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COMMISSION STAFF WORKING PAPER

19th REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES

Brussels, 01-05 November 2004

This report does not necessarily reflect the view of the European Commission and in no way anticipates the Commission's future policy in this area.

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1 Introduction

The 19th meeting of the STECF was convened at the Conference Centre "Albert Borschette" in Brussels from 1 to 5 November 2004.

The STECF meeting was preceded by the joint meeting of the subgroups SGRST and SGECA (25-29 October 2003). These Sub-groups prepared reports reviewing the status of stocks of Community interest and the economic implications of the ACFM advice for 2005.

The Secretariat of the STECF welcomed the participants wishing them success in their deliberations and informed the group on issues reported hereinafter under the sections from 1.3 to 1.6..

The terms of reference for the meeting were surveyed and briefly discussed to arrange the details of the meeting. The session was managed through alternation of plenary and parallel working groups meetings.

The 19th meeting of the STECF was also attended by scientists of some new Member States of the European Union that were invited as experts because they have not yet been nominated full member of the STECF (see section 1.5).

1.1 LIST OF PARTICIPANTS

The complete address of the participants is listed in Annex 1.

Members of the STECF:

Ardizzone,Giandomenico

Bertignac, Michel

Cardinale, Massimiliano

Casey, John (Chairman)

Di Natale, Antonio

Dickey, Collas Mark

Fariña, Celso Antonio

Franquesa, Ramon

Gustavsson, Tore

Keatinge, Michael

Kuikka, Sakari

Lokkegaard, Jorgen

Messina, Gaetano

Officer, Rick

Perraudeau, Yves

Pestana, Graça

Petrakis, George

Polet Hans

Rätz, Hans Joachim

Simmonds, John

Vanhee, Willy

Vanhoof, Luc

Virtanen, Jarno

Invited experts:

Kuzebski Emil

Poviliunas, Justas

Saat, Toomas

Hovgaard, Holger

STECF Secretariat:

Biagi, Franco (European Commission DG-Fish)

Shepherd Iain (European Commission JRC)

1.2 TERMS OF REFERENCE

STECF was informed on some issues and asked to address the following questions:

1. Information from the Commission, planning.

1.1. Mandate for the STECF November 2004 – November 2005: tasks, organisation, role of subgroups coordinators, planning 2004/2005.

1.2. Data collection. Council Regulation (EC) 1543/2000:

1.2.1. Procedure for adoption of the forthcoming SGRN report (29 November-3/8 December 2004) addressing MS non conformities and derogations for 2005 national programs and re-evaluation of 2003 pilot projects.

1.3. Procedure of nomination of STECF members of Countries recently acceded to the EU

1.4. Proposal of new Commission Decision establishing the STECF

2. To review the scientific advice on stocks of Community interest and to elaborate a report on the current state of these stocks.

STECF is requested to update the stock status report of November 2003 using the most recent scientific information. In addition to the advices of ICES-ACFM and other Regional Fisheries Organizations, the basic document for this task is the report prepared during the SGRST-SGECA joint meeting of 25-29 October last, which STECF is requested to review, comment as appropriate and endorse. STECF is invited to comment taking into consideration the mixed nature of several fisheries (*see also the SGRST Report on mixed fisheries - point 6 in the agenda*).

In the light of the recent ICES-ACFM advice, STECF is requested to address, in particular, the following questions on specific stocks:

a) Unallocated and misreported catches.

Evaluate and comment on the precision and reliability of ICES estimates of unreported and misreported catches.

b) *North Sea cod*

Evaluate and comment on the precision and reliability of the estimate of terminal-year fishing mortality of the ICES assessment of North Sea cod.

c) *North Sea haddock*

Calculate medium-term trajectories of spawning biomass and catches (landings and discards) for fishing at a range of fishing mortalities from 0.2 to 0.7 for a ten-years period, assuming either (a) continued poor recruitment, (b) good recruitment in 2005, (c) any other appropriate assumption on recruitment.

d) Sandeel in IIIa and IV

With the objective of rebuilding the SSB for sandeel in the North Sea and the Skagerrak to the Bpa in 2006, advice on an effort limitation scheme for the fisheries, including a real-time monitoring system and a harvest control rule allowing the rebuilding of the SSB to the Bpa in 2006. Evaluate the appropriateness of the fishing effort management measure as currently enforced according to Annex VI of Council regulation (EC) No 2287/2003 (working group reports SEC(2004)365 and SEC(2004)1247)

e) North Sea plaice

Review the assessment , catch forecast and advice provided by ICES, including the methodology for estimating and incorporating discard data, the estimation of new reference points, the in-year forecast assumptions and any other relevant factors.

f) *Anglerfish, North Sea and WestScotland*

Review the assessment and advice provided by ICES. Reconsider appropriate management measures after considering any additional information available after the ICES assessment. Advice on appropriate new data collection systems or required research to facilitate the provision of advice for this stock.

g) Sole in IIIa

Review the assessment and advice provided by ICES. Reconsider appropriate management measures after considering any additional information available after the ICES assessment.

h) ***Cod in VIa***

Advice on likely effect on the stock and the fisheries of the measures listed in Annex 1.

i) Nephrops in VIa

Review the assessment and advice provided by ICES. Reconsider appropriate management measures after considering any additional information available after the ICES assessment.

j) Sole in VIIe

Review the assessment and advice provided by ICES.

k) Celtic Sea sole

Review the assessment and advice provided by ICES.

l) ***Cod in VII b-k***

Advice on likely effect on the stock and the fisheries of the measures listed in Annex 2.

m) ***Plaice VIIfg***

Review the assessment and advice provided by ICES.

n) Anglerfish in VIIIc and IX

Review the ICES advice and the need for a recovery plan. Advice, with respect to anglerfish, on the need for management measures in addition to those included in the proposal for a recovery plan for hake and Nephrops in VIIIc and IXa.

Comment on the use of Bmsy and Fmsy as limit reference points.

o) ***Nephrops in IXa***

Evaluate and advice on the use of seasonal closures as an alternative to the closed areas included in the proposal for a recovery plan for hake and Nephrops in VIIIc and IXa.

p) ***Mackerel***

Review the assessment and advice provided by ICES, including the change in use of the results of the egg surveys.

In the light of the changes in the assessment method advice on possible changes to the precautionary reference points and the long-term management plan agreed by EU, Norway and Faroe Islands.

The requested advice and information on mackerel should be provided not later than 2 November 2004.

q) Western horse mackerel

Advice on likely effect on the stock and the fisheries of the measures listed in Annex 3.

r) Distribution of demersal fish in the North Sea

With reference to the report of the Meeting on Cod Assessment and Technical Measures of 28 April - 7 May 2003, update the information on distribution of juvenile and adult cod in surveys and commercial catches in the North Sea in 2003. Update information provided in Figures 4.3.1.a-d of that report.

s) ***Distribution of cod in other areas***

Advice on the location and season of the most important fishable concentrations of cod in the Kattegat, west of Scotland, the Celtic Sea and the Irish Sea.

3. **To review and comment as appropriate the outcomes of the EIAA model based on the latest ICES-ACFM advice.**

STECF is requested to review, comment as appropriate and endorse the report prepared during the SGRST-SGECA joint meeting of 25-29 October last. STECF is requested to interpret the outcomes of the EIAA model taking into consideration the mixed nature of several fisheries.

STECF is also requested to evaluate and comment as appropriate the report of the SGRST-SGECA working group of June last on improvements of the EIAA model.

4. **Mitigation of sea turtles by-catch in large pelagic longlining**

STECF is requested to review and comment as appropriate the report "Experiments in the western Atlantic northeast distant waters to evaluate sea-turtle mitigation measures in the pelagic longline fishery report on experiments conducted in 2001-2003. *February 4, 2004. by John W. Watson, Daniel G. Foster, Sheryan Epperly, and Arvind Shah. U.S. Department of Commerce National Oceanic and Atmospheric Administration NOAA Fisheries"*

STECF shall, in particular, advice:

- on the levels of by-catch mortality of sea-turtles in the various areas covered by longliners Community fisheries, notably swordfish (South-east Pacific, North and South Atlantic and Mediterranean)
- on the robustness of the scientific approach used in the USA experiments
- on the feasibility and effectiveness of the measures envisaged therein taking into consideration the current fishing practices of EU vessels
- on possible negative effects on commercial yields
- on the congruence of the results with experiments undertaken in other areas
- whether different fishing arrangements may give analogous results

According to Article 10 of Commission Decision 93/619/EC instituting the STECF, member s of the Committee shall not divulge or use outside the STECF meeting the information coming to their knowledge as a result of the requested evaluation.

5. **Shetland and Plaice boxes reports**

The European Commission is in the process of evaluating whether there are convincing conservations benefits and/or sustainable exploitation justifications for the rules concerning access to waters and resources with regards to the Shetland and Plaice Boxes. STECF is requested to advice, on the basis both of its expertise and of the two scientific reports[1] delivered early in September, which of the following options seems more justified on the basis of conservation and economic considerations:

a) Leaving the boxes in place unchanged;

b) Abolishing the boxes because there is neither conservation nor sustainable exploitation effect and, thus, there is no reason to make any exception to the principle of free access;

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[1] 1) Grift, R,E.. Tulp, I., Clarke, L., Damm, U. McLay, A., Reeves, S., Vigneau, J., Weber, W. 2004. Assessment of the ecological effects of the Plaice Box. Report of the European Commission Expert Working Group to evaluate the Shetland and Plaice boxes. Brussels. 121 p.

2) Clarke Liz, Damm Ulrich, Grift Rob, Holmes Steven, Kunzlik Philip, McLay Anne, Needle Coby, Reeves Stuart, Tulp Ingrid, Vigneau Joel, Weber Wolfgang (2004). Assessment of the ecological effects of the Shetland Box. Reports of the European Commission Expert Working Groups to evaluate the Shetland and Plaice boxes. Brussels. 72+Annexes.

c) Modifying the Boxes that is changing the boundaries of the boxes or the access restrictions associated with them.

6. Mixed fisheries.

STECF is requested to review, comment as appropriate and endorse the report of the STECF-SGRST working group (18-22 October) on this matter.

7. Data collection and economic matters.

STECF is requested to review, comment as appropriate and endorse the report of the STECF-SGECA working group on data collection and economic indicators of 4-8 October last.

8. Fleet annual report

As it is foreseen both by Article 14 of the Council Regulation N°2371/2002 and by article 12.2 of the Commission Regulation N° 1438/2003, STECF is requested to review and comment as appropriate the draft Commission report "A*nnual report from the Commission to the Council and the Eeuropean Parliament on Member States' efforts during 2003 to achieve a sustainable balance between fishing capacity and fishing opportunities*"

9. Other matters: - STECF 2005 planning

- ACFA

1.3 STECF ORGANIZATION

STECF recalled that, contrary to what was agreed at the November 2003 plenary meeting (SEC(2004)573), the coordinators of two permanent subgroups, the SGBRE (Subgroup on balance between resources and exploitation) and the SGRN (Subgroup on research needs and data collection), have not yet been appointed. In fact, only five coordinators out of seven subgroups have been appointed.

Considering the importance of the role of the coordinators in liaising with the Commission both to facilitate the participation of the appropriate experts and to identify the most suitable chairperson for STECF sub-group meetings as well as to assist in the drafting and adoption of STECF opinion by correspondence (written procedure), STECF is invited to nominate coordinators for these sub-groups as soon as possible.

STECF members are also invited to be more proactive in attending subgroup meetings and to actively assist the Rapporteur(s) whenever STECF is requested to deliver its opinion through a written procedure by correspondence.

STECF was informed that the Executive Secretariat of the Committee will be taken over by the Joint Research Center of ISPRA (JRC) from the beginning of 2005.

1.4 EVALUATION OF 2005 PROPOSALS WITHIN THE COMMUNTIY DATA COLLECTION PROGRAMME

STECF was informed that the report of forthcoming SGRN meeting (29 November-6 December), on the evaluation of derogations and no-conformities for 2005 national programmes, will need to be evaluated and adopted through written procedure by correspondence. STECF was invited to appoint one or two Rapporteurs to prepare the STECF opinion that shall be delivered before the 22 December.

1.5 STECF MEMBERSHIP AND NEW COMMISSION DECISION ESTABLISHING THE STECF

The composition of the STECF needs to be modified as a consequence of the recent EU enlargement to 10 new Member States, seven of which have a maritime façade and marine fishing interests. In order to retain and enhance the expertise of the STECF membership to deal with fisheries issues covering a wide geographic area and themes from biology and ecology to gear technology and economy, the membership will be increased from the current 28 to 35 members.

Furthermore, as a consequence of Communication (2003/C 47/06) from the Commission on improving scientific and technical advice for Community fisheries management[2], and as already recalled in previous STECF meetings (SEC2004) 573 and 843), the Commission is working to establish a new framework for the STECF members that, on the basis of a call for expression of interest, will provide a special indemnity to STECF members and invited experts. The new framework, which will also authorise an enlarged STECF will be established in a forthcoming Commission Decision.

2 Review of scientific advice on stocks of Community interest

2.1 INTRODUCTION

The STECF review of stocks of Community interest is published in the report of the SGRST meeting of 25-29 October last (SEC(2005)266. The review presents summary information on the state of stocks and management advice for stocks of Community interest throughout the world including those in Third Country and international waters. In undertaking the review, STECF has consulted the most recent reports on stock assessments and advice from appropriate scientific advisory bodies or other readily available literature, and has attempted to summarise it in a common format. The review is partially incomplete, since in some cases, appropriate information was not readily available to the group. For some stocks the review remains unchanged from the Review of Advice for 2004 (SEC(2004)372), since no new information on the status of or advice for such stocks was available at the time the review took place. This does not mean that no such information exists; merely that STECF did not have access to it. A comment to this effect is included in the relevant stock sections.

Nevertheless, the report provides summary assessment and management advice on about 300 stocks of interest to the Community.

STECF notes that the term 'stock' in some cases, may not reflect a likely biological unit, but rather a convenient management unit. In specific cases STECF has drawn attention to this fact. STECF also is of the opinion, that as far as possible management areas should coincide with stock assessment areas.

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.

PRECAUTIONARY 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.

RELEVANT MANAGEMENT ADVICE: summary of advice.

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[2] OJ C 47/06,27.2.2003, p. 5.

STECF COMMENTS: Any comments STECF thinks worthy of mention, including errors, omissions or disagreement with assessment or advice where appropriate.

STECF notes that the form of ICES advice for 2005 from its October 2004 Report has been modified to provide fisheries advice for stocks taken in mixed demersal fisheries which is summarised in section 16 of this report. In addition, the advice in relation to single species exploitation boundaries and the associated terminology has also been modified. For most stocks, the single species advice on the state of the stock is formulated under two main headings:

- *Exploitation boundaries in relation to high long-term yield, low risk of depletion of production potential and considering ecosystem effects*.
- *Exploitation boundaries in relation to precautionary limits*

For a few stocks ICES has also provided advice under the heading

- *Exploitation boundaries in relation to existing management plans.*

The ICES advice also contains other information that may be important to the formulation of management proposals and agreements. However, in this report, STECF has attempted to provide a summary of the pertinent points in the ICES advice and suggests that the full ICES advice is read in conjunction with any comments from STECF contained in this report.

Furthermore, brief overviews of the fisheries in some of the geographical regions where the Community has an interest are also included in the report

A list of reports and publications consulted is given at the end of the document. STECF recognises that in future the format of the stock review publication may evolve, taking into account comments from users of the publication.

Note that for some stocks, the stock summaries have not been updated either because there was no new information available or the appropriate experts were unable to contribute to the report because of other commitments. In such cases, this is reflected in the comments from STECF on each stock. In particular, the sections dealing with stocks under the jurisdiction of CECAF (section 5), WECAF (section 6) and the Resources in the South-east Atlantic (section 7) and Antarctic (section 13) remain unchanged from the STECF review of advice for 2004. In addition, STECF was unable to update the stock status and advice for most stocks in the SW Atlantic. Consequently, the text for some stocks in section 8 reflects the stock status as described in the 2003 stock review.

The STECF review of scientific advice was drafted by the STECF Sub-group on Resource Status (SGRST, Chair, J. Casey; SEC(2005)266) during its joint meeting with the Sub-group on Economic Assessment (SGECA) of 25 – 29 October 2004 (SEC(2005)1710), and subsequently finalised at the 19th STECF Plenary meeting (1 – 5 November 2004).

STECF acknowledges the painstaking efforts required in compiling the draft stock review and expresses it's thanks to all participants for their valuable contributions.

In recognition of their contribution the list of participants is given below:

Antonio DI NATALE	Celso FARIÑA
Calvo Angel	John CASEY (Chair)

Julio PORTELA

Mariano GARCIA

Leonie DRANSFELD

Miguel Neves DOS SANTOS (part-time)

Raúl PRELLEZO

Sieto VERVER (by correspondence)

Willy VANHEE

Ivone FIGUEIREDO

Anna CHILARI

Michael KEATINGE

Michel BERTIGNAC

Nando CINGOLANI

Hans-Joachim RÄTZ

STECF Secretariat

Franco BIAGI (EC)

2.2 SUMMARY OF STECF COMMENTS ON SPECIFIC STOCKS

This section reports the STECF response to specific points requested under items 2a to 2s in the terms of reference (see paragraphs 2.2.1/2.2.19). The annexes 3 and 4 attached to this report relate to items 2 l and q respectively.

2.2.1 The precision and reliability of ICES' estimates of unallocated and misreported catches

There are many ways to consider unreported and misreported catches. They can be classed into two categories:

1. Long term systematic and logistic misreporting
2. Variable and one off misreporting that is generally linked to economic, restrictive or ecological changes in the execution of a fishery.

The systematic and logistic misreporting includes sale of small quantities of mixed fish, legal misreporting of catch within the error margins of log books, the water content of tank boats and the use of gutted or un-gutted weights. The second category can include area misreporting, species mis-identification and unreported "black" landings. Most of these will involve falsification of logbooks.

The approach used by ICES to estimate misreporting varies by working group or fishery type. Many stock assessments have no estimates of misreporting incorporated into the catch data, whereas others are largely driven by misreported catch. When used in the assessment, ICES has two approaches to deal with misreporting:

a) Censuses of misreported catch that are incorporated into the assessment by adjusting the catch input data often through the use of unallocated catch. Estimates are collected through informal conversations, unofficial logbooks, auction censuses and other estimation methods that are raised to the total catch.
b) Model driven approach, where the catch data are not adjusted but the model is made to account for patterns in residuals, contrasting patterns between surveys and catch information or trajectories. Examples of this approach have included time series analysis (TSA) with missing catch, Bayesian methods to estimate missing catch, and the recent ADAPT assessment of North Sea cod.

These ICES methods deal with the type of misreporting of catch from category 2 above. The systemic bias is rarely addressed by working groups. In terms of clarity of information and transparency, the modelling approach is often well explained but the census approach is usually not. This is partially due to the lack of clear protocols for these methods as they slowly develop over time but also by the need for fisheries institutes to keep their sources confidential. Some of the information can be used to prosecute or penalise those being monitored. This worry has also lead to the widespread use by ICES of the unallocated sections of catch tables. There is a perception that publicising the source of the problem will reduce the efficiency of the estimation method.

STECF supports attempts by scientists to obtain accurate catch data and views it as good practice. However, the final responsibility for providing accurate data of total landings lies with the fishing industry. Failure to provide this information will result in biased scientific and economic advice.

STECF does not have suitable data to evaluate and comment on the precision and reliability of ICES estimates of misreporting. All working groups and ACFM advice should clearly state the methods used to derive the estimates of misreported and unallocated catches.

STECF considers that while greater clarity in the methods used to collect and raise data is required, this must be balanced against the need to retain a necessary degree of anonymity in the collection system. The Committee is concerned that any attempt to expose detailed information concerning specific fleets, nations, or those prepared to collect this information could negatively impact on the existing co-operation between scientists and industry and jeopardise the resulting science and management advice.

2.2.2 North Sea cod

As the estimated terminal fishing mortality rates are inexorably linked to estimates of spawning stock biomass and other views of stock dynamics, which form the basis of fisheries agreements, STECF looked at the quality of all these estimates.

STECF utilized the ICES North Sea working group report (Anon. 2004), ICES 2004 (ACFM advice of autumn 2004) and Darby, 2004.

ICES advice refers to cod in Subarea IV (North Sea), Division VIId (Eastern Channel), and Division IIIa (Skaggerrak). The same stock units are called here, later on, as North Sea cod.

2.2.2.1 STECF CONCLUSIONS

STECF considers that the methodology ICES has used is a sensible and appropriate approach to estimate missing catches.

STECF notes that the results of simulations indicate that when estimates of the proportion of missing catches are made in a situation where this proportion is increasing, the model seems to overestimate the proportion with a probability of about 0.8. This, likely, leads to a higher probability of overestimation of F. There is no information on how the model behaves with decreasing proportions of missing catch.

STECF therefore considers that the terminal estimate of fishing mortality on North Sea cod in the ICES advice for 2005 is the least reliable in the time series and that it is likely to be an overestimate, compared to the values estimated in earlier years.

However STECF notes that, the terminal estimates of fishing mortality arising from the assessment are crucial to the prediction of future biomass and catches and it is more appropriate to use the terminal year model estimates where there is a strong suspicion of missing catch than to assume that there is no missing catch.

The justifications of the STECF view are given in Annex 2.

2.2.3 North Sea haddock Medium Term Projection

2.2.3.1 Conditions as the basis for the projections

There is no standard projection software that provides the appropriate stochastic recruitment applicable to the intermittent large year-class seen in the North Sea haddock. Therefore only deterministic medium term projection are provided. The following conditions form the basis for the projections.

1 Choice of selection pattern for North Sea haddock projections

Figure 2.c.1 below shows haddock selection patterns for ages 0 to 7+, estimated as the ratio of F-at-age to mean F 2-4 for each year, then averaged over different numbers of years up to and including 2003. Selection at age for the large year-classes, 1967, 1974 and 1999 are shown in Figure 2.c.2. with a correctly scaled selection on the 1999 yearclass shown also in Figure 2.c.1.

There are a two main of issues.

- Selection patterns averaged over recent years seem to have declined on ages 5 and above.
- Selection on the 1999 year class has been low relative to mean selection for other year classes throughout its exploitation so far.

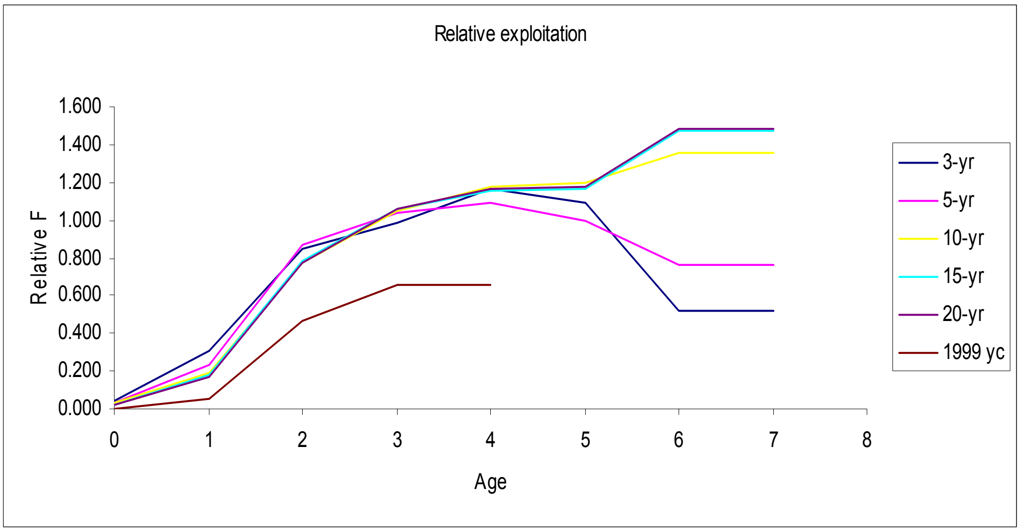


Figure 2.c.1 North Sea haddock selection pattern ages 0 to 7+. For periods mean of 15, 10, 5 and 3 years and the selection on the dominant 1999 year class which is caught at a lower F than other year classes.

For projections there is a need to provide a selection curve that provides a sensible response without adding greatly to the overall complexity. Such a curve should deliver the following features:

- A selection pattern that corresponds to future expected exploitation for new year classes.
- A mean F 2-4 that generally reflects current exploitation of year classes.

- A projection forward of F on the 1999 year class that delivers an F that continues the observed lower F (relative to mean F 2-4) into the future at ages 5, 6 and older.

Failure to provide the last of these three criteria, by setting F 2-4 for the 1999 year class equal to a long-term mean exploitation would result in a sudden step change in the apparent exploitation as expressed in either catch or in F for the 1999 year class. Even though this would not be seen in the mean exploitation F 2-4. Such a change might also imply a step change in fishing effort not evident in the mean F 2-4 and not intended in management.

As the 1999 year class dominates the abundance in the stock, effectively it will dominate the catch for the next few years as it has for the last two, implying something like a directed fishery on the 1999 year class. Such a situation implies a rather flat selection pattern for age 5 and above over the next few years. A reduction in selection at age 5 and above does not seem likely for such a dominant year class. Comparison with exploitation of 1967 and 1974 year classes suggests a flat or very slightly rising selection at older ages.

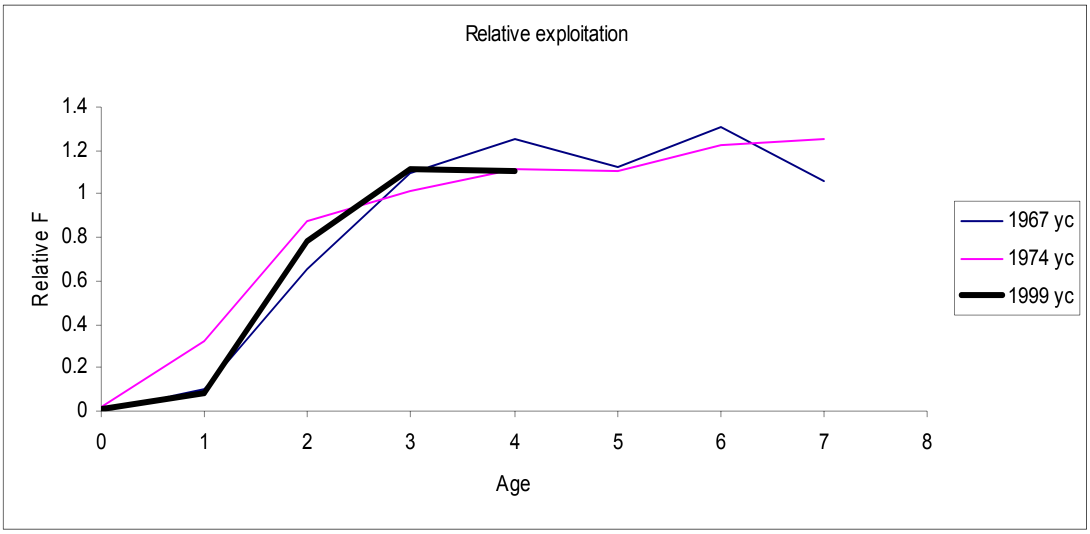


Figure 2.c.2 Comparison of selection along three abundant year classes ages 0 to 7+ showing that historically abundant year classes have relatively flat exploitation ages 3 and above.

One solution, therefore, would be to set F at 4 and older to 1.0, implying continuity of exploitation at mean F 2-4 and above. However, Figure 2.c.1 shows that the exploitation on the 1999 year class has been low compared to mean F 2-4. Thus, for continuity of exploitation, there is a need to maintain a low selection for the 1999 year class.

An alternative approach to the problem would be to use population weighted mean F at age. This helps considerably with the alignment of mean F to the 1999 year class. It does not deal with the sharp fluctuation in F with year class that occurs as the 1999 year class gets older through ages 5 and 6. and so makes F on the 1998 and 2000 year classes quite wrong in the projections. This latter issue is less important as they don't contribute as much catch. The selection at ages 5-6 in this case could be dealt with by forcing the selection pattern to be flat for ages 4 and above. To do so however, causes one additional issue, that by redefining the basis for F it makes the assessment (as documented in the ACFM summary sheet) and the projections completely incompatible unless we re-tabulate the assessment.

Thus all these requirements cannot be met fully with a single selection pattern. Nevertheless the complexity of a cohort related selection pattern for all year-classes is not well supported by the information we have and would be complex to implement.

There is therefore a need for a compromise solution.

1.1 **Considering the requirements for correction selection for incoming year classes** (2000 and onwards). The general pattern corresponds to recent observed fishing patterns, i.e. a dome shape pattern with higher selection on ages 3 and 4 asymptotic at older ages to 0.78 * mean F 2-4.

1.2 **Considering the requirements for correction selection for the 1999 year class**, (which is age 5 in 2004 and age 6 in 2005). The mean selection over the last 5 years, with a reduction in F at age **5** provides just such a compromise for the 1999 year class as can be seen in Figure 2.c.3.

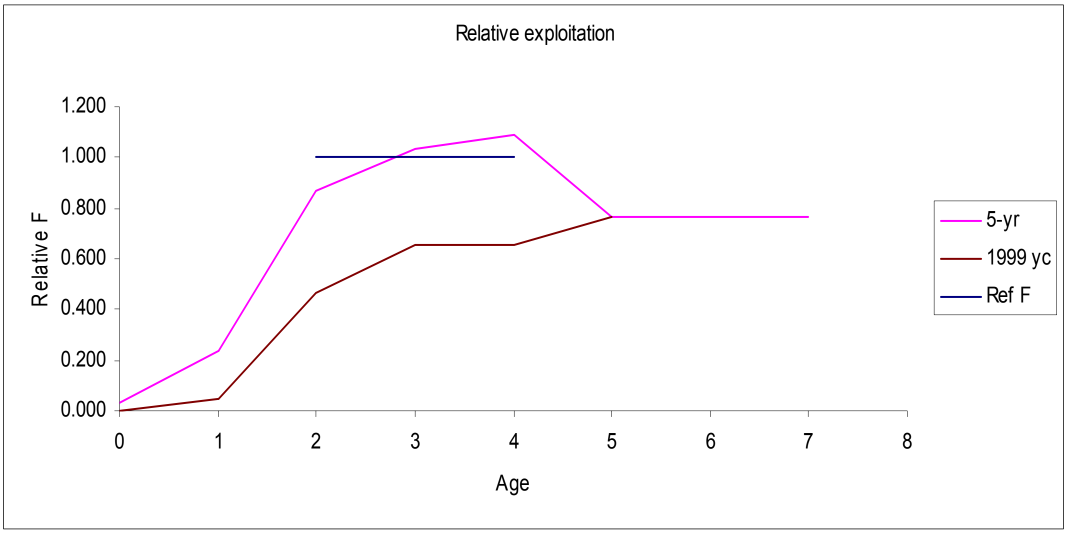


Figure 2.c.3 Selection pattern used in the projections ages 0 to 7+ and the selection pattern effectively applied to the 1999 year-class in the past as measured in the assessment ages 0-4 and in the projections age 5 and older. The implied reference F mean ages 2-4 is shown for reference.

