are correct.
Comments STECF PLEN 17-02	STECF is aware that additional selectivity trials are currently being performed in Denmark, and the results could be included in a future evaluation

Table 4.3.2. Main findings of the STECF EWG 17-03: **North-Western Waters.**

<i>De minimis</i>	
Fishery	Common sole caught in gillnets and trammel nets in the Channel and the Celtic Sea
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Common sole caught with beam trawls with a mesh size of 80-119mm with increased mesh sizes in the extension of the beam trawl
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03. The definition for the Flemish panel proposed by the NS group should also be included in any new version of the NWW discard plan.
Comments STECF PLEN 17-02	STECF has no further comments
Fishery	<i>Nephrops</i> caught with bottom trawls with a mesh size of 80-99mm in ICES subareas VI and VII
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Whiting caught with bottom trawls and seines <100mm and pelagic trawls to catch whiting in the Channel
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Whiting caught with bottom trawls and seines ≥100mm and pelagic trawls to catch whiting in the Celtic Sea and the Channel
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Whiting caught with bottom trawls and seines <100mm and pelagic trawls to catch whiting in the Celtic Sea
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Combined <i>de minimis</i> for species under the landing obligation for vessels using bottom trawls >80mm in the Celtic Sea and the English Channel
Main findings of the EWG 17-03	Not part of JR but EWG asked to consider a standalone proposal. No new information is presented to support the proposal and justification is based on previous experiments used to support existing <i>de minimis</i> exemptions for whiting in the Celtic Sea and Channel. Combining catches to calculate <i>de minimis</i> increases the volume of <i>de minimis</i> available. Provided this is taken into account in setting catch advice then this in itself is not a problem. However, MS should be

	<p>aware it will mean the eventual TAC will be much lower.</p> <p>Combining catches effectively means the volume of <i>de minimis</i> for any individual species can be in excess of 5%.</p>
Comments STECF PLEN 17-02	<p>STECF notes that to respect the precautionary approach, under a combined <i>de minimis</i>, the separate <i>de minimis</i> volume for each individual species within the combined species can only be accounted for in respective stocks TACs by discounting the maximum possible amount of <i>de minimis</i> for each species that could potentially be discarded. STECF notes that this is likely to reduce the fishing opportunities for all other fleets catching these stocks.</p>
High Survivability	
Fishery	<i>Nephrops</i> caught with Pots, Traps or Creels in ICES subareas VI and VII
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Common sole (undersized only) caught with trawl gears in area VIIId
Main findings of the EWG 17-03	<p>Existing. Delegated act required submission of additional scientific information supporting the exemption.</p> <p>Additional information has been supplied including the results from new experiments which show no effect of seasonality on survival between trips in August and October.</p> <p>Information relating to the location of nursery areas as referred to in the Delegated Act is missing. These areas are not defined so it is not possible to monitor whether fishing is occurring outside such areas</p>
Comments STECF PLEN 17-02	STECF has no further comments but re-iterates the observations of EWG 17-03 that the nursery areas referred to in the Regulation should be defined.

Table 4.3.3. Main findings of the STECF EWG 17-03: **Pelagic plans.**

<i>De minimis</i>	
Fishery	Artisanal pelagic trawl fisheries using OTM and PTM in ICES sea area IV b,c and VIIId
Main findings of the EWG 17-03	<p>Existing. Extension of existing exemptions contained in the North Sea and NWW discard plans to include PTM gear.</p> <p>The transition from the current discard rate to the 1% (<i>de minimis</i> level) will be challenging without significant changes of fishing pattern, either by improvements in selectivity or by avoiding areas of higher unwanted catch. This may provide an incentive for the fleets involved to adapt their behaviour and continue research on ways to improve selectivity and is a reasonable justification to retain the exemption.</p>
Comments STECF PLEN 17-02	STECF has no further comments.
High Survivability	

Fishery	<i>Mackerel and Herring in the ring net fishery in ICES areas VIIe and VIIf</i>
Main findings of the EWG 17-03	New exemption for 2019 but previously assessed by STECF in 2015. The basis for the exemption is similar to other exemptions included under the existing <i>de minimis</i> plans and there are certain similarities between the fisheries.
Comments STECF PLEN 17-02	STECF has no further comments.
Technical measures	
Fishery	Sprat fisheries in the North Sea
Main findings of the EWG 17-03	New derogation. Given the fact that the supporting study for this derogation request only covered two years further research would be useful in evaluating the validity of the conclusions reached by ICES.
Comments STECF PLEN 17-02	STECF has no further comments.

STECF comments on the EWG 17-03 report when NEW information is available to the PLEN STECF 17-02

South West Waters

STECF notes that in relation to the main findings of the EWG, the Commission has requested additional information from the Member States regional groups. In most cases this information has been provided to the Commission.

For the case of South-Western waters the following additional documents were made available to the PLEN STECF 17-02:

- Informe: asesoramiento para aportar información científica a una solicitud de información complementaria sobre el estudio de la merluza para la solicitud del "de mínimos" y la de las cigalas. IEO.
- Study of the Portuguese Fleets catching hake (*Merluccius merluccius*) in area IXa. Directorate-General for Natural Resources, Safety and Maritime Services
- Additional information for the *de minimis* exemption consolidation request for hake (*merluccius merluccius*) of 6%, for 2017 and 2018 and 5% thereafter proposed) from Spain for trawlers catching hake in the Bay of Biscay (ICES VIIa,b,d). Anon.
- A scientific paper titled: Bio-economic assessment of a change in fishing gear selectivity: the case of a single-species fleet affected by the landing obligation. Scientific paper.
- A table for the *Nephrops* survivability exemption where additional information of the fleets subject to this exemption is provided.

In light of this new information the following comments apply in addition to the observations from STECF EWG 17-03 (Table 4.3.4).

Table 4.3.4. Main findings of the STECF EWG 17-03 and summary of additional information received relating to exemptions presented: **South-Western Waters**.

DE MINIMIS	
Fishery	Common sole caught in gillnets and trammel nets in the Channel and the Celtic Sea
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Common sole caught with beam trawls and bottom trawls in directed fishery in ICES subareas VIIIA,b
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake caught with trawls in directed fisheries in ICES subareas VIII and IX
Main findings of the EWG 17-03	Data missing in respect of number of vessels, catches, discards and <i>de minimis</i> volumes already recorded and for other fleets which have significant catches of hake. Baseline selectivity data for the standard gears used in the fisheries not supplied. EWG cannot assess if the additional workload created by the landing obligation represents a disproportionate cost for the fisheries covered by this exemption.
COM comments to Regional Groups	A request for more information of the economic impact of increasing selectivity and of sorting and handling catch. Information about the fleets and fisheries concerned by the exemption are requested.
Response by Regional Groups	Additional information of fleets and métiers definition for vessels operating in the Bay of Biscay (VIIabd) is provided, including: <ul style="list-style-type: none"> • Additional information on the increased workload required to meet LO requirements. It includes physical and economic estimations for fleets operating in the VIIabd and VIIC. • Additional information on the likely economic consequences of increasing the selectivity in for Portuguese fleets (IXa) and Spanish Pair trawlers (VIIabd), demonstrating the economic losses from improvements in selectivity.
Comments STECF PLEN 17-02	STECF notes that no new information is provided in terms of <i>de minimis</i> volumes already recorded. STECF notes that no information has been provided for French fleets, which have significant catches of hake. STECF notes that further information on the baseline selectivity data for the standard gears is needed to provide a full assessment. STECF notes that from the studies provided no economic gain is obtained from increasing the selectivity (Pair trawler), and an economic loss of 71% is reported for Portuguese trawlers. STECF notes that according to the information provided, there is a likelihood of increasing of effort on board being required in sorting catches and deteriorating safety conditions even if mitigation

	<p>measures to reduce unwanted catches are adopted. STECF cannot assess whether this is specific to these fisheries or generic to all fisheries subject to the landing obligation.</p> <p>STECF reiterates the conclusion of the STECF EWG 17-03 that selectivity experiments presented were not successful in reducing catches of unwanted hake, but comparative information of the selectivity with larger mesh size is not available</p>
High survivability	
Fishery	<i>Nephrops</i> caught with trawls in ICES subareas VIII and IX
Main findings of the EWG 17-03	<p>Existing. Delegated act required submission of additional scientific information supporting the exemption.</p> <p>Additional studies have been completed and have largely addressed the issues raised by STECF in 2016 regarding the duration of the original experiments.</p> <p>The fleet descriptions provided are detailed for French and Portuguese fleets but there are other relevant fleets, notably Spanish, for which no information has been provided.</p>
COM comments to Regional Groups	Not available
Response by Regional Groups	A table including the details of Spanish vessels affected by this exemption has been provided
Comments STECF PLEN 17-02	<p>STECF notes that according to the additional information provided there are up to 191 French, 198 Spanish and 24 Portuguese vessels that fall under the existing exemption. STECF further notes that this new information addresses the observation from EWG 17-03 and that the full scope of fisheries to which the exemption could apply is now known.</p> <p>STECF agrees with the observations of EWG 17-03 that the evidence provided for the survival of discarded <i>Nephrops</i> gives robust scientific estimates of discard survival. The derived survival rates were calculated as 36.9% (20.9-52.9%) for individuals with the "standard" sorting process and 51.2% (30.9-71.5%) for individuals sorted with the "chute system". These survival estimates should be interpreted as the maximum discard survival estimates as they do not account for induced experimental mortality, and exclude marine predation.</p>
MCRS	
Fishery	Horse mackerel in ICES VIIIc and IXa
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.

North Sea

For the case of the North Sea the following additional documents were made available to the PLEN STECF 17-02:

- Information has been provided by the UK on the numbers of vessels, catch etc. for *Nephrops* grounds outside the Farn Deeps in respect of the high survivability exemption for *Nephrops* caught with trawl gears in area IV. Limited information has also been provided for relevant NL vessels in respect of this exemption.

- Fleet and fishery information has been provided by DE and NL in respect of the high survivability exemption for fish bycatch in pots and fyke nets in area IIIa and IV.
- Fleet and fishery information has been provided by DE, NL and the UK in respect of the *de minimis* exemption for whiting and cod caught using bottom trawls < 100mm (TR2)

Table 4.3.5. Main findings of the STECF EWG 17-03 and summary of additional information received relating to exemptions presented: **North Sea.**

De minimis	
Fishery	Fish bycaught in <i>Nephrops</i> targeted trawl fishery
Main findings of EWG 17-03	<p>Existing but NS regional group propose to include cod catches in the calculation of <i>de minimis</i> volume.</p> <p>There are no additional studies provided to support this exemption over and above what was presented in 2016. The only additional information is a re-calculation of the volumes with cod catches added.</p> <p>Combining catches to calculate <i>de minimis</i> increases the volume of <i>de minimis</i> available. Provided this is taken into account in setting catch advice then this in itself is not a problem. However, MS should be aware it will mean the eventual TAC will be much lower.</p> <p>A detailed description of the fleets and fisheries is provided</p>
COM comments to Regional Groups	None
Response by Regional Groups	No action required
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	<i>Nephrops</i> caught by bottom trawls with a mesh size of 80-99mm
Main findings of EWG 17-03	<p>Existing provision by NS regional group propose the level of <i>de minimis</i> from 6% to 2%.</p> <p>There are no issues with this exemption</p>
COM comments to Regional Groups	None
Response by Regional Groups	No action required
Comments STECF PLEN 17-02	No additional comments
Fishery	Whiting and cod caught using bottom trawls < 100mm (TR2)
Main findings of EWG 17-03	<p>Existing provision with cod added.</p> <p>No additional supporting information is supplied and the exemption is based on the justification provided in 2016 for the French fleet.</p> <p>An additional Dutch Fleet has been included under the exemption but no information describing this fleet is provided. No information is also provided for justifying the inclusion of this fleet under the exemption</p> <p>With cod and whiting catches now combined for the <i>de minimis</i> there is a possibility that the volumes of <i>de minimis</i> requested could exceed the actual volume of cod discards particularly for the Dutch fleet. MS should be aware it will mean the eventual TAC will be much lower as the increased volumes of <i>de minimis</i> will need to</p>

	<p>be taken account of in the catch advice and deducted from the available fishing opportunities.</p> <p>Very little information on the economic impact of increasing selectivity and of sorting and handling catch is provided for either the French or Dutch fleets.</p>
COM comments to Regional Groups	Information on other fleets that may avail of this exemption in addition to the French fleet.
Response by Regional Groups	<p>Fishery and fleet descriptor data has been supplied for UK, Netherlands (NL) & Germany (DE).</p> <ul style="list-style-type: none"> • UK report 22 TR2 vessels in area IVc targeting sole and landing more than 5 tonnes of species other than <i>Nephrops</i>. These vessels had catches of 19.2 tonnes of cod and 4.7 tonnes of whiting of which 1.3 tonnes of cod and 2.2 tonnes of whiting were discarded. Discard rates for cod and whiting were 7.5% and 91% respectively. A <i>de minimis</i> volume of 1.15 tonnes of cod and 281kg of whiting is requested. • NL report 38 TR2 vessels not targeting <i>Nephrops</i>. These have very small catches of cod and whiting are recorded and a <i>de minimis</i> of 93kg of whiting is requested, equating to 4% of the total catches of whiting. • DE report 3 vessels operated in IVc with TR2 gear mainly in a mixed fishery targeting plaice. Landings data is provided shows landings of cod of 151kg with no landings of whiting. No discard data is provided.
Comments STECF PLEN 17-02	<p>Fisheries and fleet descriptor data has been provided for FR, UK, NL and DE. For NL is not clear what the actual landings and discards were from the vessels reported. The DE data is incomplete as no estimates of discards are included. Therefore STECF is not able to comment on the total level of <i>de minimis</i> volume being requested under this exemption. However, given that the catches of cod and whiting by the UK, NL and DE (landings only) are negligible and provided discarding under the exemption is monitored, the impact from these fleets is likely to be minimal. The FR fleet has much higher levels of catches of cod and whiting. STECF re-iterates the observations of EWG 17-03 that the potential maximum volumes of <i>de minimis</i> for whiting and cod, taking account of the limitation of 2% on cod discards, should be deducted from the catch advice and deducted from the available fishing opportunities.</p> <p>STECF also observes that economic information to support the exemption is still lacking but notes that the Member States were not asked by the Commission to provide any further information.</p>
Fishery	Fish bycaught in Northern prawn trawl fishery with a sorting grid, with unblocked fish outlet
Main findings of EWG 17-03	<p>Existing but NS regional group propose to include cod catches in the calculation of <i>de minimis</i> volume.</p> <p>There are no additional studies provided to support this exemption over and above what was presented in 2016. The only additional information is a re-calculation of the volumes with cod catches added. Levels in the case of this exemption are quite low reflecting the relatively low discards of undersized fish in this fishery.</p> <p>Combining catches to calculate <i>de minimis</i> increases the volume of <i>de minimis</i> available. Provided this is taken into account in setting catch advice then this in itself is not a problem.</p> <p>A detailed description of the fleets and fisheries is provided.</p>

COM comments to Regional Groups	None
Response by Regional Groups	No action required
Comments STECF PLEN 17-02	No additional comments
Fishery	Whiting caught in bottom trawls \geq 90mm in IIIa
Main findings of EWG 17-03	<p>New. A combination of previous studies and ongoing studies are used to justify the exemption based on difficulties in increasing selectivity. Limited economic data based on prices for whiting are provided for the fisheries involved. This data shows the handling costs exceed the selling price for the landings of all whiting.</p> <p>The 2% <i>de minimis</i> volume requested is higher than the current discard volume of whiting below MCRS so in effect the exemption encourages high-grading by allowing for the discarding of otherwise marketable whiting. This may also act as an incentive not to try to improve selectivity in the fishery any further.</p> <p>The request covers one fishery where there are no reported discards.</p> <p>The fisheries and fleets are well described.</p>
COM comments to Regional Groups	None
Response by Regional Groups	No action required
Comments STECF PLEN 17-02	No additional comments
Fishery	Bycatch of plaice in fisheries caught in the <i>Nephrops</i> trawl fishery with a mesh size \geq 80-99mm with a SEPNEP in ICES area IIa and IV
Main findings of EWG 17-03	<p>New. Detailed information is provided to support this exemption which is based on the use of a selective gear to reduce plaice discards. The case is well presented and the information provided is reasonable. It shows plaice discards can be reduced by up to 80% and the <i>de minimis</i> is requested to cover residual discards that cannot be released.</p> <p>A definition of the SEPNEP gear modification is provided in the JR which is useful. The definition would benefit from some re-drafting as it is not altogether clear.</p>
COM comments to Regional Groups	None
Response by Regional Groups	No action required
Comments STECF PLEN 17-02	No additional comments
High survivability	
Fishery	<i>Nephrops</i> caught with trawl gears with a Netgrid selectivity device in area IV
Main findings of EWG 17-03	<p>Existing. Delegated act required submission of additional scientific information supporting the exemption.</p> <p>No new studies have been completed although additional information relating to two of the factors known to affect discard survivability was provided; catch composition and environmental variables (ambient air and water temperature) on different <i>Nephrops</i> grounds. These studies increase the knowledge</p>

	regarding the representativeness of the underpinning survival study for the current exemption. They show survival is unlikely to differ due to environmental conditions between the <i>Nephrops</i> grounds in the Farne deeps and Firth of Forth and Moray Firth but not whether differences in fisheries and catch compositions is likely to differ between the Farne deeps and these two areas. The information does not support a survival exemption in the whole of area IV at all times of the year.
COM comments to Regional Groups	Provision of information on the numbers of vessels, catch etc. for <i>Nephrops</i> grounds outside the Farne Deepes, using the STECF template.
Response by Regional Groups	Detailed information on the number of vessels, catch, discard rates and estimated survival rates for <i>Nephrops</i> by FU's excluding the Farne Deepes has been provided by the UK. Limited information has been provided for the NL that reports that 1 vessel fished in the Farne Deepes and caught 3 tonnes of <i>Nephrops</i>
Comments STECF PLEN 17-02	Fisheries and fleet information is now completed for the UK. Limited information is provided for NL but only 1 vessel is involved with very limited catches. STECF re-iterate the observations of EWG 17-03 that there is insufficient evidence to support applying this exemption for the whole of area IV and at all times of the year.
Fishery	Common sole (undersized only) caught with trawl gears in area IVc
Main findings of EWG 17-03	Existing. Delegated act required submission of additional scientific information supporting the exemption. Additional has been supplied including the results from new experiments which show no effect of seasonality on survival between trips in August and October. Information relating to the location of nursery areas as referred to in the Delegated Act is missing. These areas are not defined so impossible to monitor whether fishing is occurring outside such areas.
COM comments to Regional Groups	Clarify the location of the nursery areas referred to in the JR (if at all applicable for area IVc).
Response by Regional Groups	No information provided
Comments STECF PLEN 17-02	STECF re-iterates the comments of EWG 17-03 that it is important that the position of these nursery areas is clearly indicated in the relevant Regulation. These nursery areas have been identified for VIId in an earlier STECF plenary meeting (15-02). It is not clear whether such nursery areas have been identified in the North Sea.
Fishery	Fish bycatch in pots and fyke nets in area IIIa and IV
Main findings of EWG 17-03	Exemption is intended to replace existing <i>de minimis</i> exemption included in the Delegated Act. No direct evidence is presented on the survival rates of the discarded species in the proposed fisheries. The exemption applies to pot fisheries targeting crustaceans but the evidence is based on the survival of discarded cod from pots used to target fish

	<p>(consistently >75%). Increasing depth has a negative effect on the health of released cod.</p> <p>The exemption assumes that haddock, whiting, cod, plaice, sole, hake and saithe released from crab and lobster pots and <i>Nephrops</i> creels have the same survival chances as cod released from pots used to target fish. There is no direct evidence to support this but it is reasonable to infer that, at the point of release, and assuming environmental and technical operations are comparable, the likelihood of survival is high. The risk of substantial avian predation of discarded fish needs to be considered in such an exemption.</p> <p>Fleet and fishery descriptions are detailed for Sweden, less clear for UK, and there may be other countries associated with the proposed exemption that have not been described.</p>
COM comments to Regional Groups	Fleet and fishery information for all fleets that potentially will avail of this exemption, using the STECF template.
Response by Regional Groups	<p>Limited data has been provided for DE and NL.</p> <ul style="list-style-type: none"> • DE reports that between 1-3 vessels used pots to target edible crab in area IIIa and IV. There was no fish bycatch landed and there is no discard data available. • NL reports that 67 vessels (< 10m) target Chinese river crab and lobster in coastal and estuarine waters with pots. There is no reported bycatch of species subject to the landing obligations. <p>Other Member States – UK, DK, BE and FR - are not affected by this exemption.</p>
Comments STECF PLEN 17-02	The information provided helps to clarify which fleets intend to avail of this exemption. In this regard STECF re-iterates the observations of EWG 17-03 that given these gears are relatively benign, all information available indicates that mortality of discarded fish is likely to be low and that the actual catches are negligible, the impact of this exemption is minimal.

Mediterranean

For the case of Mediterranean, the following additional documents were made available:

- A document provided by PESCAMED high level group with information on fishery of Norway lobster (*Nephrops norvegicus*) in Spain, France and Italy;
- Two reports provided by Italy on behalf of ADRIATICA on Solemon project (2015 and 2016) with preliminary results on survivability of common sole caught with rapido trawl in GSA17 in the Adriatic Sea, together with data on the fishery: Report of the Adriatic Beam Trawl Survey (SoleMon) in GSA 17 – 2015 and Report of the Adriatic Beam Trawl Survey (SoleMon) in GSA 17 – 2016.

On the light of this new information the following comments apply in addition to those coming from the STECF EWG 17-03 (Table 4.3.6).

Table 4.3.6. Main findings of the STECF EWG 17-03 and summary of additional information received relating to exemptions presented: **Mediterranean**

<i>De minimis</i>	
Fishery	Hake and red mullet by vessels using trawl nets in the Western Mediterranean
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake and red mullet by vessels using gillnets in the Western Mediterranean
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake and red mullet using trawls in the Adriatic
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake and red mullet using gillnets in the Adriatic
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake and red mullet using rapido (beam trawls) in the Adriatic
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Common sole using trawl nets in the Adriatic
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Common sole using gillnets in the Adriatic
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake and red mullet by vessels using trawl nets in the south-eastern Mediterranean
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Hake and red mullet by vessels using gillnets in the south eastern

	Mediterranean
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Deep-water rose shrimp in the south eastern Mediterranean
Main findings of the EWG 17-03	Existing provision and was therefore not evaluated by EWG 17-03
Comments STECF PLEN 17-02	STECF has no further comments.
High survivability	
Fishery	Scallop caught with mechanised dredges in GSAs 1, 2, 5 and 6;
Main findings of the EWG 17-03	Existing. Delegated act required submission of additional discard data and any other relevant scientific information supporting the exemption. No information provided to EWG 17-03 so no analysis carried out.
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Carpet clams caught with mechanised dredges in GSAs 1, 2, 5 and 6
Main findings of the EWG 17-03	Existing. Delegated act required submission of additional discard data and any other relevant scientific information supporting the exemption. No information provided to EWG 17-03 so no analysis carried out.
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	Venus shells caught with mechanised dredges in GSAs 1, 2, 5 and 6
Main findings of the EWG 17-03	Existing. Delegated act required submission of additional discard data and any other relevant scientific information supporting the exemption. No information provided to EWG 17-03 so no analysis carried out.
Comments STECF PLEN 17-02	STECF has no further comments.
Fishery	<i>Nephrops norvegicus</i> caught with trawls in the western Mediterranean
Main findings of the EWG 17-03	The JR from the PESCAMED high level group (HLG) requested a new exemption for <i>Nephrops norvegicus</i> caught with trawls in the western Mediterranean on the basis of high survivability. The PESCAMED HLG provided a report of survivability experiments carried out as part of the EU funded Minouw project - "Survival of discarded <i>N. norvegicus</i> from the Catalan Sea bottom trawl fishery". EWG 17-03 noted that the discard survival estimates generated were not representative, as samples for observation were taken only at the beginning of the sorting process. PESCAMED HLG did not provide any data for the fisheries affected (Spain, France and Italy).
COM Comments to Regional Groups	Not available
Response by Regional Groups	PESCAMED HLG has provided a document with information on the fisheries for <i>N. norvegicus</i> in Spain, France and Italy
Comments STECF PLEN 17-02	STECF notes that the fisheries and fleet information provided for Spain and France is brief and not fully homogeneous. These countries provide a brief summary of the <i>Nephrops</i> fishery in these countries regarding gear characteristics, fishing grounds, associated species in the catch,

	<p>number of vessels and, in the case of France, landings data. No catch information is provided for Spain.</p> <p>Regarding the information provided by Italy, STECF wondered whether there could be an error in the information supplied. The reported information relates to lobster, but STECF emits some concerns that it may not be Norway lobster (<i>Nephrops</i>) but probably spiny lobster, <i>Palinurus elephas</i>, instead of <i>Nephrops</i>. The reasons for these concerns relate to the description of the gear used and the price. The Italian information refers to trammel nets and not to trawls. In the Mediterranean, including in Italy, the main gear to catch <i>Nephrops</i> is trawls whereas spiny lobster is fished mainly with trammel nets.</p> <p>In conclusion, is this sufficient/insufficient, check the template with regards to other areas/JR, EWG 16-17</p>
Fishery	Common sole (<i>Solea solea</i>) caught with rapido (beam trawl) in GSAs 17 and 18
Main findings of the EWG 17-03	Commission Delegated Regulation (EU) 2017/86 includes an exemption on the basis of high survivability for common sole caught with rapido trawls in the Adriatic Sea GSA 17 and GSA 18. This exemption was granted for one year on the provision that the Member States concerned in the fishery should submit relevant data to the Commission to allow STECF to further assess the justification for this exemption. However, this information was not provided to EWG 17-03 so the working group was unable to carry out an evaluation. EWG 17-03 noted that survivability studies for the common sole in the GSA 17 were in progress in the framework of the SOLEMON project carried out by the CNR-ISMAR (Ancona, Italy). It also noted that there exist other published studies on the survivability of this species in other areas. EWG 17-03 stated that these studies may provide supporting information for the requested exemption.
COM Comments to Regional Groups	Not available
Response by Regional Groups	Italy on behalf of ADRIATICA provided two reports of the Solemon project (2015 and 2016) with preliminary results on survivability of common sole caught with rapido trawl in GSA17 in the Adriatic Sea, together with data on the fishery.
Comments STECF PLEN 17-02	<p>STECF notes that results of the Solemon project are preliminary and that the project was not designed to specifically evaluate the survival rates of Common sole caught with rapido trawl in the Adriatic. Results are based on two experiments conducted in 2015 and 2016 comprising a total of 8 hauls and about 150 individuals, covering common sole below the MCRS (20 cm TL).</p> <p>STECF notes that the experiments were only conducted in GSA 17 (i.e. GSA 18 was not covered), and that the methodology used in the experiments is not fully explained (there is reference to van Beek FA et al. 1990; On the survival of plaice and sole discards In the otter trawl and beam trawl fisheries in the North Sea. Neth J Sea Res 26: 151 – 160)</p> <p>STECF notices that preliminary results of the Solemon project show that survival at the point of release is between 83.2% and 72.3%, and between 69.7 and 57.4% after 72 hr observation. However, it is not known whether mortalities had ceased by this time, but based on other studies, additional mortalities are likely to have occurred beyond 72 hr, therefore an absolute discard survival estimate cannot be determined from the evidence provided.</p> <p>STECF notices that the surveys were done in winter (late November) and therefore it is likely that the reported survival rates are higher than the rates that could have been estimated in summer months when temperatures are much higher.</p>

	<p>STECF notes that the surveys were done in shallow waters (8-14 m depth) and therefore it is likely that the reported survival rates are higher than the rates that could have been estimated if individuals would have been caught in deeper waters.</p> <p>STECF further notes that the experiments were conducted as part of research cruises. It is not clear how representative the gear used and the conditions under which the sole were collected are of commercial practice. In particular, STECF observes the tow times were of a very short duration and this may be a factor in the high survival rates observed.</p> <p>In conclusion, there are some indications of potential survival in this fishery, but the method used was not sufficient to derive robust and representative estimates of survival.</p>
--	---

In conclusion, the information provided by France is quite complete in relation to fisheries data, but not the information provided by Spain, whereas Italy still has to present data on that fishery. Regarding survival rates of *Nephrops*, only Spain has submitted data. A table summarizing all existing information (fishery + survival rates), which updates table 10.1.1 shown in EWG 17-03 report, is given below in Table 4.3.7. This updated table shows the information by country that is still missing.

Table 4.3.7. Update of Table 10.1.1 given in STECF EWG 17-03 report: Summary of high survivability exemptions submitted as part of the Mediterranean Joint Recommendations (restricted to new or re-assessed exemptions)

Country	Exemption applied for (species, area, gear type)*	Species as bycatch or target	Number of vessels subject to the LO	Landings (by LO subject Vessels)	Estimated Discards*	Estimated Catch	Discard Rate	Estimated discard survival rate	from provided studies
France	Norway lobster caught with trawls	GSA7: bycatch GSA8: target	50 (but <10 really targeting Nephrops, mainly in GSA 8)	GSA7: 9t GSA8: 7-18t	<10% of total catch	unknown	unknown	unknown	Fisheries: https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/annex_en.pdf
Spain	Norway lobster caught with trawls	target	608	unknown	unknown	unknown	unknown	- Winter 74% - Spring 36% - Summer 6%	Survival rates: MINOUW project
Italy	Norway lobster caught with trawls	target	unknown	unknown	unknown	unknown	unknown	unknown	

- * The information given here should be disaggregated by exemption applied

Black Sea

For the Case of Black Sea, the following additional documents were made available:

- A letter from Bulgaria explaining the motivations for the exemption of turbot (*Psetta maxima*) caught with bottom set gillnets (GNS) in the Black Sea on the basis of high survivability.

In light of this new information the following comments apply in addition to those coming from the STECF EWG 17-03 (Table 4.3.8).

