JRC SCIENTIFIC AND POLICY REPORTS

39th PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-12-01)

PLENARY MEETING,
16-20 April 2012, Brussels

Edited by John Casey & Hendrik Doerner

2012

Report EUR 25303 EN

European Commission
Joint Research Centre
Institute for the Protection and Security of the Citizen

Contact information
STECF secretariat
Address: TP 051, 21027 Ispra (VA), Italy
E-mail: stecf-secretariat@jrc.ec.europa.eu
Tel.: 0039 0332 789343
Fax: 0039 0332 789658

https://stecf.jrc.ec.europa.eu/home
http://ipsc.jrc.ec.europa.eu/
http://www.jrc.ec.europa.eu/

JRC 70759

EUR 25303 EN
ISBN 978-92-79-24753-8
ISSN 1831-9424

doi:10.2788/23845

Luxembourg: Publications Office of the European Union, 2012

Printed in Italy

TABLE OF CONTENTS

39th PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-12-01)

PLENARY MEETING

16-20 APRIL 2012, BRUSSELS

1. INTRODUCTION

The STECF plenary took place at the Centre Borschette, Brussels (Belgium), from 16 to 20 April 2012. The Chairman of the STECF, Dr John Casey, opened the plenary session at 14:15h. The chairman especially welcomed the three newly appointed committee members Jenny Nord, Giuseppe Scarcella, and John Simmonds. The terms of reference for the meeting were reviewed and 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 20 April.

2. LIST OF PARTICIPANTS

The meeting was attended by 31 members of the STECF, three external experts, 13 Maritime Affairs and Fisheries personnel (DG MARE), two JRC experts, and two members from the STECF secretariat. Section 11 of this report provides a detailed participant list with contact details.

The following members of the STECF informed the chairman and secretariat that they were unable to attend the meeting:
Massimiliano Cardinale
Simon Jennings
Hilario Murua
Antonello Sala

3. INFORMATION TO THE PLENARY

3.1. STECF plenary – information from the secretariat

The secretariat informed the Committee that the venue of Expert Working Group EWG-12-08 'DCF 2011 MS Annual Reports Evaluation' meeting has been changed. The meeting will take place in Hamburg at VTI premises.

4. ASSESSMENT OF STECF EWG REPORTS

4.1. STECF EWG 11-19 on the DCF –Assessment of 2012 National Programme (NP) Amendments

Terms of Reference

STECF is requested to review the report of the STECF Expert Working Group (EWG 11-19), evaluate the findings and make any appropriate comments and recommendations.

Additional request

Whilst undertaking this evaluation, STECF is specifically requested to give an opinion on the UK's proposed amendments to surveys (section III.G of the UK proposed amendment to its 2012 National Program).

The UK proposes major changes involving several surveys. These changes include:

- Demersal Young Fish Survey (DYFS); coasts of NS; 3rd/4th Quarter (English Demersal Young Fish Survey) - This survey was removed from the NP in 2011 and is proposed for removal from the UK NP for 2012 and 2013.
- Western IBTS Q4 is removed from bid and the intention is to replace it by a new Western Channel and Celtic Sea Multi-gear survey in Q1 of 2013.

Acceptance by the Commission of any modification to DCF surveys shall be conditional to STECF approval and therefore STECF is requested to evaluate whether the UK's proposed amendments are acceptable or not.

Introduction

The Expert Working Group (EWG 11-19) on the Review of National Programmes and the Future of the DCF met in Brussels from 28th November to 1st December 2011(http://stecf.jrc.ec.europa.eu/reports/dcf-dcr). The Commission received 14 revised 2012 National Programmes. The review assessed each module of the revised NP and determined whether the module contained minor changes, substantial changes or no changes. All revisions were categorised by the EWG and expert opinion was given as to whether a revision was justified and whether it improved the NP.

There is currently great debate on scope and format of the new DCF. In order to inform this debate, the meeting reviewed the SWOT analysis carried out by EWG 11-02 in March 2011. The approach taken was to undertake a brainstorm session on the strengths, weaknesses, opportunities of the DCF.

Two major data end users of DCF data (ICES and GFCM) presented their views on data issues and the DCF. They explained that objectives of the new DCF must be linked with the objectives of a reformed CFP, integrated with other policies such as the MSFD and the Habitats Directive and also linked with the objectives of the RFMO's. There must also be more emphasis on ecosystem aspects such as biodiversity and ecosystem health and functioning and to fisheries approaches (as opposed to fish stock approaches). Socio economic aspects must also be better integrated. The new DCF should also consider a more regional approach, more efficient stratification, better data access, reduced observer bias and adapt to new conditions while maintaining time series. The New DCF must address the data access issue and improve access for advisers, scientists and public debate. There will also be a requirement to look at new data types related to biodiversity, food webs (e.g. new stomach data) and habitat impacts (e.g. multi-purpose TV surveys).

There were two specific recommendations from the 8th Liaison Meeting that were addressed by EWG 11-19 (http://www.dcf-germany.de/fileadmin/sites/default/downloads/). These related to an apparent conflict in the recommendations from the RCM Baltic and RCM North Atlantic (Recommendation LM 6 and LM 28); the issue of concurrent sampling (Recommendation LM 24) and métier variables, regional ranking (Recommendation LM 44). The dedicated workshop on concurrent sampling (WKISCON, ICES 2008) recalled the original idea that concurrent length sampling of landings ashore could be considered as a supplement to sampling at sea, and be combined with sampling of length compositions of the retained catches sampled at sea where appropriate. The EWG acknowledged the fact that concurrent sampling on-shore faced implementation difficulties leading to modification of the scheme as defined in the Commission Decision or impossibility to sample concurrently. This situation is different from on-board sampling, where concurrent sampling still remains the rule and the code of good practice.

STECF observations

STECF notes that several NPs were not submitted to the Commission for review and may contain (minor) revisions that have not been evaluated.

STECF notes that the changes in the revised NP assessed by EWG 11-19 were mostly minor except for module 3 (Evaluation of the fishing sector) where there were some major and unacceptable revisions. Only in a few cases was the group able to evaluate the financial implications of modifications in the NP.

STECF notes that some MS do not follow the current guidelines and recommendations from the RCMs and follow up by MS should be presented in the different sections on regional coordination of the NP and not as one combined list in the report. Moreover not all MS follow the guidelines that revisions made to the original text of the NP should be highlighted in red to facilitate review of the changes.

STECF notes that several of the conclusions and recommendation of EWG 11-19 were taken up in EWG 12-01 on the revision of the DCF.

STECF notes that in the present proposal from the Commission on the Common Fisheries Policy discard bans may be one of the new important elements. Such bans will of course affect the kind of data that sea-sampling programmes can provide as fishermen may change their fishing patterns and be required to retain and land all bycatches.

STECF notes that on the issue of analysis to merge métiers, some MS have put considerable effort into describing and analysing their métiers in order to merge them for sampling purposes. The Lot 2 project has also been finalised recently (see also Deporte et al. 2012).

STECF notes that the organisation of RCM recommendations in the NP is an issue that needs to be discussed when the guidelines are updated. Potentially, all RCM recommendations and actions following them could be presented in one list.

STECF conclusions

STECF concludes that the contents of the Annual Reports could be enhanced if:

- all MS follow the guidelines for the Annual Report.

- all the adjustments carried out by MS were clearly reported to illustrate the activities implemented in the reference year (i.e the reference year in the 2012 report is 2011).

- revisions in the text of the NP proposals within the programme period were done in a way allowing the reader to follow the development in the MS. For example, the report for year three of the three-year programme, should retain all information valid for the first two years. This could easily be accommodated by leaving in tracked changes.

- all MS performing the ranking system would use the average values of the 2 previous years and if MS would use the most updated set of values (i.e. landing values, tons, fishing days) in order to select the métiers to be sampled.

- all MS would list the most recent recommendations (from SGRN, SGECA, STECF, RCM, Liaison meeting) and report the actions taken by the MS.

- RCM recommendations that the MS already have acted upon were not deleted when MS revise their NP within the programme period.

- MS which applied for derogation to exclude certain métiers from their sampling programme, would take into account the regional context in their rationale.

STECF concludes that in general the quality of the NP is adequate, but that there is still room for improvement both on the quality of the NP and on the transparency of the adjustments. The EWG was not confident, however, that they reviewed all adjustments, because it was not clear whether the NP that were not received had been adjusted.

STECF concludes that MS should continue to sample all métiers selected by ranking according to the DCF and be sure to cover all the species/stocks where a demand is formulated by an end-user (or listed in Appendix VII of the Comm. Dec.). The methodology used to achieve the goals remains at the discretion of the MS, provided that it is fully documented and approved within their NP proposal.

STECF concludes that the renewed DCF should address the indicators of the MSFD to be able to improve the implementation of the ecosystem based approach to fisheries management.

STECF concludes that important knowledge has been gained in the study mentioned above on statistical methods for identifying and prediction métiers from logbooks data. However, it is too early to state that the methods are suitable for all countries and fishing activities. MS should start to work with the tools developed within the study and the outcomes of the analysis should then be contrasted with the results from the routine analysis. Experience could then be brought to the training course planned by ICES ('Analysing and visualisation of VMS and EU logbook data using the VMStools R-package' 25th-29th of June 2012).

STECF concludes that the timing of the Liaison Meeting (LM) should be changed. The LM recommendations are not channelled to the MS in due time as the LM is scheduled right after the RCM with the result that the LM lacks complete RCM reports to review and LM is unable to judge final recommendations by the RCM. LM should provide a final list of recommendations for inclusion in the NP, rather than MS using the unofficial lists of recommendations by the RCM.

In view of the current process of the revision of the DCF STECF concludes that:

- the role of the sea-sampling programmes within a possible future regime of discard ban should be thoroughly discussed within the revision process of the DCF.

- the review of the SWOT analysis of EWG 11-02 was very productive and created very useful results to inform the future EWG on the revision of the DCF.

- the issues raised during the DCF brainstorm session (list of 46) should be used to inform the debate on the new DCF. The focus should be on addressing these issues rather than identifying new issues.

STECF recommendations

In order to facilitate enhancements in the NPs, STECF recommends that the Commission should:

- include in the guidelines definitions of minor, major, or substantial changes (e.g. methodological issues, sampling design, changing in the surveys, derogations etc etc).

- request all MS to include a summary page giving a brief overview of the main revision made to the NP.

- publish the list of all relevant recommendations from STECF, RCM, Liaison meetings in the data collection web site.

STECF recommends that the Commission provide to the NP review group, the original text and the proposed NP revisions for ease of comparison. The final version of the approved NP is what should appear on the DCF website. This website is currently not up to date.

Additional Request on UK surveys

Background

The UK provided a document answering four questions from the Commission. Point 3 and 4 were related to major changes involving several surveys.

- Survey 1: Demersal Young Fish Survey (DYFS); coasts of NS; 3rd/4th Quarter (English Demersal Young Fish Survey) - This survey was removed from the NP in 2011 and is proposed for removal from the UK NP for 2012 and 2013.
- Survey 2: Western IBTS Q4 is removed from bid and the intention is to replace it by a new Western Channel and Celtic Sea Multi-gear survey in Q1 of 2013.

Request to the STECF

Acceptance by the Commission of any modification to DCF surveys shall be conditional to STECF approval and therefore STECF is requested to evaluate whether the UK's proposed amendments are acceptable or not.

STECF observations and conclusions

STECF observations on Point 3 (Survey 1): STECF notes that the international DYFS 3rd/4th quarters has always been co-financed through DCR/DCF and originally covered the coasts in ICES Sub-area IV (North Sea) and Subdiv. VIId (Eastern Channel). UK had already ceased its contribution to this survey coverage in VIId in 2007. This reduction in survey coverage did significantly impair the management advice for stock assessments of sole and plaice in VIId and the short-term forecasts of stock size and catches for sole (ICES CM 2009, 2010 and 2011).
STECF notes that the UK contribution to the international DYFS since 2007 covered ICES Subarea IV only. STECF notes that based on the respective model diagnostics (ICES 2009, 2010 and 2011), the international DYFS has had negligible impact on the stock estimates of plaice and sole in Subarea IV. STECF also notes that the UK contribution to the DYFS in Subarea IV is also insignificant as far as these two stock assessments and the derived management advice is concerned.

STECF observations on Point 4 (Survey 2): STECF notes that the Western IBTS Quarter 4 survey is eligible for the DCF co-funding but has not been considered in any stock assessments as fishery independent information. The proposed change by the UK is to withdraw its English (CEFAS) part of the survey in 2012 and thereafter, while the Scottish part will be continued. Furthermore, the plan for 2013 is to restart, under the DCF, the English (CEFAS) bottom trawl survey in Q1 in the Celtic Sea which was not previously run under the DCR and was terminated in 2004. These changes are justified by UK because they deliver improved abundance indices in quarter 1 during the spawning season, and with the ability to collect biological information such as fish maturity.

STECF conclusions

STECF conclusions on Point 3 (Survey 1): STECF concludes that the proposed withdrawal of the UK contribution to the international DYFS 3rd/4th quarters in ICES Div. 4 is in line with the developed survey review criterion ‘to inform management decisions’ (STECF, 2010). The survey has had a negligible influence on the results of stock assessments of sole and plaice in Subarea IV and its withdrawal from the DYFS is unlikely to influence the results of the assessments or the quality of scientific advice. STECF concludes that the proposed withdrawal would help to maximize the effective use of both national budgets and the DCF budgets (national sampling plans for 2012 and 2013).

STECF conclusions on Point 4 (Survey 2): STECF concludes that the proposed withdrawal of the UK (CEFAS only) contribution to the Western IBTS Q4 is in line with the developed survey review criterion ‘to inform management decisions’ (STECF, 2010). The Western IBTS Q4 survey has not been considered in any stock assessments and this is likely to remain the case. STECF concludes that the proposed withdrawal would contribute to maximize the effective use of both national budgets and the DCF budgets (national sampling plans for 2012 and 2013). Furthermore, STECF concludes that a review of the eligibility criteria for DCF-funding needs to be carried out to ascertain whether reinstatement of the Cefas Q1bottom trawl survey during quarter 1 in 2013 is eligible for DCF co-funding.

References

Deporte, N., Ulrich, C., Mahévas, S., Demanèche, S., and Bastardie, F. 2012. Regional métier definition: a comparative investigation of statistical methods using a workflow applied to international otter trawl fisheries in the North Sea. – ICES Journal of Marine Science, 69: 331–342.
ICES 2009. Report of the WGNSSK 2009, ICES 2009 ACFM: 10).
ICES 2010. Report of the WGNSSK 2010, ICES 2009 ACFM: 13).
ICES 2011. Report of the WGNSSK 2011, ICES 2009 ACFM: 13).
STECF 2010. Sub-Group on Research Needs SGRN 10-03. Review of Needs Related to Surveys. E. D. Sampson. Luxembourg: Publications Office of the European Union. JRC 61965, EUR 24634 EN, ISBN 978-92-79-18750-6, 73 pp.

4.2. STECF- EWG 11-20 on the Assessment of Mediterranean Stocks Part III

Terms of Reference

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

Introduction

STECF reviewed the report of the STECF EWG 11-20 on Assessment of Mediterranean Sea stocks - part 3 (http://stecf.jrc.ec.europa.eu/reports/medbs) held from 16-20 January 2012 in Madrid. The following observations, conclusions and recommendations represent the outcomes of that review.

STECF observations

The EWG 11-20 assessed the status of 10 demersal stocks and 3 small pelagic fish stocks and their fisheries. The assessments of recent and historic stock parameters and fisheries as well as management advice provided in the EWG 11-20 report were limited to Geographical Subareas (GSAs) off France, Greece, Italy and Spain. Together with the previous two Mediterranean EWG meetings held in 2011 (EWG 11-05 and EWG 11-12), 42 assessments or reviews of assessments were conducted in total, of which 37 assessments resulted in an estimate of current exploitation rate that was evaluated against the proposed F_{MSY} reference point. The results presented in the reports of the EWG 11-05, 11-12 and 11-20 represent the best available estimates of current exploitation status for the demersal and small pelagic stocks in the Mediterranean Sea.

The EWG 11-20 also carried out short-term and medium term forecasts of stock size and yield for 26 stocks, assessed mostly during the previous EWG meetings in 2011, for which the assessments of historic stock parameters supported such analyses. The simulated scenarios, which incorporate politically-agreed management targets (Johannesburg summit & MSFD), were as follows:

- Short-term forecasts of catch and biomass for 2012 assuming different levels of F (from 0 to two times the current F and including F_{MSY})
- Medium term forecasts of annual catch and biomass assuming:
  (a) Constant F = F_{MSY} until 2020
  (b) 10% reduction in F each year until 2020 (GFCM, 2009)
  (c) Hit F = F_{MSY} by 2015, then fix F = F_{MSY}
  (d) Linear decrease in F to hit F = F_{MSY} in 2020

A general observation is that assuming constant recruitment, under all medium term scenarios spawning biomass and catches are predicted to increase in the medium term, particularly under scenarios (a) and (c). However under scenarios (a) and (c) catches are predicted to decrease in the short-term. It is also important to note that the catches from most stocks in the Mediterranean are highly dependent on recruitment since catches consist mostly of juveniles.

The Report of the EWG 11-20 provides detailed stock summary sheets which include an assessment of exploitation status relative to proposed management reference points for fishing mortality, which in most cases is the value of F corresponding to $F_{0.1}$ (a proxy for F_{MSY}). Stocks were classified as being subject to overfishing when the estimate for fishing mortality was higher than the proposed F_{MSY} reference point. Stocks were classified as being sustainably exploited when estimated F is equal to or below the relevant F_{MSY} reference point.

The EWG 11-20 also examined the completeness and quality of the data obtained through the DCF data call in 2011. The most recent data available during the meeting included those of 2010. The major issue that had to be addressed by the EWG was that many Member States had significantly revised their landings and effort figures for the whole time series requested. Furthermore, MEDITS survey information was not available for many GSAs for 2010 and 2011. These data are required to provide input to short-term forecasts.

Finally, during the EWG 11-20 meeting, two Mediterranean Management Plans were evaluated; the Spanish fisheries management plan in Mediterranean waters for the period 2012-2016 and the Slovenian fisheries management plan for the period 2011-2013. The STECF review of the report on the Spanish and Slovenian management plans was undertaken intersessionally and adopted by written procedure in February 2012 (STECF OWP 12-02[1]).

1 https://stecf.jrc.ec.europa.eu/reports/management-plans

STECF conclusions

According to the results of the assessments presented in the report of the STECF-EWG 11-12, STECF concludes that the following stocks are subject to overfishing:

- European hake (*Merluccius merluccius*) GSAs 5, 7 10, 11 and 18
- Red mullet (*Mullus barbatus*) in GSAs 7, 10 and 11
- Stripped red mullet (*Mullus surmuletus*) in GSA 5
- Pink shrimp (*Parapenaeus longirostris*) in GSA 10
- European sardine (*Sardina pilchardus*) in GSA 22

STECF concludes that the following stocks are being exploited sustainably:

- Anchovy (*Engraulis encrasicolus*) in GSA 22
- European sardine (*Sardina pilchardus*) in GSA 17

STECF recommendations

Given that 95% of the demersal and small pelagic stocks in the Mediterranean assessed by STECF in 2011 (Reports of EWG 11-05, EWG 11-12 and EWG 11-20 meetings) were classified as being subject to overfishing, STECF recommends that, in order to avoid future losses in stock productivity and landings, fishing mortality should be reduced to reach the proposed F_{MSY} reference points.

4.3. STECF- EWG 12-01 on the Review of proposed DCF 2014-2020 part 1

Background

In parallel with the development of the new EU Common Fisheries Policy and the European Maritime and Fisheries Fund (EMFF), the Commission is currently preparing a proposal for a new EU Multi-Annual Program for data collection for the period 2014-2020. Articles 37 and 38 of the CFP reform proposal set out the broad obligations for Member States to collect biological, technical, environmental and socio-economic data and to cooperate regionally. The EMFF will serve as the financial pillar of the future EU data collection program, providing the basis for national programs implementing the EU MAP 2014- 2020. This new EU multiannual program for data collection will be adopted as soon as the new Basic Regulation is adopted by Council and the European Parliament. Throughout this year, consultations on the new EU multiannual program for data collection with a wide-range of stakeholders are planned. This item has been on the agenda of several STECF EWG meetings:

- STECF EWG 11-02 was dedicated to a reflection on the requirements of the current and future DCF

- STECF EWG 11-19, which carried out a SWOT Analysis of DCF

Terms of Reference

STECF is requested to review the report of EWG-12-01 held from March 12 –16 2012 in Barza, Italy, evaluate the findings and make any appropriate comments and recommendations. EWG 12-01 will be followed up by STECF EWG 12-15 (DCF - Review of proposed DCF 2014 - 2020 - part 2) in October 2012.

STECF observations

The current DCF will expire at the end of 2013.The Commission is currently drafting a new DCF that will be in force throughout the years 2014-2020.

EWG 12-01 was requested to evaluate options provided by DG MARE for the new EU Multi-annual programme for data collection 2014-2020. The terms of reference of the meeting were divided into three main parts: design of the multi-annual plans, quality issues and regional data bases.

During EWG 12-01 representatives from the European Commission introduced the new DCF and the proposed structure of future data collection in the framework of the Common Fishery Policy. Also, two major end users (JRC and ICES) explained that in general, the DCF is considered to be a good tool for meeting end users' needs, but more flexibility of the data collection and estimation of variables was proposed. Presentations on the possibilities and constraints of matching biological and economic data and the need for changes in the biological part of the new DCF gave further input to the EWG work and discussions.

STECF notes that some of the terms of reference of EWG 12-01 had also been addressed by EWG 11-19: Evaluation of 2012 NPs related to the DCF, held on the 28th November 2011 - 1st December 2011 in Brussels. Any overlap will be addressed by the STECF answer to ToR 5.1 of this plenary meeting.

STECF notes that all terms of reference had been answered by the working group.

STECF conclusions

STECF concludes that a move towards regionalisation of collection of biological data could increase the usability of data for end users and improve the efficiency of the collection in the MS. The regional approach is also in line with the shift towards a more regionalised management of fish stocks as proposed in the CFP reform proposal (COM(2011)425 final). STECF, however, emphasises that it is important that the core of the methodology as well as the definition of collected parameters is stable over time. If that is not the case, there is a risk that end users' changing data needs as well as changing political objectives on the regional scale, could result in interrupted or

effectively truncated time series. Furthermore, it is important that regional sampling schemes do not affect the ability to standardise the data collected for the DCF with pan-European data requirements in other EU regulations, particularly the Control Regulation (COM Council Reg. 1224/2009).

STECF concludes that to ensure a common understanding of the terms of the DCF, a glossary with clear definitions should be produced. STECF therefore reiterates its previous recommendation from PLEN 11-03.

STECF concludes that the JRC web-based storage space for reference documents and tables should be continued and be further developed to take account of future requirements of the DCF in order to continue to facilitate the application of best practices in designing Annual Work Plans.

Regional databases for biological data could facilitate the work in the RCMs. STECF concludes that it is essential that the legal basis for regional databases is created so that funding for development and management of these can be ensured.

STECF notes that concurrent sampling of different fish stocks in the same catch is carried out differently in different Member States leading to inconsistent estimates of catch compositions from sampling schemes. There is a need to explain and define concurrent sampling in order to ensure consistent sampling by MS.

STECF recommendations

In relation to the revision of the new DCF, STECF would like to reiterates its previous recommendation from PLEN 11-01. *"STECF recommends that overlap in the Control Regulation (CR) and the DCF should be avoided. Data collected under the CR should not be included in the DCF unless it is to be expected that the quality of the data collected under the CR does not fulfill the quality requirements of the DCF.*

STECF further recommends including in the new DCF commitments for Member States to set up at national or regional level, a system to encourage cooperation between control authorities and the National Programmes of the DCF. The cooperation system should address all issues of relevance for the collection and processing of data to be collected under the CR and the DCF.

Before this is achieved, STECF concludes that scientific analysis in MS could be improved if MS scientists had access to online data from VMS and logbooks, as well as to data collected under the Control Regulation etc.

The CR includes commitments for Member States to develop and implement sampling plans for vessels not subject to logbook requirements and landing declarations. STECF recommends that when Member States develop the sampling plans, due notice is taken to the data requirements under the DCF. This could be done by actively involving at national level, the DCF experts in the development of the sampling plans."

STECF recommends that the roles of the institutions involved in the collection and analysis of transversal data should be discussed and clearly defined in a dialogue between all relevant parties, i.e. research institutes, control & enforcement agencies and fishing industry representatives. Furthermore, efforts should be made to ensure that the data needs of end-users are being considered in the new DCF.

4.4. STECF-EWG 11-15 and EWG 12-02 on multi-annual Management plans

Terms of Reference

STECF is requested to review the reports of the STECF EWG 11-15 and EWG 12-02 on multi-annual Management plans evaluate their findings and make any appropriate comments and recommendations.

Introduction

The development of regional, multi-stock long-term management plans are envisaged as an important element of the CFP. A series of expert groups has addressed ToRs in relation to plans for a number of areas. In June 2011, the Commission and Member States agreed that the Baltic cod plan should be replaced by a Baltic multi-species management plan which would take account of, for example, predation by cod on sprat and herring. The Baltic RAC also expressed support for such an approach. A meeting in Edinburgh (EWG 11- 15) was used to scope out work required towards developing a replacement plan. The expert Group (EWG 12-02) continued that work. This review by STECF considers both these meeting reports and draws on the single species evaluations from STECF EWG 11-07 in Hamburg 2011.In the Baltic Sea, the main fisheries are for cod, herring and sprat. Cod in the Eastern and Western Baltic are considered to be separate stocks. A long-term management plan has already contributed to the recovery of the stock of cod in the Eastern Baltic. There are a number of different herring stocks in the Baltic, with the main stock being in the eastern basin of the Baltic Sea and other stocks in the Gulf of Bothnia, the Gulf of Riga and the Western Baltic. An important issue to address when developing management plans for Baltic fish stocks that overlap in their distribution (Eastern Baltic cod, Eastern Baltic herring and sprat) is that cod are predatory, and their main prey is sprat and, to a lesser extent, herring. In addition, herring and sprat sometimes feed on the eggs of cod. This means that management of fisheries for cod can have an impact on fishing opportunities for sprat and herring, and vice versa. This is to be addressed by bringing all stocks into a single management plan where the objectives and harvest control rules are all designed to take account of these interactions between the different species.

STECF observations and conclusions

STECF has reviewed the report and draws the following observations and conclusions for the stocks listed under the headings below:

Herring in Gulf of Riga, Bothnian Sea and Western Baltic

STECF endorses the modelling approach and supports the point exploitation F_{MSY} values and a range of B trigger options for the other stocks of herring in the Baltic. (EWG report Section 10.1.3)

Western Baltic cod

STECF considers that the report from EWG 11-07 provides acceptable single species MSY estimates for the Western Baltic cod stock(EWG report Section 6.1.1).

Eastern Baltic cod, Baltic sprat and Central Baltic herring

Work on these stocks formed the major part of the report. STECF commends the expert working group for the substantial work carried out in relation to the development of a multi-species management plan for these stocks (the significant input from DTU Aqua was particularly important). While this has not provided all the answers, it represents a major step forward and clearly identifies where future research effort should be directed.

In June 2011 EWG 11-07 extensively reviewed tactical approaches from the perspective of the utility of the different management methods such as total allowable landings (TAL), catch quota, effort control, closed areas and fishing gear regulations to control fishing mortality on cod in the Baltic. It was concluded for Baltic cod fisheries that since discarding was stable and relatively low, the current enforcement of the TALs appears to be sufficient to control the total outtake. In March 2012 a similar review of tactical approaches was considered also for herring and sprat fisheries and additionally in the context of effectiveness of control and enforcement. Based on considerations of the utility the various tactical options and their cost and effectiveness, STECF considers that simplifying the range of tactical approaches in the Baltic would be beneficial. STECF identified a number of specific points regarding the choice of tactics for Baltic finfish fisheries:

i) In the Baltic TALs or Catch quotas alone are more effective than catch and effort control combined;
ii) In the Baltic with a catch quota management system, regulatory gear technical measures may not be needed (except to exclude the use of gear for small pelagic fisheries to catch cod);
iii) In the Baltic spatial measures are considered to be easier to enforce than gear and mesh regulation if technical measures to control size or age selectivity are required.

The multi-species model used in this evaluation has been developed over many years and is accepted by ICES on many occasions for providing single species advice. The

multi-species aspects depend on predation data from mainly the 1980s and there is an urgent need to update the information base. The values of cod cannibalism obtained are uncertain. The data come from before 1990s when the Baltic was under a different productivity regime, and overlap between adult and juvenile cod was different. The estimates of cannibalism depend on a few observed cases where cod have been found in cod stomachs, and because the data is so sparse the spatial differences that may be important have not been included in the model. Nevertheless the influence of these uncertain values when included in the model, suggest that F_{MSY} rises from 0.33 to 0.65. The uncertainty in these values is not included in the modelling and is not included numerically in the results.

