
JRC SCIENTIFIC AND POLICY REPORTS

# 41st PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-12-03)

PLENARY MEETING,
5-9 November 2012, Brussels

Edited by John Casey & Hendrik Doerner

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## PLENARY MEETING

## 5-9 NOVEMBER 2012, BRUSSELS

## 1. INTRODUCTION

The STECF plenary took place at the Centre Borschette, Brussels (Belgium), from 5 to 9 November 2012. The Chairman of the STECF, Dr John Casey, opened the plenary session at 9:00h. 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 9 November.

## 2. LIST OF PARTICIPANTS

The meeting was attended by 30 members of the STECF, five external experts, and four JRC personnel. 11 Directorate General Maritime Affairs and Fisheries personnel (DG MARE) attended parts of the meeting. Section 8 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:
Didier Gascuel
Hilario Murua
Jenny Nord
Christoph Stransky
Clara Ulrich

## 3. INFORMATION TO THE PLENARY

### 3.1. STECF plenary – information from the secretariat

The secretariat informed the Committee that Arina Motova resigned from the STECF.

### 3.2. STECF plenary – STECF reports searching and tracking

The secretariat reiterated the information that reports of the STECF released in the format of JRC Scientific and Technical Reports or JRC Scientific and Policy Reports can be assessed on:

1. the dedicated STECF report section on the STECF web site (https://stecf.jrc.ec.europa.eu/reports)

2. the JRC publication repository: http://publications.jrc.ec.europa.eu/repository/

3. EU book shop: http://bookshop.europa.eu/en/home

**Report pages on the STECF web site**

The STECF report pages on the STECF website include all reports released by the STECF and its predecessor the STCF. Reports are sorted in categories. Reports released before 2005 are accessible in the category "historic report" and date back to the 1980s. The report pages do not yet contain a text search facility. Guidance on how to cite STECF reports is provided.

List of categories with small descriptions:

- **Plenary Meeting Reports**
  Plenary reports contain STECF's evaluations of expert working group reports and advice/responses of the STECF on diverse requests from the Commission.

- **Data Collection Framework (DCF/DCR)**
  Contains the reports related to the DCR/DCF. The reports refer to topics such as evaluation of national programmes, indicators, review of surveys, data quality aspects, etc.

- **Economic analysis (fleet, processing, aquaculture)**
  Contains the reports referring to topics such as the annual economic reports on the profitability of EU fleets, the fish processing sector, etc.

- **Evaluation of Effort Regimes**
  Contains the reports referring to the evaluations of fishing effort regimes regarding e.g. Annex IIA of TAC & Quota Regulations, Celtic Sea, Deep Seas, etc.

- **Management Plans; impacts and evaluations**
  Contains the reports referring to topics such as multi-annual management plan evaluations, impact assessments, harvest control rules (HCRs), etc.

- **Mediterranean & Black Sea Stock Assessments**
  Contains the reports referring to the assessments of Mediterranean and Black Sea stocks conducted by the STECF.

- **Review of Scientific Advice for Stocks**
  Contains reports referring to reviews of scientific advice on stocks and fisheries provided by the STECF.

- **Balance between capacity and fishing opportunities**
  Contains the reports referring to STECF's reviews of national reports on Member States efforts to achieve balance between fleet capacity and fishing opportunities.

- **Environmental Impacts**
  Contains the reports referring to topics such as by-catches of cetaceans, sensitive habitats, etc.

- **Discards**
  Contains the reports referring to topics such evaluation and reduction of discarding practices.

- **Technical measures**
  Contains the reports referring to topics such as gear selectivity and other technical measures.

- **Strategic issues**
  Contains the reports referring to topics such as the ecosystem approach to fisheries management, CFP reform, etc...

- **Other**
  Contains all reports that do not found a place into the previous listed categories.

- **Historic reports (before 2005)**
  Contains the historical reports released before 2005. The historical reports are sorted in the same categories as listed above. They have been inserted into the system by a scanning procedure and for this reasons they are searchable only by 'title' and 'description'.

- **Data table of reports**
  Contains the electronic annexes (data tables) of STECF reports. Also provides link to the Scientific Fisheries Data dissemination tool.

**The JRC Publications Repository – search tool**

All STECF reports published in the JRC report format (since 2008) can be accessed on the JRC Publication Repository after they receiving publication identifiers (doi, EUR, ISBN no.) and are registered by the EU publication office.
Link to the tool is: http://publications.jrc.ec.europa.eu/repository/
This tool includes a search function and tracked report can be sorted e.g. by relevance or year of publication.

### 3.3. STECF plenary – lunchtime conference on STECF at DG MARE

The secretariat informed the Committee that a lunchtime conference "*Scientific advice for fisheries management under the CFP – the STECF*" at DG MARE took place on 5 November. Hendrik Doerner (JRC, STECF secretariat) and John Casey (CEFAS, STECF chair) were presenters.

Presentation outline:
DG MARE is the European Commission's department responsible for the implementation of the CFP. The CFP explicitly requires "taking into account available scientific, technical and economic advice". Accordingly, Commission proposals have to be based on scientific advice

and the implementation of the CFP requires the assistance of highly qualified scientific personnel. For that purpose, the Scientific, Technical and Economic Committee for Fisheries (STECF) was established by the Commission which should consult STECF at regular intervals on matters pertaining to conservation and management of living aquatic resources. The Commission should take such advice into account when presenting proposals on fisheries management under the CFP Regulation. Since 2005 the JRC has provided the secretariat of the STECF. JRC also supports the scientific advisory process by servicing data calls though the DCF on behalf of DG MARE feeding mainly into the work of STECF and by providing scientific expertise e.g. by chairing Expert Working Groups of the STECF. The seminar aimed to provide an overview of the history, role, working procedures and nature of advice provided by the STECF. The presenters tried to address the complete circle (from drafting ToRs to delivery of advice) and explained who should do what and when, what can be expected and what cannot, what could be done to make this DG MARE/STECF/JRC joint exercise even more efficient and effective.

A PDF of the presentation was provided to the committee members and circulated in DG MARE.

### 3.4. STECF plenary – JRC "Scientific Fisheries Data" dissemination tool released

At the July 2012 STECF plenary meeting JRC presented to the STECF a pilot tool called the "Scientific Fisheries Data" dissemination tool, developed by JRC. This new instrument aims at providing the scientific community, policy makers, authorities and the general public with the fisheries data collected in the European Union in a more user-friendly, transparent and interactive manner. The web-based dissemination tool contains economic data on the performance of the fishing fleet, biologic data on landings and discards and data on fishing effort. From 2008 to date, such data have been available solely as Tables annexed to the reports produced by the STECF. From now on, the "Scientific Fisheries Data" dissemination tool, will allow interested parties easy access to information on catches, fishing effort and economics of the EU fishing fleet in electronic form. In response to the feedback received from the STECF membership, JRC carried out a further update of the tool before displaying on the public website.

JRC informed the STECF membership that the "Scientific Fisheries Data" dissemination tool was launched in October 2012.

The tool can be accessed via the report section of the STECF web site on http://stecf.jrc.ec.europa.eu/data-reports, or directly on https://fishreg.jrc.ec.europa.eu/web/datadissemination/home .

### 3.5. STECF plenary – Overview on political agenda

DG MARE provided an overview of topical and medium term policy issues driving the Commission's agenda. The presentation can be found on the document section of the meeting's web site: http://stecf.jrc.ec.europa.eu/web/stecf/plen03 .

### 3.6. STECF plenary – SWWRAC initiative

Following the cancellation of the EWG1218 the SWWRAC called a web conference to compile "expected results from on-going projects and related deadlines to support planning the development of long term management plan for Bay of Biscay and Iberia Waters". The information compiled by the SWWRAC was sent to the STECF plenary in the form of a set of tables included in an excel spreadsheet (to be found in the background document section of the meeting's website on: http://stecf.jrc.ec.europa.eu/web/stecf/plen03).

A preliminary analysis of the summary information provided by SWWRAC is presented in Figures 3.6.1 to 3.6.3, which show that deliverables will be achieved between 2012 and 2016, being most of them planned for 2014-2015.

STECF considers that having a clear picture of existing projects, deliverables and case studies, is helpful and valuable for the future planning of STECF activities regarding LTMP for BoB and IB.

STECF suggests the Commission to take note of the deliverables' dates when planning activities regarding the development of management plans for these areas.

**Figure 3.6.1 - Case study area**

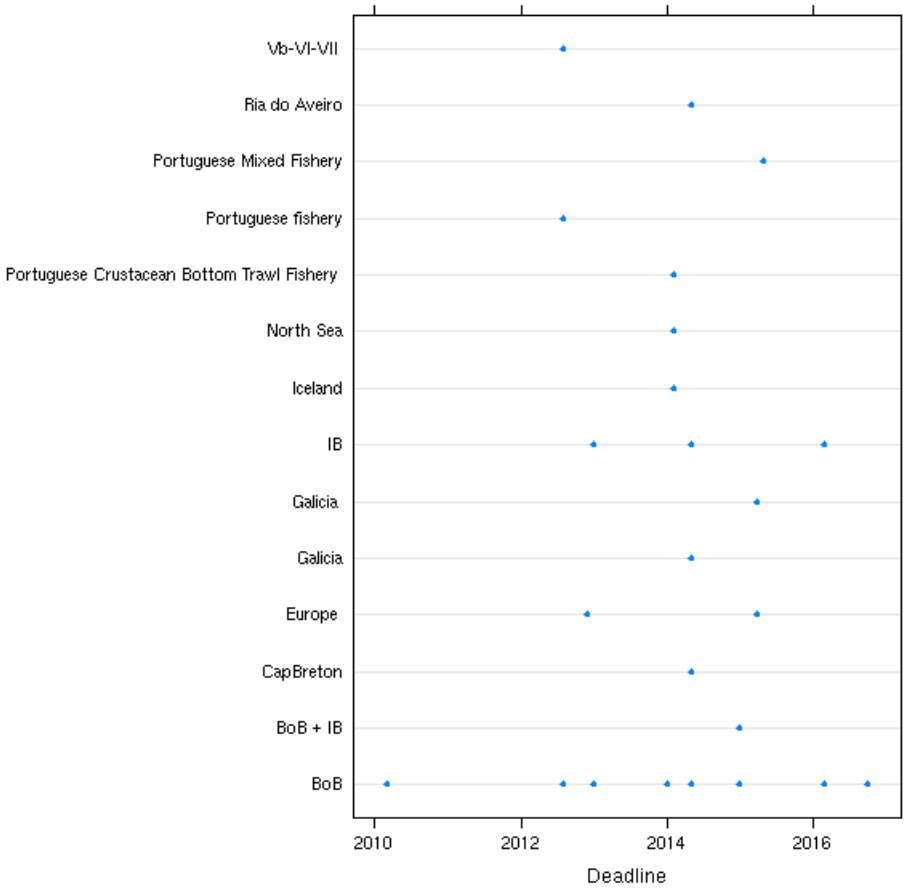


Figure 3.6.2 - Case study dealing with economics

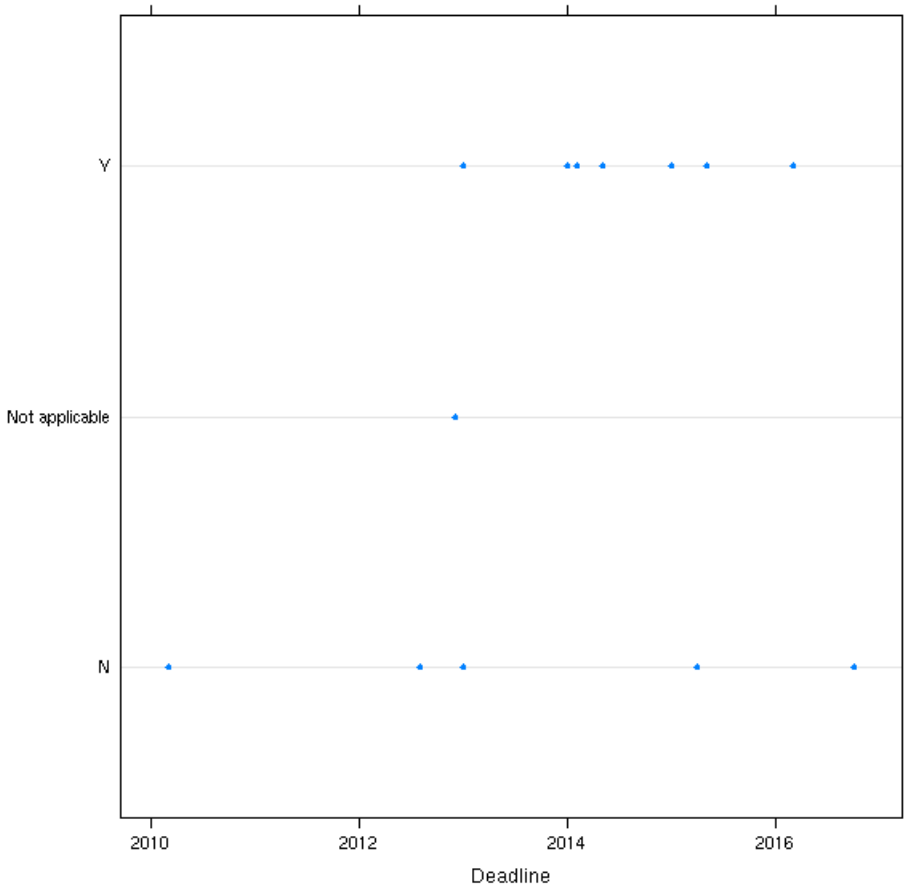
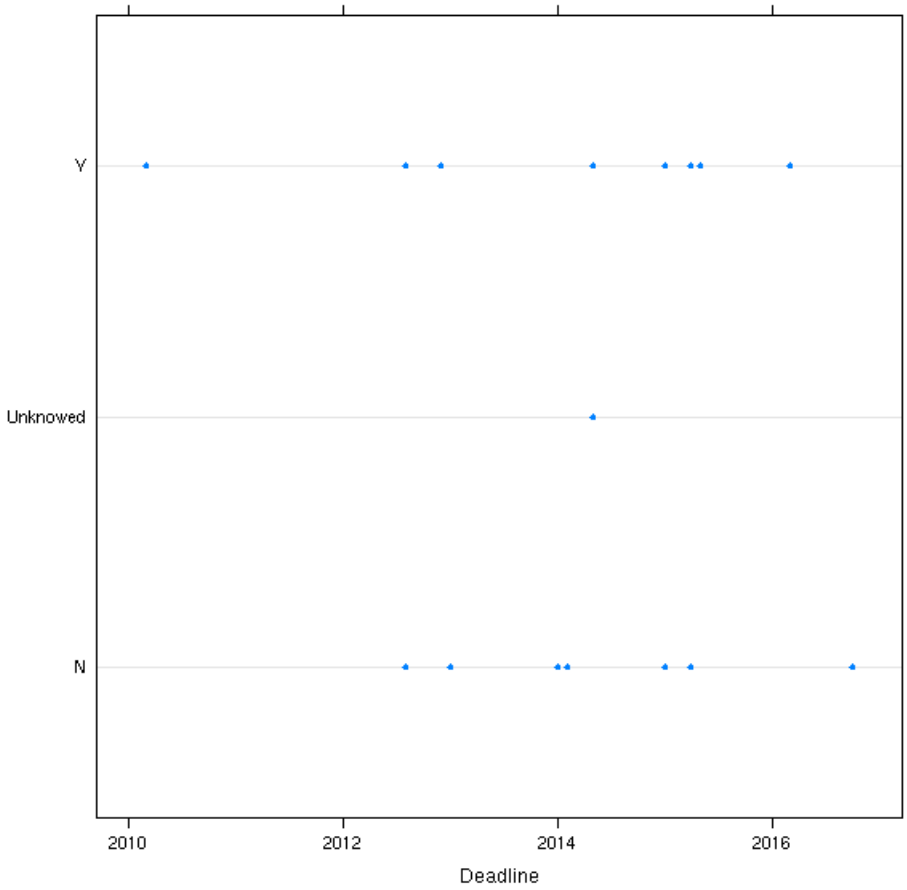


Figure 3.6.3 - Case study dealing with multispecies




### 3.7. STECF plenary – exchange with Commission on economic analyses

DG MARE asked for an exchange of views on some strategic aspects for future economic work in STECF: what new topics of economic and social analysis can be developed in the STECF, bioeconomic modeling in STECF exercises, overcapacity analysis of EU fleets, long term economic projections, suggestions for the special topic on the 2013 Annual Economic Report and views and proposals on how to further develop the socio/economic scientific advice.

The discussion was attended by one representative from DG MARE and included a discussion on new ways that STECF might help DG MARE to respond to minor *ad hoc* requests for analyses.

STECF suggests that such requests would best be dealt with in plenary meetings but stresses that this would require proper co-ordination and planning via the STECF Bureau.

The other strategic aspects listed above were not discussed in detail.

## 4. STECF INITIATIVES

### Feedback mechanism

STECF receives requests from DG Mare which need to be answered in plenary or by written procedure. However, no regular feedback mechanism to the STECF has yet been established. For example, in providing its advice, STECF occasionally suggests or recommends further work in form of studies be undertaken to fully address a regular or specific request, and it would be extremely useful if DG MARE were to provide feedback to the committee on whether such work is likely to be issued, by when and how it is intended that it be carried out. The STECF scientific advisory process would profit from an improved two way communication in areas of more strategic nature such as the dedicated section on the future of the advisory process provided by the STECF in its PLEN-12-02 report1.

STECF concludes that it would be very helpful for the further improvement of the advisory process to install a regular feedback process where e.g. the STECF focal point within DG MARE reports back to STECF on any actions taken by DG MARE in response to suggestions and/or recommendations of the STECF.

### Information on social issues

The need for obtaining information on social issues related to fisheries management has increasingly been acknowledged through stated policy objectives by the European Union. The Common Fisheries Policy (CFP) reform has stated the objective of securing economic and social viability while ensuring long-term environmental sustainability. The European Maritime Fisheries Fund (EMFF) has an objective of the sustainable and inclusive development of communities depending on fisheries. Additionally, there are explicitly stated European Union political objectives implying an increased emphasis on protecting small-scale fishing or 'keep fleets in remote areas'. Finally, the Commission drafted the need for social data in a Non Paper on the future of the DCF 2014-2020.

Impact assessments of policy changes and fisheries management plans, including both social and economic considerations, seem to be required in the future. However, so far there has been limited focus on defining data collection needs for social indicators, and available expertise to undertake thorough analyses is limited. Therefore, increased effort will be required, if future requests on how to reach the policy objectives are to be adequately addressed.

The social data needed to conduct impact analyses should be collected as far as possible under the new DC-MAP. However, beforehand it is necessary to investigate, how to define; measure and collect the social indicators. One of the items of EWG12-15 was to comment on a comprehensive study on social indicators commissioned by DGMARE ("L'identification des indicateurssociaux pour le secteur de la pêchedansl'UnionEuropéenne"). EWG-12-15 also undertook discussions on which social indicators should be included in the new DCMAP.

1Scientific, Technical and Economic Committee for Fisheries (STECF) –40$^{th}$Plenary report meeting report (STECF-PLEN-12-02). (eds. Casey, J. & Doerner, H.). 2012. Publications Office of the European Union, Luxembourg, EUR 25411 EN, JRC 73903, 124 pp.

Currently, it appears that the use of the term "social" is considered primarily in relation to the social effects of economic developments in the fleet. If the meaning of social will be seen to be broader in the future CFP, this should be reflected in the future data collection thus allowing for more elaborated analyses on social issues.

There are several FP7 research projects (MEFEPO, SOCIOEC and MYFISH), which include research on social objectives to assess policy and management impacts. However, these projects are not giving direct advice related to the future collection of social data. STECF therefore considers that a study be initiated by the Commission to closely investigate what social data to collect, how they should be defined, their potential use and how to collect them. This would facilitate future work related to address questions of the future development of the fishing sector and the development of coastal communities.

Furthermore, STECF notes the impending deadline for finalizing the indicator list and therefore stresses that would be appropriate to include relevant social indicators in the new DC MAP 2014-2020, once such indicators have been identified.

# 5. ASSESSMENT OF STECF EWG REPORTS

## 5.1. STECF EWG 12-10: Assessment of Mediterranean Stocks Part I

**Request to the STECF**

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

**STECF observations**

STECF notes that all ToRs were addressed, with the exception of ToR f. The major ToRs (a-d) were addressed through the assessments of 25 demersal stocks and their fisheries, which resulted in an estimate of the current exploitation rate compared to $F_{MSY}$. All stock assessed were classified as being exploited unsustainably. The assessment of 2 stocks did not result in a conclusion regarding their exploitation status due to data deficiencies.

STECF also notes that EWG 12-10 devoted considerable time at the meeting to evaluate the quality of the data submitted by Member States in response to the DCF Mediterranean data call in 2012 (ToR e).

The EWG 12-10 undertook revised assessments of the stocks of hake and red mullet in the Aegean and Ionian seas, but rejected the results because of unsatisfactory model fit. Most likely due mainly to the shortness of the time series, the lack of contrasting periods of over- and under- exploitation and the lack of a stock biomass estimate at low level of exploitation. Furthermore, the models were generally found to explain a very small part of the variance observed in the dataset.

STECF noted that its recent assessments of Mediterranean fisheries and stocks of demersal and small pelagic species have delivered very useful information on their past and recent status.

**STECF conclusions**

STECF endorses the findings and conclusions of the Report of the STECF-EWG 12-10 and wishes to draw particular attention to the following:

23 of the stocks assessed by the EWG 12-10 are being exploited at a rate that exceeds the rate that will deliver maximum sustainable yield (MSY). The assessment of two stocks was inconclusive due to data deficiencies.

In summary:

- **two** stocks in GSA 5, Norway lobster (*Nephrops norgevicus*) and Common octopus (*Octopus vulgaris*)
- **three** stocks in GSA 6, Blue whiting (*Micromestius poutassou*), Red shrimp (*Aristeus antennatus*) and Black-bellied anglerfish (*Lophius budegassa*)
- **three** stocks in GSA 7, European hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*) and Black-bellied anglerfish
- **three** stocks in GSA 9, Blue whiting, Sardine (*Sardina pilchardus*) and Poor cod (*Trisopterus minutus*)
- **one** stock of Spottail mantis shrimp (*Squilla mantis*) in GSA 10
- **two** stocks of Hake and Pink shrimp (*Parapaeneus longirostris*) in GSA 11
- **two** stocks of red mullet and Spottail mantis shrimp in GSA 17
- **four** stocks of Norway lobster, Pink shrimp, Red mullet and Spottail mantis shrimp in GSA 18
- **three** stocks of Common Pandora (*Pagellus erythrinus*), Black-bellied anglerfish and Red mullet in GSA 15&16
- stocks of and Spottail mantis shrimp in GSA 6 and 7 could not be assessed due to data limitations

STECF concludes that in order to achieve MSY, effort and/or catches of the fleets' exploiting the above stocks needs to be reduced to levels that will deliver fishing mortality rates at or below their respective $F_{MSY}$ reference values.

**STECF recommendations**

As a result of its review of the Report of the STECF-EWG 12-10 on assessment of Mediterranean stocks, the STECF has drawn the following recommendations:

1. In an attempt to ensure future data quality and completeness, STECF recommends that DG MARE communicate the detailed comments on data quality and

completeness contained in section ** of the EWG 12-10 report to Member States' DCF program national correspondents.

2. Noting that the time and resources required to undertake stock assessments of resources in the Mediterranean are finite and that there is little point in undertaking annual assessments for many of the resources, STECF proposes that the annual requests for stock assessments and advice be focused on a smaller number of stocks. STECF considers that as a rule of thumb, the Committee is unable to adequately deal with more than about 30 assessments per year and proposes that this could be achieved if revised assessments were undertaken biennially. Adopting such an approach would enable better coordination and planning including the appointment of stock co-ordinators and securing availability of appropriate expertise. STECF recommends that DG MARE devise a prioritized biennial schedule for assessments and discuss how such a programme can be incorporated into the annual STECF work programme at the forthcoming STECF Bureau meetings.

## 5.2. STECF EWG 12-11 and EWG 12-21: Review of national reports on balance between fishing capacities and fishing opportunities

**Request to the STECF**

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

**Introduction**

The report of the Expert Working Group on Review of national reports on Member States efforts to achieve balance between fleet capacity and fishing opportunities (EWG -12-11) was reviewed by the STECF during its 41th plenary meeting held from 5 Nov to 9 Nov, 2012 in Brussels, Belgium. The following observations, conclusions and recommendations represent the outcomes of that review.

**STECF observations**

The report includes the work of two EWGs. The tasks of these EWG were to;

1 Collate technical, economic and biological indicators, based on DCF economic fleet segments, and based on the reports provided by MS and compare EWG opinions to MS own opinions.

2 Evaluate MS annual reports in terms of Compliance with Art. 14 of Council Regulation No. 2371/2002 and Articles 13 and 14 of Regulation 1013/2010.

The EWG assessed balance indicators for the period 2008-2010 (or for some cases, 2009-2011) using the following indicators:

- The Return on Fixed Tangible Assets.
- The ratio of current revenue to break-even revenue (CR/BER).
- The capacity utilisation per fleet segment (average days at sea / maximum observed or maximum theoretical days at sea).
- A "sustainable harvest indicator": average fishing mortality F/Fmsy for all assessed stocks that were landed by the fleet segment, weighted by the segment's landing value of the included stocks.

Regarding task 1, the exercise was done for 92 fleet segments from 14 MS, representing more than 70% of the total EU landings value. In addition, the EWG examined the extent to which registered vessels in the 14 MS were inactive. This was done because inactive vessels cannot be allocated to a fleet segment, so cannot be considered in fleet segment balance indicators, but they do represent additional capacity that is not utilised. The EWG compared the outcomes with balance indicators presented in the MS reports and drew conclusions about inconsistencies. EWG 12-21 was asked not to judge overall balance between fishing fleets and fishing opportunities but rather to simply present the values of the different indicators and comment on values of individual indicators.

The EWG concluded that there is substantial variation in the values of the balance indicators among fleet segments and MS, both in the MS reports and in the independent analysis. From a technical point of view, there is a large number of fleet segments whose capacity is under-utilised. Comparison of the EWG analysis and the MS reports is in many cases, complicated by differences in definitions of fleet segments reported and because of differences in methods used to calculate indicators. In cases where results could be compared, results were not always consistent.

With regard to task 2, the EWG concluded that there was further overall improvement in providing the required elements and the quality of the required elements in MS reports on the balance between capacity and fishing opportunities compared to the 2010 reports. Despite this improvement, there is still considerable scope for further improvements by some MS, e.g. in the report structure. Moreover, some MS failed to present an overall opinion on whether the capacity of their fleet was in balance with its fishing opportunity. In some cases, the MS' opinion on balance was not based on or supported by the evidence presented in its report.

STECF notes that there were two EWG meetings and an ad hoc contract and that the TOR were not fully addressed. The main reasons for not completely answering the ToR are the request being new, the limited availability of data and the amount of work required, particularly due to the high number of fleet segments. Because of the time limitations and the priority to work on the data and extend the number of fleet segments included in the analysis, the EWG did not have time to thoroughly discuss the outcomes with regard to the approach taken and the utility of the indicators.

STECF notes that not all indicators used by the EWG to assess the balance question were from the Commission guidelines on balance indicators. The biological and the social indicators were not used. Instead, the "sustainable harvest indicator" was provided by one of

the experts who had calculated this indicator under the terms of an *ad hoc* contract with DG Mare before the second EWG. In the EWG report different aspects of the interpretation and limitations of the indicators are discussed. However, no justification for the change in indicators is given. Moreover, the report does not provide an assessment of the suitability of the indicator of "sustainable harvest indicator", whereas this indicator was only proposed recently in the EWG on ecosystem approach (STECF EWG 11-13) and has not yet been thoroughly considered and approved.

STECF also notes that the "sustainable harvest indicator" integrates information on both the harvest rate of the stocks, the landings composition, and the prices of the various fish species, which makes it complex to draw clear conclusions from the resulting indicator values, and may mask possible unsustainable fishing. E.g. for different fleet segments (Estonia TM24-40, Latvia TM VL24-40, France TM VL40-XX), the indicator score is around one, which means that on average the fleet segments are not relying economically on overexploited stocks, whereas information presented also states that most species landed by these fleet segments are overexploited.

STECF observes that if a particular fleet segment has a high value for the "sustainable harvest indicator", it does not necessarily mean that the fleet segment in question is over-capacity for its permitted or its sustainable harvest opportunity. Reducing the number of vessels in a fleet segment with a high value for this "sustainable harvest indicator" will not necessarily improve (reduce) the value of the indicator. Although the indicator may flag up a problem within one fleet segment, the solution to the problem does not necessarily lie solely within that particular fleet segment.

STECF observes that, the "sustainable harvest indicator" has only been calculated for a limited number of (mainly North European) fleet segments. This results from the limited availability of stock assessment results and the decision by the EWG to only present values for segments with 40% or more of their landings value coming from assessed stocks. STECF supports the decision of the EWG to set a threshold, in order to present representative results, but observes that this then limits the usefulness of the indicator for broad implementation. STECF notes that in the updated Commission guidelines on balance indicators, alternative biological indicators are proposed in cases where only limited biological information is available, but that these were not used by the EWG.

STECF observes that, as the EWG used the stock information from the STECF review of advice report for 2012, stock status available in October 2011 was used for the "sustainable harvest indicator", which might be outdated. This is particularly a concern for stocks assessed by GFCM due to the time delay between the stock assessment working group and the final adoption of assessments by the GFCM scientific advisory committee (GFCM-SAC).

STECF observes a difference in some years between the total number of vessels from the DCF and the official fleet register – this was not presented in the EWG report.

STECF notes that the ability of the EWG to calculate the full complement of indicators was compromised by the absence of appropriate data submission from some Member States. The JRC data coverage reports provide overviews of the timeliness and contents of the Member States' data submissions in response to data calls launched by the Commission under the DCF to support STECF. These reports are accessible on:
http://datacollection.jrc.ec.europa.eu/index.htm.

**STECF conclusions**

STECF concludes that while it should be possible for MS to provide indicator values, it is preferable to have independent calculation of balance indicators because independent calculation provides consistent methodology and wider coverage of fleet segments. Furthermore, it would be helpful if MS were required to include such independently-calculated indicators in their National reports and to take them into account when drawing conclusions on balance between their fishing capacity and their fishing opportunities. This would require changes in the timing of the EWG meeting and the deadline for the National reports.