Table 4.3.8. Main findings of the STECF EWG 17-03 and summary of additional information received relating to exemptions presented: **Black Sea**

High survivability	
Fishery	Turbot (<i>Psetta maxima</i>) caught with bottom-set gillnets (GNS) in the Black Sea
Main findings of the EWG 17-03	<p>Commission Delegated Regulation (EU) 2017/87 established a discard plan for turbot fisheries in the Black Sea. This discard plan is valid until 31 December 2019 and includes an exemption on the basis of high survivability for turbot caught in bottom set gillnets (GNS). This exemption was granted for one year on the provision that the Member States concerned in the fishery should submit relevant data to the Commission to allow STECF to further assess the justifications for this exemption. However, no information was provided to EWG 17-03 therefore the working group was unable to carry out an evaluation.</p> <p>STECF also notes that according to the Delegated Act, by 1 May 2017 Member States having a direct management interest in the turbot fisheries in the Black Sea shall submit to the Commission additional discard data to those provided for in the Joint Recommendation of 4 July 2016 and any other relevant scientific information supporting the exemption laid down in paragraph 1. The Scientific, Technical and Economic Committee for Fisheries (STECF) shall assess those data referred in paragraph 3 by July 2017 at the latest.</p>
COM Comments to Regional Groups	Not available
Response by Regional Groups	Bulgaria provided a letter explaining the motivations for the exemption of turbot caught in bottom set gillnets (GNS) on the basis of high survivability.
Comments STECF PLEN 17-02	STECF notes that the letter provided by Bulgaria does not provide any discard data. The reason stated in the letter for not providing this information relates to the provisions included in Recommendation GFCM/37/2013/2 on the establishment of a set of minimum standards for bottom-set gillnet fisheries for turbot and conservation of cetaceans in the Black Sea. STECF understands that (i) if member states ensure that mesh size of the GNS is greater or equal to 400 mm as stated in the GFCM recommendation, and (ii) if turbot with a size less than 45 cm measured from the tip of the snout to the end of the tail fin (Total length) is not caught (as it is also stated in the GFCM Recommendation), then discards may be low. It is stated in the letter that gillnets use mesh size ≥ 400 mm, but STECF notes that no data are presented to support this statement, and that no length distributions are provided either..

	<p>STECF notes however that the letter from Bulgaria acknowledges that a pilot study is currently being implemented to assess the discards of turbot caught with GNS, and that data will be submitted when available. Furthermore, the letter acknowledges that discard data will be also evaluated in the frame of the DCF work plan in 2018 through on board sampling. STECF recognizes the potential value of these sampling programs that should provide discard information.</p> <p>STECF notes that the letter from Bulgaria does not provide any results on survival rates of turbot caught with GNS. The letter simply states that the Bulgarian scientists support the survivability exemption for turbot caught with GNS in the Black Sea, and on the basis of this statement, the Bulgarian authorities request an extension of the exemption.</p> <p>STECF points out that the exemption should supported by experimental studies demonstrating high survivability as with all other exemptions currently in place in other sea basins. STECF notes that according to the current discard plan, not only Bulgaria but also Romania have a direct fisheries management interest in the exploitation of turbot in the Black Sea. Romania has not provided any background on discards or justification for the high survivability exemption for turbot.</p> <p>In conclusion the information that would support a high survival exemption has not been provided and STECF cannot evaluate it.</p>
--	--

STECF conclusions

Conclusions about the EWG 17-03 report

STECF concludes the EWG 17-03 has addressed all the terms of references and has also provided information on the progress in implementing the LO.

STECF supports the EWG 17-03 observations that avoidance of unwanted catch through improved selectivity or other means should be the primary focus in implementing the landing obligation. STECF notes though that none of the JR received contain any concrete measures to promote an increased selectivity.

STECF notes similarly that none of the JR received contain any concrete measure for the control and documentation of catches. STECF understands that several regional groups of Member States have set up control expert working groups working with the European Fisheries Control Agency (EFCA) to consider this element and they have put forward a number of proposals for appropriate measures. STECF urges the regional Member States to consider these findings and implement the measures proposed where relevant and appropriate

STECF also supports the EWG 17-03 observations that the decision to accept or reject an exemption proposal based on the survival value presented is a decision for managers. STECF cannot adjudicate on whether exemptions should be accepted or not.

STECF concludes that it is necessary to better understand the complex variables affecting the survival rate of species (e.g. area, temperature, season, handling times and procedures, habitat where individuals are discarded), as well as the socioeconomic justification for the *de minimis* exemptions. This will support future evaluations of proposed exemptions, and assist managers in drawing up future discard plans.

In this regards, STECF recalls also the conclusions made by STECF PLEN-16-02 and reported in STECF 16-06 regarding the impact of the survival vs. *de minimis* exemptions in terms of discard mortality. STECF highlights that what constitutes high survival needs also to be seen in relation with the relative amount of fish that die, and not only in consideration of those that survive, and this relates not only to the survival rate but also

to the discard ratio in the fishery. STECF PLEN 16-02 had provided examples of this, highlighting that for example an exemption based on a survival rate at 51% with a discard ratio at 15% (Figure 4.3.1) implies a discard mortality of $0.51 \times 0.15 = 7.6\%$, which might be higher than with a corresponding *de minimis* exemption.

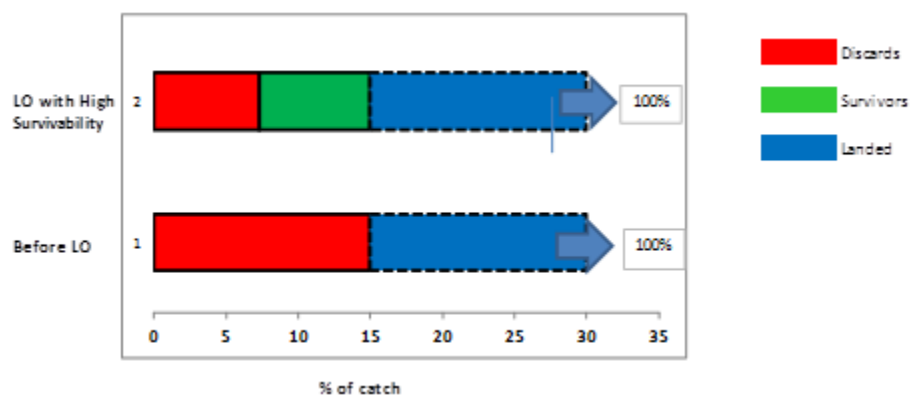


Figure 4.3.1. Discards, survivors and landed proportion using a discard rate = 15% and a survival rate = 51%

STECF highlights that there is a difference in the speed of implementation between regions. STECF notes that all stocks in the Baltic are now subject to the landing obligation. Implementation progresses vary between 74% of the number of TACs being at least partly under the landing obligation in 2018 in the North Sea to around 50% in the NWW. For the TACs which straddle two or more regions, around 50% of stocks are now covered. In non-Union waters only the Highly Migratory species are subject to the landing obligation. It is understood that other TAC species in non-Union waters will be subject to the landing obligation in 2018 but no details were available to EWG 17-03 on the number of stocks affected. STECF concludes that based on Joint Recommendations for 2018 if implemented, 55% of the TAC species will be subject to the landing obligation.

Regarding the suggestion for a combined *de minimis* for cod, haddock and whiting in trawl fisheries in the Celtic Sea and Western Waters, STECF concludes that this approach offers a degree of flexibility which may help fishermen adapt to the landing obligation in mixed fishery situations. However, STECF agrees with EWG 17-03 that for any *de minimis*, discard quantities should be deducted from the catch opportunities arising from F_{MSY} based catch advice. In this context and to respect the precautionary approach, under a combined *de minimis*, the separate *de minimis* volume for each individual species within the combined species can only be accounted for in respective stocks TACs by discounting the maximum possible amount of *de minimis* for each species that could potentially be discarded. STECF notes that this is likely to reduce the fishing opportunities for all other fleets catching these stocks. As such, any flexibility granted to some groups of vessels could have negative implications for other groups of vessels. Further analysis may be required to fully understand the trade-offs involved in this approach or in similar approaches put forward by regional groups of Member States.

Conclusions about the new information received to address some of the issues identified by EWG 17-03

STECF concludes that the regional groups of Member States have addressed some of the issues identified by EWG 17-03. Regional groups have generally clarified the fleet

segments to which the exemptions would apply and also how the *de minimis* will be calculated. The regional groups have also provided some additional information in support of several specific exemption proposals where inconsistencies or gaps were identified by EWG 17-03.

STECF notes that Bulgaria and Romania have not provided discard data for turbot caught by bottom-set gillnets (GNS) in the Black Sea as requested in the existing Regulation. STECF acknowledges the effort of Bulgaria to obtain new discard data through pilot studies and through the planned DCF 2018 work programme.

STECF also notes that Bulgaria and Romania have not provided any information to support the high survivability exemption for turbot caught by GNS in the Black Sea. STECF is therefore unable to carry out any evaluation as to whether this exemption is justified or not.

STECF concludes that regarding the *de minimis* exemption requested for the Hake caught with trawls in directed fisheries in ICES subareas VIII and IX, some information is still missing (*de minimis* recorded and French fleet data). STECF notes that the selectivity experiments presented were not successful in reducing catches of unwanted hake, but comparative information of the selectivity with larger mesh size is not available. Further selectivity experimentation could provide estimates of baseline selectivity of existing gears to allow comparison with experimental gears.

STECF concludes that regarding the high survivability exemption requested for *Nephrops* caught with trawls in ICES subareas VIII and IX, the supporting information provides robust scientific estimates of discard survival for one Functional Unit (FU23).

STECF concludes that most of the missing fleet and fishery information requested for the North Sea *de minimis* exemptions and high survivability exemptions has been provided by the Member States and was considered adequate. However, no information has been provided in relation to nursery areas for sole related to the high survivability exemption for areas IVc and VIId.

Conclusions on the JRs in the Mediterranean Sea

STECF concludes that the ADRIATICA and SUDESTEMED HLGs have not provided information to support the changes in the *de minimis* levels proposed in the JRs for the Adriatic Sea and South Eastern Mediterranean. In the absence of such information STECF is unable to assess whether an increase from 3% to 5% *de minimis* in some GSAs (i.e. small pelagic purse seines fisheries in (i) the southern Adriatic and Ionian Sea, (ii) the Malta Island and South of Sicily and (iii) the Aegean Sea and Crete Island) will have any additional impact in terms of increased catch of the corresponding small pelagic species .

STECF notes the inclusion of GSA 25 (Cyprus) in the JR for the South-eastern Mediterranean. However, in the absence of any justification to support the inclusion of this GSA, STECF cannot comment further.

Regarding the assertion raised in the letter accompanying the ADRIATICA JR, relating to slipping in purse seine fisheries, STECF considers that a request for high-survival exemption is necessary as slipping represents discarding. Any such request should be supported by relevant scientific evidence. This would be consistent with similar requests received from other regions for exemptions in purse seine fisheries on the basis of high survivability.

STECF emphasises that JR that are dealt with by plenary cannot receive the same amount of scrutiny and consistency check than those addressed in the dedicated EWG. STECF considers that JR should be submitted in time for the EWG.

4.4 EWG 17-05 Fisheries Dependent Information - Classic

Request to the STECF

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

STECF response

One meeting of the STECF EWG dealing with FDI was scheduled for 2017. The report of EWG 17-05 has been prepared using the same format as in 2016; all major tables are placed at the end of the report and related information made available on the STECF website through the JRC dissemination site.

STECF notes that the Terms of Reference relating to fishing effort and catches in the following sea areas have been addressed fully by the Report of the EWG 17-05:

1. Baltic Sea,
2. Kattegat,
3. Skagerrak, North Sea and the Eastern Channel,
4. West of Scotland,
5. Irish Sea,
6. Celtic Sea,
7. Atlantic waters off the Iberian Peninsula,
8. Western Channel,
9. Western Waters and Deep Sea
10. Bay of Biscay.

The EWG 17-05 Report is based on data submitted by Member States in response to the 2017 FDI-classic Data Call (Ref. Ares (2017)1601140 - 24/03/2017). Only the data for 2016 were requested but some member states also resubmitted some historical data to correct data submitted in previous years.

As last year, all data used by the EWG 17-05 was submitted by the Member States through the JRC upload facility. STECF notes that the data upload facility functioned well. STECF also notes and that the processed data has been made available to the working group experts through a secure access version of the Data Dissemination Tool and the introduction this year of additional post-upload data checks on the JRC secure server. STECF welcomes this progress.

STECF notes that since 2016 the upload facility has been altered to be more 'strict' in order to improve the quality of uploaded information, i.e. there are more instances where data files are rejected if containing incorrect codes. Even so, with one exception, all data requested in the FDI Data Call were provided by the Member States in time. STECF also notes a generally high, and improving, standard in member states' submissions with regard to data completeness, timeliness and quality. Completeness and quality are being improved further by the willingness of member states to investigate and produce corrections where necessary in response to the post upload checks and ahead of the EWG. To endorse where possible the data provided by the member states in response to the data call, and/or to comment on quality, (also to highlight any unexpected evolutions in the estimated parameters which are not in line with the general trend), the EWG 17-05

was asked to prepare a table describing data transmission issues by country. STECF welcomes the EWG 17-05 presentation of the overview of MS responses to the Data Call and notes the year on year reduction in the number of outstanding issues by the end of the EWG.

However, STECF notes that information on landings and discards from small vessels (without logbooks) remains very sparse.

As noted above the report of EWG 17-05 is in the same format as last year. This was agreed at STECF PLEN-16-03 because the data dissemination tool currently performs an electronic dissemination of STECF report tables, while the report provides the necessary references to data sources and to the analyses performed. In addition it is important to maintain a process by which experts check and verify the processed data, and producing tables and figures is one way to identify possible mistakes. STECF notes that (minor) errors in data were found and corrected as part of the report production process this year.

STECF notes that the EWG discussed the raising of discard data and the practice of providing discard estimates for those vessel/gear groups for which estimates were not provided by Member States ("fill-ins"). STECF also notes that the EWG found a number of discard values obtained after the raising to be unrealistic. For transparency the EWG decided to not raise discards; also to not show catch results where they were not considered representative of true catch levels.

STECF also notes that in estimating overall discard rates for each gear group across MSs, which are used in computing TAC top-ups for those stocks subject to the Landing Obligation, the EWG 17-05 used only those estimates provided by the Member States, without any raising.

STECF understands the concerns expressed by the EWG on the potential risk of automatic discards raising procedures to provide unrealistic figures, mainly in those strata where the available discard information is scarce. These automatic procedures have been used in the FDI database over the last decade. These concerns are well known and well founded, and are among the drivers calling for the "new-FDI" to be used from 2017 on. The reasons and magnitude for the discrepancies in discard estimates between the FDI database and ICES assessments (which involve more manual raising procedures for unsampled countries and métiers) have been investigated in details in STECF 2013 [LO part 1 STECF 13-23]. There it was observed that discrepancies were of limited extent for several commercial stocks, but could be more substantial for less well sampled stocks and for stocks with either very high or very low discard rates.

Nevertheless, STECF decided to revert to the old raising procedure for calculating the TAC top-ups, on the basis of several considerations:

1. In the absence of a discard estimate, a value of zero was used for those gear groups that were not sampled, implying that such gear groups are assumed to have zero discards. Hence the average discard rate for such gear groups would be an underestimate of the true discard rate.
2. It was considered preferable to maintain consistency with the procedure applied in previous years to compute TAC top-ups
3. It was noted that these discards estimates, although possibly unrealistic, are not used as absolute values to compute the TAC top-ups, but only as fractions of the overall top-up; as such, the total top-up cannot exceed the ICES catch advice and the discard estimates used do therefore not pose higher risks for the stocks
4. It is understood that the current FDI database will no longer be updated, and that revised procedures will be available next year in the new-FDI. Therefore, it was considered the most pragmatic approach to complete the current time series with

unchanged procedures and dedicate effort to improve the new FDI rather than changing the current one.

Hence, for the above reasons STECF recalculated the average discard rates for gear groupings across Member States as in previous years, and removed the original tables from the EWG report. The STECF estimates are given in annex of the STECF comments on the EWG plenary report.

STECF notes that the tables 5.1.2-5.1.5 and 5.1.7-5.1.8 contained in the STECF plenary report (PLEN-16-03) (Top-up tables) using FDI data from 2015 and 2016 were thus not available to the plenary. Tables 5.1.4, 5.1.5, 5.1.7 and 5.1.8 could not be calculated as Member States did not submit the necessary information. Updates to tables 5.1.2 and 5.1.3 will be provided afterwards, using the same raising procedures as in previous years. The tables will thus be published through written STECF procedure after publication of the plenary report.

STECF notes that the effort management regimes which motivated formation and maintenance of the FDI data base are being repealed as the area based multi-annual plans and the landing obligation come into effect. It further notes that with respect to future activities a new data call 'New-FDI' has been developed by JRC in consultation with multiple end-users and data providers, to better reflect new developments in the management applying in European waters. The intention is for the 'New-FDI' to replace the "FDI-classic" as the reference database for transversal data plus age (and additionally length) based landings and discard data. STECF notes that the content of the two databases are sufficiently different so that the 'New-FDI' is likely not to be considered as a continuation of the FDI-classic.

STECF notes that it is important that the 'New-FDI' data handling process should include transparent and clearly documented procedures/code on how the data is processed post upload, so the EWG can track and understand the implications of any changes to the procedures.

Taking into account the enormous amount of valuable information available in the FDI-classic database and its proven usefulness in the past, STECF considers that it may not be prudent to stop this database before the New-FDI has proven its utility and reliability.

4.5 EWG 17-07 DCF 2016 Annual reports evaluation & Data Transmission to end users in 2016

Request to the STECF

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

STECF response

Background for the EWG 17-07

The STECF Expert Working Group (STECF EWG 17-07) met in Gavirate, Italy, from the 26th to the 30th of June 2017 to assess Annual Reports (AR) for the data collected in 2016 by the 23 non landlocked Member States submitted as part of the Data Collection Framework and to evaluate Member States (MS)' transmission of DCF data collected in 2015 (and submitted according to data calls in spring 2016) based on information from end users and Member States' clarifications & explanations in response to the end users feedback.

Under the process of evaluation and approval of the outcomes of the National Programmes (NP), the European Commission is consulting STECF about the execution of the NP approved by the Commission and about the quality of the data collected by the Member States in accordance with articles 7.1 and 7.2 of Council Regulation (EC) No 199/2008.

In addition, the EWG 17-07 was requested to discuss how the methodologies used for the evaluation exercises of AR and DT (data transmission) failures can be simplified and streamlined in light of the new legislative framework and on-going technological developments.

Ten independent experts pre-screened the MS annual reports (AR) and the data compliance feedback from the end users before the EWG meeting. As an output of the evaluation of ARs and DT issues, the EWG was requested to produce for every MS: a) an evaluation of the AR in a table template provided by the Commission; b) an evaluation of the DT issues, commented by MS and pre-screeners, including an STECF judgment on whether the MS comments are acceptable. The evaluation process at the EWG was set up to focus on topics where the pre-screeners have raised a problem or where the pre-screeners' final assessment of a particular point has revealed to be contentious.

STECF observations

As a general comment, STECF observes that the assessment of DT issues and the evaluation of AR should be better aligned. To date for instance, the EWG 17-07 evaluated AR on data collection activities performed in 2016, but assessed the DT issues of the data call from the previous year, which means e.g. 2015 biological data and 2014 economic data. This alignment would be needed to link data transmission failures with the corresponding annual reports, and to link those directly with any subsequent necessary amendment required in the Work Plans for the following period. .

Evaluation of Annual Reports

STECF acknowledges that despite the very tight deadline between the EWG 17-07 and the STECF plenary, the EWG report was finalized in time to be presented and reviewed.

STECF acknowledges that the EWG was able to address the terms of reference with regard to Annual Reports (AR) and Data Transmission (DT) evaluation and analysis, resulting in a list of follow-up actions to be addressed by MS.

STECF notes that the AR and DT pre-screening, as in previous years, has proven to be an important and very helpful preparation for the evaluation process. To undertake the pre-screening exercise the COM provided the pre-screening experts with an updated version of the evaluation template previously used. The updated evaluation template included new columns: (i) 'Issues addressed', (ii) 'Minor/Major Issue'. In the case of minor issues, the pre-screeners were requested to give a final judgement.

STECF observes that overall, the level of compliance of the 2016 Annual Reports with National Programs shows an improvement compared with previous years. This improvement refers both to the achievements attained by MS and to the reporting procedures. The ARs of 7 MSs reached a "mostly" (50-90%) overall compliance and ARs of 16 MSs were assessed with a "yes" (>90%) overall compliance. Last year, the overall compliance for 3 MS was "partially" (10-50%), the ARs of 6 MSs reached a "mostly" (50-90%) overall compliance and ARs of 14 MSs were assessed with a "yes" (>90%) overall compliance.

STECF observes that there is a need to improve the communications between STECF and the other bodies involved in the implementation of the DCF. So far, outcomes of ARs evaluations have mainly be used into bilateral discussions between COM and MSs. But STECF considers that the outcomes of the evaluation process are also useful to identify gaps in data collection at the regional level, comparing activities and achievements among MSs fishing in the same region. STECF suggests thus that the outcomes of the evaluation could also be addressed with the appropriate regional groups such as the RCG's, PGECON and others.

Evaluation of data transmission (DT) issues

Regarding the assessment of data transmission issues, STECF notes that, as in previous years, the online compliance platform provided by the JRC on the DCF website facilitated the work of the experts. Some improvements to this platform are suggested in the conclusions.

STECF notes that, compared to previous years, the number of DT issues has decreased. This trend was due to improvements in MS data collection and transmission but, also, to a different approach applied by ICES in 2016. ICES has increased the direct communication with MS's on DT failures, and filtered out miscommunication or inappropriate failures prior to the STECF-EWG 17-07. STECF agrees with EWG that this has been a useful approach for improving data transmission as the number of outstanding DT failures was much reduced, and all failures could be evaluated. STECF also observes that in some cases the DT issue identified by an end-user is not always clearly and explicitly described.

STECF observes that no feedback on data transmission was received from the GFCM Secretariat. Representative of the GFCM Secretariat informed EWG that within the context of the new Data Collection Reference Framework (DCRF), the implementation of tentative data quality indicators (i.e. conformity, stability and consistency indicators for data quality checks with preliminary thresholds) have been approved by the GFCM Compliance Committee (CoC) in January 2016; once consolidated these will allow a more comprehensive assessment of the submitted data.

STECF conclusions

STECF concludes that the EWG 17-07 report adequately addresses all Terms of References. STECF endorses the findings presented in the report.

In addition, the STECF discussed the following:

Evaluation of Annual Reports

- The overall AR evaluation process has improved over the past years through the use of pre-screeners and the progressive evolution of the evaluation sheets. In particular, the new columns added in 2017 evaluation template were considered useful. However, the process still requires various manual cross-checks between tables and checks on formatting and editorial issues. STECF again (cf. EWG 14-17, 15-10, PLEN 16-02) concludes that there is an urgent need for online reporting and automatic checking tools for effective and efficient compilation and monitoring of ARs;
- The evaluation procedure for the AR under the EU MAP 2017-2019 has to be revised according to the new amended regulation framework. STECF suggests that the format and guidelines for Annual Reports be revised before the end of 2017 to allow for implementation by Member States during early 2018;
- A traffic light table by regions could be added in the EWG evaluation report in order to introduce a regional component in the evaluation, which would ease the communication of the AR assessment results to the Regional Coordination Groups (RCGs).

Evaluation of data transmission (DT) issues

- The online platform for data transmission issues should continue to be used and if possible improved according to the proposals in the EWG 17-07 report (adding an extra column to flag recurrent issues, better identification of data call names). The platform should be used by end users to upload DT issues, as a tool for communication with MS;
- Data transmission issues should only relate to actual data collection failures (data/variables not collected, data/variables not transmitted at all or not transmitted according to deadlines, incomplete coverage of the fleet, poor data quality). DT issues that relate to file consistency and format/coding requirements (cross checking of variables in different tables, decimals, small divergences in average values, etc.) should not be flagged as DT failures but should be addressed and solved with MS soon after the submission of data;
- The number of data transmission issues for the 2016 Mediterranean data call was very high (95). Several of them are flagged as "low severity" and the majority of them have been assessed by the EWG as "satisfactory", meaning that MSs' replies on each individual issue have been considered appropriate and the data issues do not refer to actual data collection failures. It remains however unclear whether these issues are addressed and corrected in future data collection. The overall process should be streamlined because at present MS are informed on the DT issues emerged during the quality checks performed by JRC, but it would be more beneficial to communicate DT issues that actually impacted the work of the stock assessment WGs. The present process is not useful to identify drawbacks in data collection activities and it does not allow MS in identifying gaps to be addressed

and corrected. STECF considers the need to improve the dialogue between MS and end users at regional level. STECF suggests to establish an ad-hoc working group within the Mediterranean & BS RCG (as specified in article 9 of EU Reg. 1004/2017) to deal with data transmissions issues. This group could be established during the forthcoming MED&BS RCG meeting in September. The group could then meet or hold web conferences every year to assess the data failures identified by end users in stock assessment meetings and when appropriate discuss the data needs for the next year(s). MED&BS MSs and regional end-users (namely GFCM and STECF/JRC) should be part of this dialogue;

- Regarding the Fleet Economic Data Call, the process of identification of the DT issues starts right after the data calls and MS are initially informed of any problems in data transmission. MS are allowed to resubmit the data if some errors have to be corrected. In this case, the list of still pending DT issues should be updated by the second AER EWG (and not by JRC), for the MS who proceeded with resubmission. This task does not happen at present, and should be explicitly be added to the ToRs for the AER group. Actual data failures should be separated from coding and format issues. Such an approach will also allow any DT issues for a given data year and the AR on data collected in that year to be assessed simultaneously.
- The procedure to identify and to assess DT failures should follow a step by step process as illustrated in figure 4.5.1 to ensure consistency among end-users and to guarantee a systematic consultation among end users and MSs.

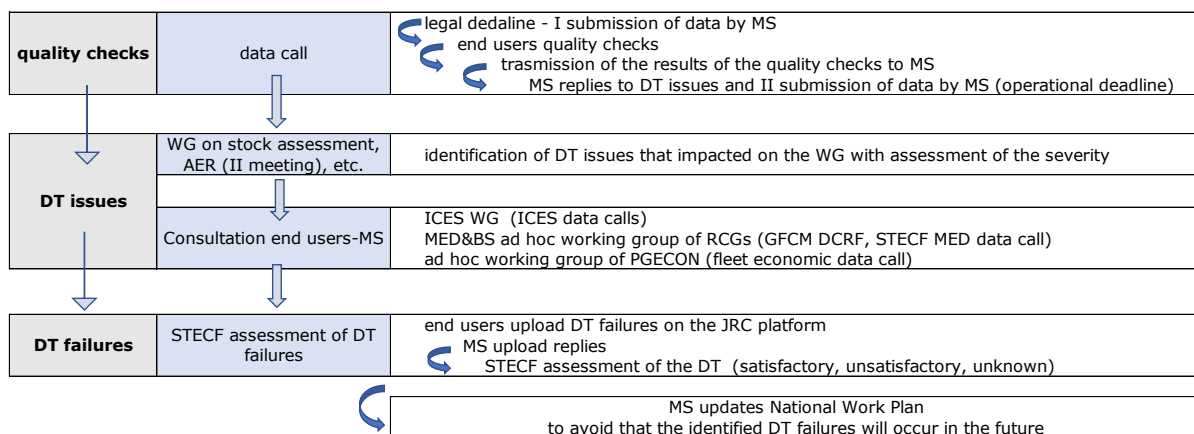


Figure 4.5.1. Process for identification and assessment of DT failures

Future improvements in methodologies used for the evaluation exercises of AR

Article 11 of EU Reg. 2017/1004 requires Member States to submit to the Commission on an annual basis a report on the implementation of their national work plans (NWP), following guidelines and format provided by the Commission. In accordance with Article 10, STECF shall evaluate: (a) the execution of the national work plans; and (b) the quality of the data collected by the Member States.

a) Evaluation of Annual Reports (AR) - execution of the national work plans

STECF suggests that the present evaluation procedure with the pre-screening exercise should continue to be used but one additional consultation with the MS could be introduced between the pre - screening and the EWG, as suggested by EWG 17-07. This additional step would allow MS to respond to pre-screeners’ comments and clarify any

issues raised. Such an approach is likely to reduce the number of outstanding issues to be addressed by the STECF EWG.

STECF considers that the time schedule proposed by EWG 17-07 is too tight and therefore suggests following the schedule reported in figure 4.5.2.

The revised DCF does not prescribe any deadline for submission of AR. Therefore, on the basis of suggestions from EWG 17-07 and according to the proposed annual cycle for reporting and evaluation given in figure 4.5.2, STECF proposes to anticipate the delivering of the AR to the middle of May.

STECF considers that the present evaluation procedure should be adjusted to allow a more efficient evaluation of ARs. This could be done if the format of ARs is simplified as follows:

- AR text should only report a) deviations from NWP planning and the reasons for these deviations, b) follow up of recommendations from Regional Coordination Groups (RCGs) and PGECON
- AR tables should be aligned to NWP tables and should be maintained in a online tool to allow for comparison, cross-checking and assessment of the level of execution.

The simplification of AR formats will also help in anticipating the presentation of the AR, as proposed above.

b) Evaluation of Annual Reports (AR) – evaluation of the quality of the data collected by the Member States

Conclusions and suggestions are reported in section 4.6 of this plenary report (EWG 17-04 Quality assurance for DCF data).