Using the modelling framework selected a detailed evaluation of a range of exploitation F for central Baltic herring, Baltic sprat and Eastern Baltic cod are presented in this report. The evaluation indicates both single species and multi-species F_{MSY} values for these three populations. In addition biomass and management trigger point values are proposed for these three species. The multispecies MSY evaluation indicates that MSY may be achieved at a higher F for all three stocks. The Fs which give maximum yield depend on the assumptions of the applied model and the use of some old diet data (pre 1990). Preliminary evaluations of growth effects in sprat and herring have been explored but are not yet substantiated. The most reliable model proposed as reviewed by ICES, (ICES WKMULTBAL Report) includes predation among cod, sprat and herring. Several different values of target F have are presented for these stocks and there is scope to explore tradeoffs in the exploitation of these species. Given the uncertainty of the estimates obtained from modelling and the lack of specific objectives at this stage, it is not possible to recommend specific multispecies MSY values for these three stocks.

Economic data were presented and simple projections involving static prices and cost structures were performed. Economic considerations suggest that there is little to be gained in value of landings from moving to higher fishing mortality rates. However, owing to the likely higher effort and increased costs of fuel etc. due to lower CPUE, lower Fs, which imply higher CPUE and greater stability, would most likely give more favourable outcomes.

In addition to the offshore fleets involved in the cod, herring and sprat fisheries, and some of the inshore cod-dependent fisheries, the Baltic Sea supports a number of inshore fleets which target other species (such as smelt, flatfish, eel, salmon and etc.) as well. The management plans under consideration here are not considered likely to affect the inshore fleets to the same extent as e.g. pelagic and demersal trawlers, which are targeting only the managed species.

Any improvement in the sectors' ability to plan will have positive benefits- not only in intangible social aspects such as improvement in the social environment (e.g. through minimizing stress) but also in concrete economic terms. The need for stability in order, for example, to get bank loans, improves the situation for the catching as well as ancillary sectors. A long-term management plan creates the appropriate climate for this type of stability.

Based on the above work, a number of key observations can be made:-

- All the multispecies MSY F values for Eastern Baltic cod, Central Baltic herring and Baltic sprat are higher than the single species values.

- Considering the direct effects of F on the target stock: Changes in yield for cod and sprat due to higher Fs on these stocks give very similar yields on the long-term and lead to lower SSBs. Simulated Fs of: F>0.65 for cod, F>0.5 for sprat or at lower Fs if TAC constraints of 15/20% are included in an HCR, run the risk of the stocks declining to lower biomass reference points that might be considered unacceptable. For Central Baltic herring Fs greater than the single species MSY value (F=0.16) give higher yields.
- Considering the indirect effects of target F on one stock affecting the other stocks: Changes in yield for sprat and herring are observed if F is changed on Eastern Baltic cod. Though higher Fs on cod give little increase in cod yield, they reduce consumption of sprat and herring by cod and give possibilities for higher yields from Baltic sprat and Central Baltic herring.
- Higher Fs than the estimated multispecies MSY values will carry even higher risks of SSB<lower biomass reference points.
- Since current multi-species modelling does not incorporate any structural uncertainty, associated with S-R relationships, predation and density dependence on growth, risks of decline in SSB will be higher than those estimated.
- The addition of year-year constraints in change in TAC increases the variability in stock size and the increases are greater in a multi-species system.
- Economic considerations suggest that lower Fs which imply greater stability and higher CPUE would give more favourable economic outcomes for the fleets evaluated.

The main conclusion to be drawn from the work is that target F values in the region of the single species F_{MSY} appear to be robust and could quickly be incorporated into a Baltic management plan.

STECF considers that there are broader considerations than were possible to fully address at the expert working group and that these should also be taken into account. The following paragraphs provide a summary of the STECF discussions.

The evaluations have concentrated on constant F based HCRs. The species interactions are driven by biomass considerations, and it is possible that HCRs with F dependent on biomass (increasing above the long-term target at high biomass and decreasing at low biomass) may be more suitable and may deliver slightly higher yields, but so far there has not been sufficient time to explore these possibilities.

Both herring and sprat are food for cod and may be competitors for food. So far, tradeoffs between yield from sprat herring and cod have only been briefly considered. Currently there are no mixed species management objectives available to develop these options. If objectives could be stated, optimisation across species may be possible.

Currently the work in preparing this report has been limited by the request to deliver the STECF advice by April 2012. If the Commission finds that more detailed options are required or a biomass based management plan is preferred and does not need the advice before the autumn or next year, then with more time this would allow for additional modelling and a greater number of options to be considered. However, to

do this effectively it is necessary for managers to enter into the dialog to develop a list of objectives allowing the work to be focused.

The work has generated interesting findings in relation to multispecies target values. The markedly higher F values are heavily driven, however, by predation data from 30 years ago and in particular by limited data on cannibalism in cod. Given that results so far suggest that at higher Fs the gains in yield are modest, that there is increased risk of depleted biomass and that the economic performance at higher F is likely impaired rather than enhanced, there does not seem to be a compelling reason to rapidly adopt a higher F strategy. STECF advises that before further consideration is given to the use of these multispecies F_{MSY} values in a future management plan, it is important that the supporting data is collected to allow more thorough evaluation of the model parameters. In particular there is an urgent need to collect predation data and information on the spatial overlap of the species and life stages. An EU call for tender issued recently provides a starting point for furnishing some of these data and in future further modelling based on the more up to date information from the tender and reviews of survey data should be possible.

The multispecies work conducted so far represents an important step towards an ecosystem approach to management, albeit for a limited range of interacting species and fisheries. STECF notes, however, that broader ecosystem considerations were not included and that these would need to be considered if a more holistic advice were to be sought. For example, it is unclear what effect increases in F values in the cod fishery (implying higher fishing effort) would have on the benthos or habitat integrity.

STECF also notes that environmental factors were not included in the modelling (apart from temperature in relation to sprat recruitment). It is possible that over longer time periods, significant effects leading to regime shifts may occur. The approaches adopted here assume reasonable stability in the system but when establishing plans going forward there is a need to be able to detect and make responses to any marked changes in environment which may render the management approach inappropriate. There is a need to extend the study to evaluate the sensitivity of the conclusions to some of the more uncertain assumptions on growth and predation.

Models can provide an indication of what might happen under different scenarios of management action but the question remains, 'which is the most appropriate model' or what is the 'probability of other model structural options given the observations'. In the light of new data generated in the Baltic, the most appropriate models might be more easily identified. However, STECF advises that if the pursuit of improved multi-species models involves an 'experimental' approach to exploitation rate which encourages the adoption of higher fishing mortality rates, there is a danger that the health of stocks may be compromised. Moreover, such an approach may result in poorer economic outcomes for the fleets.

STECF is aware of further developments in multispecies work, *inter alia* the Framework 7 project MYFISH, COEXIST, VECTORS, SOCIOEC and the call for tender for collection and analysis stomach content data. It is anticipated that this work will help to remove some of the uncertainties discussed above.

STECF recommendations

- STECF notes that the work carried out so far does not give a full range of risks and options and that currently only sparse data is available and models are limited. Nevertheless, STECF recommends that the current single species F_{MSY} values are sufficiently robust for use as F targets in a management plan for the main fisheries in the Baltic and that if managers wish to continue with exploitation at or below these values, this would be consistent with achieving high yield and low risk to stock productivity.
- If managers wish to understand the likely consequences of fishing at Fs higher than the single species F_{MSY} values, there needs to be a dialogue involving managers, scientists and stakeholders to focus the work in the correct area. A sensitivity analysis is needed to understand the robustness of the higher Fs to the assumptions implied in the models. Furthermore, there are trade-offs between stock size, yield, and risks of stock decline to biological limit points among sprat, herring and cod stocks, which have only been examined superficially which could be explored further. In addition other approaches, for example incorporating biomass considerations into the HCR, could be explored.

4.5. STECF- EWG 12-03 on the AER EU Fleet part 1

Background

Following STECF recommendations in 2011, two EWG meetings are convened to produce the AER in 2012 (EWG 12-03 & EWG 12-05). EWG 12-03 will focus on reviewing submitted data. EWG 12-05 will be dedicated to analysis, discussions and drafting the report for approval at the STECF summer plenary (PLEN 12-02).

The objective of EWG 12-03 is to produce a first draft of the 2012 AER including national chapters and regional and EU overview chapters. Particular focus will be placed on ensuring data quality and coverage is adequate. During the meeting consensus should be reached on the methods used for carrying out the special topic analyses, which will be finalized during the second meeting.

Terms of Reference

STECF is requested to review the progress made by the STECF Expert Working Group 12-03 for the preparation of the AER fleet 2012 report, evaluate its findings and make any appropriate comments and recommendations.

Introduction

The Annual Economic Report about the economic performance of EU fishing fleet is produced via two Expert Working Groups. The first meeting EWG 12-03 was held 26-30 March 2012 and the second meeting EWG 12-05 will be held 4-8 June.

The objective of the first meeting (EWG 12-03) was to produce a 1st draft of the 2012 AER with particular focus on ensuring that data quality and coverage are adequate. The objective of the second meeting is to focus more on interpretation of results rather than simply dealing with data issues only, ensuring that this years' report will contain more relevant qualitative information to accompany the data analyses than in previous years. The aim is to make the final report available at the STECF summer plenary and, after approval, release it into the public domain by the end of the summer.

The EWG chair, John Anderson, has provided STECF with an interim update from the first meeting specifying the progress made during the first meeting, including issues on which the EWG needs STECF guidance in order to progress.

STECF is generally satisfied with the progress made during the first meeting and thanks the EWG 12-03 participants for their efforts.

STECF observations

STECF notes that most data submissions still have issues such as errors and missing data that require to be addressed by the MS.

STECF notes that so far:

- Greece has not delivered any data and that an official communication from the Greek Ministry stated that no data would be forthcoming for this year's call,
- Spain has failed to provide data on fleet capacity, capital values and investments and landings volumes and values for any of the years requested,
- Romania has not provided data on capital values and investments,
- France has so far not provided data for 2008 and 2009 on a number of key parameters, although there has been assurance from France that this data will be made available as soon as possible,
- The United Kingdom did not provide data on capacity, effort and landings (volume and value by species) until the final day of EWG 12-03.

STECF notes that MS were given an extended deadline of 13th April 2012 for uploading missing data and correcting erroneous data.

STECF notes that good progress was made on most national analyses with first drafts being available for 16 MS.

STECF notes that EWG 12-03 specifically discussed two issues which now require STECF input:

1) Profitability indicators
2) Determining the theoretical maximum days at sea

In relation to issue 1, STECF notes that with the increasing use of Transferable Fishing Concessions (of one type or another) within MS, buying and selling of TFCs are becoming an increasing source of income and cost for individual vessel businesses. This could have implications for calculating and interpreting the economic performance indicators currently included in the AER, i.e. Gross Value Added (GVA), Operating Cash Flow (OCF) and economic profit.

In relation to issue 2, STECF notes that the methodology outlined in the report from EWG 11-17 is intended to be used by EWG 12-05, when calculating the economic loss arising as a result of fleet overcapacity. The approach is based on a technical indicator comparing the actual number of days at sea with the theoretical maximum number of days at sea.

STECF notes that information related to overcapacity measured in technical, biological and economic terms has also been addressed in STECF 11-17 on the balance between fishing capacities and fishing opportunities (http://stecf.jrc.ec.europa.eu/reports/balance).

STECF notes that the approach proposed in STECF 11-17 (http://stecf.jrc.ec.europa.eu/reports/balance) is not overcapacity from an economic point of view, but is transferring the technical overcapacity into economic terms by adjusting different cost figures.

STECF notes that AER 2012 is intended to include three chapters of special interest covering the following issues:

1) Estimates of overcapacity
2) Analysis of how the financial position is calculated by Member States
3) Fishing rights trade

STECF notes that the special chapters require data from other sources besides what is currently collected as a part of the Data Collection Framework.

STECF also notes that issues related to the financial position have previously been addressed in STECF 11-19 (http://stecf.jrc.ec.europa.eu/reports/balance) (p. 25), which indicated that financial position indicators between MSs may not be directly comparable. STECF notes that PGECON is an appropriate forum to address such methodological issues.

STECF conclusions

STECF concludes that the failure of some MS to deliver data by the official deadline (9th March) created difficulties for EWG 12-03 and meant it was not possible for the EWG to respond to its terms of reference.

STECF concludes that because some Member States have not delivered all of the data requested in the 2012 data call, many of the terms of reference will not be adequately

addressed and the value of the EU overview chapter, the regional analysis and the price analysis will be significantly reduced.

The Chair of the EWG 12-03 in consultation with DGMARE agreed that data uploaded after the deadline of the 2012 data call would be used in preparing the 2012 AER provided it had been uploaded by 13 April 2012. STECF notes that in preparing the 2012 AER, it will not be possible for the STECF to take account of Member States' data that are uploaded after 13 April 2012.

STECF recommendations

The following recommendations are primarily directed to the EWG 12-05.

In response to the request for guidance from the EWG 12-03, STECF recommends that the economic performance indicators are based on the macroeconomic approach at the society level, instead of having the current mixture of macro- and microeconomic indicators, which could potentially lead to confusion.

Following this, STECF thus recommends that the indicators of Gross Value Added and economic profit are calculated without including the cost/income from TCF transfers, and that instead of including the Operating Cash Flow calculations, these should be substituted with an indicator for Gross Profit being calculated as:
Income from landings + other income – [crew costs + opportunity cost of unpaid labour + energy costs + repair costs + other variable costs + non variable costs]
STECF recommends that two cases are analysed based on different levels of the theoretical maximum number of days at sea in order to illustrate how this influence the results.
STECF recommends that the maximum number of days at sea is set as:

1) the vessel using most days
2) the average of the top 10% most active vessels

For the selected fleets, STECF recommends that an explanation is given on whether any management limitations could potentially influence the maximum level. STECF recommends that any analysis of overcapacity includes a clear description of how the results should and should not be interpreted, also clearly stating the methodology with all the various caveats and limitations.

STECF recommends that the number of chapters of special interest this year is considered once more by the chair and the Commission in light of the STECF observations and conclusions above. Having three chapters instead of normally only one implies increased work for the EWG, and this could potentially threaten finalisation of the report before the STECF summer plenary.

STECF recommends that priority is given to completing the standard chapters.

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

5.1. Revision of the southern hake and Norway lobster multiannual plan

Background

During its 37th Plenary meeting held in July 2011 the STECF endorsed the findings of the STECF EWG report on the *"Impact Assessment for southern hake, Nephrops and anglerfish"*. The STECF considered that this work provides useful outputs that can contribute to an improved plan, but it is concerned that some analyses, and therefore some information that could inform policy choices, have been hampered by a lack of data from some Member States.

The STECF assessed various management options.

- Concerning mesh changes the STECF concluded that in order to define the mesh changes that would be acceptable and evaluate in detail their impact on the stock, fishery and ecosystem, a definition of fleets and gears that should be changed needs to be provided by the Member States.
- In relation to closed areas, the STECF concluded that the analysis of the Portuguese and Spanish surveys (both in October) does not provide relevant additional information to enlarge the current closed areas in time or space. With the available information the STECF was not able to assess the impact of the introduction of real time closures.
- The STECF considered that soaking time and overall length of nets deployed would be an appropriate metric to determine effort for static gears.
- With the available data the STECF was not able to assess the impact of including vessels under 10 meters in the effort regime.
- Regarding the introduction of ITQs in this fishery, the STECF considers that more work is required before the conclusions can be used to inform policy.

Terms of reference

The STECF is requested to:

- Review its findings on the *"Impact Assessment for Southern hake, Nephrops and anglerfish"* and describe the information still missing per Member State.
- Provide data on catches and effort per métier and area as specified in the table below. In case figures are not available, the STECF is requested to provide estimates.

Table – Average for the last 3 years (for which information is available)** on catches and effort per métier/area.

Catches (estimates)***										Effort
Métier	**Area**	HKE	WHB	JAX	MAC	ANF	NEP	LEZ	Other*	
TRW										**kW.days**
Baka										
Pair TRW										
Bou										
Other*										
NETS										**ST-EN**
Rasco										
Volanta										
Betas										
Tresmalho										
Other*										
Hooks										**ST-NH**
Palangre										
Hand line										
Other*										

- Legend: HKE – southern hake, WHB – blue whiting, JAX – horse mackerel, MAC – mackerel, ANF – anglerfish, NEP – Norway lobster, LEZ – megrims, TRW – trawlers, ST-EN – Soaking time and extension of nets, ST-NH – Soaking time and number of hooks.
- * If applicable and if the STECF considers it relevant please specify and provide individual data.
- ** Please specify.
- *** Please indicate whether these catches are concentrated in a given season or spread evenly throughout the year.

- On the basis of catch data per métier and area, identify the métiers that have most impact on the hake stock.
- Describe in detail the characteristics of the different métiers, including (i) the gears and mesh sizes used, (ii) species caught (including sizes), (iii) fishing areas, seasons and depth of fishing operations, (iv) vessels' characteristics – e.g. length and engine power.

STECF response

The information still missing per Member State in relation to the assessment of different management options is:

- To assess the impacts of the plan, taking into account vessels under 10 m in length, estimates of total catch by under 10m vessels from Spain are required.
- To evaluate the impact of the introduction of real time closures more information on the seasonal variability in hake recruitment is required. This is an important gap in knowledge required to assess the effects of reduced fishing on hake recruitment
- To assess the impact of technical measures, fleet segments of both Portugal and Spain need to be identified and described. The current regulatory groups may not be suitable and others may need to be identified. In particular the gear "Rasco" should not be included in the trammel and gillnetters groups. Additionally, trawls should be split into otter trawlers ("Baka") and pair trawlers. To evaluate the impact of mesh changes the selective properties of the different vessel and gear combinations is required.

- To assess the impact of additional days for vessels catching low proportions of hake (to exclude from the effort limitation scheme the days at sea of vessels not targeting hake), estimates of catches by trip for the fleets of both Portugal and Spain are required.
- To perform economic analyses of the hake fisheries, data on catch volume and catch value by species (including hake) from Spain is required. For both Portugal and Spain, such information should be provided by gear type at the aggregation levels corresponding to the proposed management options.
- To assess the cost effectiveness of regulations, data on enforcement for both MS will be needed.

Taking into account the data provided by Member States in response to the 2010 and 2011 DCF effort data calls for ICES Divisions VIIIc and IXa, STECF is unable to provide the data disaggregated by gear segmentation requested. Nevertheless, Table 5.1.1 contains a summary of reported landings and effort estimates for the gear groupings that are currently available.

STECF notes that Spain has not provided data on catch and effort by vessel length for 2007 and 2008 and has not specified vessel length for the majority of the fisheries data in 2009. Despite the fact that Portugal reported all its catch and effort data by vessel length, STECF is therefore unable to assess the quality of aggregated fisheries data regarding the coverage of the under 10 m boats and regarding the quantitative contributions of the under 10m boats to the statistics provided below. The landings and fishing effort figures provided include all information available from Spain and all information available from Portugal, including the Portuguese under 10m boats.

Table 5.1.1. Average for the 2007-2009 on landings by species (t) and effort per métier/area based on DCF data calls in 2010 and 2011.

Estimated Landings										Reported Effort
Métier	**Area**	HKE	WHB	JAX	MAC	ANF	NEP	LEZ	Other*	
TRW										**kW.days**
Baka and Pair	8c	6,012	16,630	11,455	18,616	1,077	58	657	478	8,972,872
Baka and Pair	9a	3,708	7,036	8,518	2,012	668	250	249	558	11,071,824
NETS										**ST-EN**
Volanta, Beta and Rasco	8c	2,891	0	149	176	846	0	1	127	Na
Volanta, Beta and Rasco	9a	1,100	2	513	46	110	1	0	167	Na
Trasmallo and Rasco	8c	57	0	10	42	112	0	1	140	Na
Trasmallo and Rasco	9a	232	1	189	15	149	1	0	656	Na
Hooks										**ST-NH**
Palangre	8c	1,158	12	9	167	7	0	1	437	Na
Palangre	9a	331	10	20	1	2	0	0	6,723	Na
Others	8c	86	31	10,898	43,813	48	2	2	4,792	Na
Others	9a	192	93	5,915	3,079	12	12	1	1,516	Na

- Legend: HKE – southern hake, WHB – blue whiting, JAX – horse mackerel, MAC – mackerel, ANF – anglerfish, NEP – Norway lobster, LEZ – megrims, TRW – trawlers, ST-EN – Soaking time and extension of nets, ST-NH – Soaking time and number of hooks.
- * If applicable and if the STECF considers it relevant please specify and provide individual data.
- Na: Not available

STECF notes that in order to complete the table with the gear segmentation proposed in the ToRs, a specific data call following that gear segmentation will be required.

From Table 5.1.1, STECF concludes that trawlers (mainly pair trawlers) in Divisions VIIIc and IXa are those accounting for the majority of hake landings (38% and 24%, respectively). "Volanta" in ICES Division VIIIc is the next most important gear group with 18% of the hake landings, while the same gear in ICES Division IXa (accounts for a 7% of total landings, same value as longliners in ICES Division VIIIc).

STECF observes that the data used to obtain these catch percentages are based on the average of years 2007, 2008 and 2009. These data are presented here because Spain did not respond to the 2011 DCF data call (see STECF EWG 11-11). While these data differ from officially reported landings to ICES, they are consistent with the data used by ICES for assessment of hake in VIIIc and IXa. More recent data are required in order to assess the current impact of all these fleets on hake.

Based on the results reported by the IBERMIX project (Identification and segmentation of mixed-species fisheries operating in the Atlantic Iberian Peninsula waters (EU, Contract FISH/2004/03-33) and reported in the WGHMM 2007 ICES

working group, STECF provides the following brief description of the Spanish and Portuguese fleets and the segments involved in the fishery for hake in Divisions VIIIc and IXa:

Spanish fleets:

- Gillnetters targeting hake ("Volanta"). This gear uses a mesh size of 90 mm at depths between 100 and 400 m. Each piece of netting has a maximum height of 10 m and a maximum total length of 50 m, while the maximum length permitted for the entire gear is 7,000 m. This modality is used in the study area throughout the year to catch hake, except in certain ports where there is some seasonality. The accompanying species are usually pout (*Trisopterus luscus*), and to a lesser extent species of Triglidae.
- Gillnetters targeting anglerfish ("Rasco"). This gear uses a mesh size of 280 mm at depths between 100-800 m. Each piece of netting has a maximum height of 3.5 m and a maximum length of 50 m, and the maximum total length permitted for the entire gear is 11,000 m. This gear is not allowed at depths shallower than 50 m, and is specially designed to catch monkfishes (*Lophius budegassa* and *L. piscatorius*). The most characteristic accompanying species are rays (*Raja* spp.) and red scorpionfish (*Scorpaena scropha*). Catches of crustaceans with this gear are common, such as spiny lobster (*Palinurus elephas*) or lobster (*Hommarus gammarus*).
- Small Gillnetters targeting hake (Beta). This gear operates in ICES Division VIIIc an IXa (North) This net has a general mesh size of 60 mm, extended to 80 mm when targeting sole and hake. It is set at depths shallower than 150 m; each piece of netting can reach a maximum length of 50 m and a maximum height of 3 m, while the maximum total length of the gear is 4,500 m. This gear is mainly used to catch coastal species throughout the year, targeting hake, red mullet (*Mullus surmulletus*) and other species from the families Labridae, Triglidae or Scorpaenidae. There is a multitude of variations of this gear, which adapts well to both topographical and oceanic conditions and also enables the combined catch of species of interest.
- Longliners targeting hake. A set longline consists of a main line with a number of branch lines of variable length spaced several metres apart, from which a baited hook is hung down. The gear is fixed on or near the bottom with weights and attached to a buoy. The number of hooks, distance of branch lines on the main line and length depends on the target species. The Spanish regulations for the registered set longline fleet establish the maximum legal number of hooks at 4,000 and a maximum longline of 15,000 m length.directed to three main target species, i.e. hake, pollack (*Pollachius pollachius*) and blackspot seabream (*Pagellus bogaraveo*). Even though mixed trips are rare, clean trips are not due to changes in the strategy but the availability of the species and market changes: hake between May and July, when the best yields are obtained, while blackspot seabream is targeted in winter despite the low catches, owing to the high price this species commands
- Otter trawlers ("Baca") targeting demersal species. It is a traditional trawl gear used by targeting demersal species, has a codend mesh size of 65 mm, a vertical opening of 1.2-1.5 m and a wingspread of 22-25 m. The more recent "jurelera" gear also uses a codend mesh size of 65 mm, however is able to achieve a vertical opening of 5-5.5 m and a wingspread of 18-20 m, being suitable for targeting

horse mackerel and other pelagic species The “baca” trawl trips last from 1 to 10 days, with hauls of 1 to 8 hours depending on the weather condition, the species targeted or the area being fished, and employ between 3 and 9 crew members. The “jurelera” trawl trips are shorter, from 1 to 2 days, with hauls of 2 to 6 hours, and between 3 and 10 crew members. They mainly target horse mackerel and mackerel with the demersal species traditionally appreciated in the Spanish markets (hake, megrim, monk and Norway lobster).

- Pair trawlers targeting blue whiting, mackerel and hake. This fleet uses a specific gear with a cod end mesh size of between 45-55 mm, which is able to achieve a vertical opening of around 25 m and a wingspread of 65 m 2000). Their trips last from 1 to 2 days, with hauls of 5 to 15 hours, and employ between 4 and 9 crew members. Its fishing strategy is particularly efficient targeting blue whiting but also produces important catches of hake.
- Others (artisanal). This is a miscellaneous group that normally do not target hake.

Portuguese fleets

- Trawlers targeting crustaceans and trawlers targeting fish. The trawl fleet comprises two components, e.g., trawl fleet fishing for fish and trawl fleet fishing for crustaceans. The trawl fleet fishing for fish operates off the entire coast while the trawl fleet directed to crustaceans operates mainly in the Southwest and South, in deep waters, where crustaceans are more abundant. The fish trawlers are licensed to use a mesh size >= 65 mm in the codend and the crustacean trawlers are licensed for two different mesh sizes, 55 mm for catching shrimps and >= 70 mm for Norway lobster. In 2005, the number of licensed fish trawlers was 72 with an average of 705 HP (518kW), 182 GRT and 27 m of overall length, whereas the number of crustacean trawlers was 30, with an average of 563 HP (414 kW), 178 GRT and 25 m of overall length.
    - Trawlers targeting fish.
- Others (artisanal) targeting demersal stocks. The Portuguese fleet using fixed gears is designated by polyvalent fleet. It operates along the total Portuguese coast (ICES Division IXa) and catches a great diversity of species. This fleet includes two segments, both using fixed gears: (i) boats smaller than 12 m (4K1)1, also called small scale or artisanal, and (ii) boats larger or equal than 12 m (4K2), here designated as multi-gear.

5.2. Conditions of effort restrictions in the Western Channel (VIIe)

Background

The sole recovery plan (Annex IIc of Council Regulation 43/2012) stipulates that eligible vessels using static nets with a mesh size equal to or less than 220mm are restricted to a maximum number of 164 days in ICES area VIIe. However, this restriction does not apply to any vessel fishing with nets with mesh size equal or larger than 120mm which catches less than 300kg liveweight of sole (*Solea solea*) provided they have track record of taking less than this amount of sole according to their logbook in 2004.

The UK currently has vessels which target pollack (*Pollachius pollachius*) in ICES area VIIe using static gear with a mesh size greater than 120mm and catching less than 300kg of sole a year. However, some of these vessels do not have a track record of landing less than 300kg of sole in 2004 and so they are restricted by the number of days they can fish inside the sole recovery zone despite being thought to currently have negligible impact on the sole stock.

Terms of Reference

The STECF is requested to assess the impact of amending the reference year (i.e. 2004) in the condition of effort exemption of the current sole recovery plan, and to advise on the most appropriate way of achieving this without undue unintended biological or socio-economic consequences. For example this might be by changing the reference year to be more recent or by introducing a rolling reference period of several years.

In so doing, STECF is requested to consider the impact of changing the condition of effort exemption on:

(i) the mortality and expected discards of sole in area VIIe; and
(ii) the mortality and expected discards of pollack and other commercial species in area VIIe.

Finally, STECF is requested to notify the Commission of any necessary additional conditions in order to ensure that any proposed changes to the sole recovery plan would not negatively affect the recovery of sole.

