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COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, XX.XX.2008  
SEC(2008)

**COMMISSION STAFF WORKING DOCUMENT**

**28<sup>th</sup> PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND  
ECONOMIC COMMITTEE FOR FISHERIES (PLEN-08-02)**

**PLENARY MEETING**

**7-11 JULY 2008, HELSINKI**

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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## COMMISSION STAFF WORKING DOCUMENT

### 28<sup>th</sup> PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-08-02)

#### PLENARY MEETING

7-11 JULY 2008, HELSINKI

#### 1. INTRODUCTION

STECF met at the University of Helsinki from 7 to 11 July 2008. The Chairman of the STECF, Dr John Casey, opened the plenary session at 14:00h. The terms of reference for the meeting were reviewed and the meeting agenda agreed. The session was managed through alternation of Plenary and working group meetings. Rapporteurs for each item on the agenda were appointed and are identified in the list of participants. The meeting closed at 16:00h on 11 July.

#### 2. LIST OF PARTICIPANTS

Contact details are attached in ANNEX I.

##### Members of the STECF:

Abella, J. Alvaro  
Bailey, Nick (Rapporteur)  
Balguerias, Eduardo  
Cardinale, Massimiliano (Rapporteur)  
Casey, John (Chair, Rapporteur)  
Daures, Fabienne  
Di Natale, Antonio (Vice-chair, rapporteur)  
Dobby, Helen (Rapporteur)  
Döring, Ralf (Rapporteur)  
Figueiredo, Ivone  
Graham, Norman (Rapporteur)  
Gascuel, Didier (Rapporteur)  
Guillen, Jordi  
Gustavsson, Tore  
Hatcher, Aaron  
Kirkegaard, Eskild (Rapporteur)  
Kraak, Sarah  
Kuikka, Sakari (Rapporteur)  
Martin, Paloma  
Parkes, Graeme (Rapporteur)  
Prellezco, Raul (Rapporteur)  
Sabatella, Evelina

Somarakis, Stylianos  
Stransky, Christoph (Rapporteur)  
Vanhee, Willy (Rapporteur)  
Van Oostenbrugge, Hans  
Virtanen, Jarno (Rapporteur)

### **European Commission**

#### **DG- MARITIME AFFAIRS AND FISHERIES (MARE)**

Calvo, Angel  
Daniel, Patrick  
Pertierra, Juan-Pablo

#### **JOINT RESEARCH CENTRE (JRC)**

Dörner, Hendrik  
Folisi, Floriana  
Rätz, Hans-Joachim

#### **Members of the STECF not present:**

The following members of the STECF informed the secretariat that they were not able to attend the meeting:

Andersen, Jesper Levring (Vice-chair)  
Curtis, Hazel  
Polet, Hans  
Van Hoof, Luc

### **3. TERMS OF REFERENCE**

The terms of reference included both issues assessments of STECF working group reports and additional requests submitted to the STECF by the Commission. The two categories are not distinguished below.

#### **3.1. INFORMATION FROM THE COMMISSION, ORGANIZATIONAL MATTERS**

STECF is expected to finalize its work on the draft rules of procedures which will have to be approved by the Commission.

#### **3.2. ASSESSMENT OF STECF WG REPORTS – BIOECONOMIC ISSUES**

##### **3.2.1. Long-term management plan for anchovy in the Bay of Biscay**

**DG Mare focal person:** Juan Pablo Pertierra

STECF is requested to review the report of the SGBRE-08-01 meeting of June 2-6, 2008 (San Sebastian), evaluate the findings and make any appropriate comments and recommendations. The SGBRE working group continued the work already done in parallel to the STECF April 2008 plenary.

#### **Background**

The Commission intends to make a proposal for a long-term management plan for the anchovy based on the following objectives:

1. to ensure the exploitation of the stock at high yields consistent with maximum sustainable yield;
2. to guarantee the stability of the fishery, as far as possible, and with a low risk of stock collapse.

In 1999, the Commission entrusted STECF to produce an extended risk analysis showing, under different multi-annual management strategies, the consequences on the sustainability of the resource expressed in terms of risk of collapse and on the total annual yield. The evaluations included a test of robustness to a wide range of choices in the underlying biological parameters such as stock-recruitment relationships and fleet harvest behaviour models to simulate different responses of the fleet to resource availability.

In November 2007, the Commission has produced non-paper gathering different elements that should be considered and discussed with Member States, the scientific community and the SWW RAC. These should be thoroughly analysed before they are incorporate into the long-term plan.

#### **Terms of References**

1. Having in mind the two basic objectives of the long-term management plan and the work produced in 1999, STECF is requested to provide an updated advice on the strategy to follow.

In case the new knowledge implies significant changes, recommend adaptations as appropriate.

2. Given a possible stock recovery under the long term proposal, for each Member State, what economic impacts (e.g. costs, revenues) can be expected considering the two scenarios described in Commission's non-paper:

- a. strategy with relatively higher TAC levels but higher collapse risks,
- b. strategy with relatively lower TAC levels and less frequent collapse risks.

3. Given a possible stock recovery under the long term proposal, for each Member State, what social impacts (e.g. employment) can be expected considering the two scenarios described in Commission's non-paper:

- a. strategy with relatively higher TAC levels but higher collapse risks,
- b. strategy with relatively lower TAC levels and less frequent collapse risks.

### **3.3. ASSESSMENT OF STECF WG REPORTS – CONSERVATION ISSUES**

#### **3.3.1. Reduction of discarding practises**

**DG Mare focal person:** Lisa Borges

STECF is requested to review the report of the SGMOS-08-01 meeting of June 16-20, 2008 (Ispra), evaluate the findings and make any appropriate comments and recommendations.

#### **Background**

In the follow up of the Commission "Communication on a policy to reduce unwanted by-catch and eliminate discards in European fisheries", the Commission will make concrete legislative proposals in 2008.

In this context the Commission has recently launched a consultation paper describing the approach to be used in the implementation of the communication.  
[http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation\\_250408\\_en.htm](http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation_250408_en.htm)

This approach is based on a fishery by fishery basis, where in each fishery discard reduction targets are set within a fixed period of time. In order to prepare the Impact Assessment that will accompany the legislative proposal, the Commission is asking STECF to:

**Terms of References** of the working group have been:

#### **Fisheries:**

1) evaluate the general approach of the non-paper, ie. based on specific fisheries with annual "maximum allowable unwanted by-catch limit" (MABL) during a fixed period of time: is the definition of the fishery broad or specific enough? Can a set period of time be fixed? Should gradual annual limits be set or should it be done in 2 stages, for example?

2) assess the validity of the MABL for the beam trawls fishing in ICES area IV and VIIId, and *Nephrops* trawlers fishing in area VII: is the initial discard percentage correct? Are the annual MABL percentage targets reachable? In which way (change of fishing grounds, closed areas/seasons, increase mesh size, etc) can the MABL best be reached ?

**MABL for *Nephrops* fisheries in ICES area VII to be reached over 5 years**

Weight	numbers	
Starting point	50%	60%
Year 1	25%	30%
Year 2	25%	30%
Year 3	20%	25%
Year 4	15%	20%
Year 5	10%	15%

**MABL for beam trawlers in ICES area IV and sub-area VIIId to reach over 6 years**

Weight	numbers	
Starting point	70%	80%
Year 1	40%	50%
Year 2	40%	50%
Year 3	35%	40%
Year 4	25%	30%
Year 5	20%	25%
Year 6	15%	20%

**Economics:**

3) assess the economic impact of the progressive reduction of discards in the two fisheries considering the different MABL proposed and the possible scenarios identified in ToR 2) (change of fishing grounds, closed areas/seasons, increase mesh size, etc.).

4) assess the social impact of the progressive reduction of discards in the two fisheries considering the results of ToR 3).

**3.3.2. Assessment of fish resources in the Black Sea**

**DG Mare focal person:** Franco Biagi

STECF is requested to review the report of the Black Sea working group which worked in parallel to the STECF April plenary and SGMED-08-03 of June 9-13 (Barza, Ispra) meetings, evaluate the findings and make any appropriate comments and recommendations.

STECF is requested in particular to advice on 2009 catch limitations for turbot and sprat as well as on any other technical measures that is considered adequate for sustainable exploitation of these stocks

## **Background**

For the year 2008, the European Community adopted catch limitations and associated technical measures for sprat and turbot fisheries in the Black Sea. With a view to update the assessments and catch forecast of the concerned stocks and fisheries in the area an ad-hoc STECF working group on Black Sea was convened.

## **Terms of Reference** of the ad-hoc Black Sea working group

The working group is requested to:

- Evaluate the status and trends of the sprat and turbot stocks with respect to their production potential, reproductive capacity and sustainable levels of exploitation. Provide elements for establishing catch limitations in order to limit the exploitation rates in line with sustainable exploitation of the stocks;
- Up-date the description of EU fisheries exploiting these stocks, in terms of fleets, fishing gears, deployed fishing effort (capacity in N°-GT-kW, activity in days at sea, gear characteristics), catches and catch composition, size composition, discards, fishing grounds and seasonality.
- Determine whether fishing fleets of non-EU countries exploit the same stocks and provide relevant information if available;
- Identify knowledge and monitoring gaps for fisheries, stocks, vital fish habitats and other environmental aspects relevant to fisheries in the area. Suggest monitoring and scientific actions that need to be developed in the short and mid-term to fill these gaps;
- Evaluate the progress made in addressing such gaps since last year;
- Address, in particular, the gaps in data identified in the report produced by the ad-hoc working group in Constantza in 2007;
- Prepare a plan for a joint acoustic survey on the sprat stock in Bulgarian and Romanian waters.
- Review all information on the selectivity of specific mesh sizes for turbot, in relation to MLS, and provide information for a possible harmonization of minimum mesh size and MLS for turbot;
- Identify other important fisheries and stocks that may be in need of specific management measures and analyze whether the scientific basis needs to be further developed;

### 3.3.3. Assessment of effort regime

**DG Mare focal person:** Patrick Daniel

STECF is requested to review the report of the **SGRST-08-01** of June 2-6 (Barza, Ispra) meeting, evaluate the findings and make any appropriate comments and recommendations.

The working group was requested for:

1 – an assessment of fishing effort deployed by fisheries and métiers which are currently affected by fishing effort management schemes defined in Annex II to Regulation (EC) No 40/2008;

2 – an assessment of fishing effort deployed by fisheries and métiers which will be affected by the extension of the cod recovery plan to the Celtic Sea

#### **Terms of Reference:**

1. To provide historical series, as far back in time as possible, according to each of the following fishing areas:

Areas covered by Annex IIA

- a. Kattegat (ICES functional unit IIIaS),
- b. (i) Skagerrak (ICES functional Unit IIIaN), (ii) North Sea (EC waters of ICES sub-area II and ICES sub-area IV), (iii) Eastern channel (ICES division VIIId)
- c. West of Scotland (ICES division VIa)
- d. Irish Sea (ICES division VIIa)

Areas covered by Annex IIB

- e. Atlantic waters of the Iberian Peninsula (ICES divisions VIIIc and IXa, excluding the Gulf of Cadiz)

Areas covered by Annex IIC

- f. Western Channel (ICES division VIIe)

New areas related to the assessment request

- g. Celtic Sea (total of ICES divisions VIIb, VIIc, VIIe, VIIf, VIIg, VIIh, VIIj and VIIk)

The data should also be broken down by

- ✓ Member State ;
- ✓ regulated gear type and by associated special conditions defined in Annex II as far as relevant ;
- ✓ unregulated gear types catching
  - cod in fishing areas a, b(i), b(ii), b(iii), c, d and g;

- sole in fishing areas b(i), b(ii), b(iii) and f;
- plaice in fishing areas b(i), b(ii) and b(iii),
- hake and Norway lobster in fishing area e

for the following parameters:

- a. Fishing effort, measured in kW.days and in GT.days and in number of vessels concerned
- b. Catches (landings and discards provided separately) of
  - ✓ cod, sole and plaice in areas covered by Annex IIA,
  - ✓ hake and Norway lobster in areas covered by Annex IIB,
  - ✓ sole in areas covered by Annex IIC,
  - ✓ cod in the Celtic Sea,

by weight and by numbers at age.

- c. Catches (landings and discards provided separately) of
  - ✓ non-cod , non-sole and non-plaice in areas covered by Annex IIA,
  - ✓ non-hake and non-Norway lobster in areas covered by Annex IIB,
  - ✓ non-sole in areas covered by Annex IIC,
  - ✓ non-cod in the Celtic sea catches (landings and discards)

by species, by weight and by numbers at age

- d. Catch per unit effort (cpue) of
  - ✓ cod, sole and plaice in areas covered by Annex IIA,
  - ✓ hake and Norway lobster in areas covered by Annex IIB,
  - ✓ sole in areas covered by Annex IIC,
  - ✓ cod in the Celtic Sea,

2. Based on the information compiled under point (1) above, to rank gear types, with and without associated special conditions, on the basis of their contribution to catches expressed both in weight and in number of

- ✓ cod, sole and plaice in areas covered by Annex IIA,
- ✓ hake and Norway lobster in areas covered by Annex IIB,
- ✓ sole in areas covered by Annex IIC,
- ✓ cod in the Celtic Sea.

3. If relevant data are available, to comment on the quality of estimations on total catches and discards.

4. To assess the fishing effort and catches (landings and discards) of

- ✓ cod, sole and plaice in areas covered by Annex IIA,
- ✓ hake and Norway lobster in areas covered by Annex IIB,

- ✓ sole in areas covered by Annex IIC,
- ✓ cod in the Celtic sea

and associated species corresponding to vessels of length overall smaller than 10 metres in each fishery, by gear (corresponding to regulated and unregulated gear as defined in Annex II framework) and by Member State according to sampling plans implemented to estimate these parameters.

5. To describe the spatial distribution of the fishing effort deployed both in the Celtic Sea and in the context of Annexes IIA, IIB and IIC to Regulation (EC) No 41/20007, according to data reported in logbooks on the basis of ICES statistical rectangles, with the aim to determine to what extent fishing effort has moved from long distance to coastal areas since the implementation of the days-at-sea regime for the first time in 2003 (Annex XVII to Regulation (EC) No 2341/2002).

6. Based on information compiled under point (1), on assessments done under point (2), (3), (4) and (5) and on the definition of métier adopted on level 6 of the matrix developed by the STECF-SGRN and STECF-SGECA Working Groups, to highlight métiers

- ✓ that are affected by rules defined in fishing effort regimes defined in Annex II for each of the areas a, b(i), b(ii), b(iii), c, d, e and f or
- ✓ that would be affected by a possible extension of the fishing effort (Annexe IIA) related to the cod recovery plan to the Celtic Sea.

In both cases and for each métier which will have been identified, it is requested to specify economic data which are already available or which should be requested to Member States to allow assessment of any change in fishing effort management schemes related to Annex II.

During this process, it is requested that that STECF-SGRST Working Group attempt

- ✓ to classify combinations of grouping of fishing gears and special conditions, as currently define in Annex II, according to the typology suggested by the STECF-SGRN.
- ✓ to notice
  - when aggregations of combinations may be suggested (e.g. when such combinations cover a similar métier)
  - when separation of combinations may be suggested (e.g. when such combinations cover two different métiers, or more).

A follow up meeting of the working group has been scheduled to take place on September 1-5, 2008.

### 3.3.4. Harvest Control Rules (HCRs)

**DG Mare focal person:** Lisa Borges

STECF is requested to review the report of the **SGRST-08-02** of June 9-13 (Lowestoft) meeting, evaluate the findings and make any appropriate comments and recommendations.

## Background:

For those stocks not yet subject to long-term plans, the Commission must propose fishing opportunities that are sustainable inter alia in biological terms (i.e. taking these fishing opportunities does not adversely affect the ability of future generations to meet their own needs).

Following STECF advice in 2007, the Commission seeks advice on the consequences of applying the rules set out in the annexed table.

STECF is requested to evaluate:

- ✓ the likely consequences of the application of such rules, for a typical range of biological stock situations currently encountered in Community waters;
- ✓ the consequences should be evaluated in terms of future yields and future risks to the biological resources;
- ✓ available information concerning the typical economic consequences of applying these decision rules should be provided;

STECF is also invited to provide suggestions for changes to the rules in order to improve long-term yields, reduce costs, and to improve the stability of fishing operations and markets.