STECF concludes that the usefulness of the indicator summary in future EWG reports would be enhanced if the calculated balance indicators were those contained in the updated Commission guidelines on balance indicators for MS as approved by STECF PLEN 2012-02.

STECF concludes that the "sustainable harvest indicator" if used in conjunction with other indicators (e.g. technical, economic, social) and other information such as number of overfished stocks in the landings of a fleet segment, may provide a first indicator of possible problems relating to fleet capacity within a fleet segment. The use of a suite of different types of indicators for each fleet segment or vessel length category also mitigates the risk that a fleet segment relying on overfished stocks might not be identified using this indicator alone.

STECF concludes that it would be able to give more useful and informed comments on the value of the "sustainable harvest indicator", if the "sustainable harvest indicator" itself was better understood.

STECF concludes that the approach adopted by the second balance EWG, to provide expert comments on individual indicator values only, was preferable to the approach requested in the ToR of the first EWG, in which experts were asked to draw conclusions on whether and to what extent a fleet segment's fishing capacity was in balance or out of balance with its fishing opportunity.

The summary tables included in the joint report of EWG-12-11/21 (http://stecf.jrc.ec.europa.eu/reports/balance) can be considered as a useful starting point for discussions on reasons for possible overcapacity and possible management actions.

STECF concludes that in order to streamline the process for the production of future STECF reports on balance indicators, it is desirable that the collation of information, quality checking and the calculation of the indicator values are completed before the EWG meeting, as is done in preparation for the AER.

**STECF recommendations**

STECF recommends to the Commission that further work is carried out by an EWG to evaluate, explore and understand the sustainable harvest indicator and its implications for issues of overcapacity so that more useful expert comments can be made based on the value of the indicator.

STECF recommends that in order to facilitate the calculation of the balance indicators, the Commission should ensure that the data required in the DC-map includes the maximum observed number of days at sea per vessel per fleet segment. This would enable the technical indicator to be calculated based on DC-Map data.

STECF reiterates its recommendation from STECF PLEN 2012-02 that the Commission adopts the updated "Guidelines for an improved analysis of the balance between fishing capacity and fishing opportunities" and distribute them to MS.

### 5.3. STECF EWG 12-12: Evaluation of fishing effort management in EU waters – part2

**Request to the STECF**

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

**Introduction**

The report of the Expert Working Group on Evaluation of fishing effort regimes in European Waters Part 2 (EWG -12-12) was reviewed by the STECF during its 41$^{th}$ plenary meeting held from 5-9 November 2012, Brussels, Belgium.

STECF would like to commend the members of the working group on their sterling effort in preparing such a comprehensive report. The leadership and input provided by the chair, Hajo Rätz, is particularly valuable.

STECF notes that the continuing improvements in procedures for automatic and manual checks introduced by the JRC staff have provided the group with more time to address the different ToRs as evidenced by the additional partial F analysis and the exploration of spatial catchability.

The following observations, conclusions and recommendations represent the outcomes of the STECF review.

**STECF comments, observations, and conclusions**

STECF notes that following the first meeting of this Working Group STECF EWG 12-06 (11-15 June 2012 in Lisbon), a report entitled "Scientific, Technical and Economic Committee for Fisheries (STECF) - Evaluation of Fishing Effort Regimes in European Waters Part 1 (STECF-12-09) has been published. Subsequent to that work, however, some of the data used in the production of the report were revised and updated and as a result, the summary tables were amended the report corrected. Furthermore, a number of outstanding tasks and additional terms of reference addressed.

A more complete and substantive report was completed during EWG 12-12 at Barza and this report (reviewed here) now replaces the earlier one.

The improvements documented in the Report of the STECF EWG 12-12 are related to the following:

- addition of the effort regime evaluations related to Western Waters and the Deep Sea (section 5.9).
- updated section 5.3 on the effort regimes in the wider North Sea (Skagerrak, North Sea, 2 EU and Eastern Channel) due to Dutch discard data corrections and additional effort data submission.
- CPUE and LPUE estimates by fisheries and Member States for all regime evaluations provided in digital appendixes to the report. They are available at the meeting's web site:
  http://stecf.jrc.ec.europa.eu/web/stecf/ewg12
- in line with STECF comments during the 2012 summer plenary (40th plenary), provision of updated conversion factors of fishing effort transfers between donor and receiving gear groups covered by the cod plan.
- provision of updated estimates of partial fishing mortalities generated by Member States fisheries in relation to ICES estimates of total removals or catch which generated the total F estimates in the first place.
- exploratory geographical catchability analyses for the cod stocks in the Baltic and the wider North Sea.

STECF reiterates its summer plenary 2012 comments that the Expert Working Group extensively addressed the ToR regarding the fishing effort regime evaluations for the following areas:

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

STECF EWG 12-12 tasks have been supported by the DCF fishing effort data call in 2012. STECF notes a general improvement in data completeness and quality as well as compliance by Member States with data provision deadlines. However, the work of STECF EWG 12-12 was again compromised by some important data omission, submission delays, incomplete data and erroneous data submissions and re-submission. Details about the DCF data call definitions, data quality in 2012 and significant shortfalls as identified by JRC and the experts contributing to the working group are summarized in section 4.

STECF notes that the aggregations of fisheries parameters presented, such as landings, discard estimates and fishing effort are consistent with the fisheries definitions in various

regulations, i.e. annual TAC and Quota regulations and the stock specific multiannual management plans defined in the ToR.

STECF notes that it's evaluations related to the evaluation of the effects of the particular sub-articles 13.2.a-d of the Multiannual Cod Plan, in particular the presentation of fisheries specific fishing effort, landings and discards as well as estimations of partial fishing mortalities have been supported by data called by DG MARE from Member States and provided to STECF EWGs 12-06 and 12-12. Such specific data formats were defined by STECF during its spring plenary in 2012 (39th plenary). While Denmark, France, Germany, and Ireland submitted relevant information on the application of specific provisions of article 13 2.a-d, UK only provided figures of fishing effort by area and gear and only for the TAC year 2011, which is not fully compatible with the calendar year and thus was not used by the STECF EWG. STECF based its assignments of the articles 13 2a-d to the fisheries specific catch and effort data using national declarations provided as background documents.

STECF notes that all resulting fisheries parameters of various fishing effort regimes, including those defined for the outstanding Western Waters and Deep Sea regime evaluations are downloadable at the requested aggregation in the format of digital Appendixes to the present report at the working group's web page: http://stecf.jrc.ec.europa.eu/web/stecf/ewg12.

The STECF EWG 12-12 carried out exploratory evaluations of spatio-temporal catchability patterns for the Baltic and the wider North Sea and noted that the resulting patterns of catchability in both management areas are to be considered provisional and should not be used as a basis for management advice. At present the catch per rectangle is derived from reported landings figures plus an estimate of discards. Catchability is expressed as an index, which represents the risk of an individual fish being caught. In general, it appears that the spatial extent of catchability is wider and more evenly distributed over the various statistical rectangles analysed, than that implied by the spatial distribution of catch and effort for the different fisheries.

STECF notes that the additional ToRs given to EWG 12-12 cover two major elements. The first element requests an evaluation of a particular method as proposed in STECF-12-13[2] to move from an F-based approach in Article 13 of the cod plan, to one based more directly on catch. STECF notes that Article 13 gives the MS the competence to monitor and to manage the partial Fs of the regulated gear groups in-year and requires the MS to justify the buy-back of fishing effort, in particular related to paragraph 13.2.c. STECF has previously commented that use of the fishing mortality rate approach critically depends on the availability of an assessment generating an estimate of fishing mortality. Furthermore, the use of this metric is somewhat 'removed' from the day to day experience of fishermen operating cod catch reduction schemes. STECF notes that the proposed catch based method is simple and theoretically, may work under certain conditions further explained in section 4.11 of the EWG 12-12 Report. Of prime importance is the need for a clear catch target for fishermen to work to and a requirement to fully account for all of their catch.

The second element of the additional ToR deals with catch options for Kattegat and the Irish Sea cod stocks in 2013. The STECF EWG did not provide catch options other than pointing

2 Scientific, Technical and Economic Committee for Fisheries (STECF) - Management plans part 2 - changes to cod plans (STECF-12-13). (eds Simmonds E. J. & Millar, C.). 2012. Publications Office of the European Union, Luxembourg, EUR 25447 EN, JRC 73149, 82 pp.

to the provisions of the existing cod plan. However, the EWG 12-12 Report points out that in the specific case of the Kattegat cod stock, there is a good correlation between deployed effort and harvest rates for the main gear groupings (TR2 of DNK and SWE). While STECF has been unable to identify a direct causality between deployed effort and harvest rate, the observed correlation may indicate that a reduction in deployed effort of regulated gears may result in a reduction in fishing mortality (the effect of effort reductions in passive gears are difficult to estimate). A comprehensive STECF response to the Commission's request on catch options for cod in the Kattegat and the Irish Sea is provided in Section 7.7 of this report.

In the specific case of the Irish Sea cod, the provision of a catch option is more difficult given the available information from ICES. Furthermore, the effects of recent introductions of TR2 gears with improved selectivity should be evaluated and incorporated in any forecast but this is not presently possible. As a first step, STECF has made use of data provided in the EWG 12-12 report to provide a response to this request in Section 7.7 of this report.

Major findings arising from the effort regime evaluations conducted by the STECF EWG are summarized in the following sections, for each of the area reviews undertaken.

**Effort regime evaluation for the Baltic**

STECF notes that fisheries-specific effort and catch (landings and discards) figures by Member States have been updated until and including 2011 and illustrated for both the Western and Eastern Baltic management areas as requested. The process was constrained by some incomplete data submissions in response to the 2012 DCF data call.

STECF notes that the request to estimate the uptake of permitted fishing effort could not be accomplished due to the fact that the data available were not appropriate. The EWG 12-12 has provided a recommendation regarding the specification of data required to undertake such an evaluation. STECF EWG 12-12 notes that if a fishing effort regime in the Baltic is to be maintained, it would be desirable to adopt and report more meaningful gear-specific measures of effective fishing effort that take into account vessel size and or engine power.

In area A (Sub-divisions 22-24), the decreasing trend in reported effort for regulated gear groups over the period 2002-2010, appears to have stabilised at a low level in 2011. Contrarily, the negative trend of gear groups not regulated by fishing effort continued in 2011. In area B (Subdivisions 25-28.2), the fishing effort of regulated and non-regulated gears increased in 2011 compared to the previous two years. In area C (Sub-divisions 29-32), which is not considered important for the management of cod fisheries, non-regulated gears appear to account for only a low proportion of overall cod catches from the area.

Overall, for the entire Baltic, discards of cod are estimated to be less than 10% by weight of the total cod catch. However, discard sample data are relatively poor and it is not clear how representative the estimate of less than 10% is of the true discard rate.

Significant correlations are observed between total fishing mortality of all effort regulated gears and fishing effort measured in kWdays at sea and also between fishery specific partial fishing mortalities and fishing effort in most fisheries. While good correlation does not always mean 'cause and effect', the results here suggest that management of fishing

mortality by fishing effort in units of kWdays may provide a useful auxiliary measure to catch constraints and technical measures.

**Effort regime evaluation for the Kattegat**

STECF notes that all Member States fishing in this area have reported their effort data for 2011, including mesh size range category and derogations and the overall confidence in data coverage, data correctness and the results is high. All countries submitted effort data only for 2011, data for earlier years remained unchanged so there was no revisions to data previously submitted.

Fisheries in the Kattegat are predominantly trawl (TR2) fisheries and are almost exclusively conducted by Denmark and Sweden (86% and 13% of the total regulated effort in 2011 respectively). Beam trawls are prohibited.

There are two derogations in place in Kattegat for TR2, CPart 13 and CPart 11. Since 2010, all Danish fishing activities were performed under the cod plan's provision in article 13.2.c, while all German fishing in gear category TR2 since 2010 fell under the article 13.2.b. Only Sweden reported under the derogation article 11 in gear category TR2, achieving the <1.5% cod catch by using a sorting grid. This represented 61% of the Swedish TR2 effort in Kattegat 2011 and 16% of the total TR2 effort in the area. The Swedish sorting grid was until 2009 under the derogation IIA83b in the old cod recovery plan (R (EC) 40/2008), and since it generates a catch composition that is very different from the TR2 'none' gear group it was decided to keep the old derogation in the tables by derogation of the present report. Both IIA83b and CPart11 are considered non-effort (unregulated) gears and are therefore not included in the effort regulated TR2 gear category in the tables and figures below (R (EC) No 1342/2008). The effort deployed by passive gears (GN1, GT and LL1) is relatively small, with a stable share of around 5% of the total regulated effort since 2005. The effort deployed by unregulated gear categories (including effort under the derogation CPart11) was 27% of the total effort in 2011.

According the ranked regulated gear groups' contributions to cod catch and landings in 2011, only the TR2 is estimated to exceed the level of the cumulative 20%.

STECF notes that information on fully documented fisheries FDF was only provided by Sweden and only for 2010. FDF fishing effort and catches appear negligible.

The estimated cod CPUE and respective effort transfer factors between donor and receiving regulated gear groups based on averages 2009-2011 are given in Table 5.3.1. Red cells have inadequate discard information supporting the catch estimate so that the conversion factor is unreliable. Yellow cells indicate sufficient sampling and green cells good sampling information.

Table 5.3.1. Effort transfer factors for different gear groupings

| Kattegat | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | donor gear | receiving gear | | | | | | | |
| | | GN1 | GT1 | LL1 | TR1 | TR2 | TR3 | | CPUE |
| 3a | GN1 | | 1 | 1 | 0.529 | 0.822 | 1 | | 74 |
| 3a | GT1 | 0.108 | | 1 | 0.057 | 0.089 | 1 | | 8 |
| 3a | LL1 | 0 | 0 | | 0 | 0 | 1 | | 0 |
| 3a | TR1 | 1 | 1 | 1 | | 1 | 1 | | 140 |
| 3a | TR2 | 1 | 1 | 1 | 0.643 | | 1 | | 90 |
| 3a | TR3 | 0 | 0 | 1 | 0 | 0 | | | 0 |

STECF notes that the correlations between the summed partial harvest rates for catch, landings and discards of the major fisheries and their estimated fishing efforts are highly significant. The partial harvest rates of the dominating Danish and Swedish TR2 fisheries also closely correlated with their specific effort estimates in kW days at sea. Only the Danish gill netters are lacking such correlation. While good correlation does not always mean 'cause and effect', the results here suggest that management of fishing mortality by fishing effort in units of kWdays may provide a useful auxiliary measure to catch constraints and technical measures. STECF notes however, that continued application of the effort regime under the provisions of the long-term management plan for cod stocks, is likely to lead to a significant reduction of fishing for regulated gear groups within a few years.
STECF notes that there are indications that the Danish TR2 fishery operating exclusively under Article 13.2.c has contributed to a reduction in harvest rate in 2011, mainly through a reduction in discards.

**Effort regime evaluation for the Skagerrak, North Sea including 2EU and Eastern Channel**

STECF notes that in this area, a substantial part of the effort is deployed by Non-European fleets (primarily Norway), which except for the part dealing with partial fishing mortalities by fishery are not accounted for in the EWG 12-12 Report. Norwegian fishing effort is reported to ICES (ICES, 2012).

Catch and effort data including special conditions in force since 2009 (CPart11 and CPart13) have been provided by all Member States with significant fishing activity in this area. As such, the data are considered to represent a complete account of fishing effort by regulated gears in the area as reported by national administrations.

Overall in 2011, regulated gears represented 69% of the total effort in area 3b. The main gears in management area 3b are demersal trawls/seines and beam trawls (51% and 42% of total 2011 regulated effort respectively). Nominal effort by both of these gear types has decreased since 2003.

STECF notes that only TR1 and TR2 gears exceed the maximum levels of fishing effort (kW days at sea) available each year as prescribed by the cod plan. This reflects the fact that it is the fisheries using these gears that have utilised the provisions of Article 13 and bought back fishing effort. The other gears remain at or significantly below their maximum available levels.

According to the ranked regulated gear groups' contributions to cod catch and landings in 2011, only the TR1 and TR2 are estimated to exceed the level of the cumulative 20%.

STECF notes that in 2011, fully documented fisheries FDF still represent a small proportion of the total effort (4.9%), but the proportion has increased compared to previous years All countries operating FDF contributed to this increase. Cod catches were recorded in fisheries using TR1, TR2, GN1 and Pots, but most catches (95.3% of the total FDF cod catches) were made by vessels using the TR1 gear. In total, 25% of cod catches by EU vessels were taken during FDF trials; 41%, 35%, 30% and 20% of English, Scottish, Danish and Dutch cod catches respectively.

The estimated cod CPUE (average 2009-2011) and respective effort transfer factors between donor and receiving regulated gear groups are given in Table 5.3.2. Red cells have inadequate discard information supporting the catch estimate so that the conversion factor is unreliable. Yellow cells indicate sufficient sampling and green cells good sampling information.

Table 5.3.2. Effort transfer factors for different gear groupings

| | BT1 | BT2 | GN1 | GT1 | LL1 | TR1 | TR2 | TR3 | CPUE |
|---|---|---|---|---|---|---|---|---|---|
| 3b BT1 | | 1.000 | 0.197 | 1.000 | 0.599 | 0.190 | 0.693 | 1 | 190 |
| 3b BT2 | 0.295 | | 0.058 | 0.438 | 0.177 | 0.056 | 0.204 | 1 | 56 |
| 3b GN1 | 1.000 | 1.000 | | 1.000 | 1.000 | 0.965 | 1.000 | 1 | 964 |
| 3b GT1 | 0.674 | 1.000 | 0.133 | | 0.404 | 0.128 | 0.467 | 1 | 128 |
| 3b LL1 | 1.000 | 1.000 | 0.329 | 1.000 | | 0.317 | 1.000 | 1 | 317 |
| 3b TR1 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | | 1.000 | 1 | 999 |
| 3b TR2 | 1.000 | 1.000 | 0.284 | 1.000 | 0.864 | 0.274 | | 1 | 274 |
| 3b TR3 | 0.053 | 0.179 | 0.010 | 0.078 | 0.032 | 0.010 | 0.036 | | 10 |

STECF notes that the EWG 12-12 report presents, by major fisheries and Member States, cod partial fishing mortalities derived from the fishing mortality estimated by ICES (2012), the detailed STECF estimates of landings and discards volumes and the ICES estimate of total removals. Discard mortality is generally high but has been reduced significantly since 2010.

STECF notes that the correlations between the summed partial Fs for landings of the regulated fisheries and their estimated fishing efforts are highly significant although this does not necessarily indicate a causal relationship. Similarly, the partial Fs resulting from catches of Danish gill nets, TR2 from Denmark and TR1 from Germany are correlated significantly with fishing effort. Conversely, correlations between summed partial Fs for discards and effort and for catches and effort are insignificant (the latter just above the threshold $p \leq 0.05$). Furthermore, the correlation between fishing effort in kW days and partial F for the major Scottish and Danish cod fisheries using TR1 gears are not significant. Overall, this indicates that attempts to control fishing mortality by managing fishing effort in units of kWdays across the broad range of fisheries and countries operating in this area may not be appropriate. However, for specific fisheries, effort management may be useful as an auxiliary measure to catch constraints and technical measures but case-specific investigations need to be undertaken to establish whether controlling effort will deliver the intended changes in fishing mortality on cod.

STECF notes that there are indications of reductions in partial Fs on cod in 2011 for the Scottish TR1 and TR2 fisheries operating under the provisions of article 13.2.b and c of the

cod plan, mainly through reductions in discard component of the catch by those fisheries. The German and French fisheries operating under the provision of article 13.2.b are either negligible or have reduced their effect in cod fishing mortalities substantially.

The STECF EWG 12-12 Report also provides partial Fs of fisheries using effort regulated gears for haddock 3an4, saithe 3an 4 (6 not included), as well as plaice and sole in 4.

STECF addressed an additional Commission request for information on some specific discard rates. STECF notes that the required discard information was in some cases scarce and inadequate for providing reliable 2011 discard estimates for specific fisheries with additional quota allocations. Notwithstanding this caveat, the landings and discards for cod by the regulated gear for the following countries and areas are summarised below:

Table 5.3.3: Specific discard rates.

| Annex | Species | Year | Area | Country | Reg_Gear | Landings (t) | Discards (t) | Discard rate |
|---|---|---|---|---|---|---|---|---|
| IIA | cod | 2011 | 2EU & 4 | UK (incl SCO) | TR1 | 11145.504 | 1402.372 | 0.112 |

| Annex | Species | Year | Area | Country | Reg_Gear | Landings (t) | Discards (t) | Discard rate |
|---|---|---|---|---|---|---|---|---|
| IIA | cod | 2011 | 4 | DNK | TR1 | 2789.625 | 225.694 | 0.075 |

| Annex | Species | Year | Area | Country | Reg_Gear | Landings (t) | Discards (t) | Discard rate |
|---|---|---|---|---|---|---|---|---|
| IIA | cod | 2011 | 3an | DNK | TR2 | 938.181 | 480.905 | 0.339 |

| Annex | Species | Year | Area | Country | Reg_Gear | Landings (t) | Discards (t) | Discard rate |
|---|---|---|---|---|---|---|---|---|
| IIA | cod | 2011 | 3an & 4 | DNK | GN | 2252.196 | unknow | unknow |

**Effort regime evaluation for the West of Scotland**

STECF notes that a full review of the effects of the fishing effort regime as the requested for the West of Scotland is not possible owing to the so called ‘management line’ which delimits the cod recovery zone at its western boundary. The management line cuts through units for data collection and separate fisheries parameters within and without the cod recovery zone are not available

The cod fisheries West of Scotland are primarily otter trawl fisheries. Beam trawls and static gears are hardly used. However Spanish fisheries data has not been made available for division VIa since 2010. In terms of kWdays, reported effort of regulated gears in 2011 was 50% lower than that in 2003 and 14% lower than in 2010.

The most important category in terms of cod catch and landings is TR1 with a three year average of 94-95% of the VIa cod catch (and landings) total by weight. The second most important gear category is TR2. The overall discard rate of cod (by weight) has increased in years subsequent to 2003. The rate of discarding in the TR1 gears has been between 70 and 90% over the years 2008-2011. Catches of cod by TR2 ‘none’ have been negligible since 2009. Discard information on *Nephrops* for any gear and for all other species for non-trawl gears was not available for this report. Cod CPUE values have increased considerably for the TR1 gear type since 2005.

The estimated cod CPUE (average 2009-2011) and respective effort transfer factors between donor and receiving regulated gear groups is given in Table 5.3.4. Red cells have inadequate discard information supporting the catch estimate so that the conversion factor is unreliable. Yellow cells indicate sufficient sampling and green cells good sampling information.

Table 5.3.4. Effort transfer factors for different gear groupings

| | donor gear | receiving gear | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | BT1 | BT2 | GN1 | LL1 | TR1 | TR2 | | CPUE |
| 3d | BT1 | | 1 | 0.1 | 1 | 0.006 | 0.077 | | 1 |
| 3d | BT2 | 1 | | 0.1 | 1 | 0.006 | 0.077 | | 1 |
| 3d | GN1 | 1 | 1 | | 1 | 0.058 | 0.769 | | 10 |
| 3d | LL1 | 1 | 1 | 0.1 | | 0.006 | 0.077 | | 1 |
| 3d | TR1 | 1 | 1 | 1 | 1 | | 1 | | 171 |
| 3d | TR2 | 1 | 1 | 1 | 1 | 0.076 | | | 13 |

Fishing effort deployed and respective catches taken under the FDF scheme have been received and are presented in the EWG 12-12 Report (Section 5.4.7).

STECF notes that the correlations between the summed partial Fs for catches and discards of the regulated fisheries and their estimated fishing efforts appear to be negative but are not statistically significant. The correlation between the summed partial Fs for landings and fishing effort is, however significant. The partial Fs of discards from the Scottish TR1 working under the cod plan article 13.2.b-c-d are recently increasing and dominating the fishing mortality. There are no indications that the Scottish TR1 fishery working under the article 13.2.b-c-d have contributed to a reduction in fishing mortality of cod.

STECF is unable to determine the reason why there is an absence of any significant relationship between F and effort for the greatest cod contributors to cod catches from VIa. Nevertheless from the information reported by member States, the management measures in place in VIa have not been successful in achieving a reduction in fishing mortality.

**Effort regime evaluation for the Irish Sea**

STECF notes that in terms of cod catches, the TR2 category (70-99mm mesh sizes) dominates, and that effort by this category was relatively stable between 2003 and 2008. An effort reduction occurred in 2009, coinciding with the introduction of the current cod plan, since then effort has remained at the reduced level. The majority of TR2 effort is now carried out under Article 13 of Coun. Reg. 1342/2008 (CPart13; ~80-99% of TR2 effort). A small amount of effort previously incorporated in CPart13 became exempt from the cod plan effort restrictions under Article 11 of the regulation (CPart11) in 2010 (3%), doubling in 2011 to 6%.

STECF notes that cod landings have continued to follow the declining trend which began in 2009. In relation to overall landings by species, *Nephrops* dominate Irish Sea landings and have been above 9000t since 2007, peaking in 2008 and 2011 with over 10000t. Discard information available within the Irish Sea is incomplete. Discard data are not available for all species and/or years within each gear grouping. In the absence of reliable discard data,

STECF is unable to the extent to which the observed decline in landings is due to increased discarding to comply with year-on-year reductions in TAC or is a consequence of a decline in the fishable stock. TR2 and BT2 have the most complete data particularly in more recent years, for species like cod, haddock, hake, plaice, rays, and whiting. Over the majority of the period, TR1 land the greatest proportion of cod (~40% of the total landing), however this changed in 2011 when the proportion dropped to 35%, following a declining trend, to just below that of the TR2 gear. This placed TR2 as the top ranked gear in 2011 although demonstrating little change to 2010 proportions.

The estimated cod CPUE (average 2009-2011) and respective effort transfer factors between donor and receiving regulated gear groups is presented in Table 5.3.5. Red cells have inadequate discard information supporting the catch estimate so that the conversion factor is unreliable. Yellow cells indicate sufficient sampling and green cells good sampling information.

Table 5.3.5. Effort transfer factors for different gear groupings

| | donor gear | receiving gear | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | BT2 | GN1 | GT1 | LL1 | TR1 | TR2 | | CPUE |
| 3c | BT2 | | 0.02 | 0.12 | 1 | 0.11 | 1 | | 73 |
| 3c | GN1 | 1 | | 1 | 1 | 1 | 1 | | 3094 |
| 3c | GT1 | 1 | 0.20 | | 1 | 0.96 | 1 | | 617 |
| 3c | LL1 | 0.01 | 0 | 0.002 | | 0.002 | 0.01 | | 1 |
| 3c | TR1 | 1 | 0.21 | 1 | 1 | | 1 | | 640 |
| 3c | TR2 | 0.95 | 0.02 | 0.11 | 1 | 0.11 | | | 69 |

STECF notes that there were no Fully Documented Fisheries (FDF) reported as operating within the Irish Sea in 2011.

STECF notes that the correlations between the summed partial Fs for landings of the regulated fisheries and their estimated fishing efforts are non-significant. The partial Fs of most Member State fisheries using regulated gears are not significantly correlated with their specific effort estimates. STECF notes that the lack of comprehensive discard estimates prevents reliable conclusions and should be considered when assessing management risks.

**Effort regime evaluation for the Celtic Sea**

For the Celtic Sea, the review of trends in fisheries specific effort and catches is presented in line with the standard gear aggregations utilised in the presentation of the multi-annual cod plan currently applying in the 4 areas described previously. This allows managers to evaluate the data with regard to a theoretical extension of the cod plan to include the Celtic Sea. The Celtic Sea is defined into two management areas, i.e. ICES Sub-divisions 7bcefghjk and ICES Sub-divisions 7fg.

Trends in fishing effort for the sensitive cod gears and non-regulated gears are given in the EWG 12-12 Report. Spanish data are not included as no data have been submitted. The demersal fisheries are dominated by the gears TR1, TR2 and BT2. Their effort measured in kWdays at sea remained stable during 2003-2007 and were reduced by about 20 % thereafter.

Discard information is scarce precluding reliable estimation of CPUE, however, estimates of LPUE of cod were available showing a significant increase in 2011.

STECF notes that the correlations between the summed partial F of catches and their specific effort estimates in kW days at sea over the main fisheries (effort regulated fisheries in the cod plan) are hardly significant in the entire Celtic Sea area ( Cel 1 :7bcefghjk) for the main fisheries catching Cod (ie. French TR1 and TR2, and Irish TR1). However, these relations become significant between catches and effort for French TR1 and TR2 and remain significant for the Irish TR2 and Belgium TR2 when the area is reduced to the ICES subdivisions 7fg (Cel2). While good correlation does not always mean 'cause and effect', the results here suggest that management of fishing mortality by fishing effort in units of kWdays may provide an auxiliary measure to catch constraints and technical measures in the Cel2 area.

**Effort regime evaluation for Southern hake and Norway lobster**

STECF notes that the analyses presented in the EWG report are considered insufficient to fully address the specific ToR due to the unavailability of Spanish data for 2010 and 2011. Spain did not respond to the DCF data calls for fishing effort evaluations in 2011 and 2012. In addition, Portuguese discard data were resubmitted in 2012 in a format which is obviously consistent with DCF but inconsistent with the data formats and aggregation of the data calls. Therefore, discard information provided for earlier years was deleted from the data bases and could no longer be used.

Notwithstanding these difficulties the available fisheries specific parameters aggregated according to the definitions of gear groups in the Annex IIB of the annual TAC and Quota Regulations are given in the EWG report. STECF considers that the information presented is not reliable and is not representative of the fisheries and do not form a reliable basis for management decisions.

STECF notes that the fishing effort regime is by units of days at sea per vessel. STECF EWG 12-12 noted that if a fishing effort regime with regards to Southern hake and Norway lobster is to be maintained, an appropriate measure of effective fishing effort to account for vessel size/power and gear effectiveness should be adopted.

**Effort regime evaluation for the Western Channel**

STECF notes the great majority of fishing effort deployed in the Western Channel is not regulated, while the two regulated gear groups, the beam trawls and the static nets, constitute a relatively small component of the overall effort deployed in this area. The reported effort in kWdays at sea of gear groups regulated by fishing effort appears to have been stable since 2009 after a major reduction in 2008.

STECF notes that sole landings are dominated by effort regulated beam trawls (61%), non-effort regulated gears, (32%, mainly otter trawl gears), and static nets (7%). STECF EWG 12-12 reiterates its observation that a relatively high percentage of sole is landed by non-effort regulated gears.