STECF response

STECF first notes that the reference year (2004) used to condition the effort exemption of static gears for the Western Channel sole recovery plan (Annex IIc of Council Regulation 43/2012) has not been amended since the implementation of the plan in 2007. STECF also notes that there is no particular reason to keep this reference year unchanged. On the contrary, STECF considers that a more recent year or a rolling reference period based on several recent years, more in line with "current" fishing strategies of the fleets involved, would be preferable. STECF however notes that such an amendment in the reference year could potentially lead to an increase in total effort on Western Channel sole, as more boats could be eligible for derogation. STECF is not able to quantify the likely magnitude of any such increase but considers that it is likely to be negligible. STECF considers that, if the reference year is amended, it would be preferable to use a series of recent years to account for annual fluctuation in the abundance and catch of sole. This would provide vessels with the flexibility to choose whether to apply for exemption from the effort regime according to the predicted availability of sole.

STECF notes that of the four boats seeking derogation, information on landings is sparse for two of them (see Table 5.2.1 below). STECF notes that for the years with available landing data for all the boats, the total amount of Western Channel sole

landed is very small: 9kg in 2010 and 87 kg in 2011. For 2010, this represents only 0.001% of the total landings of 680t (ICES, 2011). STECF further notes that there is a paucity of information on the discarding rates: observer information is available on only 9 trips on 7 different vessels covering the years 2004, 2006, 2008, 2010, 2011. From the data available, STECF notes however that total catches and observed discarding is rather small: 166 soles caught over 9 trips and 2 discarded. STECF concludes that changing the condition for exemption of static gears from the effort regime of the Western Channel sole management plan (Annex IIc of Council Regulation 43/2012) is likely to have a negligible effect on the total fishing mortality of Western Channel sole and on the expected discards.

Table 5.2.1. Landings of VIIe sole by UK registered vessels targeting Area VII pollack which are seeking exemption from effort restrictions in the Sole Recovery Zone or which are currently exempt. tonnes (liveweight)

Vessel	2004	2005	2006	2007	2008	2009	2010	2011
Landings of VIIe sole by vessels seeking exemption								
Vessel 1	na	na	na	na	na	na	0.006	0.070
Vessel 2	na			0.000	0.012			
Vessel 3		0.004	0.012	0.021	0.001	0.020	0.003	0.012
Vessel 4	na	na	na	na	na	na		0.005
Landings of VIIe sole by vessels with exemption								
Vessel 6				0.058	0.073		0.002	
Vessel 7		na			0.001		0.002	
Vessel 8	0.000		0.007	0.004	na	na		na
Vessel 9	0.034	0.008	0.046	0.030	0.192	0.112	0.012	0.002
Vessel 10	na	na	na		na	0.016		
Vessel 11 [(a)]	0.024			0.010	1.295	0.005	0.001	0.004
Vessel 12	0.045	0.024	0.021	0.057	0.023	0.009	0.072	0.001
Vessel 13	0.001	0.011	0.006	0.001	0.008	0.013	0.010	0.010
Vessel 14	0.009	na	0.013	0.001			na	
Vessel 15 [(a)]	0.003	0.003		1.573	1.205	0.390	0.459	0.002
Vessel 16		0.003	0.011		0.079	0.003	0.003	0.003
Vessel 17	0.001	0.006	0.007	0.013	0.014	0.011	0.007	0.012
Vessel 18	0.002	0.050	0.081	0.024	0.006	0.017	0.025	0.012

(a) The vessel 11 and vessel 15 were not given a derogation from effort in the years highlighted. The vessel owners indicated in advance that they planned to catch in excess of 300kgs of sole from VIIe and hence were given an allocation of kilowatt days in accordance with the provisions of the management plan for Western Channel sole.

STECF notes that there is insufficient information to evaluate the exploitation and the trends of Pollack in the Celtic Sea, that no stock definition is currently available and that based on precautionary consideration, ICES advises that catches should not be allowed to increase in 2012 (ICES, 2011). From data provided by UK (Table 5.2.2 and 5.2.3), STECF also notes that, for 2011, landings of Pollack from Area VII by the four boats seeking effort derogation are in the range of those currently having a derogation. The total landings for those boats amounted to 170 tonnes in 2011 (43 tonnes from Area VIIe), i.e. about 4% of the recent total landings for area VII (4000t, average 2008-2010). Regarding discards, UK mentions a low discarding rate of 2% (by weight or by number was not specified) without reference to year or period of years on which this percentage was estimated. STECF concludes that changing the condition of effort exemption to allow the four boats seeking derogation is expected to have a negligible impact on mortality on Pollack in VII and on discards.

Concerning the other species caught by the four boats seeking derogation, STECF notes that landings by boats are generally small with the exception of one boat landing several hundred tonnes (between 100 to 300t) of edible crab (*Cancer pagurus*) each

year. STECF concludes that changing the condition of effort exemption to allow the four boats seeking derogation is expected to have a negligible impact on mortality of other commercial species in area VII. STECF has no information on discarding rates of other commercial species in area VII but given that an exemption for the four boats is likely to have a negligible effect on mortality of commercial species other than sole and Pollack, the impact on discards of such species is also likely to be negligible.

Table 5.2. 2: 2011 Pollack landings from VII of over 10m vessels which target Pollack VII using static nets with a mesh of between 120mm to 220mm, which take less than 300kgs of VIIe sole and which do NOT have a track record for landing less than 300kgs of sole in 2004 (i.e. the vessels which we would like to extend a derogation to).

Vessel	Landings of Pollack VII (POL/07.) in 2011	Landings of Pollack VII from Area VIIe (POL/07.) in 2011
Vessel 1	121.4	19.2
Vessel 2	23.9	5.6
Vessel 3	17.3	18.3
Vessel 4	7.8	0.2
Average	42.6	10.8

Table 5.2.3: 2011 Pollack landings from VII of over 10m vessels which target Pollack VII using static nets with a mesh of between 120mm to 220mm, which take less than 300kgs of VIIe sole and which have a track record for landing less than 300kgs of sole in 2004.

Vessel	Landings of Pollack VII (POL/07.) in 2011	Landings of Pollack VII from Area VIIe (POL/07.) in 2011
Vessel 1	147.5	0.8
Vessel 2	131.6	105.2
Vessel 3	127.9	45.7
Vessel 4	118.5	21.4
Vessel 5	106.2	29.8
Vessel 6	54.0	54.0
Vessel 7	36.7	36.7
Vessel 8	26.3	0.0
Vessel 9	21.4	0.9
Vessel 10	19.0	19.0
Vessel 11	15.6	0.2
Vessel 12	13.6	13.6
Vessel 13	12.7	4.3
Average	63.9	27.6

STECF wishes to make clear that its advice above in relation to the UK request to exempt gill netters from the provisions of the Western Channel sole management plan is not in any way conditional on the additional considerations given below regarding demersal otter trawlers.

Additional considerations

In an attempt to control the fishing mortality on Western Channel sole, STECF considers that all major sources of fishing mortality should be subject to the provisions of the management plan. Given that otter trawlers operating in VIIe are not currently subject to such provisions, but have accounted for between 40% and 26% of

the annual total international catch of sole from VIIe over the period 2004 to 2010 (https://stecf.jrc.ec.europa.eu/reports/effort), STECF suggests that consideration be given to adding demersal otter trawlers to the list of regulated gears in any modifications to the western Channel sole management plan. STECF notes that the addition of demersal otter trawlers to the WC sole management plan would give some scope to relax the effort restrictions for those gears that are subject to restrictions under the current management plan and achieve similar outcomes in terms of overall fishing mortality on the sole stock.

5.3. Advice on exclusion of vessels taking part in FDF from the application of the fishing effort restrictions

Background

Since 2008, a number of Member States put in place trials on fully documented fisheries (FDF)/ remote electronic monitoring (REM) systems. To create incentives for the vessels to participate in those trials, additional allocation of quota has been possible since 2010. There is no derogation foreseen from fishing effort restrictions under different long-term plans for vessels participating in FDF. Some Member States argue that by defining and being able to record exactly how much cod is caught, there is no need for effort restrictions, which distort the results of the trial by hindering a change to more selective fishing practices, for instance by spatial selectivity behaviour. Furthermore Member States point out that all catches of cod – including fish under minimum size that are discarded, are deducted from the vessel quota. Furthermore if the vessel's cod quota is exhausted the vessel in question has to cease fishing in the area. MS therefore believe that catch quota schemes should be exempted from the effort provisions of long-term plans.

Terms of Reference

1. STECF is requested to assess the extent to which vessels participating in the FDF trials alter their fishing behaviour so as to catch less cod (or sole, as appropriate).

2. STECF is requested to assess how the trials with FDF have affected the fishing mortality on the stocks concerned and assess the extent to which the trials have resulted in catches by MS of the stocks concerned different from what would likely have been the case if no trials had been carried out.

3. STECF is requested to advise on the probable consequences in particular in terms of change in total catch by Member States of the stocks concerned, of excluding (either partially or fully) the vessels involved in the FDF trials from the effort management system. The consequences should be assessed with respect to the effects of all fishing on the stock of cod in the North Sea, Skagerrak and Kattegat, or the stock of sole in the western channel. The assessment shall take account of all relevant management arrangements, including the possibility that FDF vessels can buy/lease quota from other vessels.

4. STECF is requested to advise whether quota swaps to FDF vessels from vessels not participating in the trials has resulted in increased discard rates of non-participating vessels.

5. STECF is invited to comment on any appropriate measure that could improve the conservation benefit to be obtained from the FDF trials.

Introduction

STECF based most of its answers on the information contained in the latest Danish, English and Scottish Catch Quota (CQ) trial reports available on www.fvm.dk/yieldoffish which were published in mid-2011. Additionally, the draft financial section and skipper survey report of the full-year 2011 evaluation report of the Scottish trial were available.

The STECF wishes to underline that the driving principle is actually Catch-Quota Management (CQM) as opposed to Landings Quota Management, whereas Fully Documented Fishery (FDF) does not necessarily include CQM (cf. for example FDF monitoring of harbour porpoise catches in some Danish fisheries). Therefore, STECF refers in these answers to CQM rather than to FDF. The STECF recognises that ensuring compliance of CQM schemes through effective enforcement is key to achieving the desired targets. At this stage the STECF does not have sufficient information to comment on enforcement strategies and have therefore addressed the ToRs by assuming a high degree of compliance.

STECF general comment

STECF notes that the fisheries exploiting cod in the North Sea, Skagerrak and Kattegat and sole in the Western Channel are mixed fisheries. In addition, the provisions in Annex IIA of the annual TAC and Quota regulation are designed to limit the fishing mortality of certain cod, sole and plaice stocks in these areas. STECF advises that partial exemptions from the effort regimes under CQM/FDF schemes, could potentially cause an increase in fishing mortality on stocks other than those for which they have catch quota. This is particularly likely if the CQ vessels deploy additional fishing effort in order to take their catch quota. Furthermore, STECF advises that effort exemptions granted under Article 11(2) of the cod management plan are likely to result in increased fishing mortality by exempted vessels on stocks other than cod, particularly if such vessels deploy more fishing effort that they would have been permitted to deploy under the cod management plan.

Terms of Reference 1:

STECF is requested to assess the extent to which vessels participating in the FDF trials alter their fishing behaviour so as to catch less cod (or sole, as appropriate).

STECF understands this request to mean: assess the extent to which vessel operators participating in CQM trials alter their fishing tactics so as to catch less cod (or sole, as appropriate) than they would if they were not operating under a catch quota.

From the information available STECF concludes that CQ schemes improve the quality and reliability of the recorded catch composition of vessels participating in the scheme.

Both the Scottish and Danish CQM trial reports include analyses to assess likely changes in fishing tactics by skippers operating under CQM, by comparing landings composition between CQ and non-CQ vessels. These analyses point out larger proportions of small fish above the minimum landing size in CQ vessel landings than are present in non-CQ vessel landings. This difference is taken to indicate the existence of high-grading practices in non-CQ vessels. This analyses, however, does not provide a reliable indication of likely changes in the actual catch volume or composition upon switching to CQ, since the exact amount of discarding and high-grading at the level of individual trip is unknown when no observer is onboard. Therefore, it cannot be fully ascertained if the observed differences in landings compositions are linked to actual changes in fishing tactics or rather changes in recording from imperfect landings record to near-perfect CQ records.

CQM creates economic incentives to improve catch selectivity, both species and size selectivity. Anecdotal and survey evidence show that skippers do make considerable efforts to avoid catching small fish of species that are subject to catch quotas (in order to achieve higher average price per tonne) and to ensure that they do not accidentally exceed their catch quota (in order to avoid being tied-up in the harbour). STECF notes that vessels on the current CQM trials are expected in general to catch less of the species subject to catch quotas than they would have done if fishing the same basic quota under a landings quota system. A preliminary analysis using limited data from the 2010 CQM scheme, suggests that this was the case in 2010. This is because the additional quota allocation to the CQ vessels on average is less than the volume of fish these vessels would have been likely to catch and then discard if they had been fishing under the landing quota management system. However, in absolute terms, the total quantity of cod/sole removed by CQ vessels depends on the actual quota size to which they have access. For instance, if CQ vessels as a group buy or lease more quota because they are on the trial, then their total catch may be higher than it would have been had they not been on the trial and not accessed the additional quota.

STECF notes that the latest (2011) data collected for the STECF EWG 12-06 on effort regimes, to be held in June 2012, might enable additional quantitative analyses comparing the catch composition of CQ and non-CQ vessels. Such comparative analyses should be included on the ToR to the STECF EWG 12-06.

In conclusion, STECF considers that while it cannot quantitatively assess the actual extent to which CQM vessel operators alter their fishing tactics with regards to cod/sole, it expects these vessels to make lower catches per landing quota unit than they would have without CQM.

Terms of Reference 2:

STECF is requested to assess how the trials with FDF have affected the fishing mortality on the stocks concerned and assess the extent to which the trials have

resulted in catches by MS of the stocks concerned different from what would likely have been the case if no trials had been carried out.

As explained above it is likely that the CQ vessels have had lower catches of the stocks concerned per landing quota unit than they would have without CQ. However, the extent to which the trials have resulted in catches by Member States of the stocks concerned differ from what would likely have been the case if no trials had been carried out depends also on the catches taken by non-CQ vessels. Their catches can only be estimated using landings plus observer data. Information from observer trips was not available to STECF to allow the estimation of the catch on non-CQ vessels. In addition, quota swap between CQM and non-CQM vessels can potentially induce perverse effects of increase discarding which complicates the evaluation; this point is illustrated in more detail further below.

In conclusion, STECF considers that the outcomes of CQM cannot be easily evaluated by assessing changes in fishing mortality, but rather in terms of compliance with the catch quota and improvement in catch recording. However, even without a simple link between CQM and fishing mortality, STECF considers that any contribution to reducing uncertainty around F estimates is highly beneficial to both stock assessment and stock recovery or resilience.

Terms of Reference 3:

STECF is requested to advise on the probable consequences, in particular in terms of change in total catch by Member States of the stocks concerned, of excluding (either partially or fully) the vessels involved in the FDF trials from the effort management system. The consequences should be assessed with respect to the effects of all fishing on the stock of cod in the North Sea, Skagerrak and Kattegat, or the stock of sole in the western channel. The assessment shall take account of all relevant management arrangements, including the possibility that FDF vessels can buy/lease quota from other vessels.

There is very limited information available which STECF can rely on to conduct a formal assessment and advise on this issue. Assuming enforcement of the CQM, it is expected that full compliance with the target fishing mortality from the management plans, through catch quota management of all relevant vessels, should be sufficient to ensure recovery and long-term sustainability of the stocks concerned. This would remove the need for effort management whose goal is to achieve that target fishing mortality.

Exemption of CQM trial vessels from effort management is therefore unlikely to affect the catch of those vessels unless their current effort limitation prevents the vessels from taking their catch quotas of the stocks concerned. If non-CQM vessels continued to have their activity effectively limited in line with required exploitation rates, the total catch of the stocks concerned could be expected to be about the same as it would be if the CQ vessels were also limited by effort regulations.

Within the terms of the cod plan, derogations from effort regulations can be only justified on the basis of articles 11 and 13. Article 11 concerns fisheries with very low cod catches, which is most likely not the case for the current CQM vessels. Additional effort allocated to vessels participating in the CQ scheme on the basis of Article 13 would not be expected to result in increased fishing mortality on cod by

such vessels as catches of cod by CQ vessels will be limited by their catch quota instead of the amount of available effort.

However, STECF underlines a major issue with the current CQM trials, which operate on a subset of the vessels only, is that the actual benefits of CQM in terms of overall fishing mortality may be blurred and possibly lost by the possibilities for quota swapping and leasing (see point 4 below) between participating and non-participating vessels.

STECF emphasises that to ensure that an exemption of CQM vessels from effort management will not lead to an increase in the catches of the stocks concerned by non-CQ vessels, the exemption should be implemented so that the fishing effort of non-CQ vessels is not allowed to increase. This requires that the effort that would have been allocated to the vessels entering an unrestricted effort CQ scheme, should be deducted from the effort allocation of the relevant Member State and that the non-CQ vessels do not change their fishing pattern to target the species of concern.

STECF notes that Article 13 also supports the implementation of cod avoidance plans. Supplementing CQM by requiring vessel operators to propose a plan of how they will avoid catching more cod/sole than their catch quota, for example through changing area, target species or selective gear (as done for example in the English FDF trial) might help making these changes in fishing tactics more quickly.

Terms of Reference 4:

STECF is requested to advise whether quota swaps to FDF vessels from vessels not participating in the trials has resulted in increased discard rates of non-participating vessels.

STECF has insufficient information to evaluate if quota transfers to CQ vessels from non-CQ vessels has resulted in increased discard rates of non-CQ vessels. However, evidence from the survey of skippers in Scotland (trial participants and non-participants) shows that, to some extent, this drives the price of quota leasing up to a level higher than non-participating vessels are prepared to pay and encourages increased discarding by vessels operating landings quotas. STECF therefore considers that, in a part-fleet CQ scheme, quota swapping between non-CQ and CQ vessels could potentially induce more discarding by non-participating vessels, by reducing their landings opportunities without changing their fishing tactics and catch levels through e.g. reduced effort. Depending on the level of extra CQ quota bonus for CQ vessels and degree of quota swap from non-CQ to CQ vessels, whole-fleet total removals and discards amount and/or rate might in some cases be higher than under traditional landings quota management with legally required discards. For illustration, a simple arithmetical example using fictitious information explaining this process is provided below. The examples show the potential effect of quota transfers. Some change in fishing tactics by non-CQ vessels involved in transfers may be expected, however, the real impact on total catch is most likely less than shown in the example below.

Example to illustrate the potential effect on total catch of quota swaps from non-CQ vessels to CQ vessels.

No CQ trials.

All vessels	Landings quota	10,000 t
	Discards	5,000 t
	Total catch	15,000 t

CQ trials with no quota swaps from non-CQ vessels to CQ vessels. 30% of the fleet operates under CQ.

CQ vessels:	Quota	3,000 t
	Bonus quota (30 %)	900 t
	Total catch, CQ	3,900 t
Non-CQ vessels	Landings quota	7,000 t
	Discards	3,500 t
	Total catch, non-CQ	10,500 t
Total catch all vessels		14,400 t

CQ trials with 1,000 t quota swap from non-CQ vessels to CQ vessels. 30% of the fleet operates under CQ.

CQ vessels:	Quota	4,000 t
	Bonus quota (30 %)	1,200 t
	Total catch CQ	5,200 t
Non-CQ vessels	Landings quota	6,000 t
	Discards	4,500 t
	Total catch non-CQ	10,500 t
Total catch all vessels		15,700 t

The illustration shows an entire fleet before a part-fleet CQM trial, with all vessels catching 150% of their landings quota for cod, and discarding the third of their catch that they are not allowed to land. The discarded element includes under-sized fish. For a landings quota of 10,000 t of NS Cod, total removals are 15,000 tonnes.
Then there is a CQM trial for some vessels only, whose quota holdings amount to 30% of the total. These vessels lease in (or otherwise obtain) 1,000 t worth of landings quota from the non-CQM vessels. They get a CQ bonus of an additional 30% of the level of their landings quota, and must not discard cod of any size. They must tie up if they reach their cod quota so have a high incentive to access extra quota. During the part-fleet trial, the non-participating vessel owners do not change their fishing tactics, therefore they catch the same amount of cod as they did before the trial, however having leased out some of their quota (or not leased in the quota that leased in before the trial), they are only allowed to land 6,000 tonnes of their 10,500 tonne catch. Discard rates and total removals are higher under this part-fleet scheme than before the scheme.

If the entire fleet is put onto CQM with 30% CQ bonus, then total removals of cod are lower at 130% of landings quota rather than 150% of landings quota of cod.

Terms of Reference 5:

STECF is invited to comment on any appropriate measure that could improve the conservation benefit to be obtained from the FDF trials.

STECF considers that a number of issues regarding the conservation benefits of CQM are actually linked to the distinction of CQ and non-CQ vessels within the same pools of national fleets, the interactions and externalities between the two groups being complex and with potentially negative impact, as illustrated above. STECF considers that CQM trials so far have yielded positive and very encouraging results, but the benefits of these are still unclear because of the large proportion of vessels still operating outside of CQM.

STECF considers therefore that the issue of quota transfers from non-CQ vessels to CQ vessels should be addressed and measures should be taken to ensure that quota transfers do not result in increased catches of the stocks concerned. Measures could *inter alia* be.

- Compulsory CQM for all vessels with significant catches of the stocks concerned.
- Prevention of quota transfers from non-CQ vessels to CQ vessels.
- Limit on the extent of quota transfers
- Reduction of fishing effort of non-CQ vessels in proportion to the vessel quota transferred to CQ vessels.

In addition, to avoid that CQM leads to increased catches of the stocks concerned the quota bonus should be equal to or less than the expected discard and STECF considers that the current rule on how to set the quota bonus seems reasonable.

Notification of Catch Quota/CCTV workshop

STECF notes that a Catch Quota/CCTV workshop is being held in Edinburgh (12th-14th May) and that this has attracted participants from a number of countries involved in or considering CQM trials utilizing CCTV. One of the key aims of the workshop is to develop common standards in the application of the technology and in the analysis of the outcomes of trials. STECF expects that output from this workshop will contribute to future evaluations and the wider discussion of the merits of catch quota management approaches.

5.4. Advice on FDF trials in mixed fisheries and review of discard estimates

Background

Under this point of the ToRs, STECF is requested to consider (1) the effect of fully documented fisheries in a mixed species context and (2) the estimated discard rates used by Member States when proposing additional allocation to vessels under article 7 of Regulation 43/2012 and article 6 of regulation 44/2012.

(1) Fully documented fisheries ("catch quota") trials have so far been limited to single species (i.e. Western Channel (VIIe) sole and North Sea cod). The UK proposes to trial fully documented catch quotas in a mixed species context to determine the impact on mortality, discards and selective fishing practices in mixed fisheries. The trials may also identify 'choke' species and improve data on gadoid discards in the region.

The proposal is for an additional 1% quota for ICES area VIIde plaice, VII anglerfish, VII megrim, VII hake; and an additional 5% quota for VIIb-k haddock.

(2) In accordance with Article 7 of Council regulation (EU) No 43/2012 and Article 6 of Council regulation (EU) No 43/2012 a Member State may grant an additional allocation to vessels flying its flag participating in trials on fully documented fisheries if the predefined conditions are fulfilled. The amount of additional allocation is determined on basis of level of discards estimated for the type of vessels to which that vessel belongs. According to article 7.5 of Regulation 43/2012 and article 6.5 of regulation 44/2012, the Commission may submit to a scientific advisory body for review the rates estimated by the Member States.

UK and DK have submitted information (required under paragraph 4 of the concerned articles) including information on the estimated discards for each type of vessels participating in the trials.

Terms of Reference

1. STECF is requested to evaluate the proposed trial of fully documented fisheries in mixed fisheries in ICES area VII, considering the following points:

- Whether the proposed trials represent a risk for the conservation of the stocks concerned and of other species in area VII in light of the known status of such stocks and species, and of any possibility that the trials would entail an increase of fishing mortality inflicted on them, or whether, on the contrary, the trials may entail a decrease in mortality;
- the expected impact of the trial on discards of both trial and non-trial species. This should be presented both for vessels participating in the trial and for other vessels operating in the area whose fishing practices and discard rates may change as a result of the trial (e.g. through leasing quota);
- the potential feasibility and effectiveness of this as a trial to (i) test a fully documented fishery system within a mixed fishery, (ii) identify 'choke' species and (iii) improve data on gadoid discards;
- if there is any difference for this trial compared to current schemes for VIIe sole and area IV cod.

STECF is also requested to identity what, if any, conditions should be applied if additional allocation is granted and advise on what data should be collected during the trial in order for STECF to carry out a full evaluation on the effectiveness of all fully documented catch quota schemes in reducing fishing mortality and discards.

2. STECF is requested to review the discard estimates used by UK and DK in their notification to the Commission under article 7.4 of Regulation 43/2012 and article 6.4 of regulation 44/2012 and if the discard estimates as reviewed by STECF differ from the discard estimates provided by the UK and DK, STECF is asked to provide advice on correct discard estimates for each types of vessels concerned. If no assessment can be made STECF are asked to identify what information is required.

STECF response

Term of Reference 1 - evaluation of the proposed trial of fully documented fisheries in mixed fisheries in ICES area VII.

STECF notes the UK proposal to trial fully documented catch quotas in a mixed species context to determine the impact on mortality, discards and selective fishing practices in mixed fisheries. The trials also aim to identify 'choke' species and improve data on gadoid discards in the region.

The proposal is for an additional 1% quota for ICES area VIIde plaice, VII anglerfish, VII megrim, VII hake; and an additional 5% quota for VIIb-k haddock.

The proposed pilot scheme would have the following key characteristics:

a) A voluntary scheme.

b) Participants sign up and are held accountable to a scheme which has strict rules of governance at UK level and within overarching EU Regulation (43/2012).

c) Onboard CCTV cameras will be mandatory and be used to ensure compliance with scheme.

d) Participants must retain and land all catch quota species caught (none can be discarded).

e) All catch quota species will be counted against the participant's quota.

f) Participants will be incentivised with additional quota for the stock(s) they choose to participate for.

g) Once a participating vessel's quota is used up for any one of the stocks for which it has been allocated a catch quota, the vessel shall cease fishing within the stock area using gears which might result in catches from the stock for which its limit has been reached.

h) Additional quota - No vessel will receive more than 75% of the discard rate for their specified gear type, and no more than 30% of a vessels allocation in accordance with Article 7 of EU regulation 43/2012.

i) Beam Trawl participants will ideally use net designs developed under 'Project 50%', or demonstrate other suitable fish avoidance plans.

j) A full evaluation will be made on the efficacy of the catch quota discard reduction pilot upon completion – including an assessment of the pilots' impact on fishing mortality.

k) If participants choose to exit, or are removed from the scheme, additional quota will be removed from the vessels current or future quota allocations (as consented by the participants in the UK Terms and Conditions at the start of the scheme).

Table 5.4.1 lists the species-specific discard rates provided by the UK Authorities and Table 5.4.2 provides the requested catch quota for each stock..

Table 5.4.1 – English species-specific discard rates (by weight) for fleet segment (gear type). 1Data are from English vessels only (Cefas). Segments include <10m and >10m English vessels. Data are average estimates pooled across 2008-2010. Discard rates can represent low catch quantities. Data are raised by effort (trips) to enable aggregation across métiers/areas/vessel lengths. The values in the table represent the proportion of each species discarded expressed as a percentage of the total catch of that species and gear type.

Stock – Target Area(s)	**BT2**	**GN1 / LL**	**TR all**
Plaice (VIIde)	**8%**	11%	**-**
Anglerfish (VIIefgh)	**6%**	**8%**	6%
Megrim (VIIefgh)	12%	**10%**	4%
Hake (VIIefgh)	49%	**3%**	22%
Haddock (VIIefgh)	50%	4%	**50%**

Table 5.4.2. Summary of the CQ requested by the UK

Stock	2012 EU TAC	UK Quota	Vessel Types	No Vessels	Max allocation per vessel* (%)	Additional Quota (t)	as % UK Quota	as % EU TAC
Plaice (VIIde)	5062	1473	BT2	2	6	3.00	**0.20%**	0.06%
Anglerfish (VII)	30677	5517	BT2	2	5	7.00	**0.13%**	0.02%
			GN1	1	6	15.00	**0.27%**	0.05%
Megrim (VII)	17385	2492	BT2	2	9	2.00	**0.08%**	0.01%
			GN1	1	8	14.00	**0.56%**	0.08%
Hake (VII)	30900	5553	LL	1	2	12.00	**0.22%**	0.04%
			GN1	2	2	2.00	**0.04%**	0.01%
Haddock (VIIb-k)	16645	1665	TR1	1	38	76.00	**4.56%**	0.46%

*75% of Discard Rate
**No more than 30% of a vessels allocation rule would be applied

STECF notes that possible impacts of CQ trials on fishing mortalities may be caused by:
1. Changes in catches of target species by CQ vessels
2. Changes in catches of target species by non-CQ vessels
3. Changes in catches of bycatch species

The possible change in fishing mortality driven directly by the additional quota given to CQ vessels would be negligible since the quantities of fish concerned are small (up 0.1 to 0.5% of increase in the TAC and F see Table 2). There may be a decrease in F if total catch is reduced as a result of CQM (see illustrative example).