	Scientific advice	Action to take in setting TAC
1)	Stock exploited consistently with maximum sustainable yield.	Aim to set the TAC to the forecast catch corresponding to the fishing mortality that will deliver the highest yield in the long term <sup>1</sup> , <b>but</b> do not change the TAC by more than 25%.
2)	Stock overexploited compared to maximum sustainable yield but inside safe biological limits.	Aim to set the TAC to the higher value of (a) to the forecast catch corresponding to taking the highest yield in the long term <sup>1</sup> , or (b) continuing to fish at an unchanged mortality rate, <b>but</b> do not change the TAC by more than 15%.
3)	Stock outside safe biological limits	Aim to set the TAC to the forecast catch that will result in a 30% reduction in fishing mortality rate, <b>but</b> do not decrease the fishing mortality so far as to prejudice long-term yields <sup>1</sup> <b>and</b> do not reduce the TAC by more than 20%.
4)	Stock is subject to long-term plan and scientists advise on the catch that corresponds to the plan.	The TAC must be set by following the relevant plan.

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<sup>1</sup> As measured by the fishing mortality corresponding to a marginal yield of 10% of the marginal yield at fishing mortality close to zero ( $F_{0.1}$ ).

	<b>Scientific advice</b>	<b>Action to take in setting TAC</b>
5)	State of the stock not known precisely and STECF advises on an appropriate catch level.	Aim to set the TAC according to STECF advice <b>but</b> do not change the TAC by more than 15%.
6)	State of the stock not known precisely and STECF advises to reduce fishing effort.	The TAC should be reduced by up to 15% and STECF should be asked to advise on the appropriate level of effort.
7)	State of the stock not known precisely and STECF advises the stock is increasing	The TAC should be increased by up to 15%.
8)	State of the stock not known precisely and STECF advises the stock is decreasing	The TAC should be decreased by up to 15%.
9)	STECF advises a zero catch, a reduction to the lowest possible level or similar advice.	The TAC should be reduced by at least 25%. Recovery measures should be implemented including effort reductions and introduction of more selective fishing gear as appropriate.
10)	There is no STECF advice.	While advice is being developed, TACs should be adjusted towards recent real catch levels but should not be changed by more than 15% per year <b>or</b> relevant Member States should develop an implementation plan to allow advice to be provided within a short time-frame.

### 3.3.5. Review of scientific advice on stocks of Community interest - part 1

**DG Mare main focal person:** Patrick Daniel

STECF is requested to review the report of the SGRST-08-03 of June 30 to July 4 (Helsinki) meeting, evaluate the findings and make any appropriate comments and recommendations.

Advice for the Baltic and Deep Sea stocks were agreed to be discussed at the beginning of the SGRST-08-03 working group meeting and the final STECF opinion should have been provided to the Commission by July 4.

The working group was requested to evaluate and comment as appropriate on the 2008 ICES (ACOM) spring advice for several stocks exploited by European Community fishing fleets. These include the following:

#### **Stocks in**

- **Iceland and East Greenland**

- ICES scientific advices which have been delivered by 09.06.2008
- focal person for those stocks: Juan Pablo Pertierra
- **The Barents Sea and the Norwegian Sea**
  - ICES scientific advices which have been delivered by .09.06.2008
  - focal person for those stocks: Juan Pablo Pertierra
- **Faeroe plateau ecosystem**
  - ICES scientific advices which have been delivered by 09.06.2008
  - focal person for those stocks: Juan Pablo Pertierra
- **Celtic Sea and West of Scotland**
  - ICES scientific advices which would be delivered by .27.06.2008
  - focal person for those stocks: Ken Patterson
- **North Sea**
  - ICES scientific advices which would be delivered by 27.06.2008
  - focal person for those stocks: Peter Hopkins
- **Baltic Sea**
  - ICES scientific advices which have been delivered by 23.05.2008
  - focal person for those stocks: Stefanie Schmidt
- **Bay of Biscay and Iberian Seas**
  - ICES scientific advices which would be delivered by 27.06.2008
  - focal person for those stocks: Ken Patterson or Juan Pablo Pertierra
- **Widely distributed and migratory stocks**
  - ICES scientific advices which have been delivered by 23.05.2008
  - focal person for those stocks: Juan Pablo Pertierra & Jan Lindemann

STECF is also requested to include the evaluation of the reports of any relevant WGs.

### **3.3.6. Mediterranean – Evaluation of SGMED-08-02 and SGMED-08-03 reports**

**DG Mare focal person:** Franco Biagi

STECF is requested to review the reports of the **SGMED 08-02** of April 21-25, 2008 (Athens) and **SGMED-08-03** of June 9-13 (Barza, Ispra) meetings, evaluate the findings and make any appropriate comments and recommendations.

STECF is, in particular, requested to:

- ✓ Evaluate whether the methods used, and the estimated indicators and reference points provided by SGMED are precise, accurate and robust enough to the uncertainties and

if they are adequate to develop precautionary and high yields harvesting strategies and related harvesting control rules.

- ✓ Advice on the status of the exploited stocks with respect to maintaining their reproductive capacity and ensure a low risk of stock collapse
- ✓ Advice whether concerned fisheries exploit the stocks in line with their production potentials so to ensure exploitation consistent with long-term maximum sustainable yields or other yield-based sustainable proxy. Provide possible alternative scenarios in terms of exploitation rates and/or technical measures for short-medium and long term management guidance towards higher fisheries productivity;
- ✓ set up stock-size dependent harvesting strategies and slope-based approaches decision control rules to avoid risk situations for the stocks while ensuring higher fisheries productivity
- ✓ Advice on possible short-term economic consequences of the selected long-term harvesting strategies
- ✓ Evaluate whether the proposed long-term harvesting strategies are compatible with long-term economic profitability (MEY) of the main fisheries exploiting the assessed stocks;
- ✓ If the case, STECF should suggests adjustments and provide guidance on data needs and quality, on methods and on interpretations so that SGMED work can further progress in 2008 and 2009 towards the overall mandate given to STECF focusing its attention, in particular, on the various stocks of the following species: European hake, red mullet, blue whiting, common Pandora, red sea bream, axillary seabream, common sole, horse mackerel, greater forkbeard, poor-cod, sargo brems, picarels, bogue, Sea bass, Anglerfishes, gilthead sea bream, tub gurnard, mackerel, Atlantic bonito, stripe-bellied bonito, frigate mackerel, frigate tuna, common dolphinfish, sardine, anchovy, sprat, deepwater rose shrimp, Norway lobster, red-shrimp, blue-and-red shrimp.

As for 2008, priority should be given to complete the assessments and/or to scrutinise updated overviews for hake, red mullet, deepwater rose shrimp, anchovy and sardine stocks.

STECF should take benefit from assessments carried out or presented at GFCM and ICCAT working groups and scientific meetings of FAO regional projects; at the same time the assessments done within the STECF should be channelled into the relevant GFCM and GFCM/ICCAT joint working groups.

### **Background and STECF overall mandate:**

The European Community is expected to establish long-term management plans (LTMP) for relevant Mediterranean demersal and small pelagic fisheries based on precautionary approach and adaptive management in taking measures designed to protect and conserve living aquatic resources, to provide for their sustainable exploitation and to minimise the impact of fishing activities on marine eco-systems.

The plans shall include conservation reference points such as targets against which measuring the recovery to or the maintenance of stocks within safe biological limits for fisheries exploiting stocks at/or within safe biological limits (e.g. population size and/or long-term

yields and/or fishing mortality rate and/or stability of catches). The management plans shall be drawn up on the basis of the precautionary approach to fisheries management and take account of limit reference points as identified by scientists. The quantitative scientific assessment should provide sufficiently precise and accurate biological and economic indicators and reference points to allow also for an adaptive management of fisheries.

Stating clearly how stocks and fisheries will be assessed and how decision will be taken is fundamental for proper and effective implementation of management plans as well as for transparency and consultations with stakeholders.

Demersal and small pelagic stocks and fisheries in the Mediterranean are evaluated both at national and GFCM level; however these evaluations are often not recurring, are spatially restricted to only some GFCM geographical sub-areas (see attached reference map), covering only partially the overall spatial range where Community fishing fleets and stocks are distributed, and address only few stocks out of several that may be exploited in the same fisheries. Limited attention is also given to technical interactions between different fishing gears exploiting the same stocks.

A limited, although fundamental, scientific contribution of EU fishery scientists to the GFCM assessment process is increasingly affecting the capacity of this regional fisheries management organization to identify harvesting strategies and control rules and to adopt precautionary and adaptive fisheries management measures based on scientific advice.

Anyhow, GFCM and most of the riparian countries consider that management measures to control the exploitation rate and fishing effort, complemented by technical measures, are the most adequate approach for multi-species and multiple-gears Mediterranean fisheries.

Nevertheless, provided that scientific advice underlines to do so, also output measures may be conceivable to manage fisheries particularly for both small pelagic and benthic fish stocks.

Coherence and certain level of harmonization between Community and multilateral framework measures are advisable for effective conservation measures and to enhance responsible management supported by all concerned Parties and stakeholders in the Mediterranean.

STECF can play an important role in focusing greater contributions of European scientists towards stocks and fisheries assessment, in identifying a common scientific framework regarding specific analyses to advise on Community plans and to be then channelled into or completed by the GFCM working groups.

STECF was requested at its November plenary session to set up an operational work-programme for 2008, beginning in the 1st quarter of 2008, with a view to update the status of the main demersal stocks and evaluate the exploitation levels with respect to their biological and economic production potentials and the sustainability of the stock by using both trawl surveys and commercial catch/landing data as collected through the Community Data Collection regulation N° 1543/2000 as well as other scientific information collected at national level.

Within this work-programme STECF is also requested to provide its advice on the status of the main small pelagic stocks and to evaluate the exploitation levels with respect to their biological and economic production potentials and the sustainability of the stock by using both echo and/or DEPM surveys and commercial catch/landing data as collected through the Community Data Collection regulation N° 1543/2000 as well as other scientific information collected at national level.

STECF should take into consideration the data that Member States have been collecting on a regular basis both via monitoring fishing activities and carrying out direct surveys. STECF, in replying at the following terms of reference, should also take into consideration chapter 7 of the 26th STECF Plenary session of 5-9 November 2007, as well as the report of the STECF working group on balance between fishing capacity and fishing opportunities.

STECF shall contribute to identify and setup a advisory framework regarding low risk adaptive management by identifying and using appropriate risk assessment methods in order to understand where we stand with respect to sustainable exploitation of ecologically and economically important stocks and what additional management actions need to be taken.

On the basis of the STECF advice derived at the April 2008 plenary the Commission launched an official data calls to EU Member States requesting submission of data collected under the Community Data Collection regulation N° 1543/2000.

STECF is requested in particular:

- ✓ to advice whether the data availability may allow the development of a precautionary conceptual framework within which develop specific harvesting strategies and decision control rules for an adaptive management of demersal and small pelagic fisheries in the Mediterranean;
- ✓ to set up a conceptual, methodological and operational assessment framework which will allow STECF to carry out in a standardized way both stocks assessment analyses and detailed reviews of assessments done by other scientific bodies in the Mediterranean. The selected assessment methods shall allow estimating indicators for measuring the current status of demersal and small pelagic fisheries and stocks, the sustainability of the exploitation and to measure progress towards higher fishing productivity (MSY or other proxy) with respect to precautionary technical/biological reference points relating to MSY or other yield-based reference points, to low risk of stock collapse and to maintaining the reproductive capacity of the stocks;
- ✓ to set up a conceptual, methodological and operational assessment framework which will allow STECF to identify economic indicators and reference points compatible with economic profitability of the main fisheries while ensuring sustainable exploitation of the stocks in the Mediterranean;
- ✓ to indicate whether age/length-based VPA or statistical catch-at –age/length methods are adequate modelling tools to estimate precautionary indicators and reference points measuring the current status and future development of multispecies/multigears Mediterranean fisheries. STECF shall also provide a conceptual and operational framework to use, if advisable, these methods for demersal and small pelagic Mediterranean fisheries;
- ✓ to identify adequate empirical modelling approaches that are adequate to estimate precautionary indicators and reference points measuring the current status and future development of multispecies/multigears Mediterranean fisheries. STECF shall also provide a conceptual and operational framework to use, if advisable, these methods for demersal and small pelagic Mediterranean fisheries;
- ✓ to identify the decision-making support modelling tools that are adequate for the Mediterranean fisheries and that will produce outputs that support sustainable use of fishery resources recognizing the need for a precautionary framework in the face of

uncertainty and that may allow to provide projections of alternative scenarios for short-medium and long term management guidance;

- ✓ to provide either a qualitative or quantitative understanding of the level of precision and accuracy attached to the estimation of indicators and reference points through the different modelling tools;
- ✓ to identify which decision-making support modelling tools may help in setting up stock-size dependent harvesting strategies and respective decision control rules;
- ✓ to provide information on the data and standardised format needed for each of the decision-making support modelling tool which will be used to launch official data calls under the DCR n° 1543/2000. STECF should also indicate criteria to ensure quality cross- checks of the data received upon the calls.

### **3.4. ASSESSMENT OF STECF WG REPORTS – ECONOMIC ISSUES**

#### **3.4.1. Preparation of the Annual Economic Report (AER)**

**DG Mare focal person:** Angel Calvo

STECF is requested to review the report of the **SCEGA-08-02** of April 21-25 (Copenhagen) meeting, evaluate the findings and make any appropriate comments and recommendations.

The SGECA working group was asked to

- ✓ Prepare national chapters of current economic performance of EU fishing fleets, providing trends and outlooks;
- ✓ Based on national data, prepare regional analyses of economic performance;
- ✓ Analyse the impact of rising fuel prices on economic performance of fleets;
- ✓ Examine trends in fish prices on EU markets.

### **3.5. ASSESSMENT OF STECF WG REPORTS – DATA COLLECTION REGULATION (DCR)**

#### **3.5.1. Review of guidelines for the new DCR**

**DG Mare focal person:** Philippe Moguedet

STECF is requested to review the report of the **SGRN-08-01** of June 2-6 (Nantes) meeting, evaluate the findings and make any appropriate comments and recommendations.

#### **Background**

The Council has recently adopted a proposal for a regulation establishing an EU framework for the collection management and use of data in the fisheries sector and in support for the scientific advice regarding the CFP (Council Regulation (EC) No 199/2008). This new framework has been established taking into consideration the most recent developments in fisheries management such as the fleet-based approach and the ecosystem approach and

taking advantage of the experience gained during the implementation of the current data collection system which is in place since 2001.

Articles 4(4), and 7(1) of Council Regulation (EC) No 199/2008 and Articles 2(2)(a) and 5(2)(a) of the corresponding Commission Regulation, dealing with the submission of the National Programmes and annual reports, are referring to the use of templates and guidelines established by STECF.

In addition, Articles 6(1) and 7(2) of Council Regulation (EC) No 199/2008 state that the evaluation of both National Programmes and annual reports should be carried out by STECF. Therefore, the guidelines and templates should also facilitate SGRN's evaluation of Member States compliance with the DCR.

The purpose of this June Workshop is to establish these templates and guidelines. In this respect, the ones currently in use, and available on the JRC website (<http://fishnet.jrc.it/web/datacollection> -> Documents -> National Programmes / Technical Reports -> Guidelines -> 2006), shall be considered as working reference.

### **Terms of Reference**

- a) Review existing templates and guidelines for the submission of National Programmes and annual (technical) reports.
- b) Establish new guidelines and templates based on Council Regulation (EC) No. 199/2008 and drafts Commission Regulation and Decision; this should include the set up for evaluation criteria by STECF.

## **3.6. ADDITIONAL REQUESTS SUBMITTED TO THE STECF PLENARY BY THE COMMISSION**

### **3.6.1. Mediterranean - National management plans under Council Regulation (EC) No 1967/2006**

**DG Mare focal person:** Franco Biagi

STECF, in line also with points 4.1 and 3.4 of the terms of reference for the November 2007 and April 2008 STECF plenary sessions, is requested to review the national management plans, to evaluate their findings, to make appropriate comments, also with respect to the elements/measures included in the management plan, and to advise whether the plan contains elements that account for the state of the exploited resources, if concerned fisheries are expected to exploit main target stocks in line with their production potentials and if the plan is expected to maintain or to revert fisheries productivity to higher levels and in which time frame.

STECF should also evaluate whether the justifications for possible derogations to the minimum distance are coherent with the technical conditions established in Article 13 (5), (9), (11) and, in particular, if are compatible with sustainable exploitation of exploited stocks, if there is no significant impact on the marine environment and, finally, if the catches of species subject to the minimum size are minimal.