STECF notes that discard information in the Western Channel is scarce. The estimated landings and discards for sole by the regulated gear 3a (beam trawl) by UK are given in Table 5.3.6.

Table 5.3.6: Estimated landings and discards of sole in the Western Channel (VIIe)

| Annex | Species | Year | Area | Country | Reg_Gear | Landings (t) | Discards (t) | Discard rate |
|---|---|---|---|---|---|---|---|---|
| IIC | sol | 2011 | 7e | ENG | 3a | 349.807 | 21.961 | 0.059 |

STECF notes that the correlations between the summed partial Fs for landings of the major fisheries and their estimated fishing efforts are highly significant for the period 2005-2011. The correlation analysis excludes the years 2003 and 2004 when the data available to STECF represented only about 50% of the landings reported to ICES. The partial Fs of Belgian and English fisheries using the regulated gear 3a are closely correlated with their specific effort estimates in kW days at sea. However for the French regulated fisheries (3a and 3b), which represent just about 10% of the sole landings, the correlation between F and effort (kWdays) is statistically not significant. While good correlation does not always mean 'cause and effect', the results here suggest that management of fishing mortality by fishing effort in units of kWdays may provide a useful auxiliary measure to catch constraints and technical measures.

STECF notes that in 2011 the current fishing effort regime (days at sea per vessel) does not appear to constrain the fisheries, which have only used between 10% and 79% of the days at sea available. STECF EWG 12-12 notes that if a fishing effort regime in the Western Channel is to be maintained, an appropriate measure of effective unit of fishing effort to account for vessel size/power and gear effectiveness should be considered in any revision of the management plan for Western Channel sole. STECF concludes that fishing effort measured in kWdays at sea may represent a more appropriate measure for mobile gears, given the presented significant correlation between fishing mortality and fishing effort in kWdays at sea. STECF also considers that the lack of discard information in the assessment and forecast of fishing opportunities should be considered when assessing management risks.

**Effort regime evaluation for the Western Waters and Deep Sea**

In accordance with its ToR STECF presents trends in effort, catches and CPUE of defined fisheries (major gear groups) for 18 management areas within the conventional areas of ICES and CECAF. The EWG experienced extreme difficulties in preparing these data and the interpretation of them is confounded by uncertainty in the western waters data summaries for some member states most notably Portugal, France and Spain. Since these countries operate extensively in the Western Waters areas and are likely to contribute a significant proportion to the overall effort covered by respective regulations, the data shortfall implies that overall effort figures remain unreliable. STECF also notes that discard information is often scarce.

Effort within the Deep sea and Western waters has been compiled for kW*days-at-sea, GT*days-at-sea, and numbers of vessels. Within the EWF 12-12 Report, the focus is on kW*Days at sea. Information on GT*days at sea and numbers of vessels is available via the website: http://stecf.jrc.ec.europa.eu/web/stecf/ewg12.

Notwithstanding the shortfalls in reported STECF concludes that effort for a number of gear groups (particularly otter trawls) and countries has declined in recent years. This is most evident in the more northerly areas. The information available also indicates that increases in longliner effort have occurred in a number of areas.

STECF notes that the information on landings quantity and composition is very detailed but in general shows reductions in the landings of a number of species across the range of areas reported. One exception is the landings of certain deep water sharks in the more southerly ICES areas. The combination of questionable effort data and absence of catch information renders the calculation of aggregated CPUEs from deep sea and western waters data rather pointless at present. However, all trends in national landings, effort and LPUE data are available via the website and can be queried further for specific needs: http://stecf.jrc.ec.europa.eu/web/stecf/ewg12.

**Effort regime evaluation for the Bay of Biscay**

STECF notes that all analyses and presented trends exclude Spanish data, as Spain did not respond to the DCF data call for fishing effort regime evaluations. The resulting trends in fishing effort and landings need to be interpreted bearing in mind that the Spanish data are not considered and that discard information is scarce and dubious in certain cases. In general the trends indicated by the reported data and information may not be wholly representative.

STECF notes that the multiannual plan for the sustainable exploitation of the stock of sole in the Bay of Biscay (R (EC) 388/2006) stipulates provisions regarding maximum annual fishing capacity of the vessels holding the special fishing permit per Member State. STECF EWG 12-12 notes that only Belgium has provided the requested annual capacity data. STECF EWG 12-12 is therefore unable to evaluate the fishing effort regime in the Bay of Biscay, i.e. mainly to compare the trend in authorized fishing capacity with the trend in fishing mortality.

STECF notes that the French data submission on fishing effort in kWdays at sea and French landings consider special fishing permits only since 2010. STECF is therefore unable to fully evaluate the trend and uptake of the special fishing permit. STECF notes that the Belgian beam trawl fisheries have been working exclusively under the provision of the special fishing permit since 2006, and that the French gill netters, trammel netters and otter trawlers are reported to be operating with the permit since 2010 at a rate of around 30, 10 and 50% of vessels, respectively. The vessels holding the permits appear to be taking the great majority of sole landing in 2010 and 2011.

STECF notes that the correlations between the summed partial Fs for landings (discard data are scarce) of the major fisheries and their estimated fishing efforts are in general not significant (except for the trammel fishery of France). Hence it STECF is unable to determine whether management of fishing effort in units of kW days is likely to be an effective auxiliary measure to catch constraints and technical measures to control fishing mortality. STECF notes that the lack of discards prevents reliable conclusions to be drawn and this should be taken into account when assessing management risks.

**STECF Recommendations**

In addition to all of the foregoing evaluation work, STECF has the generic task of reviewing the DCF data call in 2012 to support fishing effort regime evaluations. STECF has two technical recommendations to DG MARE regarding the forthcoming DCF data call 2013 to support fishing effort regime evaluations as compared to the one issued in 2012.

**First recommendation**
STECF notes that the DCF data call in 2012 to support fishing effort regime evaluations is not fully consistent with the ToR. Thus, the EWG could not fully address the tasks for the Baltic regime, i.e. to assess the fishing activity measured in days absent from port (according to definitions adopted in R(EC) No 1098/2007). STECF recommends that in the Effort Data Call for 2013, the Table D should include an additional fishing effort parameter called "fishing activity" in units of days. The additional parameter shall be specific by country, year, vessel-length, area (A or B) and gear (regulated=REGGEAR or un-regulated=NONGEAR).

**Second recommendation**
STECF EWG 12-12 notes that FDF has been implemented for sole in the Western Channel in 2012 (Council Reg N 43/2012, EU TAC and Quota regulation for 2012). STECF EWG 12-12 recommends to DG MARE that, if catches and effort under FDF in the Western Channel are to be analysed in 2013, the respective DCF fishing effort data call shall consider an additional specific code in Appendix 6 called "FDFIIC".

## 5.4. STECF EWG 12-13: Economic performance of the aquaculture sector

**Request to the STECF**

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

**STECF response**

STECF noted that the report had not yet been finalised but the main findings were presented by the STECF-EWG 12-13 chair. STECF agreed to review the report by correspondence once it has been finalised and to adopt it by written procedure.

## 5.5. STECF EWG 12-14: Technical Measures and Selectivity

**Request to the STECF**

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

**STECF observations**

STECF notes that the EWG 12-14 Report discusses a variety of issues that need to be considered in the context of the function of technical measures in fisheries management under a reformed CFP and who should decide which, how and when technical measures are required. STECF agrees that the arguments and discussion presented in the Report are all pertinent and based on its review, wishes to draw out the following summary points.

The regulation of technical aspects of fishing operations, through so-called technical measures, defines where, when and how a fishing enterprise exploits and interacts with marine resources and the wider marine ecosystem. Technical measures can be loosely grouped into measures that regulate the design characteristics of the gears that are deployed such as the regulation of mesh size; measures that regulate the operation of the gear such as setting maximum limits on how long or what type of gear can be deployed; measures that set spatial and temporal controls such as closed/limited entry areas and seasonal closures; and measures that define minimum sizes of fish. Collectively, technical measures aim to control the catch that can be taken with a given amount of effort.

Technical measures (TM) are largely aimed to reduce catches of juveniles of commercial and non-commercial species, to improve species selectivity, to reduce discards and minimize the impacts on habitats.

STECF notes that current technical measures may have positive effects on conservation and protection of ecosystems, but that, given continued discarding, it can be concluded that their overall objective has not been achieved and to date their overall effectiveness has been sub-optimal.

Generally, the effects on fisheries of technical measures alone cannot be disentangled from the effects of other management tools implemented simultaneously, such as TACs and fishing effort restrictions. There is a lack of clear objectives for most TM and simultaneous application of other input and output controls only allows a comparison of the package of measures taken with the outcomes observed. In practice, it is not usually possible to quantify the extent that observed outcomes are attributable to one or other of the measures in place.

In general TM relating to gear selectivity have no clearly defined objective and, following the EU decision-making process, the measures finally adopted often differ from what was initially proposed and tested. Many measures are adopted just to improve selectivity.

Current applications of TM follow a ‘top-down’ approach that focuses on the technical specification rather than the outcome. Suuronen and Sarda (2007) carried out a review of gear-based technical measures and note that “the successful use of technical measures appears to depend largely on their acceptance by industry". Due to obvious short term financial incentives, vessel operators may try to circumvent technical measures whose implementation reduces their operating profit

STECF considers that the top-down approach may not be the most effective means of introducing technical measures, especially with regard to technical “details”. There are a number of examples where regulations specify quite complex design features of gears, e.g. article 2 of Regulation (EC) No 2056/2001which provides a complex formula for calculating the mesh size for a beam trawl escape panel, which incidentally has little resemblance to the

gear tested under scientific study, and regulations that describe in detail how to mend a broken mesh (Appendix 1 to Regulation (EC) No 2187/2005).

In general, and particularly concerning gear specifications, a result-based approach focusing on the output rather than on the input may be a more effective approach. Such an approach may provide incentives for fishermen to apply their knowledge (on gears, areas, behaviour of species, habitats) and innovative capabilities to achieve defined output objectives efficiently, instead of reducing the expected effect of detailed and prescriptive top-down regulations.

Under a results-based approach, it would be important to shift the burden of proof from current system where management must show that an infringement has occurred, to the situation where the industry makes a commitment to operate to certain standards. On the one hand, as in many other sectors, the industry should have the responsibility to show that their activities do not have unacceptable environmental impacts. However, on the other hand the industry should also have an interest in providing products that have an acceptance by consumers and thus an incentive to demonstrate that the methods they apply have minimized unnecessary impacts on the ecosystem.

There is a need to have a high level of transparency in policy discussions to create the trust between fishers and their customers. With greater demands for demonstrably sustainable fisheries customers of fish products are demanding higher standards of environmental responsibility as part of their purchasing policy. Ideally the fishing industry would demonstrate that it is using technological developments to benefit the environment rather than create additional environmental damage. This links to the concept of a commitment to agree, and then achieve objectives, rather than just a requirement to comply with a regulation. Here there is also a role for peer pressure to incentivize participation.

However, in order to ensure that those participating have the confidence that they will be treated fairly and the changes they make will not be negated by the behaviour of others, there is a need for sufficient checks on the effective performance of all involved in the fishery. This may still require relatively high level information to demonstrate that there is compliance with the objectives. Thus there will still be a need for significant commitment to monitoring and compliance checks.

In summary, STECF considers that it the long run there are three strategic elements in the planning of future development of technical measures in EU that need to be addressed:

1) Output control versus input control, creating an interest to develop technology supporting the achievement of agreed aims and acceptable levels of negative impacts.

2) Burden of proof is shifted from managers to the industry.

3) Enforcement is based more on the concept of commitment than compliance, and the monitoring of enforcement includes elements from peer pressure

**STECF conclusions**

STECF concludes that TM should have clear, well defined objectives and targets.

The management approach and the incentive structure can have a significant impact on the effectiveness of technical measures. Positive incentives with rewards for doing certain things may work better than penalties.

STECF considers that if control and enforcement problems can be solved, result based management may be the best approach for future TM. In such an approach, there should be a limited, if any, need for prescriptive EU TM regulations. The incentives created by a results-based system may improve the achievement of objectives. However minimum standards are likely to be necessary to achieve the objectives.

**STECF recommendations**

The discussion held at EWG 12-14 is an important first step in understanding the current deficiencies in technical measures and how to address these deficiencies in developing a new approach to technical measures based on a results based approach with appropriate impact metrics (impact referring to, e.g., F on fished stocks and damage to other ecosystem elements such as seafloor, seabirds). To assist the Commission further it is recommend that the EWG reconvene in quarter 1, 2013 with the following terms of reference:

a) Identify tactical objectives that potentially could be achieved using technical measures in the context of results-based management.

b) Identify appropriate metrics to quantify the progress towards the tactical objectives identified in a).

c) Discuss and identify how impact metrics can be monitored and controlled and how the effectiveness of an impact based approach can be evaluated. This should consider required levels of compliance and difficulties associated in achieving these levels.

d) Explore the need for minimum standards (baseline regulations), focusing on specifications of technical measures, considering there will be a requirement for a transitional phase from the current input based approach towards a full impact based system as well policy objectives not suited to a strict output based approach e.g. MFSD, NATURA 2000.

**References**

Suuronen, P & Sardà, F. (2007). The role of technical measures in European fisheries management and how to make them work better. ICES Journal of Marine Science, 64 (4), 751-756.

## 5.6. STECF EWG 12-15: Review of the proposed DCF 2014-2020 – Part 2

**Request to the STECF**

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

**STECF observations**

The report of the EWG 12-15 had not been finalised and agreed and was therefore not available for review during the plenary meeting. An overview of the likely contents of the report presented to the STECF by the EWG 12-15 Chair, was welcomed by the Committee.

STECF agreed to review the Report of the EWG 12-15 by correspondence once it has been finalised and to adopt it by written procedure by the requested deadline of 10 December 2012. In order to do so, STECF stresses that the report needs to finalised and delivered to the STECF Secretariat by Monday 19 November at the latest.

## 5.7. STECF EWG 12-17: Review of scientific advice on fish stocks –part 3

**Request to the STECF**

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

STECF reviewed the Draft review of advice for stocks of interest to the European Community in areas under the jurisdiction of CCAMLR, CECAF, WECAF, ICCAT, IOTC, IAATC, GFCM, NAFO, and stocks in the North East Atlantic assessed by ICES and was endorsed by the STECF at its 41st plenary meeting held in Brussels from 5-9 November 2012.

The review was drafted by the STECF-EWG 12-17 Expert Working group during its meeting held in Santa Cruz de Tenerife, Spain from 8-12 October 2012.

The STECF review of scientific advice for 2012 Part 3 was drafted by the STECF-EWG 12-17 held in Santa Cruz de Tenerife, Spain, from 8-12 October 2012.

STECF acknowledges the extensive contribution made by the following participants:

Participants EWG 12-17 meeting held in Santa Cruz de Tenerife, Spain 8-12 October 2012:

**STECF members**
Casey, John (Chair)
Scarcella, Guiseppe
Vanhee, Willy

**External experts:**
Colloca, Francesco
Garcia-Isarch, Eva
Garcia Santamaria, Mª Teresa
Gil de Sola, Luis
Jung, Armelle
Knitweiss, Leyla
Kupschus, Sven
Munch-Petersen, Sten
Portella, Julio

**JRC expert**
Mosqueira, Iago

The Report was reviewed and adopted by the STECF at its 41st plenary session held in Brussels from 5-9 November 2012.

The STECF review of advice for 2013 Part 1 included the latest assessments and advice for stocks in the Baltic Sea and was published in June 2012. Part 2 contained the review of assessments and advice released by ICES up to the end of June 2012. Parts 1, 2 and 3 will be combined and published in the STECF Consolidated review of advice for 2013, which will be available in mid-November 2012.

**Format of the STECF Review of advice**

For each stock, a summary of the following information is provided:

**STOCK:** [Species name, scientific name], [management area]

**FISHERIES:** fleets prosecuting the stock, management body in charge, economic importance in relation to other fisheries, historical development of the fishery, potential of the stock in relation to reference points or historical catches, current catch (EU fleets' total), any other pertinent information.

**SOURCE OF MANAGEMENT ADVICE**: reference to the management advisory body.

**MANAGEMENT AGREEMENT:** where these exist.

**REFERENCE POINTS:** where these have been proposed.

**STOCK STATUS:** Reference points, current stock status in relation to these. STECF has included precautionary reference point wherever these are available. For stocks assessed by ICES, the stock status is summarised in a "traffic light" table utilising various symbols to indicate status in relation to different reference points. The key to the symbols is as follows:

**- indicates an undesirable situation e.g. F is above the relevant reference point or SSB is below the relevant reference point**

**- indicates a desirable situation e.g. F is below the relevant reference point or SSB is above the relevant reference point**

**- indicates that the status is unknown e.g the reference point is undefined or unknown, or F or SSB is unknown relative to a defined reference point**

**- indicates that status lies between the precautionary (pa) and limit (lim) reference points**

**- indicates that the absolute level is unknown but increasing**

**- indicates that the absolute level is unknown but unchanged**

**- indicates that the absolute level is unknown but decreasing**

**RECENT MANAGEMENT ADVICE:** summary of most recent advice.

**STECF COMMENTS:** Any comments STECF thinks worthy of mention, including errors, omissions or disagreement with assessments or advice.

## 5.8. STECF EWG 12-16: Assessments of Black Sea stocks

**Request to the STECF**

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

**STECF observations**

STECF reviewed the report of the EWG 12-16 and noted the progress made regarding the Assessment of Black Sea stocks. STECF acknowledges the considerable efforts of the WG participants in undertaking its work and notes that the EWG adequately addressed all of the Terms of Reference.

Relevant data were compiled and stock assessments for the following 7 species were undertaken: sprat, turbot, anchovy, whiting, horse mackerel, piked dogfish, and red mullet. The available information was considered insufficient to perform a whole Black Sea assessment of the rapa whelk.

STECF notes that international research on gillnet selectivity of turbot was reviewed by the EWG 12-16 and that the current gaps in knowledge and data were documented. The EWG-12-16 report also provides a list of recommendations to address the existing gaps in data and knowledge.

**STECF conclusions**

Based on its review of the Report of the EWG 12-16, the STECF draws the following conclusions:

The Report of the EWG 12-16 contains the best and most comprehensive assessments of fish resources in the Black Sea currently available.

The assessments for Black Sea resources are compromised by the paucity of fishery-independent survey data. In addition, in the absence of fishery-independent estimates of recruitment, the results of short-term catch predictions are also uncertain.

Four of the stock assessments undertaken, sprat, turbot, anchovy and whiting, were of sufficient quality to provide analytical estimates of recent exploitation rates and stock status in relation to proposed biological reference points. Although the assessments for sprat, anchovy and whiting are considered sufficiently reliable to be used as a basis for short-term catch forecasts, the assessment results for turbot are less reliable and are indicative of relative trends only.

Similarly, the assessment results for horse mackerel and red mullet should be treated as provisional, are only indicative of trends and are not sufficiently reliable to be used as a basis for catch forecasts. The results of the assessment of piked dogfish were inconclusive with respect to stock status.

Based on the results of assessments for sprat, turbot, anchovy and whiting, STECF proposes that the following limit reference points be adopted as appropriate proxies for $F_{MSY}$ and which are consistent with high long-term yields:

**Sprat:** $F_{MSY} = F \leq 0.64$ , consistent with the exploitation rate $E \leq 0.4$

**Turbot :** $F_{MSY}$ = Range ($F_{0.1}$-$F_{MAX}$)is F=0.07 – F= 0.15

**Anchovy** $F_{MSY} = F \leq 0.54$ , consistent with the exploitation rate $E \leq 0.4$

**Whiting:** $F_{MSY} = F \leq 0.40$

In relation to the above proposed reference points the current status of sprat, turbot anchovy and whiting in the Black Sea can be summarised as follows

**Sprat:** Fishing mortality in 2011 is estimated to be F = 0.8. STECF concludes that in 2011, the stock was subject to overfishing ($F>F_{MSY}$). STECF notes that results of the 2012 assessment are consistent with those from the 2011 assessment.

**Turbot:** Fishing mortality appears to be at an historical high and is almost 6 times $F_{MAX}$. Survey indices and relative trends in the stock from the assessment indicate that the stock size is at a historical low and SSB is less than 10% of the estimated SSB at the end of the 1970s. STECF concludes that the stock is severely depleted and is being exploited at an unsustainable rate.

**Anchovy**: Fishing mortality in 2011 is estimated to be F = 1.3. STECF concludes that in 2011, the stock was subject to overfishing ($F>F_{MSY}$).

**Whiting:** Fishing mortality in 2011 is estimated to be F = 0.66. STECF concludes that in 2011, the stock was subject to overfishing ($F>F_{MSY}$).

Based on the EWG 12=16 review of gill net selectivity for turbot in the Black Sea, STECF concludes that further work is required before new recommendations on gill net selectivity as a potential management instrument can be provided.

**STECF advice**

Based on the results of the assessments for Black Sea anchovy, sprat and whiting, STECF proposes that catch limits in 2013 for these stocks be set in line with the fishing mortality reference points proposed above.

Adopting such an approach implies that catches in 2013 should be less than or equal to the following:

| | |
|---|---|
| Sprat | 64,000 t |
| Anchovy | 141,616 t |
| Whiting | 4,971 t |

As there is no international allocation key for either of the above species, STECF is unable to advise on a specific EU TAC for sprat anchovy or whiting.

Given the estimated dramatic decline in the stock biomass of turbot in the Black Sea and the extremely high annual estimates of fishing mortality, STECF advises on the basis of precautionary considerations that there should be no fisheries for turbot and individuals caught unintentionally should be promptly released. STECF considers also that an international management plan should be initiated to restore spawning stock biomass to the level capable producing maximum sustainable yield.

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STECF notes the recommendations of the EWG 12-16 with regard to future work and urges the Commission to take then into account in future planning and act accordingly.

# 6. ADDITIONAL REQUESTS SUBMITTED TO THE STECF PLENARY BY THE COMMISSION SUPPORTED BY *AD HOC* CONTRACTS

## 6.1. Request for an assessment of *Merluccius merluccius, Mullus barbatus, Mullus surmuletus, Boops boops, Spicara smaris/Spicara flexuosa* and *Nephrops norvegicus* in Aegean and Ionian waters

**Background**

EU Member States were requested to develop and adopt multiannual management plans for fisheries carried out in their waters (Article 19 of the Council Regulation EC No 1967/2006; OJ L36 of 8.2.2007 hereinafter "Mediterranean Regulation"). By their characteristics (e.g. mixed fisheries) and limited extension of waters jurisdiction in the Mediterranean most of those fisheries may also exploit straddling stocks.

Those plans shall be built on the basis of management and conservation reference points such as targets and limits against which evaluate the sustainable exploitation and the recovery to or the maintenance of stocks within safe biological limits (e.g. population size and/or long-term yields and/or fishing mortality rate and/or stability of catches). The management plans shall be drawn up on the basis of the precautionary approach to fisheries management and shall ensure the sustainable exploitation of stocks and that impact of fishing activities on marine eco-systems is kept at sustainable levels.

Within this framework Greece presented the scientific basis and state of stocks underpinning a likely management plan for demersal trawl fisheries in the Aegean and Ionian seas (GSA 22&23 and GSA 20, respectively); the stock assessments were based on a logistic surplus production model within a non-equilibrium approach.

Taking into account previous positions taken by STECF3 on the basic characteristics of data to apply the surplus production models, STECF EWG 12-10 was requested to review the assessment of hake and red mullet stocks as presented by the Greek authorities. STECF EWG 12-10 position, which will be examined at the next STECF November plenary, indicates that the applied models were generally found to explain a very small part of the variance observed in the dataset and that the assessments were not considered adequate (lack of contrast in the level of effort, shortness of the time series, lack of biomass baselines at low level of exploitation, etc) to provide reliable estimates of F and B. Age-based method (e.g. YPR and LCA) were considered most adequate for the kind of data available following the various data calls. Therefore, the very informative "Kobe plots" were considered not adequate to represent the evolution of the actual state of the stocks.

Data uploaded by Greece following the official data calls are incomplete and quite old, since their data collection stop essentially at 2007-2008; it is however advisable to explore further assessments both trough age-based methods (LCA, YPR), SURBA and to re-run the production model including longer and more contrasted data sets on catches and effort. These longer catch and effort data sets are in fact available both through the EC study EVOMED4 and new data sets outcomes of the FP7 ECOKNOWS project and partially published on JBR5 (data sets available on-line http://www.jbr.gr). These data sets will be made available by EC and the Authors of the JBR paper on the JRC ftp.
Access and use of data is authorized only for the purpose of this work, no other work and distribution is allowed outside the meeting without the written authorization by the concerned services of the European Commission.

The stocks to be evaluated (both Aegean and Ionian waters whenever possible) will concern the following species: *Merluccius merluccius, Mullus barbatus, Mullus surmuletus, Boops boops, Spicara smaris/Spicara flexuosa* and *Nephrops norvegicus*. The EWG is however free to add more demersal species if considered relevant for the demersal fisheries and available data sets are considered adequate to use age-based methods or surplus production models.

**Terms of reference**

- Provide the trends and relative importance of Greece catches of the selected species with respect to catches of other Mediterranean countries fishing in the Aegean and Ionian Sea (GSA 22&23 and GSA 20, respectively). Scientific and official statistics for capture fisheries available in different data sources have to be adequately scrutinized, compared, used and commented as needed to provide a sound and complete picture of trends in catches and fishing effort by different countries operating in the GSAs under examination (e.g. DCFR calls; GFCM and FAO-Global capture production data bases (http://www.gfcm.org/gfcm/topic/17105/en); GFCM-TASK 1 Statistical Bulletin (http://www.gfcm.org/gfcm/topic/17106/en) ; EVOMED; JBR study. Assumptions and

3 Scientific, Technical and Economic Committee for Fisheries (STECF) - Assessment of Mediterranean Stocks Part I (eds. Cardinale, M., Cheilari, A. & Rätz, H.-J.). 2010. Publications Office of the European Union, Luxembourg, EUR 24637 EN, JRC 62020, 1077 pp.

4 " Understanding size developments of exploited stock and ecosystems in the Mediterranean by using private fishermen's tally-books and historical information" (EC-DG MARE Contract N° 512.539097 Lot 4)

5"Spatial disentangling of Greek commercial fisheries landings by gear between 1928-2007" by Moutopoulos D. K. and Stergiou I. K (2012). Journal of Biological Research-Thessaloniki 18: 265-279.

criteria to fill possible gaps in the time series and to split the data by GSA have to be described and documented.

- Advise whether, how and for which species the lack of catches of countries other than Greece could substantially affect the outcomes of the analysis. Provide sound assumptions (e.g. relative importance of catches, similar/dissimilar exploitation patterns, fishing effort/fishing capacity evolution, etc.) that may mitigate the counterproductive effects and can make acceptable the outcomes of the assessments even though obtained from analysis of partial data-sets;

- Evaluate, by using both age/size based methods on commercial and scientific surveys data (e.g. LCA, YPR, SURBA) and surplus production models (ASPIC), the evolution of fishing mortality, the state of the stocks, as updated at the most recent years available in the time series. The methods, input parameters and conclusions have to be fully documented and justified (diagnostics, input –output tables etc.).

- Provide management and conservation reference points with respect to MSY management objective and safe biological limits;

- Provide rationale and explanations (e.g. selectivity, growth, maturity etc) that justify the estimation of currently valid reference points with older data sets.

- analyze trends in fishing efforts and fishing capacity, or other suitable indicators, and indicate whether the current state of exploited resources could somehow be inferred from the results of the abovementioned analysis carried out on data-sets till 2008.

**STECF observations**

The stocks for which evaluation were requested were: *Merluccius merluccius, Mullus barbatus, Mullus surmuletus, Boops boops, Spicara smaris*, *Spicara flexuosa* and *Nephrops norvegicus* related to both Aegean and Ionian geographic sub-areas. STECF was also requested to assess additional demersal species if data sets suitable for applying age-based methods or surplus production models were available.

A selected group of experts from several Mediterranean countries, including 3 experts from Greece participated in the WG. The assessment approaches undertaken were dependent on the availability of appropriate data and information which in some cases was rather limited in terms of the demographic structure of the commercial catches, the length of the time series or poor quality. It was requested to carry out new assessments using both commercial catch and surveys data. Catch at age-based methods as LCA or SURBA, using data derived from DCF as well as non-equilibrium production models using longer and more contrasted data sets derived from EC funded studies as EVOMED and from outcomes of the FP7 ECOKNOWS were suggested as possible approaches.

A number of problems were encountered with trying to reconstruct the demographic structure of the catches using different data sources, which limited the length of the time-series of data for input to LCA. No data on discards were available. Even though a much longer data series of catch and effort by gear and area was available for fitting a dynamic production model (ASPIC) a number of gaps and inconsistencies remained, which decreased the quality of such

data series. For some stocks, estimates for biological parameters used as model inputs were not available.

Data were derived from a number of sources. The primary source was data supplied by the National Statistical Service of Greece (NSSH). STECF notes that NSSH data suffer from many biases, greatest for inshore fisheries, and the extent of such bias cannot be easily estimated (Stergiou et al. 1997, Papaconstantinou 2002). In addition, NSSH did not provide data for boats smaller than 10 m or 20 HP, which represent a large proportion (up to 30%) of the fishing fleet in terms of number of vessels.

The reconstructed time series used for the assessments, provides estimates of the species composition of landings of small vessels (<10 m) using information from a technical report that relates to the period 1996-2000 only (Anon., 2001). Hence, STECF considers that the resulting species compositions are unlikely to be representative of the true species composition throughout the whole time series. Furthermore, as corrections/conversions of landings and effort data for the different species and fleet categories were based on many different data sources, STECF is unable to provide an informed opinion on the reliability of the reconstructed time-series. For example, the reconstructed time series of landings for the period 2003-2008 does not match the time series of landings for that period reported under the DCF.

Data on fishing effort are only provided as total effort by gear type or gear group without any distinction by métier and as such did not permit the quantification of species-specific effort or to examine any potential changes in fleet behaviour.

For the standardization of effort, days at sea x kW were used. To account for potential increases in technical efficiency over time, an increase of 2.74% per year, based on estimates from trawl fisheries in the Western Mediterranean was used. STECF has no basis to judge whether the value of 2.47% per year is representative of the vessels in the Greek fleet.

The relatively short abundance index time-series derived from the MEDITS trawl surveys meant that they were unsuitable as auxiliary tuning series for the ASPIC production models. Moreover, for some of the ASPIC assessments, model fit was poor and the assessments were considered unreliable.