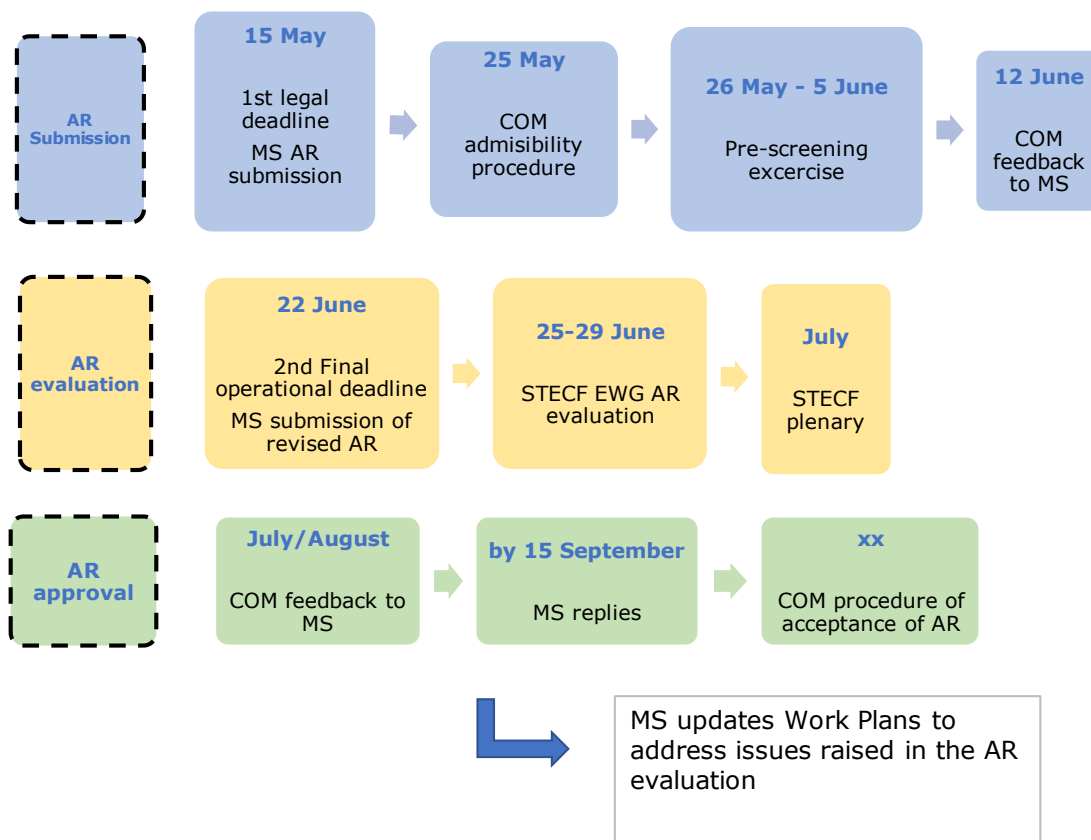


Figure 4.5.2. AR annual cycle for reporting and evaluation (dates reported in the figure refers to AR2017 to be submitted, evaluated and approved in 2018)

4.6 EWG 17-04 Quality assurance for DCF data

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 response

Background of the EWG 17-04

The quality of DCF data was formerly evaluated by the use of the coefficient of variation (CV). However, this is no longer the case, as previous STECF EWGs have come to the conclusion that the levels of CVs, as requested by the previous EU MAP, are not realistic and therefore cannot be met by Member States. As a result, this quality indicator has been removed from the Annual Report template of Member States. In addition, the new EU MAP no longer prescribes specific quality indicators for the reporting of Member States under the DCF. Instead, there is a more general reference to quality assurance in the Work Plan template. STECF Plenary (PLEN-16-02) discussed quality assurance procedures for biological and economic data under the DCF and suggested a dedicated EWG on data quality to establish: (a) guidelines on data quality for Member States; (b) main principles of evaluation of data quality for STECF EWGs; (c) minimum/ meaningful requirements. Although a wealth of information exists on data quality, clarity is missing on what should be the requirements for data quality under the DCF. The aim of the EWG 17-04 was to create a roadmap with timeline for all steps of the procedure of sampling pertaining to quality: 1) planning; 2) implementation; 3) reporting; 4) evaluation.

The EWG 17-04 took place from 3-7 July 2017 at ICES in Copenhagen and was attended by 20 independent experts, 5 Commission members (3 DG MARE, 2 JRC) and 2 observers.

STECF comments

STECF acknowledges that the Commission has established EWG 17-04 based on a suggestion by STECF PLEN 16-02, in order to "*improve the guidelines on data quality for MS and set the main principles for evaluation of data quality and results of data collection as well as establish minimum/meaningful requirements*".

STECF acknowledges that the EWG 17-04 took place the week just before the STECF plenary. A draft EWG report was made available in time to be presented and reviewed. However, this STECF review of the EWG outcome is primarily based on the presentation by the EWG chair held during the Plenary meeting rather than on the draft report.

STECF considers that the EWG 17-04 has fully addressed all Terms of Reference and provided various suggestions for improvements of the Quality Assurance Framework for DCF data, including amendments to the Work Plan templates and Annual Report requirements.

STECF notes that the assessment of data quality has been addressed in many other fields (Eurostat, ISO norms, Farm Accountancy Data Network (FADN), etc.) and that existing principles (e.g. European Statistical System (ESS), ICES, GFCM etc.) criteria and guidelines should be fully utilised in the context of DCF data. STECF notes that PGECON has already made some steps in that direction.

STECF further notes that various parties are involved in the process of assessing and improving data quality, e.g. Member States, data end-users, STECF, regional coordination groups (RCGs), PGECON. STECF considers that the roles of these parties

have to be clarified based on the suggestions of the EWG 17-04, and once clarified, be taken up as firm commitments by the involved parties.

STECF acknowledges that its own role is enshrined in the EU regulation (2017/1004), which specifies that "*STECF shall evaluate the national and draft regional work plans referred to in Articles 6 and 9. When doing so it shall take into account: (a) the conformity of the work plans and any amendments thereto with Articles 6 and 9; and (b) the scientific relevance of the data covered by the work plans for the purposes laid down in Article 1(1) and the quality of the proposed methods and procedures.*" (Article 10) and

"In accordance with Article 10, STECF shall evaluate: (a) the execution of the national work plans; and (b) the quality of the data collected by the Member States." (Article 11).

As the DCF data quality assessment is strongly linked to the evaluation of DCF Annual Reports and Data Transmission, as well as the Annual Economic Report and other STECF reports, STECF provides general observations and suggestions for future improvements in this context in section 4.5 of this plenary report.

STECF also notes that metadata (e.g. on the number of samples from which the variables have been derived) and quality indicators should be reported with the data during data calls and stored in the respective regional or international databases. These databases should also be used to facilitate MS producing tables for the Annual Report and to inform STECF during evaluation of the quality of the data collected by MS.

STECF conclusions

STECF concludes that the findings of EWG 17-04 should be fully considered by the Commission and supports the implementation of the suggested ways forward, including (i) better use of international standard procedures for quality assurance and transparency in protocols, (ii) areas of convergence between biological and economic sampling, (iii) improved statistical design and optimisation of sampling programmes.

In addition, STECF considers that perennial regional/international databases storing the detailed or aggregated data collected by Member States and adapted to the needs of relevant end-users would play an important role in the quality assurance of DCF data and facilitate the access to and use of data collected under the DCF. Regional Databases (RDBs) allow producing summary reports at regional level where metadata are presented and metrics are estimated together with their uncertainty. Additionally, RDBs allow for some internal peer-review, where data collected by one MS can be more easily used, and thus cross-checked, by other users. STECF supports therefore that steps are undertaken to further ensure the existence and maintenance of such databases.

Regarding Work Plans, STECF concludes that the current guidelines for the evaluation of Work Plans should be revised based on the suggestions of the EWG 17-04, to facilitate the STECF evaluation of the quality of the proposed methods and procedures. Additionally, the suggestions for changes in the Work Plan tables should be taken into account for future revisions of the Work Plan templates.

Regarding Annual Reports, STECF suggests that the format and guidelines for Annual Reports be revised before the end of 2017 and used by Member States during early 2018. That would enable the assessment of the quality of data collected by Member

States under the revised EU MAP. For this revision, the suggestions of both the EWGs 17-04 and 17-07 should be taken into account.

In the medium term, STECF suggests that the proposals of the recent EWGs on the review of Annual Reports and Data Transmission (STECF EWGs 13-07¹, 14-07², 15-10³, 16-08⁴, 17-07⁵) and the EWG 14-17⁶ (revised at EWG 15-15⁷) with regard to improved information flow for National Workplans and Annual Reports are implemented. STECF acknowledges that the Commission has launched the "FishHub" project (MARE/2015/04) that includes a proposal for *"a tool (...) that will enable to simplify the transmission and analysis of WPs and ARs and to automatize/verify the intended/mandatory data collection with the achieved data collection"*.

-
- 1 Scientific, Technical and Economic Committee for Fisheries (STECF) – Evaluation of 2012 MS Technical Reports under DCF (1) (STECF- 13-07). 2013. Publications Office of the European Union, Luxembourg, EUR 26090 EN, JRC 83658, 183 pp.
 - 2 Scientific, Technical and Economic Committee for Fisheries (STECF) – Evaluation of 2013 MS DCF Annual Reports & Data Transmission (STECF-14-13) 2014. Publications Office of the European Union, Luxembourg, EUR 26811 EN, JRC 91550, 257 pp.
 - 3 Scientific, Technical and Economic Committee for Fisheries (STECF) Evaluation of 2014 MS DCF Annual Reports & Data Transmission (STECF-15-13). 2015. Publications Office of the European Union, Luxembourg, EUR 27410 EN, JRC 96975, 287 pp.
 - 4 Reports of the Scientific, Technical and Economic Committee for Fisheries (STECF) – Evaluation of DCF 2015 Annual Reports & Data Transmission to end users in 2015 Quality assurance procedures (STECF-16-12); Publications Office of the European Union, Luxembourg; EUR 27758 E; doi:10.2788/352294
 - 5 <https://stecf.jrc.ec.europa.eu/ewg1707>
 - 6 Scientific, Technical and Economic Committee for Fisheries (STECF) – Preparations for future data collection under the revised DCF (STECF-14-24). 2014. Publications Office of the European Union, Luxembourg, EUR 26954 EN, JRC 93103, 44 pp.
 - 7 Reports of the Scientific, Technical and Economic Committee for Fisheries (STECF) – Evaluation of Proposals to Revise DCF National Programmes for 2016 (STECF-16-01). 2015. Publications Office of the European Union, Luxembourg, EUR 27758 EN, JRC 100350, 68 pp.

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

5.1 Interspecies flexibility

Background provided by the Commission

At the Council in December 2016 Council and Commission gave a joint statement taking note of requests from certain Member States to introduce specific by-catch provisions in fisheries targeting pelagic species. The requests were put forward with a reference to the choke species issues that arise with the landing obligation. Member States putting forward the requests asked for provisions like the footnotes that currently apply to certain industrial fisheries (sandeel, sprat, Norway pout and horse mackerel).

Please refer to the joint Council and Commission statement from December 2016 for any additional information.

Request to the STECF

The STECF is requested to review the data received from Member States on bycatches in particular pelagic fisheries, and on this basis, if data are robust, the STECF is asked to identify the levels of recurrent bycatches in the following fisheries:

- The blue whiting fisheries in the North East Atlantic
- The mackerel fisheries in the North East Atlantic
- The horse mackerel fisheries in:
 - Union waters of IVb, IVc and VIId,
 - Union waters of IIa, IVa; VI, VIIa-c, VIIe-k, VIIIa, VIIIb, VIId and VIIIE; Union and international waters of Vb; international waters of XII and XIV,
 - Area VIIIC,
 - Area IX.
- The herring fisheries in:
 - Area IIIa,
 - Area IV,
 - Areas I and II.

This review of the above mentioned fisheries should be at the area-level perceived as relevant by the STECF, this could for example be according to TAC areas.

The STECF is furthermore requested to:

- Reflect on the possible impacts of introducing footnotes in certain pelagic fisheries and associated risks, introducing bycatch provisions to be deducted from the targeted species, in the light of solving the issue of choke species in the

introduction of the landing obligation. Such impacts could *for example* be biological or in terms of fisheries management and control.

- Review if it is possible through other measures, for example specific selective devices or the use of alternative gears to reduce or eliminate these bycatches in the pelagic fisheries.

Annex – further explanations of the data provided

Data from Germany

Germany provides aggregated data covering 2014-2016 for certain bycatches in pelagic fisheries. An overview is provided for the German catches for the stocks JAX and MAC as well as the catches recorded under special conditions separately per species and stock for which by-catches have been reported, e.g. BOR/567. Additionally a table is added with rough figures on reported discards in JAX and MAC-fishing trips. As to HKE/571214, by-catches and discards do not only occur in the JAX/MAC fishery but also in the fishery on Blue Whiting in areas 6A and 7. The data is primarily provided at the level of TACs. The discard data provided have to be seen in addition to the reported catches. The discards reported under OTH can currently not be related to specific species. The BMS data was included as it has a bearing on quota management. Since 2016 the relevant BMS data are counted against the quota. This data is reported accordingly to the EU.

Data from the Netherlands

The Netherlands provides data covering 2016 for all pelagic catches, including undersized. The data is provided per fishing trip, specifying the level and percentage of catches/bycatches per species. The data also covers catch data outside EU waters (CECAF) – these can be disregarded. The data is provided at the level of ICES divisions.

Data from Denmark

Denmark provides aggregated catch data for 10 years (2007-2016), covering for each of the years bycatches (both TAC and non-TAC species) caught in the targeted fisheries for herring and mackerel. The data are provided at the level of ICES divisions. The Danish data is provided along with a letter setting out the specific requests for additional bycatch species to be added in a footnote.

STECF response

To address this TOR, STECF has reviewed the material supplied by 3 Member States and also referred to the STECF FDI database (STECF EWG 16-20), various TAC and Quota Regulations (COUNCIL REGULATION (EU) 2015/104; 2017/127) and the Council, Commission statement referred to in the background (see Appendix 1 to this section) .

Bycatch refers here to landings, not to discards. Bycatches are usually recorded onshore when being sorted in the factories, and not through on board observers programs. STECF notes also that the bycatch estimates can be considered as uncertain, as they are not always recorded in the logbooks.

Review of material supplied by MS

STECF examined each of the data submissions and considered whether these were sufficiently robust to identify recurrent levels of bycatch. Some cross-checking for reliability in the data was possible using the publicly available STECF FDI (Fisheries Dependent Information) database. Using the landings reported by area for pelagic trawls

it was possible to broadly check member state landings of target pelagic species and of bycatch demersal species. Information on bycatch pelagic species could not be checked in this way since the FDI cannot be used to discriminate between target and non-target landings of a given pelagic species in a particular gear type.

Data from Germany are provided on <https://stecf.jrc.ec.europa.eu/plen1702>. The information consists of landings data for 2014-2016 from mainly horse mackerel and mackerel targeted fisheries. Landings of the target species reported in the submission are very similar to those reported in the FDI database. Landings of bycatch demersal species are mostly small (<10 tonnes) and variable from year to year and values frequently differed from the FDI data. Landings of bycatch pelagic species were larger, (for example 250 tonnes mackerel in the widely distributed horse mackerel fishery amounting to about 2% of the target species landing)

Data from Denmark are provided on: <https://stecf.jrc.ec.europa.eu/plen1702>. The information consists of a comprehensive set of area based landings data from 2007 to 2016 subdivided into target pelagic species each with associated bycatch information and an indication of the bycatch percentage. In general, the agreement between the submitted data and the FDI database was closer for Area IV than Area III. In the following text, % of bycatch are given in reference to the total landings of the given fishery in a given area, average over the last 5 years, and according to the MS data, not the FDI database. Mackerel fishery: Bycatches in area III were generally quite small and in the last 5 years limited to one case of herring bycatch (2.5 tonnes amounting to 2.2%). In area IV, bycatches of blue whiting and herring were more significant and recurrent in the case of the latter (landings between 47 and 460 tonnes in the last 5 years; overall bycatch was in the range 0.3 to 1.9% in the last 5 years. Herring fishery: In the targeted herring fishery in area IIIa, blue whiting contributed some of the largest bycatches (up to 41 tonnes in one year in the last 5 years) while mackerel and saithe contributed small intermittent landings (maximum 23 tonnes in one year in the last five years). Overall bycatch has increased in the last couple of years in IIIa Skagerrak (3.8%). In the North Sea (area IV) herring fishery, there is evidence of recurrent bycatch landings of saithe and mackerel, particularly in IVa where the quantities have increased in recent years. Overall bycatch in the North Sea has mostly been below 1% but in IVb reached about 1.5 % in 2015. Blue whiting bycatches occurred more sporadically. Atlanto scandinavian herring fishery in IIa: In the Atlanto scandinavian herring fishery, bycatch landings of blue whiting and saithe have been made on a regular basis, the latter at a relatively small scale. Overall bycatch has been higher in the last three years (up to 2.6%) mostly owing to blue whiting bycatch.

Data from the Netherlands consisted of a very large file of individual vessel landings for all pelagic trips in 2016. No indication was provided of the species targeted during each trip. STECF has summarised the material into a simpler table of landings by species by area (Appendix 4) – no attempt was made to subdivide the material by target species. Since only one year's worth of data was provided it was not possible to consider whether bycatch levels are recurrent and since the FDI data for 2016 remain to be published, crosschecking with these data was not possible. Depending on area, landings of target pelagic species were often large and in line with TAC expectations. Landings of many bycatch demersal species were small or non-existent in a number of areas. A notable exception was a large (604 tonnes) bycatch landing of hake in Area VI.

STECF notes that the existing TAC and Quota Regulation (TQR) footnote provisions for sandeel, sprat, horse mackerel and Norway pout are in the range 2-5% of the target species (TAC and Quota Regulation COUNCIL REGULATION (EU) 2017/127). The provision allows up to the prescribed percentage of the target species TAC to comprise landings of a specified list of species. STECF notes that in the case of the *current* request for horse mackerel, this *adds* to the list of species already covered in the existing footnote provision.

STECF comments

Bycatch levels

STECF notes the part of the information provided by MS that could be compared with FDI outputs, showed reasonable agreement. The data, however, do not provide a basis to robustly identify and estimate levels of recurrent bycatches in the various target pelagic fisheries. There are several reasons. Firstly, data from two countries (Germany and the Netherlands) covered insufficient periods of time (3 years and 1 year respectively) on which to base such a judgement. Secondly, the data relate to only three countries, primarily fishing in the North Sea, and such a limited number of countries cannot be considered to provide a robust picture of what is occurring across the wider range of European countries exploiting pelagic stocks. STECF considers that the perceptions gained from specific Member States in specific fisheries and specific areas cannot be extrapolated to fisheries in other sea areas, as current bycatch levels and possible industry response to footnotes might be completely different, especially for fisheries operating at much wider scale. Detailed bycatch information is therefore crucially needed for all types of pelagic fisheries, in order to get a reliable estimate of bycatch levels. The material provided by Denmark, while alone inadequate for addressing the TOR, is nevertheless more informative than the material provided by Germany and the Netherlands, including in particular a larger range of years and a better split between target and bycatch species. Similar material from all pelagic fleets operating across the EU waters listed in the request would be required before a full assessment could be undertaken.

In order to help provide a more general picture of bycatch quantities occurring in the pelagic fisheries, aggregate data (across all countries) on landings recorded for Pelagic trawl gear was extracted from the FDI database (thus not including industrial fisheries operating with other gears). Owing to the confounding problems mentioned above, only bycatch data of demersal species was extracted and the selection was based on some of the key demersal species proposed in the Council/Commission joint statement for inclusion in footnote provisions (see Appendix1). STECF cannot though assess the quality and completeness of these demersal bycatch reported by Member State in the FDI.

Table 5.1.1 shows landings and discards by species and area for the years 2011 -2015. These provide a preliminary guide to the current scale and recurrence of bycatch species in the main gear used to catch pelagic species. For some species only relatively small bycatches appear to occur (e.g. flounder, plaice and sole). For others, quite substantial bycatch landings of some demersal species occur in some areas. Most notable examples of landings in 2015 are hake in areas VI (641 tonnes) and VIII (4058 tonnes) and whiting in areas III (511 tonnes), IV (1834 tonnes) and VII (288 tonnes landings). In the case of whiting in IV, some of this catch may come from the existing 5% provision associated with the horse mackerel TACs applying in the area. STECF notes that the scale of this pelagic gear landing of whiting in area IV in 2015 (over 1800 tonnes) is a bycatch equivalent to more than 13% of the agreed 2015 whiting TAC in the area (13678). This also exceeds, by some margin, the 2015 agreed individual whiting quotas of 5 EU countries operating demersal fisheries in the area.

Table 5.1.1 Pelagic trawl landings and discards by species and area for the years 2011 - 2015 (from FDI database).

species	Area	2011		2012		2013		2014		2015	
		landings	discards	landings	discards	landings	discards	landings	discards	landings	discards
COD	2 NON EU	0.6	0	1.7		130.3		1188.2			
	3 NO BALTIC	1.3		4.7		9.3	0.4	13.2		12.9	
	4	14.5		4.1	1	9.3		28.6	0.4	26.5	
	6 EU	0.4		0							
	7 EU NO 7D	10.9		98.2		53.3		16.2		6.4	
	7D	7.8		7.2		2.6		63.6	298.6	18.6	
8 EU	0		2.6		0		0.2		0		
FLE	3 NO BALTIC			1.9		0.1				0	
	4			0.1				0		0.1	
	7 EU NO 7D	0		0				0.1		0	
	7D							1.9		0.9	
8 EU							0.1		0.1		
HAD	2 NON EU			0.2		3.7		74.6			
	3 NO BALTIC	0.2		5.4		18.2		0.5		2.3	
	4	8.7		35.3	2	8.2		41.2	0.1	51.9	
	6 EU	4.1				0.6		1.3		11.7	
	7 EU NO 7D	39.2		250.5		144		52.3	1	13.5	
	7D	0		0.2		0.5		0.8		0	
8 EU	0		6.9		0.1		2.2		1.7		
HKE	2 NON EU									24.9	
	3 NO BALTIC	0		0.5		0.1	0.1	0.1		1	
	4	140		141.5		18.9		33.6	0	26.3	
	6 EU	17.9		90.6		166.9		177.6		640.8	513
	7 EU NO 7D	562.3		260.6		27.3	18.8	195.3	16.9	280.4	0
	7 NON EU	4						0			
	7D	4.3		8.2		0.1		30.1		0	
	8 EU	485.4	82	872.6	477.9	1032.2	890.7	3148	946.3	4057.7	
	9 EU	3.4		3.5	0.8	3.6		1.6	0.9	0.3	
	9 NON EU			0.1							
	34.1.1 COAST					10.4					
	34.1.2 EU			0.2		0		0			
	34.1.2 NON EU							33.2			
34.1.3 NON EU	25.6	0	17.1		40.7		194.3				
PLE	3 NO BALTIC	0.9		1.2		0.2	0	9.6		14.4	
	4	0.8		4.2		23.1		19.2		14.4	
	6 EU	0.6		0.1		0.3					
	7 EU NO 7D	3.6		11	27.7	4.8	0.7	9.6	0.1	4.6	
	7D	15	15.7	27.8	2.1	9.8		40.1	0.1	22.4	4.5
	8 EU	5.6		9.4		1.9		20.3		1.1	
9 EU					0				0		
POK	2 NON EU	18.6				27.4		2.8			
	3 NO BALTIC	236		56.9		1.7		12.6		11.8	
	4	1.9		6.5		45.3		216.7	0.1	135.3	0
	6 EU	0.4						30		15.5	
	7 EU NO 7D	0.9				0		0.8		0	
8 EU					0		0.1		0		
SOL	3 NO BALTIC	0				0		0		0	
	4	0.3		0.5		0		0.9		0	
	6 EU	0.4		0.1		0.1		0.3			
	7 EU NO 7D	2.5		2.4		3.9		4.2	0	0.5	
	7D	15		27.6	0	10.8		4.9	0	3	
	8 EU	5.4		20.3	0	10.2		5		4.1	
9 EU	0.1		0.2	0	0.1		0.1		0		
WHG	2 NON EU	0.7									
	3 NO BALTIC	0		127.3		56.7	0	291.6		511.7	
	4	24.3		576.1	0.2	582.5	11.8	1431.1	0	1833.9	0
	6 EU	0.1		0		0.1				24.3	
	7 EU NO 7D	71	10.2	123.3	93.5	157.9	3.5	296.4	0	287.6	
	7D	25.4	1804	70.7	73.2	31.8		126	143.6	171.7	89
8 EU	76.7	43.2	76	0.5	103.2	25.1	59.2	15.2	54.3	262	

Potential impacts of introducing footnotes

STECF notes that the above observation points to potential problems arising from the provision of interspecies flexibility footnotes in the TQR. STECF has previously commented on the risks associated with the interspecies flexibility provisions available under Article 15 (landing obligation) of the CFP (STECF, 2013). In the case of possible footnote provisions many of the same warnings apply and, indeed, there are additional considerations. For example, unlike the LO provision, there is no requirement for the bycatch species to be inside safe biological limits before it can be taken as a bycatch in a pelagic fishery.

STECF considers that the most significant issue relates to the large scale of some of the pelagic stocks to which the footnotes would be applied (compared to the generally smaller scale of likely bycatch species). This is compounded by the opportunity to utilise multiple footnote provisions (across several pelagic TACs) leading to even greater bycatch landings. Table 5.1.2 shows the available area TACs for the 4 species of pelagic fish included in the request. Several of these TACs are large and extend across several ICES areas. An extreme example of the scale of the potential problem is illustrated by considering the larger of the two blue whiting TACs (385254 tonnes) and the largest mackerel TAC (407507 tonnes). A 5% footnote provision in each would allow a combined bycatch of nearly 40000 tonnes, while a 2% footnote provision would imply a bycatch of almost 16000 tonnes (these figures ignore the existing bycatch provision in the horse mackerel fishery). These bycatches could be taken in any of the ICES areas covered by both of the TACs (ie V,VI,VII, VIIIabde, XII and XIV) potentially impacting on a wide variety of demersal fish stocks and fisheries occurring in these areas.

Table 5.1.2. 2016 TACs for the pelagic species and areas listed in the request to STECF

	I	II	III	IV	V	VI	VII	VIIIabde	XII	XIV	VIIIc	IX	X	
herring	42059		43574	341742	not applicable									
blue whiting	385254										51719			
mackerel		52190			407517						46631			
horse mackerel	82229 (inc. IVa and not VIIId)										13271	73349	?	
		14697 (IVb, IVc, VIIId)												

The scale of the potential landings of bycatch species arising from pelagic footnote provisions presents very real risks in terms of biology, management and governance of the bycatch species. There is potential to significantly increase the mortality on non-targeted bycatch species to levels inconsistent with achieving F_{MSY} and to the extent that stock biomass could be reduced below safe biological limits. For some stocks, (eg whiting in VIa), already reduced to a low level, there is potential for bycatch removals in the extreme example given above to be at a scale comparable to the remaining SSB (16247 tonnes in 2016).

The limited recent information provided by the three Member States indicates that bycatches of unwanted species have been occurring for some time, and that in most cases the rates are below those typically available in existing footnotes.

For a few stocks like whiting in the North Sea, effort have long been made by ICES to include industrial and pelagic bycatches in the stock assessment and TAC advice. But for most other stocks, these catches are likely not monitored and included in the assessment at all. In cases where these bycatches have not hitherto been included in assessments they would essentially represent unseen mortality; their inclusion would lead to elevated SSB estimates and not necessarily to higher fishing mortality. Where modest bycatches

have been occurring and the health of the stocks has not shown signs of being impaired, the case for footnotes can be persuasive. Nevertheless, STECF warns that the generalisation of bycatch provisions to all pelagic fisheries based on recently observed bycatch percentages from these 3 member states may have unforeseen implications in other areas. Bycatch provisions will create new fishing opportunities in other pelagic fleets, and industry responses to these are unpredictable and should not be assumed to be the same as in the few member states which supplied data. There is, indeed, growing evidence for example in the Celtic Sea where herring are currently scarce, that some pelagic vessels, have been incentivised to start targeting whiting which attract a higher unit price. The use of footnotes in a general and widespread way would leave open opportunities for further developments of this kind. Restricting the use of footnotes to specific cases in limited areas and at levels similar to those observed previously may help to limit the potential for damage to stocks. In preference to the use of % rates based on the target species, a more acceptable approach would be to define maximum permitted bycatch (in tonnes) based on the size and status of the bycatch species itself. That way, greater control over additional mortality etc. could be exerted.

In terms of management and governance, additional potential difficulties arise:

- Footnotes essentially have the potential to adjust the relative stability fishing opportunities since a country with a high proportion of the target pelagic species TAC could create access to a much greater quantity of a bycatch species than its agreed share would predict; particularly where the bycatch was of demersal species.
- In some cases, the footnote provision would create fishing opportunities for the pelagic fleets of countries which previously had none. Given the scale of the potential problem indicated above, this could easily imply a fishing opportunity larger than the TACs available to some of the countries with established fishing opportunities.
- Adding the footnote provision to the T&Q regulation undermines the incentive for strategic management to contribute to solving choke issues. Under the discard plans developed and agreed in regional groups, there is scope to discuss and agree the extent to which interspecies flexibility may be used to alleviate a discard issue (particularly a choke issue). STECF has already warned of the risks of using the LO interspecies flexibility particularly in view of the scope to use potentially large amounts of 'donor' or target species quota (up to (9%) to make landings of non-target species (for example, a choke species). However, the transfer % is an upper limit and regional group managers can choose to utilize lower % tailored to the specific needs of a species in a choke situation. In utilizing the LO flexibility approach, an element of control and common understanding between MS managers is maintained. Although STECF remains of the view this should be considered a LO option of 'last resort', it nevertheless appears to present fewer risks than the present proposals for extending TQR footnote provision which would apply across wide areas, to multiple species and require no strategic management discussion
- Since the proposed pelagic footnote rules would potentially allow for bycatches in widely distributed stocks to be taken in a number of ICES areas, managers concerned with more localized stocks would be unclear as to what additional catches were being taken from those stocks (as pelagic bycatch) until well after the event.

Methods to mitigate bycatch issues

STECF notes that mitigating bycatch issues in pelagic fisheries is technically challenging given the size of the catches, the complexity of the gears used, the practicalities of the

operations on board pelagic vessels and also, in some cases the similarities between the size of the target pelagic species and the bycatch species.