1.3 **Conclusion** From age 6 and above, the 5 year mean provides an appropriate exploitation pattern for both the 1999 year class and other incoming year classes. However, the selection pattern at age 5 for the 1999 year class provides a large increase in exploitation of that year class that would be inappropriate. A compromise is to set selection at age 5 to the same value as age 6 and above (see Figure 2.c.3). This provides a pragmatic compromise selection pattern reasonable suitable for the year classes currently in the population.

This does not address selection on future big year classes. This could only be done with a year class related selection pattern, which is outside the scope of this study.

2 Partitioning of F amongst components

F_{sq} is partitioned amongst catch components on the basis of landing, discards and industrial bycatch for 2003.

3 Choice of mean weights

The assessment uses a plus-group at age 7. This causes problems in the forecast when the 1999 year class enters the +group. Data are available for weights to age 15 and these have been used except for the 1999 year-class which is growing differently.

3.1 Choice of Growth for North Sea haddock

The 1999 year class is thought to be growing more slowly than the average. To project this forward we need to postulate what growth will be like over the next 10 years. A classic von Bertalanffy growth curve can be fitted to the available first five ages, (Figure 2.c.3) but this does not seem to be a good description of haddock growth. Detailed growth data including individual weights at age are not available for the haddock time series but weights at age partly based on length data (ignoring condition factor) is available from the assessment files.

The mean weight at age from all years 1963 onwards are shown along with data from the 1999 year class and two earlier large year classes (1974 and 1967) in figure 2.c.3. Both the two large year classes are seen to grow more slowly than the mean for the period though data from age 9 and older is noisy. The 1999 year class is difficult to see in the figure but the data for ages 0-4 lies among the other large year classes. The mean growth scaled to the 1999 year class is given as the thicker line. The scaling factor is 0.744. This growth is similar to the 1967 year class but slower than the 1974 year class and seems a plausible projection and has been used in the projections. Fitting a von-Bertalanffy curve through ages 0-4 for the 1999 year class results in implausible predictions of growth at older ages.

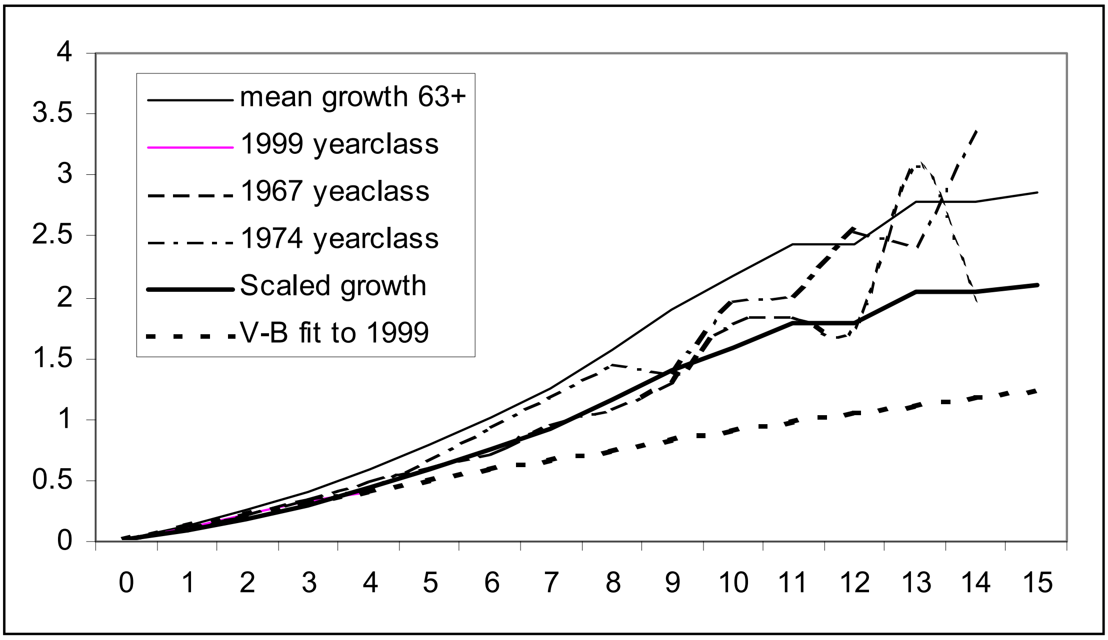


Figure 2.c.3 comparison between average growth, growth of 1967, 1974 year classes and the scaled growth curve used to provide mean weights at age for large year classes. A von Bertalanffy curve fitted to 1999 year class which underestimates growth seen in other large year classes is shown for reference.

4 Partial F for ages 7-15 is assumed to be the same as the estimated partial Fs for the original plus-group (7+) i.e. a flat selection pattern above age 7.

5 The starting point for the forecast is estimated numbers at age in 2003. However, these again are only available far as 7+ (estimated 5000 fish in the plus-group in 2003). These have been redistributed amongst ages 7-15 as follows. An exponential decline from 7 to 15, using N(t+1) = N(t)exp(-Z). Solver in Excel was used to estimate the value of Z (= 0.81) that would ensure that ages 7-15 still contained 5000 fish.

6 There are four scenarios for recruitment:
Scenario 1. pessimistic (all forecast years = GM(01-03)),

Scenario 2. moderate (all years = GM(63-03, missing 67, 74 and 99)),

Scenario 3. moderate with good (as for moderate with a repeat of the 99 YC in 2009).

Scenario 4. optimistic with good (as for moderate with a repeat of the 99 YC in 2005).

7 The standard forecasts can lead to landings well over the TAC in 2004, which are considered unrealistic. Thus the spreadsheet contains an interim step before the final forecast. HC landings are calculated from the standard forecast. For each year, the ratio r(y) of landings to TAC is calculated. If this is greater than 1.0, then the partial Fs at age for the HC component are adjusted top give a catch of 80,000t

2.2.3.2 Implementation

This has been imlpemented in a spreadsheet. To validate the spreadsheet, standard settings were used and the results compared to ices MFDP. While any spreadsheet may have some hidden error we have checked this and believe this gives correct results.

2.2.3.3 Results

The results of the projections by scenario are given in Figures 2.c.4 to 7 respectively.

The results of these deterministic projections should be treated with caution, they are based a spread of recruitment outcomes which bracket the possible outcomes but its unlikely that any single scenario will be realized. Scenario 2 is the most likely and would be the median line on a stochastic medium term recruitment run.

The results presented also depend on the choice of mean weights, and growth as shown cannot be guaranteed. The growth of the 1999 year class is taken to be below average and compares well to observed growth on earlier large year classes

Figure 2.c.8 shows the projected 10 year average exploitation for North Sea haddock at F=0.2 to F=0.7 under the four different recruitment scenarios. It should be noted that F of 0.3 which is close to Fmsy for North Sea haddock provides an F based target that provides the best average yield in all scenarios. The yields themselves depend the realized recruitment and growth.

The settings used here differ from the settings selected at ICES. ICES used standard methodology (excepting for a low growth curve) which we have adapted here to fit more appropriately to the specific exploitation and growth differences found in North Sea haddock. We have had to carry out extensive additional work in order to provide what we believe are more useful projections, this work would have in any case been outside the framework of an ACFM meeting at ICES.

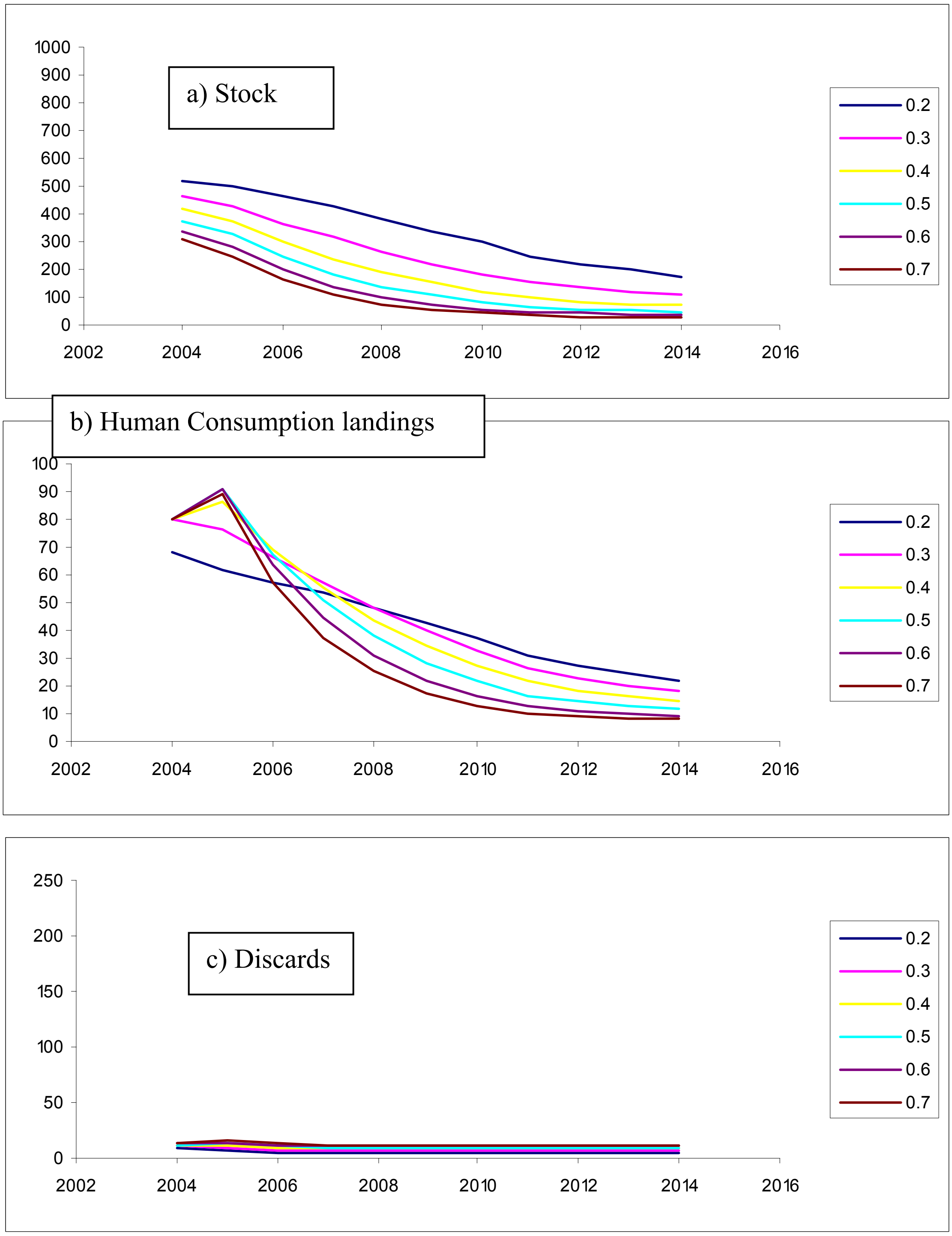


Figure 2.c.4. North Sea haddock medium term deterministic projections for scenario 1 pessimistic recruitment (low recruitment median 2001-03 from 2005) for 6 different fishing mortalities from F=0.2 to F=0.7. F=0.3 is close to F_{msy}. a) Spawning stock biomass (SSB), b) Human Consumption landings, c) Discards (Units thousands of Tonnes)

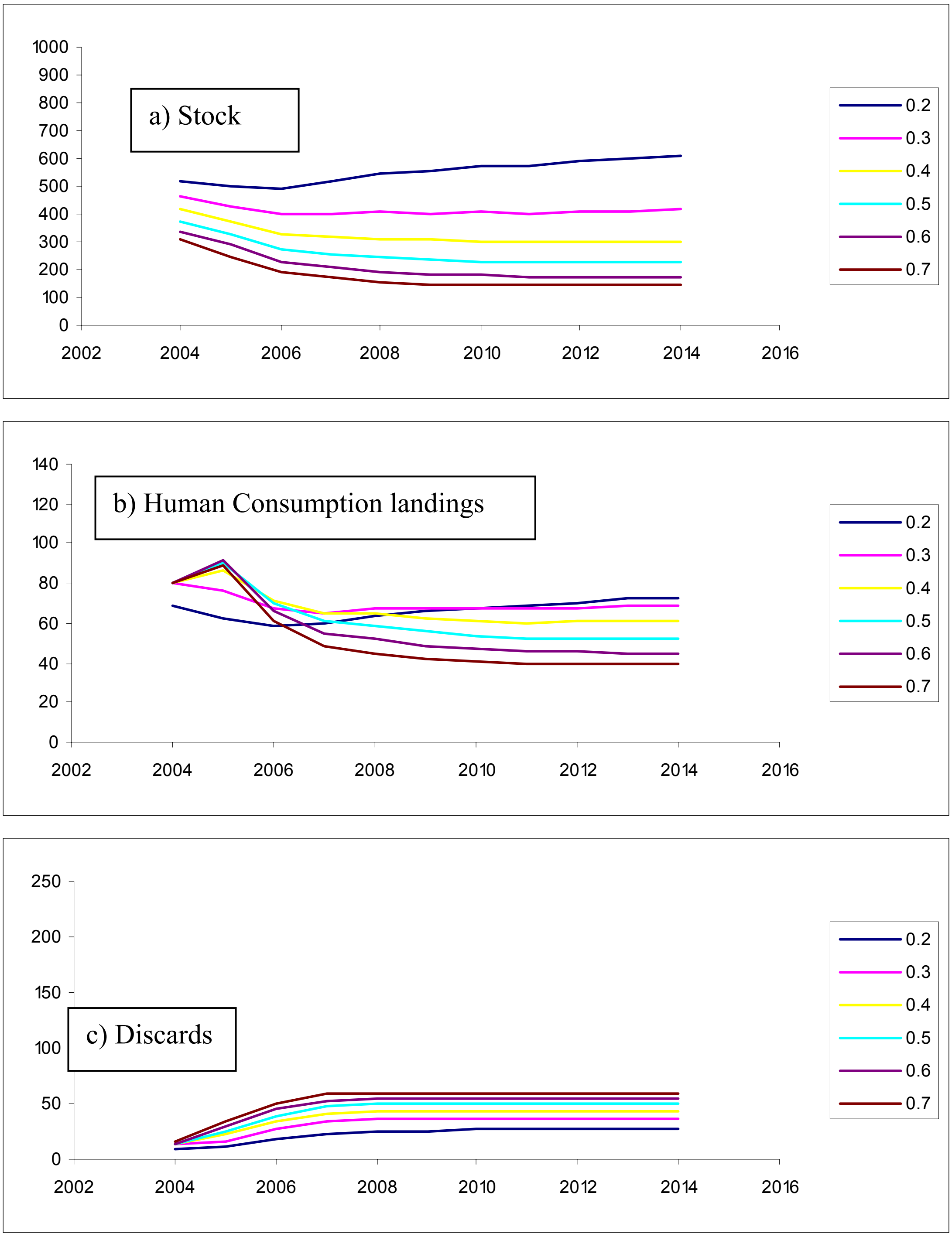


Figure 2.c.5. North Sea haddock medium term deterministic projections for scenario 2 moderate recruitment (geometric mean recruitment excluding high year-classes from 2005) for 6 different fishing mortalities from F=0.2 to F=0.7. F=0.3 is close to F_{msy}. a) Spawning stock biomass (SSB), b) Human Consumption landings, c) Discards (Units thousands of Tonnes)

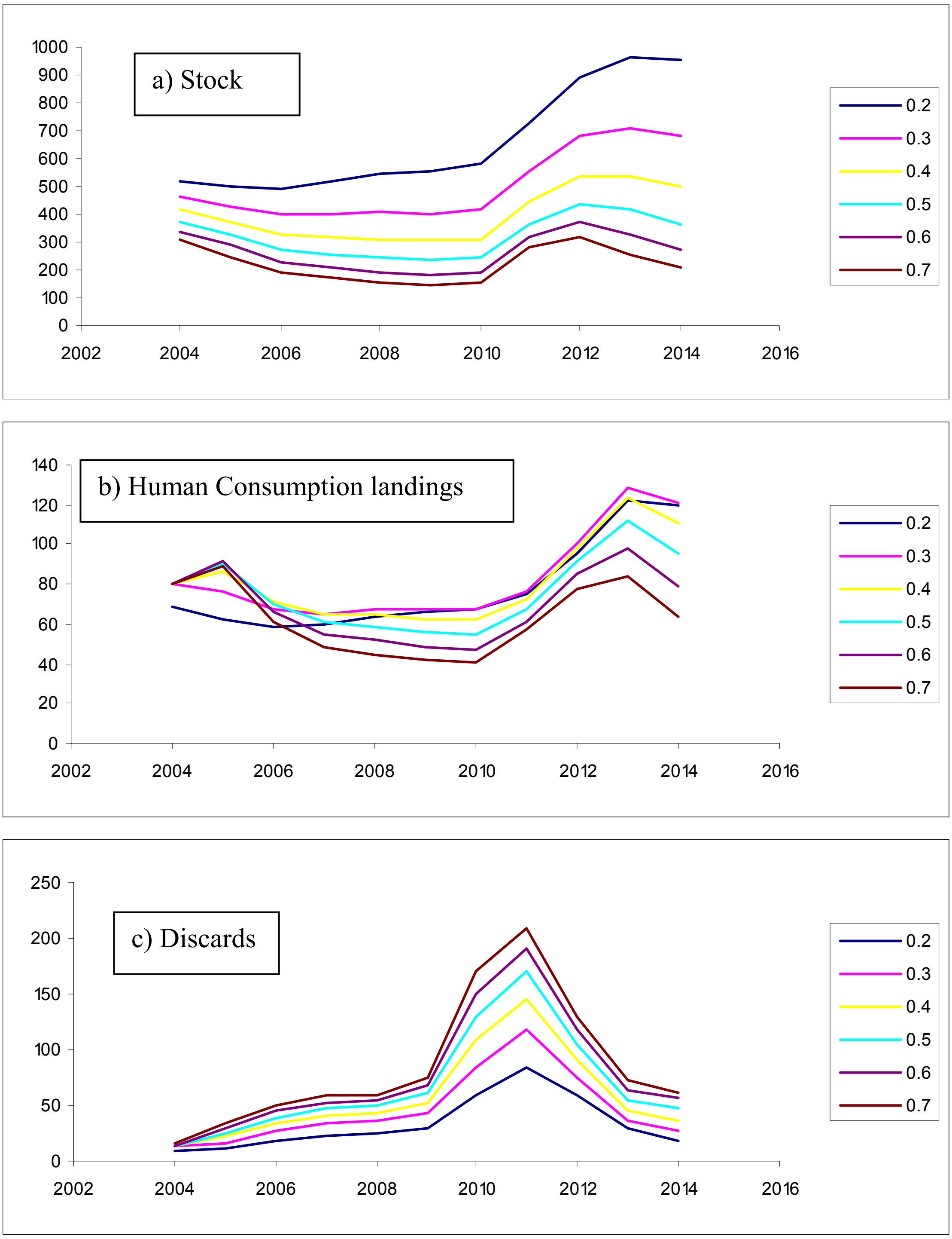


Figure 2.c.6. North Sea haddock medium term deterministic projections for scenario 3 moderate to good recruitment (geometric mean recruitment year-classes from 2005 with high yearclass in 2009) for 6 different fishing mortalities from F=0.2 to F=0.7. F=0.3 is close to F_{msy}. a) Spawning stock biomass (SSB), b) Human Consumption landings, c) Discards (Units thousands of Tonnes)

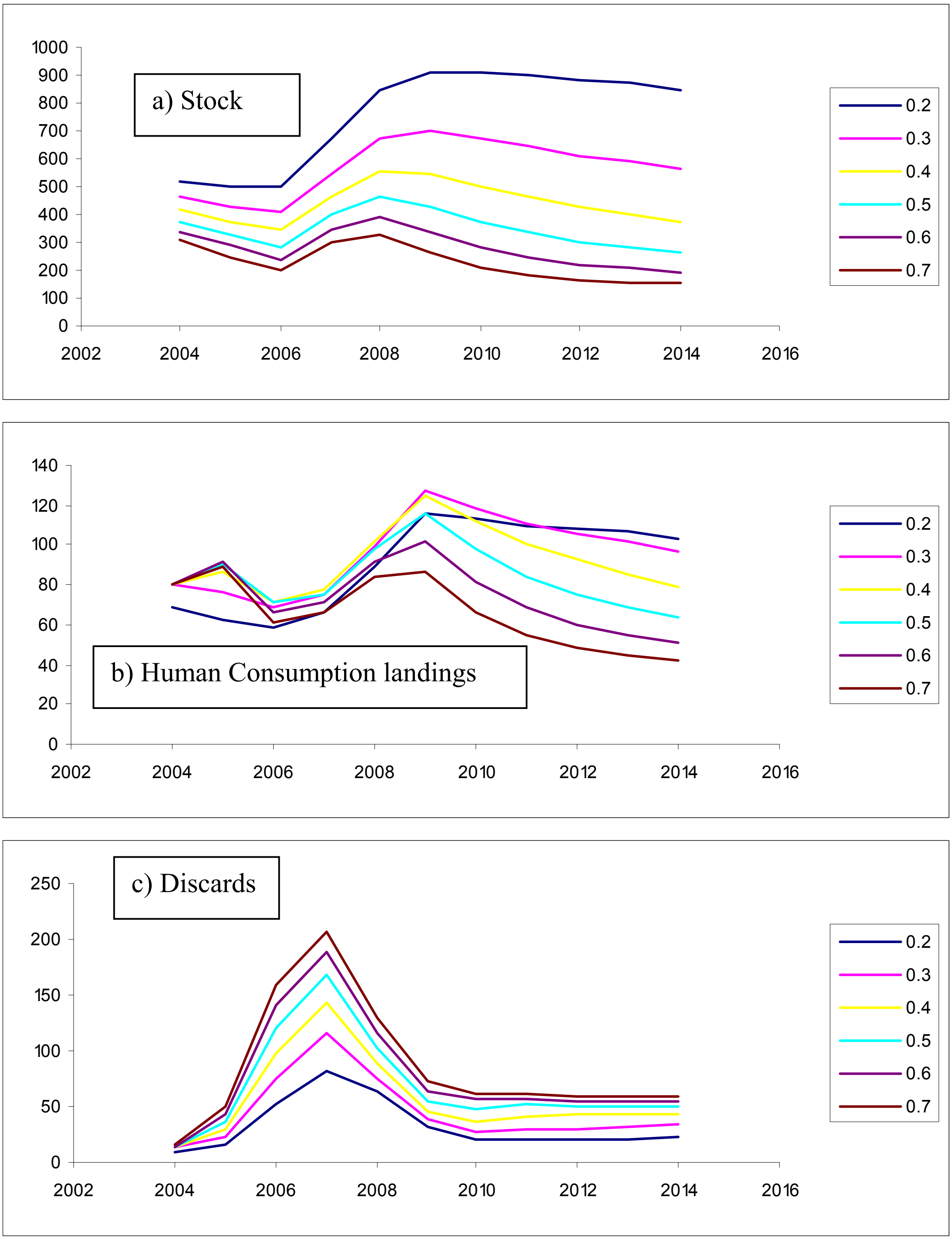


Figure 2.c.7. North Sea haddock medium term deterministic projections for scenario 4 optimistic recruitment (geometric mean recruitment year-classes from 2005 with high yearclass in 2005) for 6 different fishing mortalities from F=0.2 to F=0.7. F=0.3 is close to F_{msy}. a) Spawning stock biomass (SSB), b) Human Consumption landings, c) Discards (Units thousands of Tonnes)

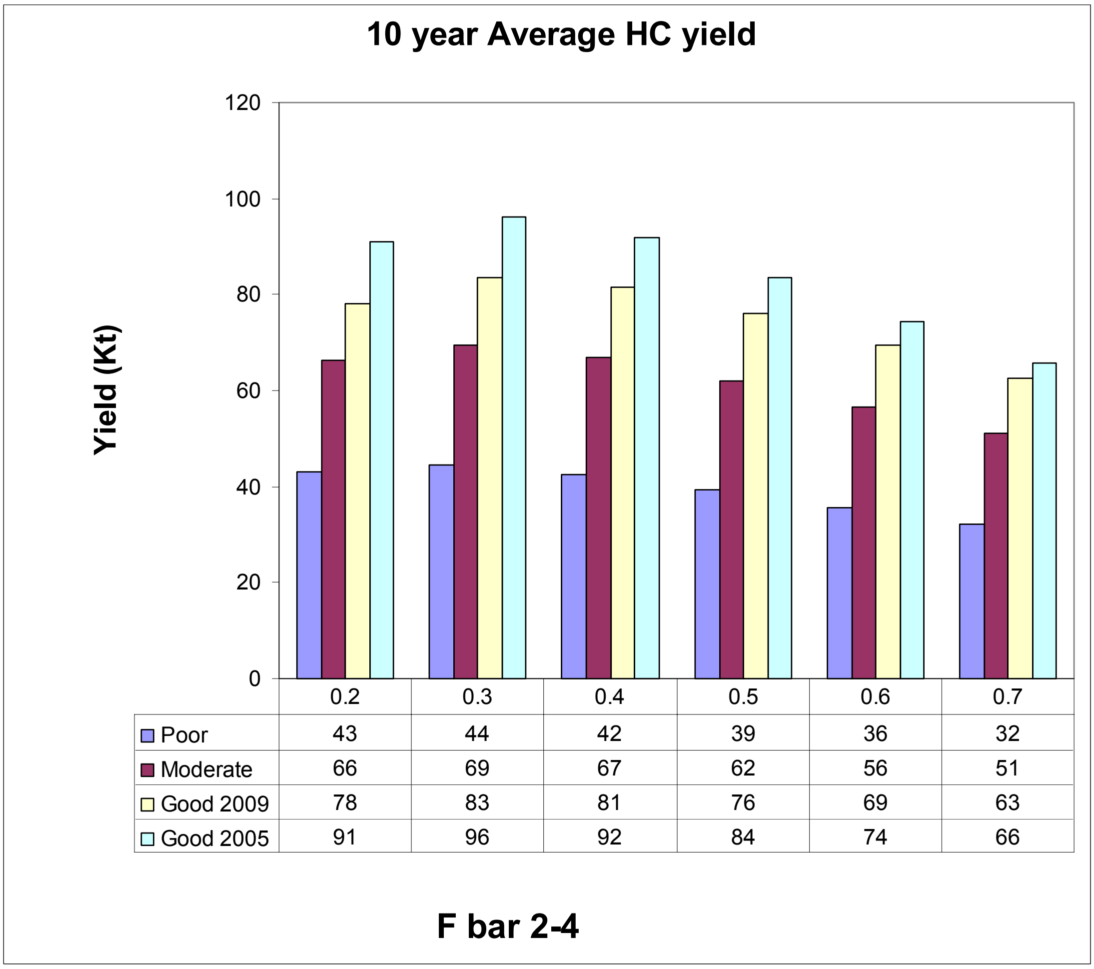


Figure 2.c.8. Yield averaged over 10 years for North Sea haddock medium term deterministic projections for four scenarios for 6 different fishing mortalities from F=0.2 to F=0.7. Maximum average yield occurs at F=0.3 for all scenarios. (Units thousands of Tonnes)

2.2.4 Sandeel in the North Sea and Skagerrak

Based on the most recent estimates of SSB, ICES classifies the stock as having reduced reproductive capacity. SSB in 2004 is estimated to be at a historic low value (325 000 t). SSB in 2003 was above **B**lim, but has in 2004 decreased to below **B**lim due to a historic low recruitment in 2002.

ICES advices "that the management of the sandeel fishery in 2005 should attempt to rebuild SSB to Bpa by 2006". ICES further notes that SSB in 2006 is largely dependent on the 2004 year class for which there is no reliable estimate. ICES is unable to provide predictions that can be used for TAC setting for 2005. The fishery should therefore initially be managed through effort control. ICES consider that a real-time monitoring of the sandeel stock in the beginning of the fishing season of 2005 is required to determine a sustainable effort level for the main fishing season. Stock size can be estimated early in the 2005 season, requiring data through week 17 (end of April, after approximately 4 weeks of fishing) and subsequent data analysis. It will be necessary to determine the effort limit for the remaining year from a predefined harvest control rule that allows the rebuilding of SSB to **B**pa in 2006. This procedure requires an *ad hoc* working group to meet before the start of the 2005 sandeel fishery for a full evaluation of the 2004 real-time monitoring system and to outline real-time monitoring methodology and harvest control rules for the fishery in 2005 and in future years".

STECF agrees on the objective of rebuilding the SSB for sandeel to above B-pa in 2006 and acknowledge the need for developing an effort limitation scheme for the fisheries that includes real time monitoring and a harvest control law. The current harvest control method correctly identifies good year-classes but fails to reliably identify small year-classes. To be effective the design needs to be improved to provide a more precautionary approach as the key requirement is to correctly identify small year-classes. The design of the effort limitation plan and harvest control law should utilize the expertises that have been developed in the STCEF working groups dealing with the real-time based management scheme used in 2004. As these expertises were not available at the present meeting, STECF recommend an expert group be established to accomplish the task. STECF recommend that the evaluations previously forwarded in SEC (2004) 1024 is reflected in the groups ToR. It should be noted that if the management scheme is to be included in the Council Resolution fixing the 2005 fishing opportunities the group should be convened as quickly as possible.

2.2.5 North Sea Plaice

2.2.5.1 Review assessment

The assessment carried out for North Sea plaice was reviewed by STECF. The general approach using XSA and including estimates of discards was thought to be appropriate and an improvement on the assessment methods in previous years. However STECF does consider that there has been insufficient analysis of the sensitivity to, and bias introduced by, incorporating discards. Particularly:

- the raising of scarce, field-determined discard estimates (in 1999 to 2003) to the catch
- the accuracy and precision of the growth and selectivity determined discard estimates (prior to 1999)
- the switch between the two methods.

There has been no testing or validation of the methods used.

Similarly, as with most North Sea stock assessments, the method fails to account for the spatial differences seen in the survey data and fishing industry surveys. STECF thinks it inappropriate to use high F-shrinkage in the assessment model when a trend in fishing mortality is assumed, known to be occurring, or when a stock is undergoing a recovery.

2.2.5.2 Intermediate year assumptions in the forecast

The in-year forecast assumption given by ICES is that F *status quo* occurs in 2004. This gives a slightly more conservative forecast of SSB than that assuming that the TAC is taken (61 000 tonnes).