SURBA was used in some cases for estimation of recruitment, spawning stock, relative fishing mortality rate and for observing trends in these parameters, but its use was limited because in some years surveys were not conducted.

**STECF conclusions and recommendations**

STECF notes that based on trends in fishing effort and landings and information on age structure of the commercial catch by gear and surveys data, assessments of the stock status (up to 2008) for all the requested stocks in all the GSAs were undertaken. Given the available data and information, the results from the ASPIC dynamic production model are the most informative even though the results need to be considered as uncertain. However, STECF notes that for stocks where more than one assessment model could be performed, the results from the different approaches were generally consistent.

STECF considers that the data set used, represents a first attempt to reconstruct the historical catch composition currently available for the stocks and fisheries in the different GSAs considered. However, STECF is unable to judge how representative the reconstructed data set is of the true historical catch composition.

Given that the assessments carried out are based on data up to 2008 only, STECF considers that the results should only be taken to be an indication of the trends in exploitation status and stock biomass over the historic time series and may not be representative of the current status.

Notwithstanding the concerns with regard to the representativeness of the reconstructed time-series of data, STECF considers that all of the terms of Reference have been addressed to the best extent possible.

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## 6.2. Request for advice on environmental issues, fish stocks and fisheries in the EEZs around the Outermost Regions

**Taken from agreed draft sections**

**Background**

According to Article 33 of Council Regulation (EC) 2371/2002, the STECF shall be consulted regularly on the status of EU fisheries including biological, economic and social aspects. Information on fish stocks and fisheries around the outermost regions (OR's) is limited and have not been assessed systematically. This prevents the Commission to fully implement the CFP in these regions, which on the other hand deserve a differential treatment by reason of their special geographical characteristics (insularity, remoteness, etc.).

**Terms of reference**

For fishery resources in the EEZs around French Guyana, Martinique, Guadeloupe and La Reunion, the Azores, Madeira and the Canarian Islands, STECF is requested:

To describe the main stocks and fisheries (differentiating between local, resident and others) within the EEZs. The description should cover fish stock status, fishing fleets, fishing techniques, yields and the economic and social performances of these fisheries.

To describe the main environmental issues related to these fisheries; bycatch of sensitive species, effects of fisheries on natural habitats and influence of the environmental quality of the water on fisheries performance.

**STECF general observations**

The environmental and geological origins of the marine habitats around the outermost regions of the EU support distinctive benthic communities and populations of demersal/pelagic fisheries. For example, the OR's are all archipelagos consisting of chains of volcanic islands, with the exception of French Guyana which is part of the South American Continent. By definition, all the island archipelagos characteristically have very narrow or no discernable 'shelf' areas to fish. The bottom types tend to be hard in nature dominated by rocky outcrops, seamounts, gullies and vertical cliffs. There are very few areas where traditional bottom trawling can occur so most of the fisheries in these habitats rely on deploying various forms of static or passive gear types such as long-lines, gill/drift nets, and various types of pelagic and demersal traps. The associated bottom fauna, including the targeted 'commercial' fish species, are typically varied and diverse in such habitats. Eastern and western Atlantic archipelagos, as well as the Mascarene archipelago in the Indian Ocean, are biogeographically distinct with corresponding differences in the targeted 'commercial' fish species. Some species are representative of deep water ecosystems (e.g. >200 m) that are particularly vulnerable to the impacts of bottom contact fishing gears (including bottom set long-lines) and over-harvesting due to their generally low growth potential and yield. Some of the archipelago ecosystems are under increasing threat from pollution mainly caused by run off of contaminants associated agricultural land use, coastal urbanisation, tourism and climate change.

By contrast the continental shelf and slope waters off French Guyana are typical of soft 'muddy' sedimentary habitats subject to high levels of enrichment and turbidity caused by the large amount of sediments discharged from the Amazon River mouth inducing muddy bottoms and low salinity.

Based upon the biogeographic and environmental characteristics of the ORs the scientific synthesis of the available information presented in the background documents (Morato, 2012; Martin-Sosa, 2012 and Blanchard, 2012) have been grouped according to the following four 'ecological/fishery' categories rather than the overseas territory groupings as reported, e.g.; **i.** eastern Atlantic archipelago (e.g. Azores, Madeira and Canary Islands), **ii.** western Atlantic archipelago (e.g. Martinique and Guadeloupe), **iii.** Indian Ocean archipelago (La Reunion) and **iv**. Guyana continental shelf.

**Eastern Atlantic archipelago** *(Azores, Madeira and Canary Islands)*

There is a common perception among fishermen in this region (particularly in the Azores) that some demersal stocks may be facing serious problems, especially following open access regime under the current CFP reforms which will allow foreign vessels to target them

(Carvalho et al., 2011). Morato (2012) argues that the Azores are an ultra-remote island community, with fragile resources and economies and many rural communities heavily dependent on the fishing sector for their economic and social well-being, this is also the case for the other islands in this archipelago. The authors argue the fisheries need special recognition and protection from the threats of open access and free-for-all fishing, which could cause over-exploitation of certain demersal fish stocks, especially those associated with the bottom set long-line, hand-line and trap fisheries. STECF has summarised the report data against *fisheries*, *governance* and *ecosystem* issues and this is presented Table 6.1.1

STECF concludes that the resources caught by *bottom long-line*, *hand-line* and *traps* fisheries in this region are potentially at risk of being over-exploited due to both having high economic value and declining stock status.

In addition the relatively moderate level of habitat impact and bycatch associated with this fishery suggests a precautionary approach should be taken when considering any new management approaches that could potentially change the fleet dynamics of this largely local *artisanal* fleet, e.g. causing a shift from many small to fewer larger vessels. However, in terms of the habitat and fishery characteristics of this region STECF recognises there are possibly some similarities with the narrow shelf areas off mainland Portugal and Spain which support demersal *artisanal* fisheries and lesson could be learnt in terms of other fleet behaviour.

The pelagic stocks generally demonstrate high inter-annual variability and this is reflected in Table 6.2.1 in terms of their variable value and variable stock status. Indeed, highly migratory species such as tuna are particularly susceptible to the seasonal, inter-annual and inter-decadal variations of the oceanographic conditions (Gouveia and Mejuto, 2003).

STECF notes that some small and deepwater species in Division X are currently assessed by the ICES WGHANSA and WGDEEP and that advice on management for such species is available from ICES. However, STECF also notes that several fish species which are of significant local value/importance are not presently assessed either by ICES or CECAF and that consideration should therefore be given to assessing and managing them in addition to those already assessed. STECF also notes that the quantity of stock and fishery information is much less in the Madeira and the Canary islands compared to the Azores.

Overall the reports conclude that:

- Landings are stable in the Azores but declining in Madeira and Canary Is.
- Landed value have increased in the Azores but remained stable in Madeira and Canary Is.
- Number of jobs are declining in the three regions, but data for 2011 and 2012 may reveal an increasing trend
- No local stock assessments were available for Madeira, Azores or Canary Is.
- With the exception of small pelagic fish species and Atlantic bonito, other major stocks show signs of declining trends
- There's some concern from the fishing industry on the increase on fishing effort, mainly from external fleets
- Main by-catch issues in these regions are by-catch of deep-water sharks and sea-turtles, but seem to be low when compared to elsewhere

- Main effects on natural habitats seem to be related to by-catch of deep-water corals but again, impacts are low when compared to others fishing gears. At Canary Islands there is clear evidence of ecosystem destabilization by sea urchin *Diadema antillarum* due to predator over-harvest (besides becoming conditions because of climate change)

**Table 6.2.1. Eastern Atlantic archipelago** (e.g. Azores, Madeira and Canary Islands)

| Fishery | | | Governance | | | | Ecosystem | | |
|---|---|---|---|---|---|---|---|---|---|
| Gear Type | Fleet (Local, Resident, Other) | Target Species | Assessment | Fishery Management (TACs, Effort) | Closures (MPA's) | Stock Status | Habitat Impact | Bycatch | Value/Importance (Economic /Social) |
| Small pelagic nets | Local | *Trachurus picturatus*<br>*Scomber colias*<br>*Sardinella* spp<br>*Sardina pilchardus*<br>*Boops boops* | FAO statistical area 27, 34 ICES Area X (WGHANSA) | TAC's (EC Reg. 2340/2002; EC Reg. 2270/2004) | - | Increasing /variable | None | Low: common dolphin | Variable |
| Pole and line | Local | *Katsuwonus pelamis*<br>*T. alalunga*<br>*T. albacares*<br>*T. thynnus* | ICCAT | TAC's | - | Declining /variable | None | None: Minimal | Moderate/High |
| Bottom long-line, hand-line, traps | Local | *Pagellus bogaraveo*, *Conger conger,*<br>*Loligo forbesi, Polyprion americanus*<br>*Helicolenus dactylopterus*<br>*Phycis phycis*<br>*Pagrus pagrus*<br>*Seriola* spp<br>*Dentex*spp<br>*Sparisoma cretense* | ICES Area X, (WGDEEP) FAO statistical area 34 | TAC's | Yes | Declining /variable | Moderate: Cold water corals (Anthozoans, Hydrozoans) | Moderate/low: Deep water sharks, *C. squamosus, Centroscymnus* sp. | High/Moderate |
| Pelagic long-line | Other | *Xiphias gladius*<br>*Prionace glauca* | ICCAT | TAC's | - | Increasing / above Bmsy | None | High: turtles, pelagic sharks (shortfin mako and blue shark) | Low |
| Deep-water pelagic long-line | Local/other | *Aphanopus carbo* | ICES Area X, (WGDEEP) CECAF 34.1.2 | TAC's | - | Declining | None | Deep water sharks, *C. squamosus, Centroscymnus* sp. | Low/Moderate |

**Western Atlantic archipelago** (e.g Martinique and Guadeloupe)

The continental shelf of these two islands is short and the ocean waters are oligotrophic, with clear waters and coral reef ecosystems. Although Blanchard (2012) reports that the fishing fleets in this region are now quite well described and quantified there are significant difficulties associated with obtaining catch and landings statistics. There are also irregular stock assessments of the main commercial species, flyingfish, dolphinfish and blackfin tuna. Most of the fleets are constituted of very small boats and operate at a local level, with the offshore 7 m – 9 m fleet having the highest economic turnover and return.

Only assessment data related to flyingfish is presented, with the most recent stock assessment reported in 2008 (Medley et al., 2008). Medley et al. (2008) suggested that the stock of flyingfish in the eastern Caribbean is not overfished and that overfishing is not occurring, however STECF notes that this stock is not routinely assessed to be confident in this assertion.

The main pressure on the environment appears to be related to the use of Chlordecone (an organochlorine insecticide) that has been used in the West Indies from 1972 to 1993 to fight a weevil attacking banana roots. Indeed this was the only environmental pressure described in the background document (Blanchard, 2012) with the most severe effects reportedly localised around the mouth of rivers. There is no mention of by-catch associated with pelagic trolling or impacts to seabed habitats (coral reefs) caused by bottom set long-lines as no documentation were found on this topic, despite these being recognised as an important habitat in the region. On the other hand, this type of gear is used by less than 7% of the boats in Martinique and 20% in Guadeloupe.

STECF concludes that insufficient information is presented in the background document to fully address the ToR. This reflects the lack of available information.

**Indian Ocean archipelago** (La Reunion)

The continental shelf of La Réunion is short and the ocean waters are oligotrophic, with clear waters and coral reef ecosystems. Approximately 67% of the vessels are small, between 5 and 7 meters long and operate at a local level within 12 NM of the shore. The main fishing method is the use of hand lines (82% of vessels). There is an important offshore fleet operating in the region composed of vessels originating from Taiwan, Spain, Indonesia and Japan, targeting stocks of Swordfish and Tuna. Although Blanchard (2012) reports that the fishing fleets in this region are now quite well described and quantified (since 2005) there are significant difficulties associated with obtaining catch statistics.

The last stock assessment for swordfish in the Indian Ocean was carried out in 2009 (IOTC, 2009). The conclusion of the work carried out in 2009 is that the current catch level (the last year considered is 2007) is probably close to the maximum sustainable yield (MSY), suggesting a stock fully exploited.

No economic data are available and no regular stock assessments are conducted of the main locally caught and landed species. There is no data available on bycatch or impacts of fishing

on the environment. The main environmental issue highlighted is that of nutrient enrichment in coastal waters giving rise to algal blooms and smothering of seabed reefs.
A strong decreasing temporal trend of the annual production is observed for the small scale fisheries between 2005 and 2010. This may, in part, be due to over-exploitation and changes to water and seabed habitat quality caused by nutrient enrichment.

STECF concludes that insufficient information is presented in the background document to fully address the ToR. This reflects the lack of available information.

**Atlantic South American continental shelf** (French Guyana)

The majority of documented fishing occurs on the continental shelf in water depths ranging between 30 m – 120 m. The coastal waters are very turbid and have variable salinities because of the large amount of sediments and fresh water flowing from the Amazon River. The influence of the Amazon decreases from the coastline to more offshore areas.

Within the small-scale coastal *artisanal* fleet, various fishing gears are used: nets, drift nets, trammel long-lines, Chinese barrier, fishing rod, and angling. Drifting nets are used in 80% of cases, all types of ships combined. The fixed net is used in 18% of cases. Although the use of the net is fairly common, fishing strategies are not necessarily identical. Weakfishes (especially *Cynoscion acoupa*) represent more than 60% of the total landings. This artisanal coastal fishery is now the main one in French Guyana with higher landings than the industrial ones and yields remain stable. The industrial fisheries target Red snapper (*Lutjanus purpureus* and *Rhomboplites aurorubens*) exploited by two fleets (45 handliners and 5 potters) landing around 1500 tons, and shrimp (*Farfantepenaeus subtilis* and *Farfantepenaeus brasiliensis*) exploited by trawlers landing around 1000 tons, and these are routinely assessed and managed. For these fisheries STECF has summarised the data against *fisheries*, *governance* and *ecosystem* issues and this is presented Table 6.2.2.

The economic performance of the shrimp fishery is generally poor and getting worse. This is due to competition with farmed shrimp imported from south east Asia, rising fuel costs and low catch per unit effort. It is estimated that a capacity of about 15 vessels could be sustained economically given present stock status.

The report concludes that:

- The red snapper (*Lutjanus purpureus*) total biomass has since 2002 been increasing and is now at levels last seen during peak abundance in the 1990's, while spawning stock biomass has been increasing more slowly and has not yet reached the 90's peak in abundance.
- The shrimp stock (*Farfantepenaeus subtilis*) continues to decline since the mid 2000s despite a declining long-term trend in fishing mortality from 2005. This suggests that fishing is not the main cause of the collapse of the stock biomass and recruitment.
- The TAC for the shrimp fishery has rarely been achieved in recent years and it has been shown that the conditions of profitability trigger regulation of the fishery before the TAC is reached.

- To give the shrimp stock a chance to improve, if conditions again become favourable, it may be desirable to consider a revision of the TAC, and consequences of the licenses to ensure that the catches remain moderate to ensure a sustainable renewal of the stock.
- Since 2010, a turtle excluding device (TED) has been fitted to gears to obtain a fishing license. This device also reduces by-catches, and thus discards especially larger fish species.
- The red snapper fishery does give rise ghost fishing (pots lost on the bottom). This difficulty could be resolved by implementing a pot that could deteriorate after a time on the bottom after being lost, and with larger mesh size to decrease the catches of juveniles.

Given that the red snapper stock and fishery is in a healthy state, STECF considers that in addition to the vessel licences issued for the red snapper fishery, that management plans also be established.

STECF considers that introducing management plans for the weakfish fishery should be a long-term objective given its economic importance, but the benefit of introducing such management measures will clearly depend on the effective prevention of illegal fishing activities of Brazilian and Suriname vessels which operate in French Guyana waters.
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**Table 6.2.2. Atlantic South American continental shelf (French Guyana)**

| Fishery | | | Governance | | | | Ecosystem | | |
|---|---|---|---|---|---|---|---|---|---|
| Gear Type | Fleet (Local, Resident, Other) | Target Species | Assessment | Fishery Management (TACs, Effort) | Closures (MPA's) | Stock Status | Habitat Impact | Bycatch | Value/Importance (Economic /Social) |
| Hand-lines and pots | other (venezuelan fleet)<br><br>Fleet from Martinique | *Lutjanus purpureus Rhomboplites aurorubens* | IFREMER-VPA (FAO – ICLARM Stock Assessment Tool) using Venezuelan hand-line landing data. | Licences | | Increasing / stable | Low | Moderate: ghost fishing | High/Moderate |
| Shrimp trawling | Local and Resident | *Farfantepenaeus subtilis Farfantepenaeus brasiliensis* | IFREMER-VPA | TAC's, Licences | Prohibited < 30 m | Declining | Moderate | High: large fish, turtles | Moderate |
| Drifting gillnets | Local and resident | Coastal demersal species *(Cynoscion acoupa, C. virescens, Hexanematichthys proops...)* | | Local licences delivered by the "comité regional des pêches" (fishermen representatives) | | stable | Low | Moderate | Moderate economic value and high social importance |

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## 6.3. Request for an STECF opinion on the application of a selective gear during commercial fishing in the Irish Sea

**Background**

In a Council Statement in the December Fisheries Council the UK agreed to impose a number of selectivity measures including that:

*' in the Nephrops fishery (TR2) the UK administrations will work with fishers to deploy measures that result in significant reductions in cod catches. For the Irish Sea the UK agrees as an objective that by 1 July 2012 the nephrops fleet will fish with gears which will enable them to secure an exemption from the effort regime as laid down in article 11 of regulation (EC) No 1342/2008 (the cod plan).'*

The UK administration in Northern Ireland, Department of Agriculture and Rural Development, (DARD) have undertaken a number of gear trials, which are currently being assessed by STECF.

Pending the report of this assessment DARD have introduced a SELTRA type design to address discarding and cod catches in the Irish Sea from the 1st October. This implementation has been supported by an observer programme to provide data on the commercial performance of the gear, the initial reports of these observed trips will be provided by the end of October.

The initial aim of this project was to achieve the basis for an exemption under Article 11 of the Cod Plan, however DARD consider that there has been significant additional reduction in the discarding of other species.

**Terms of Reference**

Referring to the earlier assessment of this gear type and in light of the additional observational data STECF are requested to comment on the commercial performance of the gear and if possible to determine the impact upon cod and other commercial stocks. In particular STECF are invited to

- Determine, if possible, the level of reduction in cod and other whitefish catches and discards that has been achieved in the implementation so far and to comment on what further impact may be achieved by the continued use of the gear.

- Identify any additional information that would assist in the assessment of the SELTRA-type trawl and in identifying means of improving its performance in a commercial setting.

**STECF observations**

STECF use three sources of information to consider the question:

1. SR 657 Irish Sea Selectivity (Montgomery and Briggs, 2012);
2. Report on Review of recent trials by Northern Ireland on Cod reducing gears in the Irish Sea (Request for services commitment no. si2.615631);
3. observer data provided.

The results of a series of gear trials that were undertaken in the Irish Sea during April, May and June 2012 (2nd quarter) which tested a number of trawl modifications aimed at attaining catch levels of cod consistent with the cod plan, have been assessed by STECF in an ad-hoc contract (*services commitment no. si2.615631*).

STECF notes that the SELTRA trawl version 2 (300 mm) was clearly the preferred industry option and does offer the potential to reduce cod catches. Because cod displays seasonal patterns in cpue, with the spawning season (1st quarter) consistently yielding the highest cpue and the 2nd and 3rd quarters yielding the lowest values, further work is required during periods of higher cod abundance and should be supported by observer data once introduced into the fishery if case for exemption is to be presented.

For example, cod catches were low at 27.6 kg and 3.4 kg in the control and experimental trawls respectively. While the catch reductions were comparatively large (84%) and in line with the reductions reported elsewhere (Madsen et al, 2010), these were not found to be statistically significant ($p=0.09$) but this may be due to the low catch rates observed. There were no significant losses in *Nephrops* catches ($p=0.4$). Very few whiting, haddock and plaice above the MLS were caught during the trials, but there is an indication that more of the smaller fish were retained by the experimental net. The overall results are summarized in Table 6.3.1.

The design reduces overall bulk catches, thereby potentially elevating the proportion of cod in the catch even if the real level of cod catches is reduced. This not only constrains the development and application of gears that actually reduce cod catches but can provide a perverse incentive to maintain or even increase overall unwanted catch simply to reduce the percentage contribution cod makes.

The observer-dataset provides the catches by haul. By using observer data it is not possible to determine whether the low cod catches observed in the SELTRA trawl were due to the technical functioning of the gear (technical decoupling) or simply due to the low cod abundance (depletion decoupling) as we do not have information on the cod population during the sea trials. In order to explore whether hauls in particular areas were consistently without cod in the catches, possibly indicating absence or very low presence in those areas, a tentative categorization by haul and by ICES rectangles has been carried out and is given in Table 6.3..

The ratio between pooled cod catch and total catch was 0.52% and at the haul level ranged from 0% to 6.48%. The percentage cod ranged between 0% and 2.48% if we categorize the hauls by ICES rectangles. However, these latter ratios cannot be statistically supported as the number of hauls is rather poor for some areas (see Table 6.3.2). Nevertheless, one of the rectangles with 0 cod had 13 hauls, suggesting that there may not have been cod present in that rectangle.

Table 6.3.1. SELTRA single-rig. Total and cod catch (kg) and %Cod expressed as a ratio between cod and total catch.

| Control | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOW | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | TOTAL |
| Bulk | 480 | 750 | 525 | 300 | 510 | 450 | 600 | 210 | 480 | 570 | 660 | 540 | 6075 |
| Nephrops | 220 | 255 | 178 | 99 | 197 | 137 | 223 | 45 | 169 | 178 | 216 | 181 | 2097 |
| Cod | 1.83 | 0.07 | 0.00 | 0.00 | 0.11 | 0.00 | 5.47 | 13.51 | 0.11 | 2.15 | 4.36 | 0.09 | 27.69 |
| % Cod | 0.38 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.91 | 6.43 | 0.02 | 0.38 | 0.66 | 0.02 | 0.46 |
| | | | | | | | | | | | | | |
| Experimental | | | | | | | | | | | | | |
| TOW | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | TOTAL |
| Bulk | 510 | 510 | 480 | 300 | 390 | 150 | 480 | 255 | 480 | 420 | 540 | 510 | 5025 |
| Nephrops | 220 | 216 | 188 | 99 | 140 | 82 | 197 | 64 | 169 | 156 | 178 | 162 | 1,870 |
| Cod | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 2.89 | 0.00 | 3.04 |
| % Cod | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.1 |

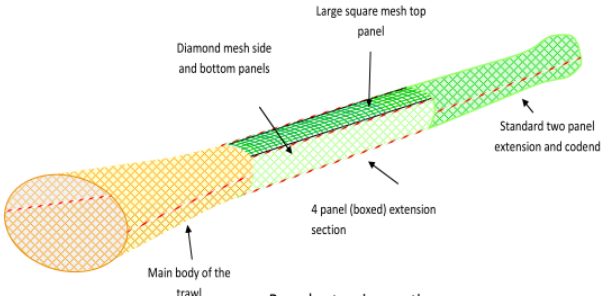


Figure 6.3.1. Large mesh upper panel of the SELTRA trawl and positioning in the trawl.

Table 6.3.2. Ratio of cod catch by total catch (KGTOT) for each ICES rectangle (ICES).

| ICES | KGTOT | Nr. of Hauls |
|---|---|---|

| | | |
|---|---|---|
| 34E4 | 2.48% | 1 |
| 36E3 | - | 2 |
| 36E4 | 1.12% | 13 |
| 37E4 | 0.47% | 51 |
| 37E5 | 1.37% | 3 |
| 39E4 | - | 14 |
| 39E5 | - | 3 |
| **Total** | **0.52%** | **87** |

**STECF conclusions**

STECF acknowledges the initiative by the UK administration in Northern Ireland (the Department of Agriculture and Rural Development, DARD) for having undertaken a trial study on gear modifications designed to reduce catches of cod and other by-catch species.

Due to the low catches of cod observed during the experimental trials, at this stage it is not possible for STECF to conclude whether the SELTRA gears will attain the desired reductions in cod catches in the Irish Sea. Experimental data from trials undertaken in seasons with higher cod abundance than observed in the current trial are required before any definitive conclusions on the potential ability of the gear to reduce cod catches under differing fishing conditions can be attempted.

From the observer data it is not possible to determine whether the low cod catches observed in the SELTRA trawl were due to the technical functioning of the gear or due to the low cod abundance or the high bulk of the catch. Further research and monitoring is required if these aspects need to be disentangled.

### 6.4. Request for an STECF opinion on the management plans for boat seines fisheries in the Spanish waters of Murcia Region and Baleares

**Background**

Member States were expected to adopt management plans for fisheries conducted by trawl nets (demersal and pelagic), boats seines, shore seines, surrounding nets and dredges (for molluscs) within their territorial waters (Article 19 of the Council Regulation EC No 1967/2006; OJ L36 of 8.2.2007 hereinafter "Mediterranean Regulation").

The plans shall include conservation reference points, either empirical or model based, such as targets against which the recovery to or the maintenance of stocks within safe biological limits can be assessed (e.g. population size and/or long-term yields and/or fishing mortality rate and/or stability of catches). The management plans shall be drawn up on the basis of the precautionary approach to fisheries management and take account limit reference points where recommended by relevant scientific bodies.

The plans shall ensure the sustainable exploitation of stocks and that impact of fishing activities on marine eco-systems is kept at sustainable levels.

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

Moreover, with a view to carry out some specific fisheries, exceptions to some rules may be granted as stipulated by Articles 4(1) second subparagraph, 4(5), 9(7) (not applicable to trawl-nets), 13(5), 13(9), 13(11), 15(3) respectively of the Mediterranean Regulation.

In order to benefit of such derogations the fisheries concerned, in addition of being managed within an adequate management plan (Article 19) , shall respect some conditions including, *inter alia*, to be highly selective, in order to ensure that catches of species mentioned in Annex III are minimal, to have a negligible effect on the marine environment and shall be carried out neither above coralligenous habitats and mäerl beds nor above seagrass beds of *Posidonia oceanica* or other marine phanerogames.
For the latter issue a derogation to operate in the water columns above seagrass beds is available (Article 4(1) second subparagraph) provided that the lead-line and/or the hauling ropes of boat seines do not touch the sea grass bed during the fishing operations.

Member States were expected to provide up-to-date scientific and technical justifications for such derogations.

Spain submitted the scientific basis for two management plans and justifications for derogations for the boat seines fisheries in the waters of Murcia Region and Baleares.

**Terms of Reference**

STECF is requested to review the scientific basis for the above mentioned management plans as, to evaluate their findings, to make appropriate comments, also with respect to the elements/measures included therein, and to advise whether the plans contain adequate elements that account for:

1. the biological characteristics and the state of the exploited resources with reference in particular to long-term high yields and low risk of stock collapse,

2. the fishing pressure and if concerned fisheries are duly described and expected to exploit the main target stocks in line with their production potentials. Advise whether the plan is expected to maintain or to revert fisheries productivity to higher levels in line with MSY or proxy and in which time frame.

3. pre-agreed harvesting control rules based either on catch limitation, fishing pressure or biomass levels which, in case of specific changes in the productivity of the stock and or the fishing pressure, are adequate to readjust the plan towards the objective

4. negligible impact of fishing activities on marine environment (protected habitats and species)

5. size and/or species selectivity of the regulated fishing gears with particular attention to sizes and relative quantities of species mentioned in Annex III of the Mediterranean Regulation

6. adequate mechanisms of monitoring and review of the plans

7. STECF is also requested to indicate, and comment as adequate, whether the data on catches and catches per unit of effort have been duly analyzed with a view to provide a first set of (rough) management and conservation reference points to drive the management plan in line with sustainable fishing.

**Management plans for the transparent goby boat seine fishery in waters of the Murcia Region**

A document entitled "Management plan for the traditional fishing of the transparent goby (*Aphia minuta*) in the waters of the Murcia region, Spain" was examined by STECF.

**STECF observations**

The traditional method of fishing uses a small-mesh seine net at the cod end (4 mm) and fishing occurs at a short distance from the coast and shallow depths (5-40 m). Therefore, three derogations from the Mediterranean regulation are requested; for the mesh size, distance from the coast and minimum depth.

The boat seine fishery targeting the transparent goby contributes by about 25% to the annual income of the fleet concerned (small scale fishing vessels).

In the Plan, it is stated that the drop of seine when towed does not exceed 3 m. Furthermore, the Plan presents data from a recent *ad hoc* sampling on board the small scale fleet of Murcia (inspection of 9 hauls immediately after net retrieval) indicating the absence of any benthic organism or inert elements from the bottom or any broken leaves of *Posidonia*.

The plan presents evidence from published studies as well as data from a recent *ad hoc* sampling survey on board the Murcia small scale fleet (inspection of 9 hauls immediately after net retrieval) that the transparent goby fishery is highly selective. In the *ad hoc* samplings average by-catch of other species was less than 1.5%.

Catches are also obtained of another gobiid *Pseudaphia ferreri* (~15%), mainly during the end of the 3-4 months fishing period. This species is also traded as the *Aphia minuta* although at lower prices.

The proposed Management plan comprises a number of elements:

- Specification of the gears to be used, the maximum number of vessels licensed to use the gear, the season (December to March) that the gear may be deployed and a maximum number of fishing days per vessel per week.

- A threshold value of 24.8 kg day$^{-1}$ vessel$^{-1}$ for CPUE (25% percentile of historical time series) to be used as follows: Should the average seasonal CPUE fall below 24.8 kg day$^{-1}$ vessel$^{-1}$ for three consecutive years, action (not specified) shall be taken.

- Monthly threshold values (based on 25% percentiles values of CPUE for each fishing month of an historical 10-years' time series) to determine the number of days that the gear may be deployed during each week of the fishing season.

- An annual catch limit: The fishery will be closed as soon as the cumulative seasonal catch reaches 20 t (75% percentile of seasonal catches over the period 2001 to 2011).

- According to the Plan, the number of authorized vessels in the transparent goby fishery is being reduced from 74 to 29 units.

**Observations in relation to each of the elements outlined in the Terms of Reference**

*Biological characteristics and the state of the exploited resources with reference in particular to long-term high yields and low risk of stock collapse.*

The biological characteristics of *Aphia minuta* are adequately presented. No information is provided on stock status. The proposed plan states that the annual abundance of transparent goby is mainly determined by environmental conditions but no specific scientific evidence is provided. The data presented indicate that catches and CPUEs have varied without trend over the period 2001-2011.
STECF notes that the life cycle of transparent goby is very short (less than 1 year) and that natural mortality is high.