Gear based technical approaches could include the application of grids to separate out unwanted fish. These have been applied in pelagic fisheries in the Faroes and e.g. Norway pout industrial fisheries and shrimp fisheries. Recently gear trials in Skagerrak carried out by Sweden tested a new flexible pelagic grid in the herring fishery to reduce bycatch of saithe. These trials were successful and using the grid has led to a 90% reduction of saithe bycatch while the loss of herring is no greater than 15% (PELAC, 2016⁸; <http://www.pelagic-ac.org/media/pdf/Presentation%20Hjelm%20pelagic%20grid.pdf>). The result of work carried out to date suggests the utility of grids is most pronounced where the target species are of small size relative to the unwanted bycatch.

In some of the pelagic fisheries, such as for herring and horse mackerel, the species is often located fairly close to the seabed and fishing operations reflects this. In such fisheries towing times can be long and the likelihood of catching demersal species is quite high. In some fleets, gear adaptations to prevent pelagic fish escaping under the footrope involve elements of the gear being in contact with the seabed. Such adaptations may increase the risk of unwanted catches of demersal species and it is unclear what is the effect on target species of removing these.

The use of acoustic technologies has long been employed as a method for locating and targeting aggregations of some pelagic species. In these cases, catches are generally very 'clean' and contain only very small quantities of bycatch. In contrast some pelagic trawl fisheries employ longer towing times and distances, fishing across numerous aggregations or at seasons where the fish are less aggregated. In the latter cases, the likelihood of encountering unwanted bycatch species is increased. Measures to avoid unwanted catch could involve the use of more targeted approaches making use of a variety of emerging underwater technologies such as acoustics (potentially including fish size discrimination), underwater TV and devices to open and close the mouth of the net while in operation.

While not reducing bycatch 'per se', it is also worth noting that the use of *de minimis* to allow the discarding of catches of demersal species in pelagic fisheries is a potential option to reduce choke situations. *De minimis* is not currently used because it would require sorting bycatch and discarding it over the side. Most pelagic catches are pumped aboard in large volumes and stored in refrigerated sea water tanks or frozen on board, which makes it very difficult to sort out at sea. It might though be technically possible to mechanically sort demersal bycatch from pelagic catches during the operation of pumping fish on board vessels. Most modern pelagic trawlers and purse seines have fish / water separator arrangements on board and it may well be possible to sort demersal bycatches at this point of the operation. However, to date this has not been tested.

Economic impacts

STECF observes that the bycatch of a substantial amount of demersal species in pelagic fisheries could have two main economic impacts:

8 <http://www.pelagic-ac.org/media/pdf/Newsletter%201-2016.pdf>

- 1) With the footnotes, The bycatch reduces the short-term catches in demersal fisheries (as the bycatch would be part of the overall fishing mortality) and, therefore, the economic activity of the affected fleet segments. The landings of the fleets with quota of the respective species are or will be reduced. In case of a substantial increase of catches of the bycatch species the flexibility leads to an increase in fishing mortality and this could reduce additionally long-term catch opportunities.
- 2) Not including the footnotes allowing the pelagic vessels the bycatch of demersal species may lead to severe choke species problems for the vessels implementing the LO. They don't have a quota for the bycatch species and it may be complicated or even impossible for a MS to distribute a quota to these vessels. Therefore, they have to stop their activity relatively early, which might lead to economic losses.

STECF conclusions

STECF concludes that the limited member State data supplied were not sufficiently robust to identify the level and recurrence of bycatch across all of the fisheries listed. Data were supplied from too few countries to make an objective review. In some cases, data covered too short a time period and did not separate landings into the different target fisheries. STECF concludes that to conduct a review adequate for evaluating all the areas and fisheries listed, submissions from all member states with pelagic fisheries in those areas would be required. STECF notes that detailed material was received from Denmark and that in some of the smaller areas where pelagic vessels from that country operate, the information may be helpful in informing footnote provisions.

STECF recognises the importance of trying to provide tools for avoiding choke situations and understands the value to the pelagic vessels of a provision (such as bycatch footnotes) which avoids closing fisheries or adversely impacting efficient operating practices. STECF concludes, however, that in common with interspecies flexibility provision in the LO, an extension of the footnote based interspecies flexibility provision presents considerable risks if extended to pelagic stocks distributed across wide sea area in which numerous bycatch species may be caught. STECF suggests that in specific, more localised fisheries where a history of predictable bycatches has occurred and is well documented, there may be a case for considering footnote provision, but STECF considers that this should not be generalised to all pelagic fisheries. STECF concludes that it would be preferable to operate any such bycatch provisions through a maximum permitted bycatch (tonnes) of the bycatch species and not on a % basis of the target species TAC. STECF also concludes that any such footnote provision should attract strict rules on full documentation and reporting so as to ensure transparency and the opportunity to scientifically assess the impact of these catches.

STECF concludes that when the target stocks are widely distributed and the potential bycatches are less well known, there are potential negative impacts of footnote provision for stock status and the ability to achieve and maintain CFP F_{MSY} targets. Although it was noted that bycatch information was lacking from many member states operating in these widespread fisheries, STECF is aware of changes in targeting behaviour by pelagic vessels (both potential and already observed) that could increase mortality and thereby risk stock status in bycatch species. Given the scale of these pelagic fisheries, the scope for damage to associated stocks is high. STECF further concludes that there are potential impacts on the general coherence of the management and governance in a number of fisheries, particularly demersal ones. Of particular concern is the potential reduction in fishing opportunities and concomitant economic viability for those operating in fisheries targeting the bycatch species. This situation would be e.g. analogous to those where

growing and largely unpredictable recreational fisheries are limiting catching opportunities for those involved in directed commercial fisheries.

STECF concludes that a number of mitigation measures to avoid bycatch may be available but recognises that avoidance of bycatch in pelagic fisheries is not always straightforward. Potential measures including technical solutions and changes to fishing operations would require to be considered on a case by case basis. STECF considers that any one solution would not be suitable in all cases.

Appendix 1 - 2016 December Council and Commission joint statement on associated by-catch species (Council and Commission) as provided by the Commission to the STECF.

Council and Commission have taken note of the requests by Member States to allow for specific provisions allowing by-catches in fisheries targeting pelagic species for the following stocks:

- *hake, boarfish, whiting, haddock, cod, saithe, greater silver smelt, skates, tusk, common sole, plaice, flounder and mackerel in the Blue Whiting North East Atlantic;*
- *hake, haddock, boarfish and whiting in the mackerel fishery in the North East Atlantic;*
- *herring in the mackerel fishery in areas IIIa and IV;*
- *boarfish, whiting, haddock, cod, saithe, greater silver smelt, skates, tusk, common sole, plaice and flounder in the mackerel fishery in areas VIIIc, IX, and X;*
- *hake in horse mackerel in areas IVb, IVc, and VIId, and in horse mackerel in areas IIa-XIV*
- *cod, saithe, greater silver smelt, skates, tusk, common sole, plaice, flounder, hake in the horse mackerel fishery on the Western stock (main area);*
- *boarfish, whiting, haddock, cod, saithe, greater silver smelt, skates, tusk, common sole, plaice, flounder, and mackerel in the horse mackerel fishery on the Western stock (area VIIIc);*
- *boarfish, whiting, haddock, cod, saithe, greater silver smelt, skates, tusk, common sole, plaice, flounder and mackerel in the horse mackerel fishery in area IX;*
- *saithe and mackerel in the herring fishery in IIIa;*
- *saithe and mackerel in herring fishery in IV;*
- *saithe in Atlantico-scandic herring in I and II.*

Given that these by-catches occur in fisheries for species which have not yet been scientifically assessed for the purpose of interspecies flexibility, the Member States concerned commit to providing the Commission by 28 February 2017 with the necessary supporting data for scientific assessment by ICES.

In light of the available scientific advice, the Commission will consider proposing appropriate provisions for the general approach on any associated by-catch species in the fishing opportunities, including on inter-species flexibility.

5.2 Irish avoidance programme for picked dogfish

Background provided by the Commission

At the Council in December 2016 the Commission gave a statement on avoidance programmes for picked dogfish. This invited Member States to develop avoidance programmes for picked dogfish similar to the current programme that has been put in place in Union and international waters of I, V, VI, VII, VIII, XII and XIV. If these programmes are developed and positively assessed by the STECF, the Commission would consider making a proposal to include TACs for unavoidable by-catches in the areas concerned.

STECF has already assessed a catch avoidance programme from the UK. Ireland has now submitted a catch avoidance programme to be assessed by the STECF.

Request to the STECF

STECF is requested to review the proposal received from Ireland on an avoidance programme for picked dogfish, and on this basis assess whether, taking into account the latest ICES advice on the stock⁹, this programme will:

- Contribute to the avoidance of picked dogfish in the fisheries concerned.

Furthermore STECF is asked to assess, whether this programme will contribute to:

- Improving the current data deficiencies.
- Increasing the knowledge on spatial aggregations of picked dogfish.
- Increasing the knowledge on discard survival.
- Facilitating the introduction of the landing obligation.

STECF response

Summary of the Irish avoidance programme

The proposed scheme builds on the latest management legislation for the species (Council Regulation, 2017), which states that it shall be prohibited for Union fishing vessels to fish for picked dogfish, also known as spurdog (*Squalus acanthias*), except for avoidance programmes in which picked dogfish shall not be targeted. When accidentally caught in fisheries where picked dogfish is not subject to the landing obligation, specimens shall not be harmed and shall be released immediately. A vessel engaged in a by-catch avoidance programme may land not more than 2 tonnes per month of picked dogfish that is dead the moment when the fishing gear is hauled on board. Member

⁹ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/dgs-nea.pdf>

States participating in the by-catch avoidance programme shall ensure that the total annual landings of picked dogfish do not exceed the amounts set out in Council Regulation (2017). They shall communicate the list of participating vessels to the Commission before allowing any landings and shall exchange information about avoidance areas. Council Regulation (2017) also states that it shall be prohibited to fish or retain on board any picked dogfish (and other listed species) in the Porcupine Bank during the period from 1 May to 31 May 2017.

The proposed Irish avoidance programme is based on this regulation. It is proposed that avoidance is achieved by allowing limited by-catch for authorised vessels. These vessels would then inform other vessels of the risk of high picked dogfish catches, allowing the fleets at large to avoid them (the level of 'high' is not defined in the proposal, neither is the mechanism to inform other vessels, or the required response from those vessels). Thus, the authorised vessels would serve as the industry's "look-out fishery". Other main aspects of the proposed programme:

- The scheme shall operate only in the following fisheries:
 - Sub-area 6a OTB
 - Sub-area 7b GNS for hake
 - Sub-area 7b/7j OTB for *Nephrops* or Sub-area 7g OTB or GNS;
- In each of the three fisheries, no more than 8 vessels shall participate;
- Each vessel shall receive a quota of 2t per month;
- Each vessel shall carry VMS;
- The programme is not applicable during the spawning period (October to January);
- Once the quota available is exhausted, all fishing by vessels in the avoidance programme in that ICES statistical rectangle shall cease for a period of 120 hours (5 days).
- Landings of picked dogfish cannot be taken in Tralee Bay (documented spawning grounds);
- Vessels taking part in the programme will carry a scientific observer who shall record the vitality of catches and the quantity of live discards of picked dogfish;
- Upon landing, the local Marine Institute office shall be contacted to allow for catch sampling to occur.
- Protected species shall be released alive, taking great care not to harm them.
- Picked dogfish shall not be targeted and any picked dogfish retained must be dead on hauling;
- Include a maximum landing length of 100cm (a provision in place before the zero-TAC was introduced);
- The programme will be reviewed on a triennial basis.

Additional background information provided by STECF

This is the latest in a series of four related requests to STECF, and to ensure consistency in responses and provide further context, STECF 17-02 have summarised previous conclusions that are relevant to this latest request:

STECF PLEN 13-03

- On granting exemptions to land unintended picked dogfish by-catches, STECF PLEN 13-03 considers it will generate additional mortality and compromise the recovery of the stock.
- It may be possible to monitor long term trends in abundance of picked dogfish using existing monitoring programmes, but due to the wide distribution, low abundance, and low predicted rate of recovery, any change in abundance is unlikely to be detected for at least 10 years.
- STECF PLEN 13-03 supports additional information collection systems, that would not increase mortality, including observer programs, remote electronic monitoring, and skippers' self-reporting, but exemptions to land unintended by-catches are likely to be less effective at achieving recovery of picked dogfish than maintaining a zero TAC.

STECF PLEN 14-03

- The UK proposed a real-time monitoring programme using a picked dogfish bycatch quota as an incentive for skippers to participate. The proposal incorporated reporting of by-catches by fishermen, which is validated by observer sampling, and includes agreed move-on rules to avoid areas where picked dogfish catches were high.
- STECF PLEN 14-03 supported the collaborative approach and the use of an incentive whereby good behaviour is rewarded with a landing allowance of picked dogfish, that comes at no apparent cost to the stock.
- Monthly quota limits and the prohibition of quota movement was supported by STECF to avoid the possibility of the development a targeted fishery.
- STECF PLEN 14-03 noted that when picked dogfish catch levels are below the maximum monthly threshold, there may be an incentive to misreport the "lively" fish as "dead" and land those fish and increase fishing mortality by landing fish that may have otherwise survived. Measures needed to avoid this include observer coverage or CCTV systems.
- While the landing of dead discards would mean there should be no increase in fishing mortality, without successful avoidance behaviour from skippers, the programme would not progress the conservation objectives for picked dogfish.
- STECF PLEN 14-03 observed that it would not possible to predict the usefulness of move-on rules because it is not known whether moving from one area to a different area will result in higher or lower incidental catches. Moreover, there were no indicators presented against which individual avoidance behaviour could be measured.
- STECF PLEN 14-03 concluded that managers need to base their decision on whether to permit the pilot to go ahead without having access to objective scientific advice.

STECF PLEN 15-03

- The UK undertook a pilot project on the management of picked dogfish and proposed a full avoidance programme, based on real-time monitoring and a bycatch quota.
- STECF 15-03 considered the UK proposal could potentially aid the rebuilding of the stock of picked dogfish by promoting avoidance behaviour, which may in turn lead to reductions in fishing mortality.
- STECF 15-03 considered that the main potential benefits of the proposed pilot project are in providing an incentive for participating vessels to report incidental catches of picked dogfish and the proportions of the catch that are brought aboard dead and alive.

- If operationally successful, it would require that vessels move away from areas of high incidental catch, which may result in a reduction in fishing mortality relative to that which would occur in the absence of the programme.
- Picked dogfish is not included in any discard plans to implement the Landing Obligation (Delegated Regulations), therefore vessels that do not opt into the programme can continue discarding catches of picked dogfish, it is likely that realised catches will exceed any agreed by-catch TAC.
- In order to promote a reduction in fishing mortality through discard avoidance, provisions to opt into the project should be expanded to include additional vessels and MS.

STECF notes the following to provide further context to its response:

Picked dogfish is a long-lived, slow-growing, and late-maturing species and is therefore particularly vulnerable to fishing mortality. ICES (2016) advised that when the precautionary approach is applied, there should be no targeted fisheries on this stock in 2017 and 2018.

From 2011 to 2016, picked dogfish was managed by a zero-TAC, which meant that no picked dogfish could be landed, but incidental catches were still taken. And because some discards do not survive, fishing mortality still occurred.

ICES advice (2016) states that, based on medium-term projections, annual catches at the recent assumed level (2468 tonnes) would allow the stock to increase at a rate close to that estimated with zero catches.

From 2019, stocks with a TAC will be subject to the Landing Obligation, whereby all catches will be landed and counted against quota, unless exemptions are awarded, and fishing activities must stop once the quota has been fulfilled.

If picked dogfish has an associated TAC in 2019, it will be subject to the Landing Obligation. A zero-TAC would mean that any catches of picked dogfish could stop or 'choke' fishing activities.

An alternative management approach for picked dogfish is for it to be classified as a prohibited species. A species for which fishing is prohibited, will not be subject to the Landing Obligation. As a prohibited species, incidental catches picked dogfish could not be landed for sale and would not stop fishing activities.

As a prohibited species, there are though no direct incentive to avoid incidental catches of picked dogfish. The level of incidental catches as a prohibited species are likely to be the same as that under zero-TAC, but there would be no control on mortality levels.

In contrast, under a TAC subject to the Landing Obligation, there would be a limit of fishing mortality, economic benefits to the fishing industry, and an incentive to avoid picked dogfish to mitigate the risk of exhausting the quota. However, this assumes effective control of the Landing Obligation and accurate catch reporting.

Since 2017, outside of avoidance programmes, fishing for this stock of picked dogfish is prohibited (Council Regulation 2017/127). "Prohibited species" by their nature are sensitive species, mostly CITES listed, where even limited fishing activity could result in a

serious risk to their conservation. The conservation status is the main criteria used to define a species as prohibited.

Therefore, there are clear differences between the management options for this stock; applying a TAC subject to the Landing Obligation or categorising picked dogfish as a prohibited species. To determine whether it is most appropriate to have a TAC or to classify picked dogfish as a prohibited species, it is necessary to investigate trade-offs and risks to the stock.

This task is made more challenging by concerns over the quality of the data for this stock as a consequence of (a) uncertainty in the historical level of catches because of misreporting and generic landings categories; (b) lack of commercial length–frequency information for countries other than the UK; (c) lack of data on dead discards; and (d) the survey data examined do not cover the entire stock area (ICES, 2016).

The avoidance programmes described in 2017/127 use limited fishing opportunities for picked dogfish as an incentive for fishermen to participate in collecting additional fishery dependent data. These data can be used to inform management measures that are appropriate for the short and medium term.

STECF comments on the ToRs

Will the proposed programme contribute to the avoidance of picked dogfish in the fisheries concerned?

The incentive for skippers to move on from areas in which picked dogfish are being caught is based on the authorisation to land and sell picked dogfish up to a limit of two tonnes per month. Once this threshold is met by a single vessel, all the vessels on the programme are required to stop fishing in that ICES statistical rectangle for five days. The avoidance of catches of picked dogfish will be successful when the following conditions are met (i) fish that would have otherwise have been caught by these vessels are not caught and (ii) that other dogfish are not caught in the area into which the vessels have moved and (iii) the picked dogfish that were present in the closed rectangle are then not caught when the rectangle opens to fishing. There is currently insufficient information to determine if these conditions are likely to be met and so whether the programme would reduce fishing mortality on picked dogfish.

It is stated that vessels on the programme would inform the wider fleet of areas of high catches of picked dogfish so that they could avoid these areas. STECF notes that it is unclear how this will work in practice. The mechanisms to capture and exchange information need to be specified in order to comply with the condition of Council Regulation 2017/127, including what is expected of the vessels that are not on the programme. Also, information is required on what happens if further catches of picked dogfish are taken by a vessel in a month in which its' two tonne threshold has already been met. And similarly, what happens when further catches are taken in an area that has been recently closed. The economic consequences of vessels moving on from an ICES rectangle are not mentioned and may be considered before implementing the programme.

In summary there is no *a priori* means to assess whether implementation of the proposed programme will result in a reduction in catches of picked dogfish (through the avoidance provisions) relative to the catches that would occur in the absence of the programme.

Also, before it is implemented, further details on the practical design of the proposed programme are needed to assess the potential for meeting its objectives.

Will this programme contribute to improving the data deficiencies and increasing the knowledge on spatial aggregations of picked dogfish?

The proposed programme states that '100% observer coverage is provided for in the proposal' and 'Vessels taking part in the programme must undertake to carry a scientific observer'. If such an undertaking actually results in all vessels participating in the programme carrying an observer on all trips, detailed information on the fishing activity and catches of the vessels, including that on catches, aggregations, and vitality of picked dogfish could be collected. Such an undertaking would also be expensive since it potentially implies 24 observers being deployed simultaneously for an unspecified number of days each month for up to nine months of the year. An alternative approach to consider would be using Remote Electronic Monitoring with CCTV cameras for more cost effective monitoring.

The proposal also states that upon landing, the local Marine Institute office shall be contacted to allow for catch sampling to occur. It is not clear why this would be needed if there are observers on-board already and so STECF suggest that more clarity on the biological monitoring of the participating vessels is provided. While useful fishery-dependent information on participating vessels is likely to be collected, it would be necessary to determine how representative such data are, before extrapolating to the wider fleet. Therefore, information on the effort, timing and location, of the wider fleet would also need to be collected.

Will this programme contribute increase the knowledge on discard survival?

STECF considered that at-sea monitoring by trained observers, could generate useful data on the health condition of picked dogfish at the point they would normally be discarded. There are detailed guidance notes on how to develop vitality and injury assessment protocols in ICES WKMEDS (2014). While this would provide information on the immediate mortality and the condition of released fish, this would not provide discard survival estimates. Studies have shown that mortality caused by the catching and sorting process can occur sometime after release. However, where the correlation between health state and survival probability is known, then absolute survival estimates can be inferred. If the stock became subject to the Landing Obligation, such information would inform on the appropriateness of awarding an exemption from the obligation to land all catches on the basis of high survival.

Will this programme facilitate the introduction of the landing obligation?

Prior to 2017, picked dogfish was managed by a zero TAC. Consequently, under the Common Fisheries Policy (CFP) landing obligation, it had the potential to become a 'choke' species as soon as picked dogfish were caught, forcing fishing activities to stop. In recognition that zero-TAC species are not compatible with the Landing Obligation, two possible alternatives have been described. The first is to remove all fishing opportunities and add picked dogfish to the list of prohibited species, thereby prohibiting the retention on board of all catches of picked dogfish and accepting continued fishing mortality through discarding. This option would likely maintain levels of fishing mortality equivalent to those that would occur under a zero-TAC and would provide no direct economic incentive to avoid incidental catches because any picked dogfish caught could not be landed and sold. The alternative would be to manage under a TAC, based on scientific advice and subject to the Landing Obligation from 2019, which would allow catches of

picked dogfish to be landed and sold. A catch limit would incentivise fishers to avoid picked dogfish which would otherwise mean that fishing activities had to stop. The incentive to avoid incidental catches would only be realised with effective monitoring of the Landing Obligation. Whether such an incentive would in practice, result in avoidance behaviour that would reduce catches to less that would be achieved in the absence of the programme cannot be predicted.

To inform on which of the options is preferable it is necessary to have more detailed data on catch levels and to know to what extent it is possible to avoid picked dogfish. STECF considers that implementation of the proposed programme under Council Regulation 2017/217, will undoubtedly benefit participating vessels through the provision to land and sell up to 2 tons of picked dogfish, per vessel per month, up to 53 tonnes and will provide an opportunity to collect fishery-dependent information through the observer programme which may also inform decision making under the Landing Obligation.

The proposal includes a triennial review, although it does not indicate how this would be structured. The proposal mentions that the key tools for enforcement are the by-catch quotas and the VMS observations, and that observer data will be collected. STECF note that a review method should be provided which defines the indicators against which avoidance behaviour can be measured. Moreover, full implementation of the Landing Obligation is scheduled for the beginning of 2019, so it would likely be necessary to fully assess the trade-offs between the management options (prohibited species or TAC) before that time.

STECF conclusions

STECF concludes that there is no *a priori* means to assess whether implementation of the proposed programme will result in a reduction in catches of picked dogfish (through the avoidance provisions) relative to the catches that would occur in the absence of the programme.

STECF concludes the programme would potentially provide detailed information on the fishing activity and catches of the participating vessels. This would include information on catches and aggregations of picked dogfish, and would provide useful data on the health condition of picked dogfish at the point they would normally be discarded which would inform discard survival rates. However, the level of observer coverage of the programme remains unclear and this will determine the extent and utility of the data. In agreement with ICES (2016) any provision for the landing of picked dogfish bycatch should include close monitoring of the stock and fisheries.

STECF concludes that to improve the chances of meeting its objectives, further details are needed before the programme is initiated. This includes the mechanisms to capture and exchange information on incidental picked dogfish catches between participants and with the wider fleets (a requirement of Regulation 2017/127), and details of what would happen if catches of picked dogfish were taken by a vessel during a month in which its' two tonne threshold has already been met. And similarly, what would happen when further picked dogfish catches are taken in an area that has been recently closed.

STECF concludes that to investigate the trade-offs and risks to the stock and to the fishing industry for adopting different management approaches (including TAC subject to the Landing Obligation vs prohibited species), it is necessary to have more detailed data

on catch levels, to enhance stock advice, and to know to what extent it is possible to avoid picked dogfish. The focus of avoidance programmes should be to ensure that this information is collected so it can inform on management decisions of the future of this stock.

References

Council of the European Union, 2017. Council Regulation (EU) 2017/127 of 20 January 2017 fixing for 2017 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters. 172 pp.

ICES WKMEDS, 2014. Report of the Workshop on Methods for Estimating Discard Survival (WKMEDS), 17–21 February 2014, ICES HQ, Copenhagen, Denmark. ICES CM 2014/ACOM:51. 114 pp.

5.3 Clarification on STECF Report on Joint Recommendations for Natura 2000 sites under CFP Article 11 (STECF-16-24)

Background provided by the Commission

STECF issued a piece of advice on Joint Recommendations for Natura 2000 sites under CFP Article 11 (STECF-16-24) in 2016.

In May 2017, Denmark submitted some clarification to the Commission in relation to the two different mapping techniques used for the site called 'Centrale Storebælt og Vresen' as well as to the protection of harbour porpoise, grey/ harbour, seals, mudflats, sandbanks, lagoons and several birds species mentioned in the STECF conclusions.

Request to the STECF

STECF is requested to take into consideration the comments received by Denmark for Joint Recommendation for Natura 2000 sites under CFP Article 11 (STECF-16-24) and to revise the previous advice of 10 December 2016, if applicable .

STECF response

STECF observations

The Danish authorities submitted clarifications on three issues raised in the STECF-16-24 report: (i) protection of reef structures in relation to scientific advice from ICES, (ii) protection of harbour porpoise grey/harbour seals, sea birds and other marine habitats such as sandbanks and mud flats etc., and (iii) control and enforcement of smaller vessels < 12 meters. These issues are addressed consecutively below.

Protection of reef structures in relation to scientific advice from ICES

In December 2016 STECF (STECF-16-24) concluded that the Joint Recommendation measures will contribute towards ensuring that reef habitats of community interest are maintained and restored at favourable conservation status inside the delineated areas as stipulated under Article 2 of Directive 92/43/EEC. However, STECF noted that in the area 'Centrale Storebælt og Vresen' the proposed boundaries of the no-take zones are positioned very close to the reefs, and in some cases do not encompass a buffer zone defined in accordance with ICES Guidelines.

In their May 2017 reply the Danish authorities clarified that for the site 'Centrale Storebælt og Vresen', two different mapping techniques have been used, and that for one of the mapping techniques both 'back scatter data' and verifications are lacking. '. The Danish, Swedish and German authorities agreed that areas where fishing takes place and reef structures have not been verified should be kept open to fishing.

STECF acknowledges that the overall aim of the proposal is to ensure adequate protection of reef structures, and to contribute to the obligation of achieving favourable conservation status for these habitat types in accordance with Article 6 (2) of the Habitats Directive. This will be achieved by prohibiting fishing activities with mobile bottom contacting gears in areas mapped as reefs (habitat code H1170). Moreover, at some sites fishing activities with passive gears such as gillnets, lines, traps and pots will also be prohibited in areas mapped as bubbling reefs (habitat code H1180). The reef structures mapped in the Natura 2000 sites will be protected from fishing impacts by placing buffer zones around the reef structures. STECF considers that the proposed measures for the management of reef habitats are a step forward to minimise the negative impacts of fishing activities on reef habitats and ensure that fisheries activities

avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.

With regards to the presence of buffer areas, the ICES advice states that a buffer equivalent to 4x water depth is an adequate size for buffer zones. The Danish authorities clarified that the buffer zone around the verified reef structure is no less than 240 m, equivalent to 6x water depth, and as such will cover and protect several areas where unverified reef structures are present, STECF notes thus that if unverified reefs are not treated as reefs, the proposed buffer zone is in compliance with ICES advice.

STECF notes that a low resolution technique was used to map the central area where conflicts between mobile bottom contacting gears and some unverified reefs were seen, and that this area was excluded from the proposed fishery closure (see red area in Figure 5.3.1). The area in which fishing will not be banned covers an area of 2.7 km², compared to a total reefs area at the site (verified and not verified) of 120.6 km², so only 2.3% of possible reefs will not be protected. Given the overall low percentage of possible reefs which will not be protected, and the fact that only unverified reefs are located within the proposed buffer zone, STECF agrees with the assessment of the Danish authorities that this approach should not pose a risk to the overall conservation status of the verified reefs at the site 'Centrale Storebælt og Vresen'.

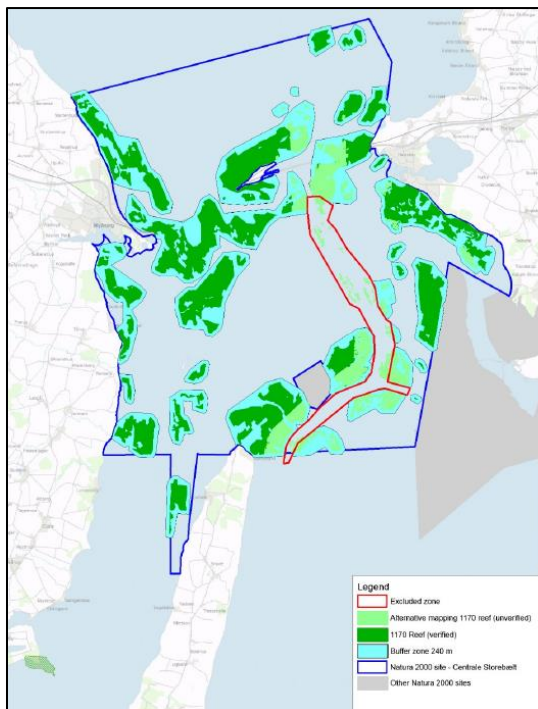


Figure 5.3.1. Map of Natura 2000 site 'Centrale Storebælt og Vresen' provided by Danish authorities. Source: Clarification regarding STECF Report on Joint Recommendations for Natura 2000 sites under CFP Article 11 (STECF-16-24) submitted by the Danish authorities to the European Commission in May 2017.

Protection of harbour porpoise, grey / harbour seals, sea birds and other marine habitats such as sandbanks and mud flats etc.

In December 2016 STECF concluded that additional measures may be required to ensure protection of species and habitats other than reefs for which the Natura 2000 sites included in the Joint Recommendation have been declared.