For haddock the catch quota requested translates into an overall TAC increase of about 0.5% (Table 2). The preliminary catch statistics from ICES 2011 indicate that the quota was fully taken in 2011. STECF expects that discard rates were high in 2011 owing to high catch levels, above the quota limits, generated by the strong 2009 year-class. This year-class will achieve marketable size in 2012, so undersized discards should decrease naturally, but high grading might be expected to increase in 2012. The arrangements for CQM are expected to prevent high grading in the vessels on the scheme and result in a reduction in catch (and the partial F for these vessels) below what would otherwise be expected. Furthermore, CQM might improve the estimate of F by improving catch recording. However, in terms of overall F on the stock these potential benefits may not be apparent given the unknown effects of vessels not participating in the scheme.

For other species overall TAC change is minor (<0.1%) and would not be expected to have any significant effect on stock conservation.

Catches of other species (taken as bycatch) would be better documented by vessels in the CQ trial, and possibly 'choke' species would be identified. Information from the CQ trial would improve data used to estimate gadoid discards by non-CQ vessels.

In conclusion, the additional quota are small and it is unlikely that the proposed trials will have a measurable effect on the fishing mortality or represents an additional risk for the stocks concerned or of other species in area VII. As explained in section 6.3a transfer of quota from non-CQ to CQ vessels may lead to an increase in fishing mortality for the stocks concerned (depending on the scale of quota transfer and any subsequent increase in discards by the non-CQ vessels after the transfer of their fishing opportunity). However, with the relative few vessels involved in the trials, transfers are likely to be limited and the possible impact on fishing mortalities to be very low.

STECF notes that based on the national CQ reports from Scotland and Denmark presented in 2011 that there are some national differences across CQM trials for example, i) undersized catches must be landed in the Scottish scheme but only recorded in Denmark, ii) vessels must supplement CQM with demonstrated avoidance plans in the English scheme), but the suggested UK plan is comparable to the previous English pilot.

Previous CQ trials have shown that it is difficult to assess the effect of the trials in terms of total catch of the stocks concerned. This is not due to lack of information or data on the trials but because the information on the non CQ vessels in general is limited. It would therefore be useful if a data collection program for non CQ vessels is run parallel to the CQ trials.

STECF concludes that the additional quotas are small and it is unlikely that the proposed trials will have a measurable effect on the fishing mortality or represents an additional risk for the stocks concerned or of other species in area VII. STECF supports this trial and sees this as an important step in developing the CQM approach. It is important to learn more on the implications of CQM in mixed-fisheries context. Information from the CQ trial would potentially improve data used to estimate discards from the stocks concerned by non-CQ vessels. It is expected that the scheme will help to discover which are the 'choke' species in this mixed fishery.

Further steps, such as observer trips, CCTV data and skipper interview surveys for non CQ vessel would be helpful to determine discarding practices, species and size composition of catches, and fishing tactics and practices for vessels not participating in the FDF trials.

Terms of Reference 2 - review the discard estimates used by UK and DK.

STECF has not been able to fully review the information provided in the various notifications since it is not always clear how or which discard rates have been applied. STECF suggests that in addition to the provision of tables of information, MS should provide a narrative example showing how their calculations were made and precisely stating which discard rate has been applied. It is important to note that discard rates

presented in scientific reports from ICES and STECF refer to discards as a proportion of catch. In the application of CQM, the additional quota provided to vessels is often expressed as a proportional increase on landings. STECF draws attention to the need to ensure the appropriate rate is used when allocating additional catching opportunity. STECF also notes that it will be possible to better evaluate the discard rates used by the UK and DK after overall discard estimates and comparisons with national discard estimates are undertaken by the planned STECF expert group in June 2012.

5.5. Request for an STECF opinion on assessment of the Member States annual reports whether the conditions for exclusion in accordance with Article 11(2) of Regulation (EC) No 1342/2008 remain fulfilled

Background

In accordance with Article 11(2) of Council Regulation 1342/2008 establishes a long-term plan for cod stocks and the fisheries exploiting these stocks the Council may, acting on a proposal from the Commission and on the basis of information provided by the Member States and on the advice of STECF, exclude certain groups of vessels from the application of the effort regime.

The current exclusions for groups of vessels from Spain, Sweden, the United Kingdom, Poland and Ireland are described in Council Regulation (EC) No 754/2009, as amended. Member States must submit annually, appropriate information to the Commission and STECF to establish that the conditions for any exclusion granted remain fulfilled. Reports on Art 11 are due 31st March.

Terms of Reference

Based on the information provided by the Member States in support of the continuing exclusions granted under Article 11 in their annual reports, the STECF is requested to assess whether the groups of vessels concerned have been complying with the conditions set out in the decision on exclusion. In carrying out its assessment, the STECF is requested to:

a) advise whether the data on catches and landings submitted by the Member State support the conclusion that during the preceding fishing season (from the date of the exclusion), the vessel group has (on average) caught less than or equal to 1,5% of cod from the total catches of the vessels concerned;

b) specify the reasons, if the information presented gives indications on the non-fulfilment of the conditions for exclusion.

In carrying out its assessment, the STECF should consider the rules on vessel group reporting established in Article 4 of Commission Regulation (EU) No 237/2010

laying down detailed rules for the application of Council Regulation (EC) No 1342/2008.

STECF response

Poland

The Polish report is available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012. Only 1 vessel is concerned belonging to the TR1 group, fishing with mesh size 120 mm, targeting saithe. Tables 1 and 3, informing about their fishing activities in February and March 2011, do not conform to the prescriptions in Regulation (EU) No 237/2010 and are therefore not sufficiently informative. Table 1 provides cod catches but not total catches of all species (Column 14), and Table 3 reports sampling intensities (Column 17) for February and March 2011 of 94 and 48 tows sampled. while sampling intensity should be given as the ratio of the sampled effort to the total effort deployed by the group of vessels during the fishing season. According to Tables 1 and 3, 639 kg and 1830 kg cod was caught and landed in February 2011 and March 2011, respectively. Another table labelled as <2011 TABLE_OF_FISHING_POK-VOY_I_(UE)> was provided with catches (or landings?) per tow. In February 2011, 94 out of 108 tows were observed (87%) and in March 2011, 48 out of 57 (84%). These tows had on average 0.1% and 0.7% cod in their catches (or landings?). The reported amounts of cod in this table (observed and non-observed tows) in February add up to 639 (the same number reported in Tables 1 and 3) but the ones in March add up to a different number: 1754 (1830 in Tables 1 and 3).

STECF considers that assuming STECF has interpreted the information correctly, the information provided indicates that the vessel caught <<1.5% of cod relative to the total catches.

Sweden

The Swedish report is available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012. The data concern 86 vessels targeting *Nephrops*, fishing with a sorting grid and 70, 75, and 80 mm codend meshes in areas (a) and (b)(i) in the Skagerrak. According to Table 1, 670 kg of cod was caught and landed. According to Table 3, 4626 trips (mostly day trips, although some at 2, 3 or 5 days long) were observed. The data in Table 3 seem to imply that 100% of effort was observed (the sum of the effort of the observed trips equals what is given as 'total effort' in Column 16). On average, on these trips 0.06% of cod was caught, but the maximum was 35.6% (SD = 1.1%).

Given that it is unclear whether the information provided by the Swedish authorities on sampling intensity have been collected in accordance with the provisions of Regulation 237/2010, STECF considers that assuming STECF has interpreted the information correctly, the information provided indicates that the vessels caught <<1.5% of cod. However, it is surprising that on a few trips, vessels fishing with a grid reported relatively high proportions of cod in their catches. STECF suggests that

the Commission ask the Swedish Authorities to re-examine their figures the ascertain how such high proportions arose.

Ireland

The Irish report is available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012. Two groups of Irish vessels are currently exempted under Article 11(2): a group of TR2 vessels operating in Division VIIa (Reg. 712/2010 Article 2) and a group of TR1 vessels operating in Division VIa (Reg. 1106/2011 Article 2).

The Irish authorities note that it was not possible at this stage to provide estimates of total effort for the exempted vessels due to lack of finalised 2011 logbook data.

TR2 vessels in VIIa using a selective sorting grid.
The group consists of three vessels operating in the Irish Sea (ICES Division VIIa) in the TR2 (70-99mm) gear category, targeting *Nephrops*. A table is provided in the format of Table 1 (according to Reg. 237/2010) but it only contains information on the 4 observed trips (which should have been provided in Table 3) (2 vessels had one observed trip and the third vessel had two observed trips). Sampling coverage is not given as a proportion of total effort by these vessels in the management period. In these 4 trips, a total of 24 kg of cod was caught and discarded. The average percentage of cod in the catch in these trips was 0.09% (min=0.0% - max 0.42%).

STECF considers that the coverage by observers is low (only 4 trips) and it is not clear what proportion of total effort of these vessels in the management period this represents. The sparse information provided indicates that the vessels caught <<1.5% of cod.

TR1 vessels VIa.

The group consists of 5 vessels operating mainly in ICES Division VIa in the TR1 (120mm) gear category. Again, a table is provided in the format of Table 1 but it only contains information on the 13 observed trips (which should have been provided in Table 3); these 13 observed trips concern only 4 of the 5 vessels. Sampling coverage is not given as a proportion of total effort by these vessels in the management period. In these 13 trips, a total of 3189 kg of cod was caught, of which 68 kg was discarded. Four out of the 13 observed trips had cod catches exceeding 1.5%, and the average percentage of cod in the catch in these trips was 1.19% (min=0.0% - max 3.88%). The document from the Irish authorities also provided VMS data that confirm that the vessels performed the relevant activity in the area specified in their initial submission. Bootstrap analyses (similar to those done at STECF PLEN-11-03, but using the cod and total catches rather than the proportions) of the 13 trips' data indicate that the probability of having catches of cod above 1.5% of the total catch is 0.24..

STECF-PLEN-11-01 advised on this group of vessels "that if fishing by the group of vessels listed continues in the area specified in the submission, catches will have to be

monitored closely for cod fractions of equal or less than 1.5% in the light of changing stock size."

STECF considers, based on the information provided, that the 5 Irish TR1 vessels concerned have on average cod catches of <1.5%, but according to the analysis there is a 24% probability that the true proportion of cod in the catches of the vessels concerned exceeds 1.5%. .

UK

The UK is available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012. The data provided in Table 1 concern 44 vessels targeting *Nephrops* in the West of Scotland, but only 40 of them are fishing in the relevant areas (The Minches and the Clyde). Of these 40, two fished only in the Clyde, 37 only in the Minches, and one in both. In total, these vessels made 27 trips in the Clyde and 578 in the Minches. Cod landings in the Clyde amounted to 0 and in the Minches 0.0146 (tons?); however, that last number is contradicted by the information provided in Table 3. According to Table 3, only 16 trips were observed of 14 vessels; 15 trips in the Minches and only one in the Clyde. One vessel was sampled on three separate trips while fishing in the Minches. There is some discrepancy between Tables 1 and 3: the mentioned vessel had 0 cod landings according to Table 1, but 3.4 kg according to Table 3. The effort reported per vessel does not always correspond between Table 1 and Table 3; however, for the mentioned vessel it does, and therefore the discrepancy in cod landings cannot be explained by non-correspondence of effort reported in Tables 1 and 3. Such discrepancies affect the scientific credibility of the data. The observed trips represented 0.5% to 3.1% of the total effort of those vessels in the management period, which is a low coverage. On 12 of the observed trips, cod was discarded, up to 10 kg. The average percentage of cod in the total catch of the 16 trips was 0.4% (ranging from 0% to 1.34%).

Spain

The Spanish report is available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012. The data in Table 1 contain 18 monthly records of 4 vessels, fishing generally deeper than 300m but sometimes as shallow as 234m. Only one of these records has non-zero cod catches, namely 424 kg that was discarded. This vessel was the only one with observer trips according to Table 3, two trips in the same month, together accounting for the 424 kg of cod caught, and representing 1.28% and 1.62% of the total catches of these trips (on average 1.45%) while fishing at depths of 298-513m and 279-356m, respectively. The coverage of observed effort was low: the two trips represented 3% of the total effort of the relevant vessels as in Table 1.

STECF considers that the coverage by observers is very low (only 2 trips, both in the same month, of only one of the 4 vessels) representing 3% of total effort of these vessels in the management period. While the percentage of cod in the catches from the sampled vessels is on average, just below 1.5% (1.45%), STECF is unable to discern whether this value is representative of the fleet of vessels concerned because

of the low sample size. STECF is concerned about the relatively high cod catches, since they were taken at depths around 300m, of which it was previously thought that this is sufficiently deep to be considered spatially decoupled from cod's distribution.

Answer to ToR:

a) The data submitted by Poland, Sweden, and the UK, and the data submitted by Ireland for the three TR2 vessels support the conclusion that during the preceding fishing season (from the date of the exclusion), the vessel group has (on average) caught less than or equal to 1,5% of cod from the total catches of the vessels concerned; The data submitted by Spain and the data submitted by Ireland for the 5 TR1 vessels do NOT support the conclusion that during the preceding fishing season (from the date of the exclusion), the vessel group has (on average) caught less than or equal to 1,5% of cod from the total catches of the vessels concerned.
b) In the case of Spain, the reason is that, while in the observer data provided the average percentage of cod in the catches is only very slightly below 1.5%, sample sizes were too small to confirm the statistical significance of this estimate. In the case of Ireland, the reason is that, while in the observer data provided the average percentage of cod in the catches is slightly below 1.5%, the bootstrap analysis indicates that the probability is 24% that the proportion of cod in the catches exceeded 1.5%.

General

STECF notes that sometimes Member States do not comply to Regulation 237/2010 and its prescriptions of the Tables 1 and 3 for the annual reports. Moreover, some Member States seem to misinterpret what is expected for these tables.

- Table 1 should document all fishing activity of the relevant vessels in the relevant areas, whereas Table 3 should document observed trips.
- In Column 11 of Table 1 not just one figure for depth must be provided, but instead the range of the minimum and maximum of fishing depths.
- Column 14 of Table 1 should provide data on the total catches (landings + discards) of all species, not just of cod.
- Column 17 of Table 3, on sampling intensity, should provide information on the proportion of the total effort of the relevant vessels in the relevant areas (as reported in Table 1) that is covered by the observed trips in Table 3.

In addition STECF asks that Member States accompany their annual reporting with a scientific justification of the chosen sample size for observer trips and whether these samples represent the relevant group of vessels and their fishing activity temporally and spatially.

5.6. Request for an STECF opinion on the implementation of Article 13.2 of the Regulation (EC) No 1342/2008

Background

In accordance with Article 13.2 of Council Regulation 1342/2008 establishes a long-term plan for cod stocks and the fisheries exploiting these stocks the Member States may increase the maximum allowable fishing effort within applicable effort groups. Member States are required to notify the Commission of any increase of the fishing effort allocation by April 30 of the year during which such compensation for effort adjustment shall take place. The notification shall include details of the vessels operating under the special conditions referred to in Article 13 (2) (a-d), the fishing effort per effort group that the Member State expects to be carried out by those vessels during the year and the conditions under which the effort of the vessels is being monitored, including control arrangements.

Under Article 13.7 the Commission shall request STECF to compare annually the reduction in cod mortality resulting from the application of point (c) of Article 13 (2) of the cod plan with the reduction it would have expected to occur as a result of the effort adjustment referred to in Article 12(4).

Not all Member States have allocated additional effort only on the basis of Article 13 (2) (c) and have identified additional allocation on the basis of Article 13 (2) (a,b).

In May 2011 the United Kingdom notified the Commission of the allocation of additional effort in accordance with article 13.2, primarily under point (c) but additionally in respect of points (a) and (b); highly selective gear and the intended application of cod avoidance fishing trips.

In April 2011 France notified the Commission of fishing effort increases in 2011 in accordance with article 13.2 (cod avoidance measures) of the cod plan, in particular in relation to point (b) on less than 5% cod catch composition.

In May 2011 Ireland notified the Commission of the additional fishing effort allocated as a result of either spatial or technical measures in 2011, again under Article 12.2 (c).

In May 2011 Denmark notified the Commission of the allocation of additional effort in accordance with article 13.2 (b) and (c).

In April and in December 2011 Germany notified the Commission of fishing effort increases in 2011 in accordance with article 13.2 (b).

Terms of Reference

Based on information provided by the United Kingdom, France, Ireland, Germany and Denmark justifying fishing effort increases for 2011 under the conditions laid down in article 13.2 (c) of the cod plan (Council Regulation (EC) No 1342/2008), the STECF is requested to assess the effectiveness of the relevant cod avoidance

measures undertaken pursuant to Article 13.2 (c). In carrying out its assessment, the STECF is requested to compare the impact in cod mortality which results from the application of this provision (cod avoidance or discard reduction plan) with the reduction it would have expected to occur as a result of the fishing effort adjustment referred to in article 12.4 of the cod plan.

In light of its conclusions of the assessment referred to above, STECF are requested to advise the Commission on any appropriate adjustments in effort to be applied for the relevant areas and gear groupings as laid down in article 13.7 of the cod plan as a result of the application of Article 13.2 (c).

Additionally, based on any relevant information obtained from the EWG 11-06 and in conjunction with the information provided by Member States justifying fishing effort increases for 2011 pursuant to Article 13.2 of the cod plan Council Regulation (EC) No 1342/2008) under conditions other than paragraph 13.2 (c) (, the STECF is requested to assess the additional effort applied by the Member States concerned in terms of its compatibility with the conditions and objectives of the plan and in terms of its impact on cod mortality. STECF are requested to identify instances were this assessment is not possible and to indicate specific information for each action that should be provided to enable such assessment.

STECF are requested to identify where possible any cumulative or in combination impact as a result of the actions undertaken under Article 13 (2).

STECF response

STECF notes that in 2011 UK, France, Ireland, Denmark and Germany have notified the Commission of the allocation of additional effort in 2011 in accordance with Article 13.2.

STECF notes that the requested analyses to review the compliance and effects of the additional effort allocation by MS in accordance with the provisions in Article 13.2 require information and data which will be available only by mid June 2012. STECF notes therefore that it would address this request and respond accordingly during its next plenary meeting (9-13 July 2012) based on the results of the EWG 12-06 (11-15 June 2012, effort regime evaluations) and EWG 11-07 (18-22 June 2012, management plan reviews).

The first prerequisite to the ToR would be analytical assessments of the four cod stocks in the Kattegat (1), in the Skagerrak, North Sea and Eastern Channel (2), Irish Sea (3) and to the west of Scotland (4).
Secondly, the ToR requires the availability of national catch (landings and discards in weight, preferably also by age groups in numbers) and fishing effort (kW*days at sea) for 2011 and each of the fisheries (defined in accordance with the cod effort regulated gear groups) for which additional effort was granted. Based on such data, STECF would be able to quantify the impact of the fisheries with increased effort allowances in terms of fishing mortality added and evaluate the specific provisions of Article 13.2. STECF notes that the current 2012 DCF data call to support fishing effort regime evaluations requests such data for 2011 only for the provisions of the entire

Article 13.2 and not specifically by each of the four paragraphs and the defined derogations, i.e. for a) on highly selective gear, b) cod-avoiding fishing trips, c) cod avoidance or discard reduction plan and d) fishing activity to the west of the west of Scotland line.

STECF recommends that DG Mare calls the 2011 data on aggregated (summed) national cod catch (landings and discards separately estimated in weight in units of tonnes, preferably also by age groups in numbers in units of thousands of individuals) and fishing effort (kW*days at sea) for

- each of the effort regulated fisheries defined in Annex I of the Council Reg. 1342/2008 and granted additional effort allowances (BT1, BT2, GN, GT, LL,TR1, TR2, TR3) in
- each of the cod plan areas 2a (Kattegat), 2b (Skagerrak, North Sea, Eastern Channel), 2c (Irish Sea), 2d (West of Scotland) specifically coded as
    - CPart13.2.a for highly selective gears used.
    - CPart13.2.b for cod-avoiding fishing trips.
    - CPart13.2.c for cod avoidance or discard reduction plan.
    - CPart13.2.d for fishing activity to the west of the west of Scotland line.

Such 2011 national catch and effort data shall be called from UK, France, Ireland, Denmark and Germany and submitted to DG Mare by not later than 10 June 2012 and immediately forwarded to the STECF EWG 12-06 for review and evaluation during its meeting 11-15 June 2012. The relevant data shall be submitted as simple EXCEL sheets in the formats and using the explicit codes given in the following two tables.

Tab. 1 Cod landings and discards

Country	Year	Regulated Gear	Regulated Area	Derogation	Cod Landings (t)	Cod Discards (t)
UK	2011	BT1	2a	CPart13a	9999	9999
FRA		BT2	2b	CPart13b		na
DEN		LL	2c	CPart13c		
IRL		GN	2d	CPart13d		
GER		GT				
		TR1				
		TR2				
		TR3				

Tab. 2 Fishing effort

Country	Year	Regulated Gear	Regulated Area	Derogation	Effort (kW*days at sea	
UK	2011	BT1	2a	CPart13a	9999	
FRA		BT2	2b	CPart13b		
DEN		LL	2c	CPart13c		
IRL		GN	2d	CPart13d		
GER		GT				
		TR1				
		TR2				
		TR3				

5.7. Request for exclusion from the cod plan effort regime in accordance with Article 11(2) of Regulation (EC) No 1342/2008

Background

Article 11(2) of Council Regulation (EC) 1342/2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks lays down the conditions under which the Council, acting on a Commission proposal and on the basis of the information provided by Member States and the STECF advice, may exclude certain groups of vessels from the effort regime.

Following a number of requests by Member States to the European Commission, the STECF assessed in 2009, 2010 and 2011 the activity of groups of vessels against the criteria mentioned in Article 11(2) of the cod plan, in particular based on the concept of technical or biological decoupling. The Commission's approach to vessels' exclusions from the cod plan effort regime has taken into account the STECF's concept of technical and/or biological decoupling as well as vessels' group activities or characteristics that result in cod catch rates equal to or below 1,5% of the total catches for each group of vessels concerned, provided that:

a) the Member States provide appropriate information to the Commission and STECF in order to establish that the conditions are and remain fulfilled in accordance with the detailed rules adopted by the Commission and;

b) the Member States concerned put in place a monitoring system that provide representative catch data enabling the Commission to assess whether the fulfilment of the exclusion criteria at the group or vessel level continues to be met.

Member States requests for exclusion must follow the requirements prescribed by Commission Regulation (EU) No 237/2010 laying down detailed rules for the application of Council Regulation (EC) No 1342/2008.

Terms of Reference

Under the conditions laid down in Article 11(2) of Regulation (EC) No 1342/2008 establishing a long-term plan for cod stocks, the STECF is requested to evaluate the UK request for exclusion from the cod plan effort regime of a group of 21 trawlers (gear category TR2) targeting *Aequipecten opercularis* (Queen Scallop) in the Irish Sea.

Following the approach described in the background and taking into account the information and data provided by the UK to the European Commission, the STECF is requested to advice on the following:

1) To what extent does the data on catches and landings submitted by the UK support the conclusion that during the reference period for which the data have been collected, the vessel group has (annually on average) caught less than or equal to 1.5% of cod of its total catches?

2) In cases of scientific uncertainty with regard to question 1), please specify the information and data that have to be improved; in particular concerning the sampling strategy including sampling precision levels and intensities in relation to catch and discards data and, where relevant, the description of gear properties and its effect.

3) In cases of scientific uncertainty with regard to question 1), please specify whether the information presented gives indications that the non-fulfilment of the assessment criteria is due to a specific activity of the vessel group, e.g. when the group fishes in a particular area.

In carrying out its assessment, the STECF should consider the rules on vessel group reporting established in Article 3 of Commission Regulation (EU) No 237/2010 laying down detailed rules for the application of Council Regulation (EC) No 1342/2008.

The STECF advice should be consistent with comparable advices.

The STECF is requested to complete the table below summarising its findings in relation to the present request.

Table: Summary of STECF findings in relation to vessels groups requests for exclusion.

Country	Description of vessel group	Data submitted	STECF advice in April 2012
			[to include a statement on a favourable or negative opinion on the exclusion in question]

STECF response

The UK request for excluding the Queen scallop (*Aequipecten opercularis*) TR2 fisheries around the Isle of Man from the effort regime contains a cover letter detailing previous STECF advice (PLEN 09-01) on a similar request, data on an observer programme for by-catch sampling in 2009, gear and area specifications (incl. VMS data map), cod catch estimates and monitoring arrangements for 2012. The observer data from 2009 shows that cod catches as a proportion of overall catch were 0.033% (SD 0.025%).
The Duncan (2009) report on by-catches in the Queen scallop trawl fisheries around the Isle of Man, cited in the UK submission, provides further details on the catch composition. It shows that cod had a proportion of 0.43% in numbers (Table 5 in Duncan, 2009). Among all fish species, however, cod had an overall contribution of 0.37%. In a recently published study on this fisheries (Hinz, 2012), a similar catch

composition is being reported, and cod is not listed under the top 8 fish species occurring.
STECF notes that in the UK submission, discard observer data were not available for 2011 and 2009 observer data have been used for estimating discards in 2011. Considering the very low proportions of cod in the catches, STECF considers this procedure as not critical to the assessment of the UK submission with regard to the 1.5% limit.
A copy of the draft Isle of Man temporary discards ban byelaw was provided by DG MARE during the meeting, foreseeing that any bony fish caught by Manx registered fishing vessels, whilst fishing in the directed Queen scallop trawl fishery within the territorial sea, must be retained on board, landed and recorded on the required log sheets from 1 June to 31 December 2012. In combination with the increased monitoring proposed (CCTV, two scientists employed in 2012 to monitor discards), STECF regards this byelaw as supporting improvements in catch estimation.

1) To what extent does the data on catches and landings submitted by the UK support the conclusion that during the reference period for which the data have been collected, the vessel group has (annually on average) caught less than or equal to 1.5% of cod of its total catches?

Under the assumption that the 2009 observer data can be used as valid proxy for the 2011 catch estimates, the data submitted by the UK support the conclusion that the vessel group has (annually on average) caught less than 1.5% of cod of its total catches.

2) In cases of scientific uncertainty with regard to question 1), please specify the information and data that have to be improved; in particular concerning the sampling strategy including sampling precision levels and intensities in relation to catch and discards data and, where relevant, the description of gear properties and its effect.

According to Article 4 of Reg. 237/2010, more recent observer data than 2009 should be presented in order to monitor the catch composition for 2012. STECF notes that proposals to undertake appropriate sampling in 2012 are outlined in the covering letter from the UK Authorities.

3) In cases of scientific uncertainty with regard to question 1), please specify whether the information presented gives indications that the non-fulfilment of the assessment criteria is due to a specific activity of the vessel group, e.g. when the group fishes in a particular area.

Not relevant, as the assessment criteria are fulfilled.

Table 5.7.1 summarises the STECF findings in relation to this request for exemption from the effort regime under the cod management plan.

Table 5.7.1: Summary of STECF findings in relation to vessels groups requests for exclusion.

Country	Description of vessel group	Data submitted	STECF advice in April 2012

UK	21 trawlers using otter bottom trawls (TR2) targeting Queen scallops (*Aequipecten opercularis*) in the Irish Sea (ICES Div. VIIa, around the Isle of Man)	Vessel and gear specifications, landings, discards (estimates), observer data, fishing effort (according to Reg. 237/2010).	The data presented (based on 2009 observer data) confirms that cod catches were well below 1.5% (0.033% [SD 0.025%]). The annual report according to Article 4 of Reg. 237/2010 should contain more recent observer data than 2009.

References:

Duncan, P.F. (2009). An Assessment of Bycatch in the Isle of Man Queen Scallop Trawl Fishery - A Report Prepared for the Isle of Man Government Department of Agriculture, Fisheries and Forestry as part of the application for fishery certification under the Marine Stewardship Council
November 2009. DRAFT, 51 pp.

Hinz, H., Murray, L.G., Malcolm, F.R., Kaiser, M.J. (2012). The environmental impacts of three different queen scallop (*Aequipecten opercularis*) fishing gears. Marine Environmental Research 73: 85-95.