*Fishing pressure and if concerned fisheries are duly described and expected to exploit the main target stocks in line with their production potentials. Advise whether the plan is expected to maintain or to revert fisheries productivity to higher levels in line with MSY or proxy and in which time frame.*

The fishery is adequately described for the last 10 years. Data and information on the fishing fleet, days-at-sea, fishing gear, fishing operation, duration of the fishing season, landings, size compositions, prices etc. are presented in the proposal. Seasonal and monthly CPUE series are also presented. Based on catches and CPUEs, empirical catch and effort limits are proposed (see below) aiming at the conservation of the resource.
As *Aphia minuta* has a longevity of less than one year it is not appropriate to consider exploitation in terms of MSY.

*Pre-agreed harvesting control rules based either on catch limitation, fishing pressure or biomass levels which, in case of specific changes in the productivity of the stock and or the fishing pressure, are adequate to readjust the plan towards the objective*

Harvest rules to limit catches and effort are proposed in the plan and should the average seasonal CPUE fall below 24.8 kg day$^{-1}$ vessel$^{-1}$ for three consecutive years, the plan suggests that action should be taken to limit the fishery. However the plan does not specify what action should be taken.

Given that transparent goby has a life cycle of one year, STECF considers that such an approach may not provide adequate protection for the stock and that a limit based on a single fishing season

would provide better safeguards. However, should the CPUE fall below the specified limit in three consecutive years, the whole plan should be reevaluated as the current approach is unlikely to be appropriate.

Reference CPUE limit levels have also been defined for the different months of the fishing period (based on the lower quartile value for monthly CPUE in the 2001-2011 time series), i.e. 23.3, 26.3, 22.8 and 13.3 kg $day^{-1}$ $vessel^{-1}$ for December, January, February and March, respectively. If the average CPUE per vessel in one month is lower than the respective monthly reference level, fishing effort in the following month shall be reduced by one day per week (from 5 to 4 days) for all vessels. If CPUE remains below the respective monthly limit level, the fishery will be closed for the subsequent month.

STECF notes that in years in which recruitment (availability to the fishery) is delayed, this effort control rule will deliver some biological protection but might not work optimally in terms of catch, e.g. the effort will be reduced in January when CPUE is low in December, simply because recruitment was delayed during that year.

A further catch limit is defined in the Plan, i.e. closure of the fishery until the next fishing season, whenever the cumulative catch in the current season exceeds 20 t (~the 75% percentile of the annual catch values of the 2001-2011 time period).

Given the absence of stock assessment of the stock, STECF considers that CPUE and catch limits are appropriate.

*Impact of fishing activities on marine environment (protected habitats and species)*

STECF considers that the information provided in the proposed plan is insufficient to determine whether the lead-line and/or the hauling ropes of boat seines do or do not touch the seagrass bed during the fishing operations. Furthermore, it is not clear from the information provided whether or how often fishing operations take place over *Posidonia* beds or whether they overlap a significant fraction of the areas occupied by *Posidonia oceanica* or other marine phanerogames.

*Size and/or species selectivity of the regulated fishing gears with particular attention to sizes and relative quantities of species mentioned in Annex III of the Mediterranean Regulation*

The information supplied in the plan suggests that the fishery for transparent goby is highly species-selective and has very low by-catch rates. No information is provided on the size composition of by-catch species.

*Mechanisms for monitoring and review of the plans*

The Management Plan includes adequate mechanisms for implementing and monitoring that are fully described in the text of the proposal. It will be reviewed and submitted again three years after the date of its approval. In the meantime, appropriate biological studies will be conducted to assess the target population of the transparent goby.

*STECF is also requested to indicate, and comment as adequate, whether the data on catches and catches per unit of effort have been duly analyzed with a view to provide a first set of (rough) management and conservation reference points to drive the management plan in line with sustainable fishing*

The analysis so far undertaken provides a first set of reference points that appear to be reasonable for management purposes but it is not possible at this stage to determine whether they will give rise to exploitation rates that are sustainable in the longer-term. To this end, further analysis would be desirable and a new simple method that can be explored for estimating sustainable catch levels when the data available is limited is the Depletion-Corrected Average Catch (NOAA Stock Assessment toolbox, Alec MacCall, NMFS/SWFSC/FED). The goal is to identify a moderately high yield that is sustainable, having a low chance that the estimated yield level greatly exceeds MSY.

**STECF conclusions**

STECF is unable to assess the impact of the provisions of the proposed management plan on sensitive habitats because of a lack of appropriate data and information but notes that impacts on by-catch species is not an issue of concern since the fishery for *Aphia minuta* is highly species specific and by-catches form only a small proportion (<1.5%) of the total catch.

Given the available information and the short life span of *Aphia minuta* it is not possible to determine the likely long-term effects on future recruitment and spawning stock biomass. However, the harvest rules proposed in the plan are expected to result in exploitation rates that are less than or equal to the average rate over the last decade. STECF therefore considers that implementing the plan as proposed is unlikely to pose any serious threat to the stock in the short term. Furthermore, appropriate monitoring would permit the collection of the data and information required to undertake the proposed three-year review.

STECF notes that the plan prescribes that for every vessel participating in the fishery, the authorities will collect on a daily basis catch and price information, together with ancillary information such as haul position and depth. STECF agrees that such information is essential for a thorough evaluation of the plan in the future. Such data will allow the magnitude and variability of the catch rates to be determined along with effort in days fishing that are carried out. Information on daily catches and prices will allow a management plan to be created that takes account of not just the mean catch rates but also the variability so that maintaining or restricting the fishery can be carried on a better informed basis in the future. Price information will also allow economic considerations on the consequences of management to be included in the management decisions. Such data would also give information that may help refine the rules when late spawning is identified as the cause of low catches in the first month of the fishing season.

**Management Plan for Balearic Boat Seines**

Boat seining is a traditional fishing activity in the Balearic waters. This MP refers to two boat seine fisheries, one targeting transparent goby (*Aphia minuta*) locally called jonquillo and *Pseudoaphia ferreri* and a second targeting picarel (*Spicara smaris*), locally called gerret. The boat seines are called jonquillera and gerretera respectively.

Jonquillera is used in Majorca, while gerretera is used Ibiza and Formentera and occasionally in Majorca. Of the 348 vessels that made up the Balearic small scale fleet in 2010, the number of boats involved in boat seining fishing was 36 and 6 respectively for jonquillera and gerretera. Closures are implemented from the 1st May to 14th December for jonquillera and from 30th April to 31st October for gerretera.

From 2001-2002 to 2010- 2011 jonquillera landed between 10 and 40 t per season, and gerretera landed between 5 and 15 t per season. For the vessels using jonquillera, jonquillo represented around 40% of the annual landings and income.

These boat seines are used very close to the coast, in shallow waters.

The proposed management plan consists of 69 pages, chapters 1-6 translated into English, and chapter 7. "Aspectos socioeconómicos", in Spanish.

The economic impact of the measures on the fisheries concerned is not presented.

The proposed Management plan comprises a number of elements:

- Derogations from the Mediterranean regulation (Council Regulation (EC) No 1967/2006) with respect to mesh size, distance from the coast and minimum depth for gear deployment.

- For both "jonquillera" and "gerretera", specification of the gears to be used, the maximum number of vessels licensed to use the gear, the season that the gear may be deployed (mid-December to April for "jonquillera" and November to April for "gerretera"), and a maximum number of fishing days per vessel per week (five days per week).

- Monthly threshold values (based on 25% percentiles values of CPUE for each fishing month of an historical 10-years' time series for both "jonquillera" and "gerretera") are defined. In case that the observed monthly values do not reach the monthly threshold, the number of fishing days per week will be reduced from five to four during the next month , and should the threshold not be reached, then the following month the fishery will be closed for the whole month.

- For "jonquillera", a limit value of 30 kg $day^{-1}$ $vessel^{-1}$ for *Aphia minuta* CPUE and 40 kg $day^{-1}$ $vessel^{-1}$ for *Pseudoaphia ferreri* CPUE, and for "gerretera", for *Spicara smaris*, 200 kg $day^{-1}$ $vessel^{-1}$ (25% percentile of historical time series) is also fixed.

- Finally, for "jonquillera" a maxima quota per season (*Aphia minuta +Pseudoaphia ferreri*) is set to 40 t, and for "gerretera" to 10 t. When these quotas are fished, the fisheries will be closed until the next season.

- According to the Plan, the number of authorized vessels in the transparent goby and picarel fisheries cannot exceed 80 units.

**Observations in relation to each of the elements outlined in the Terms of Reference**

*Biological characteristics and the state of the exploited resources with reference in particular to long-term high yields and low risk of stock collapse.*

The biological characteristics of *Aphia minuta*, *Pseudoaphia ferreri* and *Spicara smaris* are broadly presented, based on the literature although the information on *Spicara smaris* is rather limited. STECF notes that there is much more information available on these species than that mentioned in the MP. No information on size distributions is provided.

Concerning long-term high yields and low risk of stock collapse, the plan alleges that the abundance of the transparent goby is not related to fishing effort but to environmental conditions,

although no scientific basis is provided. It is worth mentioning that the transparent goby life cycle is very short (1 year), with very high natural mortality rate.

*Fishing pressure and if concerned fisheries are duly described and expected to exploit the main target stocks in line with their production potentials. Advise whether the plan is expected to maintain or to revert fisheries productivity to higher levels in line with MSY or proxy and in which time frame.*

The two boat seining fisheries are described in terms of fishing grounds, fishing gears, duration of the fishing season, fishing operation and trends in landings. Transparent goby landings over 1982-2011 displayed wide fluctuations, with peaks in 1983 (80 t) and 1991 (around 70 t), minimum landings in 1995 (< 10 t), and since then landings increased to around 40 t in 2009. The number of boats using jonquillera increased from 30 in 2002 to 36 in 2010. Picarel landings are shown to decrease during 2002 to 2011, and the number of boats declined from 15 to 8.

Seasonal and monthly CPUE are available for both fisheries and remained relatively constant over the past decade. STECF notes that there are a number of inconsistencies in different sections of the proposed plan regarding plan regarding the number of vessels involved in boat seining, landings and CPUE by species.

As *Aphia minuta* has a longevity of less than one year it is not appropriate to consider exploitation in terms of MSY.

*Pre-agreed harvesting control rules based either on catch limitation, fishing pressure or biomass levels which, in case of specific changes in the productivity of the stock and or the fishing pressure, are adequate to readjust the plan towards the objective*

Harvest rules to limit catches and effort are proposed in the plan regarding total annual catch, the daily catch per vessel and monthly CPUE thresholds for kg $day^{-1}$ $vessel^{-1}$.

Reference CPUE limit levels have been defined for the different months of the fishing season (based on the lower quartile value for monthly CPUE in the 2001-2011 time series) as follows: for "jonquillera", 15.59, 23.20, 25.46 and 21. 10 kg $day^{-1}$ $vessel^{-1}$ for December, January, February and March, respectively; and for "gerretera", 18.7, 47.9, 64.4, 65.2 and 50.9 kg $day^{-1}$ $vessel^{-1}$ for November, December, January, February and March, respectively. If the average CPUE per vessel in one month is lower than the respective monthly reference level, fishing effort in the following month shall be reduced by one day per week (from 5 to 4 days) for all vessels. If CPUE remains below the respective monthly limit level, the fishery will be closed for the subsequent month.

STECF notes that in years in which recruitment (availability to the fishery) is delayed, this effort control rule will deliver some biological protection but might not work optimally in terms of catch, i.e. the effort will be reduced in January when CPUE is low in December simply because recruitment was delayed during that year.

Finally, for "jonquillera" a quota per season (*Aphia minuta +Pseudoaphia ferreri*) will be set at 40 t, and for "gerretera" at 10 t. When these quotas are reached, the fisheries will be closed until the next season.

Given the absence of stock assessment of the stock, STECF considers that CPUE and catch limits are appropriate.

*Negligible impact of fishing activities on marine environment (protected habitats and species)*

The impact is alleged to be negligible because of the way the gear is operated, the fishing grounds where it is deployed (never over *Posidonia* beds) and the selectivity of the gear (almost all the catch corresponds to the target species). Little supporting data and information are presented. In the proposed text for the regulation of the boat seining fishery in the Balearic Islands (chapter 6.4 of the MP) it is specified that the use of "jonquillera" and "gerretera" will be prohibited over Posidonia beds.

*Size and/or species selectivity of the regulated fishing gears with particular attention to sizes and relative quantities of species mentioned in Annex III of the Mediterranean Regulation*

No information on sizes of the target species is presented. The "jonquillera" by-catch amount and species composition are described based on a specific study on the selectivity of this gear. No field studies on the "gerretera" by-catch, which is said to be known from the daily sales slips, by species and vessel. The target species are dominant in the catches (in weight, gobid species are 89% of the "jonquillera" catch, and picarel is 94% of the "gerretera" catch).

*Adequate mechanisms of monitoring and review of the plans*

Monitoring is included in the MP, but not detailed as to how it is to be undertaken. The duration of the plan will be three years and will be reviewed annually in order to consider any potential revisions that may be needed in the light of a change in the recruitment regime.

The sampling proposed in "6.6 Inspection, control and population monitoring plan" should also include the proposal to undertake sampling the size composition of the target species for the improvement of the assessment and management of the stocks.

*STECF is also requested to indicate, and comment as adequate, whether the data on catches and catches per unit of effort have been duly analyzed with a view to provide a first set of (rough) management and conservation reference points to drive the management plan in line with sustainable fishing*

The analysis so far undertaken provides a first set of reference points that appear to be reasonable for management purposes but it is not possible at this stage to determine whether they will give rise to exploitation rates that are sustainable in the longer-term. To this end, further analysis would be desirable and a new simple method that can be explored for estimating sustainable catch levels when the data available is limited is the Depletion-Corrected Average Catch (NOAA Stock Assessment toolbox, Alec MacCall, NMFS/SWFSC/FED). The goal is to identify a moderately high yield that is sustainable, having a low chance that the estimated yield level greatly exceeds MSY.

For the transparent goby fishery, stock size has been defined, for each fishing season, using the Leslie depletion model, with the monthly CPUE and cumulated catch as input. A maximum catch per fishing season and a monthly threshold reference CPUE (kg per boat and day) have been defined based on catch rates 2001-2002 to 2011-2012. This is the same approach used in MP of the *Aphia minuta* (rossetto) boat seine fishery in the GSA09, which at present is being implemented. It is to be noted that in 3 of the total 8 fishing seasons used in this analysis, the monthly CPUE at the beginning of the fishing season was not the highest of the season. Such finding can be explained by

a non complete overlapping that may happen between the time schedules of recruitment to the fishery and the previously defined fishing season.

Regarding the picarel boat seine fishery ("gerretera"), it is alleged that the catches of this gear form a very small part of the total catch of picarel, which is mainly due to trawlers targeting the adult fraction of the stock, and hence, the fishing mortality exerted by the "gerretera" must be small. Applying the proposed management model for the rosetto fishery to the available data on picarel, monthly reference threshold values of CPUE (kg per boat and day) for picarel have been defined. However, in the case of *Aphia minuta*, removals are all accounted for by the "jonquillera" fishery and unlike picarel, which lives for several years, the lifespan of *Aphia minuta* is less than one year.

There are some doubts on whether the same management strategy proposed for the small gobids in the plan could apply for a species as picarel, characterised by a quite different life history (longer lifespan, sexual inversion, etc) and a different exploitation pattern (juveniles exploited by small-scale vessels with seines and adults by trawling). The exploitation status of the stock should be estimated considering the amount and structure of the catches from all the fisheries where the species is involved, and not only following in time the catch rates of the juveniles' fishery. Such procedure will likely produce a biased perception of the evolution of the stock biomass, on the impact of any fishing strategy on the stock, and makes impossible the definition of a suitable management reference value. On the other hand, it is likely that the impact on the stock status of the fishery presented in the plan will be negligible, due to the very small number of vessels involved.

**STECF conclusions**

Given the available information and the short life span of *Aphia minuta* it is not possible to determine the likely long-term effects on future recruitment and spawning stock biomass. However, the harvest rules proposed in the plan are expected to result in exploitation rates that are less than or equal to the average rate over the last decade. STECF therefore considers that implementing the plan as proposed, is unlikely to pose any serious threat to the stock in the short term. Furthermore, appropriate monitoring would permit the collection of the data and information required to undertake the proposed annual review.

STECF notes that the plan prescribes that for every vessel participating in the fishery, the authorities will collect on a daily basis, catch and price information from the daily sales slips. Fishermen will fill in a form detailing the daily catch. STECF considers that the form should also include ancillary information such as catch by haul, haul position and depth. Such information is essential for a thorough evaluation of the plan in the future. Such data will allow the magnitude and variability of the catch rates to be determined along with effort in days fishing that are carried out. If possible the daily price should also be recorded. Together with the overall catches this information will allow a much better informed management plan to be created, one that takes account of not just the mean catch rates but also the variability so that maintaining or restricting the fishery can be carried on a better informed basis in the future. Retaining also price information will also allow economic considerations on the consequences of management to be included in the management decisions. Such data would also give information that may help refine the rules when late spawning is identified as the cause of low catches in the first month of the fishing season.

The information presented suggests current sustainability of these fisheries, with no evident decline in the catch rates along the time series. The implemented reference points are based on daily CPUE from the fleet. The MP includes the elements requested, but in general, these could have been addressed in a more elaborated way, taking into account the information that must be available (e.g. first sale records of daily catch, by boat and species, available since 2002).

About the number of boats that will be authorized to conduct boat seining, it is indicated that this number will be limited to 80, and, at the same time, it is said that it is difficult that more than 60 units be licensed. Furthermore, it is stated that the total number of boat seining boats in 2010 was 42. The MS should clarify the basis for the proposal of the limit of 80 vessels (i.e. around the double of the licenses in 2010). STECF recommends that, in case the MP is implemented, the number of boats authorized to use boat seine not to be higher than the number of vessels authorized the year previous to the implementation of the MP.

STECF considers that the boat seine fisheries are considered highly selective. Moreover, they do not affect seagrass meadows as fishing on these areas are not allowed according to the provision of the MP.

STECF acknowledges that the plans submitted to the current plenary meeting by the Spanish Authorities are a much more comprehensive and contain more relevant information than plans previously submitted.

# 7. ADDITIONAL REQUESTS SUBMITTED TO THE STECF PLENARY BY THE COMMISSION

## 7.1. Request for advice on the management plan of herring in VIaS VIIbc

### Background

ICES advises on the basis of the maximum Sustainable yield (MSY) approach that there should be no catches of this stock in 2013 unless a rebuilding plan is implemented. In 2011 the Pelagic RAC proposed a management plan for this stock. The plan was examined by STECF during its 2011 autumn plenary meeting. Several comments were then issued concerning areas for improvement. Subsequently, the Pelagic RAC agreed to introduce amendments to the proposed plan in order to take the feedback from STECF on board. The revised plan is attached in Annex.

### Terms of Reference

Further to the STECF advice6 of November 2011 in response to a number of questions from the European Commission in relation to the stock concerned, the STECF is requested to:

1. Assess the proposed management plan as revised, 1) to determine whether applying the plan provisionally in 2013 is likely to entail an excessive risk for the conservation of the stock, and 2) to determine what would be required to do a full evaluation of the plan.

6 Scientific, Technical and Economic Committee for Fisheries (STECF) - 38th Plenary meeting report (PLEN-11-03). (eds. Casey, J. & Doerner, H.). 2011. Publications Office of the European Union, Luxembourg, EUR 25033 EN, JRC 67714, 101 pp.

2. Identify the TAC that should apply to this stock in 2013 based on the proposed plan, as revised.

**Revised PRAC plan for herring in Via southVIIb**

1 Every effort shall be made to keep SSB above 76kt (SSB consistent with unacceptable risk of recruitment impairment).

2 For 2013 and subsequent years the TAC shall be set based on fishing mortalities, as follows:

a. SSB $>B_{pa}$ $F = F_{0.1}$

b. SSB $<B_{pa}$ $F = SSB*(F_{0.1}/B_{pa})$

3. If an assessment is available, but is considered by ICES to be less reliable, then the TAC settings in paragraph 2 shall apply, but the TAC shall be down-weighted by a factor (G) (see explanation below) based on the level of uncertainty

Uncertainty down-weighting parameter G
The parameter G is defined as follows:

$G = \exp(-1.645\ a)$

where'a' refers to the standard deviation of the final year SSB estimate

4. If ICES considers that SSB is at risk of being below 76kt, the TAC shall be based on ICES advice, and set at a lower level than provided for in Section 2.b.

5. In order to provide for separate management of this stock, relative to that in $VIa_{north}$, every effort shall be made to disaggregate abundance-at-age data in Division VIa.

6. In order to avoid bycatches and unaccounted mortality of this stock, and in light of the problem of disaggregating stock-specific data, it is necessary to establish an interim temporary exclusion zone for 2 years. In anticipation of results of the analyses being conducted by ICES, and until better information on stock mixing is available, a temporary exclusion zone prohibiting herring fishing shall be established that lies between 56°N and 57°30 N, in Sub-Division VIaN. It should be noted that this exclusion will only affect catches of herring by the Irish Fleet in VIaN)

7. When SSB is deemed to have recovered to a size equal to or greater than $B_{pa}$ in three consecutive years, the rebuilding plan will be superseded by a long-term management plan.

**Background**

ICES presents an exploratory assessment and states that it "shows that SSB is below $B_{lim}$". The exploratory assessments show different trends in F: one assessment shows a stable trend at high values, whereas another one shows a decrease since 2006. In both cases F is still above $F_{MSY}$. Recruitment has been low since 2000".

ICES also states that "no reliable assessment can be presented for this stock…and…therefore, fishing possibilities (for 2013) cannot be projected.".

ICES also notes that there is currently no explicit management plan for this stock. A rebuilding plan was proposed by the Pelagic RAC in 2011. ICES has not been requested to evaluate this plan.

In its review of advice in July 2012 STECF agreed with the ICES assessment of the state of the stock and the advice for2013 and that there should be no catches from this stock unless a rebuilding plan is put in place.

In Nov 2011 STECF advised that the original proposed rebuilding plan from the pelagic RAC could not be considered to be precautionary because it lacked provisions for closing the fishery if the stock fell very low. In addition, the assessment results from ICES are too unreliable to be used as a basis for a catch forecast. As a result STECF was unable to provide the forecast catches corresponding to a value for F of F=0.2 prescribed in the proposed version of the management plan. The PRAC has responded to the STECF comments with a revised plan (see above) which has been examined here. STECF would like to thank the PRAC for recognising the issues raise and appreciates the efforts made to improve the plan. Although there remain some issues of clarity which are noted below overall STECF considers that this plan is a good attempt at drafting a management plan for this stock and is grateful to the PRAC for following this initiative.

**Interpretation of the plan**

To consider the performance of the plan for 2013/14 STECF has considered the clauses of the revised PRAC plan and makes observations by clause as follows:

**Clause 1**
The year for which the SSB is to be evaluated is not explicitly stated. Enquiries with Chair of ICES HAWG, who STECF understands helped draw up the plan, indicated that the understanding was that SSB in the intermediate year would be used for this and subsequent clauses. STECF has continued on this basis, but suggests it is important to specify this for an evaluation. ICES reports that SSB in 2011 is below 76kt and the short term forecast (see below) also indicates it will remain so in 2012 so Clause 1 is relevant for setting the TAC 2013. Clause 1 states that "every effort shall be made to keep SSB above 76kt"; what is meant by every effort is unclear but it would be reasonable to conclude that 'every effort' would imply reducing the fishery sufficiently to bring SSB back above 76kt. A deterministic short term forecast (STF) given by the ICES HAWG but not forming part of the ICES advice suggests it is not possible to rebuild SSB above 76kt in 2013. Thus 'every effort' in clause 1 might be construed as reducing catch to zero. If this interpretation of the clause is not correct STECF suggests the clause has no active role and is deleted from the plan.

**Clause 2**
STECF notes the reduction on F linked to the condition of SSB being below $B_{pa}$ and considers this to be an improvement with respect to the earlier plan. Currently this clause cannot be applied directly as there is no agreed assessment. However, if an assessment were available clause 2 could be applied straightforwardly and would make the main clause of the plan. $F_{0.1}$ is taken to be F=0.2 from the ICES HAWG report. (ICES 2010, Figure 1.3.4)

**Clause 3**
As there is no agreed assessment Clause 3 is relevant for 2013 and with some assumptions can be used to estimate a TAC. The clause refers to 'an assessment' though as there is no agreed assessment what constitutes 'an assessment' is unclear. STECF assumes the ICA assessment given by ICES to indicate SSB is below $B_{lim}$, but not accepted by ICES for a forecast, can be used to fulfil the required role. A note provided by Clarke and Egan (members of HAWG) uses this assessment and a short term forecast to give a catch option of 1.5kt for 2013 (see details below).

**Clause 4**
Clause 4 is unclear and cannot be evaluated directly. It states that if ICES considers that SSB is at risk of being below 76kt, the TAC shall be based on ICES advice, and set at a lower level than provided for in Section 2b.It is unclear how much additional reduction if any is intended by this clause. The level of risk is not specified making it difficult to interpret the effect of this clause. As indicated above ICES currently considers that SSB is below 76 kt and advises zero catch unless there is a recovery plan. So the effect of the clause is circular and unclear. ICES is unlikely to report risks of SSB < 76 kt, because if anything, ICES is more likely to report risk of SSB below $B_{lim}$ (81kt). The additional reduction expected from this clause should be stated. Currently this clause is ignored in setting a TAC.STECF considers it may be unnecessary given Clause 2 and 3.If it has no specific role it could be deleted.

**Clause 5**
This clause has no direct impact on setting the TAC.

**Clause 6**
Clause 6 appears to be an attempt to ensure that catch allocations from $VIa_{north}$ are not taken in the southern part of $VIa_{north}$ which has a higher probability of containing $VIa_{south}$ fish than catches from more northerly areas. It may also reduce the likelihood of area misreporting $VIa_{north}$ catch to $VIa_{south}$ and VIIbc. STECF includes the area misreporting as an overcatch element in the evaluation of the plan, for details of the overcatch see section below.

**Clause 7**
This clause has no direct impact on setting the TAC.

**Uncertainty down-weighting parameter G**

The definition of the parameter 'a' just needs clarification. STECF considers this should be either the standard deviation of the log(SSB) or the CV of the SSB. But not as stated the standard deviation of the final year SSB estimate.

**Summary of interpretation of plan**

In the current situation the plan has at least two interpretations, both are investigated below. The PRAC should be encouraged to work with an individual who is to carry out the evaluation to ensure that each clause has its intended changes described as an algorithm so it can be tested and then PRAC should arrange for a full evaluation to be carried out during 2013.

**Overcatch**

ICES indicate in its annual advice that catches in VIa south and VIIb have exceed the TAC in 22 of the last 25 years. In calculating the short term forecast the ICES HAWG included an overcatch of 3.4 kt for 2012 (see STF below). This is required to obtain an estimate of SSB in 2012 for use in setting the TAC for 2013. STECF agrees with this choice for the STF. For the stochastic simulations, to give estimates of risk, STECF examined the magnitude and variability of the overcatch for the last 25 years and concluded that overcatch had declined from a high 25 years ago to a relatively stable mean over the last 10 years. Examination of changes over time did not support the conclusion that the overcatch was proportional to the VIa south VIIb TAC rather that is was a variable amount fluctuating about a mean, therefore STECF has chosen to include this overcatch in the risk evaluation as an additional random catch with mean and standard deviation of 2.4ktand 1.4kt respectively.

**Short Term forecast and TAC set under clause 2 &3 (Supplied by Clarke and Egan ICES HAWG)**

**TAC setting 2013**

A short term forecast, from the FLICA assessment in HAWG 2012 using a modified value for recruitment (R) in 2011 is used to give estimates of SSB in 2012 (Table 7.1.1). Recruitment age 1 in 2011 is taken from the S-R function using the estimated SSB in 2010.The option in bold in Table 7.1.1 corresponds to the requirements of clause 2 of the rebuilding plan, based on SSB in the intermediate year (2012). $SSB_{2012}$ = 38.7 kt gives an F =0.07 which is reduced from the overall target of $F_{0.1}$ = 0.2 due to the estimated SSB <Bpa = 110 kt (Figure 7.1.1a) and results in an estimate of catch without correction for assessment uncertainty of 2.68 kt.

As assessment is not accepted the clause 2 F must be modified under Clause 3;

Bootstrapping (1000 iterations) was used to derive the assessment uncertainty. (Figure 7.1.1b).
The precautionary down-weighting factor, G, from Clause 3, is defined as follows

G = exp(-1.645*a),
= 0.544 where a = 0.37 (see Figure 7.1.1b).

Applying the down weighting factor, G gives a TAC option for 2013 of 2 680 t, as follows

TAC 2013 = 0.544 * 2,680 t = 1,458 t.

**STECF evaluation of risk**

A full evaluation of the plan was not feasible within the proposed time frame. However, in order to investigate the possible consequences of following the plan in the short term several stochastic simulations were carried out each with 1000 realisations (using FLR 2.0 Jan 2009 and R version 2.14). It is considered that by including uncertainty and stochastic recruitment it is possible to make more informative projections than deterministic STFs. The following assumptions are made:

**Assumptions and parameterisation for stochastic simulations**

- Biological parameters such as mean weights, maturities, natural mortality etc. for 2012-2014 are taken from the ICES assessment data set as averages of the last three years.
- Fishery selectivity 2012-2014 is taken from the (not accepted) ICES ICA assessment as an average of the last 3 years.
- Numbers at age in the assessment are taken with error at age as given by the ICES ICA assessment. (Error Age 2-7+ = 0.4809182, 0.3727776, 0.3582298, 0.3821252, 0.4199497, 0.4199497).
- Recruitment age 1 in 2011 and subsequent years are drawn from the S-R function. This option reduces reliance on the specific recent recruit value that is particularly uncertain. The estimated 2011 value lies at the 94 percentile on the S-R function and has a CV 2* the S-R function variability for recruit values.

- The intermediate year catch (2012 and forwards) used in each projection uses the set TAC, optionally with overcatch based on historic average overcatch for the last 10 years. This is 2.4kt with the observed variability drawn from a normal distribution with SD=1.39.
- Four catch options are given to illustrate results of different implementation:
  1. Clause 3: TAC of 1 485t (see STF above) implemented with no over catch,
  2. Clause 3: TAC of 1 485t (see STF above) implemented with over catch at the mean and variance of last 10 years,
  3. Clause 1: Zero catch for complete implemented closure of the fishery.
  4. Clause 1: Zero catch for complete implemented closure of the fishery implemented with over catch at the mean and variance of last 10 years.