The clarifications submitted to the Commission explain that a thematic approach is pursued by Denmark and the other Baltic Member States concerned, where the marine habitats and species which need urgent attention are protected first. Until 2021 the protection of reef structures will be the overall focus of the management plans for the designated Natura 2000 sites since fishing is considered to be posing a threat to reefs. The Danish authorities point out that unlike for harbour porpoise, seabirds, sandbanks and other marine habitats, knowledge and scientific evidence does exist on the conflict between fishing with mobile bottom contacting gears and the conservation status of reef structures.

With regards to the protection of marine mammals / seabirds and other marine habitats found at the Natura 2000 sites, the Danish authorities acknowledge that fishing may also cause a threat, but state that the protection of these features is considered to be less urgent compared to reef structures. It is further clarified that several projects on bycatch of harbour porpoise and seabirds have been launched and are currently ongoing. The clarification letter submitted to STECF further explains that it is expected that these studies will be an important inputs to a Danish National Strategy for Harbour Porpoise Protection.

The Danish proposal states that the Commission's 2008 guidelines concerning the development of proposals for fisheries management measures in marine Natura 2000 sites within the scope of the CFP¹⁰ were taken into account when drafting the Joint Recommendations. According to these guidelines, Member States may envisage the implementation of certain fisheries management and control measures depending on the conservation objectives of the Natura 2000 sites, with the information provided in the site Standard Data Form (SDF) providing the basis for a Member State's conservation objectives. The SDFs of the sites included in the Joint Recommendation submitted by Denmark in fact include a number of species and habitats besides reefs, such as for example harbour / grey seals, harbour porpoises, and sandbanks. STECF notes that there is practically no background information provided on threats to species / habitats other than reefs listed in Annex I and species listed in Annex II of the Habitats Directive from different types of fishing gears (corresponding to item 4 of the 11 required information items in the Commission guidelines from 2008).

STECF observes that (with the exception of site DK00VA261) the Natura 2000 sites under consideration were established in 1998, and confirmed Special Areas of Conservation (SACs) in 2011. Member States should take the necessary management or restoration measures to ensure favourable conservation status of sites within 6 years at the most as required by the Habitats Directive. STECF observes that although the Danish authorities state they will assess whether there is a need to propose fisheries management

10 Fisheries measures for marine Natura 2000 sites – a consistent approach to requests for fisheries management measures under the Common Fisheries Policy: http://ec.europa.eu/environment/nature/natura2000/marine/docs/fish_measures.pdf

measures for additional marine species and habitats before 2021, only reef habitats will be the overall focus of the planned fisheries management measures until 2021. In addition to the planned fisheries management measures, Denmark also aims to implement a national strategy for harbour porpoise protection as part of management plans being formulated before 2021 for 16 out of a total of 97 Danish Natura 2000 sites.

STECF considers that it may have been appropriate to use an approach in line with the (albeit non-binding) common methodology for assessing the impact of fisheries on marine Natura 2000 sites¹¹, which *inter alia* recommends that (i) a conflict matrix is constructed to identify which gears used in marine Natura 2000 sites is impacting habitats / species for which Natura 2000 sites have been designated, and (ii) fisheries management measures are established where impacts are not considered acceptable. Where insufficient information was available to assess conflicts or establish management measures for certain species or habitats a clear explanation could have been provided, together with a road-map for addressing remaining challenges for each species / habitat listed in the site SDFs.

Control and enforcement of smaller vessels <12 meters

STECF notes that the clarifications submitted to the Commission emphasize that effective and targeted control and enforcement of adopted measures have been developed. The control and enforcement model is based on a risk assessment, and also takes fishery from smaller vessels into account. In 2018, this model will be evaluated.

Furthermore, the Danish comments clarify that VMS signals are submitted every hour for Swedish and Danish vessels >12 meters, and not every two hours as previously stated by STECF. STECF is also informed that VMS signals of Danish vessels >12 meters are polled every 10 minutes when the vessels are present in the alert zone.

The submitted clarifications also state that since smaller vessels have fishing patterns which are similar to those of larger vessels, there is no indication of fishing activities taking place in the areas mapped as reefs, nor in the buffer zones. STECF notes that Figure 6b in proposal for fisheries management measures for the protection of reef structures in Natura 2000 sites located in Danish territorial waters in western Baltic Sea (reproduced below) shows that some fishing activities by vessels larger than 12 meters have been recorded both on the reefs and in the buffer zones.

STECF notes that the Commission delegated regulation (EU) 2017/118 establishes fisheries conservation measures for the protection of the marine environment in the North Sea, and has introduced additional control measures to ensure their effective implementation in the 'Bratten' area located in the Skagerrak. Sweden, Denmark and Germany have a direct management interest in this area. These additional measures include (i) provisions that bottom contacting gears are lashed and stowed whilst present in or transiting through the protected area concerned, and (ii) a requirement for all fishing vessels present to be fitted with and to maintain in operation an automatic identification system (AIS). STECF considers that the same Member States are concerned, and similar concerns exist with regards to the effective implementation of

11 Common methodology for assessing the impact of fisheries on marine Natura 2000:: <http://ec.europa.eu/environment/nature/natura2000/marine/docs/Fisheries%20methodology.pdf>

appropriate monitoring and control measures for the seven Natura 2000 sites in the Danish part of the Kattegat and Western Baltic Sea.

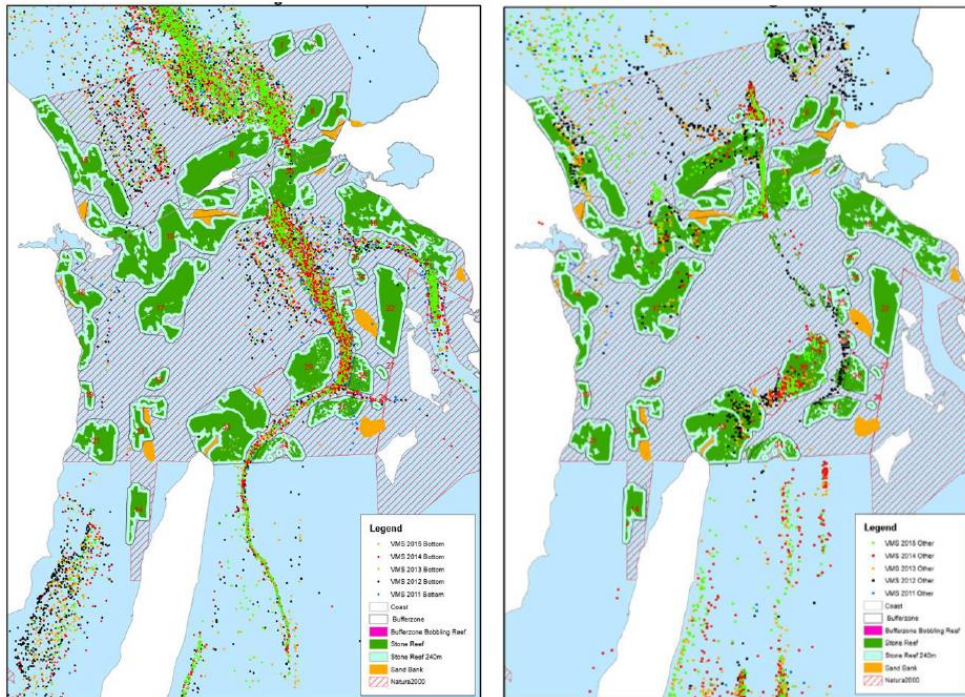


Figure 5.3.2. Map of Natura 2000 site 'Centrale Storebælt og Vresen' showing reef structures, proposed buffer zones and VMS positions for Danish vessels above 12 meters – left map showing fishing activities with bottom contacting gears, and right map showing fishing activities with other gear types. Source: Proposal for Fisheries Management Measures for the protection of reef structures (H1170) in Natura 2000 sites located in Danish territorial waters in western Baltic Sea submitted by the Danish authorities to the European Commission.

STECF conclusions

With regards to the protection of reef structures in relation to scientific advice from ICES, STECF concludes that as a result of the overall low percentage of possible reefs which will not be protected, and of the fact that only unverified reefs are located within the proposed buffer zone, the approach proposed in the Joint Recommendation should not pose a risk to the overall conservation status of the verified reefs at the site 'Centrale Storebælt og Vresen'. Overall the proposed measures for the management of reef habitats will contribute to minimising the negative impacts of fishing activities on reef habitats, and to ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.

STECF notes that fishing activities at the Natura 2000 sites considered in the Joint Recommendation may cause a threat to species and habitats other than reefs which are listed in the sites' Standard Data Forms. These include for example harbour porpoise, harbour and grey seals, seabirds, sandbanks, as well as other marine habitats. STECF observes that ongoing work on harbour porpoise bycatch and sandbank impacts are mentioned, but notes that no systematic analysis of fishing impacts on species / habitats other than reefs seems to have been carried out when formulating the Joint Recommendations, despite the fact that the conservation objectives of the relevant

Natura 2000 sites go beyond the protection of reef habitats. Several species / habitats listed in the site Standard Data Forms are not mentioned when discussing management measures in the submitted proposals. And for those species / habitats which are mentioned, but for which further work is required before management measures can be formulated, it remain unclear what is the precise status of ongoing work as well as planned future activities STECF considers that this needs to be addressed in order to achieve favourable conservation status of all species and habitats present at the Natura 2000 sites under consideration, most of which were designated 'Special Areas of Conservation' in 2011.

STECF considers that in addition to the '*consistent approach to request for fisheries management measures under the Common Fisheries Policy*' which were taken into account by the Member States who formulated the Joint Recommendations, the '*common methodology for assessing the impact of fisheries on marine Natura 2000 sites*' is considered by the Marine Expert Group set up by the European Commission to support the implementation of marine Natura 2000 sites¹² to be the best practice approach when formulating fisheries management measures under the Common Fisheries Policy. STECF notes that although this methodology is not legally binding, it is in line with the relevant articles of the Habitats and Birds Directives, and provides guidance on the application of existing legal provisions in the context of fisheries in the Natura 2000 network.

STECF restates that the control areas of the Natura 2000 sites are small, which complicates enforcement and control. There is a risk that fishing could take place by fishing vessels operating within the Natura 2000 sites for which VMS signals are not polled every 10 minutes (i.e. fishing vessels from Member States other than Denmark), or which are not monitored by VMS at all (i.e. all vessels < 12 meters in length) without being detected. STECF thus considers that additional control and enforcement measures may be appropriate for such fishing vessels.

12 (see: http://ec.europa.eu/environment/nature/natura2000/marine/index_en.htm)

5.4 Eastern Bluefin tuna

Background provided by the Commission

The management of the Eastern Bluefin tuna stock is under the purview of the International Commission for the Conservation of Atlantic Tunas (ICCAT). On the basis of data collected and provided by the different CPCs, the ICCAT Standing Committee on Research and Statistics (SCRS) is asked to release both a scientific advice on the status of the stocks and associated management recommendation.

The stock assessment for eastern Bluefin is scheduled this year between the 20 and 28 July. During a Data preparatory meeting in early March 2017, scientists have identified both data requirements and assessment methods to be considered for this year stock assessment.

Unfortunately, the focus will likely remain on making stock projections using the same methodology (VPA) which was used during the last full stock assessment in 2014, and for which results are characterized by significant uncertainties. These uncertainties are linked to shortcomings of both the data and the methodology and may prevent the delivery of clear advice for this important stock.

ICCAT Recommendation 14-04 stipulates that the ICCAT scientific committee (SCRS) should deliver a new advice in 2016 on the basis of new modelling approaches. However the stock assessment was not delivered in 2016 and it was decided that an additional year was required to facilitate the development of the new modeling approach.

In order to improve the advice, some significant progresses have been made in terms of the quality of the data. Concerning the methodology, and despite the provisions of ICCAT Recommendation 14-04, in 2017 the work plan for the upcoming assessment refers mainly to the use of VPA and the possibility to explore some additional methods. In order to facilitate the delivery of a more accurate advice in 2017, it is therefore necessary to conduct before July some additional work on the use of alternative modelling approaches which could then be fully considered during the stock assessment.

One particularly relevant approach would consist of using a State Space Assessment Model. The state-space assessment model (SAM) is an assessment model which is used for several assessments within ICES. The model has fewer model parameters than full parametric statistical assessment models, with quantities such as recruitment and fishing mortality modelled as random effects.

One advantage of SAM is that it actually includes a prediction mechanism, unlike VPA where the historical estimation is backwards and a variety of additional assumptions have to be made for the projections, particularly related to recent year-class strength.

SAM also has a web based interface which will allow members of the BFT Working Group to be involved intersessionally, to see all details of the implementation, run it themselves, experiment with data, experiment with model assumptions, get help directly where they are (no matter where the helpers are) and also to ensure transparency.

The ToRs concerning the support to the EBFT stock assessment have been addressed through a study conducted by Anders Nielsen and Abdelouahed Ben Mhamed.

Request to the STECF

STECF is requested to review and provide an opinion on the report of the ad-hoc contracts in order to facilitate its use as an input to the ICCAT stock assessment process taking place in late July 2017, and in particular if it can offer an alternative to the use of VPA and its associated limitations.

STECF response

Summary of the ad hoc contract SCRS/2017/146 report

The TORs of the ad-hoc contract were:

1. Apply the State Space Assessment Model (SAM) of Anders Nielsen to assess the East Atlantic and Mediterranean bluefin stock in 2017;
2. Add the current version of SAM to the ICCAT software catalogue before end of April so that it can be used in the 2017 stock assessment;
3. Modify the likelihood function so that CPUE series used in the VPA2 can be included in SAM;
4. Run comparisons between SAM and VPA based on the 2014 assessment dataset. In particular STECF should compare the levels of uncertainties between the outputs from SAM and the VPA methodology used during the 2014 stock assessment model;
5. Set up and run a range of scenarios including diagnostics following the recommendations of the 2017 data preparatory meeting of ICCAT;
6. Develop hindcast procedure to verify the validity of the model by checking how it performs as a predicting tool.

STECF assumes that ToRs 2 and 3 have been performed, the other ToRs are addressed in the report.

In order to answer these TORs the state-space stock assessment model SAM was used as an approach to evaluate the impact of uncertainty. The report gives a general description of the properties of the SAM model, a brief description of input data sets and scenarios, a limited description and analysis of the results and a brief discussion/conclusion.

To evaluate the robustness of SAM a range of diagnostics (e.g., residual plots, Q-Q plots and retrospective runs) were presented. The data used were the VPA inputs from the 2014 assessment and the updated data available to the Bluefin working group on the 22nd May 2017. In total five scenarios were run with SAM (see Table 5.4.1). Based on the 2014 data set a comparison with the VPA2 approach is presented. For the different scenarios a three-year forecast is also presented.

The following main conclusions are drawn by the experts: *"The comparison between the two models using the different scenarios shows that SAM tend to have large confidence intervals compared to the VPA2. The comparison shows also that VPA tend to detect an increasing pattern in the recent years based on the 2014 dataset. The differences in the SSB and recruitment pattern between SAM and VPA2 could be related to the selection pattern. Older ages are more selected based on SAM model. However the same plots show that younger ages are selected based on VPA2 model. The study shows that the State-Space Model SAM is a powerful tool that can detect the uncertainties in the*

assessment datasets. The presentation of the existing uncertainties makes the provision of scientific advice to be more cautious.”

The report can be found on <https://stecf.jrc.ec.europa.eu/plen1702>.

Table 5.4.1 Description of the scenarios run with SAM.

scenario	description	abbreviation
1	2014 dataset with reported catch	sc1_2014_reported
2	2014 dataset with inflated catch	sc2_2014_inflated
3	2017 dataset with revised reported catch	sc3_2017_reported
4	2017 dataset with revised reported catch and <u>increasing</u> natural mortality for ages 4+ by 0.05	sc4_2017_reported_m+
5	2017 dataset with revised reported catch and <u>decreasing</u> natural mortality for ages 4+ by 0.05	sc4_2017_reported_m-

STECF observations on the ad-hoc contract report

1) Assessment results

STECF notes that an inflated catch dataset updated to 2017 is not presented in the report. Since inflated catch are considered by the SCRS to be the best dataset, it remains unclear to STECF whether a new inflated dataset will be made available to ICCAT, or whether the “revised reported catch” data set is actually equivalent to the “inflated” catch..

Both assessment methods (VPA2 and SAM) and all scenarios tested show a decreasing trend in fishing mortality after 2000. This indicates that management was successful in reducing fishing pressure and this conclusion is robust to the two assessment methods and various scenarios tested. The SAM assessments further show a strong decrease in the selectivity for younger age groups over time.

Changes and additions to the 2014 data sets in 2017 seem to have a large impact on SAM assessment results. For example, the SAM assessment indicates that the stock is in a low productivity phase when the 2014 data set is used, with recruits estimated at a historically low level after 2010. This perception changes when the 2017 data set is used as input to the SAM assessment. With this dataset, the median recruitment after 2010 is estimated to be at or above the long-term average. This effect can be partly attributed to the addition of two more years in the 2017 data set (see notes on retrospective patterns below) but also the data revisions and additions may have an impact. Conversely, the median SSB estimated with the 2017 dataset is lower than with the 2014 dataset in most of the years. It is unclear whether the difference comes from the shortening of the time series in the 2017 data set (start year in the 2014 data sets: 1950; start year in the 2017 data sets: 1968) or from the revision and addition of input data.

The comparison of the VPA2 and SAM assessment based on the 2014 data set revealed large differences in assessment results especially for the years after 2000. Although

confidence intervals are wide in the SAM assessments, the VPA2 estimates are outside the SAM confidence intervals in several years for various metrics. Apart from the years before 1960 and after 2008, the VPA2 returns a more pessimistic assessment, with F estimated systematically higher and SSB systematically lower compared to SAM.

In the years after 2010 SSB shows a strong increase in VPA2 while the SAM assessment shows a much less pronounced increase until 2013. STECF notes though that a similar increase in SSB after 2010 is nevertheless identified by the SAM assessment with the time series updated in 2017. This similarity indicates that although noisy, there is a sufficient signal in the data to indicate that biomass is increasing.

STECF notes that the VPA2 assessment with the 2017 dataset has not been performed. It is thus not possible to judge whether both assessment methods are more in line with each other after the revision of the input data in 2017.

2) assessment diagnostics

As also stated in the report, STECF notes that the diagnostics presented in the report indicate overall that residual patterns are not a major issue in the suggested SAM assessments, regardless of the scenario. Nevertheless, some residual patterns are found for example in the fit to the larval index from the 2017 data set and to a minor extent for ages 11 and 12 in the fit to the catch at age data from the 2017 data set. Residual analyses on autocorrelation and trends with fitted estimates indicate further issues for some fleet and age combinations. The appropriateness of including all CPUE series could be investigated further (see below).

The difference in residual diagnostics between scenarios appears to be minor in most cases. Some differences were found between scenario 2 (2014 data set with inflated catch) and the other scenarios according to the figures provided in the report.

STECF notes that there are some retrospective patterns in the different SAM scenarios. When using the 2014 input data set, recruitment in the most recent years is consistently overestimated, and the whole time series of SSB gets rescaled dependent on the final year of the assessment. This indicates that the assessment is not fully stabilised. Using inflated catch reduces the SSB scaling problem but does not remove the retrospective pattern on recruitment. When using the 2017 input data set, a substantial underestimation of both recruitment and SSB was observed in the runs with 2010 to 2012 as final year compared to the assessments with 2013 to 2014 as final year. This is not unexpected as by definition SAM provide smoother estimates of trends compared to assessment methods like VPA that are less robust to noise in the data.

These observations are robust to the tested changes in natural mortality assumptions.

3) Some shortcomings and suggestions for improvement

Overall, the narrative text in the report is rather short and does not provide sufficient description and analysis of the results. Additional considerations on how to interpret the figures, such as provided by STECF above, would improve the quality of the analysis. In addition, standard summary plots including confidence intervals for the SAM assessments with the 2017 data set would be useful.

STECF notes that although the results of the SAM assessments provided look promising, the report does not provide basic description of the chosen settings for model parameters and configuration. Alternative settings could be explored to identify the best configuration for the most robust assessment.

The assessments include a large number of CPUE indices from commercial fleets, and their impact on assessment results might be explored further. According to the report, it was agreed at the data preparatory meeting that the fleet structure may require some adjustment from the initial proposal following the examination of model diagnostics, but it remains unclear whether and how this has been done. For example, the influence of each index was tested by removing them from the assessment one at a time (“leave one out” runs). These runs were not included in the report but STECF extracted them from <http://stockassessment.org>. These shows that for example, the new aerial survey have a large influence on the SAM assessment results with the 2017 data set and SSB would be estimated considerably lower in 2015 if this index was left out (Figure 5.4.1). The impact of the various survey indices and associated structural uncertainties might be undertaken during the ICCAT assessment.

In addition, STECF underlines that tuning series in a stock assessment should be consistent with the spatio-temporal distribution of the catches and of the stock. Some CPUEs used in the report are derived from fleets which may not cover the full distribution of the stock, such as the fisheries from Japan, US and Canada. The suitability of these indices as tuning series should be considered.

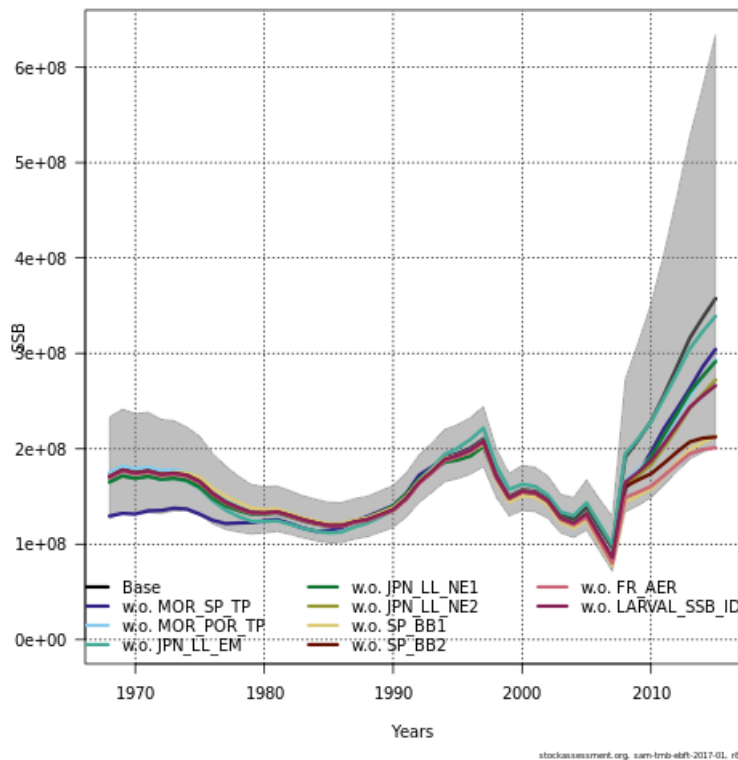


Figure 5.4.1: Leave one out runs for the SAM assessment using the 2017 input data sets and no change in natural mortality.

According to the report, a range of diagnostic procedures were suggested at the data preparatory meeting. These included residual plots, retrospective analyses, hindcasting, jackknifing and the bootstrap. It was also agreed that steps taken to ensure convergence to global best solution (e.g., jitter starting values test that different starting values achieve the same minimum negative log-likelihood) should be reported, and likelihood profiling of key estimated parameters should be conducted. In addition, parameters should be reported with standard errors. STECF agrees that this comprehensive list of diagnostics would give a coherent picture of the quality and robustness of the SAM assessments. However, apart from residual plots and retrospective analysis, STECF notes that the report does not provide these additional diagnostics. STECF acknowledges that

residual plots and retrospective analyses are the most usual diagnostics used to assess the quality of an assessment; nevertheless, the suggested additional diagnostics would provide important information on the robustness of the results presented.

STECF notes that the analysis and interpretation of the forecast runs remain limited, and the ToR 6 on "Develop hind cast procedure to verify the validity of the model by checking how it performs as a predicting tool" is thus only partially addressed.

Finally, STECF notes that an important follow up requirement for this work will be the estimation and/or the revision of reference points in accordance with the new assessment setup. Reference points like F_{MSY} are sensitive to the assessment method used, and thus any significant change in the assessment model requires their re-evaluation. This has not been considered in the ToR for the contract, but this work would have to be performed during the ICCAT assessment. STECF notes that ICES provides tools like Eqsim that can be used in conjunction with SAM or VPA assessments to estimate F_{MSY} (and sustainable ranges) in a fast and efficient way.

STECF conclusions

STECF reviewed the latest version of the report of the ad hoc contract. The TORs were answered apart from the last TOR (predictive skills), which was addressed only partially. STECF considers though this to be a minor issue which does not affect the validity of the results presented. In addition, not all recommendations from the data preparatory meeting were followed and a number of shortcomings were identified. Addressing these shortcomings would further improve the quality of the work performed and would allow for a more comprehensive evaluation of the robustness of the stock assessment results presented.

STECF agrees with the general conclusion that the State-Space Model SAM is a powerful tool to investigate uncertainties in the assessment datasets. VPA-like assessment models usually assume some certainty in the catch data, which may not be the case. The comparison between the two models across the different scenarios shows that SAM tends to have larger confidence intervals compared to the VPA2. SAM is considered to be a more robust assessment method especially when input data are uncertain, and would lead to more precautionary scientific advice. STECF considers thus that SAM is a more appropriate alternative than VPA for the assessment of Eastern Bluefin tuna.

However, STECF considers that the assessment scenarios presented here remain exploratory trial runs, and that further analyses would be necessary to identify the most robust set of input data, model configuration and selection of CPUE indices time series for the final 2017 assessment.

Finally, STECF underlines the necessity to revise reference points in 2017 if significant changes are brought in the final assessment compared to the 2014 setup.

5.5 Effort regime for Mediterranean demersal fisheries

Background provided by the Commission

DG MARE is considering improving the fishing effort regime so far implemented, only through the national management plans (Article 19, MEDREG), in Mediterranean demersal fisheries. The new effort regime would possibly set fishing opportunities (in terms of input controls) in accordance with the scientific advice of the relevant fisheries/metiers.

For this purpose, MARE is seeking advice from the STECF on:

- two concrete elements of the possible new effort regime for Mediterranean demersal fisheries; and
- the current limitations and information needed (e.g. data, modelling) to adjust and improve the provision of scientific advice.

Request to the STECF

The STECF is requested to:

1. Discuss, comment as adequate and advice whether the settings below are appropriate for the establishment of a fishing effort regime in the western Mediterranean demersal fisheries, taking into account the availability of data and scientific advice:
 - (a) Effort unit in term of 'number of fishing days'.
 - (b) Effort groups in term of 'gear type/target species/Member State' (see example for the western Mediterranean in Table below).
 - (c) In the case that these settings are not appropriate, other alternatives should be discussed, commented as adequate and proposed for an efficient and effective fishing effort regime.

Gear type	Target species	Member State
TRAWL (continental shelf & upper slope)	HKE+MUL+DPS+NEP	France/Italy/Spain
TRAWL (deep-waters)	ARA+ARS	France/Italy/Spain
NETTERS	SBS+PAG	France/Italy/Spain
NETTERS	HKE	France/Italy/Spain
LONGLINERS	HKE	France/Italy/Spain

2. Give advice on the aspects to be improved in current scientific knowledge to provide, by 2018, commensurate fishing effort levels with respect to the estimated target F_{MSY} , which could refer to the less vulnerable stock (equivalent to the highest F_{MSY}), the most vulnerable stock (equivalent to the lowest F_{MSY}) or a mixed stocks average.

STECF response

STECF considered that the questions asked were very specific, directly looking at particular issues linked to the quantification of effort. STECF is of the opinion that before focusing on such implementation details, it is necessary to address the intrinsic characteristics of effort management. Effort management has been trialled and implemented in various parts of the world, and the experience collected allows understanding the pros and cons of effort management, both in general terms and more specifically in the context of the Mediterranean. During the plenary meeting, a dialogue was engaged with DGMare on this, and some of the outcomes of this discussion is briefly reported below before addressing the ToRs.

STECF general comments on effort management

Current effort measures in the Mediterranean

In the Mediterranean countries, management is mainly based on some technical measures, with only limited control of the total level of effort. The regulations in place are mainly linked to area and seasonal closures, with the implementation of protected areas closed to fishing for the whole year or for certain periods, the seasonal protection of nursery areas or spawning areas, and seasonal fishing bans for certain fleets. In some management plans presented in the past, the regulation of fishing effort levels were mostly based on proposals for the decommissioning of vessels, overall reductions in fishing capacity, but seldom on reduction in activity (e.g. fishing days by week or daily hours of activity). The effectiveness of most of the measures implemented to actually reduce fishing pressure is not demonstrated, as fishing mortality has remained very high for most Mediterranean stocks. This is because measures linked with spatial management do not necessarily reduce the level of effort, but often simply displace it towards other areas. While measures protecting juveniles can ensure that the stocks do not collapse by maintaining some productivity, fishing pressure is applied to the adult component of the stocks. So reducing fishing mortality towards Fmsy implies reducing this fishing pressure, i.e. reducing the total catches of the adult populations.

The declared reductions in “overall fishing effort” by reducing fleet capacity through decommissioning did not appear to produce an effective reduction in fishing pressure, because decommissioning schemes often first remove the oldest and least efficient vessels, some of them being no longer operating.

TAC vs. effort control

The definition of maximum catch limits (TAC) during a certain timeframe and for certain number of species is a management option that has been widely adopted, particularly in most developed countries. Providing a TAC advice based on Fmsy criteria is rather straightforward when accurate assessments exist. Although major progresses are currently being achieved regarding the accuracy and precision of Mediterranean stock assessment, implementing TACs in the Mediterranean remain challenging because the available data are not reliable enough as fisheries information is often partial and imprecise and time series relatively short.

There are additional issues linked to the enforcement of a management regime based on output controls (TACs) in the Mediterranean. The main one is the difficulty to monitor and control the catches of the numerous fleets spread along the Sea. Demersal fisheries

target species mixes often without clear dominant species. Landings occur over an extremely high number of ports and landing places and the fishery is dominated by the small scale fisheries whose catches are difficult to quantify.