ICES has tended to give advice on the basis of F *status quo* for the intermediate year, on the understanding that often TACs are often not adhered to and estimating the effort within the current year has proved very difficult. With regard to North Sea plaice in 2004, there is no evidence available to STECF to decide whether the management measures introduced in 2004 have been effective in reducing fishing mortality. Hence STECF supports the assumption used by ICES of F *status quo* in 2004 within its stock forecasts for North Sea plaice.

2.2.5.3 Management advice, the agreement and catch forecasts.

ICES considers the assessment uncertain and the current management agreement is now in conflict with the new precautionary reference points (see below). The management agreement states "*The Parties shall, as appropriate, review and revise these management measures and strategies on the basis of any new advice provided by ICES*". Hence if the new reference points provided by ICES are accepted by Norway and the EU, the 1999 management agreement needs to be adapted to reflect these new values. The management agreement must also account for changes in the assessment methods, i.e. the inclusion of, and distinction between human consumption landings and discarded catch. STECF also considers that such a re-negotiation should include a target fishing mortality based on maximum sustainable yield and risk to SSB and a buffer on change in catch, similar to other that on Northern hake limiting TAC changes per year. This is relevant as ICES considers that this assessment is uncertain and the assessment has been prone to large changes in the perception of the stock in recent years. The use of reference points as targets within the management agreement is inappropriate. In the absence of an economic harvest control rule, an F of 0.2 seems an appropriate long term exploitation target. Analysis of the yield per recruit information shows that a fishery at Fpa would yield only 50% of that given at Fmax at F=0.2.

2.2.5.4 Reference Points

The technical basis for the determination of the reference points has changed (now discards are included and the method used has changed). STECF is not in position to determine if the new reference points are appropriate but is concerned at the magnitude of the increase (Fpa changed from 0.3 to 0.6).

The precautionary reference points should not be used as targets within a management agreement (see above).

2.2.6 Anglerfish, North Sea and WestScotland

2.2.6.1 ICES Advice

ICES provides the following advice for management considerations

"Historical catches for the combined area are believed to have been adequately estimated until recent years. However, due to a long history of misreporting, the correct allocation of catches to Subareas IV and VI is not possible. Estimates which take into account misreporting indicate that the percentage of the catch taken in Division IIIa and Subarea IV, and in Divisions VIa & VIb in the years 1993-2002 average 60% and 40%, respectively. These values have previously been used to allocate the TAC between these areas.

A TAC regulation such as that currently implemented is therefore not adequate to regulate fishing mortality within sustainable limits. However, it is implicit in the inadequate landings and effort data that a reliable estimation of **F**sq would also be impossible, as such a TAC would continue to result in misreporting.

ICES is not able to provide an assessment that includes catch options and relates management measures to fishing mortality. The main reasons are the problems with effort data and the high levels of misallocation of landings. These data deficiencies prevent reliable estimation of the current fishing mortality. *ICES Advice Autumn 2004* 4-213

In such situations, ICES would often advise on a precautionary TAC based on recent landings. However, the landing data are not reliable and due to misreporting, a TAC regime does not regulate fishing mortality. Therefore, ICES has concluded that the only possible route is to allow the fishery to continue within the current effort, inasmuch as this can be determined.

ICES finds that a detailed and stringent programme, including the mandatory reporting of both catch and effort data in logbooks should be established to collect high quality effort and landings data. "

2.2.6.2 STECF opinion

STECF has no additional useful scientific information since the ICES advice was formulated in October.

FRS Marine Laboratory Aberdeen have already run a fishermen's diary data collection programme (Bailey et al 2004 working paper) and the fishers are keen to extend this scheme. This information was used by ACFM to produce the above advice.

Current surveys are not sufficient for estimation of anglerfish. There are plans to conduct a new survey with research and commercial fishing vessels in 2005 in the areas where directed anglerfish fishing occurs.

STECF broadly agrees with the ICES advice. STEC considers this would help to collect more useful data such as the survey and diary scheme.

STECF has concerns on regarding the practical implementation if the ICES advice and makes the following comments:

- Complete removal of the TAC might lead to attempts by fishers to substantially increase the fishery. This view was reinforced by informal meetings with the fishing industry in Scotland.
- This leads to a requirement to ensure there is no completely unrestricted fishery.
- If there is an increase in TAC there is the need to limit effort. This might be by restricting access to the fishery to those vessels currently fishing for anglerfish.
- There is a need to collect detailed effort and catch data from the fishery.

This leads to the following recommendations:-

- A new less restrictive TAC set somewhere above the current TAC of 10 200 t and below the nonrestrictive TAC in 1999 of 30 200 t, conditional on the need to take mixed fisheries advice into account. However, STECF has no basis on which to calculate such a TAC.
- Access restrictions to this fishery should be based the fishery the current effort.
- Conditional on access to the increased TAC implementation of a detailed internationally coordinated logbook system on a haul by haul basis in cooperation with scientific institutes.
- In addition STECF considers that surveys for anglerfish designed by scientific institutes but involving industry should be a mandatory part of proposed changes in management for this stock.

2.2.7 Sole in IIIa (Kattegat-Skagerrak)

In June 2004, ICES classified the Kattegat/Skagerrak (ICES Div. IIIa) sole stock as having full reproductive capacity and being harvested sustainable. For 2005 ICES advised a TAC of 370 t concordant with F-pa (0.3).

STECF notes that ICES recognized the assessment and forecasts as uncertain due to severe data problems, including

1) no reliable research survey data useful for XSA tuning,
2) an unknown and variable targeting practice that compromised the use of official (log-books) catch rates for XSA tuning
3) the occurrence of catch misreporting and discarding in years when the TAC is restrictive
4) that due to the closure in the fisheries in the 4th quarters of 2002 and 2003, the commercial catch matrix is biased in not reflecting the strength of the incoming end-of–year recruitment. This meant that 50% of the expected catch in 2005 comes from year-classes that are assumed at recent averages.

STECF also agrees with ICES that when strict catch constraints are employed, a stock assessment based on CPUE time series from official log-book data is uncertain. The CPUE series are compromised by changes in fishing practices such as changes in species targeted, increases in discarding, non-compliance and/or a constraint on the maximum catching potential of the fleet. These changes imply that the landing levels and CPUE derived from logbook information may not adequately reflect the stock abundance.

Official log book information is compiled on a trip basis and so the CPUE time series is further compromised by the targeting of sole for some hauls and not in others (in response to the TAC restrictions). STECF notes that the a trial XSA assessment, conducted by WGBFAS, using an alternative CPUE series based on those trips that targeted sole (only trips where sole were accounting for more than 10% of the trip value) resulted in a different perception of the state of the stock (SSB approximately doubled). However, using CPUE from a target fishery alone, instead of a CPUE from the whole fishery, it may mask changes in stock size as effort is reallocated from or to the directed fishery.

Also recent evidence suggests that substantial discarding and black landings have occurred thus compromising the landing statistics. However, the lack of robust estimates did not allow inclusion of black landings and discarding data into the stock assessment.

STECF acknowledges and welcomes ICES initiatives to take onboard information from the fishing industry. For the IIIa sole this includes haul by haul catch rate information from fishers targeting sole. These are derived from unofficial logbooks and show in average a clear increase in CPUE from 2001 to 2003. This increase in CPUE was also observed on a cutter utilized for biological sampling from 2000 to 2003.

STECF acknowledges that the surveys carried out by Sweden and Denmark in the area are not directed at sole, that catch rates of sole are low and that they are not used in the assessment. However, the information can be used as supporting information. The survey carried out by Sweden covering the eastern parts of IIIa shows fluctuating trends in recent years whereas the Danish survey that covers Kattegat and the Belts confirms an increase in stock abundance.

STECF considers that the stock assessment is very uncertain. Therefore **STECF recommends that a benchmark assessment should be carried out in spring 2005**. STECF further appreciates the initiatives taken by Denmark to improve the information base for stock assessment. STECF is not in a position to resolve the data deficiencies and the assessment ambiguities and, therefore, agrees with the ICES advice.

2.2.8 Cod in VI a

STECF was requested to advice on the likely effect on the Cod in VIa stock and the fisheries of the measures as reported by the 2004 ICES Working Group for the Assessment of Northern Shelf Demersal Stocks and further underlined and commented by stakeholders during a consultation meeting: "*From mid September 2003 to mid July 2004 the Irish trawl fishery off Greencastle, Co. Donegal that traditionally targets juvenile cod was closed. The closure was instigated by the local fishing industry to allow an assessment of seasonal closure as a potential management measure. Almost 8,000 cod were tagged and released during the closure. Most of the cod catch during the closed period is normally taken in the fourth quarter. During 2000-2002 50% of the Irish catch weight of cod in VIa (61% by number) was taken in the fourth quarter. The closure will have markedly reduced the Irish fishing mortality on cod that would otherwise have occurred in 2003. As the Greencastle codling fishery is a mixed demersal fishery, any benefits following from the closure are likely to extend to other demersal stocks."* Assuming that the reduction in catch would result in a proportional reduction in fishing mortality the closure would have yielded a minimum reduction in fishing mortality of 5% on VIa cod. However, the benefit of the closure is likely to have been much more significant. The fishery targets juvenile cod and increased survival will therefore have been concentrated on juvenile cod necessary to rebuild the stock."

STECF evaluated the potential reductions in landings resulting from the closure by comparing for 2000-2003 the Irish landings during the fourth quarter to the annual Irish landings, and to the annual International landings (Table 2.2.8.1). STECF confirms that during 2000-2002 50% of the Irish landings weight of cod in VIa (61% by number) was taken in the fourth quarter.

Table 2.2.8.1. Proportions of the annual Irish landings, and the annual International landings of VIa Cod during 2000-2002 represented by Irish landings during the fourth quarter.

	Irish	International
Q4 Irish landings weight as % of Annual landings weight	50%	6%
Q4 Irish Catch Number at Age as % of Annual CN@A	61%	7%
Q4 Irish Catch Number at Age1 as % of Annual CN@Age1	84%	15%
Q4 Irish Catch Number at Age1&2 as % of Annual CN@Age1&2	69%	9%

STECF notes that the potential landings reduction resulting from the closure is small when considered with reference to the total International landings. However, STECF notes that juvenile cod were targeted in the fishery now closed. Historically the Irish quarter 4 landings of juvenile cod have represented a important proportion of the total international landings of juvenile cod (15% at Age 1, 9% at Ages 1&2, Table 1). STECF therefore agrees that the closure will have markedly reduced the fishing mortality on cod by Irish vessels that would otherwise have occurred in 2003 and considers that, for juvenile cod, the reductions in mortality will also be important in an International context. Unfortunately there is no accepted analytical assessment of the stock and therefore STECF cannot precisely estimate the reductions in fishing mortality resulting from the closure.

STECF considers that the closure may contribute to the effective reduction in F recommended by ICES:

- Previous TAC reductions have not been accompanied by mechanisms to directly reduce fishing mortality and have consequently not resulted in desired reductions in fishing mortality. Such TAC reductions may even be counter productive when they increase discards. When discards are poorly estimated the quality of the assessment will be diminished.
- There are large differences in the cod catch rates between the closed area / period where cod has traditionally been targeted and the catch rates in other areas /periods. Noticeable reductions in cod catches are therefore expected despite effort redistribution.

STECF considers that the VIa cod stock remains at a critically low level. STECF also notes that the unilateral closure of the fishery off Greencastle, County Donegal, Ireland has been re-instated from November 2004-mid February 2005. STECF both welcomes and supports the ongoing closure. STECF considers that the continued closure will be beneficial and complementary to the stringent management measures necessary to rebuild the stock. STECF also considers that the initiation of the closure by industry to be particularly important. When coupled with the expected conservation benefit, it is expected to make continued industry support for the closure more likely.

STECF reminds the Commision that, following their implementation, the committee is often asked the evaluate the efficacy of technical conservation measures such as that presented here. STECF is often unable to complete such evaluations because measurable performance criteria are not available. STECF is pleased that, in this particular case, the conservation measures have been accompanied by a unilateral research program. The research program is designed to evaluate the possible stock increase resulting from the closure, balanced against the loss of cod from the fishery due to natural mortality and migration. Tagging work included in the program is expected to provide necessary information on mortality, growth and migration.

2.2.9 Nephrops in VI a

Unlike white fish stocks ICES traditionally updates advice on *Nephrops* biennially. This was the case in 2003 (based on data up to end of 2002), when ICES advice (based on average historical landings) indicated no basis for change in the TAC of 11,300 tonnes. A new assessment, conducted by ICES in 2004 and reviewed (under a special request) by an ACFM subgroup and ACFM (ICES 2004a and b), concluded that status quo fishing effort would likely lead to an 11% increase in landings (from 11,300 to 12,700 tonnes). The ACFM subgroup report noted that status quo effort would imply no increase in cod catches in this fishery. ICES concluded, however, that as this was a special request (not part of the biennial Nephrops assessment procedure) and as the proposed 11% increase in landings was considered to be within the uncertainty of the 2003 assessment therefore declined to revise the 2003 advice.

While ICES indicates that there is an important interaction between cod and *Nephrops* fisheries this is the case in some areas however in VIa the interaction between cod and *Nephrops* fisheries is low. Only 9% of VIa cod catch (landings and discards) were taken in VIa Nephrops fisheries in 2003.

STECF considers that as status quo fishing implies no increase in cod catches in this fishery there is, from a mixed fishery perspective, no reason why this proposed increase should not be implemented. STECF therefore considers that the 11% increase, proposed by the WG and confirmed by ACFM, represents an appropriate revision of the TAC of 12,700 t for 2005.

2.2.10 Sole in VIIe

In autumn 2004, ICES gave the following advice for sole in subdivision VIIe: "ICES continues to recommend that a recovery plan be implemented which ensures a safe and rapid rebuilding of SSB to levels above Bpa. Rebuilding the stock in the short term requires that fishing mortality should be reduced by at least 80%. This corresponds to landings of less than 230 tonnes in 2005."

Taking mesh size changes into account as a tool in a recovery plan, different potential scenarios for changes to the exploitation pattern in the fishery were evaluated by ICES. It was concluded that, if fully implemented, at the current level of F (Fsq), all of the proposed scenarios lead to an increase in SSB compared to status quo in the long term by:

1) 25% if 90-mm mesh size is adopted by beam trawlers only,
2) 45-50% if all fleets adopted a selectivity equivalent to a 90-mm mesh size,
3) 100% if all fleets adopted a selectivity equivalent to a 100-mm mesh size.

For option 2) and 3), SSB is expected to be above or close to Bpa in the long term.

ICES furthermore noted that fishing mortality should be reduced by 30% if the stock should be exploited sustainably in the longer term. STECF notes that, whilst corrections have been made in the assessment by ICES for misallocation and under-reporting of landings, it is expected that under-reporting problems still remain and that medium/long term forecasts may be less reliable.

STECF agrees with the following main conclusions from the ICES advice:

- If a rapid rebuilding of SSB by 2006 is required for this stock, an 80% reduction in fishing mortality is needed,
- An improved selection pattern, possibly in conjunction with a reduction in effort, would considerably improve the status of this stock
- Simulations of increased mesh size indicate substantial losses in short term yield (Figure 2.2.10.1),
- That a recovery plan should be implemented.

STECF considers that the advice for a 80% reduction in fishing mortality is of little utility since effort reduction of this magnitude is unlikely to be realised in the short term.

STECF recommends that more progressive approach to effort reduction which can be phased in over a number of years and implemented in conjunction with technical conservation measures should be considered instead.

STECF considers that phased effort reduction may be achieved through limited year-on-year reduction in TAC. This approach has been used in the northern hake and cod recovery plans, where a limit of 15% year-on-year change in TAC has been chosen as a measure to be included in management plans having regard to:

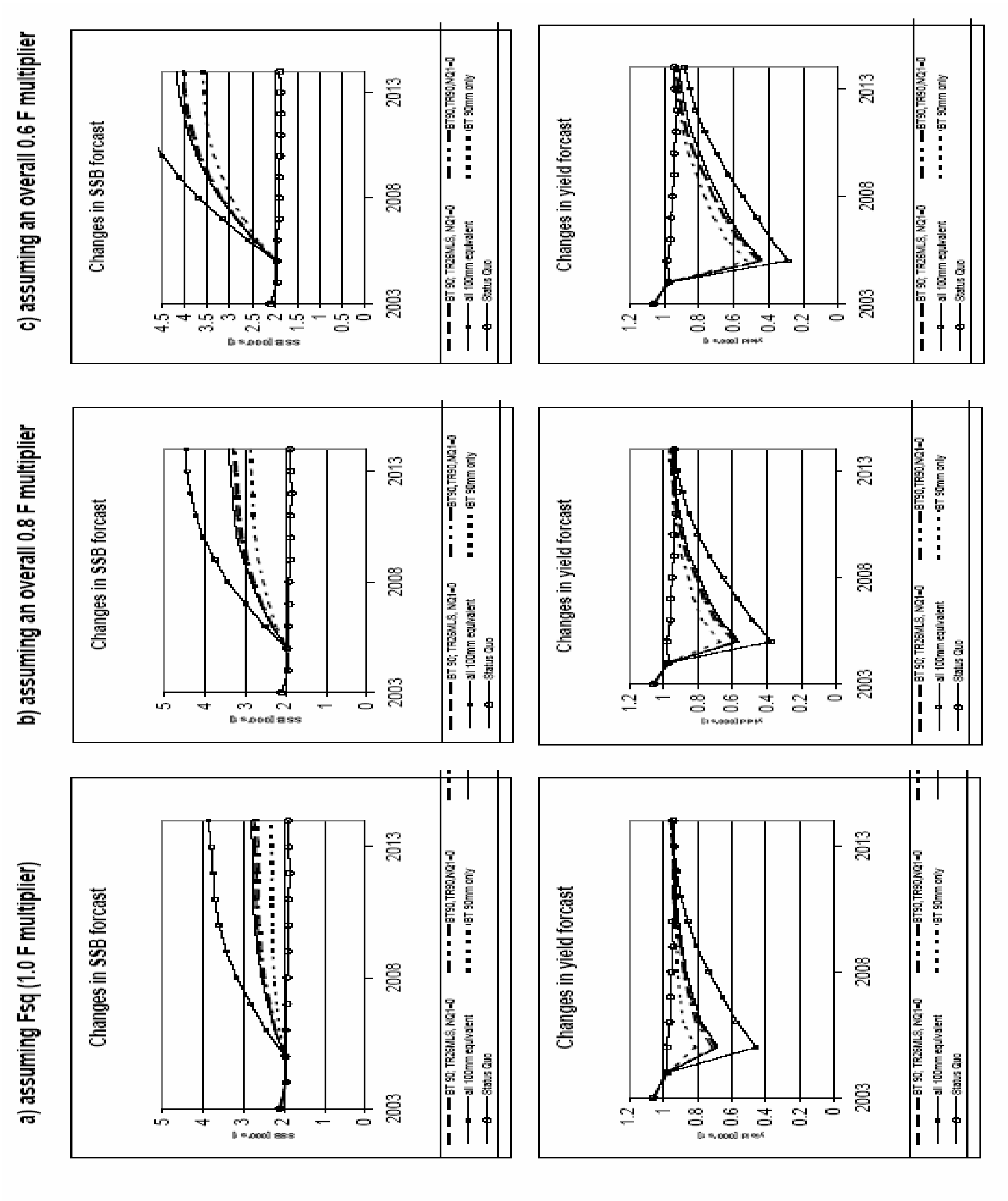
(a) the conservation status of the stock and,
(b) the economic impact of the measures on the fisheries concerned.

Considering the above comments**, STECF recommends** that:

- A recovery plan is implemented for this stock,

- Mesh size be increased,
- Year on year reductions in TAC be limited in order to minimise economic impact.

Figure 2.2.10.1: Predicted changes in SSB and Yield with different changes in Selection and F multiplier by fleet using XSA recruitment estimates.



2.2.11 Celtic Sea sole

In autumn 2004, ICES gave the following advice for sole in subdivision VIIfg: "A 30% reduction in F is needed to reduce F below Fpa. This corresponds to landings of less than 840 tonnes in 2005".

Some elements in the assessment should, however, be noted:

- ICES acknowledges that there has been an overestimation of fishing mortality in the last few years, thereby giving the impression that F is too high relative to Fpa. STECF considers that the ICES advice has been framed with reference to a F reference point that may no longer be valid.
- At current levels of fishing mortality, SSB is maintained within the range where recruitment is not impaired and above the lowest observed biomass. The very strong 1998 year class followed by average recruitment has brought SSB well above the biomass reference point.
- The assessment indicates that, at current F, there is a high probability that SSB will remain above Bpa and well within the observed range of stock dynamics in the short to medium term. However, STECF notes that improvements in yield and SSB would ensue from fishing at lower levels of fishing mortality (Fmax = 0.25).

STECF therefore recommends that a progressive approach to effort reduction, phased in over a number of years should be considered. STECF considers that phased effort reduction may be achieved through limited year-on-year reduction in TAC. This approach has been used in the northern hake and cod recovery plans, where a limit of 15% year-on-year change in TAC has been chosen as a measure to be included in management plans having regard to:

(a) the conservation status of the stock and,

(b) the economic impact of the measures on the fisheries concerned.

This advice is consistent with the STECF advice provided for Celtic sea plaice. Sole is taken mainly in a directed beam trawl fishery with plaice as a by-catch, and to a lesser extent in otter trawl fisheries.

2.2.12 Cod in VII e-k

STECF was requested to advice on the likely effect on the Cod in VIIe-k stock and the fisheries of the measures listed in Annex 3 of this report (*Annex 2 of the ToRs*): "Projet de mise sous plan de reconstitution du stock de Cabillaud de la Mer Celtique : proposition des professionnels Irlandais, Anglais et Français".

STECF notes that a closure of 3 rectangles during the first quarter of the year is being proposed by the UK, Irish and French industries. The proposal is calculated using landings statistics as its basis rather than catch. Since the quota has not been restrictive for the French fleet which accounts for about 75% of the landings STECF considers the analysis to be broadly representative of historic catches. Assuming that ccording to the historical distribution of catches is maintained, the such a closure proposal suggests that would lead to an annual reduction of cod landings of around 13% would result from the closure, taking into account the likely redistribution of effort.

STECF welcomes the proposal. STECF considers that the initiation of the proposal by industry and the involvement of scientific bodies in its development to be particularly important and likely to result in continuing industry support. STECF notes that the proposal seeks to meet biological objectives whilst maintaining the socio-economic objective of continued viability of the participating fisheries. STECF encourages such proposals and considers that they may improve governance through the integration of multiple objectives and co-expertise.

STECF points out that several elements in the proposal, the stock status and the characteristics of this fishery may contribute to an effective reduction in F and increase in SSB consistent with ICES proposals:

- Previous TAC reductions have not been accompanied by mechanisms to directly reduce fishing mortality and have consequently not resulted in desired reductions in fishing mortality. Such TAC reductions may even be counter productive when they increase discards. When discards are high and poorly estimated the quality of the assessment will be diminished.
- Perceptions of the status of the stock in 2003 show an improvement from the perception in 2002. The current stock status requires management measures consistent with the industry proposal.
- There are large differences in cod catch-rates between the areas and periods identified for closure and at other areas and periods. Noticeable reductions in cod catches are therefore expected despite effort redistribution.
- The proposal was initiated by the industry. Hence, continued industry support is expected.

STECF agrees with the ICES advice that a 17% reduction in F is needed to achieve SSB at Bpa (8,800 t) in 2006. This corresponds to landings of less than 5,200 tonnes in 2005. STECF therefore advises that a TAC reduction consistent with the ICES advice should be coupled with the implementation of the industry proposal. Such a measure is consistent with the F reduction expected to result from the industry proposal. It also provides necessary protection should effort redistribution result in the industry proposal failing to fully achieve its objectives.

Whilst cod fishing mortality is expected to be reduced despite fishing effort redistribution following the area closure, this may not be the case for all species. Potential effort redistribution towards other species for which effort restrictions are also needed may require that further effort control measures are implemented. STECF further notes that Council Regulation (EC) No 1954/2003 has already established measures for the management of fishing effort in a biologically sensitive area in Subareas VIIb, VIIj, VIIg, & VIIh and that effort exerted within the biologically sensitive area by the vessels of each EU Member State may not exceed their average annual effort (calculated over the period 1998-2002).

STECF reminds the Commision that, following implementation, the committee is often asked to evaluate the efficacy of technical conservation measures such as those contained in this proposal. STECF is often unable to complete such evaluations because measurable performance criteria are not available. STECF considers that the performance objective of the industry proposal is achievement of a 13-18% reduction in fishing mortality on cod in 2005. **STECF strongly recommends that**, should the industry proposal be implemented, the Commission ensures that the measures are accompanied by appropriate monitoring programs that will allow efficacy to be evaluated.

2.2.13 Plaice VIIfg

In autumn 2004, ICES gave the following advice for plaice in subdivision VIIfg: "*A 70% reduction in F is needed to achieve SSB at Bpa in 2006. This corresponds to landings of less than 250 tonnes in 2005. If this is not possible, ICES then recommends that a recovery plan including a sustained reduction of fishing mortality is implemented to rebuild the stock above Bpa in the medium term. Direct effort reductions, rather than TAC controls, are required to promote such a reduction in fishing mortality*."

STECF notes that an industry proposal for spatial and temporal closure of part of the fishery for VIIe-k cod has been tabled (Annex 2 to its current Terms of Reference). The proposal is based on an analysis of the spatial and temporal landings of cod in this region. STECF questioned whether the proposed measures to protect cod would also provide protection to VIIfg plaice. Landings of plaice in the Celtic Sea by France, Ireland and the UK(E&W) for the period 2001-2003 were examined by ICES rectangle and month. Over this period, landings by these countries account for approximately 60% of the total landings from the assessment area. The remaining catch is taken by the Belgian fleet for which no data were available. STECF considers that remaining landings are likely to be distributed with a similar spatial and temporal pattern. Assuming that effort is not redistributed and historical catch distributions are maintained, STECF considers that the closure specified in the cod proposal will effect a landings reduction of around 13% in Celtic Sea plaice.STECF considers that:

- The advice for a 70% reduction is of little utility since effort reduction of this magnitude is unlikely to be realised in the short term. **STECF recommends** that in order to achieve the desirable exploitation rate a more progressive approach to effort reduction which can be phased in over a number of years should be considered. Such a measure could be supplemented with additional technical conservation measures.
- Discard rates are believed to be high for this stock and their non-inclusion in the analysis may represent a major deficiency in the assessment, particularly if there have been changes in discarding practices over time.
- The high level of discarding in this fishery suggests a mismatch between the mesh size employed in the fishery and the size of the fish being landed on the market. A change in the minimum landing size alone will have no effect on the fishing mortality rate. Increases in the mesh size of the gear would result in fewer discards and, ultimately, in increased yield from the fishery. Although the use of larger mesh gear could be encouraged in this fishery, it should be noted that plaice is taken as a by-catch in the beam trawl fishery for sole and an increase of mesh size will significantly reduce sole catches in this fishery.
- STECF considers that phased effort reduction may be achieved through limited year-on-year reduction in TAC. This approach has been used in the northern hake and cod recovery plans, where a limit of 15% year-on-year change in TAC has been chosen as a measure to be included in management plans having regard to:
  - (a) the conservation status of the stock and,
  - (b) the economic impact of the measures on the fisheries concerned.

This advice is consistent with the STECF advice provided for Celtic sea sole as plaice is taken as a by-catch in the beam trawl fishery for sole, and as part of a mixed demersal fishery by otter trawlers.

2.2.14 Anglerfish in VIIIc and IX

ICES management advice for anglerfish in VIIc and IX is based on a combined species assessment (*Lophius piscatorius* and *L. budegassa*) using the ASPIC stock production model. The production model provide estimates of stock biomass and fishing mortality to their respective maximum sustainable yield (MSY).The B_{MSY} and F_{MSY} points were used by

ACFM advice as proxies for precautionary reference points and can be used as a lower boundary for the biomass and an upper boundary for F. Recruitment failure may not be detected using production models.

ACFM advice is based in an exploratory assessment which is indicative of stock trends but cannot be used as an absolute measure of stock status. ACFM consider in its advice "*Fishing mortality equal to zero in 2005 is required to bring SSB back to B_{MSY} in the short term. If this is not possible then a recovery plan should be established that will ensure rapid and safe recovery of the SSB above B_{MSY}.*"

STECF points out that, when using surplus production model, sufficient contrast in the catch and catch per unit of effort data over a reasonable time period is needed in order to reliably estimate B_{MSY} and F_{MSY} and that, in view of the instability of the results, this does not seem to be the case for this stock. STECF notes that B_{MSY} and F_{MSY} are defined in the context of a production model (Schaefer, 1954?). At F_{MSY} the %BPR (the total biomass per recruit, BPR, as a percentage of BPR when F=0) is 50%. High level of %BPR is intended to ensure a high stock size and a low risk of poor recruitment.

STECF reviewed the ICES advice and notes that both species of anglerfish are caught in the mixed trawl (catching also hake and *Nephrops*) and artisanal fisheries (catching also hake in Portuguese waters), consequently the implementation of the recovery plan for southern hake and *Nephrops* in the Iberian region should reduce fishing mortality on anglerfish.

In the recovery plan for hake and *Nephrops*, SGMOS (2003) evaluated two effort reduction schemes: a 10% constant effort reduction relative to the previous year, and a lower effort reduction (5%) the beginning of the time series and then 10%. IPIMAR (2003) analysed the likely effect of these on the recovery of southern anglerfish stocks. Both schemes produce similar results, with a medium term recovery of the SSB and yield maintained below MSY. Considering the recovery plan as starting in 2004, the probability of anglerfish biomass being above B_{MSY} in 2006 is 50%, by 2010 the probability rises to over 80%.

STECF notes that the effort data reported for 2003 (ICES, 2005) indicate a decrease for the Spanish fleets and suggest a slight increase for the Portuguese artisanal fleet in 2003. However these changes in fishing effort may not have resulted in a reduction in F on anglerfish.

There is a limited scope for use of additional technical measures on anglerfish in the area. In addition to EU regulations in Region 3, national regulations include closed areas for hake (also affecting bottom species like anglerfish) in Spanish and Portuguese waters and gear regulations. Little is know about nursery and spawning areas Consequently, an appropriate closed area to protect juveniles cannot be identified. Improving selectivity throughout technical measures relating to gear design is currently a difficult objective, given the morphology of the species.

STECF notes that ICES advice of F equal to zero in 2005 is inconsistent with the mixed fisheries context. A separate recovery plan for anglerfish is not appropriate since the existing recovery plan for hake and *Nephrops* is likely to benefit the status of the anglerfish stocks, instead **STECF recommends** hake and *Nephrops* proposal should be amended specifically to include anglerfish.