### 3.6.2. Mediterranean - Deep sea fisheries and species

**DG Mare Focal person:** Franco Biagi

STECF is requested:

- ✓ To advice on the depth contour(s) starting from which, the changes in environmental and biological conditions in the Mediterranean, suggest adequate to make a distinction between shallower and deep-sea species/fisheries. STECF is in particular requested to look whether the fisheries/species undertaken/living beyond the shelf-edge, from the epibathial downward, can be categorized as deep sea or if deeper depths shall be considered.
- ✓ To advice whether finfish and shellfish species may have different depth contours to distinguish between deep-sea and shallow-sea species/fisheries.
- ✓ To list deep-sea crustaceans (common and scientific name) as exploited by target or mixed deep-sea fisheries. The main associated fisheries should be listed as well.
- ✓ To list deep-sea finfish (common and scientific name) as exploited by target or mixed deep-sea fisheries. The main associated fisheries should be listed as well.
- ✓ To list deep-sea cephalopods (common and scientific name) exploited by target or mixed deep-sea fisheries. The main associated fisheries should be listed as well.

### 3.6.3. Mediterranean - Length of bottom-set (trammel net, gillnet, combined bottom-set net) and drifting nets on the basis of the volume of stored net

**DG Mare focal person:** Franco Biagi

#### Background

Several technical characteristics can affect the volume of a packed net such as the material, the mesh sizes, the twine thickness, the drop of the net, the number of pieces of nets hung jointly on a single headline, the diameter of headline and footrope, the dimension of the buoys and buoyancy factor, the type and dimensions number of plumbs in the lower rope and the stowage factor just to quote some.

Anyhow, Annex II (a) of Council Regulation (EC) No 1967/2006 envisages the possibility to estimate the length of the bottom-set nets and drifting nets from the weight or volume of its packed mass.

#### Terms of Reference

STECF is requested to collate technical and empirical information to estimate rough length-categories for bottom-set nets and drifting nets on the basis of the weight or of the volume of their mass once stowed on the deck or in the storage baskets.

STECF is requested in particular to provide estimates of weights and/or volume for the following combinations or any other else that STECF consider advisable.

Type of net	Twine	Drop of the net	Length categories (m)
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	diameter (mm)	(m)	<500	500< <1000	<1000 <2500	2500< <4000- 5000	5000< <10000	>10000
Trammel net		2						
		4						
Bottom-set gillnet	<0,5	2						
		4						
		8						
		10						
		20						
		30						
	>0,5	2						
		4						
		8						
		10						
		20						
		30						
Combined bottom-set net								
Driftnets								

### **3.6.4. Mediterranean - Length-weight relationship(s) for the red (blackspot)--sea bream (*Pagellus boagaraveo*)**

**DG Mare focal person:** Franco Biagi

STECF is requested to provide the length-weight relationship(s) with its confidence limits for the red-sea bream (*Pagellus boagaraveo*) both in the Mediterranean and in the southern part of ICES area IXa. STECF shall also provide, if advisable, a LW relationship with confidence limits common for the two areas.

### **3.6.5. Possible impact harmonising mesh size for Northern hake gillnet fisheries in Western Waters**

**DG Mare focal person:** François Th  ret.

Following a request submitted by the NWW-RAC and supported by the Commission, the STECF is requested to provide answer to the following questions:

- ✓ What would be the probable increase in fishing mortality, induced by harmonisation of the rules through a single 100 mm mesh size for gillnet for vessels targeting Northern Hake throughout the distribution area of the stock, be, given the current practices and the current fishing effort in Areas VI, VII and VIII ?
- ✓ Once this assessment is completed, which measures of control of the activity may help to compensate the reduction in mesh size in areas VI and VII?
- ✓ In particular, how such an harmonization of mesh sizes should impact capacity limits or fishing effort ceilings in Northern Hake (gillnet?) fisheries?

The current mesh sizes used, when targeting hake, for gillnets are 120 mm North of 48° N and 100 mm south of 48° N with an exception in areas VIIIc and IX where the mesh size is 80mm.

### **3.6.6. Assessment of by-catch of cetaceans**

**DG Mare focal person:** Rita Santos

STECF is requested to assess the national Member States reports according to Article 7 in Regulation 812/2004.

#### **Background**

Regulation 812/2004 establishes the measures to be carried out by MSs, aiming for the reduction of incidental by-catch of cetaceans in European waters. According to Article 6 in this regulation, MSs have to report, each year, to the Commission on the implementation of Articles 2 to 5. The Commission, after receiving MSs second annual report, has to report to the European Parliament and the Council on the operation of this regulation (Article 7, of the regulation). The report will be based on the assessment done by ICES and STECF of the MSs reports.

### 3.6.7. Review of the status of the Celtic Sea cod stock

**DG Mare focal person:** Ken Patterson

#### **Background**

The Commission has undertaken to review the TAC for cod in Divisions VIIb-k, VIII, IX and X; EC waters of COPACE 34.1.1 according to new scientific advice during 2008.

ICES will present a new advice concerning this stock on 27th. June 2008 including a new assessment and forecast for 2009.

The Commission would like to be informed of the consequences of the new assessment concerning fishing opportunities in 2008.

#### **Terms of Reference**

With the background of the latest ICES advice, STECF is requested to advise the Commission of the fishing possibilities concerning this stock in 2008 according to the usual precautionary criteria.

In addition, and with reference to the Commission's "Policy Statement" Communication concerning the setting of TACs for 2008<sup>2</sup>, STECF is requested to advise

- (a) which "Policy Statement" category is applicable to this stock;
- (c) what TAC results from the application of the relevant "Policy Statement" rule.

### 3.6.8. Large pelagic sharks in the Mediterranean

**DG Mare focal person:** Franco Biagi

The recent scientific paper published on Conservation Biology titled "**Loss of Large Predatory Sharks from the Mediterranean Sea**" addresses the status of large sharks and links the decline of *large predatory fishes to intense fishing in the region*.

STECF is requested to review the paper, to evaluate the findings and to make any appropriate comments and recommendations.

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<sup>2</sup> Communication from the Commission to the Council - Fishing Opportunities for 2008 : Policy Statement from the European Commission. COM/2007/0295 final.

### **3.6.9. Request related to the British proposal for a revision of the methodology used to calculate the TAC for North Sea cod**

Following the request submitted to the Commission by the UK authorities for a STECF opinion on their memo which underlines a possible strategy to reduce discards in fisheries located in the North Sea, the Commission would like to analyse the British proposal for a revision of the methodology used to calculate the TAC of North Sea Cod.

To reach such an analyse, the Commission requests the STECF plenary

- to evaluate fishing possibilities expressed as both limits of catches and limits of fishing effort which could be suggested for 2009 in application of the current Cod Recovery Plan R(CE) No 423/2004.
- to calculate those fishing possibilities if the Commission proposal for a review of the Cod recovery plan was adopted, mainly by taking into account both the new provision defined in Articles 6 & 6a of the draft proposal for setting TACs and data submitted by the UK authorities in their memo.

Due to the short schedule and to the current heavy agenda the STECF plenary has already to deal with during its summer plenary meeting, answer to this question may possibly be delayed. In such a case, the STECF would have to suggest which procedure should be used to answer the Commission question by specifying a possible schedule as well.

## **4. INFORMATION FROM THE COMMISSION – ORGANISATIONAL MATTERS**

### **4.1. Expert reimbursement**

The secretariat reminded the experts that indemnities and travel plus daily allowances are paid on different budget lines by the Commission meaning that experts receive two separate payments for each meeting. These payments are not necessarily done at the same time. The secretariat informed the Committee that forms for reimbursement of experts for the 2008 working groups up to mid/end June 2008 were sent to DG MARE. The timely provision of documents by the experts improved after the introduction of the new rules for reimbursement meaning that experts have 30 days to provide the documents needed. The secretariat reminded that a new functional mailbox has been set up ([stecf-payments@jrc.it](mailto:stecf-payments@jrc.it)) where experts should send any forms to they were unable to provide to the Secretariat during the relevant meeting. This new functional mailbox aims to further increase the efficiency of the Secretariat's administrative work.

## **5. STECF – RULES OF PROCEDURES**

STECF adopted its rules of procedures which will be sent to the Commission for approval.

## **6. BIO-ECONOMIC ISSUES**

### **6.1. Long-term management plan for anchovy in the Bay of Biscay**

#### **Background**

The Commission intends to make a proposal for a long-term management plan for the anchovy based on the following objectives:

1. to ensure the exploitation of the stock at high yields consistent with maximum sustainable yield;
2. to guarantee the stability of the fishery, as far as possible, and with a low risk of stock collapse.

In 1999, the Commission entrusted STECF to produce an extended risk analysis showing, under different multi-annual management strategies, the consequences on the sustainability of the resource expressed in terms of risk of collapse and on the total annual yield. The evaluations included a test of robustness to a wide range of choices in the underlying biological parameters such as stock-recruitment relationships and fleet harvest behaviour models to simulate different responses of the fleet to resource availability.

In November 2007, the Commission has produced non-paper gathering different elements that should be considered and discussed with Member States, the scientific community and the SWW RAC. These should be thoroughly analysed before they are incorporate into the long-term plan.

Accordingly, two STECF Working Groups were convened, one in Hamburg from 14-18 April in parallel to the STECF/PLEN-08-01 meeting and a second in Pasajes from 2-6 June 2008. Both of these meetings addressed the following terms of reference.

#### **Terms of References**

1. Having in mind the two basic objectives of the long-term management plan and the work produced in 1999, STECF is requested to provide an updated advice on the strategy to follow.

In case the new knowledge implies significant changes, recommend adaptations as appropriate.

2. Given a possible stock recovery under the long term proposal, for each Member State, what economic impacts (e.g. costs, revenues) can be expected considering the two scenarios described in Commission's non-paper:

- a. strategy with relatively higher TAC levels but higher collapse risks,
- b. strategy with relatively lower TAC levels and less frequent collapse risks.

3. Given a possible stock recovery under the long term proposal, for each Member State, what social impacts (e.g. employment) can be expected considering the two scenarios described in Commission's non-paper:

- a. strategy with relatively higher TAC levels but higher collapse risks,

- b. strategy with relatively lower TAC levels and less frequent collapse risks.

Additionally to these terms of reference some additional terms of reference were set to this second meeting.

1. Perform the economic and social analyses on the basis of revised data which will include new data from France;
2. Perform the economic and social analyses taking into account the biological uncertainty as resulting from the stochastic 10-year projections of the stock and fishery;
3. Examine the sensitivity of the results from the HCR evaluation to alternative operating models.

### **STECF Observations**

The report of the SGBRE-08-01 Working Group was reviewed by STECF during its Plenary Meeting of 07-11 July in Helsinki.

The working group evaluated the impact of three different harvest control rules (HCR) by simulation, regarding the sustainability of the stock, catches, economic balance and social impact.

Three different HCR were simulated. The first rule (Rule A) is based on catching a constant proportion ( $\gamma$  values) above an escapement Biomass (SSB) level. The second rule (Rule B) is based on catching a constant proportion ( $\gamma$  values) of the SSB. Thirdly a rule (Rule C) based on a constant short-term risk of 15% for low recruitment.

The performance of each rule was tested for  $\gamma$  values between 0 and 1 by steps of 0.1.

For each of the strategies outlined, the HCR with and without a ceiling equal to 33,000 tonnes, (the historically fixed level of TAC set to this fishery) and, with and without a minimum TAC as corresponding to the smallest catch that allows the fishery to remain economically viable (at 7,000 tonnes, as pointed out by the SWW RAC), were constructed.

In the fishery model, the simulation was performed using two operating models: an age-structured and a two-stage biomass fishery model.

The model was conditioned on the results from the stock assessment corresponding to ICES advice 2007. An age-structured model used for verification, is based on a seasonal multi-fleet integrated catch at age assessment as the one used in ICES 2005. This model was updated up to 2007 in order to provide starting conditions for the current simulations.

Catches were allocated to countries on a half-year basis. The allocation was based on the mean fraction of the catch taken by each Country during the period 1992-2004 (constant allocation). However, some other possible allocations were tested, 90% (Sp)-10% (Fr) to 60% (Sp)-40% (Fr). Furthermore a likely projection of the allocation of catches to countries is the draft under discussion at the pelagic committee of the Southern RAC (variable allocation relative to the TAC level).

The socio-economic impact was evaluated by means of algorithms developed during the meeting. It performs a stochastic socio-economic analysis considering the biological outcome

as an input. It is based on estimations of production functions for anchovy by semester and by fleet, considering the SSB of anchovy, the number of vessels in the fishery of anchovy and the time devoted to it. A production function for the rest of target species was also estimated, in this case without considering any SSB.

A price function for anchovy, based on French and Spanish data is also estimated. Price for other species was considered as fixed.

The economic model was conditioned on the data provided by IEO & AZTI's CAFE Project database (EU contract no 022644) for the Spanish fleets was used, and DPMA-Ifremer data for the French fleets. The time series goes from 2000-2005, and 2000-2006, respectively.

The indicators presented are:

- Biological risk measured in terms of number of the likelihood of SSB being below Blim
- The number of years in which the fishery should be closed.
- The total expected catch of anchovy.
- The variation of this catch.
- The Gross revenue obtained from anchovy (discounted 5%) for each fleet.
- Gross Cash Flow (discounted 5%) for each fleet.
- Economic risk as the likelihood of having a negative cash flow.
- A social indicator as the relative wage to the average of the country by FTE.

The report presents tables including the values obtained for all these indicators as well as a summary of the main findings and limitations. Tables showing the results of the various harvest strategies investigated are given in Tables 3.1.1.1 , 3.1.1.2, 3.1.1.2.1, 3.1.1.2.2, 3.1.3.1 of the SGBRE-08-01 Working Group report..

### **STECF conclusions and recommendations**

STECF endorses the approach and findings presented in the report of the SGBRE-08-01 Working groups and draws the following conclusions:

1. The higher the exploitation rate the higher the catch, its variability, the associated biological risk and the discounted gross revenue.
2. The overall discounted cash flow is maximized for low harvest rates but this may be a consequence of the “optimistic” expected availability of other species and the assumption of a constant price. This could be also the reason for the relative low sensitivity to the allocation between member states.
3. Setting a maximum TAC of 33.000 tonnes reduces maximum attainable catch and decreases inter-annual variability in TACs and also reduces the associated biological risks. Furthermore, the economic risk is lower when a maximum is set.
4. Setting a minimum TAC of 7.000 tonnes does not alter mean catch or associated biological risk but increases the probability of closures.
5. For equivalent levels of biological risk, expected catches are higher for the options where there is no upper TAC constraint.
6. Both rules A & B imply similar biological risk at equal mean annual catch. However, Rule B may result in more stability in TACs.
7. The social indicator reflects the relationship between the average wage of the member state and those obtained by the fleets. STECF stresses that this indicator social only

takes into consideration employment of on-board crew and in fact, only reflects the social consequences of a scenario that assumes a constant number of vessels.

8. The anchovy processing industry is asking for a well-supplied market (high TAC) and low prices. In that sense low TACs create a risk to the fleets of losing their buyers. But high TACs also increase the risk of closing the fishery, and discontinuity in the supply could also result in the processing industry turning to other markets. The latter effect therefore provides a driver for TACs that give a low probability of closure. A survey to estimate recruitment strength takes place every autumn. If it can be demonstrated that the survey provides a reliable index of incoming recruitment, HCRs that make use of the index could be developed. A further evaluation process, which would include simulation testing, would then be required.
9. Results are insensitive to the choice of either the Ricker or the Quadratic Hockey stick stock and recruitment models, however. However, the results are highly sensitive to persistent low recruitment. Under such a scenario, the average catch would be less than 10,000 t while the associated biological risk will be higher than 10% for all HCRs investigated.
10. The economic data collected under the current DCR (even if it had been available), is not appropriate for conditioning the model used.

The model assumption that the total TAC will always be caught is probably unrealistic. It would be more appropriate to take into account the economic incentives for vessels to re-allocate effort between species. However, to solve this, a full feedback bioeconomic model, which takes into account the economic behaviour of vessels and the biological consequences is required. STECF notes that at present, such a model is unavailable.

## **7. CONSERVATION ISSUES**

### **7.1. Reduction of discarding practises**

#### **Background**

In the follow up of the Commission "Communication on a policy to reduce unwanted by-catch and eliminate discards in European fisheries", the Commission will make concrete legislative proposals in 2008.