STECF notes though that the same difficulties would to a large extent also apply with effort control. First of all, STECF underlines that it would be at least as difficult to monitor and control the amount of effort exerted by a vessel as it is to monitor and control its catches, especially for small vessels. In the Mediterranean, there is a clear gap in knowledge of where and when do the small vessels operate, as vessels under 10m are not required to fill in logbooks. STECF notes that this limit is set at 8m in the Baltic Sea. Effort control would then need to be simple to implement and control if it is applied to vessels without logbooks.

Relationship between fishing effort and fishing mortality

It would be necessary to estimate a desirable level of fishing effort consistent with the management objectives based on yields (e.g. MSY) or in certain limits based on fishing mortality rates. Even when reliable formal assessments are carried out, the relationship between fishing effort (e.g. in fishing days) with F_{MSY} is not linear and is difficult to assess and predict. The impact of each unit of effort (one fishing day) on the target species differ not only between fleets, métiers and gears, but also between two fishers with the same type of vessel, and between two fishing trips of the same vessel. This relationship has been extensively studied also in data-rich areas (cf e.g. Marchal et al. 2006, 2007; Mahevas et al., 2011, Ulrich et al., 2012, Kraak et al., 2013), but with only limited success. Obviously, if effort reduces a lot so will fishing mortality, but the effects of limited reductions are likely small. The co-occurrence of many species characterised by different life history traits in the exploited fish assemblages makes this further difficult, because different species are impacted differently by the effort, depending on the catchability.

Overcapitalisation and input substitution

Effort regimes in fisheries economics generally characterized as inefficient with an incentive structure leading to overcapitalisation (FAO 2016). Limiting the time allowed to fish leads to an investment in equipment to catch more fish at the same amount of time. Seminal papers, as Squires (1987), Kompas et al. (2004), or Da Rocha et al (2016) in the Mediterranean, show that policies based on input control lead then to a fishery with more fishing firms with lower productivity, and overcapitalization. Therefore, the effort needs to be adjusted regularly to take the improvement in efficiency into account.

On an already overcapitalized fishery the introduction of a management system based on input controls generates additional incentives for increased overcapitalization. The values of these overcapitalization differ on how expectations of fishers are considered. Under rational expectations the source of this overcapacity is based on the existence of imperfect markets (fisher do not have a market to insure the risk derived from the natural and management induced variability – as they can not judge what the future will hold they would need some kind of insurance to minimize the risks). In this situation, the less productive vessels stay in the fishery and pay the idling cost to wait for better times, which reduces the average factor productivity of the fleet. The result of input controls, will be that more vessels with reduced efficiency are required to achieve the same biological targets, compared to non-distortionary instruments limiting the catch/landings (i.e ITQs). This all implies an overcapitalized fleet.

From the total factor productivity point of view, it should be also noted that an input-

based management system can substitute regulated inputs (i.e. vessel power) by unregulated ones (i.e. gear headrope length) (Wilén, 1979) which could potentially decrease technical efficiency of the vessels, as shown in the Australia's banana prawn fishery (Kompas et al., 2004). For example, if vessels below 12 m are not regulated all fishers will invest in vessels with a length of 11.99 m.

Finally, it should be also added that fishers see also fishing not simply as an economic activity. For many it is more a way of living and, therefore, they also stay in a fishery although they have a comparable low income.

Effort management in mixed-fisheries

It is well established that most of the commercial resources in the area are heavily exploited and need a strong reduction of removals (total catches) in order to make the stocks sustainable. Therefore, if such reduction is to take through effort control rather than TAC, effective and significant reduction of fishing effort (i.e. a reduction of the total number of fishing days) would need to be considered, rather than further reduction of fleet capacity through decommissioning or additional spatio-temporal technical measures. STECF notes however that such decision may have important impacts under a socio-economic point of view and will trigger unpredictable changes in fishers' behaviour that could jeopardize the success of any enforced measure. A generalized fishing effort reduction may also penalize certain fractions of the fleets which are exploiting more sustainable stocks.

STECF notes that the implementation of a management based on a fishing effort regime is difficult also because assessments on exploitation status are not available for many stocks. Only these few stocks are currently considered in the plans for the identification of the necessary measures for the sustainable exploitation of the stock assemblages. The choices are based on the assumption that the status of this limited number of stocks is sufficiently representative of the general status of the whole stock assemblage and also that their evolution under alternative management measures will be similar to the expected evolution of the other not-assessed stocks.

The success of an effort-based management for mixed-fisheries single-species objectives may not be reached if not considered the differences in the stocks dynamics. A single effort limit applied to all fleets in a management area needs to ensure sustainability and high revenues, but may produce under-exploitation or over-exploitation of some stocks (Maravelias et al., 2012).

There are many other important considerations regarding the relative pros and cons of effort control versus TACs, and there are also important lessons to be drawn from experiences with effort regimes in other areas; but providing a full and synthesis of this knowledge goes beyond the work achievable during a plenary session. STECF remains at disposal for providing a more comprehensive overview at a later stage.

STECF comments to the ToRs

1. Discuss, comment as adequate and advice whether the settings below are appropriate for the establishment of a fishing effort regime in the western Mediterranean demersal fisheries, taking into account the availability of data and scientific advice:

(a) Effort unit in term of 'number of fishing days'.

STECF notes that the number of fishing days is a standard measure of fishing effort for trawlers, but it is usually not a very precise estimate of the actual fishing pressure, not least due to the observed differences in daily effective fishing duration (hours fishing by day, and time fishing vs. time steaming etc) among port, countries or regions which should be included in the same Management unit.

Additionally, fishing days do not account for differences between small and large vessels. STECF notes that nominal fishing effort is thus often expressed as the product of some capacity measure and fishing activity. For example KwDays have been used in the effort control for the EU cod management plan. This can improve the relationship between fishing effort and fishing mortality (Marchal et al., 2002) but is still not sufficient, as fishing power is determined by many other characteristics. Moreover, different and more complex functional relationships may apply for each stock according to their characteristics (Rijnsdorp et al., 2005).

STECF also notes that the number of fishing days as a proper measure of effort and of ability of a vessel to capture fish is not the more suitable for other gears. In these other gears the efficiency of the capture is mostly depending on the number of gears each vessel uses in a fishing trip, the number and size of the set nets, the number of set hooks, the soaking time, etc.

STECF considers that as the relationship between fishing effort and fishing mortality rate F varies depending to the stock and other variables, the choice of proper effort measures is critical and may undermine the ability of a management plan based on a fishing effort regime to effectively control F.

(b) *Effort groups in term of 'gear type/target species/Member State' (see example for the western Mediterranean in Table 5.5.1 below).*

Table 5.5.1. Effort groups in western Mediterranean

Gear type	Target species	Member State
TRAWL (<i>continental shelf & upper slope</i>)	HKE+MUL+DPS+NEP	France/Italy/Spain
TRAWL (<i>deep-waters</i>)	ARA+ARS	France/Italy/Spain
NETTERS	SBS+PAG	France/Italy/Spain
NETTERS	HKE	France/Italy/Spain
LOGLINERS	HKE	France/Italy/Spain

STECF notes that the level of aggregation of fisheries/stocks defined for the collection of data and for giving management advice named "continental shelf & upper slope" fisheries has been adopted over all the Mediterranean GSAs in the frame of the European Data Collection Frame. STECF observes that it includes a great variety of stocks and may not be appropriate for effort management. The defined aggregation includes different fisheries operating at different depths and targeting different stock assemblages with fairly different species composition. As an example, in the NW Mediterranean, *Mullus barbatus* is mainly caught by trawlers in coastal areas at depths <100m with octopus, mantis shrimp, cuttlefish as the main targets and also by artisanal fisheries operating close to the coast. Over a deeper depth range, mainly in the range 100-250m Rose shrimp is caught with hake. A fishery targeting *Nephrops norvegicus* operate in the depth range 250-400m with other octopus spp., squids, Scyliorhinidae as accompanying species. A fleet operating on the slope in depths between 500 and 1000m target red shrimps. This last fishery have been kept separated to the so-called "continental shelf &

upper slope" fisheries, but still remains problems for assign the target of one fishing trip to red shrimps.

STECF notes that the aggregation defined in the data collection framework was initially mainly based on economic considerations and due to practical sampling issues. STECF considers that in the case a management plan based on fishing effort regime for the main stocks is planned, there is the need of a more disaggregated information as it will allow a more realistic and useful quantification of effort partitioning. STECF considers that In the present conditions, we are not able to quantify specific effort for single stocks assemblages nor to define, based on the current allocation of fishing effort and status of the different exploited assemblages, the changes in fishing pressure needed for driving stocks to better status.

However, disaggregation may lead to other type of issues. The imposition of a reduction of effort on some stock/assemblage in some area/depth may produce opportunistic shifts in effort allocation of part of the fleet on other resources/areas in the case in such other areas effort is not limited.

2) In the case that these settings are not appropriate, other alternatives should be discussed, commented as adequate and proposed for an efficient and effective fishing effort regime.

STECF identified as an alternative to the existing aggregation, a more detailed disaggregation for the group called "continental shelf & upper slope" over all the Mediterranean. Such disaggregation should consider 3 areas/depth intervals where different fisheries target different fish assemblages: coastal area up to 100m, continental shelf (100-200 m) and upper slope (250-400m).

STECF also considers that it is necessary to assess exploitation status of more stocks per gear type/target species/Member State aimed at defining the more adequate fishing effort levels for the whole species assemblages

3. Give advice on the aspects to be improved in current scientific knowledge to provide, by 2018, commensurate fishing effort levels with respect to the estimated target F_{MSY} , which could refer to the less vulnerable stock (equivalent to the highest F_{MSY}), the most vulnerable stock (equivalent to the lowest F_{MSY}) or a mixed stocks average.

STECF stresses the need for better data on age structure of the catches and longer catch time series for carrying out assessments for an enlarged list of stocks. These stocks should be selected based on different aspects as they should represent different life strategies, different velocity of response to alternative management choices, to have different commercial importance, etc.

The choice of optimal fishing effort levels for stocks should be based, when possible, on formal assessments of the current exploitation status and in the case of stocks with limited data, using sound indicators of stock status. STECF stress that is necessary to make available detailed data on the vessels daily operations (areas and targets) using VMS information, logbooks, interviews, or other sources for effort partitioning among exploited stock assemblages.

STECF notes that is impossible to define a single adequate effort level for all stocks as large differences in catchability and stock status across stocks. In any case, trade-offs would have to be made between the most and the least overexploited stocks, if a unique effort level is to be applied. STECF notes that the elements used for defining a desirable/commensurate effort level can be based on the status of the less vulnerable stock or based on the status of the most valuable stocks or through a mixed stocks status average. Scientists may show the likely consequences of different choices but the

final decision will have to be made by managers based on biological, social and economic considerations.

STECF considers that it is unlikely that for 2018 it will be reached the planned objectives based on MSY considerations. The current exploitation status for most of the exploited resources is too high and a drastic reduction of fishing effort would be necessary. Assuming a relationships between fishing effort and fishing mortality (even if not linear) would mean that effort should be reduced by at least the same proportion as the expected reduction in fishing mortality. Such a 1-to-1 relationship has for example been applied in the EU cod plan 1352/2008. Even in the case a drastic reduction is enforced, stocks will need many years to recover to more sustainable levels

STECF considers that additional regulations such as closed areas or fishing seasons can only have an effect is the overall amount of catches is reduced. Spatial management affect selection and size composition but does not necessarily reduce fishing effort. The decision to close an area to fishing can though also justified by a desire to restrict vessel efficiency. Such closures would be defined in areas with high catch rates and where vulnerable ages are found. Any measure aimed at restricting efficiency will though produce a reduced profitability.

Modelling may help define the more sound management measures based in effort, some scenarios of management setting fishing effort regimes for a certain number of stocks (i.e. at different levels of area aggregation or considering a variable number of interacting stocks) can be simulated. It is for example possible to measure the ability, following alternative choices, to meet the management needs based on the available scientific perception of stock status. STECF stresses that in the Mediterranean, however, it is not possible to compare likely performances and advantages of TAC based managements against effort based or particular combinations of individual TACS as was already done in other areas (Baudron et al. 2010, Zeller & Reinert, 2004, Kraak et al, 2004 and others).

Other simulations should be related to the consequences of alternative management choices (management based on the more biologically weak species, aimed at optimizing total yields, to prioritize the more valuable stocks or others). A potential idea that could be investigated further in the Mediterranean is the implementation of tariffs-based RTIs (Real-Time Incentives), where different "effort tariffs" apply in different areas and seasons (Kraak et al., 2015),

STECF conclusions

Effort management has been well studied in other areas, and there are a number of characteristics that may be discussed with managers before implementation in the Mediterranean Sea. A major difficulty foreseen is the poor monitoring and documentation of the actual effort levels of a large fraction of the fleet.

The relationship between fishing effort and fishing mortality is not linear, as there are many technical and human factors that govern the impact of one unit of fishing (e.g. one day) on the exploited stocks, and fishers can also compensate effort reductions with increased fishing efficiency. Therefore reductions of fishing mortality cannot be obtained with small adjustments in the fishing effort, and larger reductions would be necessary before observing measurable effects.

The measurement of fishing effort and the choice of the appropriate unit of measurement Nominal effort expressed as capacity x activity is a usual but still unprecise unit. Days at sea is also little appropriate for small vessels with set gears, as vessels may bring on board and utilize during a single trip different types and numbers of gears or to leave set fishing gears for several days

The criteria for aggregation of the stocks/areas has to be revised to account for more realistic fishing patterns. The definition of a sound effort management unit depends on a good definition of stock boundaries and good information on catch composition, which may be lacking.

It is advisable to consider the feasibility and the respective pros and cons of output control measures (TAC) vs. effort control in the different fisheries.

Spatio-temporal measures aimed e.g. at the protection of juveniles or spawning aggregations may be useful but are not sufficient to reduce fishing mortality on adult populations.

Finally, STECF stresses that the feasibility of effort management in the Mediterranean is a complex issue that cannot be fully addressed within the frame of an STECF plenary. STECF encourages further dialogue with stakeholders, regional states and scientists regarding the potential efficiency of a diversity of management measures.

References

- Baudron, A., Ulrich, C., Nielsen, J. R., and Boje, J. 2010. Comparative evaluation of a mixed-fisheries effort-management system based on the Faroe Islands example. – *ICES Journal of Marine Science*, 67: 1036–1050.
- Da-Rocha, J. M., Prellezo, R., Sempere, J., & Antelo, L. T. (2016). Fleet dynamics and capital malleability (No. 2016-09). El Colegio de México, Centro de Estudios Económicos
- FAO (2016). Effort rights in fisheries management – General principles and case studies from around the world. Rome (FAO Fisheries and Aquaculture proceedings 34).
- Hartman J.L., Sands N.J. 1999. A simulation model to assess management and allocation alternatives in Multi-Stock Pacific Salmon Fisheries. (in) *Sustainable Fisheries Management Pacific Salmon* Knudsen E, Cleveland R. Steward, Donald D. MacDonald, Jack E. Williams and Dudley W. Reiser(eds) eBook ISBN: 978-1-4398-2267-8.
- Hegland, T.J., Hopkins, C., 2014. Towards a new fisheries effort management system for the Faroe Islands? - Controversies around the meaning of fishing sustainability. *Marit. Stud.* 13, 12. doi:10.1186/s40152-014-0012-7
- Í Jákupsstovu, S.H., Cruz, L.R., Maguire, J.J., Reinert, J., 2007. Effort regulation of the demersal fisheries at the Faroe Islands: A 10-year appraisal, in: *ICES Journal of Marine Science*. pp. 730–737. doi:10.1093/icesjms/fsm057
- Kompas, T., Che T.N., and Grafton Q.R., "Technical Efficiency Effects of Input Controls: Evidence from Australia's Banana Prawn Fishery," *Applied Economics*, 2004, 36 (15), 1631–1641.
- Kraak B.M., Buisman F.C., Dickey-Collas M. , Poos J.J. , Pastoors M.A. , Smit J.G.P. , Daan N. and Kell L.T. 2004. How can we manage mixed fisheries? A simulation study of the effect of management choices on the sustainability and economic performance of a mixed fishery ICES CM 2004/FF:11.
- Kraak, S.B.M., Bailey, N., Cardinale, M., Darby, C., De Oliveira, J.A.A., Eero, M., Graham, N., Holmes, S.J., Jakobsen, T., Kempf, A., Kirkegaard, E., Powell, J., Scott, R.D., Simmonds, E.J., Ulrich, C., Vanhee, W., Vinther, M., 2013. Lessons for fisheries management from the EU cod recovery plan. *Mar. Policy* 37, 200–213. doi:10.1016/j.marpol.2012.05.002

- Kraak, S.B.M., Reid, D.G., Bal, G., Barkai, A., Codling, E.A., Kelly, C.J., Rogan, E., 2015. RTI ("Real-Time Incentives") outperforms traditional management in a simulated mixed fishery and cases incorporating protection of vulnerable species and areas. *Fish. Res.* 172, 209–224. doi:10.1016/j.fishres.2015.07.014
- Mahévas, S., Vermard, Y., Hutton, T., Iriondo, A., Jadaud, A., Maravelias, C.D., Punzón, A., Sacchi, J., Tidd, A., Tsitsika, E., Marchal, P., Goascoz, N., Mortreux, S., Roos, D., 2011. An investigation of human vs. technology-induced variation in catchability for a selection of European fishing fleets. *ICES J. Mar. Sci.* 68, 2252–2263. doi:10.1093/icesjms/fsr150
- Maravelias, C.D., Damalas, D., Ulrich, C., Katsanevakis, S., Hoff, A., 2012. Multispecies fisheries management in the Mediterranean Sea: Application of the Fcube methodology. *Fish. Manag. Ecol.* 19, 189–199. doi:10.1111/j.1365-2400.2011.00801.x
- Marchal, P., 2002. A comparison of three indices of fishing power on some demersal fisheries of the North Sea. *ICES J. Mar. Sci.* 59, 604–623. doi:10.1006/jmsc.2002.1215
- Marchal, P., Andersen, B., 2006. Improving the definition of fishing effort for important European fleets by accounting for the skipper effect. *Can. J. Fish. Aquat. Sci.* 63, 510–533. doi:10.1139/F05-238
- Marchal, P., Andersen, B., Caillart, B., Eigaard, O., Guyader, O., Hovgaard, H., Iriondo, A., Le Fur, F., Sacchi, J., Santurtún, M., 2007. Impact of technological creep on fishing effort and fishing mortality, for a selection of European fleets. *ICES J. Mar. Sci.* 64, 192–209. doi:10.1093/icesjms/fsl014
- Pascoe, S., Robinson, C., 1998. Input Controls, Input Substitution and Profit Maximisation in the English Channel Beam Trawl Fishery. *Agric. Econ.* 49, 16–33. doi:10.1111/j.1477-9552.1998.tb01249.x
- Rijnsdorp A, Daan N, and Dekker W. 2005 Partial fishing mortality per fishing trip: a useful indicator of effective fishing effort in mixed demersal fisheries. *ICES Journal of Marine Science*, 63: 556e566 (2006) doi:10.1016/j.icesjms.2005.10.003
- Squires, D., "Public Regulation and the Structure of Production in Multiproduct Industries: An Application to the New England Otter Trawl Industry," *RAND Journal of Economics*, 1987, 18 (2), 232–247.
- Ulrich, C., Wilson, D.C.K., Nielsen, J.R., Bastardie, F., Reeves, S. a., Andersen, B.S., Eigaard, O.R., 2012. Challenges and opportunities for fleet- and métier-based approaches for fisheries management under the European Common Fishery Policy. *Ocean Coast. Manag.* 70, 38–47. doi:10.1016/j.ocecoaman.2012.06.002
- Wilén, J., "Fisherman Behavior and the Design of Efficient Fisheries Regulation Programmes," *Journal of the Fisheries Research Board of Canada*, 1979, 36, 855–858.
- Zeller D, Reinert J 2004 Modelling spatial closures and fishing effort restrictions in the Faroe Islands marine ecosystem *Ecological Modelling* 172 (2004) 403–420

5.6 Management Plan for small pelagics fishery using purse seine net "srdelara" (Republic of Croatia)

Background provided by the Commission

Under Article 19 of Council Regulation (EC) No 1967/2006 (hereafter referred to as "MEDREG"¹³), Member States shall adopt management plans for fisheries conducted by trawl nets, boats seines, shore seines, surrounding nets and dredges within their territorial waters. Measures to be included shall pursue a sustainable exploitation of the marine biological resources while minimizing the impact on marine ecosystems.

According to paragraph 5 of Article 19 of the Mediterranean Regulation, the measures to be included in the management plan shall be proportionate to the objectives, the targets and the expected time frame and shall have regard to:

- a) the conservation status of the stock or stocks;
- b) the biological characteristics of the stock or stocks;
- c) the characteristics of the fisheries in which the stocks are caught;
- d) the economic impact of the measures on the fisheries concerned.

In 2013, the Common Fisheries Policy (CFP¹⁴) introduced new elements for conservation such as the target of maximum sustainable yield exploitation rate (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 maximum sustainable yield or MSY. Where targets relating to the MSY (e.g. fishing mortality at MSY) 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 also contain specific conservation measures based on the ecosystem approach to achieve the objectives set. In particular, they 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 fisheries, conduct pilot projects on alternative types of fishing management techniques, etc.

A national management plan addressing, in particular, fisheries harvesting stocks shared amongst different countries shall inevitably take into account the overall supranational context in terms of scientific basis, of already existing conservation/control measures as well as of opportunities and constraints stipulated by the decision making process.

13 Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94. [OJ L 409, 30.12.2006, p. 11-85](#)

14 Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC. [OJ L 354, 28.12.2013, p. 22-61](#)

Croatia has recently submitted a revised national "Management Plan for small pelagic fishery using purse seine net 'sredlara' " with a view to align it to the goals set by the Regulation (EU) No 1380/2013 for reaching the MSY by 2020 as well as those related to the landing obligation. All data on fleet and catches should have been updated including also the socio-economic analysis based on the DCF data.

During recent years, Croatia has submitted various draft management plans to the European Commission (EC). The STECF has provided advice in four occasions (in April 2016, in July 2016, in October 2016 and in March 2017)

Request to the STECF

1. STECF is requested to review the scientific basis of the abovementioned revised Management Plan, to evaluate its findings and make appropriate comments with respect to conservation/management measures proposed therein from the point of view, particularly, of their conformity with the conservation and management requirements/objectives stipulated by the Council Regulation (EC) No 1967/2006 ("MedReg") and by the Regulation (EU) No 1380/2013 while taking into account the relevant provisions adopted by the General Fisheries Commission for the Mediterranean (GFCM).
2. In the event that the scientific/technical basis or the management measures are not sufficient or consistent, the STECF shall provide recommendations on the additional information needed and on the likely mitigation/adaptation measures to address the drawbacks identified.
 - More specifically, STECF is requested to advice, and comment as adequate, whether the management plan contains satisfactory elements/measures and scientifically sound comments/interpretations in terms of:
 - The biological characteristics and the state of exploited resources with reference in particular to long-term yields and low risk of stock collapse. Specific advice and comment is requested on
 - which biological conservation and management indications can be drawn from data and information reported in Section 11?
 - Whether the provisions stipulated by the Article 13.3 of Council Regulation (EC)No 1967/2006 could serve the conservation scope, other than the protection of the sea bed habitats, of protecting spawning and nursery grounds in coastal areas where spawners of both anchovy and sardine migrate as reported in section 11
 - whether the sardine and anchovy must be considered short-lived species taking into account their expected life-span?
 - Whether there are scientifically well-known examples of fish stocks without parental care where the recruitment strength is mostly independent from the environmental factors?
 - Coherence of analysis reported in the section on the "Status of the stocks" with respect to the information provided in graphs 10 & 11
 - The description of the fishing pressure and the measures to accomplish a sustainable exploitation of the main target stocks;
 - The data on catches, effort and catches/landing per unit of effort (CPUE-LPUE), as well as the biological reference points ensuring the conservation of the concerned stocks:
 - Specific advice and comment is requested on the LPUE reported in table 10 and whether such metric could be considered a good indicator of the status of exploited stocks providing indication of some positive trend.

- The catch composition in terms of size distribution, with particular reference to the percentage of catches of species subject to minimum sizes in accordance with Annex III of the Mediterranean Regulation;
- 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);
- The social and economic impact of the measures proposed;
- The scientific monitoring of the plan;
 - Objectives that are consistent with the objectives set out in Article 2 and with the relevant provisions of Article 6 of Regulation (EU) No 1380/2013;
 - Quantifiable targets such as fishing mortality rates and/or spawning stock biomass;
 - Clear time-frames to reach the quantifiable targets;
 - Conservation reference points consistent with the objectives set out in Article 2 of Regulation (EU) No 1380/2013;
 - Objectives for conservation and technical measures to be taken in order to achieve the targets set out in Article 15 of Regulation (EU) No 1380/2013, and measures designed to avoid and reduce, as far as possible, unwanted catches;
 - Safeguards to ensure that quantifiable targets are met, as well as remedial action, where needed, including for situations where the deteriorating quality of data or non-availability put the sustainability of the main stocks of the fishery at risk;
 - Other conservation measures, in particular measures to gradually eliminate discards, taking into account the best available scientific advice, or to minimise the negative impact of fishing on the ecosystem;
 - Quantifiable indicators for periodic monitoring and assessment of progress in achieving the targets of the management plan.

STECF response

STECF notes that some of the given ToRs were beyond the scope of the usual evaluation of similar management plans and were not entirely clear. These have been discussed with the Commission, and after clarification it has been agreed to restrict the STECF evaluation to the standard review of the elements of the plan.

STECF comments on the information provided

The submitted document (first submission in April 2017, re-submission with amendments in July 2017) is a revision of the national management plan for the "srdelara" purse seine (the Croatian purse seine targeting sardine) which was adopted in 29 May 2014.

The fleet involved consists of 249 vessels with total tonnage 18538 GT and engine power 77146 kW. The licences (249) for "srdelara" were authorised in 2014 to vessels with minimum activity of 20 fishing days with this net during the period from 1 July 2009 to 30 June 2014. The total number and capacity of vessels that are active in the "srdelara" fishery varies from year to year because certain of the authorised vessels may not use "srdelara" in a particular year as the vessels are also authorized to use other fishing gears.

STECF notes that the information presented in the plan concerning the composition of catches and discards and corresponding fish sizes remains rather incomplete and fragmented and does not provide a clear overview of the impact of that fleet. In particular the plan provides the following data:

- Total landings of the purse seine "srdelara" (65552 t, which was 99% of the landings of all Croatian purse seines) and their composition (78% sardine, 19% anchovy, 3% other) are only provided for 2015.
- Total landings of sardines, anchovies and unsorted (anchovy + sardine) small pelagic fish are presented for 2014 and 2015 regardless of the gear used (not specifically for "srdelara"). It is though stated that the landings of anchovies and sardines attributable to other purse seines (not "srdelara") in 2015 represented the 0.06% of total catches of these species, so STECF considers that it might have been possible and preferable to present all information for "srdelara" only.
- Data are presented for 2015 concerning the number of fishing vessels, GT, number of fishing days, landings, value of landings, including landings and value of landings of sardine, anchovy and unsorted small pelagic fish for all purse seines (not specifically for "srdelara") per vessel length category (6-12, 12-18, 18-24, 24-40, >40m).
- Landings per unit effort (days x GT) per vessel length category are presented for the years 2013, 2014 and 2015, which does not allow an analysis of trends.
- Landings of sardines and anchovies in Croatia are presented for the period 1975-2015.
- Bycatch composition of "srdelara" is only presented from a research study carried out in 2011.
- The plan includes information on the mean length of the fish, the parameter b of the length-weight relationship and the age composition of catches for anchovy and sardine caught in the period 2000-2015.

The plan contains several additional information.

In a chapter entitled "Socio-economic indicators", data on effort, capacity, prices, employment, salaries and a suite of economic variables and indicators are presented for the period 2012-2014 per vessel length category (6-12, 12-18, 18-24, 24-40), regardless of the purse seine net used. These data follow the Data Collection Framework (DCF) segmentation as reported in the AER (Annual Economic Report), based on the prevalent gear. Nevertheless, STECF notes that there is inconsistency in what is reported in the table and the notes about the currency used. Incidentally, from a comparison of data reported in some tables of the MP (e.g. table 11) with AER 2017 data, STECF observed that these data are not expressed in Euros, as described in the note to the same table, but in the national Croatian currency.

The plan provides a chapter with technical characteristics of the "srdelara" net which is based on a study of 2015 (Technical properties of purse seine nets targeting small pelagics in the Adriatic Sea and impact of their use on the marine environment).

The plan lists a large number of potential management measures that could be taken along the lines of Regulation (EC) No 1380/2013. These measures are categorized under the headings "*Permanent cessation of fishing activities*", "*Temporary cessation of fishing activities*", "*Authorisation*", "*Specific measures*" and "*Measures for the prevention of unwanted catch*".

STECF notes however that most measures listed in the management plan (except some specific measures in 2017 and 2018, added in the July version of the plan to comply with the 2016 GFCM recommendation, see below) remain poorly specified, as the processes by which each of these measures will be decided and how and when they will be implemented is not described. For example, it is said that: "*In order to reduce fishing mortality, protect sexually mature stock at the time of spawning, increase the level of recruitment and protect younger age categories, the measure of temporary cessation of a fishing activity in a particular area can be carried out*"... "*In order to increase the selectivity of fishing gear, a higher minimum mesh size or compulsory installation of*

*special devices to increase selectivity or to avoid unwanted catches can be defined”....
“The minimum reference size for the conservation of sardines in the Republic of Croatia is 11 cm, and for anchovy 9 cm,if it proves biologically justified more stringent provisions may be prescribed.”....*

STECF comments in response to Request 2

-Biological characteristics and the state of exploited resources with reference in particular to long-term yields and low risk of stock collapse. Description of the fishing pressure and the measures to accomplish a sustainable exploitation of the main target stocks

Section 11 includes plots of spawning stock biomass, fishing mortality and recruitment for sardine and anchovy in GSA17 & GSA18 from the most recent GFCM assessments of the stocks carried out within the WGSASP/SAC/GFCM in 2016. According to these assessments, endorsed by SAC/GFCM in its 19th session (Ljubljana, Slovenia, May 2017), the stocks of sardine and anchovy in the Adriatic Sea are overexploited and at low biomass levels. SAC recommended to decrease the fishing effort on these stocks.