2.2.15 Nephrops in IXa

STECF notes that the fishery for *Nephrops* is closely linked to that for hake and a recovery plan for the southern hake and Iberian *Nephrops* stocks has been proposed (SGMOS, 2003). The proposal includes an accumulative reduction of F of 10% per year towards $F_{0.1}$, and the closure of selected *Nephrops* grounds to all fishing. **STECF reiterates its previous recommendation that the recovery plan be adopted.**

IPIMAR (2004) carried out medium-term predictions to examine the potential impact of two different seasonal closures as an alternative to the permanent closures contained in the proposed recovery plan for hake and *Nephrops.*

- a closed season for *Nephrops* fishing for the months of July, August and – September, coinciding with the period of highest catches and effort, coupled with a reduction of 10% in fishing mortality in the remaining months of each year and
- a closed season of the months August and –September, coinciding with the spawning period for *Nephrops* coupled with a reduction of 10% in the fishing mortality in the remaining months of each year.

Both scenarios used starting stock numbers and status quo fishing mortality from the most recent ICES assessment and future recruitment was assumed to remain constant at a low level.

Using an accumulative reduction of F of 10% per year towards F0.1 an immediate loss is expected in landings in the first and second years of the recovery plan. From the third year on, the landings are expected to increase and stabilize from the fifth year onwards.

Following the large drop in F in the first year, caused by the introduction of a closed season, F gradually declines to reach the $F_{0.1}$ level in seven or eight years, according to whether the closed season is for three or two months respectively. Compared to its current size, spawning stock biomass of *Nephrops* is expected to double after 8-10 years (about 800 t).

For fishery units (FU) 28-29, the lack of reliable logbook data, prevents a direct comparison of the potential effects between the proposed closed areas and closed seasons. However, results using data from trawl surveys, indicate that there may be greater gains in *Nephrops* stock biomass and larger losses in *Nephrops* landings from the introduction of closed areas rather than the proposed closed seasons.

In FU 26, the Spanish surveys indicates that an area of relative high density of *Nephrops* is located between depths of 80-140 m. However, STECF notes that the closed area for FUs 26 included in the proposed recovery plan of the EC regulation on southern hake/*Nephrops* encompass an area much larger than the 80-140 m depth contours.

The STECF notes that if the proposed closed areas are intended only to protect *Nephrops*, consideration should be given to revising their boundaries in Division IXa.

For FUs 26-27, STECF was unable to evaluate the potential effects of seasonal or area closures.

For FU 30 - Gulf of Cadiz, the ICES advice is not to increase the catches above the current level, although ICES recognises that the state of the stock is unclear. From 1998 to 2003 the landings increased from 86 t to 285 t. The reason of this increase is unknown and could be a result of a number of factors including increasing effort through fleet modernization or higher stock abundance.

STECF was unable to evaluate the potential effects of seasonal or area closures for FU 30. STECF recommends that an alternative of closed season could be studied according to the reduction in effort following the strategy of the recovery plan.

STECF notes that the maximum benefit of any effort reduction scheme will only be achieved if it is applied to all fleets that catch *Nephrops*. STECF also notes that there are several gears not involved in the referred mixed fisheries that are likely to be affected by a seasonal closure.

2.2.16 North East Atlantic mackerel.

2.2.16.1 Background

In its 2004 assessment of the northeast Atlantic mackerel stock, ACFM has revised its perception of the current and recent status of this stock. ICES states that "*This year's assessment was carried out with a change in the use of the egg survey. The results indicate a very different perception of the stock dynamics where SSB (2003) is now considered to be substantially lower (40%) than estimated last year and fishing mortality substantially higher*". In the model used, the relationship between the survey data and the catch can be considered either 1:1 (absolute) or proportional (relative). ACFM decided to treat the results of the triennial egg surveys as a relative rather than an absolute index. This differed from the Working Groups approach.

The effect of this change was that SSB has been revised downward in each year from 1980 onwards by an amount ranging from <5% (between 1980 – 1990) to >20% (1999 to present, Figure 1).

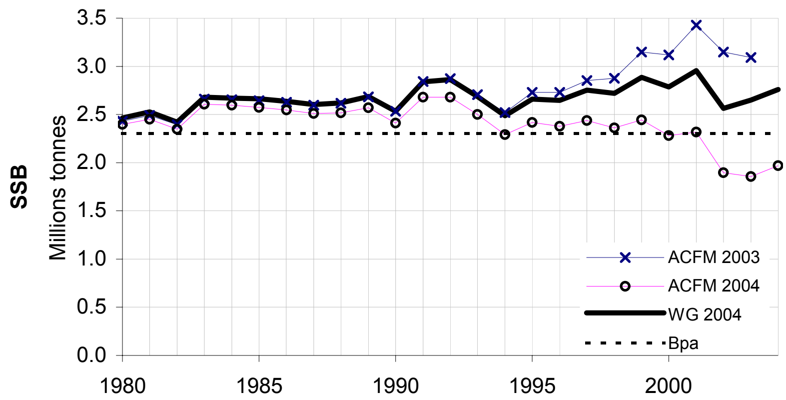


Figure 1 Estimates of SSB of North East Atlantic Mackerel in 2003 and 2004 stock assessments.

In terms of fishing mortality, the revised assessment indicates that *F* in 2002 is considered to be 70% higher than the value calculated by ACFM in 2003. This upward revision in *F* is evident in each year from 1980 onwards by an amount ranging from <5% (between 1980 – 1990) to >20% in 1998, 36% in 2000, 49% in 2001 and 70% in 2002 (Figure 2). Fishing mortality is calculated to have exceeded Fpa every year from 1974. Hence, ICES considers that the stock is harvested unsustainably, that is, fishing pressure is much higher than the maximum level recommended by ICES, Fpa = 0.17 (Figure 2).

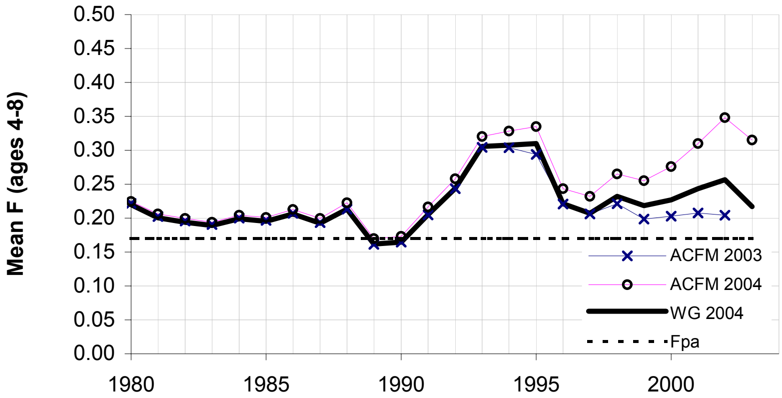


Figure 2 Estimates of mean F of North East Atlantic Mackerel in 2003 and 2004 stock assessments.

2.2.16.2 STECF considerations

STECF considers that ACFM's usage of the survey data as a relative rather than absolute index is appropriate, and therefore agrees with the resulting assessment. Recent management of the North East Atlantic Mackerel has followed an F target regime with F set to a small range around Fpa (with Fpa = F0.1). This regime has worked satisfactorily and the new perception of stock status does not result from a major failure of management but from a new interpretation of the data. The stock has been slightly over exploited over the last 6 or more years with a rising F that was not detected due to the choice of assessment method. The stock has dipped below Bpa due to a combination of a fishing mortality that has been too high and the failure of a single year's recruitment (2000). The triennial egg survey results in sparse and noisy tuning data. In the past there was a perception that the reported landings corresponded well to the catch, and that the egg survey was an absolute measure of stock abundance, or at least a similar small bias occurred in the survey and reported landings. This was the method used by the WG for the last 5 years. It is now clear that neither the landings nor the survey are unbiased and the assumption of stability has been inappropriate. This means it is now necessary to remove the bias by estimating the long-term difference between landings and egg survey, hence the change in assessment method. This results in a substantial change in perception of the stock and will also add some noise to the assessment in the future.

The current adjustment is therefore due to a problem cumulated over the last 4-5 years that has now been detected. Other than the single low year-class (2000), recruitment remains relatively stable.

For the future it is expected that the assessment based on catch data and triennial surveys will always be noisy. This situation could be improved by better recording of catch, more frequent egg surveys, or the addition of another survey aimed either at estimating juveniles or the adult population. Any additional survey is likely to be very expensive due to the size of the area to be covered. Currently we will have to accept that the assessment is rather uncertain. This uncertainty is implicitly included in the management through the choice of a low exploitation rate (F_{pa}=$F_{0.1}$=0.17).

2.2.16.3 Reference points

Recalculation of F_{pa} and biomass reference points using the most recent assessment, results in no significant change to the reference points.

2.2.16.4 Current Management Advice

STECF considers that the current SSB of the NEA mackerel stock is below Bpa and F to be above Fpa.

The agreed management plan requires that, under these circumstances, the fishing mortality rate be adapted, in light of scientific estimates of the conditions prevailing, to ensure a safe and rapid recovery of the SSB to a level in excess of 2,300,000 tonnes.

The prevailing conditions include a perception of a low stock from a noisy assessment. Management should consider a regime that dampens the response to the noisy assessment, such as a long-term harvest strategy. It is appropriate to consider a limit to the year-on-year change in TAC to smooth out the influence of this noise. An example of this is northern hake recovery plan, where a limit of 15% year-on-year change in TAC has, in the past, been chosen as a measure to be included in the management plans having regard to:

(a) the conservation status of the stock and,

(b) the economic impact of the measures on the fisheries concerned.

STECF notes that adaptations to fishing mortality rates are not specified in the management plan, and considers that these should be adopted as a medium term harvest control rule (HCR). STECF also notes that for the following two years, until the next survey becomes available, the stock assessment will be of poorer quality. This suggests a minimum of three years before it is possible to fully assess the success of any newly implemented management measures.

Considering the above comments, STECF considers that a TAC for 2005 of 464,000 tonnes (85% of the 2004 TAC) would be a first step towards a medium-term objective of reducing fishing effort to within precautionary levels. This is not inconsistent with paragraph 2 of the agreed management plan. Management for subsequent years should follow an agreed HCR.

2.2.17 Western Horse Mackerel

STECF welcomes the initiatives proposed by the EAPO (European Association of Producers Organisations) northern pelagic working group (described as annex 3 in STECF terms of reference and attached to this report as annex 4). Many of the issues raised are of interest and relevance to the assessment and management of horse mackerel. While lacking some of the essential characteristics of a management plan, i.e. clearly defined objectives, targets and time frame, the initiative represents a useful attempt to investigate some critical issues concerning horse mackerel.

STECF notes that the plan is now some two and a half years old and many of the proposed actions may have occurred, however no information on these actions has been passed to STECF.

STECF supports the proposals for improving scientific advice, but the proposed funding mechanisms are unclear. The HOMSIR project (funded by the European Commission) has already addressed the stock structure of western horse mackerel and has suggested changes to the stock boundaries. STECF also considers that work on finding a better assessment techniques and/or management technique should also be encouraged. STECF welcomes the offer of assistance to scientists through collecting samples, using commercial vessels for research and sharing of knowledge with scientists. Further concrete collaborations should be encouraged.

STECF has not received any information on the bycatch study that is mentioned in annex 4. The gear technology project, however, has begun with the pelagic industry collaborating with the Netherlands Institute for Fisheries Research. STECF has no information with which to assess the impact of the proposed closed area in area VIII. Some horse mackerel were caught from the proposed closed area in late 2003. STECF looks forward to receiving the described evaluation of the closed area, but would like information on how the closure will be assessed in terms of the measure's targets and objectives.

It is beyond the competence of STECF at the moment to fully address the issue of conservation bonuses. The impact of such measures as conservation tools should be carefully scrutinised and appraised prior to any agreement to implement them.

Further work on developing a long-term management plan for horse mackerel should be encouraged.

2.2.18 Distribution of demersal fish in the North Sea

The element of the terms of reference dealing with commercial catches is addressed by providing the Excel spreadsheet 'Landings Simulator' which has been updated preliminarily with the following 2003 catch data, the version is circulated to members of STECF.

National Source	Comment
Denmark	With local gear codes
Germany	With local gear codes
Netherlands	With local gear codes
France	Without assignment to quarter or gear codes
UK Scotland	With local gear codes
Norway	Without gear codes
Netherlands landing of foreign vessels	Data not entered

For a fleet based analysis the local gear codes need to be updated to international codes. No data from Belgium or UK England has yet been included. Data can be sent to John Simmonds in the following format.

Year	Quarter	Rect	Fleet	COD	HAD	NEP	PLE	POK	SOL	WHG	X	Y	Division	Gear
2000	1	44E6	OTB 070-099	1.7433	2.19124	44.073	3.6315	0.0297	0	0.04972	E6	44	IV	OTB
2000	1	44E6	OTB 100-109	2.3938	12.66488	2.883	4.0178	1.2387	0	10.3926	E6	44	IV	OTB
2000	1	44E6	Other	0.5592	0.18676	1.439	0.3049	0	0	0.01582	E6	44	IV	OTH
2000	1	44E6	SDN 100-109	0.8973	9.86348	0	0.1219	0	0	0.09379	E6	44	IV	SDN

2.2.19 Important fishable concentrations of cod in the Kattegat, west of Scotland, the Celtic Sea and the Irish Sea.

West of Scotland / Irish Sea

During its Plenary meeting STECF was unable to assemble the data required to re-evaluate the location and season of the most important fishable concentrations of cod to the west of Scotland and in the Irish Sea. STECF suggests the provision of this advice would best be achieved by convening a meeting of relevant experts with a specific term of reference to assemble these data.

Celtic Sea

STECF notes that Annex 2 to its current Terms of Reference details an industry proposal for spatial and temporal closure of part of the fishery for VIIe-k cod, and indicates the most important fishable concentrations of cod in the Celtic Sea. This proposal is further discussed under Term of Reference 2 (L).

Kattegat

The main spawning time of the Kattegat cod is from the end of January to March. Concentrations of prespawners in the fourth quarter as well as spawners in the first quarter are the basis for the commercial fishery. The Kattegat stock interacts with adjacent cod stocks by means of receiving recruits and losing older fish due to migration. Stock interactions of this kind will compromise the interpretations of the stock recruitment relations. There is evidence that the stock interacts with neighbouring cod stocks in the Skagerrak-North Sea by way of migrations of adults and transportation of larvae. Therefore these interactions add uncertainty to the assessment.

Baltic Sea

Baltic cod are treated as two separate cod stocks: the western cod stock and the eastern cod stock. In generally the western cod stock inhabitants the areas west of Bornholm (ICES SD´s 22-24) and the eastern cod stock occurs in the central, eastern and northern parts of the Baltic (ICES SD´s 25-32). The abundance and distribution of these cod stocks has varied considerably over time due to biological as well as anthropogenic causes. Both the stocks are overlapping in the areas near the Bornholm Island (ICES SD 24/25). Studies in the last decade suggest that the significant migrations and exchanges of juvenile and adult cod occur between both stocks. However, for assessment purposes cod catches are assigned to a particular stock based on the location where they were caught.

The spawning of the western Baltic cod starts in February and finishes end of May/beginning of June. The main spawning time take place in March/April. The spawning areas of the western stock are historically located in Kiel Bay and Mecklenburg Bay (SD 22) and Arkona basin (SD 24) below the 20m depth horizon.

At present the main spawning areas of the eastern stock are located in the Bornholm depth (SD 25) in a depth horizon below 40m. The spawning season extends from April-May until August/September. The main spawning period takes place in June/July. In the last decade only sporadic spawning has taken place in the Gdansk basin and Gotland basin dependending on the hydrographic situation. The prespawner aggregations during November-March in the Bornholm depth provide the basis of the most fishable concentrations.

2.2.20 Reference

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2.3 STOCKS SUBJECT TO TAC BUT FOR WHICH ADVICE IS NOT AVAILABLE FROM SCIENTIFC BODIES

Traditionally, STECF gives a series of data for recent years on catch and corresponding TACs, based on Commission's statistics. In rare occasions STECF is able to provide with innovative information useful for management, and has generally advised that, if a TAC is to be set, it should be based on recent catches.

Again, STECF was not in a position to improve the advice given in recent years. TAC and catch data (000tons) were updated and this is shown in the following tables. Figures are taken from DG-FISH statistics. STECF notes that in nearly all cases the agreed TACs are not restrictive.

Previous comments made by STECF on these stocks remain valid.

2004 landing figures are reported until the month of September/October.

Pollack Vb (EC zone), VI, XII, XIV

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.70	0.7
Landings (kt)	0.34	0.33	0.50	0.40	0.31	0.22	0.31	0.23	0.22	0.14	0.18	0.11

Pollack VII

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	14.0	14.0	14.0	14.0	14.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0

Landings (kt)	5.32	6.02	5.38	6.08	5.46	5.20	3.81	3.96	5.45	5.64	5.02	3.72

Pollack VIIIabde

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.1	1.68	1.68
Landings (kt)	1.35	1.87	1.60	1.43	1.32	1.00	1.08	1.18	1.30	1.52	1.26	0.91

Pollack VIIIc

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.64	0.51	0.41
Landings (kt)	0.05	0.06	0.05	0.05	0.06	0.09	0.11	0.09	0.12	0.04	0.07	0.03

Pollack IX, X CECAF 3.4.11

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.36	0.36
Landings (kt)	0.05	0.03	0.06	0.05	0.06	0.05	0.04	0.06	0.12	0.08	0.07	0.05

Herring VIIef

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Landings (kt)	0.76	0.45	0.95	1.0	1.04	0.40	0.68	0.71	0.67	0.67	0.83	0.55

Whiting VIII

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	5.0	5.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.6	4.5
Landings (kt)	3.11	3.43	4.32	2.70	2.69	2.13	3.13	1.56	3.06	2.56	2.16	1.56

Whiting IX, X CECAF 3.4.11

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.7	1.36	1.02
Landings (kt)	0.23	0.31	0.17	0.18	0.14	0.11	0.08	0.08	0.04	0.04	0.04	0.05

Plaice VIII, IX, X CECAF 3.4.11

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.56	0.45	0.45
Landings (kt)	0.44	0.44	0.41	0.35	0.32	0.23	0.28	0.45	0.31	0.29	0.27	0.24

Sole VIIIcde, IX, X CECAF 3.4.11 (SOX/8CDE34)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.6	1.52
Landings (kt)	1.37	1.20	1.25	0.98	0.96	0.97	0.90	1.02	0.98	0.72	0.85	0.60

Horse mackerel X, CECAF 34.1.2 (EC Zone - Azores Islands)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	4.0	3.2	3.2
Landings (kt)				1.72	1.92	1.50	0.65	0.65	1.04	3.55	1.5	0.87

Horse mackerel CECAF 34.1.1 (EC Zone - Madeira Islands)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	-	-	-	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.6	1.6
Landings (kt)				0.39	0.76	0.66	0.34	0.56	0.35	0.36	0.57	0.48

Horse mackerel CECAF 34.1.1 (EC Zone - Canary Islands)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	-	-	-	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.6	1.6
Landings (kt)							0.04	-	0.08	0.17	0.17	0.10

Common prawn, French Guyana (*Penaeus subtilis*). (PEN/FGU.)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agreed TAC	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Landings (kt)	3.3	4.2	4.0	4.3	4.0	3.8	3.5	2.65	2.65	3.41	3.56	1.25

3 Annual Economic Report 2004 and Economic Interpretation of ACFM Advice

3.1 ANNUAL ECONOMIC REPORT (AER)

As part of the Concerted Action (Q5CA-2001-01502), the Annual Report (AER) on the Economic Performance of Selected European Fishing Fleets has been produced. STECF clearly values the AER as being the cornerstone of the economic analysis of the performance of European fishing fleets and the potential economic impact of TAC proposals. Considering its vital role, STECF urges all MS to produce the necessary data in a timely fashion, utilising data definitions as agreed upon and covering the relevant period. STECF foresees that the data collection regulations in the future will be a necessary tool for producing a harmonised and improved analysis giving a complete overview of the European fishing fleets.

The AER analysis shows that there has been a slow and gradual decrease of the employment and number of vessels which might indicate an increase of the productivity. However, for 2003, the overall picture also indicates a decrease of the value of landings which for many fleet segments have produced a severe economic situation. This is especially the case for fleet segments covered by recovery plans. The increase of the fuel prices will probably aggravate the economic difficulties.

STECF notes that there is no resource rent created by most of the fleet segments in 2003. This is an indication of inefficiencies caused by over-capacity and depleted stocks.

3.2 THE EIAA REPORT FOR 2005

3.2.1 The Economic Assessment

The working group report (SEC (2004) 1710) gives an assessment of the expected economic impact of the TACs proposed by the ACFM for 2005.

The financial impact of ACFM advice can be assessed for fleet segments subject to quotas, Knowledge of the catch composition for the national fleet and each fleet segment is also required. The costs and earnings information is from the Annual Economic Report (AER).

The segments included are those for which necessary information is available. The economic information is generally reliable. In this report it has been possible to include segments from each EU member state as follows:

1. Belgium	1 segment
2. Denmark	5 segments
3. Finland	2 segments

4. Netherlands 2 segments
5. Sweden 6 segments
6. United Kingdom 6 segments
7. Spain 3 segment

The assumptions for the calculations for these 7 countries are:

- The TACs for each species are caught adjusted with an uptake-ratio calculated from the base period's landings relative to the allocated quotas.
- Future prices are base period prices adjusted with a flexibility rate of 0.2 based on the whole TAC for the EU for the relevant species.
- The stock-catch flexibility rate is 0.6 for demersal species, reflecting their spatial density, and 0.1 for pelagic species owing to their shoaling behaviour. Hence, an increase in stock abundance lowers the amount of effort.
- The change in effort is proportional to the change in the quotas for the relevant segment.
- Costs are calculated at fixed prices (base period) but adjusted proportionally with the change in effort for future years.
- For the United Kingdom fleet segments, landings have been valued at the national average price reigning in each year.

The EIAA-model is constructed to work with a list of TACs for the management areas as complete as possible. For the member states and the included fleet segments this list should be as complete as possible as well implying that if the landing value is composed of a large share of non-quota species or no information is available about the quota species for the pertinent fleet segment, the model will produce very little or no change in the economic results because landings of non-quota species are assumed constant in the model.

3.2.2 TAC proposals for 2005.

The group has evaluated the potential economic impact of three sets of TAC proposals for 2005, see table I.1, based on the following criteria:

1. Single species TACs. As far as possible TACs for 2005 were taken directly from the ICES advice for single species exploitation boundaries. These were used to demonstrate the economic performance of the fishing fleets in 2005 relative to the 2001-2003 baseline run if TACs were set according to the single species advice and ignoring any interactions between stocks and fisheries. For some stocks, the single species advice is for zero catch in 2005 and in such cases the TAC input to the EIAA was therefore zero. For other stocks, ICES was unable to provide quantitative assessments and advice on catch options for 2005 and in such cases the TAC for 2005 was set equal to the 2004 TAC.
2. TACS set in line with ICES' mixed fishery advice. This scenario was undertaken to evaluate the economic performance of the fleets the interactions between stocks and fisheries are taken into consideration. This represents a worst-case scenario, since it implies zero catch for a large number of demersal stocks that are caught in mixed fisheries. For example, for the North Sea mixed fisheries, the ICES advice states :

   Fisheries in Division IIIa (Skagerrak-Kattegat), in subarea IV (North Sea) and in Division VIId (Eastern Channel) should in 2005 be managed according to the following rules, which should be applied simultaneously:

   - With minimal bycatch or discards of cod;

- Implement TACs or other restrictions that will curtail fishing mortality for those stocks for which reduction in fishing pressure is advised;
- Within the precautionary exploitation limits for all other stocks (see text table above).
- Where stocks extent beyond this area, e.g. into Division VI (saithe and anglerfish) or is widely migratory (Northern hake) taking into account the exploitation of the stocks in these areas so that the overall exploitation remains within precautionary limits;

The group has interpreted the wording “with minimal by-catch or discards of cod” as meaning a zero TAC for cod and for those species caught together with cod. Hence for example in this case, the catch of haddock, whiting plaice and sole was also be set to zero.

3. TACs set in line with existing management agreements and proposed management plans. For several stocks management agreements exist. For such stocks, the group selected the TAC consistent with such agreements. For other stocks not subject to management agreements the 2005 TAC was set in line with single stock exploitation boundaries, unless they were stocks associated with the stocks subject to the management agreement. For example, The management plan for Northern hake calls for a 25% reduction in fishing mortality on hake. Hence the group chose to estimate a TAC consistent with a 25% reduction in fishing mortality on anglerfish and megrim stocks that are associated with the fisheries exploiting hake. Pelagic stock TACs were set according to single stock exploitation boundaries, since there is no significant interaction with demersal stocks in the fisheries exploiting pelagic species.

   For many stocks the assessment area encompasses more than one management area. In such cases the TAC for the stock was partitioned according to the allocation of the 2004 TACs to the different management areas.

   In the absence of SSB estimates in the ICES advice, SSB for 2005 was assumed to be the same as that for 2004.

Table 1. TAC proposals for 2005. Metric tonnes.

	2004[3]	2005 Single species	2005[4] Mixed	2005[5] Manage-ment plan
Herring				
I,II	71,542	76,658	76,658	76,658
IIIa	60,164	79,245	79,245	79,245
IIIbcd (EC zone)	78,770	92,000	92,000	92,000
IIIbcd, Management Unit 3	61,200	61,200	61,200	61,200
IIa,IVab	260,502	388,622	388,622	388,622

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[3] 1. As decided by the Council, Council Regulation (EC) No. 2287/2003 of 19. December 2003. The list of TAC/management areas in the table is not fully complete

[4] Based on STECF interpretation of ICES mixed fisheries advice

[5] If an agreed or proposed management plan as available marked with *

IVc,VIId	66,098	132,132	132,132	132,132
Vb,VIaNb	29,340	30,100	30,100	30,100
VIa S,VIIbc	14,000	14,000	14,000	14,000
VIaClyde	1,000	1,000	1,000	1,000
VIIa	4,800	4,800	4,800	4,800
VIIef	1,000	1,000	1,000	1,000
VIIghjk	13,000	11,000	11,000	11,000
Anchovy				
VIII	33,000	5,000	5,000	5,000
IX,,X,CECAF	8,000	4,700	4,700	4,700
Cod				
I,IIb	18,322	15,855	16,975	16,975
IIIa Skagerrak*	3,773	0	0	3,773
IIIa Kattegat*	1,363	0	0	1,000
IIIbcd (EC zone)*	47,125	18,648	14,742	23,751
IIa,IV*	22,659	0	0	30,283
Vb,VI,XII,XIV*	848	900	0	1,100
VIIa*	2,150	0	0	2,170
VIIb-k,VIII,IX,X,CECAF34.1.1	5,700	5,200	5,200	5,200
Megrim				
IIa (EU),IV	1,890	1,890	0	945
Vb,VI,XII,XIV	3,600	2,200	0	1,650
VII	18,099	19,264	14,448	14,448
VIIIabde	2,101	2,236	2,236	1,677
VIIIc,IX,,X,CECAF	1,336	1,050	0	788
Anglerfish				
IIa (EU zone),IV	7,000	7,000	0	7,000
Vb,VI,XII,XIV	3,180	3,180	0	2,385
VII	20,902	26,617	21,528	21,528
VIIIabde	5,798	7,383	5,972	5,972
VIIIc,IX,,X,CECAF	2,300	2,300	0	2,300
Haddock				
IIIa,IIIbcd*	2,143	4,142	0	900
IIa,IV (EU zone)*	66,256	66,365	0	14,427
Vb,VI,XII,XIV	7,205	12,928	0	4,860
VII,VIII,IX,X,CECAF34.1.1	9,600	46,350	0	35,120
VIIa	0	0	0	0
Whiting				
IIIa	723	723	0	360
IIa,IV (EU zone)	12,924	12,924	0	6,500
Vb,VI,XII,XIV	1,600	1,600	0	500

TACs (cont.)	2004	2005 Single species	2005 Mixed	2005 Management plan
Whiting (cont.)				
VIIa	514	0	0	400
VIIb-k	16,000	10,600	7,000	7,000
VIIIabde	2,242	2,242	1,800	1,800
VIIIc,IX,,X,CECAF	1,020	1,020	0	750
Hake				
IIIa,IIIbcd*	1,178	1,003	0	1,003[6]
IIa,IV (EU zone)*	1,373	1,169	0	1,169[4]
Vb,VI,VII,XII,XIV*	21,926	18,674	0	18,674[4]
VIIIabde*	14,623	12,454	0	12,454[4]
VIIIc,IX,,X,CECAF	5,950	0	0	6,200
Blue Whiting				
IIa,IV	53,934	62,563	62,563	62,563
Vb,VI,VII	209,653	243,197	243,197	243,197
VIIIabd	14,654	16,999	16,999	16,999
VIIIe	0	0	0	0
VIIIc,IX,,X,CECAF	30,415	35,281	35,281	35,281
Nephrops				
IIIa,IIIbcd	4,600	4,600	4,600	4,600
IIa,IV (EU zone)	18,987	18,987	0	9,494
Vb,VI	11,300	11,300	0	11,300
VII	17,450	17,450	0	17,450
VIIIab	3,150	3,150	3,150	2,934
VIIIc	180	0	0	162
VIIIde	0	0	0	0
IX,,X,CECAF	600	600	0	540
Northern Prawn				
IIIa, IIa,IV	10,599	10,599	10,599	10,599
Plaice				
IIIa Skagerrak	9,310	7,448	0	7,448
IIIa Kattegat	1,863	1,900	0	1,900
IIIbcd (EU zone)	3,766	2,400	2,400	2,400
IIa,IV (EU zone)*	55,523	58,700	0	35,000
Vb,VI,XII,XIV	1,227	1,227	0	1,227
VIIa	1,340	2,970	0	2,970
VIIbc	160	77	77	77

[6] Calculated on the basis of a 25% reduction in F, but should be status quo in F

VIIde	6,060	4,580	4,580	4,580
VIIfg	560	250	250	250
VIIhjk	466	271	271	271
VIII,IX,,X,CECAF	448	448	448	448
Pollack				
Vb,VI,XII,XIV	704	704	0	704
VII	17,000	17,000	0	17,000
VIIIab	1,680	1,680	1,680	1,680
VIIIc	410	410	0	410
VIIId	0	0	0	0
VIIIe	0	0	0	0
IX,,X,CECAF	360	360	360	360

TACs (cont.)	**2004**	**2005** Single species	**2005** Mixed	**2005** Manage-ment plan
Saithe				
IIa,IIIabcd,IV	92,182	59,954	0	29,977
Vb,VI,XII,XIV	19,713	12,821	0	6,411
VII,VIII,IX,X,CECAF34.1.1	6,968	6,968	6,968	6,968
Mackerel				
IIa (EU),IIIabcd,IV*	21,381	25,381	25,381	25,381
IIa,Vb,VI,VII,VIIIabde,XII,XIV*	297,595	353,270	353,270	353,270
VIIIc,IX,,X,CECAF*	32,305	38,349	38,349	38,349
Sole				
IIIa,IIIbcd	470	370	370	370
II,IV	17,000	17,300	0	17,300
Vb,VI,XII,XIV	85	85	85	85
VIIa	664	1,000	0	1,000
VIIbc	65	62	62	62
VIId	4,525	5,700	5,700	5,700
VIIe	197	230	230	230
VIIfg	1,050	840	840	840
VIIhjk	390	335	335	335
VIIIab	3,600	4,100	4,100	4,100
VIIIcde,IX,,X,CECAF	1,520	1,520	0	1,520
Sprat				
IIIa	46,250	46,250	46,250	46,250
IIIbcd (EC zone)	152,376	152,376	152,376	152,376
IIa,IV(part n/a)	238,000	238,000	238,000	238,000
VIIde	9,600	9,600	9,600	9,600
Horse Mackerel				
IIa(EU),IV(EU)	46,788	15,336	15,336	15,336
VI,VII, VIIIabde,XII,XIV,Vb(EU)	131,879	142,950	142,950	142,950
VIIIc,IX	55,000	25,000	25,000	25,000

X,CECAF	3,200	3,200	3,200	3,200
Turbot				
IIa(EU),IV	4,590	3,443	3,443	3,443
Lemon Sole, Brill				
IIa(EU),IV	6,610	6,610	6,610	6,610
Dab/flounder				
IIa(EU),IV	18,401	18,401	18,401	18,401
Skates and rays				
IIa(EU),IV	3,297	3,297	3,297	3,297
Norway Pout				
IIa,IV(n/a)	173,000	0	0	173,000
Sand eel				
IIa,IV	902,200	173,900	173,900	173,900
Salmon				
LIlbcd (EC zone). except sub-division 32 of IBSFC, in number	346,918	346,918	346,918	346,918

3.2.3 ASSESSMENT OF THE ECONOMIC IMPACT OF PROPOSED 2005 TACs BY FLEET SEGMENTS

The economic consequences of the three scenarios described in table 1 are presented below in table 2. The selected economic indicator is the operating profit margin defined as the net profit relative to the value of landings. Theoretically, net profit relative to the value of the invested capital would be a more appropriate measure, but because of the uncertainty about the estimated value of the invested capital it is concluded that this economic indicator is not so useful.