5.8. Assessment of various requests submitted by Member States relating to current EU Technical Measures Regulations

Background

Following the entry into force of the Lisbon Treaty, temporary technical conservation measures could no longer be included in the annual Fishing Opportunities Regulation. To ensure that the existing temporary technical conservation measures of the Fishing Opportunities Regulation before Lisbon would remain in place, the Council adopted Regulation (EC) No 1288/2009[2]. This Regulation provided for continuation of the temporary measures on a transitional basis for 18 months until 30 June 2011. As it had not yet been possible to incorporate the transitional measures into the existing technical measures Regulation (EC) No 850/98[3] (or a new Regulation replacing that Regulation) by 30 June 2011, the measures were further extended for another 18 months under Regulation (EU) No 579/2011. These measures are important for sustainable fishing, and their consolidation and continuity should be ensured.

2 OJ L 347, 24.12.2009, p 6.
3 OJ L 125, 27.41998, p. 1.

During the negotiation of Regulation (EU) 579/2001 some Member States requested possible changes to be taken into account by the Commission when drafting its proposal on a new framework for Technical Conservation Measures. The Commission is now requesting STECF assess these requests.

STECF is requested to review the report prepared under an *ad hoc* contract, evaluate the findings and make any appropriate comments and recommendations.

1. Request from the Irish Authorities on the use of the entangling nets

Background

The Irish authorities have requested a derogation to Annex III of EC Regulation 43/2009 for a small number of inshore vessels < 10m in length to use entangling nets to target lesser spotted dogfish (*Scyliorhinus canicula*) within the restricted area in ICES zone VIa as defined in the Regulation. The basis for this derogation is that that this fishery can be demonstrated to have very low levels of catches of cod, haddock, spiny dogfish and whiting.

Terms of Reference

In the light of available information, particularly on observed catch composition data, the STECF is requested to give its opinion on the likely impact of the proposed derogation on the species of concern listed below based on the spatial and temporal characteristics of this fishery and the specifications of the gear proposed.

Species concerned: cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting
(*Merlangius merlangius*) lesser-spotted dogfish (*Scyliorhinus canicula*), spiny dogfish
(*Squalus acanthias*).

STECF response

STECF observations

The report describes the fishery concerned by the derogation. Prior to 2009 in Area VIa about 25 vessels engaged in the pot fishery for crab and lobster would have spent some time gillnetting for lesser spotted dogfish (*Scyliorhinus canicula*) which is mainly used for bait in that pot fishery. This fishery was: seasonal, lasting from around the beginning of June and finishing at the end of September; confined to coastal areas, normally within 3 nautical miles of the coast and in depths shallower than 40m; and only undertaken during periods of slack tides, restricting fishing to a maximum of 10 days per lunar tidal cycle.

Historically 1500m of single sheet gillnets is used on vessels > 10m with a soak time of less than 24 hours. Vessels between 8m and 10m would use between 500m and 1000m of gear.

Concerning the stock status of *Scyliorhinus canicula*, the latest available advice from ICES (2010) indicates that the stock in VIa has increased substantially in the past few years. Data from fishery independent surveys (IBTS Q1 and IBTS Q4) show that between 2007 - 2009 the catch rates were two or three times greater than they were at the start of the time series. While the survey trends indicate a continued increase in abundance over the time period, there are no analytical assessments available that provide an estimate of biomass or the means to assess what the likely impact of a restricted fishery would be on the population of *Scyliorhinus canicula*.

Due to the fact that there is very little information available on the fishery and to support their request, the Irish Authorities obtained a derogation to undertake a restricted sampling programme in the fishery during 2011. In total there were 12 days sampling carried out and an average of 1994 kg of *Scyliorhinus canicula* landed. *Scyliorhinus Canicula* comprised over 98% of the catch (96.7 to 99.1%), with the remainder of the catch comprising Red Gurnard (0.87%) and crustaceans (0.43%). There was no by-catch of any of the species of concern as specified by the Commission and STECF, namely cod, haddock, whiting and spiny dogfish.

STECF conclusions

STECF notes that from the observer programme the fishery concerned is highly selective and does not catch any cod, haddock, whiting and spiny dogfish.

STECF notes that from the survey data the gillnet fishery has not had a negative impact on the stock status of *Scyliorhinus canicula*. However, it is not possible to be definitive on these issues due to the lack of analytical assessment for *Scyliorhinus Canicula* and the observer programme is limited to one year.

STECF recommend that if the derogation is authorized in order to prevent the expansion of the fishery it must be subject to the following restrictions:

- the fishery is constrained to waters within 3 nautical miles of the coast;
- the fishery is limited to vessels less than 10 m;
- vessels are restricted to a maximum of 1000m of gillnet and with a maximum soak time of 24 hours;
- the fishery is restricted to the months of June to September and for a maximum of 10 days per month;
- and the target species, *Scyliorhinus Canicula*, is not sold for human consumption.

Furthermore, due to the absence of analytical assessment for *Scyliorhinus Canicula* STECF recommend that the derogation should be reviewed periodically. In order to

ensure such a review the Irish Authorities must ensure that monitoring is carried out using dedicated logbooks and that vessels are obliged to carry observers when requested.

2. Request on possible seasonal closed areas in area VIa to protect cod

Background

Since 2004 ICES have advised a zero catch of cod in ICES Division VIa. An improved selectivity measure were introduced into the fishery by the EU in 2009 and while there are some indications of an increase in the stock, SSB remains well below B_{lim} and mortality remains high. Cod are known to be a hyper-aggregating species, so at low abundance it is still possible to find areas of high cod density. This can lead to high catches in localised areas, with the possibility of low levels of fishing effort causing high mortality on the stock. There are two existing EU closures in Area VIa – the Clyde Sea closure and the Windsock closure[4]. STECF has assessed these closed areas in 2007 and found them to have some positive benefits although in the case of the windsock closure they suggested a re-defining of the boundaries. In addition the Irish authorities have introduced a seasonal closure in ICES statistical rectangle 39E3 in ICES zone VIa to all fishing activity by Irish vessels to protect juvenile cod. STECF has assessed this closure and found it is a limited impact on overall cod mortality in VIa but has reduced the fishing mortality of the Irish fleet significantly. There are indications that there may be other areas within Area VIa that could be closed seasonally to protect cod and given the continued poor state of this stock it is considered appropriate by the Commission to try and identify such areas.

Terms of Reference

In the light of available information, particularly effort (VMS), landings and catch composition data, the STECF is requested to give its opinion on potential areas that could be closed within Area VIa and their likely effect on the catches and if possible, cod fishing mortality. STECF are also asked to consider whether the seasonal closure currently enforced by the Irish authorities should be closed to all fishing activity (except pelagic trawls). The impact on the fleets involved and the likely displacement to other areas that may impact on other stocks should be considered.

Species concerned: cod (*Gadus morhua*), **Gears concerned:** All gears.

STECF response

STECF observations

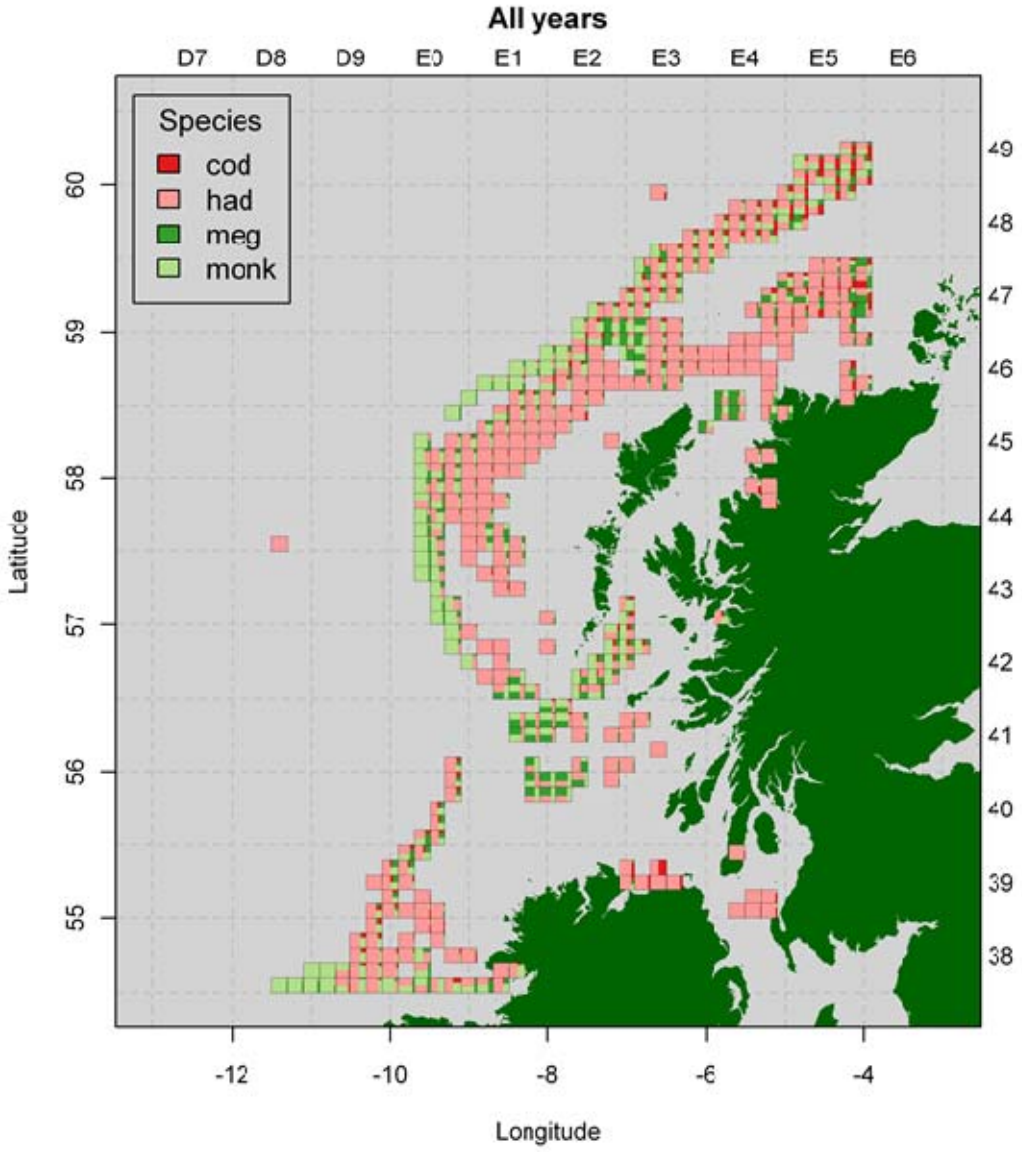
STECF has considered the distribution of cod in VIa on several occasions, relating to (i) the efficacy of the West of Scotland management line (the "French Line"), (ii) the

4 coordinates are referenced in Council Regulation 41/2007 annex III, Part A article 7.1

possibility to spatially regulate the uptake of haddock quota while minimising the catches of cod, (iii) the impact of measures undertaken in accordance with articles 11 and 13 of the cod management plan (EC Regulation 1342/2008).

The report presents a summary of the available information and a description of the distribution of the main species: cod, haddock, monkfish, megrim and *Nephrops*.

STECF (PLEN-11-03) noted that to fully evaluate the options for further spatial measures to reduce fishing mortality on cod and to considered and 'of which' clause to the allocation of haddock quota in VIa, where uptake of haddock quota in areas of higher cod abundance would be limited, a full international data set would be required. Irish and UK (Scotland, England, Wales and Northern Ireland) logbook linked VMS data (2005-2010) was combined to provide spatial resolved information on the distribution of landings and LPUE and the proportion each species makes to the total landings of all species combined (landings only).



Distribution of cod, haddock, megrim and monkfish as a proportion of the total landings.

The updated information confirms the previous comments by STECF that the majority of cod catches are largely confined to the north eastern part of VIa. Cod landings form a relatively small component of landings in this area, although quota induced discarding is known to be a significant issue in this area and therefore, the contribution cod catches make may be much higher.

STECF conclusions regarding location of additional areas for closure in Via

STECF concludes that the work presented in the report and earlier, identifies a number of statistical rectangles bounding the Windsock closure having the highest cod LPUE in VIa. These are situated north of 59^0N and east of 6^0W and could be used as the basis for extending or redefining the current Windsock closure.

STECF notes that there are significant landings of other species within this area, in particular haddock, megrim and monkfish. Extending the current closure will impact fishing opportunities for these species and could result in displacement of effort to other areas.

STECF considers that allowing access with cod selective gear such as the Eliminator trawl could be an alternative to extending or redefining the existing closure.

STECF conclusions regarding the extension to all EU vessels of the seasonal closure currently enforced by the Irish authorities in ICES statistical rectangle 39E3.

In the closed area for Irish vessels, some UK vessels are fishing for shellfish, other than *Nephrops*, with trawls or seines. It is likely that this is reported landings (2100 tonnes in 2010) of queen scallop based on the knowledge of the fisheries active in the area. There is no landing of cod from that fishery but the level of discards is unknown due to the lack of observers data.

Due to the level of data aggregation (lack of monthly or quarterly data) STECF cannot ascertain whether part or all of these catches were taken during the period of the Irish Closure (October 1 to March 31). More detail is required on the temporal distribution of the fishery and in order to assess whether there are cod catches (discards) associated with the fishery for shellfish other than *Nephrops*, observer data is required. STECF cannot conclude on the economic consequences of extending the closure to all nationalities due to a lack of appropriate economic data.

STECF considers that restricting the activity of Irish vessels while allowing international activity in the area is likely to reduce the potential benefits of the Irish conservation measures for cod.

3. Request from the Irish Authorities on *Pollachius virens* with respect to Council Regulation (EC) 43/2009

Background

The Irish authorities have requested clarification on gears and species allowed to be caught within the restricted area in ICES Division VIa defined in Council Regulation (EC) 43/2009 (Annex III, Part A, Point 6.3.) with certain small-scale fishing gears. Council Regulation (EC) 1288/2009, which amended these measures, extended the original list of derogated gears to allow the use of handlines and mechanised jigging and including mackerel and pollock in the list of permitted species. However, the derogation for pollock appears to refer solely to *Pollachius pollachius*. This has created difficulties for fishermen who, when using mechanised jigging machines, commonly catch both *Pollachius pollachius* (pollack) and *Pollachius virens* (saithe). Not including *Pollachius virens* (saithe) in the list appears to have been an oversight.

Terms of Reference

In the light of available information, particularly on observed catch composition data, the STECF is requested to give its opinion on whether there are any biological or technical reasons why *Pollachius virens* (saithe) should not be included in the species listed in the derogation.

Species concerned: Saithe (*Pollachius virens*), Pollock (*Pollachius pollachius*). **Gears concerned:** jigs/handlines.

STECF response

STECF observations

The report describes the fishery concerned by the requested derogation. Prior to 2009 in Area VIa many inshore vessels engaged in the pot fisheries for crab and lobster would have spent some time jigging and trolling for both saithe (*pollachias virens*) and white pollack (*pollachius pollachius*). About 15 vessels in the 10m-15m size range had the capacity to travel offshore to a large array of wrecks were they used jigging machines. About 30 of the smaller (< 10m) inshore boats used trolling boards to target both saithe and white pollack.

Concerning the stocks concerned, ICES has only started to gather catch data on *Pollachius pollachius* and as such there is insufficient information to evaluate the status of the stock. The spawning stock biomass for *Pollachius Virens* has declined in recent years and in 2011 the ICES advice is for a 15% reduction in catch. The Irish quota for 2012 in area VIa is 407 t.

Due to the fact that there is very little information available in the fishery in Area VIa, the Irish Authorities obtained a derogation to undertake a restricted sampling programme in the fishery. In total 9 days of sampling was carried out, 3 in 2010 and a further 6 in 2011. Fishing operations were confined to the wrecks on the north coast of Ireland. Catches of *Pollachius Virens* were approximately 56kg per hour fishing and *Pollachius pollachius* were approximately 34kg per hour fishing and both species made up more than 99.9% of the total catch.

STECF notes that at present *Pollachius Virens* are being discarded by the jigging vessels and simply contributing to unaccounted mortality. To permit their retention and landing will avoid discarding and ensure that their removal is taken into account and discounted against national quota.

STECF conclusions

STECF notes that the fishery is very selective for *Pollachius Virens* and *Pollachius pollachius*. During the sampling programme the catch comprised 59% *Pollachius Virens* and 41% *Pollachius pollachius* and less than 0.1% by-catch.

STECF notes that catches of *Pollachius Virens* are quota restricted and assuming that appropriate management measures are in place, their inclusion in the list of permitted species should not place any additional pressures on the stock.

STECF concludes that *Pollachius Virens* should be included in the list of permitted species that can be carried aboard fishing vessels concerned.

4. Request from the Irish Authorities to fish with sorting grids

Background

The Irish authorities have requested a derogation to use sorting grids in accordance with points (b), (c), (d) and (e) from Appendix 2 of Annex III of Regulation 43/2009 in the area defined in Paragraph 8.2 (b) of Annex III of Regulation 43/2009 in the Irish Sea (ICES Division VIIa). In this area currently vessels are allowed to operate with a separator trawl being recognized as a cod "friendly" gear. The reason for this derogation is that the sorting grid has been demonstrated to give very large reductions of cod catches far in excess of those achieved with the separator trawl and therefore it seems inappropriate that the use of the sorting grid should be prohibited in this area.

Terms of Reference

In the light of available information, and previous assessment of the sorting grid in relation to cases submitted under Article 11 of the LTMP for cod, the STECF is requested to give its opinion on the likely impact of this derogation on cod stocks in the restricted area and whether the use of the sorting grid would have any negative impacts.

Species concerned: cod (*Gadus morhua*), **Gears concerned:** separator trawl, sorting grids

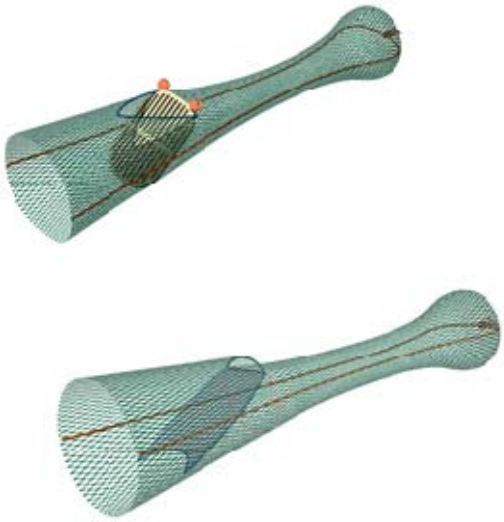
STECF response

STECF observations

Information based on results of trials using the Swedish grid and the inclined separator panel, the two gears specific to this request are presented in the report and used to determine whether the Swedish grid has cod selective properties that are at least as good as the separator trawl and could therefore be considered for addition to the current derogation for separator trawls.

The twin-rig catch-comparison method was employed to assess (i) the potential of the Swedish grid in comparison to the standard gear and (ii) the potential of the inclined separator panel in comparison to the standard gear, of reducing the bycatch of cod and other species. The ‘standard *Nephrops* trawl’, was that used by most vessels in this fishery and had an 80 mm codend. Both the standard and experimental trawls had

square mesh panels of 80 mm mesh size placed in the extension piece approximately 12m from the codline in accordance with current legislation. Both set of trawls also had large mesh headline panels of 160mm as per current legislation in Area VIIa.



Drawing of the separator panel

Drawing of the Swedish grid

During March – April 2009, on the Smalls grounds in Area VIIg, a total of 15 valid tows were carried out with the Swedish grid and 14 with the inclined separator panel. The results are presented and analyzed in the report and the main elements are:

Swedish grid

The Swedish grid released all cod above minimum landing size. This is in line with results from previous trials carried out in the North Sea by Cefas. It is apparent, that selection of cod with this device is size dependent, smallest fish being able to go through the bars of the grid.

The grid reduced the catch of cod by 85% by numbers and 99% by weight compared to the standard trawl.

The average percentage cod catch of the total catch by haul with the grid was 0.3% compared to 7.7% with the standard trawl.

Catches of haddock, whiting, monkfish, megrim, lemon sole, John Dory and ling were all reduced significantly and in the case of monkfish this was almost by 100%.

Inclined separator panel

The inclined separator panel retained less cod for all size classes and selection with this device does not seem to be length dependent. However, retention is more varied than with the grid and some fine-tuning is required to the panel to maximise release of cod without reducing the catch of all other species significantly.

The inclined separator panel reduced the catch of cod by 72% by numbers of fish and 84% by weight compared to the standard trawl.
The average percentage cod catch of the total catch by haul with the inclined separator panel was 3.7% compared to 11.8% with the standard trawl.

Catches of haddock, whiting, monkfish, megrim, lemon sole and ling were all reduced significantly.

STECF notes that the selective Swedish grid is more selective for cod than the inclined separator panel and that the results obtained with the Swedish grid are consistent with previous trials held in England, Scotland, Denmark and Sweden.

In the absence of evaluation in the report, STECF cannot conclude on the effect of the use of the Swedish grid on cod stock in the Irish Sea. However, STECF can conclude that the effect will be positive for the cod stock in comparison with the existing derogation.

STECF conclusions

STECF notes that the trawl fitted with the Swedish grid retains fewer cod than the trawl fitted with the inclined separator panel.

STECF recommend permitting the use of the Swedish grid in the *Nephrops* trawl fishery in the Irish Sea Cod Recovery closed area.

5. Request from the UK Authorities to use a novel escape panel for trawls in the Irish Sea *Nephrops* fishery

Background

The UK authorities request a derogation to use a novel escape panel for trawls in the Irish Sea *Nephrops* fishery which consists of parallel 120 mm square mesh panels divided by a 12 mesh strip of diamond mesh netting (Briggs, 2010) in the area defined in Paragraph 8.2 of Annex III to the Regulation 43/2009. In this area currently vessels are allowed to operate with a separator trawl being recognized as a cod "friendly" gear. The reason for this derogation is based on the very high reductions in haddock and whiting discards that have been shown in trials with this selectivity device.

Terms of Reference

In the light of available information, the STECF is requested to give its opinion on the likely impact of this derogation on cod, haddock and whiting stocks in the closed area defined in paragraph 8.2 of Annex III of Regulation (EC) 43/2009 and in the Irish Sea as a whole. STECF is asked to assess the improvement in selectivity and reductions in discards that may result from the use of this square mesh panel arrangement based in the results of the trials work conducted. In particular, given the depleted state of the

cod stock in the Irish Sea, STECF is asked to assess the benefits to cod stocks of using this gear modification.

Species concerned: cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting (*Merlangius merlangius*), *Nephrops norvegicus*. **Gears concerned:** *Nephrops* trawls.

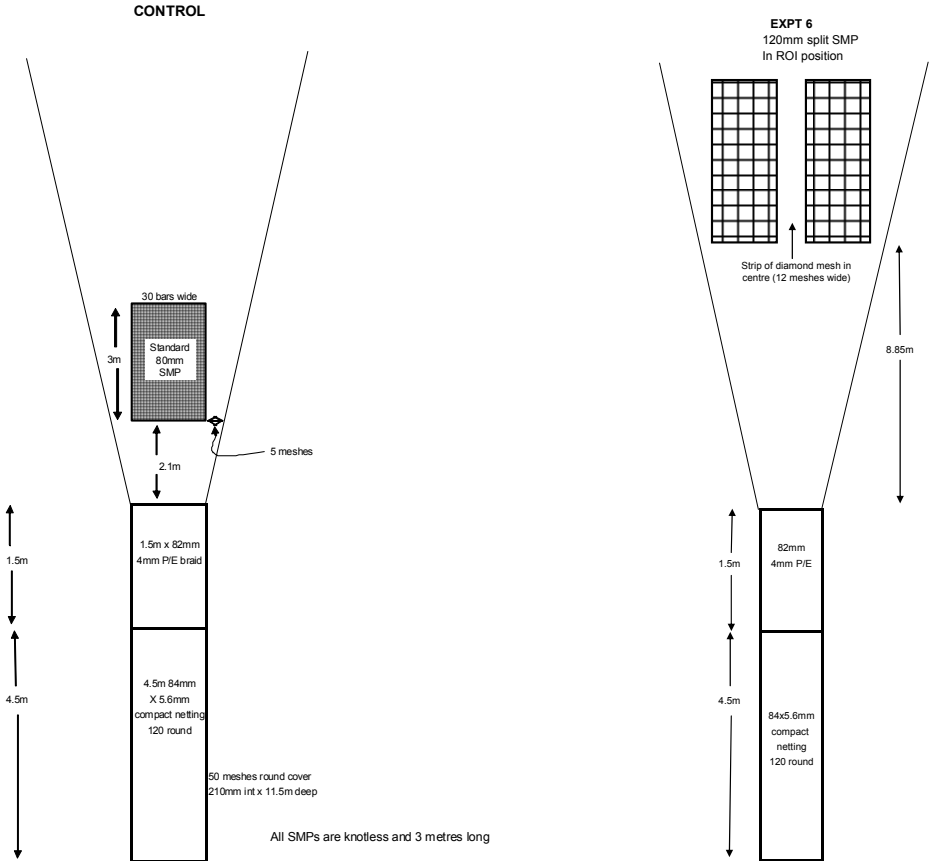
STECF response

STECF observations

The information basis for this request relates to a series of trials undertaken in the Irish Sea (Division VIIa) in October 2008 and March 2009. The specific trials relevant to this request are published in a paper by Briggs (2010).

In these trials a *Nephrops* trawl with parallel 120 mm square mesh panels divided by a 12 mesh strip of diamond mesh netting positioned 8.85m from the extension was compared with a standard *Nephrops* trawl with nominal 80mm diamond mesh throughout and with an 80mm smp positioned 2.1m from the extension. The test and control gears were fished in a twin rig configuration, which permitted a direct comparison of the two gears while fishing along the same track. Figure 5.1 portrays the configuration of both gears.

Over the course of two experimental trials, 16 comparative tows were carried out (8 in October 2008 and 8 in March 2009) on the *Nephrops* grounds off the County Down coast, Northern Ireland.



Control (left) and experimental design (right) tested

The catch data shows a statistically significant reduction of 54% (by number) in the catch of haddock, and of 64% (by number) in the catch of whiting.

The populations of both species encountered by the fishing gear comprised mainly haddock and whiting < 20cm and there are indications that there is no difference in the performance of the gears for haddock > 20cm and whiting > 25cm. Very few cod were caught during these trials (in total only 105 were caught during the trials, 60 in the experimental gear and 45 in the standard one) and it was not possible to carry out a meaningful analysis (Figure 5.2).

These results (Briggs, 2010) can be used to assess the potential impact of the experimental design on catches in the Irish Sea as a whole.

Irish Sea as a whole

In the Irish Sea as a whole, the proposed gear should release more juvenile haddock and whiting than the standard gear used by the Northern Irish *Nephrops* trawl fleet and would lead to a large reduction in the discarding of haddock and whiting < 20 cm. However, there are indications that there is no difference in the performance of the split panel gear and the standard gear for whiting > 25cm and haddock > 20cm.

Given that there were so few cod caught during the trials it is not possible to assess the benefits to cod stocks of using this gear modification in the Irish Sea as a whole.

Closed area

For haddock and whiting in the closed area, the split square mesh panel trawl will only be as selective as the inclined separator trawl if the population of these species comprises predominately fish < 20 cm. Otherwise the inclined separator panel trawl will be more selective.

Again given that there were so few cod caught during the trials it is not possible to assess the benefits to cod stocks of using the split square mesh panel trawl in the closed area. It should be noted that the inclined separator reduced catches of cod above MLS by ~75%. It is highly unlikely that the split square mesh panel will achieve such reductions.

STECF notes an important point in the report on the trawls used during the sea trials. It is not clear from Briggs (2010) whether the codend of the split square mesh panel trawl had a lifting bag. This is an important point as the absence of the lifting bag could increase the L50 of the gear by approximately 2 – 3 cm for haddock and whiting. Hence, given the length distribution of the populations fished, it is possible that the improved selective performance of the split square mesh panel trawl is attributable to their being no lifting bag on the 80mm codend.

STECF conclusions

STECF notes that the trials demonstrate that the proposed gear should lead to a large reduction in the discarding of haddock and whiting < 20 cm.

Given that there were few cod caught during the trials it is not possible for STECF to assess the benefits to cod stocks of using this gear modification.

STECF notes, however, that if large cod (~ > 45 cm) are among the population fished they are unlikely to be able to escape through the 120mm square mesh panel and in which case it is unlikely that the 1.5 and 5% targets would be met.

STECF considers that it is highly unlikely that the split square mesh panel will achieve the same selectivity for cod than the inclined separator panel.

6. Request from the Dutch Authorities on the use of the Pulse Trawl in ICES Area IVc and IVb

Background

In March 2006, the Commission requested ICES to evaluate the use of an electric "pulse-trawl" to target plaice and sole in the beam trawl fishery in the North Sea.

ICES were requested to give advice on the ecosystem effects of a potential derogation to Regulation (EC) No 850/98 to allow the use of the pulse trawl on a commercial basis.