STECF notes that the fishing mortality (F) exerted on sardine increased abruptly (tripled) between 2009 and 2014. At the same period, the SSB remained at a very low level despite the slightly increasing trend in recruitment. Noticeably, the Croatian landings increased also abruptly at the same period, with a doubling between 2009 and 2014 (from about 30000 to 60000 t, see Fig. 2 in the plan). The Croatian “srdelara” is responsible for the largest share of the sardine stock catches.

STECF further notes the steady increase in F exerted on anchovy since the late 80’s and the declining trend in recruitment and SSB during the last decade.

Anchovy and sardine are short-lived species (few age classes comprise the bulk of the catches, e.g. Fig. 8 and Fig. 9 in the plan). STECF PLEN 17-01 has discussed stock and recruitment relationships for small pelagics in the Adriatic and noted that there is a strong unbounded linear relationship between spawning stock biomass (SSB) and recruitment; and conversely, there is also a strong correlation between recruitment and the following SSB: high recruitment gives rise to a large stock in subsequent years, but when the recruitment declines, so does the stock. Changes in recruitment are partly in response to environmental changes, and not only a result of SSB.

STECF considers that fishing mortality on both stocks is now high, in a period of low stock productivity and low biomass, which increases the risk of stock collapse under unfavourable environmental conditions.

No specific measures and harvest control rules to achieve the sustainable exploitation of sardine and anchovy in the Adriatic have been specified in the national plan for “srdelara” (see ‘STECF observations’ above).

-Data on catches, effort and catches/landing per unit of effort (CPUE-LPUE), as well as the biological reference points ensuring the conservation of the concerned stocks

As detailed above (‘STECF observations’), the plan contains limited and fragmentary data on catches, by-catches, discards, and CPUEs/LPUEs.

The LPUE time series presented in Table 10 of the plan are very short (3 years) and do not allow any realistic inference of increasing/decreasing trends. As analysed in detail by STECF when examining the management plan of “Ciplarica” and “Palamidara” (PLEN-17-01), the use of LPUE as an indicator of stock abundance has many important drawbacks and should be avoided for pelagic species.

-Catch composition in terms of size distribution, with particular reference to the percentage of catches of species subject to minimum sizes in accordance with Annex III of the Mediterranean Regulation

As detailed above ('STECF observations'), the plan contains limited data on catch and size compositions. The "srdelara" fishery targets Annex III species, anchovy and sardine. Thus, the purse seine fishery is not regulated for the catch of these species to be minimal. No information is provided for Scomber spp. and Trachurus spp. which are also Annex III species

-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)

It is stated in the plan that the purse seine "srdelara" does not come into contact with the sea bed during its operation and it has no impact on seagrass beds. This conclusion is based on a study carried out in 2015 (Technical properties of purse seine nets targeting small pelagics in the Adriatic Sea and impact of their use on the marine environment).

STECF examined the results of the aforementioned study in PLEN-16-02 and concluded that, according to the information provided, the physical impact of the lead-line on the seabed seems to be negligible for the seines operating in the Central-Southern Adriatic Sea (e.g. mean depth around 80 m). However, it is unclear whether these conditions are met for the purse seines used in shallow waters (e.g. <25 m depth). Further clarifications are needed regarding the distance between the lead-line and the seabed during the fishing operations.

The provisions stipulated by article 13.3 of Council Regulation (EC) No 1967/2006 (minimum fishing depth set at 70% net drop) could, in addition to securing minimum impact on protected habitats, also contribute to the protection of coastal spawning and nursery grounds of anchovy and sardine.

STECF notes however that no information is provided in the plan regarding the location and depth of the srdelara fishing activities.

-The social and economic impact of the measures proposed

No such impact analysis is provided in the plan. Despite the economic relevance of the "srdelara" fishery for the Croatian fishing sector (including the processing sector), as stated in the MP and as emerging from the data provided, no social and economic impact of the measures proposed is provided in the MP. The availability of detailed data by fleet segments (as reported in the MP and in the AER 2017) could allow for a simple evaluation of the potential impacts of the measures proposed (i.e. capacity reduction, temporal closure, restriction in the number of fishing days) on employment, income, costs and wages.

-Objectives that are consistent with the objectives set out in Article 2 and with the relevant provisions of Article 6 of Regulation (EU) No 1380/2013. Quantifiable targets such as fishing mortality rates and/or spawning stock biomass. Clear time-frames to reach the quantifiable targets. Conservation reference points consistent with the objectives set out in Article 2 of Regulation (EU) No 1380/2013. Safeguards to ensure that quantifiable targets are met, as well as remedial action, where needed, including for situations where the deteriorating quality of data or non-availability put the sustainability of the main stocks of the fishery at risk

The objectives of the plan are described in a generic manner in Section 12 of the plan. In Section 13 the "goals", "specific goals" and "indicators" are listed for biological, economic and social objectives. For example, for the goal of "Achieving the highest level of

sustainable catches of target species by 2020” the proposed “indicators” are “SSB-Sardine biomass index”, “SSB-Anchovy biomass index” and “F-Fishing mortality”. In the April 2017 version of the plan, no reference target values have been specified for any of listed indicators (namely, SSB-Sardine biomass index, SSB-Anchovy biomass index, F-Fishing mortality, Average value of the catch at the first sale/vessel, Number of participants in the fishery and fish processing industry, Average salaries of employees).

The exact way in which each of these indicators will be used in order to achieve the respective management goal is not specified.

In the July 2017 version of the plan, the following biomass reference points have been specified for the two stocks:

	Sardine	Anchovy
SSB _{lim}	125318 t	45936 t
SSB _{pa}	250636 t	91872 t

STECF notes that these values (biomass reference points) have been proposed by WGSASP/SAC/GFCM in 2015 (benchmark GFCM assessments) but have not yet been adopted by GFCM. STECF notes that additional considerations on SSB reference points are given in PLEN 17-01.

It is said that no reference points based on F have been defined in the plan based on “recent STECF conclusions” (PLEN 17-01), and existing concerns about determination of the value of fishing mortality corresponding to F_{MSY} , as well as the discrepancy between GFCM and STECF assessments.

STECF recalls its recommendation in PLEN-17-01, that until objective means to determine the most appropriate stock-recruitment relationships are decided upon, proxies for F_{MSY} for Adriatic sardine and anchovy be derived using Patterson’s method and adopted as an upper limit for the exploitation rate on these stocks. The corresponding values for proxies for F_{MSY} are as follows:

Anchovy in the Adriatic (GSAs 17&18) $F_{MSY} = 0.48$

Sardine in the Adriatic (GSAs 17&18) $F_{MSY} = 0.4$

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

Regarding the landing obligation, it is said that the plan shall be in line with Commission Delegated Regulation (EU) No 1392/2014 of 20 October 2014 establishing a discard plan for certain small pelagic fisheries in the Mediterranean Sea (*de minimis* exemption).

STECF notes that this Regulation shall apply until 31 December 2017. The actions that will be taken in order to conform to article 15 after the end of 2017 are not specified, and no specific measures to avoid and reduce unwanted catches have been formulated

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

See ‘STECF comments on the information provided’ above.

STECF notes that, in its fortieth session (Malta, May-June 2016), GFCM adopted Recommendation GFCM/40/2016/3 establishing further emergency measures in 2017 and 2018 for small pelagic stocks in the Adriatic Sea (GSA 17 and GSA 18). According to it:

1. The country shall not exceed the level of catches for small pelagics exerted in 2014.
2. Fishing vessels targeting small pelagic fish shall not exceed 180 fishing days per year, with a maximum of 144 fishing days targeting sardine and a maximum of 144 fishing days targeting European anchovy.
3. In 2017 and 2018, the country shall apply spatiotemporal closures in view of protecting nursery and spawning areas. Such closures shall cover the entire distribution of small pelagic stocks in the Adriatic Sea, for periods of not less than 15 continuous days and up to 30 continuous days. These closures shall take place during the following period: for sardine, from 1 October–31 March, and for European anchovy, from 1 April – 30 September.
4. In 2017 and 2018, the country shall apply additional closures for vessels over 12 m for not less than 6 months. Such closures shall cover at least 30% of the area which has been identified as a nursery area or as an important area for the protection of early age classes of fish (in territorial and inner sea).

STECF notes that, in the July 2017 version of the plan, actions to comply with the emergency measures established in Recommendation GFCM/40/2016/3 have been included, specifically, with points 1, 2, and 3 above (catch limitation, restrictions in number of fishing days, temporal closures). With regard to point 4 (additional spatiotemporal closures for vessels larger than 12 m to protect nursery areas/early age classes), specific actions have not been defined due to the poor knowledge on the distribution and extent of nursery grounds of anchovy and sardine in Croatian waters.

STECF notes that the 2014 catches, which have been set as a limit in the 2016 GFCM recommendation, correspond to the highest sardine catch of the Croatian fleet. STECF considers that the GFCM emergency measures are not sufficient to reduce the fishing mortality to levels consistent with MSY, i.e. at reference levels recommended by STECF in PLEN-17-01 –see above. STECF further notes that the effects of GFCM emergency measures have been tested in the “Workshop on the assessment of management measures” (WKMSE) held by GFCM in 2016 and 2017, and the various simulations that were run showed that such emergency measures do not have any positive effect on the sardine and anchovy stocks, compared to the status quo simulations (no measure taken).

Finally, the plan envisages the revision/reissuing of authorizations for using “srdelara” in 2017, applying stricter criteria in terms of historical vessel activity (number of fishing days) although these criteria have not been specified yet.

-The scientific monitoring of the plan. Quantifiable indicators for periodic monitoring and assessment of progress in achieving the targets of the management plan

No specific information is provided regarding the scientific monitoring of the plan. The assessment of sardine and anchovy in GSA17 and GSA18 is carried out yearly, first, within AdriaMed (FAO regional program) and then in WGSASP/SAC/GFCM.

No reference values are specified for the indicators listed in Section 13, except for B_{lim} and B_{pa} as described above (namely, F-Fishing mortality, Average value of the catch at the first sale/vessel, Number of participants in the fishery and fish processing industry, Average salaries of employees).

STECF conclusions

STECF notes that the sardine and anchovy stocks in the Adriatic are overexploited and have a high risk of collapse due to the currently low productivity of the stocks combined with overfishing at low stock levels.

The sardine and anchovy stocks in the Adriatic Sea are of direct management interest to five countries (Croatia, Italy, Slovenia, Montenegro and Albania), hence, there is a need for regional cooperation and coordination on adopting effective management measures for the stocks. Within the general framework of the new CFP, the management of the "srdelara" fishery should be part of a regional management plan for small pelagic fish in the Adriatic Sea. Nevertheless, STECF notes that the "srdelara" fishery is responsible for the largest share of the sardine catches in the region, and consequently has a major impact on the fishing mortality on that stock. Therefore, any measure undertaken nationally to significantly reduce the sardine catches of this fleet will directly contribute to improving the conservation for this stock. No specific measures and harvest control rules to achieve the sustainable exploitation of sardine and anchovy in the Adriatic have been specified in the national plan for "srdelara".

STECF notes that many potential management measures are listed in the plan. However, they remain poorly specified, as the processes by which each of these measures will be decided and implemented are not described.

The specific measures complying with the GFCM emergency measures are specified. However, based on the evaluation carried out by GFCM in the Workshop on the assessment of management measures (WKMSE) held in 2016 and 2017, STECF considers that these measures are likely insufficient to reduce fishing mortality to the levels specified in the objectives.

STECF notes that the information provided in the plan does not allow for the full assessment of the effects of "srdelara" on the stocks of anchovy and sardine. The national management plan for "srdelara" has to include all those elements needed for assessing such effects and, specifically, gear-specific data on catches and discards, fishing effort, CPUE and respective size and age compositions of catches for the longest time series available.

5.7 Derogation for 'gangui' trawlers in certain territorial waters of France

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 (nm) of the coast or within the 50m isobath where that depth is reached at a shorter distance from the coast. In addition, Article 13(2) prohibits the use of trawl nets within 1,5 nm of the coast. At a request of a Member State, derogation from Article 13 (1) and (2) may be granted, provided that the conditions set in Article 13(5) and (9) are fulfilled.

Furthermore, Article 4(1) of MedReg prohibits fishing with trawl nets, dredges, purse seines, boat seines, shore seines or similar nets above seagrass beds of, in particular, *Posidonia oceanica* or other marine phanerogams. Derogation from this article may be granted, provided that the conditions stipulated in Article 4(5) are fulfilled. If a fishery benefits from derogation under Article 4(5) then derogation to the minimum distance from the coast and depth shall be allowed.

Finally, 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. According to paragraph 5 of Article 19, the measures to be included in the management plan shall be proportionate to the objectives, the targets and the expected time frame and shall have regard to:

- a) the conservation status of the stock or stocks;
- b) the biological characteristics of the stock or stocks;
- c) the characteristics of the fisheries in which the stocks are caught;
- d) the economic impact of the measures on the fisheries concerned.

In 2013, the Common Fisheries Policy (CFP) introduced new elements for conservation such as the target of maximum sustainable yield exploitation rate (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 maximum sustainable yield or MSY. Where targets relating to the MSY (e.g. fishing mortality at MSY) 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 also contain specific conservation measures based on the ecosystem approach to achieve the objectives set. In particular, they 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 fisheries, conduct pilot projects on alternative types of fishing management techniques, etc.

On 2 June 2014 Commission Implementing Regulation (EU) 586/2014 granted derogation from Articles 4(1), 13(1) and 13(2) of the MedReg in territorial waters of France adjacent to the coast of the Provence-Alpes-Cote d'Azur region to 'gangui' trawlers:

- (a) bearing the registration number mentioned in the French management plan;

(b) having a track record in the fishery of more than five years and not involving any future increase in the fishing effort deployed; and

(c) holding a fishing authorization and operating under the management plan adopted by France in accordance with Article 19(2) of Regulation (EC) No 1967/2006.

This derogation applies until 6 June 2017.

In line with the above Commission Implementing Regulation granting derogations, France committed to communicate to the Commission, within 3 years following the entry into force of this Regulation (i.e. until 6 June 2017), a report drawn up in accordance with the monitoring plan established in the management plan. The Management plan for professional 'gangui' fishing in the Mediterranean Sea by vessels flying the French flag was adopted on 13/05/2014¹⁵.

On 16 June 2017 France submitted a request to prolong the derogation from the first subparagraph of Article 4(1), from the first subparagraph of Article 13(1) and from Article 13(2) of the MedReg for 3 more years. The request is supported with the following documents: the implementation report justifying the request to renew the double derogation, 30 annexes providing supporting data and information, the list of annexes and the list of bibliography. The management plan for professional 'gangui' fishing is attached under annex 3.

Request to the STECF

STECF is requested to review both the implementation report of the 'gangui' fisheries supporting the request to renew the derogation and the current Management Plan, to evaluate their findings and make appropriate comments with respect to conservation/management measures proposed therein from the point of view, particularly, of their conformity with the conservation and management requirements/objectives stipulated by the Council Regulation (EC) No 1967/2006 ("MedReg") and by the Regulation (EU) No 1380/2013.

More specifically, STECF is requested to advice, and comment as adequate, whether the implementation report and the management plan contain adequate and up-to date scientific and technical justifications ensuring that:

- 1) the conditions set by the MedReg are still fulfilled:
 - The fishing vessels concerned have an overall length of less than or equal to 12 meters of overall length and engine power of less than or equal to 85 kW, in accordance with the first subparagraph of Article 4(5) of MedReg.
 - the fishing activities concerned affect not more than 33% of the area covered by seagrass beds of *Posidonia oceanica* within the area covered by the management plan and not more than 10% of seagrass beds in the territorial

¹⁵ Arrêté du 13/05/2014 portant adoption de plans de gestion pour les activités de pêche professionnelle a la senne tournante coulissante, a la drague, a la senne de plage et au gangui en mer Méditerranée par les navires battant pavillon français. (NOR: DEVM, JO no. 122 du 27 mai 2014).

waters of France, in line with requirements of points (ii) and (iii) of the first subparagraph of Article 4(5) of MedReg.

- catches of species subject to minimum conservation size as mentioned in Annex III are minimal, in line with Article 13(9) of MedReg.
- the mesh size comply with the requirement of at least a square-meshed net of 40mm or a diamond meshed net of 50mm and panels of netting smaller than 40mm mesh size are not used for fishing or kept on board, in line with Article 9 of MedReg.
- appropriate steps have been undertaken to ensure the collection of scientific information with a view to the identification and mapping of Posidonia habitat, in line with Article 4(6) of MedReg.

2) the impact on the Posidonia beds has been mitigated further, in the years of implementation of the management plan, in particular ensuring an effective reduction of the fishing capacity and effort. In the event that these justifications are not sufficient, the experts shall provide recommendations on the additional information needed and on the likely mitigation measures to counteract possible nonfulfillment.

3) the current management plan would continue to ensure a sustainable exploitation of species targeted by 'gangui' trawler without jeopardizing the socio-economic sustainability of the overall fishing fleets involved in exploiting those resources in the coastal area.

STECF response

On 2 June 2014 Commission Implementing EC Reg. No. 586/2014 granted derogation from Articles 4(1), 13(1) and 13(2) of the MedReg in territorial waters of France adjacent to the coast of the Provence-Alpes-Cote d'Azur region to gangui trawlers having a track record in the fishery of more than five years. STECF notes that it is not known whether the vessels concerned have track records of more than 5 years, as the relevant information is lacking in the documentation submitted by France.

On 6 June 2017, French submitted to the Commission a request to prolong the derogation from Articles 4(5), 13(1) and 13(2) of the MEDREG for 3 more years. The request was supported with an Implementation Report of the scientific monitoring plan 2014-2016 and the management plan (adopted on 13/05/2014) for professional gangui fishing. The Report and the Management Plan were submitted to the STECF for opinion. Therefore, the current request has a double derogation:

- from Article 13(1) and 13(2) of MedReg for the use of the gangui within 1.5 nautical miles (nm) of the coast or within the 50 m isobath where that depth is reached at a shorter distance from the coast, and;
- from Article 4(1) of MedReg for the fishing with gangui above seagrass beds, in particular *Posidonia oceanica*.

The STECF response is hence based on the information contained in the Implementation report '*Report in support of the application for renewal of the double derogation from Council Regulation (EC) No 1967/2006 by the Commission Implementing Regulation of 2 June 2014 (EU) No 586/2014*' prepared by France and 30 annexes providing supporting data and information. The management plan for professional gangui fishing was attached under Annex 3. All the material was submitted in French.

The gangui management plan was revised by the STECF EWG 11-05 in 2011 and endorsed by the STECF PLEN 11-02 afterwards. The main comments raised by STECF in 2011 were (i) insufficient information on the conservation status and the biological characteristics of the stocks, (ii) unknown impact of the small-scale fishing gears operating in coastal waters on habitats and species, (iii) insufficient measures for the protection of coastal habitats and (iv) lack of a clear definition of the objectives, and of the justification of the time schedules proposed for the different proposals.

These aspects are also part of the current evaluation.

According to MEDREG, Mediterranean Member States have to adopt MPs for fisheries conducted with trawl nets, boats seines, shore seines, surrounding nets and dredges within their territorial waters. MEDREG sets conditions of minimum distance from the coast and minimum depths for these fisheries. Derogations are possible only under a number of conditions, and provided that there is no significant impact on the marine environment.

More specifically, STECF is requested to advice whether the Implementation Report and the management plan contain adequate and up-to date scientific and technical justifications ensuring the following conditions.

Fishing vessels have LOA ≤ 12 m and engine power ≤ 85 kW, in accordance with the first subparagraph of Article 4(5) of MedReg

According to the Implementation Report, in 2017 a total of 24 vessels were fishing with gangui gear. With regards to vessel length categories: 15 vessels measured between 8-12 m (4 vessels fishing the small gangui and 11 fishing with gangui with otterboards); 7 vessels between 5-8 m (6 small gangui and 1 gangui with otterboards); 2 vessels under 5 m (1 small gangui and 1 gangui with otterboards). With regards to engine power: 12 vessels were equipped with engines of 50-85 kW (2 small gangui and 10 gangui with otterboards); 12 vessels under <50 kW (9 small gangui and 3 gangui with otterboards). STECF notes that this condition is fulfilled.

*Fishing activities concerned affect not more than 33 % of the area covered by seagrass beds of *Posidonia oceanica* within the area covered by the management plan and 10 % of seagrass beds in the territorial waters of France, in line with requirements of points (ii) and (iii) of the first subparagraph of Article 4(5) of MedReg*

The report of the 17 May 2010 of the former Protected Marine Areas Agency (AAMP) assessed the surface of the *Posidonia* beds on the coastline of the three departments of Région Provence-Alpes-Côte d'Azur to be **320 km²**. While the overall value of the surface of the *Posidonia* beds in Mediterranean French territorial waters in 2017 was **893 km²**.

According to the Implementation Report, the total swept area (TSA) affected by French ganguis can be assessed by the formula: $TSA = w \times h \times t \times n \times d \times v \times r$, where w is the horizontal opening (at the gangui wing tips); h is the time duration of a single tow; t is the towing speed; n is the number of tows per day for a single gangui vessel; d is the number of fishing days; v is the number of active gangui vessels; r is the repetition rate. The Implementation Report used for the estimation of the total swept area the following values: $w=10$ m; $h=1h15'$ (1.25 in decimal); $t=1$ kn (1852/3600=0.514 m/s); $n=5$; $d=150$ and 50 days for ganguis with otterboards and for small ganguis, respectively; $v=24$ (12 ganguis with otterboards and 12 small ganguis).

The report use a repetition rate of 0.2, which means that the swept area is only 20 % of the total swept area of all hauls cumulated, considering that most hauls are taken in the same place. Following this approach, the estimated swept area in 2017 was estimated in

the Implementation Report to be 52 km², which corresponds to 16.2 % of the total *Posidonia* beds surface in the three departments of Région Provence-Alpes-Côte d'Azur and 5.8 % of the area of *Posidonia* beds in French territorial waters. Therefore, according to the Report, these ratios are lower than the maximum limits of 33 % and 10 % set in the Article 4(5) of the MEDREG.

However, STECF notes several inconsistencies in the above reported calculations. Firstly, by using the same values of the Implementation Report, the overall swept area by small ganguis should have been 13.89 km² and not 10 km², resulting in 17.4 % of the area covered by seagrass *Posidonia* beds within the area covered by the management plan and 6.2 % of the total *Posidonia* beds in French territorial waters and not 16.2 % and 5.8 %, respectively (see Table 5.7.1).

Table 5.7.1. Estimation of the Total Swept Area (TSA) in 2017 by gangui with otterboards (Otter) and small gangui (Small) according to values used in the French Implementation Report.

		Otter	Small	
Horizontal gear opening	$w[m]$	10	10	
Towing time	$h[s]$	4500	4500	
Towing speed	$t[m/s]$	0.514	0.514	
No. hauls	n	5	5	
No. days	d	150	50	
No. vessels	v	12	12	
Annual tow repetition rate	r	0.2	0.2	
<hr/>				
TSA/haul	m ²	23150	23150	
TSA/day	m ²	115750	115750	
TSA/year	m ²	3472500	1157500	
TSA (all vessels)	m ²	41670000	13890000	
	km ²	41.67	13.89	55.56
<hr/>				
<i>Posidonia</i> beds [km ²]				Ratio
3 departments	320			17.4%
French waters	893			6.2%

Furthermore, STECF notes that for the ganguis with otterboards, the overall footprint (surface area of the seafloor swept by the gear) was underestimated because it is mainly affected by the otterboards, bridles and sweeps, and not only by the groundrope (Figure 5.7.1). Therefore, instead of using 10 m (horizontal gangui opening at the wing tips), a value corresponding to the otterboard spread should have been used. If not available directly, this value can be estimated using published values from the scientific literature. STECF notes that according to the literature (Notti et al., 2013; Sala et al., 2013; Sacchi et al., 2010), a value of 20 m likely represents the otterboards spread for such towed gears.

On the other hand, the value of 10 m for the horizontal opening of the small ganguis appears to have been overestimated, since according to the Ministerial Decree of 16 May 2011, which lays down technical measures for the professional gangui fishing in the

Mediterranean, the maximum horizontal gear opening must be restricted to 1.5 m. STECF is unable to assess if this technical measure was not respected during the last period of derogation, or it was mistakenly used for the calculation of the swept area in the Implementation Report. STECF however notes that the Ministerial Decree of 16 May 2011 sets a maximum allowed length of 10 m for the small gangui trawls, and thus considers that in the Implementation Report the length of the trawl was mistakenly confused with the width of the trawl. Therefore, it was decided to revise the calculation by using a mean width of 1.5 m for the small ganguis.

Moreover, according to the Report of the SGMED Subgroup on the Mediterranean Sea (STECF, 2004), as well as the Ministerial Decree of 16 May 2011, gangui towing speeds range between 1.5 and 3.0 kn depending on the seabed characteristics. Therefore STECF considers that an average value of 2 kn might have been adopted for the calculation.

Following the above considerations, STECF estimated that the calculation of the overall swept area would have resulted in 170.80 km², which corresponds to **53.4 %** of *Posidonia* beds surface area in the three departments of Région Provence-Alpes-Côte d'Azur, or **19.1 %** of the total *Posidonia* beds in French waters (see Table 5.7.2). This is above the respective thresholds of 33 % and 10 %, and therefore, the condition of the derogation is not fulfilled.

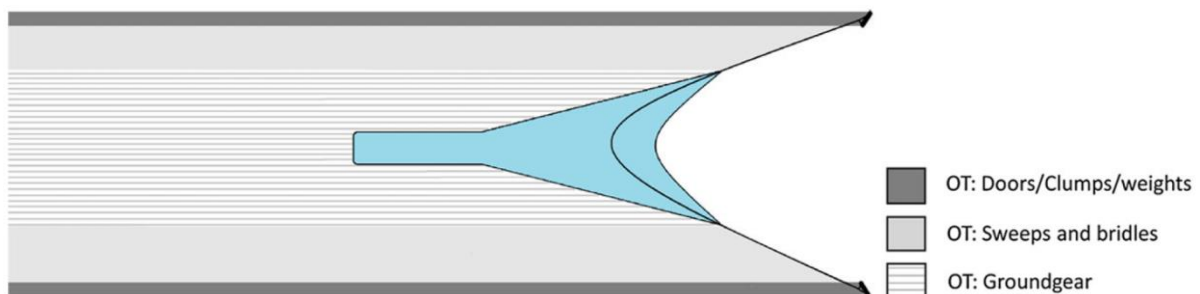


Figure 5.7.1. Conceptual gear footprints of an ottertrawl fished by one vessel. The conceptual footprint consists of three types of seabed impacts: (1) the track affected by the doors/clumps/weights, (2) the track influenced by the sweeps and bridles, and (3) the track affected by the trawl/groundgear itself. Source: Eigaard et al. (2016).

Table 5.7.2. Estimation of the Total Swept Area (TSA) in 2017 by gangui with otterboards (Otter) and small gangui (Small) according to new recalculated STECF values.

		Otter	Small	
Horizontal gear opening	$w[m]$	20	1.5	
Towing time	$h[s]$	4500	4500	
Towing speed	$t[m/s]$	1.029	1.029	
No. hauls	n	5	5	
No. days	d	150	50	
No. vessels	v	12	12	
Annual tow repetition rate	r	0.2	0.2	
Area/haul	m^2	92600	6945	
Area/day	m^2	463000	34725	
Area/year	m^2	13890000	347250	
Swept Area (all vessels)	m^2	1.67E+08	4167000	
	km^2	166.68	4.167	170.8
<i>Posidonia</i> beds [km^2]				Ratio
3 departments	320			53.4%
French waters	893			19.1%

Catches of species subject to minimum conservation size as mentioned in Annex III are minimal, in line with Article 13(9) of MedReg

STECF notes that the terms 'catch' and 'landings' were often mixed up in the Implementation Report and it was not possible to identify the correct meaning of the values reported in the text and tables. In the current STECF response, the term 'catch' will be used hereafter. The information is neither split between small ganguis and ganguis with otterboards, and nor between areas inside the 1.5 nm and outside, and over *Posidonia* beds or away.

According to the Implementation Report, approximately fifty different species have been recorded in gangui catches. Target species were mainly: sea basses, sea perches, Labridae, redfish, representing 67 % of the total catch, with the 5 species *Scorpaena porcus*, *Serranus scriba*, *Serranus cabrilla*, *Symphodus tinca*, *Symphodus rostratus* accounting for 61 % of the catch. In total it was mentioned that 37 main species were caught, however, detailed information and scientific names of the species were missing.

The Implementation Report shows the evolution from 2014 to 2016 of the catch of the species listed in the Annex III of the MedReg (Table 5.7.3) in weight and in percentage of the total annual gangui catches. STECF however notes unusual trends in the annual catch composition, for example some species were reported only in some years and are completely absent in others: gilthead sea bream (absent in 2015), horse mackerel and mackerel (absent in 2014 and 2015), black seabream (absent in 2014), common Pandora (only in 2016, being 0.62 % of the total annual gangui catches), Norway lobster (only in 2015), etc. Also, STECF notes substantial differences between the total catch of Annex III species by ganguis in 2015 (149.06 kg) and those reported in 2014 (648 kg) and 2016

(2273 kg). According to the information provided, catches of Annex III species represented up to 7 % of the total gangui catches in 2016.

Moreover, it is noteworthy that no information has been provided in the Implementation Report about the length frequencies of the species caught annually by the ganguis. Overall, STECF considers that the data and information presented in the Implementation Report is insufficient and too inconsistent across years, to conclude whether the gangui catches of the Annex III species can be expected to be minimal. Similarly, the selectivity of the gangui cannot be assessed.