The net profit is defined as the value of landings minus all costs. If the net profit is negative the operating profit margin is negative. In the table the profit margin for the three scenarios for 2005 is related verbally to the profit margin for 2004 in the following way:

'Impact' = Impact of 2005 TAC on operating profit margin compared to 2004

- "W"=Worsened = Segment was making losses, losses now greater
- "I"=Improved = Segment was making losses, losses now smaller
- "L"=Lower = Segment was making profits, profits now lower.
- "H"=Higher = Segment was making profits, profits now higher
- " – " = No significant change.

The situation of the included segments of each country is the described by the characteristics of the segments followed by the economic results of the three scenarios relative to the base line 2001-2004.

Table 2, Economic impact of three scenarios for 2005

Segment	Single species		Mixed		Management plan	
	Operating Profit Margin	Impact	Operating Profit Margin	Impact	Operating Profit Margin	Impact
Belgium						
Beam trawlers ≥ 24m	**-0.9%**	L	**-18.9%**	L	**-0.3%**	L
Denmark						
Purse seiners and trawlers ≥ 40 m	**-2.4%**	L	**-2.4%**	L	**-2.4%**	L
Trawlers 24 - 40 m	**-36.5%**	W	**-46.5%**	W	**-38.9%**	W
Trawlers < 24 m	**-31.4%**	W	**-38.9%**	W	**-29.6%**	W
Danish Seiners	**-17.3%**	W	**-97.1%**	W	**-17.0%**	W
Gill Net	**-49.2%**	W	**-107.0%**	W	**-35.5%**	W
Finland						
Trawlers ≥ 24	**-16.5%**	W	**-16.5%**	W	**-16.5%**	W
Trawlers < 24	**-10.6%**	I	**-10.6%**	I	**-10.6%**	I
Netherlands						
Beam trawlers ≥ 24m	**1.1%**	L	**-266.9%**	L	**1.0%**	L
Beam trawlers < 24m	**2.3%**	L	**-26.4%**	L	**3.1%**	L
Sweden[1]						
Pelagic trawlers/purse seiners ≥ 24	**26.5%**	H	**26.5%**	H	**26.5%**	H
Shrimp trawlers	**24.8%**	-	**25.5%**	-	**24.9%**	-

Trawlers ≥ 24	**11.7%**	L	**-15.2%**	L	**8.0%**	L
Trawlers < 24	**2,8%**	L	**1,0%**	***L***	**8,0%**	L
Nephrop trawlers	**15.8%**	L	**20.0%**	H	**16.5%**	L
Gill netters ≥12	**15.7%**	L	**11.2%**	L	**18.5%**	L
UK						
Scottish Demersal Trawlers ≥ 24 m	**-6.4%**	W	**-97.0%**	W	**-15.7%**	W
Scottish Demersal Trawlers < 24 m	**-10.0%**	W	**-156.8%**	W	**-21.6%**	W
Scottish Seiners	**-17.1%**	W	**-299.9%**	W	**-37.7%**	W
Beam Trawl	**-34.9%**	-	**-78.6%**	W	**-39.8%**	W
Scottish Nephrops Trawlers	**5.9%**	-	**-459.4%**	W	**-1.6%**	W
Northern Ireland Nephrops Trawlers	**11.2%**	-	**-181.8%**	L	**5.3%**	L
SPAIN						
N and NW trawlers	**-9.6%**	W	**-26.5%**	W	**-10.7%**	W
300 fleet	**5.2%**	L	**-30.3%**	L	**6.5%**	L
Galician purse seiners	**-16.3%**	W	**-16.3%**	W	**-16.3%**	W

1. Swedish figures are gross cash flow in proportion to gross revenue

3.2.4 The Mixed Fisheries Scenario

Concerning the mixed fisheries scenario used for running the EIAA model STECF wishes to note that:

1. the model as such does provide a good basis for the prediction of the economic impact of the proposed TACs on selected fishing fleet segments.
2. assuming constant elasticity it is able to calculate effort and variable costs based on TAC, quota and predicted price levels for reductions in quota that are not marginal but are in the range of 40-100%.

However the accuracy of the model depends on the validity of the following assumptions

1. the catches are identical to those specified in TACs and quotas.

2. With a reduction of a single TAC in a mixed fisheries it can be queried whether, in case species do occur in fixed proportions in the fishery, after a reduction of one single species TAC, the other TAC(s) can still be fully taken up, as is assumed in the model.
3. The variable costs are assumed to be related to the magnitude of the relevant TAC(s). It can be queried whether a predicted TAC reduction with a related predicted price increase and hence effort reduction will indeed result in the predicted reduction of the variable costs.
4. The price flexibility is assumed to be constant. It can be questioned whether, in the case of severe alternations to the TAC levels and hence altered supply to the market, prices will react as predicted. It is the opinion of STECF that with TAC reductions as large as 40 – 100% the actual predicted supply to the market might have an effect on prices beyond the predicted effect as calculated with the price elasticities as included in the model.

3.3 EVALUATION AND COMMENTS ON REPORT OF SGRST-SGECA WORKING GROUP LAST JUNE

A joint SGRST-SGECA sub-group meeting on "further improvements of the EIAA model including long term perspective and effect of recovery plans" was held in Brussels on 14–16, June 2004 (SEC(2005)259). A draft summary of the meeting was made available to STECF. The working group concluded that the data that should be collected under the Data Collection Regulation does, in principle, include the variables necessary to calculate the economic consequences of TACs and quotas for selected fleet segments of the European Communities with the EIAA model. However this will only be a sufficient dataset once data from the previous year as well as the three years previous to that are available from all Member States.

However a number of improvements to the model are necessary if it is to be more broadly applied. These improvements include the ability to stochastically change parameters so as to assess confidence levels, the inclusion of species-dependent catchabilities, the improvement of transparency of the model for new or inexperienced users, the inclusion of variable fleets and TACs for medium and long-term projections and the possibility to use effort rather than TAC as input.

Up to now the development and application of this model has been financed by a Concerted Action. Given that EIAA is presently the only tool available for assessing economic impact of changes in TAC on a European scale, given that there is a growing need for such information and given that at present this Concerted Action is due to finish at the end of this year, the STECF Members recommend that the Commission outline its plans for ensuring that the work continues.

Some Mediterranean fisheries are controlled on effort not TACs. An analagous meeting to cover economic impact models for these fisheries will be tentatively held in January 2005.

A further additional meeting to build on the conclusions of both meetings will take place in spring before the next STECF plenary session. This spring meeting will gather both biologists and economists whose job will be to summarise the present modeling status, ensure a seamless compatibility between both sets of models on matters such as fleet segmentation, indicate timescales for delivery of data by Member States and propose how the EU can enhace its capability to measure the impact of proposed management measures both in the following year and in the longer term.

The STECF expects that a more sophisticated integrated approach to bio-economic modelling might contribute towards sustainability by demonstrating that fishing at lower fishing mortalities takes less effort, reduces costs and increases profits. Or that restrictions aimed at increasing a stock biomass do not only have negative short-term impacts in terms of lost catches but are an investment for the future. A number of EU projects such as

EFIMAS and COMINT are investigating these aspects. STECF looks forward to seeing the results.

4 Mitigation of sea turtles by-catch in large pelagic longlining

STECF was requested to review and comment as appropriate the report " Experiments in the Western Atlantic Northeast Distant Waters to evaluate sea turtles mitigation measures in the pelagic longline fishery - Report on experiments conducted in 2001-2003[7].

With the intention of providing more informed comments on the issues raised STECF, in its review, also takes account of additional information, in particular where this lead to improved practices in existing surface longline fleets.

4.1 Overview

Currently all species of marine turtles are protected reptiles and all are considered by CITES and other Conventions to be endangered or threatened. While poorly documented, the by-catch of marine turtles in pelagic longline fishing is well known in temperate and tropical oceans. Added to this is the reluctance, amongst many fishermen, to take hooked turtles aboard their vessels. Instead the general practice is to cut the branch line as soon as a turtle is seen, releasing it at sea with the hook inside the mouth or deeper in the body. Only rarely will fishermen bring the turtle aboard and remove the hook and this, generally, only happens when the hook is clearly in the jaw.

The experience of marine turtles rescue centres, however, confirms that marine turtles are often able to survive isolated incidences of becoming hooked in this way, slowly destroying the lower quality hooks or expelling them after a certain time.

In those cases where hooks cause internal damage, however, the animal generally dies. While it is not know how many turtles die at sea due to hooking or because they have become entangled in branch lines, work conducted in the NE Atlantic (Watson et al. 2004a) provide a first assessment of turtle mortality due to interaction with longliners.

[7] Watson, J.W., Foster, D.G., Epperly, S.P., Shah, A.K. February 4, 2004. National Marine Fisheries Service, NOAA, U.S. Department of Commerce,

Figure 4.1.1 ‘*J-hooks*’ of 8/0, 9/0, and 10/0 size category .

Pelagic longline fleets traditionally use ‘*J-hooks*’ of various size and shape: examples of 8/0, 9/0, and 10/0 ‘*J-hooks*’ are shown in figure 4.1.1 where the relative size of these hooks can be seen. Smaller hooks and baits are used to target small size pelagic fishes (small tunas and tuna like species), while larger hooks and baits are used to target large tuna species, swordfish or shark. Circular hooks (figure 4.1.2) are also available that differ from the traditional *J* hooks in their degree of curvature along the main axis. In addition both *J* and circular hooks are available in a basic flat design or offset in cross-section. Figure 2, for example, illustrates an 18/0, 10°offset, circular hook – these dimensions relate to size of hook, degree of curvature along the main axis, and degree of offset in cross-section.

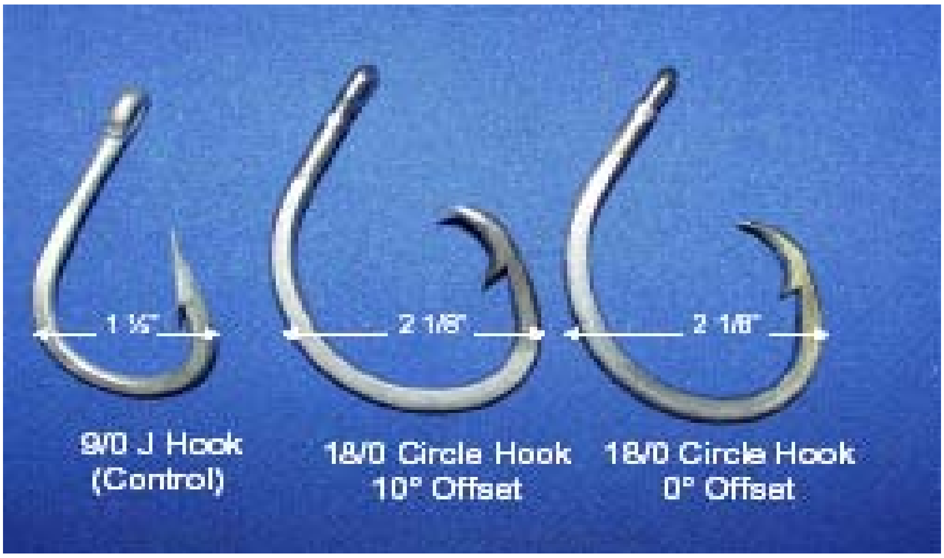


Figure 4.1.2 Circular hooks

In general terms there is currently insufficient available information to either quantify or compare the impact of various hook types on marine turtles.

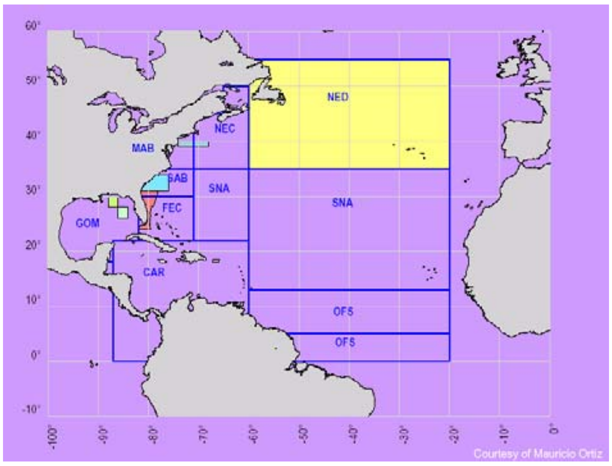
Recent experiments by various workers (Anonymous, 2003; Bolten, 2002; Garrison, 2003; Watson et al., 2004b, 2004c) have begun to investigate this impact in a number of fisheries including the NW Atlantic swordfish fishery and the Gulf of Mexico yellowfin fishery.

Others studies have, in general, considered only a single hook type or two hooks types but not on the same longline.

Recently circle hooks have been proposed as one of the methods to reduce the turtle by-catch in surface longline fisheries targeting large tunas and a number of experiments have been conducted by various research teams to investigate this.

4.2 NOAA EXPERIMENTAL WORK 2001 - 2004

Between 2001 and 2003 NOAA in cooperation with the Blue Water Fishermen's Association initiated a three-year project in the Western Atlantic Ocean to develop and evaluate fishing gear modifications and tactics to reduce the incidental capture of endangered and threatened sea turtle species by pelagic longline fishing gears. This work was completed in 2003.



1. In 2001 the NOAA research tested the effect of moving hooks that are normally deployed very near floats to 20 fathoms away from floats. Historical data indicates a higher turtle take proportion on the hooks nearest floats. The design also tested the effect of using blue dyed squid rather than the standard squid as bait. Data on eighteen other variables were also collected to determine their effect on turtle capture rates.

- Analysis of the data collected in 2001 indicated that there was no significant effect of blue dyed squid bait on turtle capture rates and that there was an increase capture rate for leatherback turtles on the hooks placed 20 fathoms from floats. A general linear model indicated that daylight hook soak time (the amount of time the hooks are in the water during daylight hours) was the only variable which effected loggerhead turtle capture rates, but there was no effect of daylight soak time for leatherback turtle captures.

2. In 2002 NOAA evaluated the effect of reducing daylight hook soak time, the use of 18/0 circle hooks both offset and non offset with squid bait, and the use of mackerel bait on both J hooks (control) and 18/0 circle hooks in reducing sea turtle interactions with pelagic longline gear. The control hook used in the experiments was the standard 9/0 J type typically used in this fishery with an offset of 25-30 degrees.

Hook type	25°-30° offset 9/0 "J" (*)	0° offset 18/0 circle	25°-30° offset 9/0 "J"	10° offset 18/0 circle
Bait	Squid	Squid	Mackerel	Mackerel
Loggerhead turtle	CPUE = 0.5 (no.)	-86%	-71%	-90%
Leatherback turtle	CPUE = 0.48 (no.)	-57%	-66%	-65%
Swordfish	CPUE = 890 (kg)	-29%	+63%	+30%
Bigeye tuna	CPUE = 90 (kg)	+26%	-90%	-81%

(*) CPUE values are approximate.

- Analysis of the data collected in 2002 indicated that daylight soak time was not a significant variable in determining turtle interactions with longline gear. 18/0 circle hooks were found to significantly reduce both loggerhead and leatherback interactions when compared to J hooks. 18/0 circle hooks with squid bait reduced swordfish catch, but increased tuna catch. 18/0 circle hooks with mackerel bait had the highest reduction in loggerhead turtle interactions and increased swordfish catch, but decreased tuna catch. J hooks with mackerel bait significantly reduced both loggerhead and leatherback interactions, increased swordfish catch, and reduced tuna catch.

3. In 2003 NOAA duplicated the 2002 experiments with the 18/0 non-offset circle hooks with squid bait and the 18/0 10° offset circle hook with mackerel bait to collect additional data over two fishing seasons. The experimental design also included evaluation of two additional hook designs: a 20/0 10° offset circle hook with mackerel bait and an 11/0 modified "J" hook. As the modified "J" could not be obtained in time for the experiments a 10/0 non offset Japanese tuna hook was substituted for the 11/0 modified "J" hook. Evaluation of the Japanese tuna hooks was terminated early in order to maximize the sample size on the other treatments and there was insufficient data collected to evaluate the effectiveness of this hook design. Preliminary evaluations were also conducted on the efficiency of 18/0 non offset circle hooks with squid bait on tuna directed sets, but the sample size collected was too small to determine the effectiveness of the 18/0 circle hook for tuna. Data was also collected on hooking times for target and bycatch species using hook timers and time depth recorders.

For swordfish sets, the control hook was a 25° - 30° offset "J" hook and the control bait was squid. Treatments were non-offset 18/0 circle hook with squid bait, 10°

offset 18/0 circle hook with mackerel bait, 10° offset 20/0 circle hook with mackerel bait, and non-offset 10/0 Japanese tuna hook with mackerel bait. For tuna sets the control hook for tuna directed fishing sets was a 10° offset 16/0 circle hook and the control bait was squid and the treatment hook was a non-offset 18/0 circle hook and the treatment bait was squid.

- Analysis of the data collected in 2003 indicated that the 18/0 non offset circle hooks with squid bait had significant reductions in loggerhead and leatherback catch when compared to the control "J" hook and squid bait, and an increased tuna catch, but had a significant reduction in swordfish catch. The 18/0 10° offset circle hook with mackerel bait also had a significant reduction in catch of loggerhead and leatherback turtles compared to the control hook and bait and an increase in swordfish catch, but a significant decrease in tuna catch. The 20/0 10° offset circle hook also had a significant reduction in loggerhead and leatherback catch, a slight increase in swordfish catch and a significant decrease in tuna catch.

Hook type	25°-30° offset 9/0 "J" (*)	0° offset 18/0 circle	10° offset 18/0 circle	10° offset 20/0 circle
Bait	Squid	Squid	Mackerel	Mackerel
Loggerhead turtle	CPUE = 0.4 (no.)	-64%	-89%	-91%
Leatherback turtle	CPUE = 0.25 (no.)	-90%	-56%	-72%
Swordfish	CPUE = 790 (kg)	-29%	+12%	+8%
Bigeye tuna	CPUE = 62 (kg)	+20%	-83%	-90%

(*) CPUE values are approximate.

- While some data have been presented on by-catch, these relate solely to blue shark and are presented in as aggregate data as shown in the following table:

Hook type	25°-30° offset 9/0 "J" (*)	0° offset 18/0 circle	10° offset 18/0 circle	10° offset 20/0 circle
Bait	Squid	Squid	Mackerel	Mackerel
Blue shark	CPUE = 27	+0.4%	-28%	-37%

(*) CPUE values are approximate.

- Tuna Directed research Results: Sample size was too small to determine effect, but preliminary numbers indicate reductions in both loggerhead and leatherback turtles with 18/0 circle hooks compared to 16/0 circle hooks. Bigeye tuna catches were similar and there was a slight increase in yellowfin tuna catch with 18/0 circle hooks versus 16/0 circle hooks

4. The most recent experiment (Watson et al., 2004c) was conducted in the Gulf of Mexico, between February and April 2004, with the purpose of determining the comparative efficiency of 0° offset 18/0 and 0° offset 16/0 (both Mustad 39960 type) used in the yellowfin longline fishery. The experimental design was to alternate 16/0 and 18/0 hooks, baited with sardines (the bait size is not reported), along the entire set with an odd number of hooks between floats and equal distance between hooks and between hooks and adjacent floats (randomized hook pattern). All participating vessels (three) were required to standardize fishing gear in order to reduce variability associated with gear configuration. All vessels carried observers on board and both vessel captains and observers were provided appropriate training.
5. Other sparse information on by-catch were found in other documents attached to Watson et al., 2004b (Epperly, 2004). From these documents, it appears that other protected species were caught in 2003 during the experiment. These are Kemp's Ridley turtle (2 specimens), Hawksbill turtle (2), Green turtle (2), Olive Ridley turtle (2), other unidentified turtles (2), Risso's Dolphin (5), unidentified Balaenopterid whale (1), Striped dolphin (1), unidentified sea bird (1). No other species out of these protected species is listed among by-catch. The document provides also information on marine turtle genetics, the releasing procedures, tagging experiments and hooking rate by size of hooks and turtles. Particularly on this late issue, larger loggerhead turtles are obviously taken by larger hooks, independently from the hook type. The location of the various hook types, also in correlation with the bait type is provided, with a clear major presence of hooks in the jaw when circle hooks are used. A de-hooker system was also used during the experiment and the Authors provide a "Careful Release Protocol".
6. Another document attached to the same report examines the post-hooking mortality in loggerhead turtles by the use of PAT tags (Epperly et al., 2004). A total of 43 turtles were tagged and 4 were used as control animals. The results of this study appears not very clear in the summary available, but it is clearly stated that 27% of turtles externally hooked or entangled and released with gear attached will die, while this percentage reach 42% for turtles having the mouth hooked or that have ingested hooks.

The experiment carried out in the Gulf of Mexico is the last one of a series of observations (Garrison, 2003). In this last experiment, while no loggerhead turtle were caught, 3 leatherback turtles were hooked: 1 with 16/0 hook (cpue = 0.068) and 2 with 18/0 hook type (cpue = 0,135). (The cpue for leatherback turtles is 50% higher in 18/0 circle hooks compared to 16/0 circle hooks). The leatherback turtles were released alive, still hooked and with a part of the branch line on.

Yellowfin tuna catch was 347 specimens with 16/0 circle hook (cpue = 0,0235) and 250 on 18/0 circle hook (cpue = 0,0169), while the cpue (weight per hook) was 1.44 lbs for 16/0 circle hook and 1.07 lbs for 18/0 circle hook. No information is available about any other species caught as by-catch. The cpue in number for the yellowfin tuna is 26.5% less in 18/0 circle hook (25.7% reduction by weight).

7. A further paper by Watson et al., (2004a) entitled 'The rationale for rule making option to require 16/0 circle hooks in tuna direct pelagic longline

fishery to mitigate sea turtle mortality' is a useful document and a good summary of all the existing comparative data for NW Atlantic and the Gulf of Mexico. It provides an overview of the existing knowledge and the expected fishery changes in terms of catches for the main target species. However here too there are, in some cases, sufficient data, while the by-catch of other species, including sharks and other commercial species, is simply not considered.

4.3 COMMENTS.

4.3.1 As concerns the experiments in the NW Atlantic, STECF make the following comments:

- The robustness of the scientific approach used by Watson et al., 2004b (Central - NW Atlantic) while indicating certain trends, is insufficient to fully to assess the impact of any proposed change in current surface longline practices.
- From a turtle conservation point of view, this work indicates that circle hooks appear to provide a lower catch rate of marine turtles compared to "J" hook types.
- Circle hooks also show lower catch rates for some target species - sometimes these reductions are large but results are not conclusive as bait size is omitted from consideration.
- Bait size, which is an important factor in catch discrimination for several species, is not reported in the 2001 or 2002 experiments. This is an important omission from this report.
- The data from the 2001 and 2002 experiments do not mention any other species taken as by-catch. Increasing bait and/or hook size can result in an undesirable higher bycatch rate of, for example, shark.
- The statistical analysis presented in the report is difficult to evaluate. There are no clear tables with the ANOVA results and the details of the model used are not presented. However, the major flaw is the failure to incorporation possible covariates in the analysis. Temperature, time of the day, position etc should have been used as covariates in the analysis (an ANCOVA might be considered in this case).
- Hook types are defined in terms of maker's codes; these are not standardised and could vary over time and among manufactures. A more technological description should be provided, and should, specifically, include the dimensions of gape, shank length, overall width, etc.

4.3.2 As concerns the experiments in the Gulf of Mexico, STECF make the following comments:

- The scientific approach used in these experiments does not allow a complete assessment of the impact of proposed changes in surface longline fishing practices. The previous mentioned data indicate that the use of 0° offset 18/0 circle hook in the directed tuna fishery result in a serious economic loss (approximately 27%) to the fishery when compared to the 0° offset 16/0 circle hook. At the same time, a higher catch rate of leatherback turtles is reported for the 18/0 circle hook, while no catches of loggerhead were recorded. Unfortunately no comparison is available for “J” hooks; this renders this study less appropriate as a reference point.

- Previous, more detailed studies (Garrison, 2003), reveal that while there is a by-catch of sharks in this fishery it is not clear how shark catch rate increase in relation to either hook type and size or bait type and size.
- It is not known if loggerhead turtles are usually caught by longlines in this area in the time period covered by the experiment.

4.3.3 General comments:

- The identification of the most relevant migration areas and season for several important marine turtle species (loggerhead, leatherback, green) is a key factor in improved management of pelagic longline fishing activity; for example a time/area closure might help to mitigate the problem when it reach critical levels.
- No data are currently available which quantify the impact of the smaller size hooks required in several pelagic longline fisheries for species smaller fish.
- Bait size, as well as hook size, can affect the catch rate of several species, including loggerhead turtles, but only incomplete data are available on bait size.
- None of the experiments reviewed in this report compared 9/0 j-hooks with circle hooks of similar dimensions. The experiments generally compared standard 9/0 j-hooks with much larger circle hooks thus making catch comparison difficult.

4.4 RECOMMENDATIONS

- STECF is aware of the impact of surface longline activities on marine turtles, even if data are not available for the large range of areas and fisheries. Finding a solution to mitigate this impact is an urgent issue but, at the same time, it is important to consider all appropriate aspects of the problem, including displacement elements (for example, changes in catch rate for the target species and the most important by-catch components) before recommending any generalised adoption of gear modifications for all the fisheries and/or areas.
- *On the level of bycatch mortality of sea turtles in the various areas covered by Community fisheries*. STECF notes that insufficient information is currently available to the Committee to specifically address this issue and, consequently STECF recommends that a working group be convened with the objective of compiling a comprehensive overview of the marine turtle by-catch problem related to longline fisheries, in particular in the various areas covered by Community fisheries. This group should compile all published data from various oceans and fisheries with the purpose of identifying ‘hot-spots’ where this problem is or may be significant.
- On the robustness of the scientific approach used in the USA experiments. See section 4.3.1 and 4.3.2.
- On the feasibility and effectiveness of the measures envisaged therein taking into consideration the current fishing practices of Community vessels: See 4.3.1 and 4.3.2.
- On possible negative effects on commercial yields: See 4.3.1 and 4.3.2

- On the congruence of the results with experiments undertaken in other areas: See 4.2
- STECF recommends conducting additional experiments to obtain the necessary information on the most important surface longline fisheries in various areas (South-East Pacific, Indian Ocean, North and South Atlantic, Mediterranean) where Community fleets operate, with a particular attention to the pelagic longline fisheries requiring smaller hook size. The information collected during these experiments should include comprehensive details of all catches including, target species, turtles, sharks and other by-catch components.
- STECF recommends that detailed catch information, including, target species, turtles, sharks and other by-catch components, should be collected by observers placed on Community vessels operating in pelagic longline fisheries.
- STECF recommends that additional efforts be devoted to identify areas and seasons where important migrations or concentrations of marine turtles occur. This should include necessary information on yearly variation etc, with a view to introducing real-time management of these fisheries.

4.5 REFERENCES:

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Watson, J.W., Bergmann C., Shah, A.K, Foster, D.G., Epperly, S.P., 2004c. Evaluation of 18/0 Circle Hook in the Gulf of Mexico Tuna Fishery. Report on Experiments Conducted in 2004. Report to NOAA Fisheries, U.S. Department of Commerce: 13 p.

5 Shetland and Plaice box reports

5.1 PLAICE BOX.

STECF reviewed the report of the European Commission Expert Working Group to evaluate the Plaice box reports[8]. The plaice box was implemented in 1989 in an attempt to reduce discard mortality on juvenile plaice with the aim of enhancing recruitment, yield and spawning stock biomass of plaice in the North Sea. The report describes trends in landings and effort, discard rates, growth rates, spatial distribution of juvenile plaice and environmental parameters such as water temperature and nutrient concentrations. The report also addresses the hypothesis that food availability in the box has reduced due to reduced bottom disturbance by the beam trawl fleet by describing trends in spatial distribution and growth rates together with results of recently published studies.

STECF agrees with the main findings in the report, the most important of which is that there is no direct evidence that the plaice box has enhanced recruitment, spawning stock biomass and yield, as was its purpose. Since the Box was established in 1989, recruitment has shown a negative overall trend, and spawning stock biomass and total yield have decreased by 60 %. However, because the Box was not established in an experimental set up with an equivalent control area, its functioning and effectiveness has to be inferred from trends in relevant parameters. From trends observed it was inferred that the Plaice Box has likely had a positive effect on the recruitment of plaice but that its overall effect has decreased since it was established.