**Results**

The stock data imported into FLR (Figure 7.1.2). S-R function fitted was fitted to the assessment S R data for both Beverton Holt and Hockey Stick functions. Both models fit well and show a clear reduction in recruitment below 74kt. Both fits indicate that recent recruitment is well explained by the models with no need to account for additional lower or higher recruitment, supporting the use of the S-R functions for 2011 recruitment. The Hockey Stick function (Figure 7.1.3) was chosen for the stochastic simulations.

The results of the stochastic simulations show a slow rise in SSB over 2012-2014, (Figure 7.1.4), the magnitude of the rise depends on the assumptions of catch (see above).

The probability of SSB $>B_{lim}$ = 81 kt and for SSB > $B_{pa}$ = 110 kt for the four different options is given in Table 7.12.

**Conclusions**

All options indicate that the probability of SSB > $B_{lim}$ will still be below 50% in 2014. Closing the fishery in 2013 increases the probability of recovery in 2014 by about 4% but it remains below 50% in 2014.

As the overcatch currently contributes more than 60% of putative catch for this fishery considerations of overcatch are perhaps more important than the value of the TAC. Controlling and stopping the overcatch would increase the probability of recovery by around 15% in 2014 and by more in subsequent years. Simulations suggest that failure to control the overcatch will delay recovery by at least an additional year. If managers wish to obtain rapid recovery they might like to consider if it is easier to control overcatch in a fishery with zero TAC or with a small TAC. Clause 6 of the proposed plan may help reduce overcatch by some fleets, but probably not all fleets that are misreporting. Improving enforcement through links between VMS and quota uptake would potentially be a better way of reducing overcatch.

**Response to the Commission request**

These simulations provide some guidance to answer the request from the Commission.

1a) Risks

Table 7.1.2 presents the risk by year of SSB < $B_{lim}$ and SSB < $B_{pa}$ based on interpretation of the plan and compliance with catch to the TAC. As the overcatch currently contributes more than 60% of putative catch for this fishery considerations of overcatch are perhaps more important than the setting the TAC. The managers should consider what interpretation should be given to Clause 1 (should SSB < 76 kt close the fishery). The managers should also consider the likely response to a reduction in TAC and whether one or other option is more likely to improve compliance and reduce the overcatch.

1b) Requirements to do a full evaluation of the plan.

A full evaluation of the plan requires the decision process to be translated into a harvest control rule that can be described as a mathematical algorithm. This process will show weaknesses of the plan with regards to setting yearly management measures (TACs), and it is the basis to carry out simulation studies. Initial guidance is given by STECF above.

A set of scenarios have to be agreed between stakeholders and scientists that take into account management objectives, the most important risk factors (overcatch, S/R uncertainty, variation in weights and maturation etc.) and uncertainty on stock assessment (variability and bias in an accepted assessment for clause 2 and a 'not accepted' assessment in clause 3).

Having agreed on scenarios, a simulation study should be carried out, preferentially using MSE algorithm, to test the full range of factors and evaluate alternative harvest control rules taking into account the largest range of uncertainties possible.

In addition to the technical simulations described above a full evaluation of the plan should include the lessons learnt from other management plan evaluations. For example, in a critical paper on the previous cod plan, Kelly et al. (2006) had commented that the plan had not considered the fishers' loss of revenue caused by reduced opportunities to fish and recommended that future plans should consider these more explicitly. Kraak et al. (2012), in their evaluation of the current cod plan, found that "ignoring the dimension of fishers as reactive agents in the design, the impact assessment, and the annual implementation of the measures has contributed to the failure to adequately implement the plan and achieve its objectives." More generally, Murawski (2010) states that failure to make explicit society's choices about how to restructure the fisheries to become sustainable may undermine the credibility of recovery programmes.

In the current case, the proposed management plan and the measures that follow from it require a change in behaviour of the industry which may have economic consequences for the individual fisher and the industry. Specifically, if the proposed plan is followed it requires an immediate reduction of the TACto about one third of the current TAC. Though catches may remain higher if the issue of overcatch is not dealt with effectively. Therefore, in addition to scenario simulations to investigate the consequences to the stock under the proposed management plan, it should be investigated whether a reduction of the catches can actually be implemented and how the industry can adapt to this lower level of catches and revenues from these. Such an investigation should address both the reduction in TAC directly influencing catch against quota and the potential for reducing the overcatch which could dominate the fishery if it is not successfully reduced.

2) TAC that should apply to this stock in 2013 based on the proposed plan.

| | |
|---|---|
| Clause 1 implies closure | TAC 2013 = 0.0kt |
| Clause 3 implies | TAC 2013 = 1.5kt |

**References**

ICES 2010 Report of the Herring Assessment Working Group for the Area South of 62°N (HAWG)ICES CM 2010: ACOM:06

Kelly CJ Codling EA, Rogan E. 2006. The Irish Sea cod recovery plan: some lessons learned. ICES J Mar Sci; 63:600–610.

Kraak SBM et al. 2013.Lessons for fisheries management from the EU cod recovery plan.Marine Policy; 37:200–213.http://dx.doi.org/10.1016/j.marpol.2012.05.002.

Murawski SA. 2010. Rebuilding depleted fish stocks: the good, the bad, and, mostly, the ugly. ICES J Mar Sci; 67:1830–1840.

**Table 7.1.1. Outputs from short term forecast of ICA assessment following procedures of HAWG 2012.**

| Rationale | Fbar (2012) | Catch (2012) | SSB (2012) | Fbar (2013) | Catch (2013) | SSB (2013) | SSB (2014) |
|---|---|---|---|---|---|---|---|
| Fmult(2010) = 0.000 | 0.23 | 7607 | 38699 | 0.00 | 0 | 46221 | 55241 |
| Fmult(2010) = 0.100 | 0.23 | 7607 | 38699 | 0.02 | 912 | 45618 | 53613 |
| Fmult(2010) = 0.200 | 0.23 | 7607 | 38699 | 0.05 | 1805 | 45023 | 52042 |
| **F HCR proposed** | **0.23** | **7607** | **38699** | **0.07** | **2680** | **44437** | **50526** |
| Fmult(2010) = 0.400 | 0.23 | 7607 | 38699 | 0.09 | 3537 | 43859 | 49063 |
| Fmult(2010) = 0.500 | 0.23 | 7607 | 38699 | 0.11 | 4376 | 43289 | 47652 |
| Fmult(2010) = 0.600 | 0.23 | 7607 | 38699 | 0.14 | 5197 | 42728 | 46290 |

**Table 7.1.2. Probability SSB>Blim = 81ktand SSB>Bpa = 110kt based on TAC of 4.2kt in 2012 and catch options of a)1.5ktb) 0.0 ktc) 1.5kt +historic area misreporting d) 0.0kt +historic area misreporting ,in 2013 and 2014, where historic area misreporting is 2.4+SD=1.39**

| Probability | SSB >Blim | | | | SSB >Bpa | | | |
|---|---|---|---|---|---|---|---|---|
| Assumptions | 2012 | 2013 | 2014 | 2015 | 2012 | 2013 | 2014 | 2015 |
| TAC=1.5 | 0.01 | 0.12 | 0.34 | 0.60 | 0.00 | 0.02 | 0.10 | 0.27 |
| TAC=0.0 | 0.01 | 0.13 | 0.37 | 0.67 | 0.00 | 0.02 | 0.12 | 0.33 |
| TAC 1.5+ Imp error | 0.01 | 0.07 | 0.19 | 0.35 | 0.00 | 0.01 | 0.06 | 0.15 |
| TAC 0.0+ Imp error | 0.01 | 0.08 | 0.23 | 0.43 | 0.00 | 0.02 | 0.07 | 0.18 |

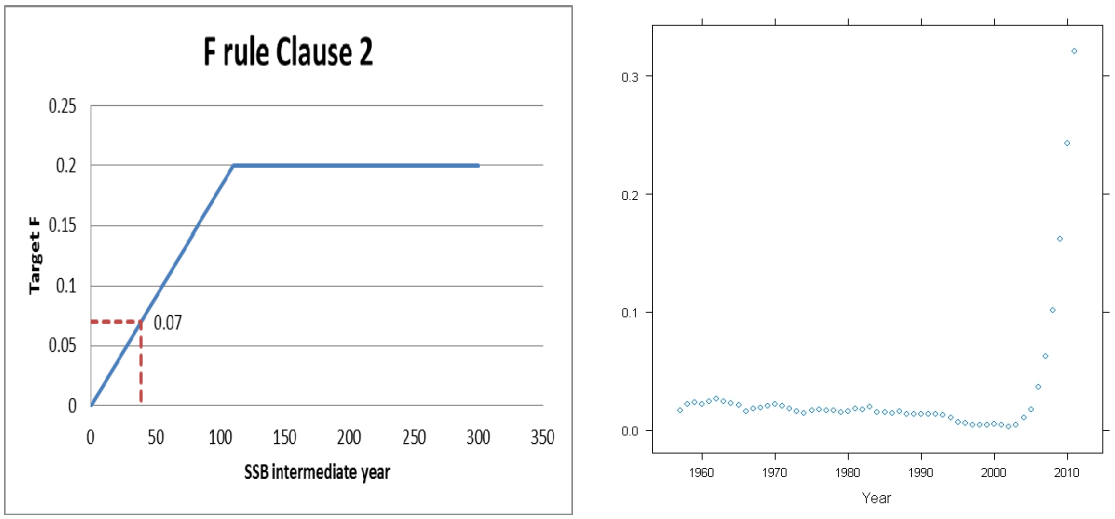


**Figure 7.1.1. a) Target F dependence on SSB, rule from clause 2 with the value for 2012 SSB=38.7kt, gives F=0.07 b) SSB error in ICES HAWG ICA assessment , from bootstrap re-sampling to obtain value of G required under Clause 3 = 0.37**

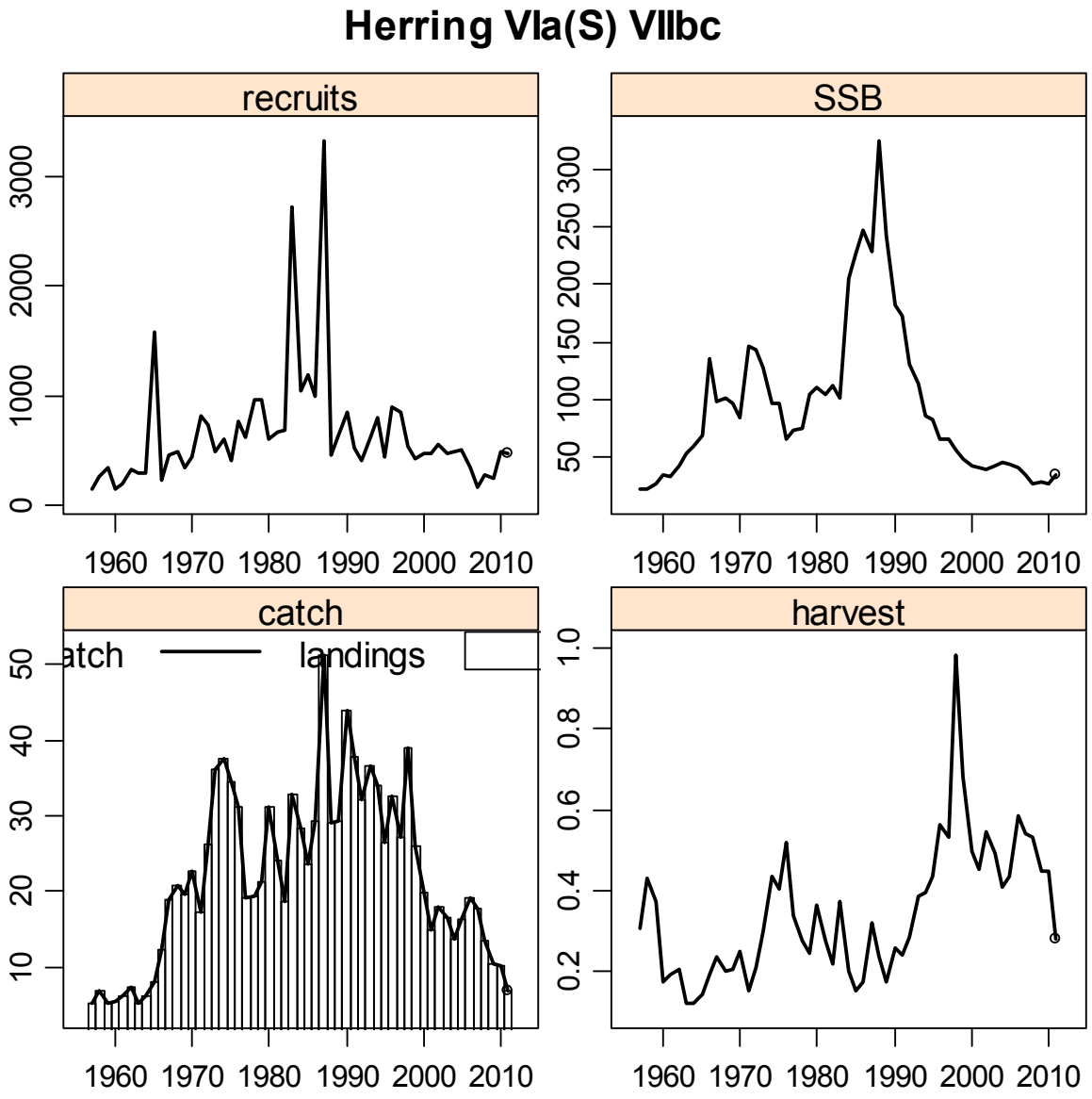


**Figure 7.1.2. ICES ICA assessment for herring in VIasouthVIIbimported into FLR**

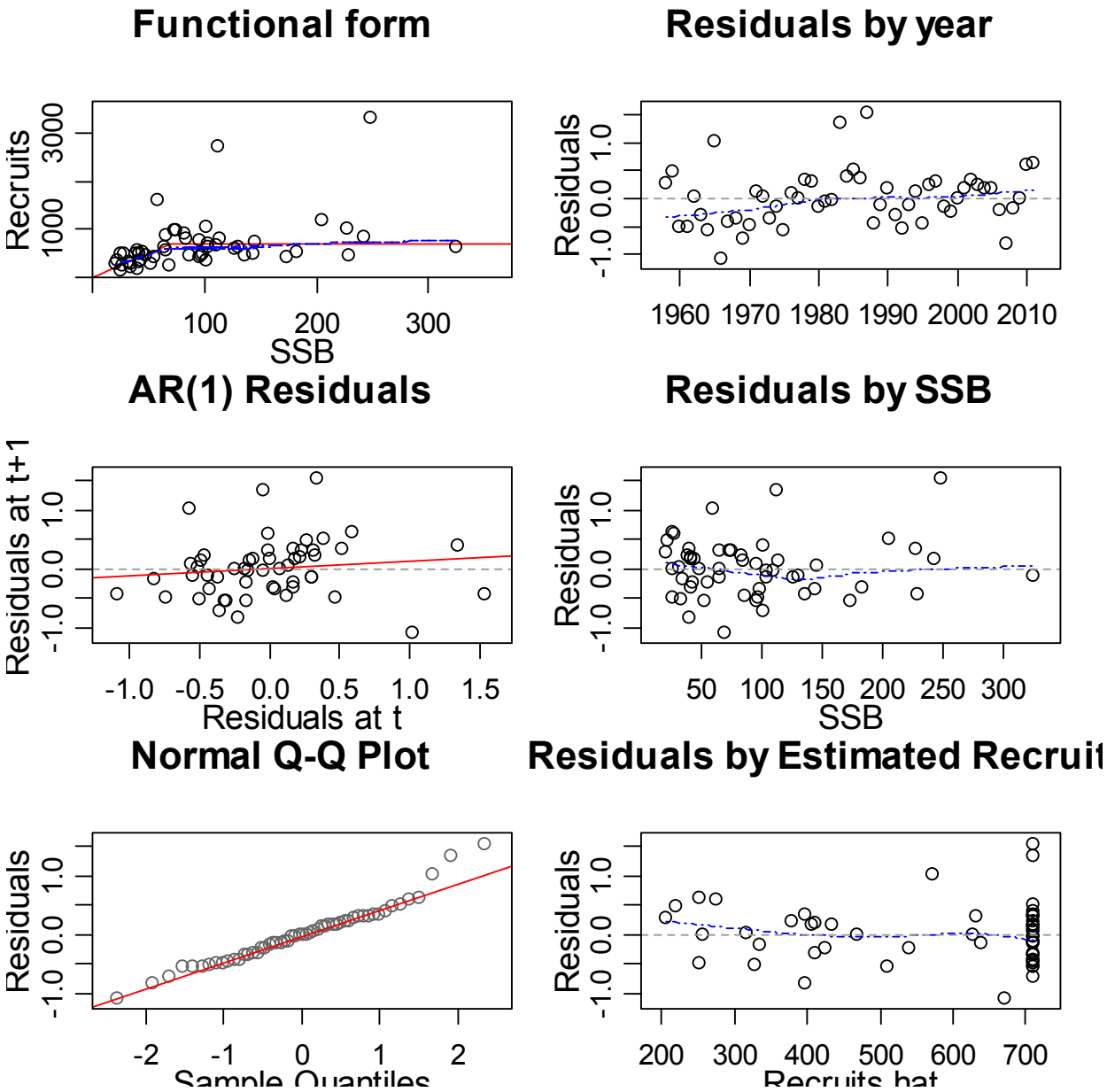


**Figure 7.1.3. Stock Recruit fitted to ICA assessment data assuming Hockey Stick S-R function used for evaluations. Residuals by year show that recent years conform to the model residuals by SSB show good overall fit to the model.**

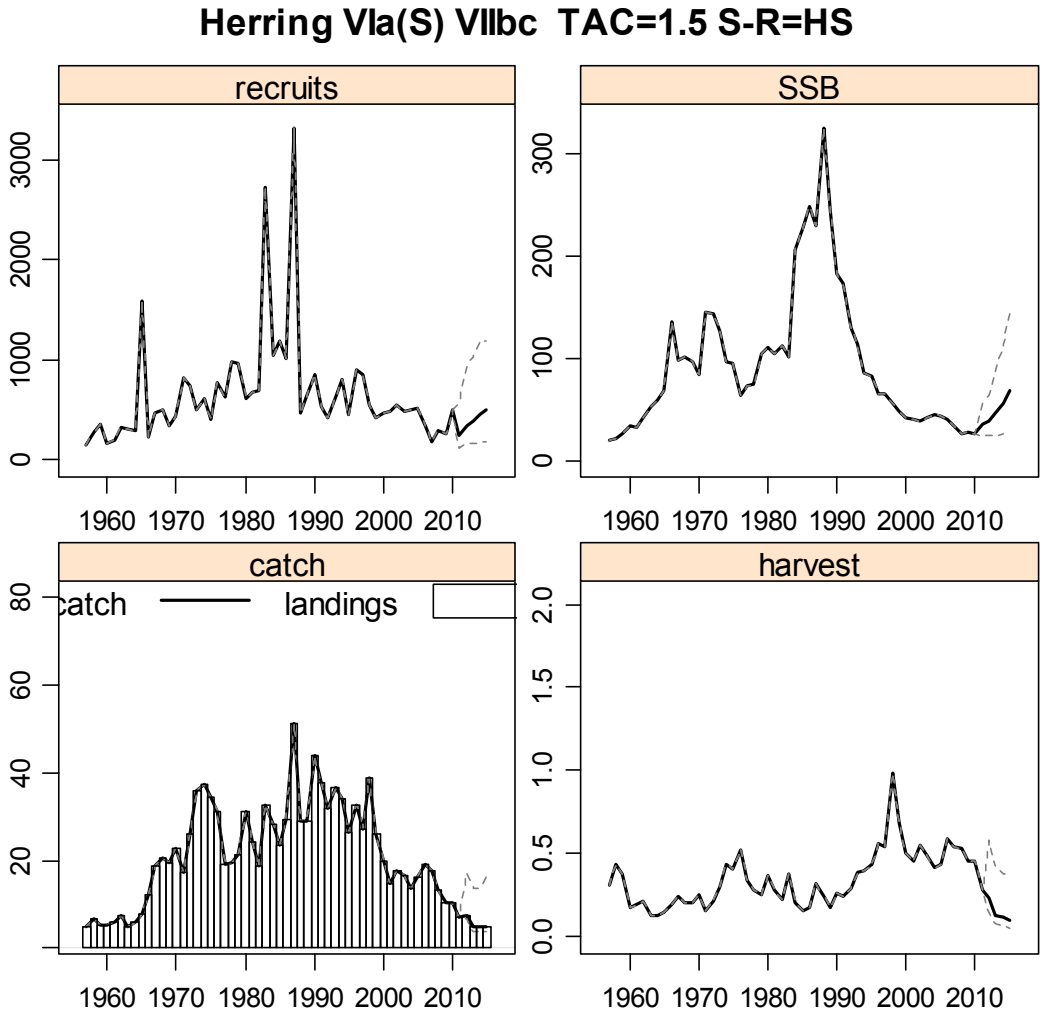


**Figure 7.1.4.Example of stochastic stock projections based on TAC2012 = 4.2kt TAC 2013-14 = 1.5kt. Implementation includes overcatch 2.4kt + SD =1.4kt. Recruitment based on ICA assessment 2010/11 Recruitment 2012/14 drawn from Hockey Stick S-R function (Fig 7.1.3)**

## 7.2. Request for an STECF Assessment of gear trials using an inclined panel in Scotland

**Background**

Commission Regulation 1342/2009, the cod plan, makes provision for certain vessels to be exempted from the effort regime, by way of their actions or fishing behaviour under Articles 11 or 13.

Following from their Statement in the December 2011 Council, on improving selectivity and discards in the North Sea and West of Scotland, the UK (Marine Scotland) have undertaken a series of trials of fishing gears to reduce cod catches.

The UK has now provided a report on a trail of a modified inclined panel, identified as a Faithlie Cod Avoidance Panel.

**Terms of Reference**

STECF is asked to review and evaluate the results of scientific trials on this trawl design submitted by the UK and in particular to assess,

1. The extent that this inclined panel trawl can be expected to reduce the catches of adult and juvenile cod. In addition STECF are asked to comment on the overall reduction in the catches (both landings and discards) of other commercial species likely to be achieved by this trawl. STECF are further asked to comment on the possible impact on cod mortality arising from the use of this gear.

2. To what extent does the data and information provided in relation to the technical characteristics of the inclined panel 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 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 response**

*The extent that this inclined panel trawl can be expected to reduce the catches of adult and juvenile cod.*

The Scottish Government Fisheries Management and Conservation Group allows for the provision of additional fishing effort to the TR2 fleet if commit to fishing with highly selective gear. The FCAP modification has been developed by a commercial net maker and evaluated during experimental trials by Marine Science Scotland. The FCAP gear is essentially an inclined panel of large mesh (300mm) inserted inside the main body of the trawl, with escape holes cut in the upper body of the trawl and a lower gap along the lower edge of the panel. The panel mesh size is sufficiently large to permit the passage of the main target species (*Nephrops*) yet small enough to limit the passage of cod, which are guided up the panel and out via escape holes. The gap along the lower edge of the panel is to permit passage of groundfish species such as anglerfish under the panel.

The report presented by Marine Science Scotland is based on observations from trials undertaken in the Fladen Grounds in the Northern North Sea. Two FCAP designs were tested during the trials. The first variant (FCAP1) achieved reductions in catches of cod, haddock and whiting when tested in two different trawl designs ('standard' industry trawl (Fidelis) and a low headline, topless trawl (letterbox)). The objective of the trials were to attain cod reductions in excess of 60% by weight, and while significant reductions in cod catches were achieved with the Fidelis trial, these were insufficient to meet the 60% reduction criteria. Subsequently, the dimensions of the fish outlets were increased to try and improve the cod escapement rate. The analysis presented below only considers the modified FCAP with the increased escape outlets (FCAP2).

Before considering the results, it is important to note that while devices such as the FCAP, which function largely by physically segregating species based on size differential e.g. *Nephrops* and cod, the effectiveness of these gears tends to be length dependent and therefore effectiveness measured as a percentage reduction in catch will be dependent on the population structure of the fish entering

the gear. The trials were undertaken in the Northern North Sea during quarter 3 (July/August) and the results will be dependent on the size structure of the cod population encountered in this area and season. If the gear is fished in areas with high abundance of large fish, then the exclusion rate will increase. The opposite is true when the population contains mostly small fish.

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 62%, 74% and 66% 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, although the relationship between length and retention probability is weaker for haddock and whiting. For cod where at the minimum landing size (MLS) of 35cm there is a ~30% reduction by number, and for fish >80cm the reduction is ~70% in comparison to the standard gear. STECF are unable to comment on the likely impact that the FCAP2 design would have on the target species, (*Nephrops*) and other important by-catch species, due to the low catch rates observed during the trials.

STECF concludes that the results presented demonstrate that the FCAP2 trawl significantly reduced the catches of adult cod, haddock and whiting. If effectively implemented into the TR2 fishery, the use of the FCAP2 gear will result in a reduction in fishing mortality on all three species. Based on STECF effort and catch data for 2011, it is estimated that the TR2 fleet have a total cod catch of 1,140 t, of which 235 t are landed and 905 t are discarded. This equates to a fishing mortality of 0.0097 associated with this fleet segment. Assuming that fishing mortality will be reduced by at least 60% (Fpar=0.0038).

*The extent that the data and information provided in relation to the technical characteristics of the inclined panel trawl support the conclusion that catches of cod by such gear will be less than or equal to 1.5% from the total catches*

STECF concludes that there is insufficient data presented to assess whether the cod catches are at levels consistent with article 11(2) of EC Regulation (1342/2008). There is insufficient catch data presented to allow STECF to evaluate whether the FCAP2 trawl results in catches of cod below 1.5%. STECF notes that in order to assess whether the design is capable of attaining cod catches below 1.5%, observer data collected during fishing trips where the FCAP2 trawl is deployed under normal fishing operations as opposed to experimental trials, is required.

*Requested improvements in data*

From the results presented, it is clear that the FCAP device results in significant reductions in cod (and haddock/whiting) STECF concludes that the experimental methodology, catch sampling levels and the analytical approach taken is robust. It is noted that catch rates of cod in the control gear were high, sufficient for the analysis, and the percentage reductions in cod catches relatively stable between hauls (min 49%; max 74%). However, the analysis is based on only 7 hauls and the results in terms of exclusion rate may change depending on the length composition of the population. STECF notes that if it is the intention that the FCAP2 gear will be deployed more widely across the Scottish TR2 fleets, then 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.

## 7.3. Request for an STECF evaluation of the revised ICES advice for the Stock of Haddock in Area VIa

### Background

In September 2012 ICES issued revised advice in relation to the stock of haddock in ICES area IVa. This advice rectifies errors in the June advice that have been identified, as a result of these amendments a substantial decrease in the future landings and SSB of the stock have been identified. A report detailing the amendment process has been issued by ICES.

ICES identified that these same errors were present in the advice for 2012 and that the assumptions made in relation to recruitment in 2011 have also been subject to downward revision.

In February 2012 emergency measures were enacted by the Commission to remove catch composition rules which were considered, given the perceived improvement in the stock at the time, to be likely to result in increased discarding. As a result a directed fishery has now been enabled.

### Terms of Reference

The STECF is asked to review and comment on the revised advice.

In particular the STECF is asked to make recommendations pertinent to the management of this stock including measures to reduce discarding, management of a directed fishery and to comment on any links with the measures to protect cod.

### STECF response

STECF agrees with the revised ICES forecast for this stock.

STECF notes that the revision made to the 2012 forecast (based on the 2011 assessment) leads, on the basis of the ICES MSY framework, to a substantial decrease in predicted landings for 2012 : from 10,200 tonnes to 5,618 tonnes. STECF notes however that the revised prediction for 2012 is close to the agreed TAC for 2012 (6,015 tonnes).

STECF notes that landings in 2013 based on the ICES MSY framework implies a fishing mortality of F=0.25, resulting in landings of 3,100 tonnes in 2013.

Applying the harvest rules in the management plan proposed for this stock would imply that the TAC for 2013 should be set at 4,510 t corresponding to a 25% decrease in the TAC compared to 2012.

STECF notes that both of the above options are predicted to result in a decrease in SSB in 2014 compared to 2013, still remaining below $MSY_{Btrigger}$ (30,000 t)

STECF notes that recruitment to this stock is highly variable and that special attention must be paid to how to manage periods of low recruitment interspersed with large, occasional pulses. In recent years around 50% of the total catch in weight has been discarded, so restricting landings alone may not achieve the necessary increase in SSB. STECF notes that discarding of haddock remained a

problem in 2011 (46% by weight discarded) and that vessels targeting *Nephrops* (TR2) are responsible for ~80% of all discards while landing only 80 tonnes, less than 5 % of the total landings (1,742 tonnes). STECF reiterates its previous recommendations that for the TR2 fleet operating in VIa, the most appropriate method to reduce unwanted catches of VIa haddock is to introduce a species selection grid and that to further reduce the capture of juvenile (<MLS) haddock that pass through the grid, consideration should be given to improving the size selection. This could be achieved by simultaneously increasing the cod-end mesh size, reducing the maximum number of meshes in circumference to 100 and moving the 120 mm square-mesh panel to 6 – 9 m from the codline.

STECF notes that, although the ICES revised forecast has resulted in a downward revision in both predicted landings and SSB, haddock in VIa abundance is still estimated to increase in the short term. STECF notes that given this estimated increase in abundance, a catch composition rule is likely to lead to an increase in regulatory-induced discards and as a consequence, considers that haddock should be kept outside the catch composition rules under the cod management plan. However, STECF is unable to quantitatively assess what the impact on fishing mortality and discard levels this may have.

A large variety of measures and regulations have been implemented as part of the long-term plan for cod stocks and emergency measures introduced under EC regulation 43/2009 (Annex III). They include *inter alia* TAC regulation, area closures, technical measures, and effort restrictions. Each of these measures and regulations may have had an impact (positive or negative) on the haddock stock, however, it is not possible for STECF to quantify it.