In this context the Commission has recently launched a consultation paper describing the approach to be used in the implementation of the communication. [http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation\\_250408\\_en.htm](http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation_250408_en.htm)

This approach is based on a fishery by fishery basis, where in each fishery discard reduction targets are set within a fixed period of time. In order to prepare the Impact Assessment that will accompany the legislative proposal, the Commission is asking STECF to:

#### **Terms of References of the working group have been:**

##### ***Fisheries:***

- 1) evaluate the general approach of the non-paper, ie. based on specific fisheries with annual "maximum allowable unwanted by-catch limit" (MABL) during a fixed period of time: is the definition of the fishery broad or specific enough? Can a set period of time be fixed? Should gradual annual limits be set or should it be done in 2 stages, for example ?

2) assess the validity of the MABL for the beam trawls fishing in ICES area IV and VIId, and *Nephrops* trawlers fishing in area VII: is the initial discard percentage correct? Are the annual MABL percentage targets reachable? In which way (change of fishing grounds, closed areas/seasons, increase mesh size, etc) can the MABL best be reached?

**MABL for *Nephrops* fisheries in ICES area VII to be reached over 5 years**

	Weight	numbers
Starting point	50%	60%
Year 1	25%	30%
Year 2	25%	30%
Year 3	20%	25%
Year 4	15%	20%
Year 5	10%	15%

**MABL for beam trawlers in ICES area IV and sub-area VIId to reach over 6 years**

	Weight	numbers
Starting point	70%	80%
Year 1	40%	50%
Year 2	40%	50%
Year 3	35%	40%
Year 4	25%	30%
Year 5	20%	25%
Year 6	15%	20%

***Economics:***

3) assess the economic impact of the progressive reduction of discards in the two fisheries considering the different MABL proposed and the possible scenarios identified in ToR 2) (change of fishing grounds, closed areas/seasons, increase mesh size, etc.).

4) assess the social impact of the progressive reduction of discards in the two fisheries considering the results of ToR 3).

**STECF comments and conclusions**

**STECF observations**

STECF reviewed the report of the SGMOS-08-01 Working Group on discards, noting that a considerable amount of information had been compiled in the short time available. STECF considers that SGMOS-08-01 adequately addressed most of the terms of reference. STECF notes however, that the sub-group did not explore fully all possible mechanisms to reduce discarding, in particular development of new markets for species or size classes currently discarded and adjustments to management systems to reduce discarding associated with legislative conflicts e.g. over quota discards or discarding fish below minimum landing size.

STECF notes that fishers discard part of their catch for a variety of reasons, either for market/economic considerations or to comply with regulations. Lack of marketing opportunities, limits on the capacity of vessels to retain fish onboard, quality considerations, or large price differentials between or within species (highgrading) all induce discarding. It is noted that the management framework can have a strong influence on discard rates. Fisheries that are managed extensively by output controls such as total allowable catch (TAC) and catch composition regulations are often characterized by high discard rates. For any given catch, fishermen will always have an incentive to discard any fish for which the economic costs of retaining, landing and selling the fish exceeds the expected market price. STECF notes that tackling the discard problem in a specific fishery therefore requires an understanding of the incentives to discard in that fishery.

STECF considers that in order to reduce discarding in European fisheries, a range of approaches may be needed depending on the cause of discarding and that this may require adaptation to existing management systems and development of market opportunities for species or size classes that are currently being discarded. STECF also recognises that discarding rates can be reduced through the adoption of more selective fishing techniques and support is available through the EFF. It may therefore be appropriate to create economic incentives for fishermen to change their fishing behaviour and/or to employ more selective gear in order to reduce discards. However, measures to reduce discards may result in reductions in landings and short term losses of revenues, and may act as a disincentive to adopt such measures.

STECF is broadly supportive of the overall approach suggested in the Commission consultation paper and notes that currently, costs and consequences associated with discarding are largely external to the business. Providing targets and associated periods for compliance internalizes these costs and provides incentives to reduce discards. However, successful outcomes are concurrent on a number of issues associated with policy implementation which are considered in detail in the report. STECF further notes that one consequence is that individual businesses or fleet segments could achieve a commercial advantage over others by failing to reduce their discards and mechanisms should therefore be introduced to minimise this.

STECF endorses the methodology used for the economic analysis of the beam trawl fisheries in IV and VIId and the *Nephrops* fisheries in area VII. However, due to absence of data disaggregated at the métier level and strong assumptions made (e.g. constant TAC uptake ratio for all species), the results can only be regarded as indicative. In an optional follow up WG such data should preferably be used and the assumptions should be reviewed. Notwithstanding, STECF notes that the Beam trawl fleets engaged in the area IV and VIId flatfish fisheries are currently unprofitable because of high fuel costs. While the situation is not as severe for Irish and UK fleets operating in area VII *Nephrops* fishery, many fleet segments are only marginally profitable. Further reductions in fishing opportunities that may be associated with the discard policy will worsen the economic situation.

STECF notes that individual métiers within the two general fisheries definitions are likely to have different economic situations and differing discard patterns although the aggregation of the available data precluded any métier-specific analysis. For the effective monitoring and remedial intervention and to assess the economic consequences, data monitoring should be done at a métier level.

STECF notes that the baseline measurements for both fleets are based on data collected under programmes that are not designed to provide precise data on discard rates across aggregated fisheries and typically only cover <1% of the total effort. Therefore these are likely to be imprecisely estimated and should be reviewed in light of new data becoming available.

STECF considers that the first level of reductions (all species combined) identified in the consultation document is in principle achievable with existing technical methods. However, additional approaches are necessary in order to mitigate the negative economic consequences.

STECF further notes that achieving the proposed reductions for individual indicator species (i.e. plaice and *Nephrops*) are likely to be more problematic and have a greater economic impact if they are to be achieved.

STECF is not in a position, to determine with any degree of certainty, if the longer term targets (e.g. > 3 years) set out in the consultation paper are practically achievable or economically viable.

STECF notes that the discarding of benthos has not been considered as a target in the subgroup report. STECF notes that the discarding of benthos may be considered a practice whose reduction may be desirable because of its ecosystem effects and other adverse effects and should therefore be included as a measurable element of discard reduction targets.

STECF notes that methodologies for reducing discards will take time to develop and test. The development and implementation phase should allow sufficient time for various methods of reducing discards to be investigated and a subsequent period allowed for assessing the reduction in discard levels realised. For the fisheries studied by the Working Group, the development and implementation phase is likely to take of the order of two years. Once effective approaches have been developed and implemented, a monitoring phase should follow, during which the achievable discard reduction would be measured. STECF notes that it is important that the monitoring phase is sufficiently long to allow for seasonal fluctuations and considers that one year is the minimum period necessary to quantify target reduction levels. This same reference period should be used subsequently in the measurement of discard rates in the fishery for the purposes of monitoring the achievement of agreed target levels.

The sub-group recommends that a standardized sampling strategy and raising procedures be adopted across all member states engaged in the same fisheries to ensure data compatibility. However, STECF considers that member states should be able to propose individual sampling strategies tailored to their individual needs and these should be agreed and coordinated on a regional level by appropriate authorities. STECF recognizes the need to ensure that discard policy monitoring programmes do not adversely impact on current sampling programmes conducted under the auspices of the Data Collection Regulation.

STECF concludes that rather than using discard rates as a metric to determine whether policy targets have been achieved, reductions in absolute levels at a métier level should be used, as rates can obscure and underestimate significant reductions in discard levels and do not offer indications of the impact on non-commercial species. STECF comments that in the case of

individual species for which analytical stock assessments exist, a metric that is relative to abundance (at age) can be used, i.e. the annual estimates of discard-F. For example, in the case of North Sea plaice, discard-F-at age is estimated annually in the stock assessment.

STECF considers that target levels should be based on numbers rather than weights discarded, as this will provide the best measure of overall conservation benefits and avoid potential conflict between the two metrics.

STECF considers that the policy objectives would be most effectively served and measured by the adoption of a monitoring programme that monitors the discard levels aggregated across agreed species. STECF considers that for some species such as those subject to recovery plans species-specific target reductions should be agreed and implemented.

STECF notes that, from an economic standpoint, the costs attributable to by-catch and discarding are currently external to the fishing business, representing costs to society (lower long-term gains, unwanted by-catch of species valuable to people, willingness to pay for protection, etc.). Setting targets to reduce discards as proposed in the consultation paper, results in an attempt to internalise these costs to fishing businesses. Internalising external costs will lead to an increase in the operational costs of the fishing business that are not easy to compensate in the short term, due to fishers' status as "price takers" (i.e. they can not directly influence fish prices).

STECF suggests that introduction of a variety of incentives to reduce discards should be considered. Reduction of internal costs by rewarding fishermen for ecological services by avoiding by-catch may be a good instrument to compensate for any additional costs, at least for a transitional period. In the long run, fishermen should be able to compensate for such costs if they benefit from higher profitability owing to the recovery of stocks. If external effects are relatively small, they may be able to adjust their cost and earnings structure to stay profitable through the use new technical measures or marketing instruments (special products, eco-labelling etc.).

STECF suggests using the instruments of Axis III of the European Fisheries Fund to develop pilot projects or new management tools to reward fishermen for a transitional period. STECF notes that this is systematically not a subsidy but a reward for a service to society which should also only cover costs for a specified period. STECF suggests using the instruments of Axis III of the European Fisheries Fund to develop pilot projects or new management tools to cover costs for a transitional period. STECF notes that this is systematically not a subsidy but a reward for a service to society, which should also only cover costs for a specified period. In the long run avoiding discards may result in higher revenues in some fisheries. In the *Nephrops* fishery in VII avoiding bycatch and discarding of small hake may increase catch possibilities in the gill net fishery for hake. If such obvious links exists between reducing external costs in one fleet segment which result in an increase in revenues in another segment a partial cost recovery for governments may be possible.

## **STECF Conclusions and Recommendations**

STECF concludes that to assess the impact of the policy it is necessary that discard data be collected at a metier level and with appropriate data for raising metrics to determine the absolute changes in discard levels. Also economic data should be collected on a metier level.

STECF concludes that a group should be set up to evaluate member states' proposals for monitoring and data raising methodologies at appropriate metier levels.

STECF concludes that a mid-term review should be conducted to assess the initial success of the policy and propose changes to targets in light of new information if necessary.

STECF concludes that the industry needs to be provided with timely, periodic data from monitoring programmes to determine how effective their measures are in achieving the goals so that they have sufficient temporal scope to adapt if further adjustments are required.

STECF suggests that a system of a variety of incentives to reduce discarding be introduced. In the consultation paper sanctions for non-compliance with the overall targets are already discussed. Additional programs to support fishermen during the transition period to practices with lower external costs may substantially increase the probability of success.

STECF further concludes that there is very limited knowledge on the specific costs of discard reduction measures. STECF suggests that MS should collect data on these costs in the ongoing pilot studies. Such costs include inter alia, costs for storage requirements for bycatch not currently landed, costs in time associated with sorting the catch, any compulsory or voluntary technical changes and associated costs, costs of steaming time to fishing grounds etc. With these additional data, it may be possible to calculate any changes in cost structure by adopting particular discard reduction measures and offering appropriate rewards for ecological services through pilot programmes conducted under the EFF.

## **7.2. Assessment of fish resources in the Black Sea**

STECF is requested to review the report of the Black Sea working group which worked in parallel to the STECF April plenary and SGMED-08-03 of June 9-13 (Barza, Ispra) meetings, evaluate the findings and make any appropriate comments and recommendations.

STECF is requested in particular to advice on 2009 catch limitations for turbot and sprat as well as on any other technical measures that is considered adequate for sustainable exploitation of these stocks.

### **Background**

For the year 2008, the European Community adopted catch limitations and associated technical measures for sprat and turbot fisheries in the Black Sea. With a view to update the assessments and catch forecast of the concerned stocks and fisheries in the area an ad-hoc STECF working group on Black Sea was convened.

### **Terms of Reference** of the ad-hoc Black Sea working group

The working group is requested to:

- Evaluate the status and trends of the sprat and turbot stocks with respect to their production potential, reproductive capacity and sustainable levels of exploitation.

Provide elements for establishing catch limitations in order to limit the exploitation rates in line with sustainable exploitation of the stocks;

- Up-date the description of EU fisheries exploiting these stocks, in terms of fleets, fishing gears, deployed fishing effort (capacity in N<sup>o</sup>-GT-kW, activity in days at sea, gear characteristics), catches and catch composition, size composition, discards, fishing grounds and seasonality.
- Determine whether fishing fleets of non-EU countries exploit the same stocks and provide relevant information if available;
- Identify knowledge and monitoring gaps for fisheries, stocks, vital fish habitats and other environmental aspects relevant to fisheries in the area. Suggest monitoring and scientific actions that need to be developed in the short and mid-term to fill these gaps;
- Evaluate the progress made in addressing such gaps since last year;
- Address, in particular, the gaps in data identified in the report produced by the ad-hoc working group in Constantza in 2007;
- Prepare a plan for a joint acoustic survey on the sprat stock in Bulgarian and Romanian waters.
- Review all information on the selectivity of specific mesh sizes for turbot, in relation to MLS, and provide information for a possible harmonization of minimum mesh size and MLS for turbot;
- Identify other important fisheries and stocks that may be in need of specific management measures and analyze whether the scientific basis needs to be further developed.

The Terms of Reference for the Sub-Group on the Black Sea were extensive. During the SGMOS-08-03 meeting in Ispra 2008, the WG made very good progress in continuing the work of the Hamburg meeting by assembling and reviewing the available data, and compiling data in operational format for application of integrated stock assessment models (ICA and XSA).

The WG performed initial runs with the stock assessment models (ICA and XSA). Although initial results are very preliminary, and at this stage cannot be used for assessing the stocks' state and dynamics, they represent a necessary background for further assessment refinement, which will hopefully bring stable results and improved model diagnostics.

Having said that, the WG will further need more time and resources to complete the historical assessments of sprat and turbot, which especially for turbot could be quite complicated, because the large uncertainties in catches, age composition and abundance indices.

### **Sprat**

The WG found the state of catch and age data for sprat stock assessment acceptable.

CPUE indices for sprat were available for the Ukrainian and Bulgarian commercial fleets only. These data seem to reflect the relative dynamics of the stock, but the WG suggests that

research survey indices are required to give a fishery-independent estimate of relative abundance which is desirable to calibrate the assessment.

A juvenile survey for sprat has been undertaken by Romania for several years (and previously by Ukraine), but there is a need to extend it into Bulgarian waters at least to give a more representative coverage of the distributional area of the stock. This index is very important for estimating the strength of recruitment in the current year and should be given high priority in planning future sampling programmes. The acoustic survey, which is expected to start in Bulgarian waters, will hopefully provide a reliable index of biomass.

From the analyses of relative trends in data, indices and preliminary assessment results, it appears that during early 2000s the sprat stock has recovered from the low state of the early 1990s and seems to have a maximum for the observed time series in 2000-2003. The present biomass (2006) is possibly lower, but because of the relatively low level of exploitation, the stock does not seem to be threatened by overfishing,

### **Turbot**

Catch data of turbot are very problematic. Official landings from different countries show diverging trends that can be due to various causes including misreporting. The WG noted that more information on how catches are reported needs to be provided to allow plausible interpretation of the variable dynamics of catches.

Both CPUE from commercial catches and swept area biomass estimates from research surveys were available to the WG, but most of them, unfortunately, do not show consistent trends and are difficult to interpret. This brings into question their utility tuning of assessment models. Further attempt will be made to choose the best data and models for assessment.

Given that that turbot fisheries and survey information gives conflicting signals, a cross-examination of different sources is needed to find out which part of the information is more reliable and can be used. Future assessments for turbot in the Black Sea should focus more on standardized biomass surveys and improved catch reporting.

Because of the conflicting results produced with different assessment model configurations, it is impossible at this stage, to have confidence in the absolute biomass estimates or stock trends in the most recent years. However, research survey indices indicate that the stock has improved since the collapse in the 1990s (at least in Bulgarian and Romanian waters).

### **Ecosystem considerations**

The WG discussed some ecosystem considerations that apply to the state and dynamics of the fish stocks in the Black Sea. It appears that the distribution and behaviour of sprat on the north-western shelf and especially in Romanian waters varies to a great extent depending on environmental conditions. Sprat schools tend to be negatively affected by jellyfish swarms. Previous studies have found that the stock dynamics of sprat is related to climate fluctuations, trophic interactions and other environmental factors. Predators such as bonito in the pelagic system, and Rapa whelk (*Rapana thomasiana*) in the benthic system apparently have significant effects on abundance and behaviour of their prey populations, and may also have an indirect influence through trophic cascades at the ecosystem level.