There are two reasons to assume that the Plaice Box has a positive effect on the recruitment of Plaice: 1) at present, the Plaice Box still protects the majority of undersized Plaice. Approximately 70 % of the undersized Plaice are found in the Plaice Box and Wadden Sea, and despite the changed distribution, densities of juvenile Plaice inside the Box are still higher than outside; 2) In the 80 mm fishery, discard percentages in the Box are higher than outside. Because more than 90 % of the Plaice caught in the 80 mm fishery in the Box are discarded, any reduction of fishing in this area would reduce discard mortality. There is, however, no proof of a direct relationship between discard mortality and recruitment.

Although negative effect of the Box cannot be ruled out completely, the observed trends do not provide clear support for the hypothesis of decreased food abundance as a result of the Plaice Box: 1) contemporary literature shows that there is no positive effect of bottom trawling on ecosystem productivity; 2) the decrease in growth rates was initiated before the establishment of the Plaice Box; the temporal trends in growth rate are not correlated with the trends in beam trawling effort and 3) similar trends in the abundance and spatial patterns of Plaice were shown for areas outside the Box such as the Wadden Sea and the Dutch coastal zone southwards of the Box.

[8] 1) Grift, R,E.. Tulp, I., Clarke, L., Damm, U. McLay, A., Reeves, S., Vigneau, J., Weber, W. 2004. Assessment of the ecological effects of the Plaice Box. Report of the European Commission Expert Working Group to evaluate the Shetland and Plaice boxes. Brussels. 121 p.

5.1.1 Economic effects of the Plaice Box.

The report on the evaluation of the plaice box did not address any economic criteria. At present, STECF is unable to provide an evaluation of the economic effects of the box. Additional information is needed in order to both evaluate the economic impact and to advise on the utility or appropriate changes to its design.

5.1.2 STECF CONCLUSION

Based on information presented in the Report on the evaluation of the plaice box, STECF agrees with the findings given in the report and concludes the following:

- The majority of juvenile plaice are found in the plaice box, and thus suffer less discarding from larger fishing boats.
- The observed trends in growth and abundance do not provide clear support for the hypothesis of decreased food abundance for plaice as a result of the Plaice Box.

5.1.3 STECF RECOMMENDATIONS

Given that:

- it is probable that the plaice box has acted as a refuge from discarding from larger beam trawlers
- the current status of the plaice stock is classed as having reduced reproductive capacity and is harvested unsustainably.
- there is a need to minimise the discard rates of juveniles

STECF recommends that as a minimum, the current plaice box regulation should be kept in place. However, STECF recognises that a further reduction in discarding of young plaice is desirable and alternative measures over and above maintaining the current plaice box regulation should be considered. Any further developments of a North Sea plaice management plan must include objective and targets against which the plaice box can be evaluated.

5.2 SHETLAND BOX

STECF reviewed the report of the European Commission Expert Working Group to evaluate the Shetland Box reports[9]. The Shetland box restricts the number of vessels of at least 26m in length between perpendiculars, fishing for demersal species other than Norway pout and blue whiting in a sea area to the north of Scotland and was established under Article 7 of Council Regulation (EEC) No. 170/83 and by Council Regulation (EC) 237/2002.

The report consideres the objectives of the Shetland Box and assumes that the purpose of the Box is to limit fishing activity and, by implication, fishing effort in the

[9] 1) Clarke Liz, Damm Ulrich, Grift Rob, Holmes Steven, Kunzlik Philip, McLay Anne, Needle Coby, Reeves Stuart, Tulp Ingrid, Vigneau Joel, Weber Wolfgang (2004). Assessment of the ecological effects of the Shetland Box. Reports of the European Commission Expert Working Groups to evaluate the Shetland and Plaice boxes. Brussels. 72+Annexes.

prescribed area, to protect biologically sensitive demersal species and to ensure the satisfactory development of the stocks.

In an attempt to examine the effects of the Box on fishing activity and fishing effort, the report considers the following :

i) the licensing system which limits vessel access and information on licence uptake and demand and commercial fisheries data

ii) trends and changes in the distribution of fishing effort over the period since the Shetland Box was established.

In addition the report summarise information on demersal fish stock trends and stock status in relation to the current ICES precautionary and limit reference points and presents results of analyses of fisheries survey data, to describe the distribution and relative abundance of the main demersal stocks in the relation to the Shetland Box and considers whether distributions have changed over time.

The main findings of the report are as follows:

- There are insufficient data to make a comprehensive, quantitative evaluation of the effects or the effectiveness of the Shetland Box.
- Article 20 of (EC) Regulation No. 2371/2002 is currently not effectively limiting the numbers of large demersal fishing vessels, eligible under the licensing scheme, that fish within the Shetland Box. Although eligible vessels may have been excluded in the past, it is not possible to quantify this directly. The working group was not able to evaluate the effects of the Shetland Box on international fishing effort.
- The introduction of the Shetland Box is, however, associated with a reduction in fishing effort of UK heavy trawlers and effort of vessels in this category has been maintained at low levels in the Box since then. The high reported values of fishing effort and landings by UK heavy trawlers in the late 1970s attest to the relevance of the Shetland Box as a conservation measure when it was introduced in 1983. Changes in the structure of the UK fleet, in Shetland Box Report particular the trend to smaller vessels over the last 20 years, mean that the category of vessels restricted is probably less relevant now.
- The demersal stocks important in the northern North Sea have shown mixed fortunes over the lifetime of the Shetland Box. The status of some, particularly cod, give cause for concern. It is possible that over its lifetime the Shetland Box has had beneficial effects on demersal stock development. However, establishing whether or the extent to which this is the case is not possible in the absence of a quantitative assessment of the impact of the Box or a basis for assessing its effects relative to other conservation measures.
- The evaluation has established that the Shetland Box was in the past, and remains, an important area for demersal fish species and fisheries, now possibly more so now than at the time when it was established. Recent decommissioning, restrictions on days at sea and the cod protection area are likely to prove more effective in achieving reductions in fishing effort and mortality than TACs alone.
- The Shetland Box provides a framework for spatial limitation of fishing effort, particularly with consideration of larger more powerful fishing vessels. Its future should be considered in the present day management context of UK

decommissioning and effort control in the form of limits on days at sea. Changes that could lead to an increase or redistribution of fishing effort to target high productivity areas like the Shetland Box should be avoided.

5.2.1 Economic effects of the Shetland Box.

The report on the evaluation of the plaice box did not address any economic criteria. At present, STECF is unable to provide an evaluation of the economic effects of the box. Additional information is needed tin order to both evaluate the economic impact and to advise on the utility or appropriate changes to its design.

5.2.2 STECF RECOMMENDATIONS

Given that

the Shetland Box was in the past, and remains, an important area for demersal fish species and fisheries, now possibly more so now than at the time when it was established;

removal of the Box and its access regulations could lead to an increase or redistribution of fishing effort into the Box;

demersal stocks that the Shetland Box is designed to protect continue to require significant reductions in fishing mortality;

STECF recommends that the current regulation should be kept in place.

6 Mixed Fisheries

STECF has only received a draft version of Mixed Fisheries Report with some editorial work remaining, however, the report reviewed is regarded as substantively complete. The STECF-SGRST sub-group was required to work with very demanding time constraints, taking advice before it is formally released from ICES and presenting a final report within 1 week of the end of the meeting. The subgroup should be commended for providing the report in the stage it reached. Meanwhile, by the time the STECF report is going to be published, the SGRST report is published as SEC (2004)1711.

6.1 MAIN CONCLUSIONS

STECF draws the following main general conclusions concerning mixed fisheries issues:

1. STECF notes that current advice on mixed fisheries, while attempting to inform managers about the appropriate allocation of effort among fisheries - consistent with desired levels of fishing mortality by species - lacks (except perhaps in the North Sea) appropriate data including discard data.
2. STECF further notes that current management systems (including relative stability and a reluctance to manage effort by fleet) present obstacles to the implementation of an appropriate allocation of effort among fisheries consistent with desired levels of fishing mortality by species.
3. STECF considers that while credible mixed fisheries analysis can, in time, be undertaken as data availability and quality issues are addressed, inclusion of

new discard data into assessments is complex issue and may only become possible over a number of years.

4. The group compiled fleet-based fishery data for the North Sea, Irish Sea, Celtic Sea, Iberian Peninsular and Bay of Biscay. The level of fishery disaggregation varied by sea area and discard data were only available from the North Sea.
5. Mixed fishery forecasts were made for the North Sea and full results are presented in the report. The data coverage, including discarding is much improved from previous years. There are however, still a large number of gaps in the database and these have been interpolated with a very coarse fill-in. This proceedure may have an adverse effect on the results.
6. Mixed fishery forecasts were also made for the Irish Sea, Celtic Sea, Iberian Peninsular and Bay of Biscay. Due to the lack of discard data and a number of grave concerns regarding data quality in each of the areas, the results presented are preliminary and the group strongly recommends that they are not used for management purposes.
7. As several errors in the inputs to the Irish Sea data were discovered after the meeting and as there has not been time to correct these, STECF consider that the MTAC results presented here for the Irish Sea to be misleading and currently unsuitable for management purposes .
8. The group was also asked to advise on the extent to which two fisheries could be managed seperately by species: a) plaice and sole in the North Sea and b) cod, haddock and nephrops stocks. MTAC does not provide information for this purpose, however, similar data is required for such a study. The analyses were brief, but an analysis of the catch by fleet data indicated that there may be some scope for managing some of the fisheries on these stocks independently. The scope depends on the proportion of the total catch in the major fisheries, and this has not been examined in detail.

In addition to these primary points there a number other specific points to be noted which are given below by area.

6.1.1 North Sea mixed-fisheries data

The group has made progress in compiling fishery-, age-disaggregated landings and discards data. An exploration of the database suggested that the age-structured landings and discards provided by the database were consistent with ICES assessment inputs. Nevertheless, in the context of running mixed-fisheries forecasts, this database is still subject to the following limitations:

- The data coverage is still not comprehensive, particularly with regards to discards information on plaice and whiting. Missing information was eventually completed with a coarse procedure (missing discards by fisheries strata were estimated over all available information). This procedure is only a first proxy, and any results derived from the current MF database should be interpreted cautiously.

- The mixed-fisheries database did not include information on industrial by-catches, which resulted in an under-estimation the haddock 0-group.

6.1.1.1 Conclusions on North Sea MTAC

The dataset underpinning the MTAC analyses is greatly improved from that used last year. There are fewer missing strata (gear, mesh, area, quarter,species, age) and discard data have now been included. The dataset is not, however, complete, and missing strata have been filled in with a coarse algorithm which takes grossly averaged data. Any usage of the results of MTAC for this year should bear this in mind.

In terms of meeting the criteria for the cod Recovery Plan and the plaice Management Plan, no single run achieves this feat simultaneously. The closest MTAC could get was with run 8, an f-multiplier of 0.7 on cod, 0.45 on plaice, p=2, q=1. (The draft report contains a typographical error and 0.45 is wrongly noted as 0.85)

6.1.2 Irish Sea.

Fishery-based advice requires well-defined fisheries based on complete and reliable catch data. This is clearly not the case for the Irish Sea as it lacks consistently defined fisheries with constant catch composition over time within fisheries/fleets. The data set also lacks discards for all species in the Irish Sea which is of primary concern, ACFM referred to the lack of discard data as a “fatal flaw" in a mixed fisheries context (ACFM 2004). Given the number and strength of these concerns, the group considers the MTAC results presented here for the Irish Sea to be misleading and totally unsuitable for management purposes.

6.1.2.1 Important note

During the final checking of this section it was discovered that several typographical errors were made in the “species.dat” file. This is partly a product of the extreme haste of the meeting and forecast files not arriving from ICES until the third day of the meeting. There was no time to correct this before release of the report. The group can not therefore overstress its reservations concerning the use of the Irish Sea MTAC runs for mangament purposes.

6.1.3 Celtic Sea & Bay of Biscay (Southern Shelf)

In conclusion the MTAC results presented should be taken as very preliminary due to

a) the lack of suitably disaggregated fishery data and
b) the lack of inclusion of discards.

Whilst STECF acknowledges that the inclusion of a new series of discard data in stock assessments is not straightforward, the committee considers that the inclusion of discard data is required to improve the demersal fisheries assessments in this area.

The mixed fishery units used proposed by the Commision for this area combine stocks and TAC areas thus the options provided are not necessarily linked to appropriate biological units. For the Celtic sea, the Commission requested that the Subgroup use the same gear aggregations as those adopted for the North sea analysis. With the exception of *Nephrops* targeted mobile gear, the aggregation of catch data by mobile gear groups was done across all fleets irrespective of fishery information or inconsistency in the basis used by different nations to allocate catches into fleet groups. Marked differences in species interactions between countries were therefore obscured within the fleet groupings.

Thus, the Group strongly recommended that the results of these preliminary runs are not used for management purposes.

6.1.4 Iberian Peninsula

The results obtained in the MTAC runs for the Iberian Peninsula are considered by the subgroup as unreliable due to the following reasons:

- The fleet definitions are not appropriate. Particularly, the trawl fleet is a mixture of several fleets using different gears, mesh size and targeting different species.
- An important part of the area (Gulf of Cadiz) had to be excluded from the analysis. This area was not included in the last assessment of Southern hake.
- Data by age were not available for some stocks: black and white anglerfish (assessed by ASPIC and ALK's still in a preliminary stage); *Nephrops* from Functional Unit 30 (assessed by LCA); and *Nephrops* from Functional Unit 31 (not assessed in 2004).
- No discards were available for any species.
- No data from pelagic species (as horse mackerel, blue whiting and mackerel) were available. However, in some trawl fleets, pelagic species catches are greater (more than 90%) than the catches of the demersal species considered in this preliminary analysis.

The Group strongly recommended that the results of these preliminary runs are not used for management purposes.

6.2 GENERAL MIXED FISHERIES ADVICE ISSUES

In addition to the above points there are a series of issues that should be addressed.

6.2.1 Use of F_{pa} for a target F

The scenarios requested by the Commission use the maximum fishing mortalities recommended by ACFM in terms of singles species precautionary exploitation boundaries. These are given as limits beyond which the stock is at increased risk of impaired recruitment and not as an optimal fishing mortality for the maximisation of long term yield. In situations where current fishing mortality is above F_{pa}, decreasing fishing mortality to F_{pa} is a sensible first step to stock rebuilding or the prevention of overfishing. The use of F_{pa} as a target for those stocks where fishing mortality is already lower is not a necessarily a good, long term strategy. Such a move will probably result in an increase in yield in the short term, but this is at the expense of long term yield and will increase the probability of driving the stock towards the boundaries of unsustainability. For those stocks where current fishing mortality is lower than F_{pa}, a better target F would be one leading to optimal yield.

6.2.2 Further MTAC development.

Although there are no plans to add more complexity to the current MTAC model the Group nevertheless identified some important adaptations which the program would benefit from.

There is no distinction between landing and discard fishing mortality in the input to MTAC and hence the TAC's (single species and mixed species) are determined as total catch. Current management procedures utilise TACs for landings and therefore TAC output from MTAC is limited direct use.

6.2.3 Spatial resolution within the mixed fishery databases.

The request from the Commission regarding the ability to independently manage sole from plaice, and haddock & Nephrops from cod highlighted a potential shortcoming of the data input to the mixed fishery database. Although fleet definition can include a reference to a particular spatial component, the data format only allows for ICES division as a data field. There are cases, particularly for *Nephrops* fisheries, where it is possible to define the fishery at a much finer spatial scale and therefore an additional field for spatial resolution may be appropriate. This does, however, considerably increase the number of strata within the database and therefore increases the complexity of the task of "filling in" or interpolating data for missing strata. Further work is required into the feasibility of increasing the spatial scale and the consequences for data quality.

6.2.4 Timing of the meeting.

The timing of this meeting, in particular with reference to the proximity to ACFM and STECF is unfortunate and does not allow sufficient time to permit changes in draft ACFM advice to make it through the Group's calculations. There is also insufficient time to review and check the work undertaken by the Group before submitting its report to STECF. This has been compounded this year by relatively few members of the Group able to contribute to the finalisation of the report immediately after the meeting. The Group acknowledges that relatively little can be done regarding the timing of the meeting, but as such must point out that the results can not be checked as thoroughly as they would like.

One possible solution would be to convene the meeting during ACFM to set up input files and input datasets and carryout preliminary runs with WG assessments. Then reconvene after ACFM to put in final agreed data and catch options.

7 Data collection and economic indicators

7.1 BACKGROUND

STECF received the SGECA report on Data collection and economic indicators. The meeting was convened in Brussels on 4.-8. October, 2004 and was a continuation of the workshop on economic data (Ecodata) held in Paris in spring.

The aim of the meeting was to reach a common agreement in terms of quality and utility of economic information to be collected within the Commission Regulation N°1639/2001 and to provide an advice to the Commission on possible needs of modification of the Appendix XVII therein.

The group was requested to:

- review and evaluate the economic indicators (Appendix XVII of the Commission Regulation N°1639/2001) produced by the ECODATA workshop

- evaluate the appropriateness of the fleet segmentation in the National Programs (in particular, its link with the one used to collect biological data)
- evaluate both the sampling strategies carried out by each Member State to collect the economic data and the statistical reliability of economic indicators

The report is published as SEC(2004)1712). In the following we summarise and comment on its main points and conclude with the recommendations of STECF.

7.2 ECONOMIC INDICATORS

STECF agrees with the sub-group that the definitions in the Data Collection Regulation should be harmonised with those used in statistics in general, especially those in the Structural Business Statistics and European System of Accounts (ESA). The report listed a number of documents where they have defined economic indicators in general statistics and referred to those when revising the economic indicators in the Data Collection Regulation.

STECF believes that harmonising the definitions with those used in Structural Business Statistics and European System of Accounts will facilitate comparison between Member States and between different sectors.

STECF agrees with the working group that the unit of production is a vessel and the target population is the Fishing fleet register. The register should be corrected for errors and dormant units excluded. The population should therefore include all units active during at least a part of the reference period.

While each MS should be free to choose whether to obtain data through sampling accounts or by issuing questionnaires, STECF believes that accounts should be preferred, because they are more accurate and will contribute towards the current push towards a harmonisation of accountancy standards.

Table 7.1 lists all the economic indicators needed with a description and reference to appropriate definitions used in Structural Business Statistics and European System of Accounts. STECF endorses the definitions presented in the table 7.1.

Table 7. 1: Definition and Specification of Economic Indicators for Fisheries

Economic indicator defined in Commission Regulation (EC) No 1639/2001 App XVII	**Codes**		**Economic Indicators for Fisheries**		
	Structural Business Statistics	***ESA 1995***	***Indicator***	***Additional specifications for fisheries***	***Comments***
Income (turnover)	12 11 0 excl. para 4		Turnover	1. Gross value of landings (including processing onboard) whatever the marketing channels – total and per species 2. Income accruing from other activities of the vessel (e.g. tourism, recreational fishing) 3. Incoming rents from quotas or fishing rights 4. Other income, e.g. revenues from POs 5. Do not include social benefits of persons	
			Gross revenue	1. Turnover 2. Subsidies connected to the production including compensation for bans on fishing	
Production costs – crew (include social cost)	13 31 0 13 32 0 13 33 0		Labour costs	1. Wages and salaries of crew 2. Imputed value of owner's labour on board (and other unpaid family workers) 3. Social security costs	
Production costs – fuel	20 11 0 (13 11 0)		Fuel costs	1. Only fuel costs, excluding lubricant 2. Value	Recommend that fuel volume is considered as an optional indicator of "Effort"
Production costs – repair and maintenance	(13 11 0)	3.70. e) (1)(2)	Repair and maintenance costs		
Production costs – other operational costs	(13 11 0)		Other costs	Separate variable and non-variable costs 1. Variable costs: landings costs, sales, lubricant, treatment, ice, bait, boxes, salt, food, transport, harbour dues, pilot services, PO fees 2. Non-variable costs: administration (shore staff, communications, etc.), netting, insurance, general expenses, net leasing of technical equipment, costs of hiring/renting of quota or other fishing rights	1. Separation of variable and non-variable costs was agreed by the Concerted Action for the purpose of bio-economic analysis 2. Separation of these costs should be optional for MS 3. It is desirable if information on costs of quota and fishing rights can be separated

Table 7.1: Definition and Specification of Economic Indicators for Fisheries (continued)

Economic indicator defined in Commission Regulation (EC) No 1639/2001 App XVII	**Codes**		**Economic Indicators for Fisheries**		
	Structural Business Statistics	***ESA 1995***	***Indicator***	***Additional specifications for fisheries***	***Comments***
Production costs – other operational costs (cont.)			Interest payments		Should be optional for MS
Fixed costs		6.02. to 6.05.	Capital costs	1. Depreciation of the physical capital, including very expensive netting 2. Opportunity costs	1. Discussion and clarification is needed on the depreciation system, depreciation of fishing rights, application of different depreciation rates to different assets, different ways of valuing assets 2. Discussion is needed on the opportunity cost approach 3. Recommend a study, as outlined in Section 7.1.
Financial position			Financial position	Borrowed capital divided by total capital	
Investments (assets)		7.09. to 7.24.	Capital value	Include value of fishing rights, as a separate item if possible	1. Codes should be used as guidance to the definition of the indicator 2. Discussion on the specifications for fisheries is required, in line with discussions of "Capital costs" 3. Recommend a study, as outlined in Section 7.1.
	15 11 0	3.102. to 3.111.	Investments	Include value of fishing rights, as a separate item if possible	1. Codes should be used as guidance to the definition of the indicator 2. Discussion on the specifications for fisheries is required, in line with discussions of "Capital costs" 3. Recommend a study, as outlined in Section 7.1.

Table 7.1: Definition and Specification of Economic Indicators for Fisheries (continued)

Economic indicator defined in Commission Regulation (EC) No 1639/2001 App XVII	Codes		Economic Indicators for Fisheries		
	Structural Business Statistics	***ESA 1995***	***Indicator***	*Additional specifications for fisheries*	***Comments***
Prices/species	N/A	N/A	Prices/species		Use country statistics
Employment	16 11 0 16 13 0 16 13 1 16 13 2 16 13 5 16 14 0 16 15 0	11.32. to 11.34.	Employment	1. Full-time equivalents (FTE) 2. Full-time 3. Part-time	Recommend a study on defining full-time equivalent, with Eurostat collaboration, as outlined in Section 7.2.
Fleet	N/A	N/A	Fleet	Vessels in fishing vessel register	
Effort	N/A	N/A	Effort	1. Days at sea 2. Data should conform to that produced under module D of 1639/2001	Recommend that fuel volume is considered as an optional indicator of "Effort"

STECF acknowledges the specific problems in fishing defining methods to calculate the capital costs and employment. STECF also strongly supports the initiative made by the SGECA **to have two studies to** make clear and solid definitions and procedures how to calculate those. For the terms of reference of the study on Capital costs STECF propose to include the issue of how to handle the fishing rights.

7.2.1 Studies required to facilitate the implementation of the Data Collection Regulation

The working group proposed the following Terms of Reference for studies.

7.2.1.1 Evaluation of the capital value, investments and capital costs in the fishery sector

7.2.1.1.1 Background

In the SGECA working group on the Community data collection framework (Commission Regulation EC nr. 1639/01) the evaluation of capital value, investments and capital costs, including fishing rights, was discussed. It was agreed that a methodological study to address this issue is necessary.

7.2.1.1.2 Objectives

The main goals of the study are the following:

1. To provide an exhaustive definition of the following economic terms in the fishery sector:
- Capital value
- Value of fishing rights
- Investments
- Depreciation cost
- Opportunity cost

The study has to define all the tangible and intangible assets that compose the capital and the investments by element. It should take into account the different ways in which fishing rights and licenses are implemented and how they should be accounted for in the economic analysis. The study has to define criteria in order to classify assets in terms of age life and share of total capital.

An investigation has to be made as to which components of the fixed capital should be included in the calculation of depreciation.

2. To outline an overview of the existing methods for:
- Capital evaluation (historical value, replacement value, insurance value, book value and the question of fishing rights),
- Depreciation calculation (perpetual inventory method, "straight line" method, the common method of the concerted action EAEF Q5CA-2001-01502)
- Opportunity cost calculation.

3. To propose the best methods for evaluation of capital value (including fishing rights) and investments and for calculation of depreciation and opportunity costs from a theoretical point of view and to list the problems connected with their implementation. The method must produce results that are comparable between and across European fishing fleets.

7.2.1.1.3 Methods

The results of the study must be applicable to all the European fishing fleet segments as defined in the EU regulation n. 1639/01.

Definitions and methods must be in line with the European System of Accounts and have regard to existing regulations concerning the definition of characteristics for structural business statistics, as well as the OECD report on measuring capital.

The working group suggested that the contractor should consult Eurostat and/or national accounting experts.

7.2.1.2 Calculation of labour including FTE in fisheries

7.2.1.2.1 Background

In the STEGA working group on the Community data collection framework (Commission Regulation EC nr. 1639/01) the use of full-time equivalent FTE as an indicator for the employment in the fisheries sector was discussed. It was agreed to adapt the definition of the European Business Statistics (Commission Regulation EC nr. 2700/98):

Code: **16 14 0 -** Title: Number of employees in full-time equivalent units

Definition:*The number of employees converted into full-time equivalents (FTE). Figures for the number of persons working less than the standard working time of a full-year full-time worker, should be converted into full-time equivalents, with regard to the working time of a full-time full-year employee in the unit. Included in this category are people working less than a standard working day, less than the standard number of working days in the week, or less than the standard number of weeks/months in the year. The conversion should be carried out on the basis of the number of hours, days, weeks or months worked.*

It was also observed that there are some major problems to apply this definition to fisheries: Standard working time of a full-year full-time worker is not provided in the definition and varies between countries, fisheries, and even fishing firms. A small-scale fisherman might have a standard working week of 10 hours, whereas in the industrial fishery, workers might work up to 100 hours a week. The standard working week might also change throughout the year e.g. seasonal fisheries. This implicates that comparison of FTE's between fisheries and countries is hardly possible

7.2.1.2.2 Objectives

The main goals of the study would be:

- To provide SGECA with a background document on basis of which they can discuss and decide on the used methodology on FTE.
- To provide a comprehensive overview of methods used for defining and estimating the standard working time of a full-year full-time worker in other sectors e.g. agriculture, SME (small and medium-sized enterprises). Possible methods investigated should at least use both the proportion of revenue of workers received from the fishery and proportion of time spent in the fishery.
- To describe the problems connected to the different methods of estimating FTE and solutions proposed.

- To analyse the effects of applying the different methods to two extreme fisheries case studies: a small-scale fishery and an industrial fishery. The analysis should show how comparable the results of the different methods applied are among fisheries and countries.

7.2.2 Interim Measures

The difficulties outlined above in using the proposed definitions in the implementation phase should not be the reason not to start collecting data. Rather MS should provide details how the definitions are applied in practice. This will increase transparency and enable reliability to be evaluated.

7.3 FLEET SEGMENTATION

SGECA was also requested to evaluate the appropriateness of the fleet segmentation in the National Programs and in particular, its link with the one used to collect biological data. The working group noted that under the present regulation data collected is sometimes not disaggregated enough for sophisticated bio-economic modelling.

From the economic point of view the segmentation should comprise of vessels that are homogenous in physical characteristics and have homogenous economic and cost structure. Fishermen may have different strategies within a fleet segment that influence economic results. This variation should be taken account in sampling strategy by stratification where all relevant additional information (fishing areas and land based regions) should be used to minimise variation.

For economic analysis this kind of fleet based disaggregation is essential and combined with other information, e.g. logbooks, it is also sufficient for many bio-economic analyses.

STECF considers that fleet segmentation presented in Data Collection Regulation is a good starting point but needs further disaggregation. The need to measure economic impact on regions means that in several countries further disaggregation based on (land based) regional differentiation will be needed.

STECF acknowledges that there are bio-economic models that need more detailed information, but sees that it should be handled on case study basis. STECF supports the working group recommendation to encourage discussions between economic and biological experts. They should together consider what kind of analysis should be carried out and to formulate feasible segmentations to appropriate purposes. It is urgent that STECF take the initiating role in this development. **STECF recommends that a meeting should be convened involving both biologists and economists to identify problems with present fleet segmentation** and examine proposed segmentations e.g. preliminary indications drafted by the ICES working group and also those covering the Mediterranean.

7.4 SAMPLING STRATEGY AND RELIABILITY OF THE DATA

The precision level is not a widespread measure for the reliability of economic data. STECF therefore believes that this is not always the best way to evaluate reliability of fisheries economic data. STECF agrees that a detailed description of the data collection method and the definitions used as well as a cross-checking against other data will lead to a better understanding of accuracy and reliability. Deriving the data from accounts will enable the application of auditing techniques.

7.5 *SUMMARY OF PROPOSED CHANGES TO THE DATA COLLECTION REGULATION*

Based on these considerations the Working Group presented a few additions to the regulations. STECF believes that there is a need to

1. move certain aspects of the extended program of Data Collection Regulation into the minimum programme – for instance a disaggregation of vessels by fishing region
2. disaggregate economic parameters by the region of the vessel's home port at the appropriate NUTS level
3. define the average background and characteristics of the crew in more detail

The working group noted that there are no dates for submission of data nor does the Data Collection Regulation explicitly state what should be the reference year of the data collected. STECF recommends that economic data should be available not later than the 3rd quarter after the year of study i.e. September 2004 data available for 2003.

STECF agrees with the SGECA recommendation that the Workshop referred to in the report from the meeting in Paris (10-14 May 2004) planned to discuss depreciation and the concept of Full Time Equivalents (FTE) should be delayed to late 2005, until the two studies presented above are fulfilled.

7.6 *RECOMMENDATIONS*

STECF **recommends** that the definitions in the Data Collection Regulation should be harmonised with those used in economic statistics in general, especially those in Structural Business Statistics and European System of Accounts (ESA).

STECF **recommends** the two studies, relating to Capital costs and employment, as proposed to be implemented in due curse.

STECF **recommends** strongly that the discussions between economic and biologic experts lead to a meeting to clarify the objectives for bio-economic modelling and define data requirements including fleet segmentation. STECF urges the Commission to take the necessary steps for such a group to be convened.

8 Commission Annual Report on sustainable balance between fishing capacity and fishing opportunity

8.1 *GENERAL COMMENTS*

The Commission should be commended on the new annual report on the EU fishing fleet (COM(2004)799), as it provides a good overall reflection of the new Community Fleet Policy framework, following the suspension of the MAGP at the end of 2002. The STECF also acknowledges that the quality of the report hinges on the accurate reporting of Member States and initial teething problems are probable in this regard. STECF nevertheless recommends that the following issues and comments be specifically considered in future reporting on the EU fishing fleet.