Following its assessment ICES advised that while there were many positive aspects of the pulse trawl, there were several issues primarily relating to the potential for inflicting increased unaccounted mortality on target and non-target species that needed to be addressed before final conclusions could be drawn on the likely ecosystem effects of this gear. Following the 2006 advice, the Commission subsequently granted Member States a derogation for 5% of the fleet to use the pulse trawl on a restricted basis provided attempts were made to address the concerns expressed by ICES. This derogation has been renewed annually since 2007.

In consultation with the Commission and the Dutch Ministry, in 2009 ICES was asked to update this advice on the ecosystem effects of the pulse trawl. This assessment concentrated on a number of experiments that had been carried out in the Netherlands since the earlier ICES assessment. While the advice was largely positive, issues regarding the methodology used in the experiments were raised, principally that the experiments carried out may not representative of commercial fishing conditions. Since this assessment further research has been carried out and reviewed by an ICES Study Group (SGELECTRA) set up to consider all aspects of electrical trawling.

It is also now apparent that within the Netherlands, driven primarily by the cost of fuel, there is now demand to use the pulse trawl and the number of vessels applying to fish under the 5% derogation exceeds the number of licences available. The Dutch authorities have made several requests to the Commission to allow them to increase the number of vessels allowed to fish or even remove the derogation altogether.

Terms of Reference

In the light of available information, STECF is requested to give its opinion on whether the concerns expressed by ICES in 2006 and 2009 regarding the ecosystem and other effects (in particular control and enforcement issues) of this gear have been adequately answered. If so STECF are asked to comment on the potential ecosystem effects and impacts on catches, and where possible on the fishing mortality, of target and non-target species resulting from an increase in the number of vessels allowed to use the gear (currently restricted to 5% of the fleet) or the current derogation being removed totally. STECF is further asked to comment on whether the current provisions contained in paragraph 3.2 of Annex III of Regulation 43/2009 are sufficient and appropriate to control the use of the gear and prevent the use of harmful electrical pulses.

Species concerned: Sole (*Solea solea*), Plaice (*Pleuronectes platessa)*, Cod (*Gadus morhua)*, Benthic species **Gears concerned:** Beam Trawls

STECF response

STECF observations

Since 2006, there has been a considerable amount of useful work undertaken to address the several concerns raised by ICES in 2006 and 2009 on the pulse trawl. In addition, an ICES study group on Electric Trawling SGELECTRA (ICES, 2011) reviewed progress in this field. Their findings are relevant to this particular request to STECF. There are also new research Dutch reports recently available contain additional useful data on pulse trawl technology.

The work has addressed the concerns relating to elasmobranchs and benthic organisms assuming that the effects would be similar for all species within these groups. ACOM (2009) concluded that the laboratory experiments on elasmobranchs, benthic invertebrates to test the effects of electric pulses were generally well designed and interpreted correctly and that those experiments indicate minimal effects on elasmobranchs and benthic invertebrates.

While the work undertaken has highlighted that the impact of the plulse trawl on the mortality of large cod remains unknown and is undesirable, bycatches of cod in the tested gear are low and conversely, the pulse trawl offers a number of significant biological, ecological and economic benefits, such as reduction of fuel consumption, decrease in fishing mortality on the target species and reduced impact on habitats.

Pulse trawl technology appears to have many potential positive benefits if used in a responsible manner. The technology and its future face the risk of reputational damage and widespread opposition if environmentally harmful designs reach market. Effective legislation and enforcement of this technology will be critical in this respect. The review of the development of pulse trawling shows highly variable differences in catch efficiency between pulse and conventional gears. In some cases, particularly with older high voltage (>2000v) systems, catch rates of commercial species were at least 50% greater than conventional gears. However, the more recent (lower voltage systems) show the catch efficiency of a pulse beam trawl is significantly less than conventional beam trawls. Given the characteristics of the current system (technical characteristics of the pulse beam trawl), the extension of number of vessels using the electric pulse systems could significantly reduce fishing mortality of target and non-target species including benthic organisms. This is under the assumption that there is no corresponding increase in unaccounted (avoidance) mortality.

Defining an adequate regulatory, control and enforcement systems represents a critical barrier for expanding the use of pulse systems in general. Widespread introduction of inefficiently regulated pulse systems could potentially result in considerable ecological damage. While the current systems under development appear to have positive impacts, the current regulatory framework is insufficient to prevent the introduction of potentially damaging systems despite adhering to current regulatory limits.

Given the complexity and interactions between pulse characteristics, using a prescriptive legislative approach will result in highly complex and technical regulations, which will also prevent further development of the system. An alternative results-based approach may be more appropriate and will reverse the burden of proof

from the legislators. It is envisaged that a range of pre agreed ecological indicators based on both field and aquarium studies should be developed and used to benchmark any system being proposed for commercial implementation. STECF agrees that the certification system under development by the Dutch, could provide a basis for an appropriate regulatory framework.

STECF conclusions

STECF concludes that most ecological concerns raised by ICES have been adequately addressed. One ecological issue remains (possible avoidance mortality of cod), but this cannot be quantified at present.

STECF concludes that provided that the current characteristics and the use of the gear remain unchanged, an increase in the proportion of the beam trawl fleet allowed to use the gear in the southern North Sea will reduce catches and fishing mortality for both target an non-target species including benthic organisms.

STECF concludes that the critical barrier for lifting the derogation is control and enforcement and that the current provisions on the characteristics of the pulse trawl are not sufficient and not appropriate to prevent unregulated and harmful pulse trawl practices / technologies to be used.

STECF concludes that a results based approach will be suitable to tackle the problem of control and enforcement and that the certification system under development by the Dutch could provide a basis for an appropriate regulatory framework.

STECF recommendations

STECF recommend that the control and enforcement issues are resolved before the proportion of the beam trawl fleet using pulse trawls is increased.

STECF recommend that any extension of the fishing area should be considered only after an impact assessment on the effects of the pulse trawl on the ecosystem, in particular when species not subject to a prior impact study, such as *Nephrops*, could be encountered by the gear.

STECF recommend that any application of pulse technology in other gear types should be considered only after an impact assessment on the effects of the new pulse gear on the ecosystem, in particular when species not subject to a prior impact study.

7. Request from the Portuguese Authorities on the use of gill nets, entangling nets and trammel nets

Background

The Portuguese government has submitted two requests to STECF in March 2009 and April 2010 requesting an extension of the current derogations on the use of gillnets and entangling nets to allow the use of trammel nets in are IX. This is on the basis of the provisions of article 9.12 of Annex of Regulation (EC) No. 43/2009 which allows to exclude certain fisheries in ICES Zones VIII, IX and X from the application of points 9.1 to 9.11 of this regulation, "where information provided by the Member States show that those fisheries result in a very low level of shark by-catches and of discards". STECF has on both occasions, owing to a lack of discard information and lack of information on catches of other sharks, concluded that the composition of sharks in the catches of the Portuguese trammel net fleet fishing in Division IX cannot be reliably quantified. Therefore the impact of this fishery on sharks could not be quantified and the derogation could not be granted.

Terms of Reference

In the light of additional information supplied by Portugal, the STECF is requested to give its opinion on whether the use of trammel nets in waters less than 600 m depth targeting anglerfish in area IX complies with the conditions set out in point 9.12 of annex III of Regulation (EC) No 43/2009. Point 9.12 states that the gears must result in a very low level of shark by-catches and discards for the Commission to allow the deployment of these nets down to 600 m.

Species concerned: Gulper shark (*Centrophorus granulosus*), all other species caught by the gears concerned. **Gears concerned:** trammel nets.

STECF response

In the report it is noted that no information was provided and it is therefore not possible to provide any response.

STECF conclusion

STECF is not in position to provide any response.

8. Request from the Spanish Authorities on the use of gill nets, entangling nets and trammel nets

Background

The Spanish government has requested the Commission to allow the continued deployment of gillnets, entangling nest and trammel nets below 600m depth in ICES zones VIII, IX on the basis of observed low levels of shark by-catches and discards. This request was assessed by STECF in April 2010. STECF considered the observer trip data submitted with the request to be very sparse and not necessarily representative of the current catch compositions of the fleet. STECF therefore concluded that the data submitted may not reliably reflect the recent catch levels of sharks by the Spanish gillnet fleet. Therefore STECF was unable to judge whether the Spanish fleet concerned was in compliance with the provisions of the regulation. The impact of the fishing activities on the shark populations in Divisions VIIIc and IX is not quantifiable.

Terms of Reference

In the light of additional information supplied by Spain, the STECF is requested to give its opinion on whether the activities of the Spanish fleet concerned comply with the condition set out in point 9.12 of annex III of Regulation (EC) No 43/2009. Point 9.12 states that the gears must result in a very low level of shark by-catches and discards for the Commission to allow the deployment of these nets down to 600 m.

Species concerned: Gulper shark (*Centrophorus granulosus*), all other species caught by the gears concerned. **Gears concerned:** trammel nets, gillnets, entangling nets

STECF response

In the report it is noted that no information was provided and it is therefore not possible to provide any response.

STECF conclusion

STECF is not in position to provide any response.

5.9. Evaluation and/or assessment of different principles for defining selectivity in support of a proposal for a Council and European Parliament Regulation to develop a Technical Conservation Framework regulation for the North Atlantic and North Sea

Background

In line with the objectives defined in the proposal for the new Basic Regulation adopted by the Commission as part of the reform of the Common Fisheries Policy, a new approach is required to regulate technical measures based on simplification, adaptation of decision making to the Lisbon Treaty, increased regionalisation, greater stakeholder involvement and more industry responsibility. This approach will strengthen conservation and resource management through better selectivity and better protection of the environment. It is centred on the development of an overarching technical measures framework with specific regionalised measures included under multiannual plans.
The ultimate goal in developing a new technical measures framework is to have a very simple regulation with few detailed rules. This Regulation should set targets and objectives and define the tools for monitoring and evaluating performance against these targets. However, in developing this new approach there are a number of principles that need to be assessed. These include *inter alia*:

- How do you set baseline selectivity/conservation standards? Are mesh sizes still the best mechanism?
- How do you assess equivalence?
- How should mesh sizes/selectivity standards relate to conservation reference sizes? And on what basis should these conservation reference sizes be set?
- Can catch composition rules be replaced? If not what should their function be and how could they be set more rationally? If not what could be used to replace them to differentiate fisheries?
- Are there suitable ecosystem indicators/biological reference points (e.g. PBR/BPUE) that could be incorporated into technical measures regulations to manage bycatch of biologically sensitive species e.g. seabirds, cetaceans?

Terms of Reference

STECF is asked to carry out an initial scoping exercise to formulate precise ToRs for an expert group to be convened later in 2012. This exercise should identify:

- A definitive list of appropriate principles and issues that need to be addressed.
- Data and information needs.
- The make-up of the group to address these issues and how best to work.

STECF response

A sub group of the STECF membership discussed the possible areas to be considered in the developing ToRs for the expert group on technical measures scheduled to meet 1-5 October 2012 (Dublin). ToR's for the expert group will be finalised during the

summer plenary of STECF. DG Mare outlined the Commission's intentions for a future revision of technical regulations that were simpler than the current approach and how these should harmonise with the current reform of the CFP, in particular the desire to move towards a more regionalised CFP, formation of multi-annual plans and regulatory approaches to tackle discards. STECF were asked to consider a number of overarching issues relating to technical measures including the concept of setting global minimum standards, how such standards relate to Conservation Reference Sizes (CRF) and what type of framework should be used for defining and setting these.

Based on the discussions of the sub-group, it was felt that the following aspect should be considered when defining the ToRs for the expert group.

It is necessary to explore appropriate metrics for defining minimum acceptable selectivity standards (base regulations) and to identify what the expected role of technical measure should be. Minimum standards could be based on setting minimum mesh sizes i.e. consolidating existing regulations, possibly at a regional level, but using incentives (preferential fishing opportunities) to encourage adoption of gears that exceed the minimum standards e.g. to avoid the tendency towards the minimum standard. As an alternative to technical specification of gear construction, e.g. mesh sizes, a fully implemented results based approach could be explored where setting minimum acceptable selectivity level e.g. minimum L50's or setting standards based on minimum catch sizes/compositions. This has the advantage of providing individuals or the appropriate (regional) authority to specify the type of gear to deploy provided it met minimum acceptable standards. Thus shifting from the current paradigm where technical measures are applied as prescriptive input controls to one where the technical characteristics of the gears used are an artefact of the output targets e.g. minimum catch levels, minimum selectivity. This approach could also incorporate broader ecosystem and policy considerations e.g. MSFD; MSY and integrated into MAP's, setting the output objectives without the need for detailed technical specifications. Similarly, fully documented fisheries or catch based approaches also incentivise enhanced species and size selectivity to avoid premature closure or cessation of fishing activity due to capture of choke species or undersize fish.

The advantages and disadvantages of all potential approaches should be considered and in particular issues surrounding monitoring, control and enforcement need to be fully integrated into these deliberations. The expert group should review case studies where results based approaches have been used to encourage improved exploitation patterns in fisheries.

No specific data requirements were identified, but the sub-group considered that a review of approaches outside the EU should be undertaken. However, further consideration on determining CRF's levels in a multi-species, multi-fisheries context will be required and likely to require work prior to the October 2012 meeting.

The STECF sub-group considered that the composition of the forthcoming expert group should comprise of experts covering a broad range of expertise including control and enforcement; gear technologists; policy shapers and biologist. The sub-group noted that the expertise in the field of control and enforcement is important and that control agencies should be targeted to promote participation. It may also be advantageous to invite expertise from areas outside the EU where technical measures are applied in a results based framework.

5.10. Effectiveness of the flip-flap netting grid trawl to increase selectivity in the *Nephrops* fleet

Background

The UK issued a statement at the 2011 December Fisheries Council on its intention to introduce selectivity measures to improve the cod stocks by significantly reducing cod mortality and reducing discards in the North and Irish Seas and the West of Scotland (areas IV, VI and VIIa). In order to reflect the circumstances of different areas and different fisheries, a number of gears are being developed for the fleets targeting *Nephrops* (TR2 gears). One such gear is the 'flip-flap netting grid trawl', which contains a vertically mounted panel where the bottom half can swing free. This is designed to reduce catches of cod, haddock and whiting (including smaller fish) whilst retaining *Nephrops*.

Article 11(2) of the cod plan (Council Regulation 1342/2008), makes provision for certain vessels to be exempted from the effort regime provided certain conditions are met. This provision includes vessels where the percentage of cod catch does not exceed 1.5% of the total catches. STECF is asked to comment on the effectiveness of the flip-flap netting grid trawl, and whether it reduces cod mortality sufficiently to allow vessels using it to be exempt from the cod effort regime.

Terms of Reference

STECF are asked to review and evaluate the results of scientific trials submitted by the UK and in particular to assess, where possible separately for the different areas (IV, VI and VIIa):

1. The extent that the flip-flap netting grid-trawl will reduce the catches of adult and juvenile cod and the catches of the other commercial species, including haddock and whiting.

2. To what extent does the data and information provided in relation to the technical characteristics of the flip-flap trawl support the conclusion that catches of cod by such gear will be less than or equal to 1.5% from the total catches

3. In cases of scientific uncertainty with regard to questions 1) and 2), please specify the information and data that have to be improved; in particular concerning the sampling strategy including sampling precision levels and intensities in relation to catch and discards data and, where relevant, the description of gear properties and its effect.

STECF observations

In accordance with a commitment to introduce technical measures to reduce catches of cod associated with the TR2 *Nephrops* fishery. The UK fishing industry has undertaken a number of initiatives to develop technical measures with the aim of reducing cod catch. One such initiative, the 'flip-flap' trawl, has been developed and tested by the industry. Given the encouraging results, scientific catch comparisons trials, where the flip-flap trawl was compared directly with a standard trawl, were undertaken. Subsequently, Marine Science Scotland Science undertook an analysis of the catch data and produced a report which has been presented to the STECF for consideration (available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012.). The report presents an analysis of the proportional retention differences at length between catches of cod, haddock and whiting from the test and control gears.

STECF commends such bottom-up initiatives such as the one presented and demonstrate commitment by the fishing sector to reduce cod mortality noting that initiatives of this type can enhance industry buy-in.

Given that the design contains three possible areas where escapement could occur relative to conventional gears, it is not possible to identify the primary source of escapement. However, it is unlikely that using 160mm mesh in the upper wings of the trawl is unlikely to contribute significantly to escapement. In practice it is likely that the primary source of escapement is associated with the fish outlet hole. It would be beneficial to identify if this is indeed the case as it could result in a more simplified design which achieves similar outcomes. This would also minimise conversion costs.

STECF notes that the experimental set up is appropriate and in accordance with scientific standards. However, it is noted that the mesh sizes in the experimental and control cod-ends differed by 8mm, with the larger mesh size being used on the test trawl. This will result in a positive bias in the estimate of the proportion of fish released from the test gear, but given that this will only impact on smaller length classes (<30cm), this is expected to result in only a minor downward revision in the estimates of catch reductions presented. This means that comparisons of the retention of fish below MLS cannot be considered and the comment presented here relates only to the effectiveness of the flip-flap trawl on fish greater than ca. 30cm.

The analysis presented is appropriate and catch levels of cod, haddock and whiting are sufficient to provide a robust assessment of the impacts. It is noted that catches of the target species *Nephrops* and other important by-catch species, monk and megrim are low (<1000kg) so it is not possible to comment on whether the design has a statistically significant impact on the retention of these.

STECF is requested to evaluate the results from scientific trials and to assess, where possible separately for the different areas (IV, VI and VIIa). STECF notes that the data presented relates only to trials undertaken in IVa and can therefore not comment on the quantative impact of the flip-flap gears in other areas. However, STECF notes that the device is likely to offer a likely mechanism to reduce fish by-catch in all *Nephrops* fisheries.

STECF Conclusions

1. The extent that the flip-flap netting grid-trawl will reduce the catches of adult and juvenile cod and the catches of other commercial species, including haddock and whiting.

The report presented by Marine Science Scotland is based on observations from two separate trials undertaken in two areas of the North Sea (Fladen and Moray Firth *Nephrops* grounds).
The results for the three main whitefish species show a large and significant decrease in the retention of all three species. Reductions by weight of 73%, 67% and 82% for cod, haddock and whiting respectively are reported. There is a length dependency for all three species and in each case fewer larger fish are retained. This is particularly the case for cod where at the minimum landing size (MLS) of 35cm there is a 33% reduction by number, and at 87cm (maximum size analysed) the reduction is 76% in comparison to the standard gear. For haddock, there is a 67% reduction at the MLS of 30 cm and 73% reduction at 44 cm and for whiting there is a 64% reduction at the MLS of 27 cm and 84% at 48 cm. STECF notes that it is not possible to comment on the extent that the flip-flap trawl will reduce catches of juvenile cod, haddock and whiting due to the discrepancy between the cod-end mesh sizes in the test and control trawls.
STECF concludes that the results presented demonstrate that the flip-flap trawl significantly reduced the catches of adult cod, haddock and whiting by levels greater than 70% by weight.

2. To what extent does the data and information provided in relation to the technical characteristics of the flip-flap trawl support the conclusion that catches of cod by such gear will be less than or equal to 1.5% from the total catches

There is insufficient catch data presented to allow STECF to evaluate whether the flip-flap trawl results in catches of cod below 1.5%. STECF notes that in order to assess whether the design is capable of attain cod catches below 1.5%, observer data collected during fishing trips where the flip-flap trawl is deployed under normal fishing operations as opposed to experimental trials, is required.

3. In cases of scientific uncertainty with regard to questions 1) and 2), please specify the information and data that have to be improved; in particular concerning the sampling strategy including sampling precision levels and intensities in relation to catch and discards data and, where relevant, the description of gear properties and its effect.

STECF concludes that the cod, haddock and whiting catch levels observed during the experimental trials and the analytical approach taken is robust and scientific uncertainly for these species is not of concern. STECF notes that it is the intention that the flip-flap gear will be deployed more widely across the Scottish TR2 fleets. STECF considers it important that data from observers is collected under normal fishing conditions to improve information including on target species and other by-

catch species and that the data gathered conforms to the requirements under Article 4.3 of EC Regulation 237/2010.

5.11. Survival of discarded fish

Background

Under Article 15 of the draft Basic Regulation as part of the reform of the CFP, the Commission has proposed the introduction of a discard ban. One of the provisions of the proposed ban is that fish with a high survival rate and vulnerable/protected species (e.g. basking shark, common skate and porbeagle) should be released back into the sea. However, it is not entirely clear what species should be excluded due to good survivability after capture.

Studies on the mortality of different fish species discarded from the decks of fishing vessels generally show high mortality rates, although the types of injuries and their severity are highly species-specific. The main factors affecting the stress, injury and mortality of discarded fish are related to capture stresses, fishing conditions and biological attributes. Capture stressors include such factors as net entrainment, crushing, wounding and sustained swimming until exhaustion. Fishing conditions include towing time and speed, light conditions, water and air temperature, anoxia, sea conditions, size and species. Biological attributes are also important. Generally it has been shown that most fish with swim bladders that inflate after capture die because of pressure changes during the capture process. The post-release mortality of other fish and aquatic organisms (i.e. those without swim bladders) is more variable and sometimes can be low. Mortality is also related to the overall fragility and physical characteristics of species. For some species, discard mortalities can be reduced through reduced exposure to air and improved on deck handling procedures, but in many cases a significant reduction in discard mortality is difficult to achieve.

Terms of Reference

In order to develop a list of species with high survivability that could be excluded under the landing obligation and should be returned to the sea after capture, STECF is requested to consider the following:

- Review all studies carried out that have investigated the survivability of discarded fish by species and by fishing method.
- Extrapolate data on survival rates by species and fishing method based on this review and list those species with high survivability and that should be excluded from the discard ban and released back into the sea after capture.

STECF response

A review of scientific papers dealing with discards survivability was conducted prior to the STECF plenary meeting, through an *ad-hoc* contract (Revill, 2012, available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012. This review identified 88 papers published since 2000 (of which 5 were review papers) where the survivability of discarded fish by species and by fishing method has been investigated. From these papers a table was constructed including the minimum and maximum observed rate of survival for 168 case studies, each case study referring to a paper (i.e. a study and an author), a species or group of species and a fishing gear. Thus, 102 different species or groups of species were considered, for some of them for a unique fishing gear and for some others for several gears and/or in several studies.

Two general observations emerge from this review. The first is that, although a significant amount of data on discard survival has been published in the recent years, the results are highly variable. Furthermore, the studies were carried out under a wide range of conditions (e.g. location, fishing gear, duration of tow, deck handling, season etc.). The lack of standardised experimental control is a hindrance to a complete understanding of this issue within European fisheries. Thus, available survivability estimates come from specific studies usually analysing a particular fishery and a limited number of species. In addition many fisheries and species have not been studied and therefore no estimates of the survival rates are available for some discarded species. As a consequence, STECF concludes that it is not possible to provide a reliable list specifying the survival rate of discards by species and by fishing gear.

The second general observation is that for a given species and fishing gear there is often significant variation in the survival rates within individual studies and between studies (see Table 5.11.1, for some examples). Thus the review confirms that many factors can affect the survival rates of discards (for example: exposure on deck, seasonality, surface sea temperature, air temperature, body size, age of fish, depth caught, catch composition, haul duration, breeding and health status of fish, etc). Furthermore, most of the experimental studies have used holding tanks (on board the fishing or research vessel) to assess by-catch survivability, effectively under rehabilitation conditions with aeration and water flow systems. However, there have been very few studies to assess the likely increased predation pressure and increased risk of disease and infection of fish discarded without rehabilitation. In addition, underwater escapement from fishing gears often leads to additional mortalities (Suuronen 2005), that are not considered in these studies or in stock assessments.

These conclusions are in general agreement with the briefing background document provided by the Commission. As a consequence STECF considers it may be erroneous and potentially misleading to make any extrapolations on discard survival rates beyond the scope of the individual studies themselves. Therefore, based on the literature review STECF is not able to provide a definitive list of candidate species that should be excluded from a possible discard ban.

Table 5.11.1 – Some examples illustrating the variability of the survival rate estimates within and between individual studies (from Revill, 2012)

Common name	Fishing method	Location	Study period	Discard survival lower limit	Discard survival higher limit	Reference
Brown shrimp	Shrimp beam trawl	U.K.	1 day	91	91	Lancaster and Frid (2002)
Brown shrimp	Shrimp beam trawl	Portugal	30 minutes	4	100	Gamito and Cabral (2003)
Norway lobster	Crustacean trawl	U.K.	4 hours	21	85	Evans et al. (1994)
Norway lobster	Crustacean trawl	Irish sea	1 hour	44	88	Symonds and Simpson (1971)
Norway lobster	Crustacean trawl	Sweden	5 days	58	75	Harris and Ulmestrand (2004)
Norway lobster	Crustacean trawl	Portugal	5-9 days	12	60	Castro et al. (2003)
Americ. plaice	Fish trawl	Canada	2 hours	0	78	Jean (1963)
Americ. plaice	Fish trawl	Canada	50 minutes	0	5	Powles (1969)
Europ. plaice	Fish beam trawl	U.K.	Immediate	98	98	Fulton (1890)
Europ. plaice	Fish and beam trawl	Netherlands	3.5 days	0	48	van Beek et al. (1990)
Europ. plaice	Shrimp beam trawl	North sea	5 days	0	100	Berghahn et al. (1992)
Europ. plaice	Shrimp trawl	Germany	7 days	12	70	Kelle (1976)
Dab	Fish beam trawl	U.K.	Immediate	59	59	Fulton (1890)
Dab	Shrimp beam trawl	North sea	5 days	33	100	Berghahn et al. (1992)
Dab	Shrimp trawl	Germany	5 days	65	100	Berghahn (1990)
Dab	Shrimp trawl	Germany	7 days	1	58	Kelle (1976)
Sole	Fish and beam trawl	Netherlands	3.5 days	4	37	van Beek et al. (1990)
Sole	Shrimp beam trawl	North sea	5 days	71	100	Berghahn et al. (1992)
Sole	Shrimp trawl	Germany	7 days	33	59	Kelle (1976)

Nevertheless, STECF analysed the results provided in the literature review to assess survival rates by species category (Table 5.11.2). Here a large variability between case studies is observed. However, two general conclusions can be made on the basis of Table 5.11.2. Firstly, there are four categories of marine by-catch where the minimum rate of survival was observed in the majority of cases to be higher than 50%. These categories are: i. reptiles (exclusively turtles) where the minimum estimated rate of survival is always higher than 50%; ii. elasmobranchs, the 50% limit of minimum survival rate is reached for 9 among the 11 studies published (e.g. 81% of the case studies considered); iii. bivalves and gastropods where 50% limit is reached in 60% of the case studies considered , and iv. crustaceans, where the 50% limit is observed in 58% of the case studies. Thus, these four categories of by-catch could be considered for exclusion from any discard ban, at least until further detailed assessments will allow specifying survival rates at the species level.

Table 5.11.2. Survival rates of discards for various categories of fish (from data provided in Revill review. The table should be read as follows: in 30% of the 96 teleost fish case studies included in the review, the minimum observed rate of survival was lower than 10%)

	Totat nb. of case studies	Nb of case studies (in %) per range of the survival rate				
		<10%	10-49%	50-79%	80-99%	100%
Minimun rate of survival						
Teleost	96	30%	31%	11%	20%	7%
Elasmobranch	11	9%	9%	45%	36%	0%
Crustacean	26	12%	31%	31%	19%	8%
Bivalve & Gastrop.	10	10%	30%	10%	20%	30%
Reptile	11	0%	0%	55%	45%	0%
Others	14	21%	36%	0%	29%	14%
Maximum rate of survival						
Teleost	96	10%	11%	19%	32%	27%
Elasmobranch	11	0%	0%	55%	27%	18%
Crustacean	26	0%	8%	19%	46%	27%
Bivalve & Gastrop.	10	0%	10%	0%	10%	80%
Reptile	11	0%	0%	36%	55%	9%
Others	14	14%	21%	0%	29%	36%

Secondly, within all categories, including teleost fishes, the maximum rate of survival is higher than 50% for a large majority of the considered case studies. It suggests that under favourable conditions (especially regarding fishing practices, exposure on deck) for a majority of the species caught as by-catch in European fisheries discards may survive in a significant proportion (at least during the few hours or days following their release). In this respect, improving fishing, deck handling and release practices should be investigated and encouraged for all species in order to increase the chance of discards survival, whilst at the same time improving the selectivity of gear to reduce undesirable catches. As a consequence, STECF notes that applying a total landings obligation for all the currently discarded by-catches would, at least for some species, likely lead to an increase in their fishing mortality.