Despite not specifically requested in the current conditions, Article 13(9)(d) of the MedReg requests that derogations shall apply only to fishing activities not targeting cephalopods. STECF notes that annual catches of cephalopods range between ca. 8-10 % of the total catch (Table 5.7.4). STECF notes that even though the Implementation Report states that cephalopods are not in the list of the target species, the reported catch values cannot be indeed considered negligible, therefore the condition requested in the Article 13(9)(d) is not supported by the data provided in the Report.

Table 5.7.3. Evolution of the annual catches from 2014 to 2016 of the species listed in the Annex III of MedReg reported in the Implementation Report for the French gangui fishing fleet by weight and in percentage of the total annual catches.

Year	Annex III species	Weight [kg]		Total weight of Annex III spp. [kg]		Total weight of all species [kg]
2014	Gilt-head sea bream	251	1.91%	648	4.94%	13123
	Striped red mullet	397	3.03%			
2015	Sea bream	2.75	0.03%	149.06	1.37%	10881
	Norway lobster	18.48	0.17%			
	Striped red mullet	47.83	0.44%			
	Black seabream	80	0.74%			
2016	Horse mackerel	158	0.49%	2273	7.09%	32049
	Gilthead sea bream	19	0.06%			
	Mackerel	20	0.06%			
	Common pandora	200	0.62%			
	Striped red mullet	1202	3.75%			
	Black seabream	674	2.10%			

Table 5.7.4. Evolution of the annual catches from 2014 to 2016 of Cephalopods reported in the Implementation Report for the French gangui fishing fleet by weight and in percentage of the total annual catches.

Year	Cephalopods	Weight [kg]		Total weight of Cephalopods [kg]		Total weight of all species [kg]
2014	Squid and octopus	646	4.92%	1230	9.37%	13123
	Cuttlefish	584	4.45%			
2015	Squid	5	0.05%	1070	9.83%	10881
	Octopus	390	3.58%			
	Cuttlefish	675	6.20%			
2016	Squid	675	2.11%	2567	8.01%	32049
	Octopus	1172	3.66%			
	Cuttlefish	720	2.25%			

The mesh size comply with the requirement of at least a square-meshed net of 40 mm or a diamond meshed net of 50 mm and panels of netting smaller than 40 mm mesh size are not used for fishing or kept on board, in line with Article 9 of MedReg

Mesh size information is not provided.

According to the Implementation Report, a survey in 2010 carried out by IFREMER showed that the replacement of traditional 22 mm diamond-mesh by a 40 mm square-mesh in the codend would lead to a 60 % decrease in catches. The study concluded that although such a change to the netting could reduce catches of juveniles, this would cause an increment in the tows per day or in the tow duration in order to try to maintain the initial landing value, with a risk of having a detrimental impact on the environment. The information presented does not allow to assess whether this has been the case, and compliance with the mesh size requirement can thus not be inferred.

Appropriate steps have been undertaken to ensure the collection of scientific information with a view to the identification and mapping of Posidonia habitat, in line with Article 4(6) of MedReg

According to the Implementation Report, STECF notes that the status of the *Posidonia* beds has been assessed (Marine Protected Areas Agency, 2012). The assessment is based on a set of well-defined criteria such as: the density of the seagrass beds, the upper or lower limit, the ravelling of rhizomes, the degree of encroachment etc. Several maps showing the distribution of *Posidonia oceanica* in gangui fishing grounds were submitted by the French authorities. The maps dates back to 1990 in one case, and in most cases the maps cover the period 2009-2012; According to the Report, the impact of bottom fishing gears has remained stable between the two periods and it was evident that the main threats for *Posidonia* beds comes from other anthropogenic factors. In terms of direct impact on *Posidonia* beds (grubbing up) the most tangible threat comes from anchorages from yachting. The Report also shows that *Posidonia* beds are monitored, evaluated and protected by the Natura 2000 status of the areas in which they are to be integrated.

STECF notes that the available habitat maps have not been updated after the implementation of the gangui derogation.

In conclusion, STECF notes that while some information do exist on the identification and mapping of Posidonia habitats, no analysis can be made on the recent trends in conservation of the Posidonia beds.

The impact on the Posidonia beds has been mitigated further, in the years of implementation of the management plan, in particular ensuring an effective reduction of the fishing capacity and effort. In the event that these justifications are not sufficient, the experts shall provide recommendations on the additional information needed and on the likely mitigation measures to counteract possible nonfulfillment

Posidonia oceanica beds are protected by many European and French Regulations including the EU Habitats Directive (Annex I¹⁶, priority habitat¹⁷), and the Law of 10 July 1976 regarding the nature protection in France, and its implementing Decree of 25 November 1977 concerning the protection of the wild flora and fauna of the French natural heritage (Boudouresque et al. 2012). This protection in France was made official by the Order of July 19 July 1988 of the list of protected marine plant species, which specifies: "in order to prevent the disappearance of threatened plant species and to permit the conservation of the corresponding biotopes, the following are prohibited at all times and throughout metropolitan France: the destruction, cutting, tearing out, mutilation, picking or removal, hawking, use, offering for sale or purchase of all part of the wild species enumerated below (...) *P. oceanica* and *Cymodocea nodosa*". *P. oceanica* is also listed in Barcelona (Annex II) and Bern (Annex I) conventions.

Gangui fishing takes place over significant areas of posidonia beds (as estimated above), some of which being specifically established as Natura 2000 sites such as the site 'Rade d'Hyères' (code FR9301613). STECF notes that conservation status assessments in line with Article 17 of the Habitat's Directive are carried out by Member States every six years, and in the most recent (2007-2012) assessment *Posidonia* beds in the south of France, including at the 'Rade d'Hyères' site, were classified as 'unfavourable / inadequate'¹⁸, requiring a change in management or policy in order to return the habitat to favourable status.

In consequence, it is important to assess the actual impact of the gangui fishing on *Posidonia* beds, and to consider mitigation measures. The Implementation Report states that: "gangui fishing has no significant impact on the state of marine plant and in particular *Posidonia* beds on which gangui fishing effort", also in comparison with other anthropogenic impacts. Nevertheless, according to the available literature (see for example Andromede Oceanologie, 2012), gangui trawls are more weighted than other traditional bottom trawls of the same size, and thus they have a higher physical impact

16 Natural habitat types of community interest whose conservation requires the designation of special areas of conservation

17 Priority natural habitat types means natural habitat types in danger of disappearance, which are present on the territory referred to in Article 2 of the Directive and for the conservation of which the Community has particular responsibility in view of the proportion of their natural range which falls within the territory referred to in Article 2

18 See <http://eunis.eea.europa.eu/habitats/10004>

on the seabed (including by scraping of the seabed, sediment mobilization, and penetration). This is particularly true for the gangui with otterboards, as the doors have been estimated to be the gear components having the deepest penetration into the sediment (Eigaard et al., 2017; Lucchetti and Sala, 2012; Rijnsdorp et al., 2016). So it cannot be stated that the impact is insignificant. STECF notes that in the MP no clear distinction was made between small gangui and gangui with otterboards.

No mitigation measures have been described in the Implementation Plan beyond reductions in fishing effort.

The gangui trawl fishery is subject to a National management plan adopted with the Decree of 13 May 2014 for all the vessels flying the French flag in the Mediterranean Sea. The management plan for gangui has the objective of phasing out the activity through regulatory supervision of the vessel type – gear link. Article 3 in the Decree states that: *"the EAF (European Fishing Authorisation) – or Autorisations Européennes de pêche (AEP) – is automatically withdrawn if the vessel-gear pair is broken, and removed from the quota of EAF. Transfers shall also be prohibited"*. Thus, the system of EAF for gangui fishing operates by issuing an authorisation to a vessel-gear pair which cannot be transferred to another vessel of the same owner or to another vessel owner.

In accordance with the National management plan and the Order of 8 September 2014 establishing an EAF regime for certain gears or methods of professional marine fishing used in the Mediterranean Sea by French flag vessels, the maximum number of EAFs in 2014 was: 14 for the small gangui and 22 for the gangui with otterboards, accounting for an overall capacity of 1745 kW.

STECF notes that since 2014, the number of active vessels and the total number of fishing days in this fishery has declined (Table 5.7.5). The decrease in the number of vessels from 36 in 2014 to 24 in 2017 is likely the consequence of the management plan, which provided two instruments to achieve this: (i) the European Fishing Authorisations regime (EAF or AEP in French), and (ii) the opening of a fleet exit plan, implemented by the Ministerial Order of 4 May 2016 on the implementation of a fleet exit plan for vessels fishing with a gangui.

Through these two instruments of the management plan, the number of active vessels fishing on 1 January 2017 was not more than 24 vessels amounting to an aggregated capacity of 1136 kW, representing a reduction of 35 % of total capacity and 33 % in the number of vessels active in the fishery. STECF notes that the reduction reported in the Report was mistakenly reported as 36 %.

Table 5.7.5. Number of French gangui vessels and fishing days in 2014 and 2016 reported in the Implementation Report (*data for 2015 not available*).

Year	Gangui type	No. active vessels	No. fishing days	Total No. fishing days
2014	With otterboards	22	608	871
	Small-gangui	14	263	
2016	With otterboards	17	389	441
	Small-gangui	11	52	

STECF notes incidentally that these estimates are not fully consistent with the values used in the estimation of the Total Swept Area, which estimated a maximum value of 150 fishing days per year for the gangui with otterboards (against $389/17=22$ fishing days in average using the values above), and 50 days per vessels for the small gangui (against

52/11=5 fishing days in average using the values above). The actual fishing effort remains thus uncertain.

In conclusion, the overall impact may have reduced mainly through the reduction of the number of gangui vessels with otterboards vessels, but the actual reduction remains unclear and STECF cannot conclude whether this can be considered a sufficient reduction of impact. A more thorough analysis could be performed using e.g. the Total Swept Area approach above, with a detailed documentation on the actual effort deployed by each individual vessel in each year, in order to quantify the actual reduction.

Regarding alternative mitigation measures, STECF notes that alternative gears (e.g. static gears) suitable for targeting the same species may have a potentially lower impact on benthic communities in general and Posidonia beds in particular since such gears are lighter, and have a more limited spatial footprint (Jennings et al. 2001; Chuenpagdee et al., 2003; Andromede Oceanologie, 2012), especially in comparison with the gangui groundrope and otterboards used by the largest gangui.

The current management plan would continue to ensure a sustainable exploitation of species targeted by 'gangui' trawler without jeopardising the socio-economic sustainability of the overall fishing fleets involved in exploiting those resources in the coastal area

The MP was enforced in 2014-2016, but the monitoring of fishing activities using logbooks that include information of each daily trip was not implemented. Sampling of species composition and sizes of catches also appears to not have been done regularly.

Taking into account the available data, the National MP uses CPUE as a reference index of resource abundance and management target (73 kg/day). This CPUE refers to the landings with all species pooled. The group of the main target species is defined in the Implementation Report as 'soup' (scorpionfish, serranidae, labridae) and represents 67 % of the total. The basis for this reference value is unclear.

STECF notes that basic information on the exploited species has not been provided. As noted above, detailed information of catch by target species and corresponding exploited sizes is unknown. The information has in addition not been provided by gangui type (small gangui vs large gangui with otterboards), despite the fact that gear characteristics and sizes affect catch composition and catch efficiency. Also catch comparison within and outside 1.5 nm has not been performed. In this regard, it is worth mentioning that the highest annual catch reported by the gangui fleet in the Implementation Report in 2015 (60.5 %) and 2016 (39.5 %) corresponds to "*species outside area*" (i.e. non-identified species). The lack of information does not permit to state that those values refer to the whole gangui fleet (i.e. inside and outside 1.5 nm). It is therefore not possible to know the current status of the target species and trends in CPUE during the implementation of the plan. It can thus not be assessed whether the current stock status is different from that at the beginning of the MP implementation. STECF cannot assess whether the plan had or would continue to ensure a sustainable exploitation of the species targeted by gangui.

As for the socio-economic sustainability, the vessels authorized to use gangui are highly dependent on the use of this fishing gear, the catch from other gears being much smaller (trammel net, combined gillnet-trammel net, trolling lines). It is stated that this fishery does not interfere with the activities of vessels using gears other than ganguis, but STECF was not in a position to evaluate this statement.

A plan for the permanent cessation of activity was implemented from May 2016. The number of vessels decreased from 36 in 2014 to 24 in 2017. It should be noted that in 2017, 62.5 % of fishermen have reached an age at which a retirement pension for a

seafarer can be requested. Indeed, 7 of the 24 currently operating fishermen-owners are aged 60 years and over with 2 fishermen-owners over 70 years. It is estimated that by 2020 the fleet would consist of 16 vessels, considering the age of the fishermen. Notwithstanding this situation, economic variables and data of the vessels for the period 2011 to 2015 indicate a profitable activity generating an average monthly income which is higher than the French minimum net salary of 1150 Eur by 1 January 2017, with gangui activity generating a significant proportion of that income. According to the report provided to STECF by France, the prohibition of that activity to these ships would imply that these vessels would likely no longer be profitable. It remains nevertheless unclear whether the gangui activity could be sustainability performed outside of the prohibited areas.

STECF conclusions

STECF concludes that based on the evidence provided in the Implementation Report, not all the conditions which need to be fulfilled in order for a derogation to be granted were met. In particular, STECF has raised some concerns on the evidence provided to support the condition that the gangui fishing affects not more than 33 % of the area covered by seagrass beds of *Posidonia oceanica* within the area covered by the management plan, and 10 % of seagrass beds in the territorial waters of France. STECF calculations made with alternative plausible values reached higher percentage of *Posidonia* beds affected by the gangui. STECF notes also that some of these areas are considered to be in unfavourable conservation status according to Natura 2000 assessment.

STECF concluded that detailed information on catch and impact on *Posidonia* beds is needed to cover separately the two types of ganguis, as STECF notes that the larger ganguis using otterboards are considered to have a stronger environmental impact than the smaller ganguis. Also, it is necessary to distinguish between activities inside and outside the derogated areas.

STECF notes that detailed information on species composition and sizes of catches is unknown, and no information on discards is provided. It is therefore not possible to conclude whether the gangui catches of species listed in Annex III and of cephalopods can be expected to be minimal, or how selective the gangui gear is. It is also not known whether the gear is impacting juveniles of commercial target species, which is an important concern since it operates over *Posidonia* beds which are nursery areas. Consequently STECF is unable to assess the potential impact of the gangui gear on fish mortality.

STECF observes that if the derogation is not granted, this would likely have a strong socio-economic impact on the small group of small-scale fishermen practicing this activity; however it remains unclear whether alternative fishing activities could be used.

No information has been provided to document that the current management plan would ensure a sustainable exploitation of the species targeted by gangui.

References

- Andromede Oceanologie, 2012. Inventaires biologiques et analyse écologique des habitats marins patrimoniaux du site Natura 2000 «Rade d'Hyères» FR 9301613. Contrat Andromede Oceanologie / Agence des Aires Marines Protegees, 501 pp.
- Boudouresque, C.F., Bernard, G., Bonhomme, P., et al., 2012. Protection and conservation of *Posidonia oceanica* meadows. RAMOGE and RAC/SPA publisher, Tunis: 202 pp.

- Chuenpagdee, R., Morgan, L. E., Maxwell, S. M., Norse, E. A., & Pauly, D. (2003). Shifting gears: assessing collateral impacts of fishing methods in US waters. *Frontiers in Ecology and the Environment*, 1(10), 517-524.
- Commission Staff Working Paper SEC (2004) 772, Report of the subgroup on the Mediterranean Sea (SGMED) of the Scientific, Technical and Economic Committee for Fisheries (STECF). European Union Mediterranean Fisheries and exploited resources, 488 pp.
- Eigaard, O.R., Bastardie, F., Breen, M., Dinesen, G.E., Hintzen, N.T., Laffargue, P., Mortensen, L.O., Nielsen, J.R., Nilsson, H.C., O'Neill, F.G., Polet, H., Reid, D.G., Sala, A., Sköld, M., Smith, C., Sørensen, T.K., Tully, O., Zengin, M., Rijnsdorp, A.D., 2016. Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions. *ICES Journal of Marine Science*, 73(1): 27-43 (doi:10.1093/icesjms/fsv099).
- Eigaard, O.R., Bastardie, F., Hintzen, N.T., Buhl-Mortensen, L., Buhl-Mortensen, P., Catarino, R., Dinesen, G.E., Egekvist, J., Fock, H.O., Geitner, K., Gerritsen, H.D., Gonzalez, M.M., Jonsson, P., Kavadas S., Laffargue, P., Lundy, M., Gonzalez-Mirelis, G., Nielsen, J.R., Papadopoulou, N., Posen, P.E., Pulcinella, P., Russo, T., Sala, A., Silva, C., Smith, C.J., Vanellander, B., Rijnsdorp, A.D., 2017. The footprint of bottom trawling in European waters: distribution, intensity, and seabed integrity. *ICES Journal of Marine Science* 74(3), 847–865. (doi:10.1093/icesjms/fsw194).
- Jennings S., Michel Kaiser M., Reynolds J.D. 2001. *Marine Fisheries Ecology*, Blackwell Science Ltd. 417 p.
- Marine Protected Areas Agency, 2012. inventories of biological and ecological analysis property marine habitats of the Natura 2000 site "off" EN 9301993 Hyères
- Notti, E., De Carlo, F., Brčić, J., Sala, A., 2013. Technical specifications of Mediterranean trawl gears. In Paschen (eds) *Contributions on the Theory of Fishing Gears and Related Marine Systems Vol. 8. Proceedings of the 11th International Workshop on methods for the development and evaluation of maritime technologies (Rostock, 9-12 October 2013)*, ISBN 978-3-8440-2251-3, ISSN 0945-0874, doi: 10.13140/2.1.3147.1687: 163-169.
- Rijnsdorp, A.D., Bastardie, F., Bolam, S.G., Buhl-Mortensen, L., Eigaard, O.R., Hamon, K.G., Hiddink, J.G., Hintzen, N.T., Ivanovic, A., Kenny, A., Laffargue, P., Nielsen, J.R., O'Neill, F.G., Piet, G.J., Polet, H., Sala, A., Smith, C., van Denderen P.D., van Kooten, T., Zengin, M., 2016. Towards a framework for the quantitative assessment of trawling impact on the seabed and benthic ecosystem. *ICES Journal of Marine Science*, 73(1): 127-138 (doi:10.1093/icesjms/fsv207).
- Sala, A., Brčić, J., Conides, A., De Carlo, F., Klaoudatos, D., Grech, D., Lucchetti, A., Mayans, A., Notti, E., Paci, N., Salom, S., Sartor, P., Sbrana, M., Soler, I., Spedicato, M.T., Virgili, M., 2013. Technical specifications of Mediterranean trawl gears (myGears). Final project report, financed by the European Commission through the Framework service contract for Scientific Advice and other services for the implementation of the Common Fisheries Policy in the Mediterranean (Contract MARE/2009/05-Lot 1), 519 pp.
- Sacchi, J., Le Corre, G., Mortreux, S., 2010. La sélectivité du gangui à panneaux des cotes varoises. Analyse comparative de l'application de la maille carrée de 40 mm. Project Report Département HMT – Laboratoire Ressources Halieutique, Sète, HMT/RH-Sète 2010-002, 32 pp.

6. STECF RECOMMENDATIONS FROM STECF-PLEN-17-02

Section 5.6 Management Plan for small pelagics fishery using purse seine net "srdelara" (Republic of Croatia)

STECF recalls its recommendation in PLEN-17-01, that until objective means to determine the most appropriate stock-recruitment relationships are decided upon, proxies for F_{MSY} for Adriatic sardine and anchovy be derived using Patterson's method and adopted as an upper limit for the exploitation rate on these stocks. The corresponding values for proxies for F_{MSY} are as follows:

Anchovy in the Adriatic (GSAs 17&18) $F_{MSY} = 0.48$

Sardine in the Adriatic (GSAs 17&18) $F_{MSY} = 0.4$

7. BACKGROUND DOCUMENTS

Background documents are published on the meeting's web site on:
<https://stecf.jrc.ec.europa.eu/plen1702>

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>

Name	Address ¹	Tel.	Email
STECF members			
Abella, J. Alvaro (rapporteur)	Independent consultant	Tel. 0039-3384989821	aabellafisheries@gmail.com
Andersen, Jesper Levring (rapporteur)	Department of Food and Resource Economics (IFRO) Section for Environment and Natural Resources University of Copenhagen Rolighedsvej 25 1958 Frederiksberg Denmark	Tel.dir.: +45 35 33 68 92	jla@ifro.ku.dk
*Arrizabalaga, Haritz	AZTI / Unidad de Investigación Marina, Herrera kaia portualdea z/g 20110 Pasaia (Gipuzkoa), Spain	Tel.: +34667174477	harri@azti.es
Bailey, Nicholas (rapporteur)	Marine Scotland Science, Marine Laboratory, P.O Box 101 375 Victoria Road, Torry Aberdeen AB11 9DB UK	Tel: +44 (0)1224 876544 Direct: +44 (0)1224 295398 Fax: +44 (0)1224 295511	baileyn@marlab.ac.uk n.bailey@marlab.ac.uk
*Bertignac, Michel	Laboratoire de Biologie Halieutique IFREMER Centre de Brest BP 70 - 29280 Plouzane, France	tel : +33 (0)2 98 22 45 25 - fax : +33 (0)2 98 22 46 53	michel.bertignac@ifremer.fr
*Borges, Lisa	FishFix, Brussels, Belgium		info@fishfix.eu

Name	Address ¹	Tel.	Email
STECF members			
*Cardinale, Massimiliano (vice-chair)	Föreningsgatan 45, 330 Lysekil, Sweden	Tel: +46 523 18750	massimiliano.cardinale@slu.se
Catchpole, Thomas (rapporteur)	CEFAS Laboratory, Pakefield Road, Lowestoft Suffolk, UK NR33 0HT		thomas.catchpole@cefas.co.uk
*Curtis, Hazel	Sea Fish Industry Authority 18 Logie Mill Logie Green Road Edinburgh EH7 4HS, U.K.	Tel: +44 (0)131 524 8664 Fax: +44 (0)131 558 1442	Hazel.curtis@seafish.co.uk
*Daskalov, Georgi	Laboratory of Marine Ecology, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences	Tel.: +359 52 646892	Georgi.daskalov@gmail.com
Döring, Ralf (vice-chair)	Thünen Bundesforschungsinstitut, für Ländliche Räume, Wald und Fischerei, Institut für Seefischerei - AG Fischereiökonomie, Palmaille 9, D-22767 Hamburg, Germany	Tel.: 040 38905-185 Fax.: 040 38905-263	ralf.doering@thuenen.de
*Gascuel, Didier	AGROCAMPUS OUEST 65 Route de Saint Brieuc, CS 84215, F-35042 RENNES Cedex France	Tel:+33(0)2.23.48.55.34 Fax: +33(0)2.23.48.55.35	Didier.Gascuel@agrocampus-ouest.fr
Knittweis, Leyla (rapporteur)	Department of Biology University of Malta Msida, MSD 2080 Malta		Leyla.knittweis@um.edu.mt
Lloret, Josep (rapporteur)	Associate Professor (Professor Agregat), University of Girona (UdG), Spain		josep.lloret@udg.edu

Name	Address ¹	Tel.	Email
STECF members			
Malvarosa, Loretta	NISEA S.c.a.r.l.		malvarosa@nisea.eu
Martin, Paloma (rapporteur)	CSIC Instituto de Ciencias del Mar Passeig Marítim, 37-49 08003 Barcelona Spain	Tel: 4.93.2309500 Fax: 34.93.2309555	paloma@icm.csic.es
Motova, Arina	Sea Fish Industry Authority 18 Logie Mill Logie Green Road Edinburgh EH7 4HS, U.K	Tel.: +44 131 524 8662	arina.motova@seafish.co.uk
*Murua, Hilario	AZTI / Unidad de Investigación Marina, Herrera kaia portualdea z/g 20110 Pasaia (Gipuzkoa), Spain	Tel: 0034 667174433 Fax: 94 6572555	hmurua@azti.es
Nord, Jenny	The Swedish Agency of Marine and Water Management (SwAM)	Tel. 0046 76 140 140 3	Jenny.nord@havochvatten.se
Prellezo, Raúl	AZTI -Unidad de Investigación Marina Txatxarramendi Ugarte z/g 48395 Sukarrieta (Bizkaia), Spain	Tel: +34 667174368	rprellezo@azti.es
Raid, Tiit	Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallinn, EE-126, Estonia	Tel.: +372 58339340 Fax: +372 6718900	Tiit.raid@gmail.com
Sabatella, Evelina Carmen (rapporteur)	NISEA, Via Irno, 11, 84135 Salerno, Italy	TEL.: +39 089795775	e.sabatella@nisea.eu

Name	Address ¹	Tel.	Email
STECF members			
Sala, Antonello (rapporteur)	Italian National Research Council (CNR) Institute of Marine Sciences (ISMAR), Largo Fiera della Pesca, 1 60125 Ancona - Italy	Tel: +39 071 2078841 Fax: +39 071 55313 Mob.: +39 3283070446	a.sala@ismar.cnr.it
Scarcella, Giuseppe	1) Italian National Research Council (CNR), Institute of Marine Sciences (ISMAR) - Fisheries Section, Largo Fiera della Pesca, 1, 60125 Ancona - Italy 2) AP Marine Environmental Consultancy Ltd, 2, ACROPOLEOS ST. AGLANJIA, P.O.BOX 26728 1647 Nicosia, Cyprus	Tel: +39 071 2078846 Fax: +39 071 55313 Tel.: +357 99664694	g.scarcella@ismar.cnr.it gscarcella@apmarine.com.cy
*Soldo, Alen	Department of Marine Studies, University of Split, Livanjska 5, 21000 Split, Croatia	Tel.: +385914433906	soldo@unist.hr
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	Tel.: +30 2810 337832 Fax +30 6936566764	somarak@hcmr.gr
Stransky, Christoph (rapporteur)	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Palmaille 9, D-22767 Hamburg, Germany	Tel. +49 40 38905-228 Fax: +49 40 38905-263	christoph.stransky@thuenen.de
Ulrich, Clara (chair)	Technical University of Denmark, National Institute of Aquatic Resources, (DTU Aqua), Charlottenlund Slot, JægersborgAllé 1, 2920 Charlottenlund, Denmark		clu@aqua.dtu.dk
*van Hoof, Luc	IMARES, Haringkade 1, IJmuiden, The Netherlands	Tel.: +31 61061991	Luc.vanhoof@wur.nl
Vanhee, Willy (rapporteur)	Independent consultant		wvanhee@telenet.be

Name	Address ¹	Tel.	Email
STECF members			
*van Oostenbrugge, Hans	Fisheries Economics, Wageningen Economic Research, formerly LEI Wageningen UR, The Hague, The Netherlands		Hans.vanOostenbrugge@wur.nl
*Vrgoc, Nedo	Institute of Oceanography and Fisheries, Split, Setaliste Ivana Mestrovica 63, 21000 Split, Croatia	Tel.: +385 21408002	vrgoc@izor.hr

STECF members marked with an asterix* did not attend the PLEN-17-02 meeting (see section 2 of this report).

JRC experts			
Name	Address	Telephone no.	Email
Carvalho, Natacha	DG Joint Research Centre JRC		Natacha.carvalho@ec.europa.eu
Casey, John	DG Joint Research Centre JRC		John.casey@ec.europa.eu
Holmes, Steven	DG Joint Research Centre JRC		steven.holmes@ec.europa.eu
External experts			
Keatinge, Michael	Bord Iascaigh Mhara, Ireland		michael.keatinge@bim.ie
Kempf, Alexander	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Palmallee 9, D-22767 Hamburg, Germany		alexander.kempf@thuenen.de
Ribeiro, Cristina			
Rihan, Dominic	Bord Iascaigh Mhara, Ireland		Dominic.Rihan@bim.ie
Simmonds, Edmund John	Independent expert		e.j.simmonds1@gmail.com

European Commission			
Name	Address	Telephone no.	<u>Email</u>
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
GENZBIGELYTE-VENTURI, Ramune	DG MARE, D.1		Ramune.GENZBIGELYTE-VENTURI@ec.europa.eu
Graham, Norman	DG MARE, D.3		norman.graham@ec.europa.eu
Groth Rasmussen, Line	DG MARE, C.1		Line.GROTH-RASMUSSEN@ec.europa.eu
König, Szuzsanna	DG MARE, C.3		zsuzsanna.koenig@ec.europa.eu
Kostopoulou, Venetia	DG MARE, C3		venetia.kostopoulou@ec.europa.eu
Laine, Valerie	DG MARE Unit Head D.1		Valerie.laine@ec.europa.eu
Lindebo, Erik	DG MARE, C.1		erik.lindebo@ec.europa.eu

Linkute, Ula	DG MARE C.1		Ula.LINKUTE@ec.europa.eu
Perez-Perera, Amanda	DG MARE D.1		Amanda.Perez-Perera@ec.europa.eu
MARAVELIAS, Christos	DG MARE D.1		Christos.MARAVELIAS@ec.europa.eu
PEYRONNET, Arnaud	DG MARE B.2		Arnaud.PEYRONNET@ec.europa.eu
SHRIVES, Jonathan	DG MARE C.1		Jonathan.SHRIVES@ec.europa.eu

***Europe Direct is a service to help you find answers
to your questions about the European Union.***

Freephone number (*):

00 800 6 7 8 9 10 11

(* The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

More information on the European Union is available on the internet (<http://europa.eu>).

HOW TO OBTAIN EU PUBLICATIONS

Free publications:

- one copy:
via EU Bookshop (<http://bookshop.europa.eu>);
- more than one copy or posters/maps:
from the European Union's representations (http://ec.europa.eu/represent_en.htm);
from the delegations in non-EU countries (http://eeas.europa.eu/delegations/index_en.htm);
by contacting the Europe Direct service (http://europa.eu/europedirect/index_en.htm) or
calling 00 800 6 7 8 9 10 11 (freephone number from anywhere in the EU) (*).

(* The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

Priced publications:

- via EU Bookshop (<http://bookshop.europa.eu>).

STECF

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

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent, evidence throughout the whole policy cycle.



EU Science Hub
ec.europa.eu/jrc



@EU_ScienceHub



EU Science Hub - Joint Research Centre



Joint Research Centre



EU Science Hub