8.2 *REFERENCE LEVELS*

STECF understands the reference levels, and the reported compliance levels herewith, to be a transitional measure following the discontinuation of the MAGP at the end of 2002. STECF notes from the annual report that some member states fleets are sufficiently below their reference levels that their fleet size is, in effect, not restricted, beyond limitations imposed by the entry/exit regime, while member states with fleet sizes close to their reference levels are restricted, to a greater extent. If the long-term goal of balancing fleets with resources is to be reached, these reference levels should be suitably adapted and form the foundation to linking fishing capacity and fishing opportunities, as discussed below.

8.3 LINK BETWEEN FISHING CAPACITY AND FISHING OPPORTUNITIES

STECF finds that the annual report fails to give adequate information to reflect the demands of Commission Regulation (EC) No 1438/2003 of 12 August 2003 laying down implementing rules on the Community Fleet Policy as defined in Chapter III of Council Regulation (EC) No 2371/2002, paragraph 12 (L 204/22), stating:

"The annual reports and the summary thereof made by the Commission in accordance with Article 14 of Council Regulation (EC) No 2371/2002 should give a clear picture of the equilibrium between fleet fishing capacity and fishing opportunities".

STECF argues that an explicit link between fishing capacity and fishing opportunities, as called for in *Article 14 of Council Regulation (EC) No 2371/2002* must be given due attention in future annual reporting on the EU fishing fleet. This is especially relevant where stock recovery plans and days at sea limitations have been implemented. Information on feasible analytical approaches should thus be sought to allow the assessment of the real balance between fishing fleets and fishing opportunities. However, further discussion among Member States will be required in order to reach a common approach.

8.4 ENTRY/EXIT REGIME

STECF considers that the adopted entry/exit regime and reporting is a step in the right direction, and provides a framework for information on the overall fleet situation in relation to public aid. The adopted regime should help ensure that public money earmarked for fleet renewal and modernisation does not lead to an increase in nominal or effective fishing capacity. Further, it should help confirm that vessels removed by public aid are not replaced and reference levels are lowered accordingly.

STECF suggests that some form of analysis in undertaken to examine how more specified entry/exit regimes can be deployed for individual fleets and fisheries, where there may be a desire to either neutralise or reduce fishing capacity. This may be especially important where stock recovery plans are in force. Such analyses should also help to account for dynamic changes in effective fishing capacity due to, for example, technological progress, changes in fish stocks, impacts of days at sea limitations, etc. Currently, the entry/exit regime is strictly based on funding criteria and/or vessel characteristics including GT's an kWs, and no attempt is made to manage fishing capacity in specific fisheries or fleet segments so as to achieve a sustainable balance between fishing capacity and fishing opportunities.

STECF considers that an analysis of the impact of the currently adopted entry/exit regime on fleet structure and balance with fishing opportunities should provide valuable preliminary information for establishing future, more targeted, entry/exit regimes.

8.5 CONSIDERATION OF NEW MEMBER STATE FLEETS

To secure a sustainable balance between fishing capacity and fishing opportunities in EU waters, STECF recommends that the Commission explicitly consider the steps to incorporate the fleets of the new fishing nations, following the accession of 10 new Member States in 2004.

9 Other matters

9.1 PARTICIPATION OF THE STECF'S MEMBERS AT THE MEETING OF THE ACFA

Every year the ACFA organises 12 meetings, respectively by 4 fields: fisheries resources, aquaculture, markets, general questions. Since 2001 STECF members (biologist and/or economist) have participated at these meetings.

Since the beginning of 2004, the STECF 'members have participated, in Brussels, at the following 12 working groups of the ACFA :

- 22 January 2004 with the group 1 (resources)
- 10 February 2004 with the group 4 (general affairs)
- 26 February 2004 with the group 3 (market)
- 22 April 2004 with the group 2 (aquaculture)
- 05 May 2004 with the group 1 (resources)
- 12 May 2004 with the group 4 (general affairs)
- 07 June 2004 with the group 3 (market)
- 02 July 2004 with the group 2 (aquaculture)
- 30 September with the group 1 (resources)
- 19 October with the group 3 (market)
- 27 October with the group 1 (resources)
- 29 October with the group 4 (general affairs)

STECF members will participate at 1 further meeting of Group 2 (aquaculture) on 30 November 2004.

As a whole, STECF members have participated at 13 meetings of ACFA, with 2 members for the 4 meetings of working group 1 (Resources).

Even though the minutes of the ACFA meetings are regularly distributed to STECF members, however their content should be considered **confidential** and not circulated outside STECF circuit.

STECF has maintained Yves Perraudeau as the coordinator for the actions of the Scientific Comittee within the ACFA.

STECF has maintained Michael Keatinge as the member to attend the ACFA meetings covering the biological matters in particular for the fisheries resources and aquaculture working groups.

Upon receipt of ACFA agendas, the coordinator, Yves Perraudeau, informs all STECF members in order to receive their opinions on the different agenda items and, if the case, to prepare an agreed position to be delivered on behalf of the STECF.

9.2 STECF ACTIVITIES IN 2004 AND PROVISIONAL PLANNING OF MEETINGS IN 2005

STECF notes that the agendas of its meeting have been becoming more and more overloaded with several items often added at very short notice or that need adoption by correspondence during the intersession period.

STECF is aware, however, that having only 2 plenary sessions per year may make inevitable the adoption of certain reports by correspondence. Perhaps, also a higher number of STECF plenary sessions (more than 2 per year) might be considered.

STECF notes that the participation of its members to subgroup meetings is sometimes quite limited with a predominance of invited experts. STECF invites its members to attend more regularly subgroups meetings, such a strategy should also speed up the work during the plenary sessions.

In closure of the meeting it was recalled that the next plenary session will take place in Brussels from 4 April – 8 April 2005.

The first following text table shows the activities carried out, since the STECF plenary meeting of April 2004, either within the STECF framework or as *ad hoc* working groups for which STECF has subeseqently delivered its opinion.

The reports of both the *ad hoc* working group on sandeeel fisheries (SEC(2004)1247 and of the STECF-SGRN on issues related to the data collection programme (SEC(2004) 1066 and 1312) were adopted by the STECF through a fast track procedure by correspondence in May, July and October respectively.

The subsequent text table shows provisional activities of STECF and its sub-groups scheduled for 2005. The Commission informed that the provisional planning for 2005 could be changed depending on the outcomes of the December Council or of other needs. Besides, STECF budget constraints might determine rearrangement of the provisional planning.

MEETING	ITEM	DATE
Final workprogramme for the period April –December 2004		
• ad hoc Working group by correspondence	Sandeel fisheries: estimate of the strength of the 2003 year-class	April- May STECF adoption by correspondence in May (SEC(2004)1247
- Research Needs and Data Collection (SGRN) ***Co-ordinator:*** yet to be named	Evaluation of pilot projects reports on discards, recreational fisheries and processing industry *Chairman*: Frank Redant	24- 28 May STECF adoption by correspondence in July (SEC(2004)1066
- Review scientific advice on Stocks of relevance to the CFP (SGRST)–Economic Assessments (SGECA) Joint meeting ***Coordinators:*** *Hans-Joachim Raetz, Jørgen Løkkegaard*	Further improvement of EIAA model including long-term perspective and effects of recovery plans *Chairmen*: Hans Frost and John Casey	14-16 June SEC (2005) 259
- Research Needs and Data Collection (SGRN) ***Co-ordinator***: yet to be named	Evaluation of achievements of 2003 data collection national programmes *Chairman*: Frank Redant	21 - 25 June STECF adoption by correspondence in October (SEC(2004)1312

- Economic Assessment (SGECA) ***Co-ordinator:****Jørgen Løkkegaard*	Reflections on economic issues and indicators with regard to the Community data collection framework (Commission Regulation (EC) No 1639/2001) *Chairman*: Tore Gustavsson	4 – 8 October 2004 SEC(2004)1712 STECF adoption at its 19th meeting in November
- Review scientific advice on Stocks of relevance to the CFP (SGRST) ***Coordinator:*** *Hans-Joachim Raetz*	Mixed fisheries forecasts *Chairman*: Ewen Bell	18-22 October SEC(2004)1711 STECF adoption at its 19th meeting in November
SGRST – SGECA joint group ***Coordinator:*** *Hans-Joachim Raetz*	- Stock status review - Fleet status report and EIAA model *Chairmen*: John Casey and Hans Frost	25 - 29 October SEC (2005) 266 SEC (2004)1710 STECF adoption at its 19th meeting in November
Scientific, technical and economic committee for fisheries (STECF) ***Chairman:*** *John Casey*	19th Plenary session	1-5 November
- Research Needs and Data Collection (SGRN) ***Co-ordinator:*** yet to be named	Evaluation of derogations and no-conformities in the data collection national programmes *Chairman*: Frank Redant	29 November– 6 December STECF opinion SEC(2005)255

Provisional planning for STECF meetings in 2005		
SUBGROUP meeting	***Item***	***Venue and Date***
- STECF Bureau	Coordination meeting	Brussels ***TBD***
- Mediterranean (SGMED) ***Coordinator:*** *Ramon Franquesa*	Economic aspects of Mediterranean fisheries. Bio-economic Modelling in the Mediterranean: analysis of case studies. Fishing effort and technical measures effects. *Chairman*: Ramon Franquesa	Brussels 24-29 January or April-May

-Economic Assessment (SGECA) ***Co-ordinator:**Jørgen Løkkegaard*	Follow-up of bioeconomic modelling within the STECF *Chairman*: TBD	Brussels 07-11 March or April-May
Scientific, technical and economic Committee for fisheries (STECF)	Plenary session *Chairman*: John Casey	Brussels 4-8 April
- Review scientific advice on Stocks of relevance to the CFP (SGRST) ***Coordinator:** Hans-Joachim Raetz*	Sandeel working group *Chairman*: TBD	2-6 May
SGRST-SGFEN joint meeting ***Coordinators:** Hans-Joachim Raetz Sten Munch-Petersen*	Community longline fisheries and turtle by catches: biological and ecological issues, overview of the problems and mitigation approaches *Chairman: TBD*	*2-3 quarter* *TBD* 5 days
- Research Needs and Data Collection (SGRN) ***Co-ordinator***: yet to be named	Evaluation of the achievement in 2004 national reports on data collection national programmes *Chairman*: Frank Redant	June 5 days
- Research Needs and Data Collection (SGRN) ***Co-ordinator***: yet to be named	Possible issues at stake on surveys or other actions foressen in the data collection programme *Chairman*: TBD	2-3 quarter 3-5 days
- Fisheries and Environment (SGFEN) – ***Coordinator:** Sten Munch-Petersen*	-Sensitive fish habitats and habitats of paramount importance for biodiversity conservation and stocks production in the Mediterranean. *Chairman:* TBD	2-3 quarter TBD 5 days
Review scientific advice on Stocks of relevance to the CFP (SGRST) ***Coordinator:** Hans-Joachim Raetz*	Location and season of the most important fishable concentrations of cod in the Kattegat,Baltic, west of Scotland, Celtic Sea and the Irish Sea	2-3 quarter TBD 5 days
- Review scientific advice on Stocks of relevance to the CFP (SGRST) ***Coordinator:** Hans-Joachim Raetz*	Mixed fisheries forecasts *Chairman*: Hans-Joachim Rätz	17-21 October TBD 5 days

SGRST – SGECA joint group ***Coordinator:*** *Hans-Joachim Raetz*	- Stock status review - Fleet status report - EIAA model *Chairman*: John Casey	24 - 28 October
Scientific, technical and economic committee for fisheries (STECF)	Plenary session ***Chairman:*** *John Casey*	7-11 November
- Research Needs and Data Collection (SGRN) ***Co-ordinator:*** yet to be named	Evaluation of derogations and no-conformities in 2006 national programmes of data collection framework *Chairman*: Frank Redant	28 November – 2 December

10 ANNEX I LIST OF PARTICIPANTS

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11 ANNEX 2. Justifications of the approach applied by ICES

In order to evaluate the chance for cod recovery there is a need to try to estimate the fishing mortality levels of the North Sea cod stocks even in a case when it is very likely that unreported catches are high. There are not many alternatives for this estimation (e.g. no representative tagging studies with stable and unbiased return rates). It is likely that a smallest bias (difference between the true value and the estimated value, true value is never known exactly) can be obtained by the approach applied by ICES (2004) and Anon. (2004). This approach can also utilize the full historical data sets. However, the estimates may be very uncertain, and therefore a justified uncertainty estimation procedure is needed.

Usually alternative surveys and catch data are used to estimate the stock abundance, but if the surveys and historical combinations of survey – stock estimates – real catches – fishing mortality links (i.e. statistical dependencies) are stable and informative enough, these relationships can be used to estimate another missing variable, in this case total landings and consequently fishing mortality rates. However, this means that there are several more estimated parameters without observations (total catch) and therefore the quality of the estimates is of concern.

In the analysis carried out by ICES (based on a modification of the ADAPT method, described by Gavaris and Van Eeckhaute (1998) and further modified to fit to the given task by Darby (2004)) , the survey catch per unit effort data sets (three surveys) are used. The method is based on an estimated catchability (survey estimates show directly the changes in stock biomass) which is assumed to be constant in time and independent of population abundance. Second assumption is, that natural mortality is known or at least stable. These assumptions may be critical, but they are not easy to avoid if the fishing mortality estimate is to be provided by the current data sets. They are common to most assessment models. For this case the additional assumptions are: 1) the assumption that there has been no remarkable unreported landings and/or discards in those historical data sets, which are used to estimate the dependencies of the variables. 2) the assumption that missing catch components have same age composition as landed catch.

By these assumptions, and by the use of surveys it is possible to estimate the missing piece of information, i.e. total catches of some years (i.e. how much catches are needed to make the surveys and catches to fit together in the same way as in history). After this estimate is obtained, the fishing mortality at age can be estimated, including the fishing mortality estimates of the terminal year (last data year). This is what ICES has provided.

When the model was applied for years 1991 onwards, the difference between agreed TAC and realized catches was highest in 1995, 1996, 1999, 2001 and 2003. The average underreporting for 1993 to 2002 was estimated as 32% of reported landings. The 2003 estimate was 123% of reported landings. The TAC in 2003 was more restrictive than in 2002.

Quality of the ICES estimates

The assessment does not include all elements of uncertainty, i.e. some of unknown parameters were assumed to be fixed (=known exactly), and therefore uncertainty estimate are almost certainly giving a too positive view about the quality of stock assessment information. Some of the assessment models try to deal with this issue, but usually e.g. natural mortality is assumed to be known. In this assessment uncertainty of catch is included but for the recent period only.

Due to the mixed nature of point estimation process and uncertainty estimation techniques, the exact definition of what the probability distributions mean, is difficult. However, exactly the same problem is relevant with several other ICES stock assessments.

If one looks at the uncertainties of the terminal year only, it is obvious that the smoothing technique used in the assessment (there is a restriction for the change of catch estimates between the years) increases the uncertainty in the terminal fishing mortality much more than is usually the case (even though terminal fishing mortality estimates are always the most uncertain ones).

None of the structural assumptions in the model have been included in the estimates of uncertainty, i.e. by giving probabilities for alternative assumptions and evaluating how much uncertainty would increase as a result of these various assumptions.

When looking at the individual surveys applied in calculating the SSB and F estimates, two out of three surveys suggest a decrease in SSB between years 2003 and 2004 and the third one suggests an increase. Two out of three surveys suggest that total mortality has increased during the last three years.

The level of bias was estimated with simulated data sets in Darby (2004) chosen specifically to represent the perception of the current situation for cod in the North Sea. These show that in the presence of rising unaccounted mortality the method can overestimate catch in the terminal year by a probability of 0.8. The method does very much better in earlier years.

It is important to note, that under the precautionary approach, an increasing uncertainty in stock trend is an argument for a more effective management scheme. As the probability distribution increases due to uncertain parameters and/or hypothesis, the increased risk of stock collapse must be decreased by more effective management actions.

Overall the main difference between this assessment and a more conventional ICES assessment is the estimation of the missing proportion of the catch.

The reported uncertainty estimates suggest acceptable quality and the estimates are useful from the management point of view but probably give a too optimistic view of the quality of the estimates of F. The terminal F is uncertain as in all assessments, but is particularly uncertain here when unknown catches are to be estimated. The estimates of F for earlier years are more reliable and should be considered when making conclusions about management need.

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12 ANNEX 3. Projet de mise sous plan de reconstitution du stock de Cabillaud de la Mer Celtique : proposition des professionnels Irlandais, Anglais et Français.

Projet de mise sous plan de reconstitution du stock de Cabillaud de la Mer Celtique : proposition des professionnels Irlandais, Anglais et Français.

I - Introduction

Lors de sa réunion des 18 et 19 décembre 2003, le Conseil des Ministres des pêches a adopté une déclaration invitant la Commission à "présenter des propositions visant à intégrer, dans les plans de reconstitution existants, les stocks pour lesquels il a été récemment constaté qu'ils étaient en dessous des niveaux de précaution de la biomasse, à savoir le Cabillaud de la Mer Celtique (…)".

Se référant au plan de reconstitution mis en place en Mer du Nord, Ouest Ecosse et Mer d'Irlande, et à ses conséquences économiques et sociales pour les communautés de pêcheurs, les représentants des principales flottilles impliquées dans l'exploitation du Cabillaud de Mer Celtique ont choisi de mettre en commun leurs réflexions pour proposer un système de limitation de l'effort de pêche alternatif à celui prévu par l'annexe V du Règlement 2887/03 et notamment son chapitre 6a. Leur objectif est de limiter les contraintes pour les navires n'ayant pas de pêche dirigée sur le stock, en évitant la prise de mesures incompatibles avec la rentabilité économique des flottilles, tout en apportant une réduction effective de la mortalité par pêche du Cabillaud.

La nécessité de constituer un groupe de réflexion sur ce thème s'est faite jour lors de la réunion constitutive du RAC Nord Ouest qui s'est tenue à Bruxelles le 23 février 2004. La première rencontre du "Groupe Cabillaud" a eu lieu à Plymouth le 9 mars 2004, elle a été suivie de deux autres les 4 et 24 juin 2004 à Cork et Dublin.

Ont participées à ces réunions les organisations suivantes :

IRLANDE : - KFO
- IFPO
- ISWFPO

- ISE

GRANDE BRETAGNE : -CFPO

-NFFO

FRANCE : - FROM-Bretagne

- OPOB
- PROMA
- UAPF
- FEDOPA
- ANOP

Ces organisations représentent la grande majorité des pêcheurs exploitant le stock de Cabillaud de la zone 7 E/K (plus de 95 % du TAC sont alloués à des pêcheurs appartenant à ces organisations).

Les travaux de ce groupe ont été suivis étroitement par les organismes scientifiques chargés de l'évaluation du stock. Ils lui ont apporté leur soutien et ont participé directement à la mise au point de cette proposition (IFREMER - CEFAS - MARINE INSTITUTE).

II -Etat des lieux

1) Le stock

L'état de conservation du stock de Cabillaud 7 E/K est infiniment moins dégradé que ceux des stocks de Cabillaud qui sont déjà soumis à des plans de restauration. Les niveaux de la biomasse féconde (SSB) pour les années 2002 et 2003 ont été estimés par le CIEM en 2003 proche de celui de la moyenne historique 1971/2003 (9200 T et 8700 T pour une moyenne historique de 10900 T). Si la biomasse féconde était, pour ces années, inférieure à la biomasse dite de précaution (Bpa = 10000 T), elle l'était de peu. Dans tous les cas elle reste très supérieure à la biomasse dite limite (Blim = 5400 T).

Le Cabillaud de la Mer Celtique fait par ailleurs preuve d'une croissance beaucoup plus rapide et d'une maturité plus précoce que les stocks de Cabillaud voisins.

Il faut également rappeler que le stock de Cabillaud 7 E/K n'est pas lié aux autres stocks de Cabillaud voisins – notamment au stock de la Mer d'Irlande et à la composante 7D du stock de Cabillaud de la Mer du Nord -, et qu'il ne partage donc pas leurs dynamiques.

La principale difficulté réside dans l'estimation de la mortalité par pêche actuelle jugée trop élevée et qui obère la probabilité d'un rétablissement rapide de la biomasse féconde au niveau de la biomasse de précaution.

Il faut cependant noter que, depuis 2003, la principale composante de la flotte exploitant le Cabillaud de Mer Celtique, la flottille chalutière française, doit mettre en application des mesures draconiennes de gestion des quotas décidées par ses organisations professionnelles : interdiction de débarquement de Cabillaud de moins de 1 kg vidé, et limitation de captures à 200 kg de Cabillaud par jour de mer. La mise en application de ces règles a provoqué le changement de métier d'un nombre significatif de navires qui ont orienté leur activité vers d'autres espèces cibles/zones. Ce phénomène induit sans aucun doute une diminution sensible de la mortalité par pêche du Cabillaud qui devrait être visible dans l'avis que rendra l'ACFM en 2004.

2) Activité des flottilles

Les navires européens capturent le Cabillaud en Mer Celtique dans deux types de pêcheries totalement différentes :

- Dans les pêcheries démersales chalutières (autres gadidés, langoustine …) où le Cabillaud est une capture accessoire tout au long de l'année ;
- Dans une pêcherie ciblée de cabillaud, au filet ou au chalut, en début d'année, lors du frai, sur des zones localisées dont la position est stable au cours des années.

Les figures 1 et 2 présentent les temps de pêche exercés dans la zone par les navires français en 2003 par métier (fig. 1) et les tonnages de cabillaud capturés par métier (fig. 2).

La catégorie des navires "Bottom trawl Gadoids" a qui l'on peut attribuer 62 % des captures de cabillaud (fig. 2) n'est responsable que de 12 % du temps de pêche exercé dans la zone (fig. 1). A l'inverse, les 88 % du temps de pêche déployé en zone 7 E/K par les autres navires correspondent à 38 % des débarquements de cabillaud en 2003.

L'opposition entre les deux conditions de capture du cabillaud (capture accessoire VS capture principale) se rencontre à l'identique dans toutes les pêcheries européennes présentes dans la zone, au-delà de la différence des métiers parfois pratiqués comme l'indiquent les chiffres de localisation et période de capture présentés figures 3 et 4.

L'existence de ces deux types de pêcheries se traduit par :

* Des captures inégalement réparties au cours de l'année : la figure 3 présente la répartition saisonnière et l'origine des débarquements de cabillaud de la zone 7 B/K. Entre 1999 et 2003, 37,7 % des prises irlandaises, anglaises et françaises ont été réalisées au premier

trimestre. Les deuxième, troisième et quatrième trimestres ne représentent respectivement que 16,8 , 21,2 et 8,6 %

La diminution des débarquements s'explique essentiellement par une diminution de la capturabilité du cabillaud à partir du mois d'avril, les concentrations de poisson liées au frai ayant disparu. La figure 4 montre les rendements en cabillaud des chalutiers français entre 1998 et 2003. Les CPUE qui peuvent atteindre 32 kg/heure de pêche dans certains rectangles au premier trimestre, chutent à partir d'avril et ne dépassent plus 10 kg/heure de pêche.

* Des captures inégalement réparties dans l'ensemble de la zone 7 E/K :

On peut remarquer que sur les 37,7 % du cabillaud annuel débarqué au 1er trimestre, près de 26 % proviennent de seulement 5 rectangles statistiques et qu'après le mois de mars, il est rare d'observer des rectangles statistiques totalisant en un trimestre plus de 1,4 % des débarquements annuels (figure 3). La figure 4 confirme cette tendance : au 1er trimestre les rendements en cabillaud des chalutiers français sont supérieurs à 15 kg/heure de pêche dans 5 rectangles. Après le mois de mars, les CPUE sont comprises entre 1 et 10 kg/heure de pêche dans toute la zone 7 F/G (figure 4).

<u>Le total des captures et de la mortalité par pêche du cabillaud ne sont donc pas proportionnels à l'effort déployé mais dépendent d'abord de la saison et du lieu où il s'exerce</u>.

III -<u>La proposition des professionnels</u>

Devant ce constat indiscutable (l'absence de lien entre le niveau d'effort déployé et la mortalité par pêche), les professionnels ont essayé de cerner la ou les mesures qui permettraient d'assurer une réduction effective de la mortalité par pêche de l'ordre de 18 %.

Ce chiffre a en effet été suggéré par les scientifiques comme nécessaire pour assurer dans le moyen terme une reconstitution de la biomasse féconde à un niveau supérieur à Bpa.

Sans équivoque, les professionnels ont recherché également une mesure dont l'impact sur les pêcheries où le cabillaud est une capture accessoire, serait la plus faible.

Il leur semble que les mesures globales adoptées dans le cadre des plans actuels de reconstitution des stocks de cabillaud et qui sont destinées à s'assurer du respect des TAC (in fine un nombre de jours de mer autorisé pour 11 mois qui peut être utilisé sur une période plus courte) ne répondraient pas à l'objectif de reconstitution par la diminution de la mortalité par pêche, du fait des caractéristiques des pêcheries en Mer Celtique.

En effet une limitation de l'activité des navires similaire à la limitation annuelle et globale des jours de mer (ou des KW x jours) appliquée en Mer du Nord, Mer d'Irlande et à l'Ouest de l'Ecosse, conduirait en Mer Celtique du fait des caractéristiques présentées, à une réduction de l'activité des navires ayant le cabillaud pour prise accessoire, plus que proportionnelle à la mortalité par pêche dont ils sont responsables et à une réduction moins que proportionnelle pour ceux dont le cabillaud est l'espèce cible.

Pour les professionnels, les conditions de capture du cabillaud qui existent en Mer Celtique (décrites au chapitre II, figures 1, 2, 3 et 4) doivent conduire à privilégier une gestion spatio-temporelle de l'activité des navires propre à garantir le respect du TAC.

La mesure qu'ils proposent pour réduire effectivement la mortalité par pêche est la fermeture pendant le 1er trimestre d'une zone correspondant au secteur où les CPUE sont les plus fortes , et où les navires exercent prioritairement une pêche dirigée sur le cabillaud.

La fermeture de cette zone doit permettre d'épargner 18 % du cabillaud produit habituellement dans l'année. Les figures 3 et 4 permettent de sélectionner 5 rectangles "candidats".

Les rectangles 30 E4 et 31E4 correspondent aux zones où les CPUE sont les plus fortes (figure 4). A eux deux ils représentent en moyenne 13,8 % des débarquements annuels en Irlande, Angleterre et France (figure 3).

Malgré leur proximité des côtes de Cornouailles qui en fait une zone privilégiée de navires anglais, et bien qu'elle constitue la principale zone de pêche du merlan des chalutiers français (près de 1100T de merlan y sont pêchées chaque année au cours du 1er trimestre – moyenne 98/03), les professionnels ont estimé que leur fermeture à toute pêche pendant le premier trimestre s'imposait.

Pour atteindre l'objectif de réduction assigné par les scientifiques, la fermeture d'un autre rectangle statistique s'avère cependant nécessaire.

Compte tenu des niveaux de CPUE enregistrés au 1er trimestre, le choix peut être fait entre quatre rectangles : 31E3, 32E2, 31E2, 32E3.

Les professionnels ont porté leur choix sur le rectangle 32E3 pour les raisons suivantes :

Les débarquements de cabillaud capturés dans cette zone au 1er trimestre représentent 4,2 % des tonnages annuels, ajoutés aux 13,8 % en provenance des rectangles 30E4 et 31E4, ils totalisent 18 %. Une fermeture simultanée et totale des trois rectangles au 1er trimestre , permettrait une réduction des débarquements dans ces proportions et une diminution des captures sûrement supérieure. Les rectangles 31E2 et 32E2 constituent des zones côtières exploitées par des navires qui n'auraient pas de zone repli en cas de fermeture de celles-ci. Le rectangle 31E3 est la principale zone de pêche pour les espèces benthiques (cardine, langoustine, baudroie) en zone 7 F/G comme le montre la figure 5. Sa fermeture pénaliserait surtout des navires ayant le cabillaud pour prise accessoire et qui ciblent prioritairement d'autres espèces.

Une simulation a été réalisée par l'Ifremer pour mesurer l'impact que pourrait avoir une telle mesure sur la diminution des captures de Cabillaud en tenant compte du report d'effort de pêche qu'elle engendrerait :

» *Une simulation brute de l'impact que pourraient avoir les reports d'effort dans les autres rectangles des seules divisions VIIfg a été menée à partir des données françaises uniquement. Les LPUE des trois rectangles statistiques concernés sont les suivantes :*

Rectangle	LPUE moyenne au 1er trimestre (kg/h)
30 E4	37.7
31 E4	18.9
32 E3	14.7
moyenne	25.1

La LPUE moyenne sur les autres rectangles des divisions VIIfg est de 7.5 kg pour le premier trimestre. En admettant que l'intégralité de l'effort qui s'exprimait dans les trois rectangles fermés soit reporté sur les autres rectangles des divisions VIIfg, la réduction nette de LPUE serait de 70%.

En utilisant ce chiffre pour l'ensemble de la pêcherie internationale, le gain espéré de la fermeture des trois rectangles serait donc de l'ordre de 13% [70% de 18%]. »

En réalité , la réduction des captures devrait être supérieure à ce chiffre car le report s'exercera en grande partie à l'extérieur de la zone 7F/G (en 7H,J,K notamment) où les LPUE de cabillaud sont très inférieures à 7,5 kg/h.

IV - Conclusion

Les avantages de la présente proposition sont multiples :

- Elle recueillerait l'accord de l'ensemble des professionnels concernés, y compris ceux qui pratiquent le pêche dirigée sur le cabillaud sur les lieux de frai.
- Elle se traduirait par une réduction de la mortalité par pêche au minimum de 18 %, et certainement supérieure ; car, en effet, c'est lors de la pêche ciblée du cabillaud dans ces rectangles, au moment du frai, que les rejets peuvent être importants.
- La fermeture de ces 3 rectangles au 1er trimestre n'engendrera de report important des captures de cabillaud ni dans d'autres zones ni à d'autres saisons.

Les CPUE observées dans le reste de la zone, et au cours des trois derniers trimestres sont trop faibles pour permettre une pêche dirigée sur le cabillaud (fig.4)

- Elle ménagerait l'activité des flottilles côtières anglaise et Irlandaise en leur laissant des zones accessibles.