Furthermore, the Regulation on the European Maritime and Fisheries Fund currently proposed by the Commission, plans to set up economic incentives in order to develop a processing industry based on by-catches (especially producing fish-meal). STECF considers this could lead to a general increase in the overall fishing pressure applied to by-catch species, inducing undesirable effects, notably on species that are already heavily exploited especially in cases where the price of the landed fish exceeds the costs for landing. Therefore, STECF advices that the potential ecological consequences of the development of new markets based on landing obligations for fish that would normally be discarded should be carefully analysed on a species by species basis and measures should be taken (e.g. taxes) to prevent incentives for the development of new targeted fisheries, prior to the allocation of any funding or facilities contributing to the development of such new markets.

STECF also notes that its advice is required with reference to article 15 of the basic CFP reform regulation submitted by the Commission. This article 15 does not introduce any general discard ban, but a landing obligation for a limited set of 37

species (or group of species) that are currently under TAC regulation (with exception for the category "Mediterranean demersal stocks"). Among these species, only eighth have been considered in publications that have investigated the survivability of discarded fish (Table 5.11..3) and some of these available estimates are either very old (e.g. Fulton, 1890), uninformative (e.g. rates estimated comprised between 0 and 100%), related only to specific gears or differ between different studies. Therefore, even for this restricted list of regulated species, STECF is not able to provide estimates of survival rates, by species and by fishing gear, that would be used to define which species in which fisheries should candidates for exclusion from the landing obligations proposed by the Commission.

Table 5.11.3. Available estimates of the survival rates of discards, for the species for which a landing obligation has been proposed by the Commission (article 15 of the proposal for a regulation of the CFP)

Landing obligation proposed in	Species	gear	Minimun survival rate	Maximum survival rate	Author
2014	mackerel	Purse seine	0	100	Huse and Vold (2010)
	mackerel, herring, horse mackerel, blue whiting, boarfish, anchovy, argentine, sardinella, capelin		na	na	
	bluefin tuna, swordfish, albacore tuna, bigeye tuna, other billfish.		na	na	
2015	Cod	Fish beam trawl	0	0	Fulton (1890)
		Fish trawl	0	100	Jean (1963)
		Demersal longline	31	100	Milliken et al (2009)
		Hand line	43	43	Palsson et al. (2003)
	Sole	Shrimp beam trawl	71	100	Berghahn et al. (1992)
		Fish trawl & beam trawl	4	37	van Beek et al. (1990)
		Shrimp trawl	33	59	Kelle (1976)
	Hake		na	na	
2016	haddock	Pelagic long line	47	61	Huse and Soldal (2002)
		Fish trawl	22	93	Beamish (1966)
		Fish trawl, Danish Seine	35	88	Hislop Hemmings (1971)
	whiting	Shrimp beam trawl	0	35	Berghahn et al. (1992)
		Fish beam trawl	0	0	Fulton (1890)
	plaice	Fish beam trawl	98	98	Fulton (1890)
		Fish trawl & beam trawl	0	48	van Beek et al. (1990)
		Shrimp beam trawl	0	100	Berghahn et al. (1992)
		Shrimp trawl	12	70	Kelle (1976)
	saithe	Shrimp trawl	48	89	Ross & Hokenson (1997)
	lemon sole	Fish beam trawl	43	43	Fulton (1890)
	megrim, anglerfish, ling, pollack, turbot, brill, blue ling, black scabbard, roundnose grenadier, orange roughy, Greenland halibut, tusk, redfish and Mediterranean demersal stocks.		na	na	

More generally, STECF notes that the move towards banning discards of TAC-regulated stocks should be seen as a step towards fully implementing a Catch Quota management system which is considered highly desirable by STECF (see section 5.4 on full documented fisheries, in the current report).

Finally, STECF notes that not all the TAC-regulated species have been included in the list given in Article 15 of the draft reform provided by the Commission. Notable absentees are crustaceans (e.g. *Nephrops*), skates and rays, sharks and endangered or protected species (such as turtles or marine mammals for which a zero quota is applied). In line with Table 6.10.2, which suggests potentially high survival rates for such groups, STECF considers that regulated crustaceans, elasmobranchs and endangered species are suitable candidates to be excluded from any future landing obligations.

STECF Recommendations

The following recommendations are based solely on the available evidence on survival rates of discarded fish in the present review.

STECF recommends that total landing obligations should apply to teleost fish that are under TAC regulation as part of a full catch quota system. In contrast, the current scientific knowledge, which suggests the potential for high survival rates for certain species discarded, does not support total landing obligations for some stocks of crustaceans and elasmobranchs subject to catch limits, or for all endangered or protected species or for some non-TAC-regulated teleost species with high survival. STECF considers that a discard ban for crustaceans and elasmobranchs should not be introduced unless more reliable stock-specific estimates of survival rates are available.

STECF notes that survival of teleost fish caught and discarded by some fishing methods can be high e.g. release of undersized sea bass from hook and line fisheries. STECF suggests that consideration be given to exempting certain fishing methods and species from any future general obligation to land TAC-regulated species.

STECF also considers that landing obligations for teleost fish should be an integral part of a catch quota management system (where TACs refer to the whole catches, and not only to landings).

In the case of species that are not subject to TACs and which would normally be discarded, STECF advises that consequences of any landing obligation should be carefully considered prior to any decision.

References

Revill A., 2012. Survival of discarded fish, a rapid review of studies on discard survival rates. Work produced in response to: Request for services commitment n° S12.615631, European Commission, Directorate-general for Maritime Affairs and Fisheries, Policy

development and co-ordination, Brussels, MAREA2, Request for services Survival of discarded fish

Suuronen, P., (2005) Mortality of fish escaping trawl gears. FAO Fisheries Technical Paper 478, Rome.

5.12. Overview of selectivity of gears used in EU fisheries

Background

Under Article 15 of the draft Basic Regulation as part of the reform of the CFP, the Commission has proposed the introduction of a discard ban. One of the key issues in the successful implementation of this policy is the enhancement of the selectivity of fishing gears to avoid unwanted catches. Currently in many EU fisheries regulated gears have poor selectivity and while there have been some improvements through the adoption of more selective gears and the use of selectivity devices such as square mesh panels and sorting grids in some fisheries discarding remain high. In particular fisheries where small codend mesh sizes are used (e.g. trawl fisheries for *Nephrops* and beam trawl fisheries for sole) are unselective for other species caught as bycatch in the fisheries. In some other EU fisheries (e.g. towed gear fisheries for Baltic cod and North Sea saithe) increases in codend mesh size and the adoption of more selective gears have led to significant reductions in discarding.

Recognising that it would be extremely difficult to assess the current levels of selectivity and discarding in all EU fisheries or métiers as defined in the DCF, the intention is to provide an overview based on generic descriptions of fisheries based on area, target species and gear. This approach will also assist in the work of STECF EWG 12-14 set up to look at different principles for defining selectivity under the future TM regulation.

Terms of reference

In order to provide a broad overview of the current selectivity (size and species selectivity) of the main towed gears used in EU waters and how discarding could be reduced through improvements in gear selectivity in fisheries identified with high discard rates STECF is requested to:

- For the North Western waters (Areas VI, VII), South Western waters (VII, IX, X), North Sea (IV+ Skagerrak and Kattegat), Baltic Sea and the Mediterranean provide a simple risk analysis (e.g. traffic light approach) of the current selectivity of towed gears (species and size selectivity) used in the different fisheries in these area and highlight fisheries with low, medium and high discard rates caused by poor selectivity.

- In fisheries where this analysis indicates discarding to be medium or high, STECF is requested to suggest possible gear modifications or selectivity devices that could be used to improve selectivity.

STECF response

STECF prepared Table 5.12.1 (available at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012) based on expert opinion which contains broad categorisation of towed gear métiers (DCF level 6), the effort group if applicable, minimum mesh size, primary target and discard species. Based on a subjective evaluation, the discard rates and levels associated with each of the gear groupings have been categorised into low, medium and high. We define low where discards are less than 15%, medium 16-39% and high >40%. These were chosen so as to be consistent with a recent EU impact assessment report on discards (Anon, 2011; http://ec.europa.eu/fisheries/documentation/studies/discards/report_en.pdf).

It is important to note that the results presented here should not be over interpreted as they are based on opinion from the limited amount of experts present at STECF. It is also important to note that it is possible that a number of métiers have not been considered due to lack of specific regional expertise e.g. Iberian fisheries. As such the categorisation of each fishery could be open to debate. STECF recommends that a more detailed analysis of discard data gathered under the Data Collection Framework should be undertaken to provide a quantitative rather than a qualitative assessment and this analysis be used to identify the level of discards for the aggregated fleets. STECF notes that the broad clustering of métiers could mask significant variation in discard rates within each broad cluster i.e. individual métiers within the cluster could potentially have different categorisation than indicated.

For each of the broad groups, STECF has attempted to give guidance on the potential cause of discards e.g. lack of market, retention of fish below MLS or other regulatory issues such as catch composition or mixed fisheries quota issues and these could be MS specific. In addition, STECF has given guidance on what broad technical solutions are required to improve size or species selection. STECF notes that there are a wide range of potential technical solutions available to mitigate discards. For *Nephrops* fisheries, there is a need to improve species selection and this would be best achieved through the use of devices such as the Swedish grid or other designs for example flexi-grids or 'flip-flap' trawls recently developed by the Scottish Industry in collaboration with Marine Science Scotland. Where discarding is associated with the retention of juveniles of the primary target species, adjustments to the size selective properties of trawls are recommended. This could include increases in mesh size or introduction/modification to square mesh panels (panel mesh size and position) or the SELTRA trawl developed by the Danish authorities for example. It is likely that the best solutions are ones that are tailored to the specific conditions of the fishery. Further consultation would be required to identify the most appropriate approach for the fisheries identified. STECF notes that while technical solutions can help mitigate discards in a wide range of situations, there are limitations and discards cannot be fully eliminated by technical means alone. In addition, technical measures may not be appropriate if there is high escape mortality i.e. in pelagic fisheries. In some circumstances, improvements in the species or size can potentially lead to

unacceptable losses of target species and other approaches may need to be considered. STECF further notes that there has been considerable development in the trialling and adoption of more species selective gears by individual Member States, fishermen and net makers. This has largely been in response to the existing long-term management plan for cod (EC regulation 1342/2008) in order to avail of increases in fishing opportunities (effort) under the provisions of articles 11 and 13. STECF considers that such frameworks can promote 'bottom-up' developments which can have greater buy-in.

STECF conclusions

In order to provide a quantitative assessment of discards associated with all EU towed gear fisheries a detailed analysis of existing discard and landings data is required. Table 5.12.1 is indicative only and must not be over interpreted as it is based on a limited qualitative evaluation and will be open to debate.

5.13. Assessment of conservation plans and rebuilding strategies for 3NO cod and 3LNO American plaice adopted by NAFO

STECF is requested to review the report prepared under an *ad hoc* contract, evaluate the findings and make any appropriate comments and recommendations.

The Terms of Reference of the *ad hoc* contract were:

Assessment of conservation plans and rebuilding strategies for 3NO cod and 3LNO American plaice adopted by NAFO

Background

The Northwest Atlantic Fisheries Organization (NAFO) adopted in September 2011, conservation plans and rebuilding strategies for 3NO cod (NAFO/FC Doc. 11/4, Annex 5) and 3 LNO American plaice (NAFO/FC Doc. 11/4, Annex 4). Both stocks have been under a moratorium to direct fishing since the mid 1990s.

The conservation plans and rebuilding strategies of both stocks were developed based on reference points in the framework of the NAFO precautionary approach and define conditions under which a direct fishery can be re-opened and harvest control rules to ensure biomass growth to reach management objectives.

Terms of Reference

STECF is requested to review the conservation and rebuilding plans of 3LNO American Plaice and 3NO Cod. Through a risk based approach, STECF should:

1) Evaluate the performance of the present rebuilding plans in terms of expected time frames (5 / 10 / 15 years) and associated probabilities to reach indicated limit and target biomass levels and catches (projections should assume appropriate levels of recruitment and the status quo fishing mortality until reaching biomass levels above B_{lim}).

2) Provide advice on the addition of a new intermediate reference point (i.e. B_{isr}) in the rebuilding plans and the NAFO precautionary approach framework to delineate an additional zone between B_{lim} and B_{MSY}, as proposed by the rebuilding plans. *NOTE: The usefulness of this new intermediate reference point should be evaluated since both rebuilding plans combine a risk analysis with the NAFO PA framework. It might be redundant to have this additional reference point if we define already the probability levels (e.g. very low risk of* $B<B_{lim}$ *might imply already being above* B_{isr} *and close to* B_{MSY}*).*

3) Review B_{MSY} and F_{MSY} provided in 2011 for both stocks and quantify uncertainty surrounding these estimates. *NOTE: Regarding the biological reference points, concerns were raised during the working group (NAFO/FC Doc. 11/4) on the uncertainty levels and lack of confidence intervals*.

4) Evaluate the Harvest Control Rule (HCR) indicated below as an alternative to the HCR of the 3LNO American Plaice (item 4 of NAFO/FC Doc. 11/4, Annex 5) and 3NO Cod (item 4 of NAFO/FC Doc. 11/4, Annex 4) Conservation Plans and Rebuilding Strategies. Through projections and a risk based approach, evaluate the performance of this HCR in terms probabilities associated with maintaining Biomass above Blim and ensuring continuous SSB growth. STECF should provide SSB and associated catch trajectories for 5 / 10 / 15 years. Projections should assume appropriate levels of recruitment and the status quo fishing mortality (3-year average scaled and unscaled) until reaching biomass levels above B_{lim}.

Harvest Control Rule:
a) When SSB is below B_{lim}:
i. no directed fishing, and
ii. by-catch should be restricted to unavoidable by-catch in fisheries directing for other species

b) When SSB is above B_{lim}:

If P y+1 > 0.9 Then $Fy+1 = F_{0.1} * Py+1$
Else
Fy+1 = 0
TACy+1 = B y+1 * Fy+1

In all cases TACy+1 = B y+1 * Fy+1 (interpreted as setting TAC with target F)

Where:
Fy+1 = Fishing mortality to project catches for the following year.

Py+1 = Probability of projected Spawning Stock Biomass to be above B_{lim}.
B y+1 = Exploitable biomass projected for the following year.

The *ad hoc* contract can be found on the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012.

STECF observations

STECF reviewed the report prepared under an ad hoc contract to evaluate the agreed NAFO management plans for 3NO Cod and 3LNO American Plaice, and an optional alternative plan (point 4 of the ToR above).

STECF considers that the report provides the necessary information to answer the terms of reference.

The plans and reference points have been evaluated using FLR routines. The evaluations are based on simple 20% precision of F and SSB (negatively correlated). The conclusions reached from the modelling exercise are conditional on the data and the assumption that the productivity of the stock is unchanged from historic values. STECF draws the following conclusions from the report, they are organised by ToR.

1) Performance of plans

Cod 3NO

For 3NO Cod, the simulations suggest that the NAFO plan has close to 100% probability of recovering the cod stock above B_{lim} by 2030, the alternative plan is slightly lower at around 90%. Under the alternative plan, fishing at the long-term target $F=F_{0.1}$ once the stock has recovered to B_{lim} (probability of being above B_{lim} >90%) has a 55% probability of SSB>= B_{MSY} by 2030. The higher F target associated with 80% probability of being below F_{MSY} (NAFO plan) suggests a 35% probability of SSB>=B_{MSY} by 2030.

Keeping the directed fishery closed and fishing at the level of F corresponding to recent bycatch levels, gives a 100% probability that SSB> B_{lim} by 2030, and a 60% probability of SSB>= B_{MSY}. In contrast opening the directed fishery immediately slows the recovery with only a 60% probability of SSB>= B_{lim} and probability of SSB>= B_{MSY} of around 10% by 2030.

Table 6.12.1 gives the probability of opening the fishery for 3NO cod under both plans by year from 2011 onwards, see point 4 below.

American plaice 3LNO

For 3L NO American Plaice, the simulations suggest that both plans have a 100% probability of recovering the cod stock above B_{lim} by 2030. Under the alternative

plan, fishing at the long-term target $F=F_{0.1}$ once the stock has recovered to B_{lim} (probability of being above B_{lim} >90%) has a 5% probability of SSB>= B_{MSY} by 2030. The higher F target associated with 80% probability of being below F_{MSY} (NAFO plan) suggests only a 1% probability of SSB>=B_{MSY} by 2030.

Keeping the directed fishery closed and fishing at the level of F corresponding to recent bycatch levels, gives a 100% probability that SSB> B_{lim} by 2030, and a 5% probability of SSB>= B_{MSY}. In contrast opening the directed fishery immediately slows the recovery with only a 70% probability of SSB>= B_{lim} and probability of SSB>= B_{MSY} of around 1% by 2030.

Table 5.13.1 gives the probability of opening the fishery for 3LNO American plaice under both plans by year from 2011 onwards, see point 4 below.

2) Utility of B_{isr}

While B_{isr} is a rather arbitrary reference point, some biomass reference point is an appropriate way to open the directed fishery. An alternative biomass reference point based on a percentage probability of SSB> B_{lim} could be used, but would depend on the chosen or agreed precision of the estimates of stock size.
The values of B_{open} (77,400 t for cod and 64,500 t for American plaice) could be used as to replace B_{isr} (120,000 t for cod and 100,000 t for plaice) because these would also give a low risk of falling below B_{lim}. The values for B_{open} are conditional on: current S-R and biology being similar to the historic time series used in the analysis; management and estimation error being considered to have an overall precision of 20%; managers wish to use a 90% probability margin for SSB> B_{lim}.

3) Utility of Reference points

Estimates of F_{MSY} are given in the report, these are unstable over time, though generally the values are lower than F~0.30 which is currently used by NAFO. Values of B_{MSY} given by NAFO for 3NO cod (248,000 t) appear to be compatible with exploitation targets of F0.1 or <F_{MSY} as biomasses can be seen to come close to these values (see Figures 4.5-4.7 in the report). Values of B_{MSY} for 3LNO American plaice (242,000 t) appear to be high (see Figures 4.8-4.10 in the report), and depend very much on assumptions of recovery to levels outside the observed range.

NAFO B_{lim} for cod 3NO (60,000 t) appears to lie well within the estimates from the present report.
NAFO B_{lim} for Am plaice 3LNO (50,000 t) appears to be low relative estimate based on S-R fit to full range of data (~100,000 t).

4) Probability of opening the fishery.

Results on the probability of opening the fishery by year and the mean catches for open or bycatch fisheries are presented in Table 6.12.1.

The simulations carried out suggest that the NAFO plan opens the fishery later than the alternative plan but then obtains higher catches in the medium term. The alternative plan opens the fishery earlier but subsequent TAC catches are lower.

During the period when the alternative plan would have opened, the directed fishery the NAFO plan is still just a bycatch fishery. The bycatch under the NAFO plan rises higher than is the case for the alternative plan.

Table 5.13.1 Comparison of performance of the NAFO and the alternative plan. The 'probability of opening' the TAC based directed fishery is presented by year values above 50% are given in bold. Mean catches for two cases the bycatch and the TAC fishery are presented separately. Initiually both have similar bycatch fisheries and the TAC fishery is closed. The NAFO plan opens the fishery later but then obtains higher catches, the alternative plan opens the fishery earlier but catches are lower. During the period when NAFO plan is still just a bycatch fishery the bycatch rises higher is the case for the alternative plan.

Am plaice 3LNO	Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Probability	ALT.-PLAN	0	0	0.01	0.02	0.05	0.11	0.2	0.32	0.43	**0.55**	**0.68**	**0.76**	**0.83**	**0.88**	**0.92**	**0.95**	**0.98**	**0.99**	**1**	**1**	**1**
of Opening	NAFO	0	0	0	0	0	0	0	0.01	0.02	0.02	0.07	0.12	0.2	0.27	0.35	0.43	**0.5**	**0.52**	**0.57**	**0.63**	**0.66**
ALT.-PLAN	Open Fishery	-	3.04	4.74	4.72	5.92	6.14	7.16	7.78	8.76	9.43	10	10.9	11.6	12.5	13.4	14.4	15.1	16.3	17.5	18.8	19.9
Mean Catch	By-catch Fishery	4	4.52	4.76	4.97	5.58	5.98	6.4	6.7	6.84	6.97	6.91	7.13	6.96	7.34	7.61	7.73	8.65	9.28	10.5	-	-
NAFO	Open Fishery	-	-	-	-	-	6.82	-	8.88	11.5	13.2	15.4	17.8	19.5	20.8	22.5	24	24.9	26.3	28	28.8	30.1
Mean Catch	By-catch Fishery	3.98	4.54	4.72	4.99	5.57	6	6.43	6.77	7.22	7.97	8.56	9.2	9.83	10.6	11	11.4	11.7	12.1	12.4	12.9	13.7
cod 3NO	Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Probability	ALT.-PLAN	0	0	0	0.01	0.05	0.11	0.21	0.41	**0.57**	**0.68**	**0.72**	**0.74**	**0.75**	**0.77**	**0.8**	**0.84**	**0.88**	**0.9**	**0.92**	**0.93**	**0.94**
of Opening	NAFO	0	0	0	0	0	0	0.02	0.07	0.19	0.37	0.49	**0.51**	**0.54**	**0.57**	**0.6**	**0.66**	**0.66**	**0.64**	**0.61**	**0.61**	**0.6**
ALT.-PLAN	Open Fishery	-	-	-	13.9	11.4	13.3	20.2	25.7	31.2	32.9	35.5	37.2	41.6	47.4	49.8	51.3	47	46.1	44.7	46.1	49
Mean Catch	By-catch Fishery	2.36	3.26	3.57	3.91	3.81	4.66	6.36	6.51	5.91	3.91	3.33	3.65	4.49	5.38	5.82	4.92	3.91	4.34	4.52	5.85	7.16
NAFO	Open Fishery	-	-	-	-	15.7	18.2	36.6	56.4	66	65.9	65.6	65.2	67.8	74.4	72.6	75.7	74	72.4	70.8	73.5	76.7
Mean Catch	By-catch Fishery	2.39	3.27	3.6	3.93	3.88	4.85	6.89	8.35	9.18	7.24	5.86	6.11	7.1	7.87	9.5	8.27	5.31	5.19	5.59	6.89	9.27

5.14. Request for advice on the multi- oscillatory model supporting a Spatial Exclusion Approach in Mauritanian Octopus fisheries

Background

Scientists of the Spanish Institute of Oceanography (IEO) have developed an approach on stock/recruitment relationships, taking into account a possible variability in values of the carrying capacity and including environmental descriptors in a multi-oscillatory model, as such as Sea Surface Temperature and Upwelling indices. This modelling approach is based on the likely existence of several possible equilibria in the population dynamics, depending on environmental conditions and called orbits of stability.

IEO scientists have applied this modelling approach to assess the dynamics of Octopus stocks distributed in the Mauritanian EEZ.

Currently, advice delivered on a quite regular basis for these stocks, mainly by the CECAF Sub-Scientific Committee (SSC), are based on the use of a dynamic production model (model developed by Pedro de Borros and derived from the Schaefer logistic model). Even if the de Borros model used by the CECAF SCC allows the inclusion of time series on environmental conditions (like upwelling indices) having a possible impact on carrying capacities and growth conditions of the stock, Spanish scientists working on Mauritanian Octopus stocks and fisheries consider that production models can't reflect well all types of inputs possibly included in the multi-oscillatory model and may consequently lead wrongly to conclusions of overfishing situation and of possible stock collapses.

The last advice delivered by the CECAF SSC on the *Octopus vulgaris* stock of Cap Blanc (20°N to 16°N) and based on results of the de Borros model concludes to its overexploitation ($B_{cur}/B_{0.1}$=79 % and $F_{cur}/F_{0.1}$=150 %) and the management recommendation suggests reducing the current fishing effort for all fisheries targeting Octopus and reinforcing the control of the management measures.

Based on data provided by the Spanish fleet targeting octopus in the Mauritanian EEZ, this multi-oscillatory model has been used to assess what would be the results of a possible Spatial Exclusion Approach (SEA) both in terms of stocks dynamics and of yields, by favouring possibly the shift to orbits of stability matching with a higher carrying capacity. If confirmed, such an approach could lead to a new assessment framework and to a new management approach allowing fishermen to take a better benefit from a stock being in a better shape.

Terms of Reference

Taking into account all the supporting documents and information provided to its members, the STECF is asked to discuss and to sum-up its views on:

- the multi-oscillatory model, having in mind other type of models, like dynamic production models which are currently used in the context of the CECAF SSC or other production and/or analytical models which have already been used or which could be used to assess Octopus stocks, taking into account possible limits in data made available to scientists;

- the results delivered by the multi-oscillatory model, when assessing both the status of the Octopus stock of Cap blanc and a possible Spatial Exclusion Approach;

- the possible advantages and/or disadvantages of a combination of management measures (like spatial temporal real-time closures based on thresholds associated to environmental indices) which may appear as the most appropriate to make such a Spatial Exclusion Approach operable and operational.

- In the light of the data available, of last developments and outputs and of information introduced to the plenum and as results of its discussions, the STECF is requested to advise the European Commission on the suitability of:

- requesting as soon as possible the CECAF SSC to assess of Octopus stocks and to deliver advice on stock status and management measures on the basis of a multi-oscillatory model;

- discussing with the Mauritanian authorities a possible new management framework for Octopus fisheries, based on a Spatial Exclusion Approach deriving from the implementation of the multi-oscillatory model and to be implemented from now on in the context of a possible protocol to the Fisheries Partnership Agreement.

Material consulted

1) Bas, C., A. P. Solari and J. M. Martin (1999). Considerations over a new recruitment model for exploited fish populations. Royal Academy of Sciences, Barcelona. Vol. LVIII, Num. 5:157-183.
2) Solari, A. P. , J. M. Martin-Gonzales and C. Bas (1997). Stock and recruitment in Baltic cod (Gadus morhua); a new, non-linear approach. ICES J. of Mar. Sci. 54:427-443.
3) Solari, A. P. ,J.J. Castro and C. Bas (2003). On skipjack tuna dynamics: similarity at several scales. in "Scales in Aquatic Ecology. Measurements, analysis and simulation". Edited by Laurent Seuront (CNRS, France) and Peter G. Strutton (Montereys Baya Aquarium Research Institute, USA). CRC Press.
4) Solari, A. P.(2008). New non-linear model for the study and exploitation of fishery resources. Mem. Phd Thesis. University of Las Palmas.
5) Solari, A. P., M. T. G. Santamaria, M. F. Borges, A. M. P. Santos, H. Mendes, E. Balguerias, J. A. Diaz Cordero, J. J. Castro and C. Bas. (2010). On the dynamics of Sardina pilchardus: orbits of stability and environmental forcing. ICES J. of Mar. Sci. 67(8).

In addition, the following additional documents were made available to STECF during the plenary:

1) Scientific papers related to the assessment of the Octopus stock in Mauritania (Chassot et al. 2010, Gascuel et al. 2007, Ono et al. 2012), Senegal (Thiaw et al. 2011) or Morocco (Robert et al. 2010).
2) Reports of working groups organised by IMROP on Octopus stock assessment (Failler et al. 2006, Labrosse et al 2010)
3) The last report of the "Joint EU/RIM scientific committee" on the fishing partnership (Anonymous 2011).

Summary of the proposed multi-oscillatory modelling approach

The multi-oscillatory model (Solari et al., 1997) represents the biomass evolution of a population in a dynamic system with variable carrying capacity. It has been validated for several fish stocks such as the Baltic cod (Solari et al., 1997; Bas et al., 1998; Solari, 2008) the Icelandic cod (Bas et al., 1998; Solari, 2008) the skipjack tuna (Solari et al., 2003) the Iberian sardine (Solari et al., 2011) and the common octopus from the Sahara and Mauritania (Solari, 2008).
The application of this model to the Mauritanian octopus (Cape Blanc stock) has provided the following main results:

- The stock has evolved around three cyclic levels of abundance (called stability orbits) dependent on the combined effect of the environmental factors (i.e. up-welling) and the fishing mortality.
- The evolution of octopus biomass has shown a general decreasing trend, fluctuating around the three stability orbits from 1971 to 2006 (available data series). The apparent reason for this decreasing trend in biomass is the combined effect of a gradual increase of fishing mortality and a change in the exploitation pattern that has shifted from mostly catching medium size and big individuals to mostly catching smaller individuals.
- Changes from minimum to maximum levels of biomass within each stability orbit seem to occur in eight-year cycles that are related to medium term variability periods in the intensity and the persistence of the up-welling.

Using the above mentioned results, a new approach has been proposed for the management of the Mauritanian octopus fishery. The considerations of this new approach are as follows:

- It may be possible to reverse the decreasing trend of biomass of the stock by applying different management strategies according to the changing environmental conditions..
- It may be possible to infer the expected evolution of environmental conditions and consequently to predict from the multi-oscillatory model the biomass range of the stock in the short-term.
- Taking advantage of the ecological characteristics of the Mauritanian octopus it may be possible to close specific areas where recruits tend to concentrate in specific periods of the year that are intimately related to the up-welling conditions. This would promote the export of biomass to the fishing grounds while preserving a substantial spawning biomass to assure the next recruitment.