### 7.4. Request for an STECF opinion on ways to assess the abundance of porbeagle (*Lamna nasus*) in the Northeast Atlantic

Porbeagle is under zero TAC since 2010. The latest ICES advice states that based on the precautionary approach no directed fisheries for porbeagle should be allowed and landings should not be permitted. It also recommends establishing a recovery plan for this population. In the section of the quality considerations refers to the current ban on fisheries as an impediment to obtain data to help evaluate qualitatively the population. If stock recovery is to be monitored properly, ICES recommends dedicating a scientific campaign for longliners in order to estimate abundance indices (sentinel survey with the industry covering the main parts of the stock area).

#### Terms of reference

STECF is requested to determine if it should be possible to monitor the abundance of porbeagle without the need to engage in a targeted research fishery. Notably, would it be possible to do this by compiling precise data on porbeagle by-catches in fisheries for highly migratory species in the NE Atlantic?

#### STECF Observations

STECF observes that owing to the wide distribution, low abundance and low predicted rate of recovery of porbeagle to $B_{MSY}$, intensive large-scale monitoring would be required to provide sufficient statistical power to monitor changes in abundance. Any research fishery with sufficient

coverage in time and space to provide information on the current state of this stock would lead to additional mortality. Any fishery-independent survey to monitor abundance would be very costly and STECF observes that there would be many higher priorities for survey funds.

STECF observe that by-catch data could indicate trends in the abundance of porbeagle on long time-scales (potentially 10 years or more), provided that data are available from a large proportion of the distributional range of porbeagle. STECF observes that by-catch data may be challenging to interpret, owing to changes in fishing gears and methods and the distribution of fisheries.

**STECF Conclusions**

STECF concludes that the additional mortality that would be caused by a research fishery intended to monitor changes in the abundance of porbeagle could compromise any recovery of the stock.

STECF concludes that it may be possible to monitor long term trends in the abundance of porbeagle, without engaging in a targeted research fishery, by analyzing bycatch data. However, owing to the wide distribution, low abundance and low predicted rate of recovery of porbeagle, any change in abundance is unlikely to be detected for at least 10 years.

STECF concludes that any fishery-independent survey to monitor abundance would be very costly and that there would be many higher priorities for data collection given available resources.

STECF concludes that, given the challenges of monitoring porbeagle abundance, the current state of the stock and the very slow predicted rate of recovery to $B_{MSY}$, that achieving recovery of the stock has a higher priority than monitoring that recovery for at least the next 15 years (15 would be the lower bound of the predicted time to reach $B_{MSY}$ with no fishing mortality).

### 7.5. Request for an STECF opinion on TACs for skates and rays

**Background**

Skates and rays have for the first time been dealt with by individual species in the latest ICES advice. ICES provides for each of them a recommended percentage change in catches (the range varies between decreases of 36% and increases of 20%). ICES do not consider TACs as the most effective means to regulate fishing mortality for these species. In most cases, rays are caught together, with little chance of targeting specifically the species that, according to the advice, are in a better state. For this reason, if setting individual TACs for these species is not a useful approach to follow, it would still be necessary to cap the catches of rays to prevent overfishing as much as possible in the short term. Alternative solutions in the shape of closed areas, seasonal restrictions or any other technical measures could be envisaged, but not in the short term.

**Terms of Reference**

STECF is requested to identify a TAC option for the stocks of rays as currently regulated in the Fishing Opportunities regulation that provides the most balanced approach, given the diversity of species caught and their varying state of conservation.

**STECF observations**

STECF reviewed the advice on skates and rays in the ICES areas II III, IV, VI, VII, VIII, IX, X, XII, and XIV (North Sea, North Atlantic) as provided by ICES and the STECF-12-177 report.

In previous years ICES advice treated rays and skates as a group and provided advice for generic TACs based on precautionary considerations.

Skates and rays have for the first time been dealt with by individual stock in the 2012 ICES advice (covering 2012-2014). Based on the ICES approach to data-limited stocks, the advice from ICES recommended percentage changes in catches for different stocks that vary between decrease to 36% and increases to 20%.

ICES has not explicitly provided advice for generic or stock/region specific TAC for rays and skates as a group in any of the areas and for Subarea IV (North Sea) Divisions IIIa (Skagerrak) and VIId (Eastern Channel) ICES does not advise that individual TACs be established for each species, at present This is because the catch statistics for individual species are not reliable.

Furthermore, ICES does not advise a precautionary decrease in TAC, because it is considered that this would lead to increased regulatory discarding and further reduce the quality of the catch data. ICES does not view the TAC as the main means to manage the fishery, but rather as an upper boundary on the outtake. Therefore, further reductions to the TAC are not considered to be the best approach to allow recovery of depleted species at present. ICES considers the generic TAC, at best, as an ineffective measure, regulating overall outtake from the assemblage.

ICES advises zero catch for the white skate (*Rostroraja alba*) and zero catch or no targeted fisheries species of genus *Dipturus*, and *Raja undulata.*

**STECF response**

STECF is aware of the difficulties arising in data collection, assessment and formulation of management advice for skates and rays in the ICES area and acknowledges that the ICES advice is the best available at the present time.

Given the present state of knowledge on the stock status of individual stocks of skates and rays, and the issues surrounding reliable species-specific catch data, STECF has no objective scientific basis to give informed advice on appropriate stock-specific TAC options for skates and rays. However, in an attempt to afford the special protection required for the depleted stocks of *Raja undulata* and *Rostroraja alba* and species belonging to the genus *Dipturus*, STECF agrees with the ICES advice for zero catch for the white skate (*Rostroraja alba*) and zero catch or no targeted fisheries species of genus *Dipturus*, and *Raja undulata*.

STECF recognises the potential benefits of having separate TACs for some species and genera or for different management areas. However, STECF considers that the present state of knowledge, data, and advice is not sufficient to advice on such (individual) TACs for 2013.

7 Scientific, Technical and Economic Committee for Fisheries (STECF) – Review of scientific advice for 2013 – part 3 (STECF-12-17). (eds. Casey, J., Vanhee, W. & H. Doerner). 2012. Publications Office of the European Union, Luxembourg, in press, 287 pp.

## 7.6. Request for an STECF opinion on the proposed implementation of cod avoidance measures in accordance with article 13.2(c) Regulation (EC) No 1342/2008

### Background

Council Regulation (EC) No 1342/2008 establishes a long-term plan for cod stocks and the fisheries exploiting those stocks; under Article 13 Member States may allocate additional fishing effort to those effort groups subject to effort adjustments in which the fishing activity of one or more vessel(s) is conducted in accordance with the requirements of Article 13.2 points a-d. Additionally Member States, under article 13.5, are required to notify the Union of increases in fishing effort under the application of Article 13.2.

The additional allocation of effort by Member States in the 2011-2012 year was evaluated and reported on by STECF in the July Plenary and partial mortality for the various measures implemented by Member States was assessed.

In July 2012 the UK submitted a report under Article 13.5 notifying the European Commission of increases in fishing effort in the 2012-2013 fishing year, the expected deployment of fishing effort and the conditions under which the effort is being monitored.

In April France submitted a list of vessels which are to be subjected to additional allocation of effort in 2012.

In April 2012 Ireland submitted a report on the allocation of additional effort for their fleets in the Cod recovery zone.

### Terms of Reference

Based on the information provided by UK, Ireland and France in 2012 describing fishing effort increases for their respective groups of vessels operating in areas under the Cod Plan in 2013 and using any other relevant information (e.g. discards, effort, observer and VMS data as well as gear technical attributes, among others), the STECF is requested to assess the effectiveness of each the relevant cod avoidance measures proposed.

In carrying out this assessment STECF is requested to compare the reduction in cod mortality which results from any application of point c) of paragraph 2 (cod avoidance or discard reduction plan) of article13.2 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.

STECF are also asked to consider what information should be provided to allow for a post implementation evaluation of each measure and to indicate any minimum levels of sampling or information that should be provided

It is expected that the STECF advises the Commission on appropriate adjustments in effort that may be applied for the relevant areas and gear groupings as laid down in article 13.7 of Council Regulation (EC) No 1342/2008.

**STECF response**

The Term of Reference can be split in two parts: (1) the request to assess the effectiveness, and to advise on effort adjustments accordingly, of measures taken under Article 13.2 in the current year (2012); and (2) the question what information should be provided to allow for a post implementation evaluation of each measure.

(1) STECF is asked to consider notifications of effort allocations under Article 13.2 for the current year (2012) only. Similar Terms of Reference have been considered by STECF PLEN-11-02 (sections 9.6 and 9.1) with respect to the pre-implementation notifications for 2011, and the effectiveness of those measures has already been considered post implementation, up to and including 2011, by STECF PLEN-12-02 (section 7.5).

**France**
France notified the allocation of effort to vessels on the basis of Article 13.2.b, which stipulates that there should be no more than 5% of cod in the catches. The document does not contain any specification how that level should be achieved. Therefore, STECF is unable to assess how effective the measures taken will be.

**Ireland.**
For ICES Area VIa, Ireland notified the allocation of effort under Article 13.2.c, where the measure taken constitutes the seasonal Cape closure, and under Article 13.2.d, where the measure constitutes fishing west of the cod management plan boundary. These measures have already been reviewed by STECF PLEN-11-01 (section 9.3) and PLEN-11-02 (sections 9.6 and 9.1), and their post-implementation effectiveness up to and including 2011 has been assessed by STECF PLEN-12-02 (section 7.5). Given that no new knowledge and information has been provided compared to what was available to STECF on these previous occasions, STECF has no reason to change its previous conclusions.

For ICES Area VIIa, Ireland notified the allocation of effort under Article 13.2.c, where the measure taken constitutes the use of three types of selective gear. With regards to two of these ('Swedish grid' and inclined separator panel) these measures taken by Ireland have already been reviewed by PLEN-11-02 (section 9.6), and their post-implementation effectiveness up to and including 2011 has been assessed by STECF PLEN-12-02 (section 7.5). Given that no new knowledge and information has been provided compared to what was available to STECF on these previous occasions, STECF has no reason to change its previous conclusions The third proposed device, the SELTRA, has been discussed (in the context of use by other Member States) by STECF (PLEN-11-01 section 9.3; STECF-11-07 section 7.2.1 and under section 6.3 of this report). STECF considers that the use of the SELTRA trawl is potentially an efficient tool to reduce fishing mortality on cod; however, its effectiveness needs to be evaluated further in comparative gear trials in seasons with sufficiently high cod abundance to get sufficient data for evaluation. . The document Ireland provided also mentions a study/analysis, but details are not provided, and STECF cannot base any conclusions on the study/analysis mentioned.

**UK**

The UK notified the allocation of effort to vessels on the basis of Article 13.2.a, using various gear modifications. No further details are given, and STECF can therefore not assess how effective these measures will be.

The UK notified the allocation of effort to vessels on the basis of Article 13.2.b, which stipulates that there should be no more than 5% of cod in the catches; to achieve this in some cases the UK requires certain of these vessels to use a specific gear (those administered by Northern Ireland) or to fish outside specific areas (those administered by Scotland). However, no information is provided which allows STECF to evaluate whether these measures are effective. STECF notes that the UK appears to implement Article 13.2.b as a landings percentage requirement rather than a catch percentage. This has already been pointed out in PLEN-11-02 (section 9.6), where STECF noted that "the information available indicates that significant catches of cod may be taken by the vessels operating under Article 13(2)(b) questioning the effectiveness of this measure in limiting catches of cod".

The UK notified the allocation of effort to vessels on the basis of Article 13.2.c taking up the following measures: selective gears, RTCs, seasonal closures, the Irish Sea cod spawning closure, FDF. Moreover, the UK notified that time spent fishing by TR1 vessels fishing in deep-water is not deducted from their effort allocation. No information is provided which allows STECF to evaluate whether these measures are effective. The UK has discontinued the application of RTCs in the West of Scotland and no additional effort there will be allocated under Article 13.2.c for Scottish vessels; the UK based this decision on the STECF conclusions about limited catch reductions achieved by RTCs in the West of Scotland (see PLEN-11-02 section 9.6).

The UK notified on the basis of Article 13.2.d that time spent fishing west of the cod plan management boundary is not deducted from their effort allocation. The effectiveness of the cod plan management boundary has been discussed by STECF before (PLEN-10-03 section 5.1). Given that no new knowledge and information has been provided compared to what was available to STECF on this previous occasion, STECF has no reason to change its previous conclusions.

(2) STECF are also asked to consider what information should be provided to allow for a post implementation evaluation of each measure and to indicate any minimum levels of sampling or information that should be provided.

STECF underlines that although STECF can specify and has specified some general data requirements (see below), the specific requirements will be case dependent. It is therefore important that the specific requirements are evaluated on a case by case basis and that this is done by the Member States concerned as part of their reporting to the Commission of the measures implemented. STECF furthermore suggests that Member States implementing measures under article 13.2 are requested to conduct pre- as well as post-implementation evaluations to be reviewed by STECF.

As a guideline, STECF has indicated in PLEN-11-02 (section 9.6) what information is required and has specified in PLEN-12-01 (section 5.6) what data are required and at what levels of disaggregation. In addition to these guidelines STECF notes that for a post implementation evaluation, in addition to data on the cod catches data on the catches of all other species are required at the same disaggregation level to verify the percentages of cod in the catches. STECF notes that it is helpful that Member States in their reports clearly identify under which of the provisions, 13.2.a, b, c, or d, they seek derogation for each set of vessels/activities.

### 7.7. Request for candidate TAC and effort levels for the cod stocks in the Irish Sea and in the Kattegat

**Background**

The STECF report "Management plans part 2- changes to cod plans (STECF -12-13)" provides a number of recommendations to improve the functioning of Council Regulation (EC) No 1342/2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks. The report provides specific methods that could be used for Irish Sea cod and Kattegat cod if short term forecasts cannot be provided. In addition the report proposes a method based on catch that could be used, instead of the F based approach, to demonstrate conformity with the Regulation as regards the implementation of Article 13. To explore how those recommendations and methods provided in the report "Management plans part 2- changes to cod plans (STECF -12-13) could be applied in practice

**Terms of Reference**

STECF is requested to provide:

Candidate TAC and effort levels for the cod stocks in the Irish Sea and in the Kattegat for 2013.The advice should be made on basis of information available to ICES, STECF and JRC.

Where possible, it is requested to advice on alternative or more appropriate measures than further reductions in TAC and effort.

Catch options equivalent to the reduction target of F deriving from the management plan for the fleet segments that are affected by annual fishing effort adjustments for each Member State concerned.

EWG 12-18 is also asked to take account of the work on these TORs done by EWG 12-12 (Fishing effort part 2).

Additionally the data requirements for Member State reporting concerning implementation results should be specified in detail so that these can be assessed by STECF.

**STECF response**

***Advice for Kattegat cod and Irish Sea cod***

Based on the most recent assessment of the cod stocks in the Irish Sea and in the Kattegat both stocks are considered to be well below $B_{lim}$ and it will likely take several years for the cod stocks to recover to levels above $B_{pa}$ even with no or very low fishing mortality.

The STECF advice for the two cod stocks for 2013 is that there should be no directed fisheries, and by-catch and discards should be minimized in 2013. STECF furthermore advises that the advice should be interpreted to mean that in 2013, catches of cod from the Kattegat and the Irish Sea should be reduced to the lowest possible level (STECF-12-08 part 2).

According to the long-term management plan, the fishing mortality in 2013 shall be reduced by 25 % compared with the fishing mortality rate in 2011. No short-term forecasts are provided for the

two cod stocks mainly because recent mortality values are highly uncertain. Articles 9 and 12 of the management plan, stipulate respectively that the TAC and fishing effort in this case should be reduced by 25 %. The corresponding cod TACs (landings) for 2013 are: 285 tonnes for the Irish Sea and 100 tonnes for the Kattegat.

Applying the management plan in the rebuilding period means several years of likely annual reductions in fishing effort of the TR2 gear category (the dominating gear in both areas) reducing the allowed effort to very low levels. This may in practice mean a closure of the demersal fisheries in the two management areas unless cod avoidance measures in accordance with article 13 of the cod management plan are taken or the group of vessels concerned is excluded for the effort regime in accordance with article 11 of the management plan.

***The fishing effort regimes in the Kattegat and the Irish Sea***

There are two derogations in place in the Kattegat for TR2. Since 2010, all Danish fishing activities were performed under the cod plan's provision in article 13.2.c, while all German fishing in gear category TR2 since 2010 fell under the article 13.2.b. Sweden reported under the derogation article 11 in gear category TR2, achieving the <1.5% cod catch by using a sorting grid. This represented 61% of the Swedish TR2 effort in Kattegat 2011.

In the Irish Sea the TR2 category dominates. Fishing effort was relatively stable between 2003 and 2008. A reduction occurred in 2009, coinciding with the introduction of the current cod plan, since then effort has remained at the same level. The majority of TR2 effort is carried out under Article 13 of the management plan. A small amount of effort became exempt from the cod plan effort restrictions under Article 11 of the regulation in 2010 (3%), doubling in 2011 to 6%.

The abundance of the cod stocks in the two management areas is so low that the TR2 vessels may be able to demonstrate that the total cod catches are below 1.5 % (article 11 derogation) or the catches on a trip level are below 5% (article 13.2.b derogation). However, this does likely not reflect technical decoupling but be a consequence of stock depletion and in a situation with increasing stock sizes catches may increase to above the limits in the near future.

The evaluation of the present cod avoidance measures in the Kattegat under article 13.2.c conducted by STECF-12-13 indicates that the reduction in fishing impact on cod of the vessel group concerned in the period 2008 to 2011 has been at the same level as required according to the management plan. A similar evaluation has not been conducted for the Irish Sea Article 13 derogation.

***Possible future fishing effort derogations***

With regards to alternative or more appropriate measures than further reductions in TAC and effort STECF considered the following possible future derogations to the effort regime in the two management areas:

- Use of the "Swedish" sorting grid by TR2 vessels
- Other means of enhancing selectivity in the TR2 trawls
- Introduction of catch quotas

*Use of "Swedish" sorting grid.* The TR2 vessels may be excluded from the effort regime if trawls with the "Swedish" sorting grid are applied. This is likely to significantly reduce the catches of cod (>~25cm) compared to the standard gears used and exclude all cod >~34 cm (Drewery et al, 2010) in both the Irish Sea and the Kattegat. However, some studies indicate that the use of the grid may increase the catches of cod smaller than 20cm (Catchpole et al, 2006), although such an increase

has not been observed in other studies (Drewrey, et al, 2010). The use of the "Swedish" sorting grid may lead to loss of landings of fish and result in reduced catches of *Nephrops*.

*Other means of enhancing selectivity in the TR2 trawls*. Although, it may be possible to further reduce the catches of cod by enhance selectivity in the trawls used, STECF considers it unlikely that it will be possible to demonstrate that such measures will result in reductions in catchability that deliver the required reduction in F foreseen for the coming years.

*Introduction of catch quotas.* The introduction of catch quotas for the vessels concerned could offer an alternative approach to derogate from the effort limitation (article 13.2.c) while limiting the catches of cod in accordance with the cod management plan. Discard estimates are available for the TR2 vessels in the Kattegat and for the Irish TR2 and Belgian BT2 vessels in the Irish Sea. Applying the discard rates and the landing TACs for the two areas, catch quotas for the vessels concerned can be estimated. For illustrative purposes the predicted landings and discards for 2013 for the gear categories mentioned above are given in the tables below. The basis for the figures isas follows:

- The landings TAC consistent with the management plan and discard rates estimates for 2011. The most recent assessments of the two stocks indicate an increase in stock size. The landings TACs which are based on a 25% reduction of the 2012 TACs may therefore be lower than would have been the case if short term catch forecasts had been available and used as basis for setting the TACs for 2013. Similarly, the discard rates may be an underestimation of the likely discard rates if the recent year fishing pattern is maintained in 2013 and fishing effort is reduced by 25%.
- No change in selectivity compared to 2011.
- Same relative distribution in catches between gear groups as observed in 2011. The relative distribution of fishing possibilities between gear groups in 2013 may not necessarily be the same as in 2011. It will depends on the allocation of fishing possibilities to gear groups, swaps of quotas between Member States and the applied fishing effort by gear group.

Introduction of catch quotas should be linked to requirements for having the fisheries fully documented and monitored.

***Data requirements for Member State reporting***

Regarding the ToR addressing the data requirements for Member State reporting, STECF has addressed this in section 7.6 of this report dealing with the evaluation of cod avoidance measures in accordance with article 13.2.c.

STECF underlines that although the Committee has specified some general data requirements (See section 7.6 of this report) the specific requirements will be case dependent. It is therefore important that the specific requirements are evaluated on a case by case basis and that this is done by the Member States concerned as part of their reporting to the Commission of the measures implemented. STECF furthermore suggests that Member States implementing measures under article 13.2 are requested to conduct pre as well as post implementation evaluations to be review by STECF.

| | 2011 | 2012 | 2013 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|

| | | | | Harvest rate | Harvest rate | Harvest rate | Tonnes | Tonnes | Tonnes |
|---|---|---|---|---|---|---|---|---|---|
| Country | Gear group | Derogation | landings | 0.1267 | 0.1267 | 0.0872 | 120 | 120 | 83 |
| | | | discards | 0.0602 | 0.0602 | 0.0415 | 57 | 57 | 40 |
| DEU | TR2 | CPart13.2b | landings | 0.0000 | 0.0000 | 0.0000 | 0 | 0 | 0 |
| DEU | TR2 | CPart13.2b | discards | 0.0000 | 0.0000 | 0.0000 | 0 | 0 | 0 |
| DEU | TR2 | none | landings | 0.0011 | 0.0011 | 0.0008 | 1 | 1 | 1 |
| DEU | TR2 | none | discards | 0.0011 | 0.0011 | 0.0008 | 1 | 1 | 1 |
| DNK | GN1 | none | landings | 0.0032 | 0.0032 | 0.0022 | 3 | 3 | 2 |
| DNK | GN1 | none | discards | 0.0000 | 0.0000 | 0.0000 | 0 | 0 | 0 |
| DNK | TR1 | none | landings | 0.0011 | 0.0011 | 0.0008 | 1 | 1 | 1 |
| DNK | TR1 | none | discards | 0.0000 | 0.0000 | 0.0000 | 0 | 0 | 0 |
| DNK | TR2 | CPart13.2c | landings | 0.0823 | 0.0823 | 0.0566 | 78 | 78 | 54 |
| DNK | TR2 | CPart13.2c | discards | 0.0369 | 0.0369 | 0.0254 | 35 | 35 | 24 |
| SWE | TR2 | none | landings | 0.0390 | 0.0390 | 0.0268 | 37 | 37 | 25 |
| SWE | TR2 | none | discards | 0.0222 | 0.0222 | 0.0153 | 21 | 21 | 15 |

Table 7.7.1: Kattegat. Estimated (2011) and predicted (2012 and 2013) partial harvest rates (catch divided by spawning stock biomass), landings and discards by gear group having a total catch of more than 1 tonnes. The basis for the predicted values are given above.

| | | | | 2011 | 2012 | 2013 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Relative F | Relative F | Relative F | Tonnes | Tonnes | Tonnes |
| | | | landings (all regulated gears) | 0.3339 | 0.3339 | 0.3339 | 472 | 370 | 277 |
| | | | discards | 0.0099 | 0.0099 | 0.0099 | 14 | 11 | 8 |
| BEL | BT2 | none | landings | 0.0234 | 0.0234 | 0.0234 | 33 | 26 | 19 |
| BEL | BT2 | none | discards | 0.0064 | 0.0064 | 0.0064 | 9 | 7 | 5 |
| IRL | TR2 | CPart13.2b | landings | 0.0460 | 0.0460 | 0.0460 | 65 | 51 | 38 |
| IRL | TR2 | CPart13.2b | discards | 0.0035 | 0.0035 | 0.0035 | 5 | 4 | 3 |

Table 7.7.2: Irish Sea. Estimated (2011) and predicted (2012 and 2013) partial relative Fs, landings and discards by gear group for which discard data is available. The basis for the predicted values are given above.

**References**

Drewrey, J., Bova, D., Kynoch, R.J., Fryer, R.J and O'Neill, F.G. (2010). The selectivity of the Swedish grid and 120 mm square mesh panels in the Scottish *Nephrops* fishery. Fisheries Research, 106, 454-459.

Catchpole, T.L., Revill, A.S. and Dunlin, G. 2006. An assessment of the Swedish grid and square-mesh codend in the English (Farn Deeps) *Nephrops* fishery. Fisheries Research 81 (2006) 118–125.

## 7.8. Request for an Assessment of cod catches in Baltic Sea subdivisions 27 & 28

### Background

Article 29 of Council Regulation (EC) No 1098/2007 of 18 September 2007 establishing a multiannual plan for the cod stocks in the Baltic Sea and the fisheries exploiting those stocks, requires the Commission to decide on an annual basis about the application of the fishing effort management limits defined in Article 8 of the same regulation to Subdivisions 27, 28.1 and 28.2.

### Terms of reference

The Commission requests STECF to advise if catches of cod in the period 1 October 2011 to 30 September 2012 in Subdivisions 27 and 28.2 were lower than 3% of the total catches of cod in Subdivisions 25 to 28 and if the catches of cod in Subdivision 28.1 were higher than 1.5 % of the total catches of cod in Subdivisions 25 to 28.

### STECF response

STECF received catch data from the Commission for all Member States fishing in the Baltic. It is not stated clearly weather the reported data relate to landings only or to total catch of cod (including estimates of discards). However, STECF consider the reported data being landings and not catches of cod. The reported data are summarised in Table 7.8.1.

Table 7.8.1 Reported cod catches from Baltic SD 25-28 from 1 October 2011 to 30 September 2012.

| | Total | | | Proportion (%) | |
|---|---|---|---|---|---|
| Division | SD 25-28 | SD 27+28.2 | SD 28.1 | SD 27+28.2 | SD 28.1 |
| Member State | [kg] | [kg] | [kg] | [%] | [%] |
| Denmark | 11503784 | 0 | 0 | 0.000 | 0.000 |
| Estonia | 685451 | 481 | 400 | 0.001 | 0.001 |
| Finland | 1152267.48 | 0 | 0 | 0.000 | 0.000 |
| Germany | 2580800 | 0 | 0 | 0.000 | 0.000 |
| Latvia | 4272669.3 | 148388 | 79.3 | 0.327 | 0.000 |
| Lithuania | 2443388 | 10393 | 0 | 0.023 | 0.000 |
| Poland | 12728884.3 | 0 | 0 | 0.000 | 0.000 |
| Sweden | 9988154.1 | 25452.6 | 0 | 0.056 | 0.000 |
| **TOTAL** | **45355398.2** | **184714.6** | **479.3** | **0.407** | **0.001** |

The data in Table 7.8.1 indicate that between 1 October 2011 and 30 September 2012, less than 3 % of the reported landings of cod from Subdivisions 25 to 28 were taken in Subdivisions 27 and 28.2 and less than 1.5 % was taken in Subdivision 28.1. However, according to ICES WKEID (2010), discards of cod represents in average around 10% of the catches.

**STECF conclusions**

For all MS, landings of cod in the period 1 October 2011 to 30 September 2012 in Subdivisions 27 and 28.2 were lower than 3% of the total landings in Subdivisions 25 to 28. Also, landings of cod in Subdivision 28.1 were lower than 1.5 % of the total landings in Subdivisions 25 to 28. Assuming an average discard of about 10% of the catches Eastern for Baltic cod, STECF concludes that for all MS, catches of cod were lower than the thresholds defined in Article 29 of Council Regulation (EC) No 1098/2007 of 18 September 2007.

## 7.9. Clarification of advice on Sole VII h-k and $F_{0.1}$

**Background**

In the STECF report *"Review of scientific advice for 2013 – part 2"*[8] STECF notes that the ICES advice for Sole (*Solea solea*) – VIIhjk for 2013 is based on the choice of FMAX as a proxy for FMSY, without any evidence to suggest that this level of F is sustainable.

STECF suggests the use of $F_{0.1}$ as a more precautionary proxy in the absence of such additional information. In that case, the resulting catches would be lower than those advised by ICES but in the absence of an estimate of $F_{0.1}$, STECF is unable to provide the equivalent value.

**Request to the STECF**

STECF is requested to provide additional clarification: please estimate $F_{0.1}$ so that catches in line with STECF opinion could be calculated.

**STECF response**

STECF notes that F0.1 estimate from the Yield/Recruit plot presented in the ICES advice is F=0.16.

The rationale used by ICES to calculate the appropriate landings values are based on a proxy for total mortality (Z), estimated from the Irish landings numbers-at-age in Divisions VIIjk. These estimates are reduced by 0.1 for natural mortality and averaged over the last 3 years (2009-2011), resulting in an average F of 0.27. The F0.1 estimate of 0.16 is 40% lower than the estimated average fishing mortality (F=0.27). Hence, applying a 40% reduction on recent landings (average over 2009-2011 = 218 t) would imply landings of 131 t in 2013.

STECF notes that adopting the more appropriate method of predicting the relative change in catch for different levels of F, implies that a 40% reduction in F from F=0.27 to F=0.16 implies that catches will be 36% lower. Hence a 40% reduction in F in 2013 from F=0.27 would imply landings of 136 t.

8 Scientific, Technical and Economic Committee for Fisheries (STECF) – Review of scientific advice for 2013 – part 2 (STECF-12-08). (eds. Casey, J., Vanhee, W., Doerner, H. & Druon, J.-N.). 2012. Publications Office of the European Union, Luxembourg, EUR 25413 EN, JRC 73064, 328 pp.

STECF considers that using estimates of total mortality derived from catch curves based on Irish landings of cod in numbers at age may not result in exploitation patters that are representative of the fishery as a whole. If that is the case, then the estimated values for recent fishing mortalities at age will be wrong and similarly, the results of the yield-per-recruit analysis may also be incorrect.

Given that there is no objective means to judge how realistic the estimates for fishing mortality are likely to be, STECF is unable to advise on the change in F (if any) required to achieve $F_{MSY}$ and in the absence of such an estimate it is not possible to calculate a catch corresponding to such a reduction. Consequently STECF concludes that irrespective of whether $F_{MAX}$ or $F_{0.1}$ is chosen as the proxy for FMSY, the relative change from the estimate of current F cannot be reliably estimated and the landings implied by the method above are therefore also unreliable.

Taking into account the concerns expressed above, STECF concludes that there is no objective basis to advise an appropriate level of catch of sole from Divisions VIIh-k for 2013 but notes that the ICES approach for data limited stocks would imply a 20% reduction on the landings compared to 2011, implying that landings in 2013 of no greater than 175 t.

## 7.10. Clarification on Cod VIIe-k and $F_{0.1}$

### Background

In the STECF report *"Review of scientific advice for 2013 –part 2"* STECF agrees with the ICES assessment of stock status and advice for Cod (*Gadus morhua*) in areas VIIe-k.