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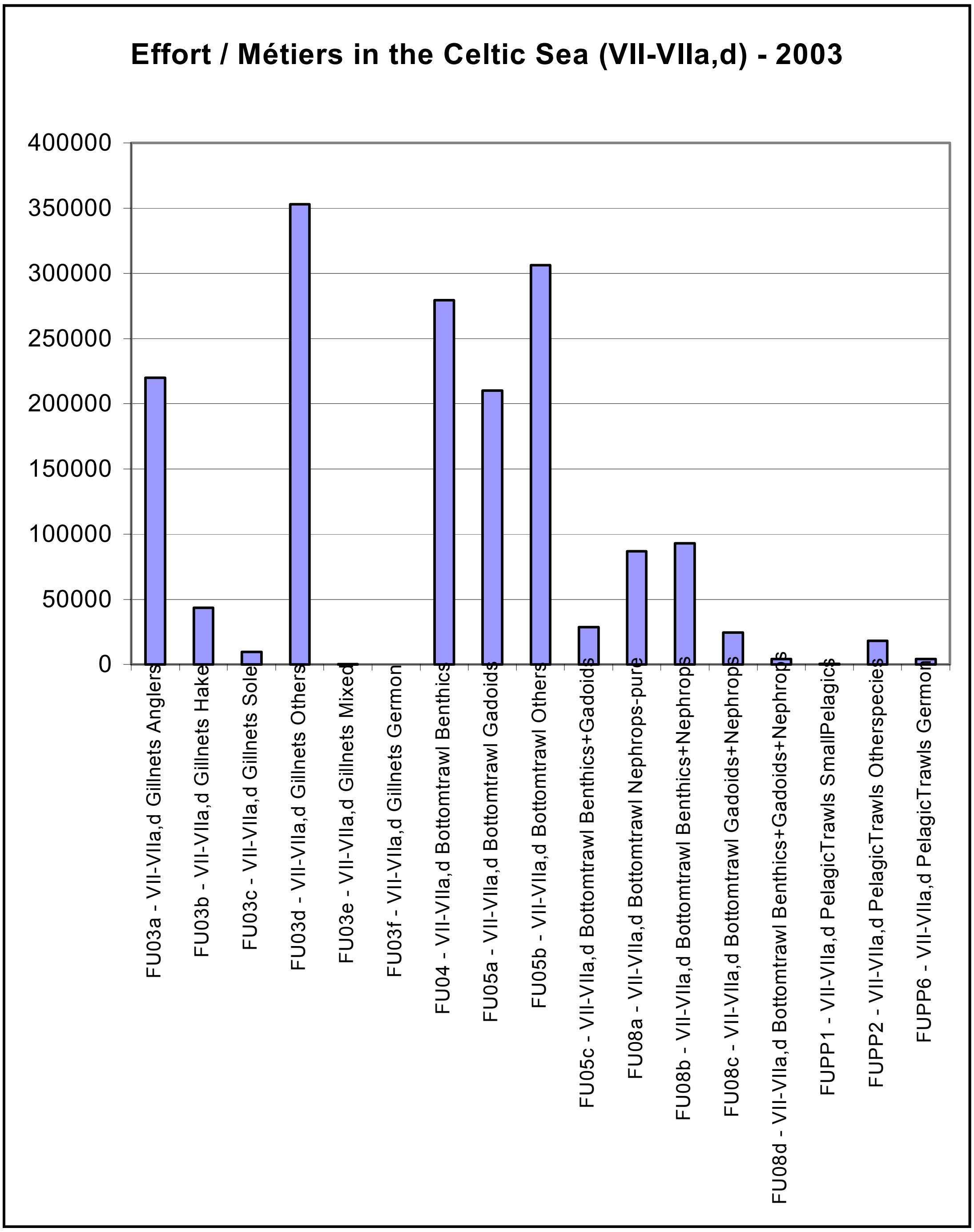


fig.1 source:DPMA Analyse Ifremer

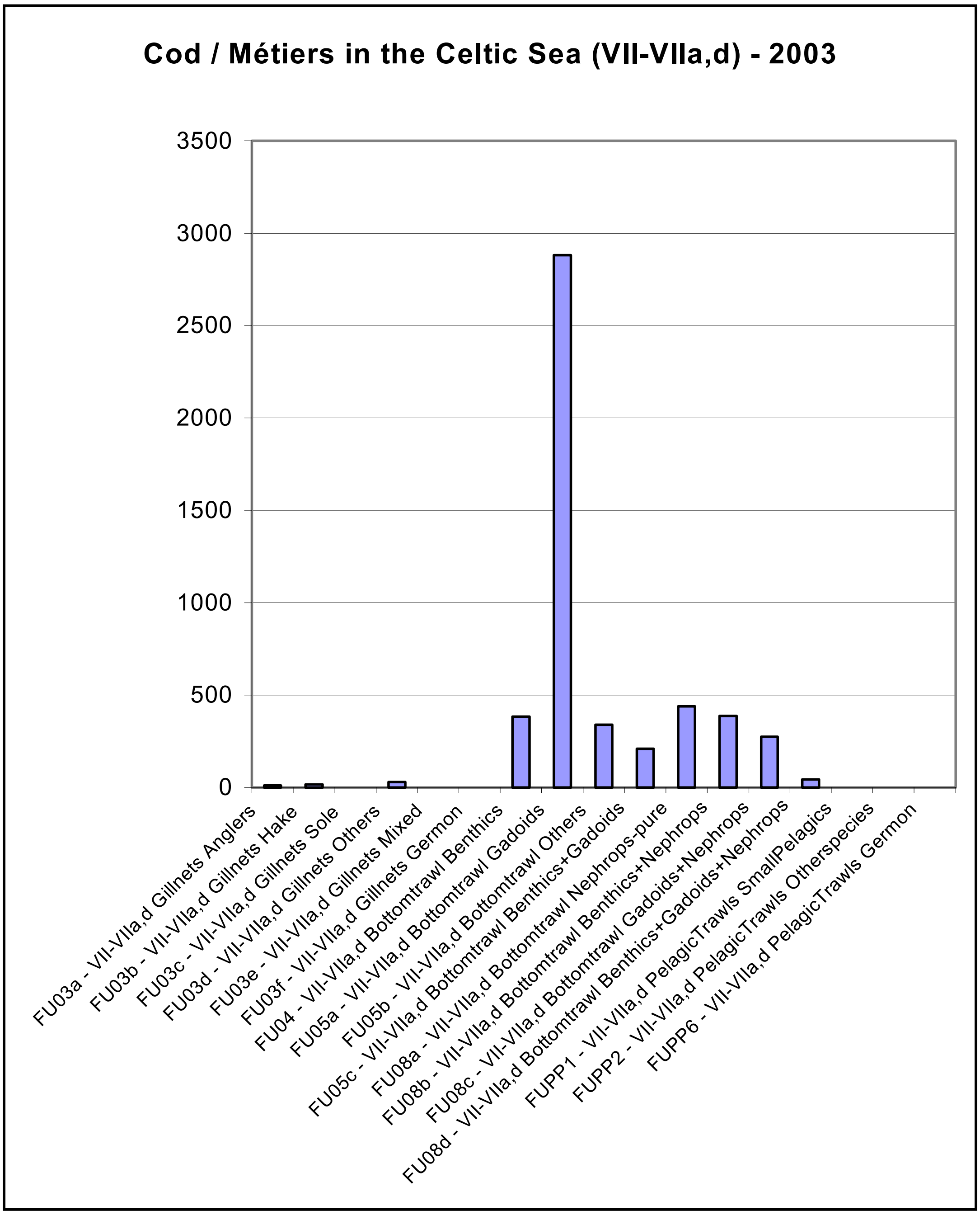
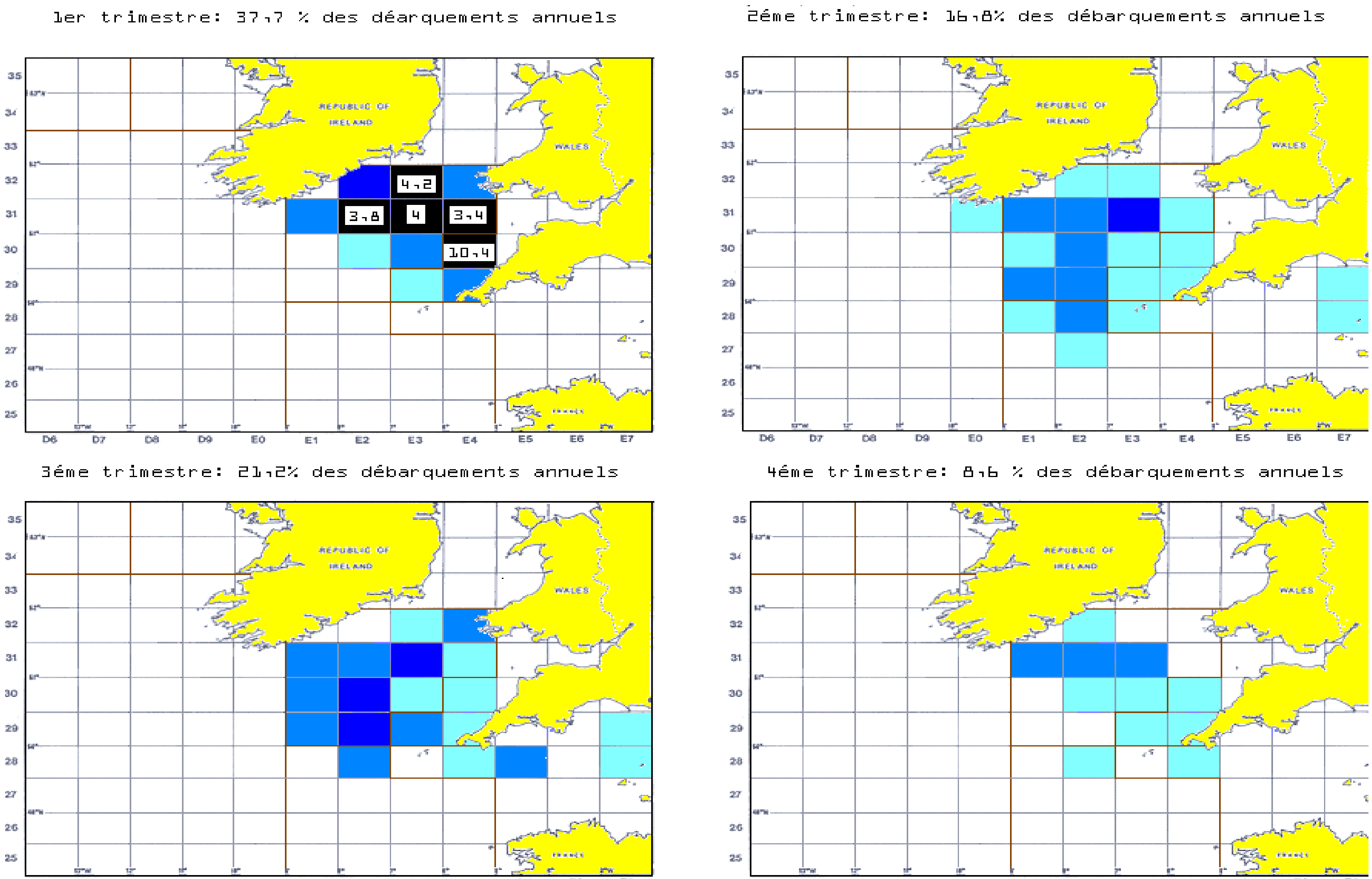


fig.2 Source:DPMA Analyse Ifremer



répartition saisonnière et origine des débarquements* de cabillaud en zone 7 B/K

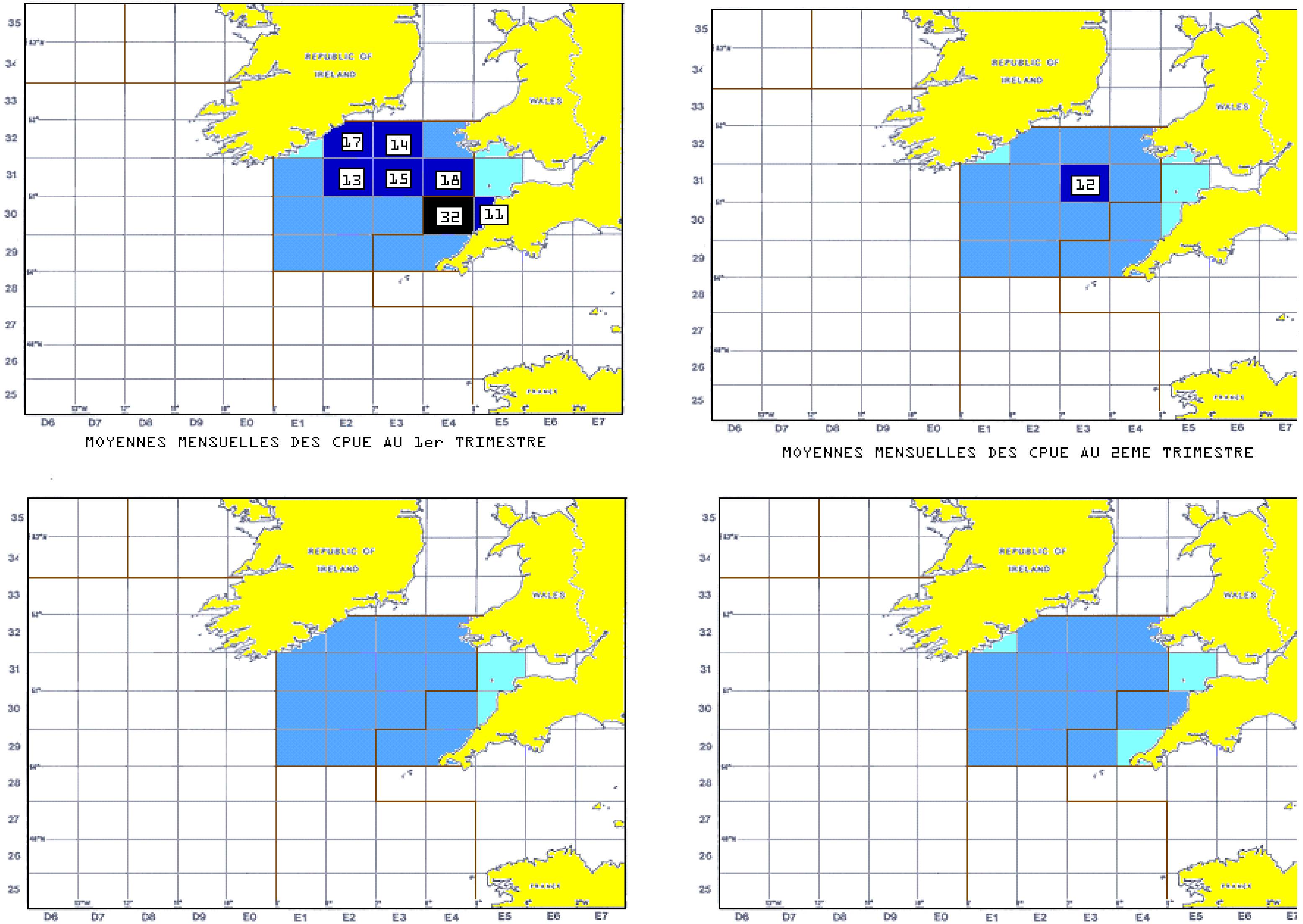
- de 0 à 0,7% des débarquements annuels
- de 0,7 à 1,4% des débarquements annuels
- de 1,4 à 3% des débarquements annuels
- plus de 3% des débarquements annuels

Fig.3

* Irlande , Royaume Uni , France

sources:DPMA CEFAS M.I
Analyse:F.B

RENDEMENTS EN CABILLAUD DES NAVIRES FRANCAIS
(MOYENNES DES ANNEES 1998/2003)



MOYENNES MENSUELLES DES CPUE AU 1er TRIMESTRE

MOYENNES MENSUELLES DES CPUE AU 2EME TRIMESTRE

MOYENNES MENSUELLES DES CPUE AU 3EME TRIMESTRE

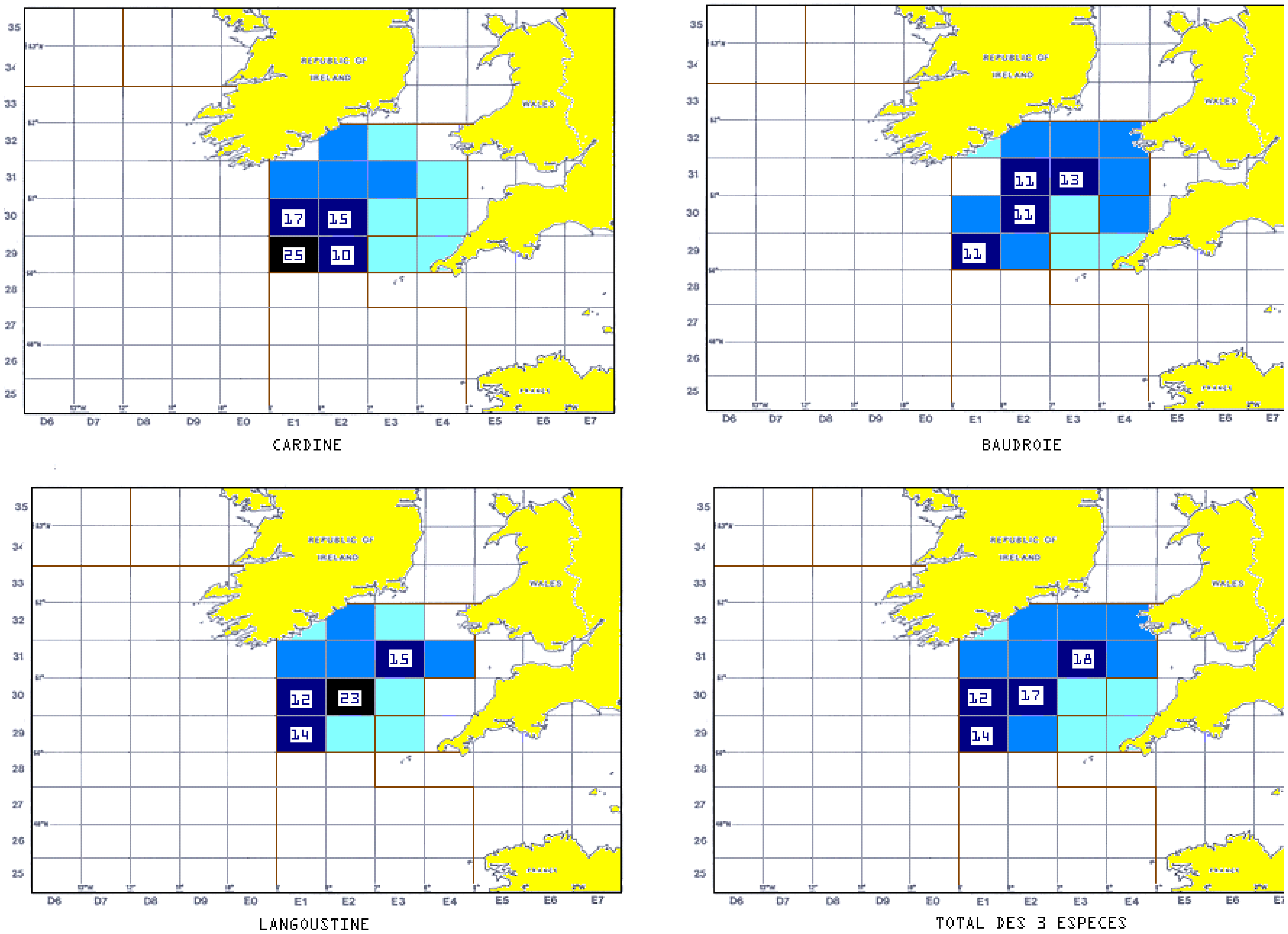
MOYENNES MENSUELLES DES CPUE AU 4EME TRIMESTRE

DE 0 A 1 KG/H
DE 1 A 10 KG/H
DE 10 A 20 KG/H
DE 20 A 30 KG/H
PLUS DE 30 KG/H

Fig.4

Source:DPMA Analyse:Ifremer F.B

PART DE CHAQUE RECTANGLE DANS LES DEBARQUEMENTS FRANCAIS DE BAUDROIE CARDINE ET LANGOUSTINE
PECHES EN ZONE 7F/G AU 1er TRIMESTRE (MOYENNE DES ANNEES 1998 A 2003)



DE 0 A 2 %

DE 2 A 10 %

DE 10 A 20 %

PLUS DE 20%

Fig.5

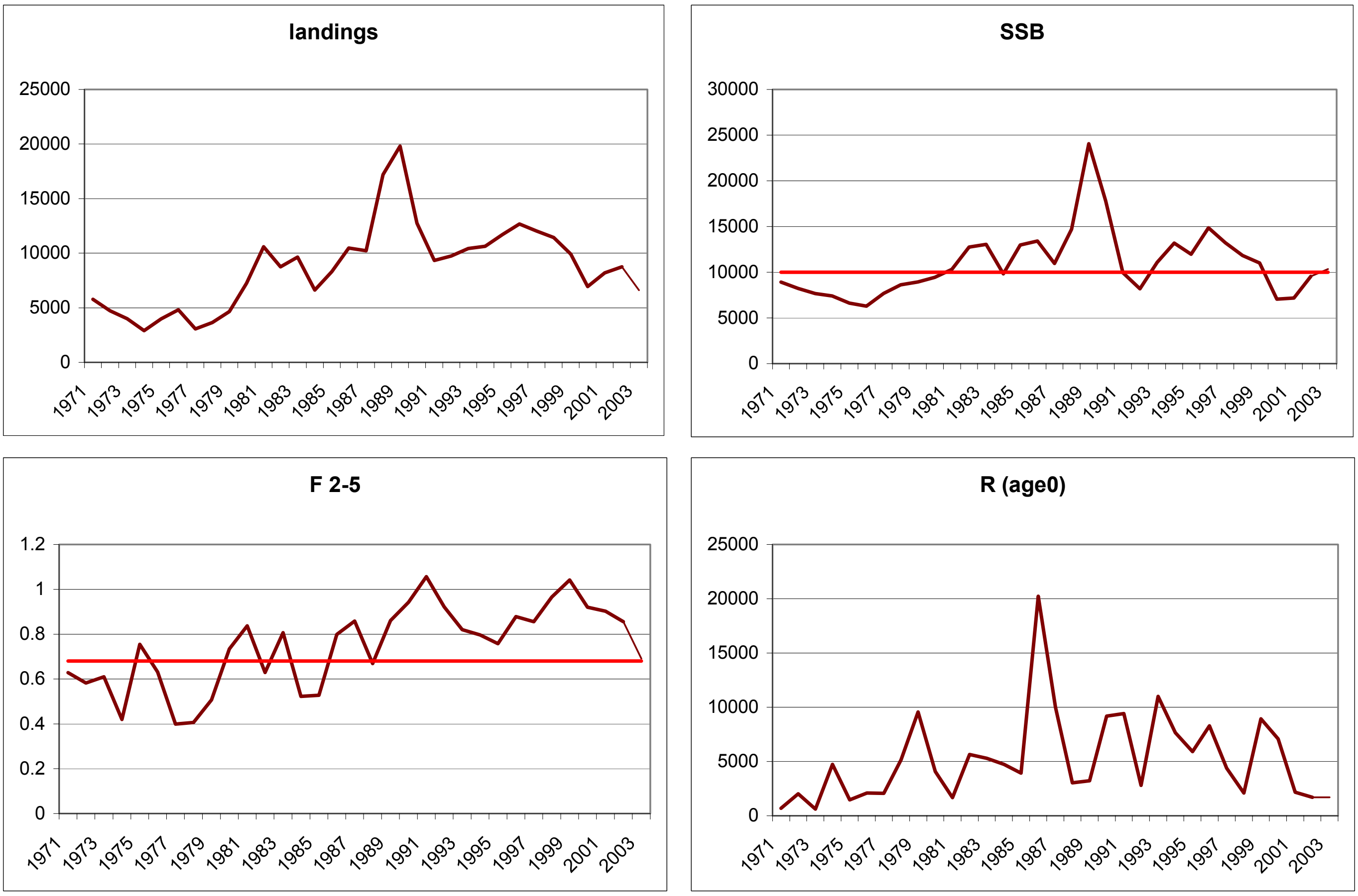
Source:DPMA/ Analyse Ifremer F.B

ANNEXE : Evaluation de la proposition par Ifremer :

L'évaluation du dernier groupe de travail (juin 2004) est incertaine du fait de l'absence de données quantitatives sur les rejets qui, en 2003 ont été très importants sur les petits individus de taille commerciale.

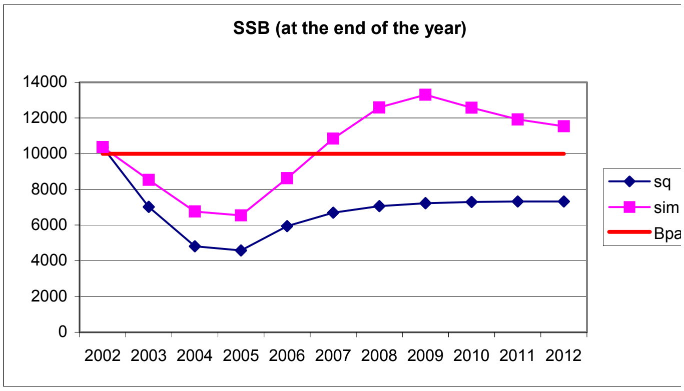
Les travaux de simulations ci-dessous ont donc été basés sur les résultats du diagnostic tel qu'il aurait pu être effectué par le WG2003 si ce dernier avait bénéficié des révisions de la base de données (et notamment des séries de LPUE) effectuées pour le WG2004.

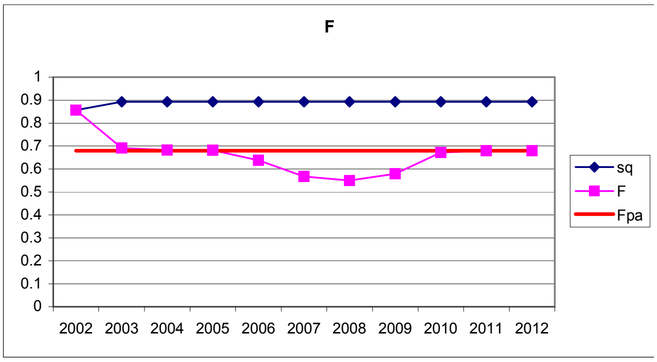
Cod VIIe-k: 2003 assessment using revised and corrected data, 2003 points based on assumptions

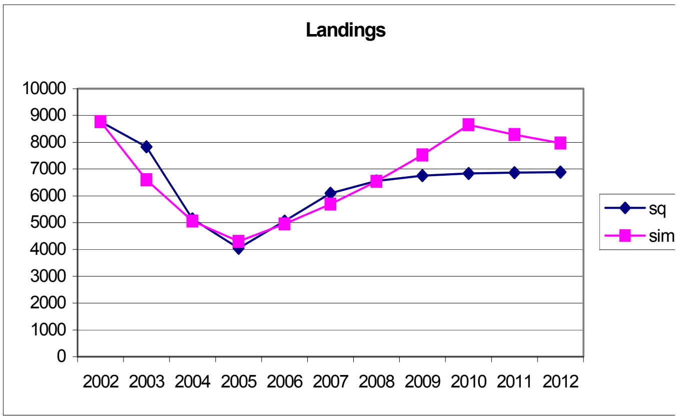


Hypothèses utilisées pour les prévisions,

- le recrutement 2003 (YC2002) est supposé faible et égal à celui estimé pour 2002 (selon les indices sur l'âge 1 fournis au WG2004),
- les recrutements ultérieurs sont supposés égaux à la moyenne géométrique sur l'ensemble de la série,
- les captures 2003 sont supposées être les débarquements estimés en 2003 augmenté de 10% [pour inclure les rejets],
- les captures de 2004 sont supposées être limitées par un TAC VIIe-k de 4600t, soit, en incluant 10% de rejets, des captures de 5060t, ce qui amène F très proche de Fpa.







Le scénario, dont les résultats sont présentés ci-dessus, a pour objectif :

- une augmentation de la biomasse féconde de 30% par an
- des variations de TAC inférieures (ou égales) à 15%
- et le maintien de F en dessous ou à Fpa

L'application de ce scénario à la situation initiale issue du groupe 2003 'révisé' entraîne :

- En 2005, une augmentation de biomasse féconde de 30% impliquerait une réduction des captures de 53%. La contrainte limitant les diminutions de captures à 15% implique une mortalité par pêche à Fpa.
- En 2006, une augmentation de biomasse féconde de 30% permet une augmentation des captures de 17%. La contrainte limitant les augmentations de captures à 15% implique une légère baisse de la mortalité par pêche –6%.
- En 2007, une augmentation de biomasse féconde de 30% permettrait une augmentation des captures de 9%. Bien que cela satisfasse la contrainte sur les variations de TAC, la biomasse féconde à la fin de l'année 2007 serait alors supérieure à Bpa. Plafonner la SSB à Bpa nécessite une légère augmentation de la mortalité par pêche et donc une augmentation de 29% des débarquements. La contrainte limitant les augmentations des captures à 15% s'applique alors et implique une baisse de mortalité par pêche de 11%.
- Dans les années suivantes (et toujours avec l'hypothèse de recrutement constant), l'augmentation des débarquements doit être contrainte, entraînant, jusqu'en 2010 une légère baisse des mortalités par pêche.

Ainsi, en 2005, la mesure proposée et soutenue par l'ensemble de la profession est de nature à atteindre l'objectif fixé par le plan de reconstitution pour cette année là (réduction des captures de 15%). Elle permettrait également de limiter les rejets provoqués par un TAC restrictif qui grève l'efficacité de ce dernier et pénalise gravement (en l'absence de quantification de ces rejets) la qualité des évaluations de ce stock.

13 ANNEX 4 Western Horse Mackerel: EAPO (European Association of Producers Organisations) initiative

STECF welcomes the initiatives proposed by the EAPO (European Association of Producers Organisations) northern pelagic working group (described as annex 3 in STECF terms of reference). Many of the issues raised are of interest and relevance to the assessment and management of horse mackerel. While lacking some of the essential characteristics of a management plan, i.e. clearly defined objectives, targets and time frame, the initiative represents a useful attempt to investigate some critical issues concerning horse mackerel.

STECF notes that the plan is now some two and a half years old and many of the proposed actions may have occurred, however no information on these actions has been passed to STECF.

STECF supports the proposals for improving scientific advice, but the proposed funding mechanisms are unclear. The HOMSIR project (funded by the European Commission) has already addressed the stock structure of western horse mackerel and has suggested changes to the stock boundaries. STECF also considers that work on finding a better assessment techniques and/or management technique should also be encouraged. STECF welcomes the offer of assistance to scientists through collecting samples, using commercial vessels for research and sharing of knowledge with scientists. Further concrete collaborations should be encouraged.

STECF has not received any information on the bycatch study that is mentioned in annex 3. The gear technology project, however, has begun with the pelagic industry collaborating with the Netherlands Institute for Fisheries Research. STECF has no information with which to assess the impact of the proposed closed area in area VIII. Some horse mackerel were caught from the proposed closed area in late 2003. STECF looks forward to receiving the described evaluation of the closed area, but would like information on how the closure will be assessed in terms of the measure's targets and objectives.

It is beyond the competence of STECF at the moment to fully address the issue of conservation bonuses. The impact of such measures as conservation tools should be carefully scrutinised and appraised prior to any agreement to implement them.

Further work on developing a long-term management plan for horse mackerel should be encouraged.