## **Assessment of other Black Sea stocks**

The question of assessing other stock in the Black Sea was discussed throughout the meeting. The WG recognised the need to undertake assessments of other important species such as anchovy, horse mackerel, bonito, and Rapa whelk. However, the WG considered that at present it does not have the capability to undertake assessments for all of these species simultaneously, and there is a need to refine and complete the ongoing assessments of sprat and turbot.

## **Black Sea Working Group suggestions from SGMED-08-03**

During the Black Sea sub-group meeting, a number of recommendations were made:

- The Working Group needs to build capacity in quantitative stock assessment. Therefore, SGMED-08-03 considers that a population dynamics and stock assessment training course be arranged.
- SGMED-08-03 considers that in future, a cross-examination of the sprat fisheries information (catches, effort and CPUE) would greatly improve the reliability of input data.
- SGMED-08-03 considers that and encourages the undertaking of acoustic and juvenile research surveys covering the areas of the main stock distribution.
- Given the available information, SGMED-08-03 consider that the catch of sprat in Bulgarian and Romanian waters is kept below 15 000t.
- Given the available information, SGMED-08-03 consider that the exploitation level of turbot in Bulgarian and Romanian waters be kept below the current TAC of 100t.
- Noting the influence of environment and species-interactions on stock biomass levels, SGMED-08-03 consider that in future, environmental influences and ecosystem interactions need to be taken into consideration when suggesting reference levels for the fisheries and designing management procedures.
- The WG recognised the need to undertake assessments of other important species such as anchovy, horse mackerel, bonito, and Rapa whelk. However, the WG considered that at present it does not have the capability to undertake assessments for all of these species simultaneously, and there is a need to refine and complete the ongoing assessments of sprat and turbot.

## **STECF COMMENTS AND CONCLUSIONS**

1. STEFC recognise that SGMED framework has represented an excellent forum to support stock assessment and advice within the region. While the work performed at SGMED-08-03 did not complete the extensive terms of reference set for the meeting, it has built the foundations upon which further work can be successfully undertaken. Further refining of the assessment models and their parameterisation should be continued in the next SGMED meetings.
2. STEFC recognises that an extensive number of assessment areas were to be covered in less than five working days (38 stocks to be assessed according to the TORs). In the light of time and man power limitations, SGMED-08-03 has focused on 3 species (hake, red mullet and pink shrimp). In any case, assessment has been performed for 13 different stocks (including the Black Sea stocks).

3. STEFC recognise that assessments performed during the meeting were considered preliminary and that more time will be required during SGMED-08-04 in order to continue with these demersal assessments and give an evaluation of the stock status.
4. The use of survey data was suggested as a tuning index, as well as for direct use in assessment approaches such as SURBA. Changes in the design and execution of surveys were noted over time. STEFC suggested that the data be standardised over time using GLMs or GAMs to take account of these changes and agrees with the approach taken by SGMED-08-03.
5. STECF stressed that there is a need to:
  - ✓ compare stock assessment results to potential maximum production levels (e.g. MSY or appropriate proxy values both in terms of F and spawning biomass).
  - ✓ make comparable analyses of the status of the stocks between the different GSA, within the Mediterranean and the Black Sea. In that context, VIT might constitute a common method to describe the current situation in terms of F and biomass using data collected within DCR.
6. STECF also recommends that estimates of F and biomass as obtained from VIT should be combined with estimates of  $F_{msy}$  derived from YPR analysis and virgin biomass to produce simple proxy of the status of the exploitation and of the stock as  $F_{sq}/F_{msy}$  and  $B_{sq}/B_{virgin}$ . This is particular important in the light of the shortness of most of the time series used by SGMED.
7. STECF consider also that trends in SSB or biomass obtained from time series shorter than 15-20 years should not be used to define the status of the stock. Stability in biomass in the short term does not automatically imply that the stock is not overexploited. With exploitation having started more than a century ago, such extrapolations are running the serious risk of “shifting the baseline syndrome” and should be avoided.
8. In light of the above observation and since most of the time series used in the SGMED are shorter than 10 years, STECF recommended that that effort is made for collating historical information on biological descriptors of the stock as  $L_{max}$  or standardized CPUE from surveys or other sources that can be compared with current CPUE estimates.
9. STECF consider that exploration and comparisons of the results between different assessment methods is advisable and it should be continued. However, after benchmark analysis has been performed, effort should be made to establish the “stock specific ad hoc assessment method” that should be used in the future to evaluate the stock status and allow for “update” assessment.

10. The Black Sea Working Group needs to build capacity in quantitative stock assessment and welcomes the Commissions initiative in planning for a stock assessment training course.
11. STECF recommends that input data should be carefully checked for consistency before used in the XSA and ICA models as well as model settings (see also point 12).
12. STECF encourages the undertaking of acoustic and juvenile research surveys covering the areas of the main stock distribution in the Black Sea.

Also, STECF consider that commercial CPUE should be not used to tune catch at age data for pelagic fisheries.

For turbot, analyses were inconclusive and thus SGMED-08-03 recommends to keep catches at the recent levels (below 100 tonnes) until an assessment has been accepted upon. Nevertheless, turbot fisheries have been initiated after the WWII and considering the biological features of the stock (i.e. long lived, slow maturing, etc.) and its high catchability, stock might have been fished at unsustainable levels long before data collection and assessment has been initiated. Thus, there is a need to collate and analysis historical data to compare current stock size, F and average individual size against historical ones. Those estimates are available and should be used in the stock evaluation. There, current level of catches are likely to be associated to level of exploitation that are larger than any proxy of Fmsy.

13. SGMED suggests that in future, environmental influences and ecosystem interactions need to be taken into consideration when suggesting reference levels for the fisheries and designing management procedures as well as other important species such as anchovy, horse mackerel, bonito, and Rapa whelk should be assessed. STECF agrees with the approach taken by SGMED-08-03
14. STECF notes that economical aspects have not been dealt with during SGMED meetings. Specific data calls should be performed. However, this should follow the assessment of the biological stock status and be thus integrated afterwards.

### **TAC for Black Sea sprat and Turbot for 2009**

15. STECF notes that the SG MED 08-03 Black Sea subgroup, has recommended candidate TACs for 2009 for Black Sea sprat and Turbot, as follows:

Sprat No greater than 15,000 t

Turbot 100 t

STECF concludes that there is insufficient scientific basis to support these recommendations. In the absence of appropriate scientific data and information STECF is therefore at this stage, unable to advise on an appropriate catch level for Black Sea sprat and turbot for 2009.

### **7.3. Assessment of effort regime**

The STECF Sub-group SGRST-08-01 on “Assessment of fishing effort under Annex II of 2008 TAC Regulation” held its first annual meeting at the Casa don Guanella, Barza d’Ispra, Italy, 2-6 June 2008. The detailed TORs are listed in Section 3.3.3 and may be summarised as follows:

1. Provide historical series of effort by gear and derogation, and of landings and discards of cod and various other species for areas included in the current recovery zones, and for the Celtic Sea.
2. Rank gear types in respect of their catches of species subject to recovery plans.
3. Comment on the quality of estimation of catches and discards.
4. Collate effort, landings and discards data for under 10m vessels
5. Provide data on effort at the statistical rectangle level and comment on movement of effort
6. Use outputs from 1-5 to consider metiers affected by existing and possible future effort regimes and to identify any redundancy in gear categorisations or any cases where more than one metier is contained within a categorisation.

The request for Celtic Sea information and requirement to consider metiers in the light of the current effort management arrangements were new TOR compared to previous meetings. In addition to invited experts and 2 STECF members, three Commission representatives and one stakeholder attended the meeting.

#### **STECF observations**

Progress in addressing most of the TORs depended on the availability and presentation of effort and catch data (TOR1). As in previous years, some effort and catch information was sent in prior to the meeting but there were a number of delays in the supply of important components. By the close of the meeting a significant proportion of the overall data had been supplied and this showed improved coverage (eg effort and landings data from Spain and cod discard data from France) and greater detail in some cases compared to previous years. STECF notes that at this stage the group was not able to finalise the database for 2008 and recognises that a second meeting will be required to fully address the TOR.

STECF notes that preparatory work on several of the other TORs was undertaken and in particular, discussion and presentations on the Annex II effort management in relation to observed metiers (TOR6) helped the development of ideas to take forward to the second meeting. STECF notes that the group developed a plan to take forward various tasks inter-sessionally and considers that, based on the progress so far, (e.g. provision of outstanding data, and database entry and checking), the group is well placed to complete its work at the second meeting.

Some consideration was given to the longer-term prospects for the future development, maintenance and access to the database. STECF welcomes discussion on possible mechanisms for supporting this increasingly useful resource, which has the potential to benefit various users and encourages further discussion before the November 2008 plenary.

#### **STECF conclusions and recommendations**

STECF concludes that by the close of the first meeting of SGRST –08-01, the data were not sufficiently complete to proceed with presentation of summary trends or to address the remaining TORs. STECF recommends that a second meeting is required and that the proposal to hold this in Lysekil, Sweden is taken up.

#### 7.4. Harvest Control Rules (HCRs)

##### Introduction

For a number of fish stocks, a number of long-term management plans have been agreed and implemented. For those stocks not yet subject to long-term plans, the Commission must propose fishing opportunities that are sustainable inter alia in biological terms (i.e. taking these fishing opportunities does not adversely affect the ability of future generations to meet their own needs).

In 2007 STECF simulates the consequences of applying a set of harvest control rules (HCRs) whose aims were to ensure that future fishing opportunities were sustainable. Following STECF advice in 2007 (STECF/SGMOS-07-07 Evaluation of "Policy Statement" Harvest Rules report, 10-14 September 2007, Charlottenlund), the Commission has proposed a new set of candidate HCRs and seeks advice on the consequences of applying the rules set out in the following terms of reference.

##### Terms of Reference

STECF is requested to evaluate:

- the likely consequences of the application of such rules, for a typical range of biological stock situations currently encountered in Community waters;
- the consequences should be evaluated in terms of future yields and future risks to the biological resources;
- available information concerning the typical economic consequences of applying these decision rules should be provided;

STECF is also invited to provide suggestions for changes to the rules in order to improve long-term yields, reduce costs, and to improve the stability of fishing operations and markets.

Rule	Scientific advice	Action to take in setting TAC
1)	Stock exploited consistently with maximum sustainable yield.	Aim to set the TAC to the forecast catch corresponding to the fishing mortality that will deliver the highest yield in the long term <sup>1</sup> , <b>but</b> do not change the TAC by more than 25%.
2)	Stock overexploited compared to maximum sustainable yield but inside	Aim to set the TAC to the higher value of (a) to the forecast catch corresponding to taking the highest yield in the long term <sup>1</sup> , or (b) continuing to fish at an

Rule	Scientific advice	Action to take in setting TAC
	safe biological limits.	unchanged mortality rate, <b>but</b> do not change the TAC by more than 15%.
3)	Stock outside safe biological limits	Aim to set the TAC to the forecast catch that will result in a 30% reduction in fishing mortality rate, <b>but</b> do not decrease the fishing mortality so far as to prejudice long-term yields <sup>3</sup> <b>and</b> do not reduce the TAC by more than 20%.
4)	Stock is subject to long-term plan and scientists advise on the catch that corresponds to the plan.	The TAC must be set by following the relevant plan.
5)	State of the stock not known precisely and STECF advises on an appropriate catch level.	Aim to set the TAC according to STECF advice <b>but</b> do not change the TAC by more than 15%.
6)	State of the stock not known precisely and STECF advises to reduce fishing effort.	The TAC should be reduced by up to 15% and STECF should be asked to advise on the appropriate level of effort.
7)	State of the stock not known precisely and STECF advises the stock is increasing	The TAC should be increased by up to 15%.
8)	State of the stock not known precisely and STECF advises the stock is decreasing	The TAC should be decreased by up to 15%.
9)	STECF advises a zero catch, a reduction to the lowest possible level or similar advice.	The TAC should be reduced by at least 25%. Recovery measures should be implemented including effort reductions and introduction of more selective fishing gear as appropriate.
10)	There is no STECF advice.	While advice is being developed, TACs should be adjusted towards recent real catch levels but should not be changed by more than 15% per year <b>or</b> relevant Member States should develop an implementation plan to allow advice to be provided within a short time-frame.

<sup>3</sup> As measured by the fishing mortality corresponding to a marginal yield of 10% of the marginal yield at fishing mortality close to zero ( $F_{0.1}$ ).

## **STECF observations and comments**

### ***Approach and methodology of the WG***

STECF notes the considerable amount of work achieved by the Working Group in addressing the terms of reference, which were ambitious. The improvements in the FLR framework have made it much easier to implement and simpler to run Management Strategy Evaluations.

The WG report provides a evaluation of 34 different harvest rules scenarios for setting TACs for two generalised fish stocks with different life history parameters “cod-oid” and “her-oid”. These scenario evaluations fall into two main groups:

- 1 Evaluations of HCR rules based on the results from analytical assessments (VPA-based rules). Three rules were evaluated corresponding to rules 1,2 and 3 in the Terms of Reference (see Table above).
- 2 Evaluations of HCR rules when no analytical assessment is available corresponding to Rules 5-10 above.

STECF notes that the Working Group's approach and methodology with respect to modelling the stock's response to varying rates of exploitation represents the "state of the art" for the evaluation of proposed management strategy rules. However, a bio-economic approach with full feedback of fisher's behaviour as a result of economic considerations would provide a more comprehensive evaluation tool.

Wider understanding and knowledge of the FLR framework would undoubtedly be of benefit in helping STECF respond to requests for advice on a variety of fisheries management issues. This may need further financial support from EU so that the methodology will become more familiar for scientists and other stakeholders.

STECF notes that, due to time limitations, a number of simulation runs that were envisaged were not undertaken. However, STECF considers that undertaking additional simulations with the same input data and assumptions is unlikely to affect the general findings and conclusions presented in the report. The FLR methodology used was developed in EU funded projects FEMS, EFIMAS and COMMIT, and has been further developed and applied in several other projects, and also in ICES working groups.

The WG simulations were mainly carried out using “basic assumptions” for the operational models with simple random noise in input parameters. There may be a need to test different HCRs to take into account environmental changes and/or stock productivity changes over short and longer-term periods, and test how well the assessment model and the HCR perform under such conditions. However, this activity may be carried out using case studies of specific management plans with plausible stock-specific hypothesis

A test on how well the assessment models can estimate  $F_{msy}$  and inclusion of  $F_{msy}$  as a target in the HCR, instead of using proxies like  $F_{0.1}$ , would also be a useful analysis. This should be done for a high number of species and also consider whether stock specific reference points could be replaced by e.g. species specific  $F$  – reference points. Meta-analysis of stock productivity may be useful elements of such activity.

STECF notes, that the methodology and HCRs have been applied to only two generic species types: herring-like and cod-like. STECF agrees with the WG that the HCR should be tested

for other species types e.g. deep water species (often very long life cycles) and short-lived species. STECF notes also, that FLR has been mainly applied to single species investigations. However, e.g. Ecosystem Approach to Fisheries Management often means that multi-species management tasks need to be considered. Understanding that computational limitations exist, STECF endorses the further development of the present methodology to allow the evaluation of multi-species impacts.

STECF notice that the economic outputs are provided in the model. However no information is provided on the economic part of the model, therefore it is not possible to evaluate the economic outcomes of the model.

Based on the results presented in the report STECF has serious reservations on the validity of the economic outputs and the methodology used. STECF suspects that the economic part of the model was just the calculation of economic indicators based on biology. Thus, no economic behaviour was taken into account and fed back into the biological model. STECF stresses that the outcomes of bio-economic models critically depend on the production function (cost structure and dependencies on e.g. effort and landings) used. The model assumes that the agreed TAC will be caught irrespective of the economic situation. In the report no assumptions are given for the economic part of the model and taking into account these reservations, STECF considers that the results may be misleading.

STECF note that the group only used revenues and net profit as economic indicators. STECF regards this insufficient for a proper economic evaluation of the HCRs.

STECF notes that although the WG adopted only a simple approach to the evaluation of economic performance under the different HCRs, the FLR framework provides the capability to employ more sophisticated economic elements, which are an increasingly important aspect of STECF activities. STECF suggests that in addition to the application of existing economic modules within the FLR framework, the development of additional economic modules be encouraged for future use.

## ***Policy Conclusions of the WG***

### *1. Cases where the HCR is based on results of an analytical assessment – VPA based rules*

#### *a) Rule – Set a TAC in line with a fishing mortality rate that is the Maximum of $F_{0.1}$ or $F_{sq}$*

The HCR rule that prescribes setting a TAC in line with a fishing mortality rate corresponding to the maximum of  $F_{0.1}$  and  $F_{sq}$  often leads to some rebuilding and recovery. However, it often fails to improve situations where overfishing is occurring and even constitutes a risk to well managed stocks. In these cases the rule either maintains fishing mortality at too high a level, preventing recovery, or it leads to a gradual increase in fishing mortality leading to slow stock declines. The HCR can become stuck on relatively high fishing mortality rates that can harm or continue to harm stocks. This occurred because the  $F_{sq}$  was often too high to be sustainable.