STECF also notes that the proposed proxy ($F_{max}$ 2011) for $F_{MSY}$= 0.4 may not be appropriate ($F_{max}$ 2012 = 0.37). In the absence of an estimate of $F_{MSY}$, STECF recommends that $F_{0.1}$ (F = 0.20) is a more appropriate proxy for $F_{MSY}$ and should be used.

### Request to the STECF

STECF is requested to provide additional clarification: Under the cod plan, target F is 0.4. STECF suggests an F of 0.20 for this stock, which is not covered by the plan. Please expand on the reasoning why 0.20 would be a more appropriate proxy for FMSY in this case.

### STECF Response

STECF notes that a management plan for cod fisheries has not yet been implemented in Divisions VIIe-k. As no simulations have been carried out to determine an appropriate value for FMSY for cod in these areas and until fishing at a level of F=0.4 has been assessed to be sustainable, STECF considers that a precautionary approach to the exploitation of the stock would be appropriate. Exploiting the stock at a rate corresponding to F0.1 (F=0.2) is more robust to uncertainty and poses less risk to the stock in the long term than fishing at FMAX (F=0.4). Hence in the absence of a robust estimate of FMSY, STECF in general considers F0.1 to be a more appropriate proxy for FMSY than FMAX.

STECF notes that for cod in VIIe-k, FMAX is relatively well defined, the SSB is currently at its highest level in the time series and under the assumption of equilibrium recruitment, the long term

estimate of SSB fishing at F0.4 is 25,000 t, similar to the current and historic level. STECF therefore concludes that adopting F = 0.4 as a provisional proxy for FMSY in the short-term is unlikely to pose any serious risk to the stock. Fishing at F=0.4 in 2013 implies that landings in 2013 will be 10,200 t and that SSB in 2014 will be 26,500 t.

The stock in 2012 is estimated to be around the maximum historical observed value of SSB (25000 t). According to the YPR and assuming average recruitment, fishing at F=0.2 results in an estimated long-term equilibrium SSB of 45,000 t.

From the SR curve, there are indications of density dependency at high level of SSB (i.e. Ricker function), which might imply that the productivity of the stock will decline at high level of stock size.

STECF however consider that further analyses are necessary to determine the most appropriate proxy of $F_{MSY}$ for this stock.

### 7.11. Update of STECF advice from July 2012 on tuna fisheries where sharks are associated species

**Background**

The tuna Fisheries Partnership Agreements (FPA) between the EU and third countries define different fleet categories for the exploitation of Highly Migratory Species. Pelagic sharks are associated species to these fishing fleets varying from simple accidental by-catches in some fisheries to main targeted species by some pelagic longline métiers. STECF was requested to provide advice on the sustainability of these fisheries in the Indian Ocean (FPA with Madagascar) and Atlantic (FPA with Cape Verde), in particular regarding the harvesting of sharks. STECF provided an answer in July 2012 (PLEN-12-02). For the FPA with Cape Verde the advice was based on ICCAT and STECF noted that the 2012 assessment of sharks would be reviewed by the SCRS in September 2012.

**Request to the STECF**

STECF is requested to update the advice from July 2012 on tuna fisheries where sharks are associated species, taking into account the ICCAT 2012 assessment of sharks and the review by the ICCAT SCRS in September 2012.

The preceding 'Background' and 'Request to the STECF' follow the 'Background' and 'Terms of Reference' considered at STECF-PLEN-12-02[9]. These are reproduced below as they have been edited by the Commission since STECF-PLEN-12-02 and allow this document to be treated as a standalone response to Request 7.11 of STECF-PLEN-12-03.

**Background** (from STECF-PLEN-12-02, subsequently edited)

9 Scientific, Technical and Economic Committee for Fisheries (STECF) – 40th Plenary meeting report (STECF-PLEN-12-02). (eds Casey, J. & Doerner, H.). 2012. Publications Office of the European Union, Luxembourg, EUR 25411 EN, JRC 73093, 124 pp.

The so called "Tunas Fisheries Partnership Agreements" currently cover fishing activities of EU fleets oriented to highly migratory species listed in Annex I of the UNCLOS, including tunas and tuna-like species, obviously, but also other pelagic species, like elasmobranchs.

Elasmobranchs have been often considered as associated catches in métiers targeting mainly tunas and billfish, particularly for longliners. However, in some fisheries the percentage of sharks in the reported catches or landings indicates high values, possibly related to métiers targeting elasmobranchs on a yearly or seasonal basis. Elasmobranchs should then not be always considered as associated species, but as targeted species.

In some cases, this catch could be considered to negatively impact the conservation of elasmobranch populations and to increase conservation risks on species which are, in some cases, already considered as threatened and/or endangered. Some third Countries (particularly Madagascar and Cabo Verde), which signed a Tuna FPA with the EU, have highlighted such a conflict for fisheries located both in the Eastern Central Atlantic and in the Western Indian Ocean.

**Terms of reference** (from STECF-PLEN-12-02, subsequently edited)

• Considering the last available stock advice and management recommendations released by the ICCAT and IOTC scientific committees on elasmobranch species,
• considering management measures already agreed by contracting parties of these RFMOs on these species,
• taking into account characteristics of fisheries covered by tuna FPAs in the Eastern Central Atlantic and in the Western Indian Ocean and, more particularly, taking as study cases the UE-Malagasy and UE-Cape Verde FPAs,

the STECF is requested to discuss:

If the status of elasmobranch species, as given in ICCAT and IOTC advice, may allow the continuation of fishing activities, following a similar fishing pattern as the one currently observed for métiers targeting sharks or having a high percentage of sharks considered as associated species in their reported catches or landings.

When either limiting the fishing pressure on sharks to its current level or even when aiming to reduce it, what type of mitigation and/or management measures could be implemented in these fisheries and for these specific métiers. The discussion should indicate possible strengths and weaknesses of such measures.

**Introduction**

The following text is an updated revision of the response to a similar request given in the Report of the July 2012 plenary meeting (STECF PLEN 12-02).

The Madagascar FPA covers the period 1 January 2007 to 31 December 2012. This fisheries agreement is for tuna seiners and surface long liners and allows community vessels mainly from Spain, Portugal, Italy and France to fish in Madagascar waters. The Madagascar FPA is part of the tuna network fisheries agreements in the Indian Ocean. The current Cape Verde FPA agreement covers the period from 1 September 2011 to 31 August 2014 and allows tuna seiners, surface long

liners and pole and line vessels from Spain, Portugal and France to fish in the Cape Verde waters. The Cape Verde FPA is part of the tuna network fisheries agreements in West Africa.

To support their request for advice, the EC provided catch data for sharks taken by EU vessels operating under the Madagascar FPA and Cape Verde FPA. Data were provided by year for 2007 to 2010 by nation and by long-line métiers for Madagascar. For Cape Verde data were provided by species for 2007 to 2010 but not by métier (Annex 1; STECF plenary report 2-2012). Catch data for three shark species were provided by the EC for Cape Verde: blue shark accounted for 89.6% to 93.8% by weight in each year, short-fin mako for 6.1% to 9.7% and silky shark for the remainder. The weight of shark catches as a proportion of tuna catches reported in the Madagascar fisheries is much higher in the Spanish and Portuguese fisheries than the French fisheries.

**Cape Verde FPA**

*Shark population status*

ICCAT (2012a, b) report the results from a range of assessment methods applied to the north Atlantic blue shark and short-fin mako. The assessment area includes Cape Verde FPA waters. Owing principally to data deficiencies, ICCAT regard the results of their assessments to be uncertain. The following table, extracted from ICCAT (2012b), summarises the results of their blue shark assessments.

Table 7.11.1: North Atlantic blue shark summary.

| | | |
|---|---|---|
| Provisional Yield (2011) | | 11.548 t[2] |
| 2007 Yield | | 61,845 t[1] |
| Relative Biomass: | $B_{2007}/B_{MSY}$ | 1.87-2.74[3] |
| | $B_{2007}/B_0$ | 0.67-0.93[4] |
| Relative Fishing Mortality: | $F_{MSY}$ | 0.15[5] |
| | $F_{2007}/F_{MSY}$ | 0.13-0.17[6] |
| Overfished 2007 (Y/N) | | No |
| Overfishing 2007 (Y/N) | | No |

Notes replicate ICCAT (2012b)
[1] Estimated catch used in the 2008 assessments
[2] Task I catch.
[3] Range obtained from the Bayesian Surplus Production (BSP) (low) and the Catch-Free Age Structured Production (CFASP) (high) models. Value from CFASP is $SSB/SSB_{MSY}$.
[4] Range obtained from BSP (high), CFASP and Age-Structured Production Model (ASPM) (low) models.
[5] From BSP and CFASP models (same value). CV is from CFASP model.
[6] Range obtained from BSP (high) and CFASP (low) models.

Based on the results of these assessments, ICCAT concludes that the biomass of North Atlantic blue shark stocks is above the biomass that would support MSY and that current harvest levels are below $F_{MSY}$. Results from all models used in the 2008 ICCAT assessment 'were conditional on the assumptions made (e.g., estimates of historical catches and effort, the relationship between catch rates and abundance, the initial state of the stock in the 1950s, and various life-history parameters), and a full evaluation of the sensitivity of results to these assumptions was not possible during the assessment' (ICCAT, 2011). Based on these assessments and a previous assessment, ICCAT concluded that fishing had not resulted in depletion to levels below the Convention objective to maintain stocks 'at levels which will permit the maximum sustainable catch'.

For north Atlantic short-fin mako, the following table, extracted from ICCAT (2012b) summarises the results of their assessments.

Table 7.11.2: North Atlantic short-fin mako summary.

| | | |
|---|---|---|
| Provisional Yield (2011) | | 2.154 t[1] |
| Relative Biomass | $B_{2010}/B_{MSY}$ | 1,15-2,04[2] |
| | $B_{2010}/B_0$ | 0,55-1,63 |
| Relative Fishing Mortality | $F_{MSY}$ | 0,029-0,104 |
| | $F_{2010}/F_{MSY}$ | 0,16-0,92 |
| Overfished 2010 (Y/N) | | No |
| Overfishing 2010 (Y/N) | | No |

Notes replicate ICCAT (2012b)
[1] Task I catch.
[2] Range obtained from BSP.

The 2012 assessment of the status of north Atlantic stocks of short-fin mako shark was conducted with an updated time series of relative abundance indices and annual catches. Coverage of nominal catch data and the number of CPUE series increased since the last stock assessment conducted in

2008, with total catch data now being available for most major longline fleets. The available CPUE series showed increasing or flat trends for the final years of each series (since the 2008 stock assessment), hence the indications of potential overfishing shown in the previous stock assessment have diminished and the current level of catches may be considered sustainable.

The results of the two stock assessment model runs almost always indicated that estimated stock abundance in 2011 was above $B_{MSY}$ and F was below $F_{MSY}$. The results indicated in general that the status of the stock is healthy, but the inconsistencies in trends between estimated biomass and CPUE series is of concern, and generates wide confidence intervals. Taking into consideration the results from the modeling approaches used in the assessment, the associated uncertainty, and the relatively low productivity of short-fin mako sharks, the ICCAT stock assessment group (ICCAT, 2012b) recommended, as a precautionary approach, that the fishing mortality of short-fin mako sharks should not be increased until more reliable stock assessment results were available.

Cortés et al. (2008, 2012) conducted a productivity and susceptibility analysis (PSA, also known as Ecological Risk Assessment ERA) for pelagic elasmobranchs to assess their vulnerability to pelagic longline fisheries in the Atlantic Ocean. The risk analysis estimated productivity (estimates of intrinsic rate of increase) and susceptibility to the fishery as the product of availability to the fleets, encounter with the gear in relation to depth, gear selectivity and post-capture mortality. The 2012 analysis differed from that conducted in 2008, principally because the spatial overlap between the effort distribution of the fleet in 1980-2009 (as opposed to 1950-2005) and the stock was considered and because more species were included. Species grouped in the high-risk area of the productivity-susceptibility plot in both analyses included short-fin mako, which was ranked at greater risk than silky shark.

Simpendorfer et al. (2008) assessed the risk of over-exploitation for pelagic shark species taken in Atlantic longline fisheries based on a combination of a productivity and susceptibility analysis (PSA), the inflection point of the population growth curve (treated as a proxy for $B_{MSY}$) and IUCN Red List status. The results were analysed using multivariate statistics to provide an integrated measure of the risk of overexploitation to help advise on status in the face of data limitations. Results of the analysis for a range of shark species were compared with those for blue shark, for which the current ICCAT stock assessment suggests the species is not overexploited. All other shark species had higher levels of risk than the blue shark. The analysis suggested that the species at highest risk were the bigeye thresher, short-fin mako, long-fin mako, and, to lesser extent, the silky shark.

For silky shark, no ICCAT assessment was available, although they were included in the productivity and susceptibility analysis (PSA) of Cortés et al. (2008, 2012) and risk analysis of Simpendorfer et al. (2008). In the analysis of Cortés et al. (2008, 2012) silky shark were identified as intermediate vulnerability with respect to blue shark (less vulnerable) and short-fin mako (more vulnerable). In the analysis of Simpendorfer et al. (2008) silky shark were estimated to be at lower risk than short-fin mako but higher risk than blue shark.

**Madagascar FPA**

IOTC have not completed full assessments for shark species taken in Madagascar FPA waters. Shark species were not identified in the data provided by the EC for the Madagascar FPA, although blue shark and short-fin mako have elsewhere been reported as major catch in Portuguese longline fisheries (Santos et al. 2011) and Spanish longline fisheries (EU, 2011) in this area.

Although no formal stock assessment is available for any of the fished shark species in the IOTC area, the vulnerability of sharks species to various longline and purse seine fleets has been assessed by an ERA in the Indian Ocean (Murua et al., 2009) that has been recently updated (Murua et al, 2012). In these analyses, blue shark was identified as of intermediate vulnerability, while short-fin mako and silky shark were both highlighted as being at high risk.

The IOTC Working Party on Ecosystems and Bycatch (WPEB) has recently concluded (IOTC 2012b) that there is a paucity of information available on blue shark in the Indian Ocean and they do not expect this situation to improve in the short to medium term. With no quantitative stock assessment and limited basic fishery indicators available the stock status of blue shark in the Indian Ocean is highly uncertain. However, the available blue shark assessments for the Atlantic and Pacific oceans, including the ICCAT assessments previously described, indicate that blue shark stocks can sustain relatively high fishing pressure in comparison with other shark species taken in tuna long line fisheries.

IOTC WPEB suggest that maintaining or increasing fishing effort in the Indian Ocean area will probably result in further declines in biomass, productivity and CPUE of blue shark. The Scientific Committee of the IOTC considered that the two primary sources of data required to support an initial assessment of blue shark status, total catches and CPUE, are highly uncertain and should be investigated further as a priority. The Scientific Committee recommended that mechanisms are developed by the Commission to encourage Contracting and non-Contracting Cooperating Parties (CPC) to comply with their reporting requirement on sharks. The WPEB noted that CPC are required to collect and report the same information as is collected and reported for tuna and tuna-like species (catch, effort and size frequency). In the report of the 'Report of the Eighth Session of the IOTC WPEB', specific suggestions were made for data collection, in particular to clarify the species included in 'most commonly caught shark species', used in IOTC Resolution 10/02.

For short-fin mako in the Indian Ocean, the WPEB of the IOTC noted the paucity of information available on this species and that this situation is not expected to improve in the short to medium term. No quantitative stock assessments or basic fishery indicators are currently available for short-fin mako shark in the Indian Ocean and the stock status is highly uncertain. WPEB note that maintaining or increasing effort will probably result in declines in biomass, productivity and CPUE.

The Scientific Committee (SC) of IOTC has made several recommendations to the Commission concerning shark conservation. The recommendations have centered on the need to improve the collection and reporting of data on shark catches in association with IOTC fisheries: in particular the need to improve data collection at the species level for stock assessment purposes, including species, sex ratios, numbers and size distributions of catches. To facilitate the collection of shark fishery data at species specific level, the SC recommends that shark fins be matched to the carcass; that is, that sharks be landed with their fins attached naturally or using tamper-proof mechanisms. Moreover, on the basis of information presented at the SC meeting in 2011, and in previous years, the SC recognised that the use of wire trace (leaders) in longline fisheries may imply targeted shark fishing. Consequently, the SC has recommended that if the Commission wants to reduce the catch rates of sharks by longliners it should prohibit the use of wire trace throughout the IOTC area.

Based on a review of research presented at the International Symposium on Circle Hooks in 2011, the WPEB of IOTC (IOTC, 2011b) noted that the use of circle hooks in longline fisheries will decrease the catch rates for swordfish but at the same time (i) will increase the proportion of animals being brought alive to the fishing vessel, implying better quality and value for target species and an improved chance of survival for bycatch species which are to be released, (ii) is likely to result in an increase in catches of sharks when using wire trace (although their use would

also result in a reduction in post-release mortality) and (iii) noted that if circle hooks were combined with the use of monofilament leaders instead of wire leaders, they would reduce shark catch rates and likely post-bite-off mortality, because the use of circle hooks will result in less gut hooking of sharks. Consequently, the WPEB encouraged the use of circle hooks in all longline vessels targeting tuna and tuna-like species in the IOTC area of competence, in particular for shallow sets, and encouraged further studies on the socio-economic impact of the use of circle hooks in longline fisheries. However, the IOTC WPEB also recommended further research into the effectiveness of circle hooks adopt a multi-species approach, so as to avoid, as far as possible, promoting a mitigation measure for one bycatch taxon that might exacerbate bycatch problems for other taxa.

There is a range of evidence on survivorship of sharks caught on long-lines, but estimates are necessarily variable among fisheries For short-fin mako, 60-85% of individuals have been reported as alive when gears are retrieved (e.g. Griggs et al 2007, Semba et al 2008), suggesting that mandatory release can reduce fishing mortality for this species. For blue shark, Moyes et al (2006) report high post-release survival and suggest that sharks can be handled more roughly on release from wire traces (Moyes et al 2006).

**Existing management measures**

**Cape Verde FPA, ICCAT**

For the ICCAT area, the 'Compendium of management recommendations and resolutions adopted by ICCAT for the conservation of Atlantic tunas and tuna-like species' summarises management recommendations (mandatory) and resolutions with regard to shark populations. The EC FPA require that both 'recommendations' and 'resolutions' are followed. ICCAT already require full utilisation (defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing) of entire shark catches and that shark fins should not total more than 5% of the weight of the sharks onboard (Recommendation 04/10). In the same resolution, ICCAT requires that Contracting Parties, Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs) annually report Task I and Task II data for catches of sharks, in accordance with ICCAT data reporting procedures, including available historical data. ICCAT have also adopted recommendation 11/08 that requires that Contracting Parties, and Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs) fishing vessels flying their flag and operating in ICCAT managed fisheries to release all silky sharks whether dead or alive, and prohibit retaining on board, transshipping, or landing any part or whole carcass of silky shark. Similar recommendation have been adopted for hammerhead sharks (family Sphyrnidae) in recommendation 10/08, oceanic whitetip shark (*Carcharhinus longimanus*) in recommendation 10/07, and bigeye thresher sharks (*Alopias superciliosus*) in recommendation 08/07. It is further required that CPCs record through their observer programs, the number of discards and releases of those species with indication of status (dead or alive) and report it to ICCAT.

**Madagascar FPA, IOTC**

For the IOTC area, the "Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission" summarises management resolutions (mandatory and binding) and recommendations which are not binding (IOTC, 2012).

For the IOTC area, existing regulations (Resolution 05/05; Resolution 12/03) requires that Contracting Parties, Cooperating non-Contracting Parties (CPCs) shall annually report data for

catches of sharks by species, in accordance with IOTC data reporting procedures, including available historical data. Moreover, Resolution 05/04 obliged full utilisation (defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing) of entire shark catches and that fins should not total more than 5% of the weight of sharks onboard.

IOTC have also adopted resolution 12/09 that requires that IOTC Member and Cooperating non-Contracting Parties are prohibited from retaining on board, transshipping, landing, storing, selling or offering for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae.

**STECF observations**

STECF notes that the high catch rates of sharks in the Madagascar and Cape Verde FPA longline fisheries show that these fisheries are targeting sharks as well as tuna and tuna like species.

STECF observes that ICCAT assessments are available for two of the three shark species caught by EU vessels from the Cape Verde FPA area. For blue shark the assessment suggests the current catch rates in the entire North Atlantic are sustainable. For short-fin mako the latest assessment results suggest that current catch rates are sustainable (ICCAT 2012a,b), although with great uncertainties about both stock status and productivity estimates. STECF notes the ICCAT statement (ICCAT 2012a) that mortality rates for north Atlantic short-fin mako sharks should not be increased until more reliable stock assessment results are available. STECF observes that PSA and risk analyses suggest that the short-fin mako is among the pelagic sharks most at risk from long-line fishing and subject to greater risk than silky shark. For silky shark, although a full assessment is not available, ICCAT have already introduced measures that require their release after capture.

STECF observes that IOTC have not assessed any of the shark species taken in the Madagascar FPA area. Species are not identified in the data provided by the EC, but data from other sources suggest that blue and short-fin mako shark dominate the catches. Data are not available to support a quantitative assessment of these species. STECF observe that a PSA indicates high risk for short-fin mako and silky shark for at least two IOTC longline fleets.

STECF observes that the WPEB of the IOTC note the paucity of information available on shark fisheries and status in the Indian Ocean and their comment that this situation is not expected to improve in the short to medium term. STECF also note the observation that maintaining or increasing effort will probably result in declines in biomass, productivity and CPUE of blue shark and short-fin mako shark, and that the life histories of short-fin mako sharks make them more vulnerable to a given rate of fishing mortality than blue shark.

STECF observes that the Scientific Committee (SC) of IOTC has made several recommendations to the IOTC concerning shark conservation. The recommendations have centered on the need to improve the collection and reporting of data on shark catches in association with IOTC fisheries: in particular the need to improve data collection at the species level for stock assessment purposes, including species, sex ratios, numbers and size distributions of catches. STECF note that to facilitate the collection of more accurate species specific fishery data that can be used to develop assessments, the SC have advised that shark fins be matched to the carcass; that is, that sharks be landed with their fins attached naturally or using tamper-proof mechanisms. However, the STECF also noted that SC pointed out the difficulty of practical implementation and safety issues for some

fleets and, thus, SC recommended all CPCs to obtain and maintain the best possible data for IOTC fisheries impacting upon sharks, including improved species identification.

STECF observes that the use of monofilament rather than wire traces will reduce shark catches and mortality if this needs to be achieved to meet management objectives.

STECF observes that NOAA has published voluntary guidance on best-practice for the release of short-fin mako sharks taken by long-line and other fisheries in the North Atlantic. To maximize survival and minimize injury they recommend using non-stainless steel circle hooks, not removing the shark from the water or gaffing it, removing the hook using a de-hooking device or cutting the line as close to the hook as possible.

**STECF conclusions**

STECF concludes that effective management of exploitation of sharks in both the Cape Verde and Madagascar FPA areas, and in any other areas fished by EU fleets, will require (a) the collection of adequate species-specific catch and biological data to support the assessment of population status, to model the effects of fishing and to model the effects of alternate management options and (b) effective implementation of measures to support data collection and to ensure catches are sustainable.

STECF concludes that, based on available evidence, that there is a high probability that the current catch levels of blue shark are sustainable in the Cape Verde FPA.

STECF notes that the latest ICCAT assessment suggests that short-fin mako is not overexploited in the ICCAT area. Although the results are more optimistic that those derived from previous assessments they are still highly uncertain, and all susceptibility analyses (PSA) indicate that this species can be easily overexploited given its life history and low productivity.

STECF concludes that the existing ICCAT requirement to release or return silky sharks should reduce mortality rates for this species in the Cape Verde FPA.

STECF concludes that the status of the blue shark stock in the IOTC area that includes the Madagascar FPA is uncertain but notes that blue shark can sustain a higher rate of fishing mortality than other shark species in the IOTC area.

STECF concludes that there is no conclusive information on stock status of short-fin mako shark in the IOTC area. However, the PSA for the stock in this area shows that short-fin mako sharks are at least as vulnerable to fishing as silky sharks.

STECF concludes that if there is a desire to reduce shark mortality rates then this can be achieved by releasing sharks caught in long-line fisheries and by the use of monofiliament traces. The disadvantage of this approach is that they will reduce catches of shark species that are targeted in directed fisheries because they affect catches of all sharks.

For blue shark in the Madagascar FPA (and in FPA areas in the IOTC area more widely), STECF concludes that there is insufficient information to determine whether the exploitation rate arising from the recently observed fishing pattern is sustainable. Hence STECF is not able to determine whether the currently observed pattern of fishing activities should continue.

For short-fin mako shark in the Madagascar FPA (and in FPA areas in the IOTC area more widely), STECF has insufficient information to determine whether the exploitation rate arising from the recently observed fishing pattern is sustainable. Hence STECF is not able to determine whether the currently observed pattern of fishing activities should continue.

For any other shark species caught in the Madagascar FPA (and in FPA areas in the IOTC area more widely), STECF has insufficient information to determine whether the exploitation rate arising from the recently observed fishing pattern is sustainable. Hence STECF is not able to determine whether the currently observed pattern of fishing activities should continue.

**STECF recommendations**

For north Atlantic short-fin mako the most recent assessments suggest $B>B_{MSY}$ but they are still regarded as highly uncertain by the ICCAT stock assessment group. Given that the susceptibility analyses (PSA) indicate that north Atlantic short-fin mako can be easily overexploited given its life history and low productivity STECF recommends the adoption of a precautionary approach and that the annual catch of the short-fin mako shark should not be increased above recent levels (2007-2010 average) in the Cape Verde FPA area and in the ICCAT region more widely we have higher confidence in the assessment results.

Given (i) the absence of an assessment for short-fin mako shark in the IOTC area, (ii) the high vulnerability to the longline fleet indicated by the PSA and (iii) evidence that short-fin mako shark may be a target species, STECF recommends the adoption of a precautionary approach, so the annual catch of the short-fin mako shark should not increase above recent levels (2007-2010 average) in any FPA areas within the IOTC area until more reliable stock assessment results are available.

STECF recommends that more comprehensive species-specific catch and biological data for sharks are needed to support the assessment of population status, to model the effects of fishing and to model the effects of alternate management options, especially in the Madagascar FPA area. For the Madagascar FPA area, STECF recommends that the recommendations on data collection relating to sharks provided by the IOTC WPEB are followed.

To facilitate data collection and accurate documentation and reporting of catches, STECF recommends that any sharks caught in FPA fisheries should be retained and landed whole (with fins wholly or partly attached to their respective carcass).

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## 7.12. EU catches of ling in ICES AREAS IIIA and IV

**Background**

ICES advises that catches should be no more than 10,800 tonnes for Ling (*Molva molva*) in Divisions IIIa and IVa, and in Subareas VI, VII, VIII, IX, XII, and XIV (other areas). This represents 80% of the mean catch 2009–2011.

The TAC in the FO regulation for shared stocks is for EC and intl waters of VI, VII, VIII, IX, X, XII, XIV and thus does not match the area covered by the advice.

To calculate the TAC for the TAC area as specified in the regulation, the Commission needs to know how important EU vessel catches are in IIIA and IV. The advice however does not specify for which countries the landings figures in III and IV are.

**Request to the STECF**

The STECF is requested to calculate or estimate landings for ling in III and IV from EU vessels.

**STECF response**

STECF has been requested ad hoc to estimate landings of European vessels of ling (*Molva molva*) in the ICES Div. IIIa (Skagerrak and Kattegat, no Baltic) and ICES Subarea IV (North Sea).

STECF queried the DCF data base created from the 2012 DCF data call to support fishing effort regime evaluations for fisheries specific catches in 2003-2012.

The resulting annual landing figures of ling by country during the period 2003 to 2011 in the ICES Div. IIIa and IV are listed in Table 7.12.1. STECF observes that discard rates were reported to vary among 10% in weight.

Table 7.12.1. Annual landings (t) of ling by country during the period 2003 to 2011 in ICES Div. IIIa and IV.

| SPECIES | REG_AREA | COUNTRY | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LIN | 3 no Baltic | DEU | 0.446 | 0.933 | 1.007 | 1.877 | 1.935 | 0.679 | 0.571 | 0.446 | 0.161 |
| LIN | 3 no Baltic | DNK | 111.188 | 120.525 | 97.176 | 87.119 | 78.825 | 57.445 | 74.729 | 111.188 | 61.352 |
| LIN | 3 no Baltic | NLD | | | | | | | | | |
| LIN | 3 no Baltic | SWE | 31.939 | 30.442 | 30.645 | 28.377 | 20.986 | 20.336 | 21.309 | 31.939 | 17.203 |
| LIN | 4 | DEU | 76.364 | 52.298 | 68.418 | 64.141 | 52.681 | 56.721 | 37.538 | 76.364 | 73.546 |
| LIN | 4 | DNK | 800.786 | 604.388 | 707.502 | 660.348 | 426.266 | 482.491 | 558.647 | 800.786 | 590.691 |
| LIN | 4 | ENG | 188.205 | 109.126 | 156.22 | 184.443 | 109.292 | 109.268 | 131.525 | 188.205 | 129.649 |
| LIN | 4 | FRA | 120.762 | 64.264 | 47.049 | 72.798 | 96.522 | 180.564 | 178.327 | 120.762 | 86.766 |
| LIN | 4 | NIR | 0.121 | 0.185 | 1.059 | 3.303 | 5.701 | 5.096 | 5.325 | 0.121 | 4.304 |
| LIN | 4 | NLD | | | | | | | 0 | | 0 |
| LIN | 4 | SCO | 2190.548 | 1801.071 | 1416.31 | 1345.167 | 1265.591 | 1758.164 | 2161.245 | 2190.548 | 2011.397 |
| LIN | 4 | SWE | 8.332 | 3.062 | 8.941 | 11.004 | 7.382 | 17.553 | 20.506 | 8.332 | 16.333 |
| Sum | | | 3528.691 | 2786.294 | 2534.327 | 2458.577 | 2065.181 | 2688.317 | 3189.722 | 3528.691 | 2991.402 |

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Abstract

The Scientific, Technical and Economic Committee for Fisheries hold its 41st plenary on 5-9 November 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 were *inter alia* assessments of Mediterranean and Black Sea stocks, evaluations of fishing effort regimes, technical measures, review of scientific advice on stocks and fisheries of EU interest, fisheries management plans evaluation issues.

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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.

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