In collaboration with the Spanish fleet (ANACEF) fishing for cephalopods in Mauritanian waters, a set of detailed data on individual haul catches by species were used to test the eventual application of the spatial exclusion model for the management of the octopus fishery in Mauritania. The main results from these analyses were as follows:

- The core of the Cape Blanc up-welling in 2010-2011 was approximately located in an area of latitude 19^0N and longitude 17^0W.
- Two windows of optimal environmental conditions for octopus (identified by Sea Surface Temperatures between 14.5 and 17.5 degrees Celsius) were observed within the up-welling system with centers at: i) latitude 18.5^0N and longitude 16.5^0W and ii) latitude 20.5^0N and longitude 17.5^0W respectively.
- Maximum octopus abundances occurred in the two geographical areas during the period September-December which is the period of high octopus biomass.

According to the above results a management scenario of the fishery was simulated including the adoption of an Exclusion Area (zero fishing mortality) of approximately 2 degrees of latitude by 1.5 degrees of longitude with center in latitude 18.5^0N and longitude 16.5^0W during the period September to December. Using arbitrary precautionary fishing mortality values in the range

between 0.3 and 0.5 and assuming constancy in the up-welling system, simulations carried out suggested that it would be possible to drive the stock to a higher oscillatory orbit and achieve a doubling of the average biomass of the stock. These preliminary results need to be validated using different simulation scenarios including variable environmental conditions.

STECF response

Several papers have been recently published on the assessment of octopus stocks, using either dynamic production model in a Bayesian context for the Mauritanian stock (Ono et al. 2012), or analytical methods for the Senegalese stock (Thiaw et al. 2011). The approach of Thiaw et al. (2011) took into account the well known effect of the variability in upwelling on the abundance of the octopus stock.

Assessments performed in working groups organised by CECAF (the FAO body in charge of the scientific advice in the West African sub-region) and by IMROP (the Mauritanian institute for fisheries research) are currently based on the Schaefer dynamic production model (Praguer, 1994). This model is based on restrictive assumptions and in order to advise on alternative management actions there is a need to develop alternative assessment methods.

The available publications and research reports conclude that the Mauritanian octopus stock is significantly overfished (Ono et al, 2012; Chassot et al, 2010; Gascuel et al., 2007; IMROP, 2010 and Anon., 2011).

When comparing the suggested multi-oscillatory model presented to STECF (Balguerias and Solari, 2012) to currently applied models for Mauritanian Octopus stock, STECF notes that the surplus production model used by CECAF and IMROP to assess Mauritanian octopus do not take into account the effect of environmental variability (i.e. yearly intensity of the upwelling) on the abundance of the octopus stock. This effect is implicitly considered in the multi-oscillatory model, describing the biomass dynamics based on orbits of stability on the time series of abundance time lags. STECF notes that environmental variability has been considered in earlier publications (Thiaw et al 2011, Jouffre et al. 2006).

A complex model like the one suggested by Balguerias and Solari, 2012, also requires a high level of expertise to be used and understood which would be problematic if such expertise is not available to CECAF working groups

STECF notes that the proposed Spatial Exclusion approach (SEA) can be considered to be a geographical solution to manage the exploitation rate so, that the stock would be recovered to meet the MSY objective. However, Balguerias and Solari (2012) conclude that “Much work remains to be done in the sensitivity analysis of the SEA (iterations based on different sets of initial conditions, and “real world” data derived parameter values) to estimate possible outcomes both in population dynamics and management of the cephalopod resources.”

STECF considers that investigating the predictive power of the multi-oscillatory model is especially important together with the quality of the information at the moment when the in-season Spatial Exclusion decisions must be taken. It would also be important to apply the available survey estimates to the analysis, as they may play an important role in the fine tuning of the borders of exclusion zones suggested by the model.

If exclusion areas are occurring on same areas in different years, such a closure would also help to decrease the likely negative impacts of the trawl fishery on benthos. In addition to protect the benthos communities, the SEA would likely be easier to implement and control than e.g. TAC or effort based management. Moreover, use of various fishing and closed zones could also include a socio-economic element to allocate resources between the local fishers and foreign fleets. Combined use of SEA management tool, together with geographical environmental and stock density estimates may be a way to answer to the need indentified in the UN Law of Seas, Article 62, i.e. "relevant environmental and economic factors".

It is preferable, that the modelling approach of Balguerias and Solari (2012), supporting SEA decision, are carried out in conjunction with other "state of the art" modelling approaches (Robert et al 2009, Chassot et al 2010, Ono et al 2012) which are able to provide probabilistic estimates that fit to risk management approaches and which would provide a more systematic basis for applying the precautionary approach.

STECF conclusions

STECF concludes that the Mauritanian octopus is currently overexploited, and some of the potential catch is lost. All available efforts should be carried out to improve the state of the stock. Use of a permanent protected or a annually-defined area are likely to be useful additional elements in such a strategy. The presented multi-oscillatory model is a novel approach to fisheries stock assessment, and it helps to focus the modelling and research to environmental factors that may lead to different ecosystem regimes.

Mauritanian octopus is likely a good candidate test case for such an approach due to the strong influence of environmental factors (upwelling and related temperature changes) on productivity and the potential to systematically model the areas where densities of young octopus are likely to be highest. However, STECF considers that despite its potential, it would be premature to apply the multi-oscillatory modelling approach in the practical management of the fishery for Mauritanian octopus in the immediate future. There is a need to undertake further analysis of several aspects namely; to use all available survey and fishery-dependent data in the analysis, undertake sensitivity analyses to input parameters and to model the uncertainties related to available information needed for implementation. In particular, the quality of the abundance indexes and the various model parameters and their stability in respect to the environmental settings needs further investigation and analysis. These need to be done to test the robustness of the simulation results to the partial information available at the time that the decision on which areas and periods to close needs to be taken.

References

Chassot, E., Balguerías, E., Guitton, J., Jouffre, D., Tfeil, B., Gascuel, D., 2010. Diagnostic de l'état du stock de poulpe (Octopus vulgaris) mauritanien. Synthèse et nouvelles évaluations par approche globale. In: Labrosse, P., Brahim, K., Ould Taleb, O.S., Gascuel, D., (Eds.), Evaluation des ressources et aménagement des pêcheries de la ZEE mauritanienne, Rapport du 6e groupe de travail de l'IMROP. Nouadhibou, Mauritanie, pp. 95–116.

Gascuel D., Labrosse P., Meissa B., Taleb SidiI MO, Guénette S. 2007 – Decline of demersal resources in North-West Africa: an analysis of Mauritanian trawl survey data over the last 25 years. African Journal of Marine Sciences, 29: 331-345.

Thiaw M., Gascuel D., Thiaw O., Thiao D., Jouffre D., 2011 - Analyzing environmental and fishing effects on a short-lived species stock: the dynamics of the octopus population, *Octopus vulgaris*, in Senegalese waters. *African Journal of Marine Sciences*, **33**(2): 209–222.

Jouffre D., Caverivière A. Et Inejih C.A., 2002. Evaluation du stock de poulpe par l'approche structurale et analyse de l'impact de l'« arrêt biologie ». *In*: Failler, P., Diop, M., Dia, M.A., Inejih, C.A. and Tous, P. editors (2006) Évaluation des stocks et aménagement des pêcheries de la ZEE Mauritanienne. Rapport du cinquième Groupe de travail IMROP, (Nouadhibou, 9-17 décembre 2002), Copace/Pace Sér. 06/66.

Anonyme 2011. Rapport de la cinquième réunion du Comité Scientifique Conjoint RIM-UE. Nouakchott, 12-14 octobre 2011, rapport IMROP, 61 pp.

Failler, P., Diop, M., Dia, M.A., Inejih, C.A. and Tous, P. editors (2006) Évaluation des stocks et aménagement des pêcheries de la ZEE Mauritanienne. Rapport du cinquième Groupe de travail IMROP, (Nouadhibou, 9-17 décembre 2002), Copace/Pace Sér. 06/66. 197 p.

Ono,K., Punt, A., Rivot, E. 2012. Model performance analysis for Bayesian biomass dynamics models using bias, precision and reliability metrics. Fisheries Research 125– 126: 173– 183.

Robert, M., Faraj, A., McAllister, M. K., and Rivot, E. 2010. Bayesian state-space modelling of the De Lury depletion model: strengths and limitations of the method, and application to the Moroccan octopus fishery. – ICES Journal of Marine Science, 67: 1272–1290.

5.15. Advice on possible options for improvement of the Article 9, 11 and 13 of the cod plan (R 1342/2008)

Background

The STECF EWG report on the "Evaluation of multi-annual plans for cod in Irish Sea, Kattegat, North Sea, and West of Scotland (STECF-11-07)" indicated on number of problematic issues with implementation of Council Regulation (EC) No 1342/2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks. The review of the plan is ongoing but it might take certain time until new plan will be adopted. Therefore the Commission is considering proposing possible improvements of those articles as a mid-term solution in particular for Article 9, 11 and 13.2(b).

Draft options for amendment are attached at the STECF PLEN-12-01 meeting's web site on https://stecf.jrc.ec.europa.eu/meetings/2012.

Terms of Reference

In the context of the above background, STECF is requested to address the following:

1 Article 9 – whether STECF will be in position to advise on TAC amounts in cases where analytical assessments are not available or advise on more appropriate measures other than further reductions in TAC and effort.

2 Article 11 - To assess the feasibility of the proposed option for the exclusion of vessels from the effort regime under article 11, in particular whether or not the areas or gears concerned can be excluded for all other fleets. What information would be needed to justify such exclusion?

3 Option for new Article 13.2(a) - advise on an appropriate figure for the percentage of the cod catches that should be allowed to be discarded for vessels with cod catches less than 5% of the total catches.

4 Option for new Article 13.2(b) - To assess the proposal to allow an increase in effort where the ratio of discards to landings is decreased. Would this system be more simple and/or resolve the difficulties outlined in evaluation report for the current article.

5 Advise on the way in which such a system could be applied to individual vessels.

6 Suggest alternative proposals, or ways in which the proposals could be improved or simplified

7 to discuss the pro and cons for each option proposed compared to existing fishing effort management methods

STECF response

ToR 1 Article 9 – whether STECF will be in position to advise on TAC amounts in cases where analytical assessments are not available or advise on more appropriate measures other than further reductions in TAC and effort.

Article 9 defines the procedure for setting TACs in poor data conditions. In previous years only North Sea cod (NS) has had an assessment and short-term forecast. For Kattegat (Kat), Irish Sea (IS) and West of Scotland (WoS) cod neither ICES nor STECF have been able to provide reliable assessments suitable for a short-term forecast. In February 2012 ICES held a benchmark workshop that concluded that new assessment models for WoS and IS cod could be used for assessment, estimates of fishing mortality and short-term forecasts for catch options. Therefore in the short-term WoS and IS should have catch options and the need for alternative measures will be reduced. In the case of Kattegat the problem is more complex, currently there is only limited catches of cod, not amounting to the TAC and most of the fleets are covered by article 13 measures so effort reductions have a lower impact on the fleets concerned. STECF has proposed studies to provide alternative measures for estimating cod catches in the absence of an assessment. Thus STECF would expect to be able to give better advice for all of these stocks in the future, however there will always be a possibility that data and models do not allow catch advice to be provided, so some provision for this situation will be necessary.

The procedure should be: ‘catch advice provided in accordance with the exploitation rate defined in the plan, based on an analytic assessment. In the absence of such an assessment, STECF will where possible provide catch advice corresponding to the aims of the plan based on an alternative methodology.

ToR 2 - Article 11 - To assess the feasibility of the proposed option for the exclusion of vessels from the effort regime under article 11, in particular whether or not the areas or gears concerned can be excluded for all other fleets. What information would be needed to justify such exclusion?

STECF (2009) noted that catches of cod <1.5% at a fleet or individual vessel level can be achieved through three possible mechanisms: (i) Technical decoupling through the application of modifications to the fishing gear that inhibits or reduces cod catches; (ii) Spatial and/or seasonal decoupling, where the fishing activity is conducted in areas, at depths, and/or in seasons that are historically not associated with cod distribution and catches; and (iii) Decoupling through cod stock depletion, where historically, cod catches in the area where the fleet/métier operates are likely to have exceeded 1.5% if the cod biomass was at a higher level.

The Commission proposal for amendment indicates two potential categories for exclusion. One concerns spatial decoupling which is expected to have very low cod catches. In this category, depths of >200m are suggested and other qualifying areas are to be listed in an Appendix. STECF considers that the depth option should be increased. Based on trawl survey and fishery-dependent data STECF considers that this limit should be set at 300 m depth. STECF notes that other, current, examples of spatial exemptions include areas in ICES VIa, the coordinates of this area could easily be provided in the proposed Appendix. Further proposals would need to be evaluated on their merits but could equally be added to the Appendix. It is important that provision is given for the areas defined in appendix 1 annex 1 of the cod plan to be amended subsequently on a case by case basis based on information annually submitted to STECF. This would ensure that areas which become important for cod abundance following a depleted period no longer attract derogations.

STECF considers that decoupling through cod stock depletion, where historically, cod catches in the area where the fleet/métier operates are likely to have exceeded 1.5% if the cod biomass was at a higher level should generally not be encouraged and where granted, should be very closely monitored. STECF further considers that effort exemptions should only be granted when technical or spatial decoupling can be demonstrated.

Technical decoupling through the application of modifications to the fishing gear that inhibits or reduces cod catches is thought to be applicable in multiple fisheries. If a gear measure is already in use in a derogated fishery and a proposal is made to use this gear in a similar fishery this would be acceptable Such fisheries would need to have broadly similar characteristics in terms of species mixture encountered. New proposals for derogated fisheries with gear modifications should in the first instance be accompanied by comparisons of a) species composition in the fishery to be considered and a fishery already derogated; b) comparison of the technical description of the proposed gear and the gear that has already been granted a derogation. The relevant Member State operating a derogated fishery must ensure that data are collected and analysed to show that the group of vessels comply with the limitations to cod catch.

Documentation of what is currently required for an article 11 evaluation is given in an implementing regulation to the cod plan. (Council Regulation (EC) 237/2010). Given recent discussions by STECF concerning evaluation of the submissions made under Article 11, it is recommended that the requirements for submissions are re-visited.

ToR 3

a) - Option for new Article 13.2(a) - advise on an appropriate figure for the percentage of the cod catches that should be allowed to be discarded for vessels with cod catches less than 5% of the total catches.

b) - Option for new Article 13.2(b) - To assess the proposal to allow an increase in effort where the ratio of discards to landings is decreased. Would this system be more simple and/or resolve the difficulties outlined in evaluation report for the current article.

Basing monitoring on percentage of cod in the total catch (as in Articles 11 and 13.2b) is flawed, because even when percentages of cod in the catch are low, these catches can still contribute significantly to overall cod mortality if overall catch or effort is high or when abundance is low. Cod by-catch ceilings expressed as percentages of total catch also have a perverse incentive to maintain or increase catches of other species. STECF identified bycatch ceilings as a flaw in the design of the plan. A system based on proportion of total expected cod outtake from the whole fishery would be more appropriate, and likely no more difficult to monitor. However, if the Commission is not currently able to amend the basis of article 13 derogations, then STECF has the following observation.

For the option for new Article 13.2(a) - STECF considers that the Commission's suggestion of a secondary condition ie. maximum 5% allowed cod discard rate (of the cod catch) for vessels is pointless because the 5% level is rather low and including it allows discarding to continue. By allowing discarding to continue this opens up the problem of discard estimation. Under these circumstances it would be preferable to state the regulation in terms of catch and that discarding of cod under this article is banned. In either case STECF has no basis for advising a specific level of discards that would be required. Rather STECF could advise on the catch needed to comply with regulation and likely to deliver the F reduction implied.

For the option for new Article 13.2(b) - For similar reasons STECF considers that it would be preferable to state the regulation in terms of catch. STECF could advise annually on the change in catch from the year before needed to comply with regulation and deliver the F reduction implied. Derogations to the effort restrictions could be offered to those who agree to monitor and keep cod catches below pre-defined levels. This would represent a clearer and simpler version of the current plan. Effort restrictions would still be in place, but the ability to buy-back effort through the implementation of cod-avoidance measures would be clarified, with a clearer link between the effort recovered and the effectiveness of the measures in reducing cod catches. The control regulation already requires individual vessels (>10m) to record landings and discards of cod at the trip level so there should be no issue for participants to be requested to declare catch.

STECF would like to point out that it considers that all elements of article 13(2) derogations should be explicitly required to be evaluated. STECF Plenary report 10-02 (insert SECTION No) contains a list of the aspects that should be covered by an evaluation submission.

6. CONTACT DETAILS OF STECF MEMBERS AND OTHER PARTICIPANTS

Name	Address	Tel.	Email
STECF members			
Abella, J. Alvaro(vice-chair)	ARPAT – AREA MARE Agenzia Regionale per la Protezione Ambientale della Toscana Articolazione Funzionale RIBM Risorse Ittiche e Biodiversità Marina Via Marradi 114, 57126 Livorno – Italia	Tel. diretto 0039-0586-263456 Fax. 0039-0586-263476	aa00477@mail.arpat.toscana.it
Andersen, Jesper Levring (vice-chair, rapporteur)	Institute of Food and Resource Economics (FOI) Fisheries Economics and Management Division University of Copenhagen Rolighedsvej 25 1958 Frederiksberg Denmark	Tel.dir.: +45 35 28 68 92	jla@foi.dk
Bailey, Nicholas (rapporteur)	Fisheries Research Services 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 (rapporteur)	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
Cardinale,Max	Föreningsgatan 45, 330 Lysekil, Sweden	Tel: +46 523 18750	massimiliano.cardinale@slu.se
Casey, John (chair)	CEFAS Lowestoft Laboratory, Pakefield Road, Lowestoft Suffolk, UK NR33 0HT	Tel: +44 1502 52 42 51 Fax: +44 1502 52 45 11	john.casey@cefas.co.uk
Curtis, Hazel	Sea Fish Industry Authority 18 Logie Mill Logie Green Road Edinburgh EH7 4HS	Tel: +44 (0)131 558 3331 Fax: +44 (0)131 558 1442	H_Curtis@seafish.co.uk
Delaney, Alyne	Innovative Fisheries Management, -an Aalborg University Research Centre, Postboks 104, 9850 Hirtshals, Denmark	Tel.: +45 9940 3694	ad@ifm.aau.dk
Daskalov, Georgi (rapporteur)	Laboratory of Marine Ecology, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences	Tel.: +359 52 646892	gmdaskalov@yahoo.co.uk

Name	Address	Tel.	Email
STECF members			
Döring, Ralf (rapporteur)	Johann Heinrich von 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@vti.bund.de
Gascuel, Didier (rapporteur)	AGROCAMPUS RENNES 65 Route de Saint Brieuc, bat.4 CS 84215, F-35042 RENNES Cedex	Tel:+33(0)2.23.48.55.34 Fax: +33(0)2.23.48.55.35	Didier.Gascuel@agrocampus-rennes.fr
Graham, Norman (rapporteur)	Marine Institute, Fisheries Science Services (FSS), Rinville, Oranmore, Co. Galway, Ireland	Tel: + 353(0) 91 87200	norman.graham@marine.ie
Garcia Rodriguez, Mariano	Instituto Español de Oceanografía, Servicios Centrales, Corazón de María 8, 28002, Madrid, Spain		Mariano.Garcia@md.ieo.es
Gustavsson, Tore Karl-Erik	Fiskeriverket, National Board of Fisheries, Ekonomi och personalenheten, Box 423, 401 26, Göteborg, Sverige	Tel 00-46-31-74-30-300 Fax 00-46-31-74-30-444	tore.gustavsson@fiskeriverket.se
Jennings, Simon	CEFAS Lowestoft Laboratory, Pakefield Road, Lowestoft Suffolk, UK NR33 0HT	Tel.: +44 1502562244 Fax: +44 1502513865	simon.jennings@cefas.co.uk
Kenny, Andrew	CEFAS Lowestoft Laboratory, Pakefield Road, Lowestoft Suffolk, UK NR33 0HT	Tel.: +44 1502562244 Fax: +44 1502513865	andrew.kenny@cefas.co.uk
Kirkegaard, Eskild	DTU Aqua, National Institute of Aquatic Resources, Technical University of Denmark, Charlottenlund Slot, Jægersborg Allé 1, 2920 Charlottenlund, Denmark	Tel: +45 33 96 33 42 Fax: + 45 33 96 33 49	ek@aqua.dtu.dk
Kraak, Sarah (rapporteur)	University College Cork Based at: Marine Institute, Rinville, Oranmore, Co Galway, Ireland	Tel: +353 (0)91 387392 Fax +353 (0)91 387201	Sarah.kraak@marine.ie
Kuikka, Sakari (rapporteur)	University of Helsinki, Department of Environmental Sciences, P.O. Box 65 (Viikinkaari 1), FI-00014 University of Helsinki, FINLAND	Tel.: +358 50 3309233 Fax. +358-9-191 58754	skuikka@mappi.helsinki.fi
Martin, Paloma	CSIC Instituto de Ciencias del Mar Passeig Marítim, 37-49 08003 Barcelona Spain	Tel: 34.93.2309500 direct line : 34.93.2309552 Fax: 34.93.2309555	paloma@icm.csic.es

Name	Address	Tel.	Email
STECF members			
Malvarosa, Loretta	Irepa onlus via San Leonardo, trav. Migliaro Salerno - Italia	Tel: 0039 089 338978 Fax: 0039 089 330835	malvarosa@irepa.org
Motova, Arina	European Regional Policy Institute, S. Konarskio str. 49, Vilnius LT-03123. Lithuania	Tel.: +370 612 19519	arina.motova@erpi.lt
Murua, Hilario	AZTI - Tecnalia / Unidad de Investigación Marina, Herrera kaia portualdea z/g 20110 Pasaia (Gipuzkoa), Spain	Tel: 94 6574000 (Ext. 821) Fax: 94 6572555	hmurua@azti.es
Nord, Jenny (rapporteur)	The Swedish Agency of Marine and Water Management (SwAM)	Tel. 0046 76 140 140 3	Jenny.nord@havochvatten.se
Nowakowski, Piotr	West Pomeranian University of Technology – Faculty of Food Science and Fisheries, Department of Fishing Technique, Szczecin		piotr.nowakowski@zut.edu.pl
Prelezzo, Raul (rapporteur)	AZTI - Tecnalia / Unidad de Investigación Marina Txatxarramendi Ugartea z/g 48395 Sukarrieta (Bizkaia), Spain	Tel: 94 6029400 Ext: 406- Fax: 94 6870006	rprellezo@suk.azti.es
Sala, Antonello	Fishing Technology Unit National Research Council (CNR) Institute of Marine Sciences (ISMAR) - Fisheries Section Largo Fiera della Pesca, 1 60125 Ancona - Italy	Tel: +39 071 2078841 Fax: +39 071 55313	a.sala@ismar.cnr.it
Scarcella, Giuseppe	Environmental Management Unit National Research Council (CNR) Institute of Marine Sciences (ISMAR) - Fisheries Section Largo Fiera della Pesca, 1 60125 Ancona - ITaly	Tel: +39 071 2078846 Fax: +39 071 55313	g.scarcella@ismar.cnr.it
Simmonds, E. John	Consultant, Aberdeen, Scotland		ejsimmonds@gmail.com
Somarakis, Stylianos (rapporteur)	Department of Biology University of Crete Vassilika Vouton P.O. Box 2208 71409 Heraklion Crete Greece	Tel.: +30 2610 394065, +30 6936566764	somarak@biology.uoc.gr
Stransky, Christoph (rapporteur)	Johann Heinrich von Thünen Institute [vTI] 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@vti.bund.de
Theret, Francois (rapporteur)	Scapêche 17 Bd Abbé Le Cam 56100 Lorient France		ftheret@comata.com
Ulrich, Clara (rapporteur)			

Name	Address	Tel.	Email
STECF members			
Vanhee, Willy (rapporteur)	CLO-Sea Fisheries Department Ankerstraat, 1 8400 Oostende Belgium	Tel 00-32-59-34-22-55 Fax 00-32-59-33-06-29	willy.vanhee@ilvo.vlaanderen.be
van Oostenbrugge, Hans	Landbouw Economish Instituut-LEI, Fisheries Section, Burg. Patijnlaan 19 P.O.Box 29703 2502 LS The Hague The Netherlands	Tel:+31 (0)70 3358239 Fax: +31 (0)70 3615624	Hans.vanOostenbrugge@wur.nl

External experts			
Balguerias, E.	Instituto Espanol de Oceanografia (IEO), Corazon de Maria 8, 28002 Madrid, Espana	Tel. +34 91 342 11 11/12 Fax: +34 91 555 19 54	director@md.ieo.es
Connolly, Paul	The Marine Institute Oranmore 1, Galway Ireland		Pconnolly@marine.ie
Solari, Aldo P.		Tel. +34 636 867 732	aldo.solari@fisheries.es

European Commission			
Ataide Dias, Rodrigo	DG MARE, C2		Rodrigo.ATAIDE-DIAS@ec.europa.eu
Cunningham, Louise	DG MARE, C2		
Doerner, Hendrik	Joint Research Centre JRC, STECF secretariat	Tel: +39 0332789343 Fax: +39 03329658	Hendrik.doerner@jrc.ec.europa.eu Stecf-secretariat@jrc.ec.europa.eu
Doignon, Gilles	DG MARE, A2		
Dross, Nicolas	DG MARE, B1		
Duarte, Rafael	DG MARE, B1		
Goldmanis Edgars	DG MARE, E2		Edgars.GOLDMANIS@ec.europa.eu
Griffin, Roy	DG MARE, C2		
Kiss, Ilona	Joint Research Centre JRC, STECF secretariat		Stecf-payments@jrc.ec.europa.eu
Markovic, Laurent	DG MARE, C2		
Patterson, Kenneth	DG MARE, A2		
Reeves, Stuart	DG MARE, E2		Stuart.REEVES@ec.europa.eu
Rihan, Dominic	DG MARE, A2		Dominic.RIHAN@ec.europa.eu
	DG MARE		
Schmidt, Stefanie	DG MARE, A2		Stefanie.SCHMIDT@ec.europa.eu
Schutyser, Frederik	DG MARE, C2		

Tritten, Christian	DG MARE, A3		Christian.TRITTEN@ec.europa.eu
JRC experts			
Jardim, Ernesto	Joint Research Centre JRC	Tel: +39 033278 5311 Fax: +39 03329658	Ernesto.jardim@jrc.ec.europa.eu
Rätz, Hans-Joachim	Joint Research Centre JRC	Tel: +39 0332786073 Fax: +39 03329658	hans-joachim.raetz@jrc.ec.europa.eu

European Commission

EUR 25303 EN – Joint Research Centre – Institute for the Protection and Security of the Citizen

Title: 39th PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-12-01)

Author(s):

STECF members: Casey, J., Abella, J. A., Andersen, J., Bailey, N., Bertignac, M., Cardinale, M., Curtis, H., Daskalov, G., Delaney, A., Döring, R., Garcia Rodriguez, M., Gascuel, D., Graham, N., Gustavsson, T., Jennings, S., Kenny, A., Kirkegaard, E., Kraak, S., Kuikka, S., Malvarosa, L., Martin, P., Motova, A., Murua, H., Nord, J., Nowakowski, P., Prellezo, R., Sala, A., Scarcella, G., Simmonds, J., Somarakis, S., Stransky, C., Theret, F., Ulrich, C., Vanhee, W. & Van Oostenbrugge, H.

JRC experts: Rätz, H.-J., Jardim, E.J.

Luxembourg: Publications Office of the European Union

2012 – 109 pp. – 21 x 29.7 cm

EUR – Scientific and Technical Research series – ISSN 1831-9424 (online), ISSN 1018-5593 (print)

ISBN 978-92-79-24753-8

doi:10.2788/23845

Abstract

The Scientific, Technical and Economic Committee for Fisheries hold its 39th plenary on 16-20 April 2012 in Brussels (Belgium). The terms of reference included both issues assessments of STECF Expert Working Group reports and additional requests submitted to the STECF by the Commission. Topics dealt with ranged from fisheries economics to management plan evaluation issues.

LB-NA-25303-EN-N

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new standards, methods and tools, and sharing and transferring its know-how to the Member States and international community.

Key policy areas include: environment and climate change; energy and transport; agriculture and food security; health and consumer protection; information society and digital agenda; safety and security including nuclear; all supported through a cross-cutting and multi-disciplinary approach.

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.

Publications Office

ISBN 978-92-79-24753-8

9 789279 247538