By including a change in the selectivity on immature fish the negative effects of this HCR can be slightly muted but not sufficient to enable this HCR to be recommended. STECF notes that such result is very likely dependent on the degree of change in selectivity.

STECF considers this approach to be a risky strategy compared to a strategy of setting a TAC in line with  $F_{0.1}$ .

*b) Rule - Set a TAC in line with a fishing mortality rate of  $F_{0.1}$*

By altering the HCR to select  $F_{0.1}$  as the response to each assessment, the HCR became more reliable in terms of maintaining well-managed stocks and recovering stocks that had experienced overfishing or were being overfished. This recovery occurred even in the face of a retrospective bias (brought about by a linear increase imposed on catchability through time), although the improvements and level of rebuilding were often reduced. This HCR would often lead to a reduction in yields for the first few years after the introduction of management. However, the significant reduction in fishing mortality led directly to a significant reduction in costs so the profitability of each fishery tended to be maintained. The amount of benefits is likely to be dependent on the cost structure of the fleet.

Within the time constraints of the workshop this HCR was reasonably well examined. However, there were numerous configurations of Operating Model, Management Procedure (HCR), and Observation Error Model that were not considered and before finally recommending this strategy for use in management it would be sensible to complete at least some of the missing combinations and to test the rule for deep water species and short living species. Especially, there is a need to test how well simple criteria like  $F_{0.1}$  function in economic terms. This type of further analysis need not necessarily be done in a workshop environment. It would be a useful addition to consider the effect of including a decrease in the selectivity on immature fish on this version of the VPA based HCRs and to test larger changes of selectivity.

*2. Cases where the HCR is based on a time series of cpue data*

*Model-free HCR*

There remain many stocks for which there is little data. The model free HCR examined proved to be incapable of maintaining a well managed stock and so could not be recommended. However, such empirical control rules can now be implemented easily within the FLR framework, so it is recommended that further work be aimed at exploring alternative formulations that might provide positive management advice for data poor situations. In addition, there are many stocks (deep-water species; short-lived species; invertebrate species) for which the present HCR formulations are unlikely to be helpful. It is suggested that further work be focussed on examining the management options for such species.

**3. Operational Conclusions of the WG**

The FLR framework has now been developed to a highly usable level and STECF endorses its use. This present work has stimulated the inclusion of an implementation of an auto-differentiation module that speeds many of the assessment calculations. Now 100 iterations within a scenario may take between 20 and 30 minutes rather than 5 to 8 hours as in the previous version. In addition, it has become much easier to implement different harvest control rules and simpler to run the Management Strategy Evaluations.

These improvements mean that Management Strategy Evaluation becomes a serious option for particular species within European fisheries. FLR has reached its current stage of sophistication and speed and a useful strategy would be to apply the MSE methodology to particular species, stocks, and fisheries. The complexities of particular fisheries and singular

stocks could be approached within the FLR framework. The complexities of particular fisheries and singular stocks could be approached within the FLR framework.

### **STECF conclusions and recommendations**

STECF concludes that for stocks for which an analytical assessment of the state of the stock is available (rules 1, 2 and 3 in the Terms of Reference), the results of simulations indicate that for overfished stocks (in relation to long-term yield) within safe biological limits, setting the TAC resulting from the application of a target fishing mortality equal to the higher of  $F_{0.1}$  or  $F_{sq}$ , often fails to lead to any improvement. Furthermore, this strategy also constitutes a risk to stocks that are initially in a well-managed state.

STECF further concludes that a HCR that prescribes setting the TAC resulting from a fishing mortality consistent with  $F_{01}$  performs significantly better. Performance in terms of the development in yield and stock biomass for overfished stocks is improved and the risk to well-managed stocks is reduced considerably.

STECF concludes that for stocks for which an analytical assessment is not available the results of simulations using the model-free HCR of setting a TAC in line with a trend in cpue, proved to be incapable of maintaining a well managed stock and cannot be recommended.

STECF considers that Gross Value Added (GVA) is an important economic indicator and recommends that estimates of GVA be provided in future management strategy evaluations.

STECF recommends that management strategy evaluations be developed that assess more fully the economic performance of different strategies. Ideally, economic behaviour should be incorporated in the simulation modelling to enable feedback between developments in the stock and the fishery.

## **7.5. Review of scientific advice on stocks of Community interest - part 1**

### **Terms of Reference**

STECF is requested to review the report of the SGRST-08-03 of June 30 to July 4 (Helsinki) meeting, evaluate the findings and make any appropriate comments and recommendations.

It was agreed that advice for the Baltic and Deep Sea stocks would be finalised by written procedure ahead of the Plenary 08-02 and provided to the Commission by July 4.

The working group was requested to evaluate and comment as appropriate on the 2008 ICES (ACOM) spring advice for several stocks exploited by European Community fishing fleets. These include the following:

#### **Stocks in**

- **Iceland and East Greenland**
  - ICES scientific advices which have been delivered by 09.06.2008

- **The Barents Sea and the Norwegian Sea**
  - ICES scientific advices which have been delivered by .09.06.2008
- **Faeroe plateau ecosystem**
  - ICES scientific advices which have been delivered by 09.06.2008
- **Celtic Sea and West of Scotland**
  - ICES scientific advices which would be delivered by .27.06.2008
- **North Sea**
  - ICES scientific advices which would be delivered by 27.06.2008
- **Baltic Sea**
  - ICES scientific advices which have been delivered by 23.05.2008
- **Bay of Biscay and Iberian Seas**
  - ICES scientific advices which would be delivered by 27.06.2008
- **Widely distributed and migratory stocks**
  - ICES scientific advices which have been delivered by 23.05.2008

STECF is also requested to include the evaluation of the reports of any relevant WGs.

Part 1 of the STECF review of advice for 2009 for stocks of Community interest is published in the STECF/SGRST-08-03 Review of scientific advice on stocks of Community interest – part 1, report, 2-6 July, Helsinki. This review presents summary information on the assessment and advice for stocks for which ICES issued advice in its report of June 2008 (ICES Advice, 2008, Books 2-9).

The STECF review of scientific advice was drafted by the STECF Sub-group on Resource Status (SGRST 08-03, Chair, J. Casey) during its meeting in Helsinki, Finland from 30 June – 4 July, 2008 and subsequently finalised and endorsed at the 27<sup>th</sup> STECF Plenary meeting (7-11 July 2008).

STECF acknowledges the extensive contribution made by the following SGRST –08-03 expert participants:

Eskild Kirkegaard  
 John Casey (Chair)  
 Afra Egan,  
 Michael Keatinge  
 Sten Munch-Petersen  
 Philip Large  
 Steven Holmes  
 Georges Petrakis  
 Michel Bertignac  
 Willy Vanhee  
 Tiit Raid (JRC, STECF Secretariat)

## 7.6. Mediterranean – Evaluation of SGMED-08-02 and SGMED-08-03 reports

Summary of STECF SGMED-08-02 Working Group

Athen 21-25th April 2008

### Background

With the aim of establishing the scientific evidence required to support development of long-term management plans for selected fisheries in the Mediterranean, consistent with the objectives of the Common Fisheries Policy, and to strengthen the Community's scientific input to the work of GFCM, the Commission made a number of requests to STECF. In order to meet these requests, a series of STECF Subgroups on the Mediterranean were initiated. The second and third of these (SGMED-08-02 and SGMED-08-03) met in Athens from 21-25th April and in Ispra from 9-13th June 2008.

**The specific terms of reference** for SGMED-08-02 were:

1. Define an official data call through DCR regarding all fisheries and survey data at the level of aggregation considered necessary for scientific assessments of fisheries and stocks in the Mediterranean Sea. Specifically, the defined official data call should support assessments of hake, red mullet and other main associated species in their fisheries during the third meeting of SGMED-08-03, and sardine, anchovy and other main associated species in their fisheries during the fourth meeting of SGMED-08-04 in 2008, respectively.
2. Compile and review fisheries and survey data availability as defined in the report of SGMED-08-01 in order to enable these future assessments of hake, red mullet, sardine and anchovy, and other main associated species.
3. Continue and complete the detailed review of existing fish stock assessments of hake, red mullet, anchovy and sardine in the Mediterranean Sea started during SGMED-08-01, to identify appropriate stocks delimitations and assessment methods.
4. Provide and evaluate fishing effort and landings data for 2006 to a specified aggregation.
5. Review, define and conduct indicator assessments regarding the estimation of fishery impacts in the Mediterranean Sea. In particular assessments of demersal assemblages should be elaborated and reviewed.
6. Compile and review social-economic indicators of Mediterranean fisheries.

### SGMED-08-02: results

All Terms of Reference for SGMED-08-02 were performed or initiated to underpin the assessment work to be undertaken at SGMED-08-03 and 08-04. A data call under the DCR was defined in order to gather information on key species (hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*), one decapod species (*Parapenaeus longirostris*), anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) prior to the SGMED-08-03 (demersal) and 08-04 meeting (small pelagics). The data requested will be used to perform trial assessments in the different GFCM GSAs or stock units defined at the SGMED-08-02 meeting. The methodologies used for stock assessment will depend on the data submitted, and this is the main reason why a large number of variables have been requested. The data

requested include landings, effort, size distribution, age distribution, maturity, growth parameters, sex ratio, discards and discards size distribution from data collected by indirect methods. From direct methods such as trawl and small pelagic surveys the data requested includes MEDITS and small pelagic surveys size distribution, age distribution and maturity at age.

Commercial effort and landings data for 2006 available at the meeting were examined by GFCM GSA. It was the opinion of experts attending the meeting that commercial information available by GSA is a reflection of the landing port for sampled vessels. Therefore, the provided effort data does not necessarily reflect the true effort exerted in each specific GSA. While data for a particular GSA may realistically (but not necessarily) reflect the location of fishing for smaller vessels, it may not reflect the actual location of fishing effort or catch for larger vessels that can steam large distances for fishing opportunities. For some GSAs, effort and landings data from non-EU member-states fleets were not available. Thus, in these GSAs the effort and the landings provided in this report represent only a part of the effective effort and total landings. Further concern was noted over the comparability of effort measured as days at sea, as for example one day at sea from a large tuna long liner would be counted equally as a day at sea of a small artisanal vessel. Also in some GSAs there are regulations that restrict fishing time per day for OTB to 12hr, while in other GSAs trawlers may operate 24hr a day, i.e. the effective effort of “one day at sea” may be different among GSAs, even for the same type of gear.

Despite these issues, data were collated and analysed to investigate the quality of the information available. Figures were created of the spatial distribution of effort (fishing days and Kw\*days) and landings (hake, red mullet, sardine and anchovy) by GSA. Methods used to collect the data within each GSA were described. It was noted that there is substantial variability among GSAs in the way effort and landings data are collected. This lack of standardization made the compilation of data harder, while comparisons among GSAs were not always straightforward. These issues must be taken into account when using commercial data in stock assessments. It is hoped that the call under the DCR will lead to an improvement in the consistency and scope of commercial fisheries data for stock assessments.

The need to gather all information available on the species of key interest at the subsequent meetings was stressed, through the DCR call, from national studies, and EU Framework project reports (to be supplied by the EC). Even if the time series of data are limited, they are useful as prior information for parameter estimation or assessments

The Working Group noted some concern over the quality of data on catch and effort by area, gears and fishing strategies. It is anticipated that the quality and range of data will be improved through the DCR data call for the next meeting. However, reduced data quality and time series may render impossible the utilization of certain assessment methods in all GSAs. For example, the lack of long time series for some species precludes the utilization in most of the areas of assessment approaches such as VPA. Discussion also reflected concerns on the reliability of the model outputs when they are fed with biased data and/or parameters.

It is also necessary to include in the models the most realistic biological parameter estimates for growth, stock recruitment, mortality, etc in order to obtain more reliable results. Assumptions on natural mortality at age values are critical in assessments, particularly for Mediterranean fisheries with an early age of first capture. Scientists needed to consider species interactions, since values of natural mortality used in assessments of hake were often

larger than those used in pelagic assessments, despite the fact that pelagic species are a prey of hake.

The Working Group noted that sensitivity analyses for different  $M$  values in stock assessments should be performed. The use of an agreed common  $M$  value for a species/geographic area, and use of a common methodology to estimate it, is recommended. The Working Group noted that, particularly for demersal species with a small size at first capture, a vector of natural mortality at age or length, based on approaches such as that of Abella and Caddy, should be used.

A list of potential stock assessment approaches was developed during SGMED-08-01, considering the expected available data and fishery characteristics. Potential methods for use at future SGMED meetings include those based on size structure of the catches (i.e. VPA) when available, on catch and effort (i.e. production models) when demographic structure of the catch is not well known, or more simple assessments based on surveys data (i.e. SURBA, composite models, simulations, indicators) or on survey data and population/harvesting parameters (e.g. simulation models as Aladym, Yield) when only such information is available. The Working Group decided that participants should be free to use one or more of them for performing assessments. Indeed, participants of the Working Group agreed that when uncertainty is high, it is preferable to use different assessment approaches and reference points for the definition of stock status and for assessing the likely consequences of alternative management actions, as well as investigating model uncertainty. In turn, reference points should either be set at precautionary levels when uncertainty is high, or reference points be selected that are robust to the uncertainties.

For demersal species, the Working Group proposed to trial a number of alternatives at SGMED-08-03, namely:

- $F_{0.1}$  –  $F_{max}$  (as a proxy for  $MSY$ )
- $F_{MSY}$
- 20-30% of  $SSB_0$
- 0.4-0.5 exploitation rate
- Maximum biological production level

In addition, the use of biological and social indicators will be tested where possible. It should be noted that the proposal is not to perform a full testing of the robustness of these reference points to uncertainty in biological parameters (e.g. natural mortality), nor to evaluate their performance as one part of the data collection, assessment and management framework through Management Strategy Evaluation. This is too extensive a process for SGMED-08-03, and should be the subject of further meetings.

The Working Group noted that fry fisheries were a potential source of considerable uncertainty for pelagic stock assessments of sardine. Given the fact that sardine fry fishery is based upon certain Management Plans (MP), experts consider that these MPs may contain

useful information about fry fisheries and therefore invite the Commission to make these MPs available to the group prior to the SGMED-08-04 meeting focusing on assessments of small pelagics.

As noted for demersal species, the selection, estimation and testing of candidate reference points is a topic of high priority, and there is a need to agree procedures and methodologies. In addition to the opportunity represented by SGMED-08-04, workshops and study groups may be needed to progress this matter. Reference Point refers to biological and fishing pressure limits generally defined as values of Biomass (B) and/or fishing mortality (F). Experts consider that exploitation rate (F/Z) could be a useful candidate to indicate some pressure state of the fishery. The exploitation rate of 0.4 (as suggested by Patterson, 1992) was proposed during SGMED-08-01 meeting. Some concerns about the use of such exploitation rate as a reference point were also expressed, and hence there is a need to investigate these candidates further.

The Working Group recommended the spatial scale at which to perform assessments for the selected demersal and pelagic species in future SGMED meetings. Assessments were proposed at the scale of the GFCM GSA. For hake and red mullet, GSAs 22 and 23 will be merged, and for hake only, GSAs 15 and 16. The Working Group noted the need for investigations of stock distributions to continue.

The approach to undertake indicator assessments based upon MEDITS survey data was agreed and will be implemented at SGMED-08-03. Indicators for socio-economic parameters in the Mediterranean were expanded upon.

### **STECF comments and conclusions**

1. STECF notes that TORs 1-4 have been completed, while for TORs 5 only preliminary work has been initiated and TORs 6 has not been dealt with at all during the meeting. Data and assessment methods will constitute the base for assessment to be performed in the next SGMED meetings.

2. Also, data on effort for different fleets were collated during the meeting. However, the lack of standardization between different fleets targeting the same species and within the same fleet in different years (i.e. unbalanced sampling design) made the compilation and use of data difficult. Also, if CPUE from commercial fisheries is used as supplementary information for stock assessment, STECF is of the opinion that if possible, technological creep (efficiency improvements) should be taken into account and appropriate standardization of CPUE series be undertaken.

3. The working Group proposed to trial a number of alternative reference points at SGMED-08-03, namely:

F0.1 – Fmax (as a proxy for MSY)

FMSY

20-30% of SSB0

0.4-0.5 exploitation rate (F/Z)

Maximum biological production level.

STECF agrees with this approach.

4. The Working Group recommended the spatial scale at which to perform assessments for the selected demersal and pelagic species in future SGMED meetings. Assessments were proposed at the scale of the GFCM GSA. For hake and red mullet, GSAs 22 and 23 will be merged, and for hake only, GSAs 15 and 16. The Working Group noted the need for investigations of stock distributions to continue. STECF agrees with this approach.

#### **Summary of STECF SGMED-08-03 Working Group** Ispra 9-13th June 2008

**Note that terms of reference and STECF comments on the Black Sea part of SGMED-08-03 are to be found in section 7.2 of this report.**

#### **Terms of Reference**

**The specific terms of reference for SGMED-08-03 were:**

- a) assess the status of the stocks of hake by all relevant GSAs (15 and 16, 22 and 23 combined) in the Mediterranean Sea and provide short term, medium term and long term forecasts of stock biomass and yield under different management options, by fisheries if possible.
- b) assess the status of the stocks of red mullet by all relevant GSAs (22 and 23 combined) in the Mediterranean Sea and provide short term, medium term and long term forecasts of stock biomass and yield under different management options by fisheries if possible.
- c) assess the status of the stocks of *Parapenaeus longirostris* by all relevant GSAs (15 and 16, 22 and 23 combined) in the Mediterranean Sea and provide short term, medium term and long term forecasts of stock biomass and yield under different management options by fisheries if possible.
- d) assess historic and recent trends (capacity, technological creep, nominal fishing effort) in the major fisheries by GSAs (22 and 23 combined) exploiting the stocks assessed. The trends should be interpreted in light of management regulations applicable to them.
- e) review and propose biological reference points related to high yields and low risk in long term of each of the stocks assessed.
- f) identify any needs for management measures required to safeguard the stocks assessed.
- g) review the applicability and fully document all applied methodologies for the assessments, projections and determination of the proposed biological reference points.
- h) fully document the data used and their origin for the assessments, projections and determination of the proposed biological reference points.
- i) review social economic reference points.

j) provide and review population and community indicators.

### Approach of the SGMED 08-03 Working groups on the Mediterranean

Data obtained from the DCR call of SGMED-08-02 were collated. Individuals were assigned as stock co-ordinators to perform stock assessments for the key species of interest to the meeting (hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*), pink shrimp (*Parapenaeus longirostris*) using all information available within the geographic scale of the assessment agreed at SGMED-08-02.

The Terms of Reference for SGMED-08-03 (as detailed above) were extensive, and required up to 38 stock assessments to be performed during the meeting. Given the number of stock assessment scientists at the meeting, the length of the meeting, the timing of the arrival of the DCR data, and the time needed during the meeting to check and collate these data, this was not feasible, despite the excellent efforts by the attendees at the Working Group.

ToR a-h:

During the meeting, assessments for 10 species/GSA combinations were initiated. It must be noted that ALL assessments must be viewed as provisional at this stage. Further improvements to these assessments will be made during future SGMED meetings. The layout of the assessment report forms was designed to facilitate this process and allow scientists and managers to review the data underlying the assessments presented, the issues encountered during the assessment and the assumptions made, the assessment outputs and subsequent management advice, in a consistent way.

The preliminary results from the assessments performed are presented below.

Species	GSA	Assessment methods						Reference point	Comments
		Trawl survey (MEDITS/GRUND)			Commercial data				
		SURBA	ALADYM	Tuning data	LCA	XSA	YPR		
Hake	1				x		x	$F_{MAXYPR}$ , $SSB/SSB_0$	$F > F_{MAXYPR}$ , $SSB < 7\%SSB_0$ , scenarios for effort reduction show increase in catch and stock biomass possible.
	9	x						$B_{lim}$ , $F_{MSY}$	Overexploited. $SSB=5\%$ of that at $F_{MSY}$ , but still able to produce recruits. HCR analysis performed.
	17				x			F/Z ratio	Risk of overexploitation, juvenile fish caught.

	20	x	x			Model-based	Stable SSB with some increase, recruits increasing. Potential to improve stock status with management	
	22/23	x	x			Model-based	SSB decreasing, recruits and yield stable. Potentially overexploited. Potential to improve stock status with management	
Red mullet	1			x		x	$F_{MAXYPR}, SSB/SSB_0$	$F > F_{MAXYPR}, SSB \sim 21\%SSB_0$ , exploitation considered moderate. Effort reduction scenarios suggest a small increase in YPR possible
	5		x	x	x	x	$F_{MAXYPR}, SSB/SSB_0$	XSA: Fishing mortality constant, slight decline in SSB over time. $F > F_{MAXYPR}, SSB \sim 25\%SSB_0$ , moderate to fully exploited. Little increase in YPR with effort reduction
	6							For the next meeting
	17			x			F/Z ratio	Fully exploited, degree of risk of overexploitation
	25			x		x	$F_{MAXYPR}, SSB/SSB_0$	$F > F_{MAXYPR}, SSB \sim 12-15\%SSB_0$ . Effort reduction could increase YPR
Pink shrimp	1			x		x	$F_{MAXYPR}$	$F \leq F_{MAXYPR}, F \sim$ optimum

ToR i:

The economist members of the Working Group reviewed social and economic reference points appropriate for Mediterranean fisheries. It was noted that the range of socio-economic indicators described could be estimated using data collected both under the new DCR Regulation and under GFCM data collection. However, these data are collected by Member States are not collected to the level of the GSA at the country scale, and hence cannot be related to biological assessments that are performed at the GSA level (either individually or combined). As economic profitability can vary significantly between GSAs, indicators by country cannot be considered representative of fisheries by GSA. This is particularly true for countries whose territorial waters consist of a number of GSAs, like Italy, Spain and Greece.

The socio-economic indicators recommended by the SGRST-07-05 and SGECA/SGRST-08-01 and those calculated for the Annual Economic Report (AER), by the SGECA-08-02 working groups compared with appropriate reference points provide a useful overview of the status of fisheries. However, they cannot be used on their own to perform a socio-economic analysis and to identify potential causes of social and economic unsustainability. The larger number of indicators from the CopeMed and AdriaMed projects would be more useful for this. However, they should not be used to perform assessments on the impact that management measures and the evolution of resources may have on fleets. In this case bio-economic models are the desired tools.

ToR j:

Preliminary analysis of the MEDITS data made available through the DCR call was initiated at the meeting. While issues remain with the information (e.g. particular values need to be checked and confirmed), an analysis of catch rates by species and GSA was performed to stimulate discussion.

### **Mediterranean Working Group suggestions from SGMED-08-03**

During the Working Group, a number of specific recommendations were made for future meetings:

- It must be re-iterated that assessments performed during the meeting were considered preliminary. SGMED-08-03 request that further time be provided at SGMED-08-04 in order to continue with these demersal assessments.
- Some inconsistencies in the estimation of biological parameters were noted during the Working Group (e.g. methods to define the point of maturity on maturity scales). SGMED-08-03 suggest that this requires further consideration, particularly where assessments move toward the estimation of stock-recruitment relationships.
- The use of survey data (e.g. MEDITS, GRUND) was suggested as a tuning index, as well as for direct use in assessment approaches such as SURBA (as used in many of the assessments described). Changes in the design and execution of surveys were noted over time SGMED-08-03 suggested that the data be standardized over time using GLMs to take account of these changes and allow improved assessments to be performed.
- Although intended for the meeting, the examination of alternative reference point levels was not fully undertaken during SGMED-08-03, due to time constraints. However, discussion did re-iterate the need to compare stock assessment results to potential maximum production levels (e.g. MSY or appropriate proxy values). SGMED-08-03 suggests that this be continued in future SGMED meetings.
- All participants found the Working Group an excellent opportunity for exchange of ideas, approaches and skills. The meeting also allowed the standardization of procedures for data collection and analysis within the region. In order to ensure that this is continued, SGMED-08-03 suggests that inter-sessional workshops or training courses be pursued to expand the number of scientists fully able to undertake assessments within the Mediterranean region.

### **STECF comments and conclusions**

1. STEFC recognises that the SGMED framework has represented an excellent forum to support stock assessment and advice within the region. While the work performed at SGMED-08-03 did not complete the extensive terms of reference set for the meeting, it has built the foundations upon which further work can be successfully undertaken. Further refining of the assessment models and their parameterisation should be continued in future SGMED meetings.

2. STEFC recognises that an extensive number of assessment areas were to be covered in less than five working days (38 stocks to be assessed according to the ToRs). In the light of time and manpower limitations, SGMED-08-03 has focused on 3 species (hake, red mullet and pink shrimp). Nevertheless, assessments were performed for 13 different stocks (including the Black Sea stocks).

3. STEFC recognises that assessments performed during the meeting were considered preliminary and that more time will be required during SGMED-08-04 in order to continue with these demersal assessments and give an evaluation of the stock status.

4. The use of survey data was suggested as a tuning index, as well as for direct use in assessment approaches such as SURBA. Changes in the design and execution of surveys were noted over time. STEFC suggested that the data be standardized over time using GLMs or GAMs to take account of these changes and agrees with the approach taken by SGMED-08-03.

5. STECF stresses that there is a need to:

- compare stock assessment results to potential maximum production levels (e.g. MSY or appropriate proxy values both in terms of F and spawning biomass).
- make comparable analyses of the status of the stocks between the different GSA, within the Mediterranean and the Black Sea. In that context, VIT might constitute a common method to describe the current situation in terms of F and biomass using data collected within DCR.

6. STECF also recommends that estimates of F and biomass as obtained from VIT should be combined with estimates of  $F_{msy}$  (or appropriate proxies) derived from YPR analysis and virgin biomass to produce simple indicators of the exploitation rate and stock status such as  $F_{sq}/F_{msy}$  and  $B_{sq}/B_{virgin}$ . This is particularly important in the light of the shortness of most of the time series used by SGMED.

7. STECF also considers that trends in SSB or biomass obtained from time series shorter than 15-20 years should not be used to define absolute stock status. Stability in biomass in the short term does not automatically imply that the stock is not overexploited. With exploitation having started more than a century ago, such extrapolations are run the serious risk of “shifting the baseline syndrome” and should be avoided.

8. In light of the above observations and since most of the time series used in the SGMED are shorter than 10 years, STECF recommended that that effort is made for collating historical information on biological descriptors of the stock such as  $L_{max}$  or standardized CPUE from surveys or other sources that can be compared with current CPUE estimates.

9. STECF considers that exploration and comparisons of the results between different assessment methods is advisable and it should be continued. However, after benchmark

analysis have been undertaken, effort should be made to establish the “stock specific ad hoc assessment methods” for future evaluations of stock status and allow for “update” assessments.

10. STECF notes that the Black Sea Working Group needs to build capacity in quantitative stock assessment and welcomes the Commissions initiative in planning for that a population dynamics and stock assessment training course.

11. STECF recommends that input data for assessments should be carefully checked for consistency before being used in XSA and ICA. Model settings should also be carefully scrutinised and justified (see also point 12).

12. STECF encourages the undertaking of acoustic and juvenile research surveys covering the areas of the main stock distribution in the Black Sea. STECF also consider that the use of commercial CPUE to tune catch-at-age data for pelagic stocks should be discouraged.

13. SGMED suggests that in future, environmental influences and ecosystem interactions need to be taken into consideration when suggesting reference levels for the fisheries and designing management procedures as well as other important species such as anchovy, horse mackerel, bonito, and Rapa whelk should be assessed. STECF agrees with the approach taken by SGMED-08-03

14. STECF notes that economical aspects have not been dealt with during SGMED meetings. Specific data calls should be performed. However, this should follow the assessment of the biological stock status and be thus integrated afterwards.

## **8. ECONOMIC ISSUES**

### **8.1. Preparation of the Annual Economic Report (AER)**

#### **Background**

STECF is requested to review the "Annual Economic Report (2008)" to make appropriate comments and recommendations. This report gives an overview of the economic situation for the European fishing fleets.

The economic data is collected within the framework of the Data Collection Regulation (DCR), cf. Council Regulation (EC) No 1543/2000 of 29 June 2000. Statistical tables included in the report have been prepared by JRC on the basis of the official economic data sent by Member States.

The SGECA meeting 08-02 analysed the economic data and prepared the report. This is the second year that the report has been prepared by a working group under the Scientific, Technical and Economic Committee for Fisheries (STECF).

The report covers data from 2003 to 2006, but there are also comments about the trends and outlook in 2007 and first part of 2008 for the fisheries in each of the Member States.

#### **Terms of reference**

The SGECA working group was asked to address the following Terms of Reference:

1. Prepare national chapters of current economic performance of EU fishing fleets, providing trends and outlooks;
2. Based on national data, prepare regional analyses of economic performance;
3. Analyse the impact of rising fuel prices on economic performance of fleets;
4. Examine trends in fish prices on EU markets.

### **STECF observations**

The STECF recognizes that the report is much more complete than the 2007 report (STECF/SCEGA-07-02 Preparation of Annual Economic Report, 12-16 March 2007, Brussels) and it includes more information and discussions. National chapters are well structured.

STECF observes that the chapters on price formation and fuel cost give a comprehensive analysis and include useful information.

In order to describe the development in fish prices within the European Union, a distinction is made between two overall regions, i.e. the Mediterranean and the Atlantic Ocean. In the Mediterranean area, nominal prices have modestly increased for the majority of the species analysed. The exception to this is anchovy, giant red shrimp and Norway lobster. The data shows that the annual price increases for these species are significant, and are more than likely to have exceeded inflationary increases in each of the countries involved. Price development of the top 10 most important species in terms of landings value, landed in the Atlantic fishing region, reveals that there is a general upward trend in the average annual price (first sale price) for most of these species, and that this is particularly evident between 2005 and 2006. If inflation is taken into account, the real average prices of most of these species have remained fairly stable.

Expenditure on fuel represents a significant component in the running costs of fishing fleets. Fuel price trends in each MS are mostly similar. The increasing fuel price trend contains two significant price shocks. The first shock was in the period 2004-05 and the price increase in that period was around the 33%. At the time of the meeting a new price shock with a similar change (33%) had occurred.

Fuel prices are currently fluctuating significantly with a clear upward trend. It is estimated that an increase of 33% in fuel price will create a reduction of the average Gross Value Added (GVA) of around 28% for the included fleets, which are all using gears giving rise to considerable fuel use, i.e. primarily mobile gears in form of trawl. If fuel prices increase with 50% instead compared to the level in 2006, this implies a reduction in GVA of 42%, assuming that fishing patterns do not change.

Despite increased effort and organization for the preparation of the AER, STECF notes that:

- while STECF asked the Commission to clarify the purpose of the report during the November 2007 plenary, these had not been identified before the meeting.

- there are several data missing with respect to years, variables and coverage for several countries. Therefore the European overview summary is incomplete and general trends cannot be evaluated
- No regional analysis attempted. For this meeting data were available at national level only, because the call for data was in line with the requirements of the present DCR. Therefore, at this stage, no complete regional analysis was possible.
- No report is available for some Member States. The participants in the SGECA meeting did not have the necessary expertise to cover all the countries.
- the report has been prepared one and a half year after the end of the reference year. Like last year, the report has been delayed for various reasons (timely data availability, organizational problems)
- the report includes statistical tables, but no information is given on the quality of data and its reliability

### **STECF conclusions and recommendations**

STECF recommends that the working process for the AER be better organised. STECF proposes the following organisation in addition to the recommendation made in the November plenary:

- In a first meeting (one or two days), experts should discuss the contents and format of the national contributions and the methodology used to analyse the specific issues (e.g. fuel prices) to be taken into the AER.
- A call for data should be launched and the quality of the data provided by Member States should be checked.
- After the first meeting, the writing of the text on the MS should be done by correspondence by the relevant national expert before the SGECA meeting. The WG should check for consistency of the national texts and prepare regional statistics.
- During the second meeting the experts present could then focus on specific issues like fuel or regional analyses and finalise the report.

STECF supports the regional approach taken in the new DCR. In order to keep consistent time series, STECF recommends that JRC should make it technically possible for MS to provide regional data and the Commission to ask MS to provide data by the regions identified in the new DCR if available.

If a regional analysis is required for the 2008 AER and if regional data cannot be provided by Member States, STECF suggests that a preliminary analysis could be done based on experts' knowledge and assumptions on the allocation of vessels into different regions.

STECF recommends that the STECF working group on data quality (SGECA –08-03) should advise which kind of metadata are necessary to assess the quality of the data. This information should be available from the national technical reports and should be used in the AER.

The STECF recognises that the AER is the only compilation of economic statistics available to researches, fisheries administration and stakeholders. But at the same time STECF underlines that the AER has not to be considered as the only source of economic information and the segmentation presented in the AER may not be appropriate for specific evaluations. In

case the Commission needs economic advice on specific fleets and/or specific issues, a call of data should be launched in order to get appropriately detailed data.

## **9. DATA COLLECTION REGULATION**

### **9.1. Review of guidelines for the new DCR**

#### **Background**

The Council has recently adopted a proposal for a regulation establishing an EU framework for the collection management and use of data in the fisheries sector and in support for the scientific advice regarding the CFP (Council Regulation (EC) No 199/2008). This new framework has been established taking into consideration the most recent developments in fisheries management such as the fleet-based approach and the ecosystem approach and taking advantage of the experience gained during the implementation of the current data collection system which is in place since 2001. Articles 4(4), and 7(1) of Council Regulation (EC) No 199/2008 and Articles 2(2)(a) and 5(2)(a) of the corresponding Commission Regulation, dealing with the submission of the National Programmes and annual reports, refer to the use of templates and guidelines established by STECF. In addition, Articles 6(1) and 7(2) of Council Regulation (EC) No 199/2008 state that the evaluation of both National Programmes and annual reports should be carried out by STECF. Therefore, the guidelines and templates should also facilitate SGRN's evaluation of Member States compliance with the DCR. The purpose of SGRN-08-01 was to establish these templates and guidelines.

#### **Terms of Reference**

- a) Review existing templates and guidelines for the submission of National Programmes and annual (technical) reports.
- b) Establish new guidelines and templates based on Council Regulation (EC) No. 199/2008 and drafts Commission Regulation and Decision; this should include the set up for evaluation criteria by STECF.

#### **STECF Observations**

SGRN-08-01 (Nantes, 2-6 June 2008) reviewed the existing guidelines and templates (version 2006) for the submission of National Programme Proposals and Annual (Technical) Reports (ToR a) and established new guidelines and standard tables (ToR b), based on the following considerations.

Existing guidelines have been reviewed in order to make them consistent with the new DCR. This revision has been substantial, considering that the new legislation is largely different from the previous one concerning the list of variables, their definitions, the introduction of new parameters (the aquaculture sector and the fuel efficiency) and the new approaches (fishery/fleet-based sampling and ecosystem indicators). SGRN-08-01 has also taken the regional approach and data quality issues into account. Each relevant section in the guidelines contains sub-sections on data acquisition (sampling strategy), data quality (precision etc.), regional coordination, and on derogations and non-conformities. The guidelines include text tables defining the field requested in the standard tables, and a consistent codification for the defined fields is given. Several technical improvements were introduced in the new standard

table templates, in order to allow SGRN, RCMs etc. to work with the included data and produce summary tables across all MS.

The STECF-PLEN-08-01 had commented on derogations by MS:

*With regard to improving transparency on MSs derogations in future, STECF recommends that NPs shall include a separate section clearly listing all their proposed derogations and the underpinning reasons for the request.*

SGRN-08-01 took this comment into account by including a section in the guidelines that requests a list of derogations, including details on approval/rejection.

SGRN 08-01 was unable to fully address ToR b, and suggested that the criteria of MS compliance with the DCR legislation, guidelines and templates should be established by the SGRN evaluation meetings.

The revised guidelines and templates for DCR National Programme Proposals are regarded as a first step in the implementation of the new DCR and will be used and commented on by Member States, SGRN, RCMs etc. The feedback received will be taken into consideration when revising the guidelines and templates for annual (technical) report submissions.

STECF notes the increased role of RCMs in developing MS National Programmes under the new DCR. Re-submissions of NP Proposals are required after relevant RCM recommendations, at the latest 2 months prior to the year of implementation (Article 5(2) of Reg. 199/2008).

### **STECF Conclusions and recommendations**

STECF endorses the SGRN-08-01 report and recommends that MS use the guidelines and templates provided in the report for their National Programme Proposals 2009-2010.

As the participation of MS in research surveys at sea has an impact on the conduction of the surveys and the data collected, as well as DCR co-financing, STECF recommends that the standard table on surveys (Table III.G.1) in the templates for NP Proposal submissions should include a column that specifies the MS participating in a particular survey.

With regard to future evaluation of MS national reports, STECF notes the following:

The sampling obligations of a MS, inferred from data requirements of a RFMO (which might deviate from DCR provisions) or from a bilateral agreement with another MS are not clearly defined in the DCR. STECF is concerned that this may affect the quality and availability of data and recommends that any corresponding data deficiencies are identified when evaluating MS annual reports.

## **10. ADDITIONAL REQUESTS**

### **10.1. Mediterranean - National management plans under Council Regulation (EC) No 1967/2006**

#### **Background**

According to Council Regulation (EC) No 1967/2006 (art.19), Member States are expected to adopt management plans for fisheries conducted by trawl nets (demersal and pelagic), boats seines, shore seines, surrounding nets and dredges (for molluscs) within their territorial waters. So far, some draft plans have been notified to the Commission for it to present its observation before the plan is adopted by Member States; a first set was examined at the

STECF November 2007 Plenary while another one was examined at the STECF April Plenary 2008.

STECF remarks that according to art.19 point 5 Council Regulation (EC) No 1967/2006 and art. 6 of the Council Regulation (EC) No 2371/2002, the plans shall include conservation reference points such as targets against which the recovery to or the maintenance of stocks within safe biological limits for fisheries exploiting stocks at/or within safe biological limits (e.g. population size and/or long-term yields and/or fishing mortality rate and/or stability of catches). The management plans shall be drawn up on the basis of the precautionary approach to fisheries management and take account of limit reference points recommended by relevant scientific bodies.

The plans shall ensure the sustainable exploitation of stocks and that impact of fishing activities on marine eco-systems is kept at sustainable levels and may incorporate any measure as more specified in detail in the previous Plenary Report.

STECF is requested to review the latest plans submitted (Greece, Malta and Slovenia), to evaluate their findings, to make appropriate comments, also with respect to the elements/measures included in each management plan and to advise whether the plan contains elements that account for the state of the exploited resources, if concerned fisheries are expected to exploit main target stocks in line with their production potentials and if the plan is expected to maintain or to revert fisheries productivity to higher levels and in which time frame.

## **STECF response**

### **Management Plan of Greece**

Two separate documents were submitted by the Greek authorities

- a) Management plan for the fishing of caramote prawn (*Melicertus kerathurus*) with bottom trawl nets in the areas of Thermaikos Gulf and the NW Thracian Sea by way of derogation from EC Regulation 1967/2006 and
- b) Management plan for the derogation of the Greek purse-seine fleet from the provision of art. 13 of (EC) 1967/2006.

Article 19 of Council Regulation (EC) No 1967/2006 indicates that Member States should notify their Management Plans to the Commission by September 2007. The draft management plan for Greece was received by STECF for evaluation only just before the Summer Plenary 2008 and the document a) is dated 30 May 2008, while document b) has only the 2008 reference date.

STECF examined the two documents separately, because they relate to two different aspects of Greek fisheries covered by Article 19 of Council Regulation (EC) No 1967/2006.

### **Management plan for the fishing of caramote prawn (*Melicertus kerathurus*) with bottom trawl nets in the areas of Thermaikos Gulf and the NW Thracian Sea by way of derogation from EC Regulation 1967/2006**

STECF notes that the proposed plan is very concise and the information presented is insufficient to allow an overview of the existing fisheries.

This report is deficient in that almost all the basic information required to undertake an evaluation of the likely impact of the proposal. The following list indicates the basic information that STECF considers is required to evaluate the proposals:

1. Information on the fleet or fleets that exploit the caramote prawn;
2. Information on fishing effort;
3. Information on total catch;
4. Temporal trends in catch levels for the target species;
5. Indicators to assess the state of the stock for the target species;
6. Basic population parameters of the target species.

STECF notes that the proposal does not include appropriate data and information to allow an assessment of the likely effect of a proposed derogation relating to the minimum distance from the coast that vessels using bottom trawls in the Thermaikos Gulf and NW Thracian Sea.

STECF concluded that the proposed management plan for the fishing of caramote prawn (*Melicertus kerathurus*) with bottom trawl nets in the areas of Thermaikos Gulf and the NW Thracian Sea by way of derogation from EC Regulation 1967/2006 does not contain appropriate data and information to allow an evaluation of the likely impact of the proposal and therefore does not fully meet the requirements of Article 6 of the Council Regulation (EC) No 2371/2002.

### **Management plan for the derogation of the Greek purse-seine fleet from the provision of art. 13 of (EC) 1967/2006**

While this proposal is accompanied by good supporting scientific data and information, some key information is missing. STECF notes that some misleading discrepancies were found in the English translation.

The proposal for derogation from Council Regulation (EC)1967/2006i concerns the provision to carry out the purse seine fishery beyond the bathymetry of 30 m or 300 m from the coastline and regardless of the vertical drop of the net.

The Plan includes a general description of the fishery and fleets in Greece, a summary of the most relevant regulations and a good description of the two most relevant species targeted by the purse seine fishery. The plan contains data on landings and discards of sardine and anchovy and indicates that catches have increased over the past 5 years by about 24% in the Aegean Sea and by 55% in the Ionian Sea compared to the preceding 5 years. The stocks of anchovy and sardine are assessed in terms of total biomass and spawning biomass but only for the Aegean Sea; data on Ionian Sea are not available.

The proposal includes the results of an economic study which indicates that enforcement of the EC Reg. 1967/2006 will have a significant negative impact on the fishery, due to the significant loss of potential fishing grounds, a reduction in catches and the need to operate much more far from the coast and landing ports. The report contains information that indicates a major fraction of the biomass of both anchovies and sardines is within the 50 m isobath. The Plan needs the following additional data and information in order to allow a reliable assessment of the potential impacts:

1. Catch levels and trends of the other important species of this fishery (*Boops boops*, *Sardinella aurita*, *Spicara* spp. and *Scomber* spp.);
2. CPU data (yearly catch per vessel, total and by target species), to complete the set on fishing effort and catch;

3. Distribution map of *Posidonia oceanica* within the area where the derogation is requested;
4. Discard data for other species in addition to those of anchovy and sardine;
5. Evaluation of the effects of the purse seine operations on the seabed <50 m depth, including potential conflict with other activities, and at depths likely to be reached by the maximum drop of the purse seine used in Greece (up to 120 m);
6. The proportions of different species in the catches occurring within the 50 m isobath and beyond the 50 m isobath;
7. Justification and clarification for the target reference point of the Management Plan (i.e.: GFCM/SAC or STECF/SGMED indications).

The establishment of a sort of real-time management on an annual basis for the purse seine fishery is the main target of this Management Plan. According to the Plan, the scientific advice would be delivered before 15 February each year. STECF notes that the proposed monitoring strategy within the Greek Management Plan is well planned and is likely to be able to provide the necessary data to achieve this target, provided that the stocks are assessed annually and the results of such assessments are independently reviewed.

STECF notes that the shortfalls in data and information should be readily available and recommends that a revised proposal including such information, be submitted for further evaluation of the likely effect of such a derogation.

### **Management Plan of Malta.**

The draft Management Plan proposed by Malta includes all the fishing activities listed in Article 19 of Council Regulation (EC) No 1967/2006, namely trawl nets and dredges (bottom otter trawl and traditional prawn bottom trawl dredge named “gangmu”), boat seine (traditional “tartarun”), surrounding nets (tuna purse seines, small pelagic purse seine named “Lampara” and surrounding net for dolphin fish) and all the other fisheries existing in Malta.

Article 19 of Council Regulation (EC) No 1967/2006 indicates that Member States should notify their Management Plans to the Commission by September 2007. The draft management plan for Malta was received by STECF for evaluation only just before the Summer Plenary 2008 and the document is dated 13 May 2008.

STECF notes that the proposed management plan submitted by the Maltese authorities is well structured in terms of a comprehensive general management of the fishery resources in Malta. The weakness of the Plan are clearly identified in a specific chapter of the proposal.

The Plan includes a detailed description of the fishing activities carried out in Malta, with a general overview of the fleet and fishing activities,

The following list indicates the basic information that STECF considers is required to evaluate the proposals:

1. Information on fleet structure and capacity.
2. Catch data by fishery segment and species for the longest possible series of years, including trends and CPUE data when appropriate and available;
3. Discard rates;
4. Stock assessment for the target species or other useful stock indicators;
5. Identification of target management reference points to be achieved during the time frame 2008-2012.

STECF reviewed the proposed Fisheries Management Plan submitted by Malta and concluded that it does not contain appropriate data and information to allow an evaluation of the likely impact of the proposal and therefore does not fully meet the requirements of Article 6 of the Council Regulation (EC) No 2371/2002.

STECF notes that some fisheries are currently carried out without the appropriate derogations, that are now requested within the Management Plan under special fishing permits granted by the Maltese authorities. These relate to the traditional boat seine called “tartarun” (derogation to operate on *Posidonia oceanica* meadows) and the traditional prawn bottom trawl dredge named “gangmu” (derogation to operate on *Posidonia oceanica* meadows and from the provisions of art. 13(1), 13(2), 14(1) and 14(2) of Council Regulation (EC) No 1967/2006). For the “gangmu” fishery, the Maltese Plan includes the proposal to carry out a dedicated pilot study.

Because the basic data to evaluate the derogation requested for these two fisheries are currently unavailable, STECF recommends that pilot studies be carried out for one year, with the aim of covering the existing information gaps. The information gathered should provide the basis for an evaluation of the requested derogations.

STECF suggests that the pilot studies on the “tartarun” (boat seine) and “gangmu” (bottom towed dredge) fisheries should be undertaken by a specified number of vessel that are able to provide the required information and with observer coverage. The data required are those those listed in paragraph 3.3.2 and 3.4.3 of the Plan and should be additional to those listed above.

### **Management Plan of Slovenia.**

The Management Plan proposed by Slovenia includes all the fishing activities listed in Article 19 of Council Regulation (EC) No 1967/2006.

Article 19 of Council Regulation (EC) No 1967/2006 indicates that Member States should notify their Management Plans to the Commission by September 2007. The draft management plan for Slovenia was received by STECF for evaluation before the Summer Plenary 2008 and the document is dated 14 March 2008.

STECF has critically examined the contents of the “Management plan for maritime fisheries in waters within the jurisdiction of the Republic of Slovenia” and notes that the Plan is well structured in terms of a comprehensive description and general management of the fishery resources in Slovenia. The weakness and deficiencies of the data are clearly listed and openly identified in the preliminary part of the Plan. Some tables of the report were not translated into English and STECF had problems in fully understanding such tables, but the most relevant tables were provided in English. A previous Management Plan submitted by the Slovenian authorities was examined in the STECF November Plenary 2007> At that time, STECF was unable to conduct a thorough evaluation.

The Slovenian Management Plan has a good description of the legislation, the fleet, total landings (1982-2006), target species by segment and related catch for 2005 and 2006. .

However in order to conduct a thorough evaluation, the following additional data and information is required:

1. Catch data for 2007 for all fisheries concerned, including the fisheries that commenced in the most recent year;
2. Data on trends in CPUE ;
3. Discard rates;
4. Stock assessment for the target species or other useful stock indicators, including shared stocks;
5. Specification of annual targets for the reduction of the bottom trawl fleet over the period 2008-2012;
6. Specification of annual targets for the reduction of pelagic trawl effort over the period 2008-2012.

STECF notes the efforts made by the Slovenian authorities to improve the previous draft and the new data now available. However, the present plan is still deficient in a number of important elements. STECF notes that the deficient data and information may be unavailable available at present.

STECF suggests that Slovenian fishery scientists collaborate with the other scientists from Countries fishing within the same GSA, with the purpose to provide agreed assessments for shared stocks and to provide the data mentioned above.

Within the Slovenian Management Plan there are the following requests for derogations:

- I. Purse seine fishery: a derogation is required about the size of surrounding nets under Article 13(5) of Council Regulation (EC) No 1967/2006. Slovenia proposes that, from 1 January 2008, Slovenian fishermen should continue to use surrounding nets whose overall drop (70 m) is greater than specified in the second subparagraph of Article 13(3) of Council Regulation (EC) No 1967/2006, mainly because a) this provision should lead to an 80% reduction of the area covered by each fishing haul, b) the fishery is carried out in non protected areas where *Posidonia* meadows are not existing, c) the fishing method which requires a longer net to catch a sufficient number of fish.

STECF has the opinion that the derogation require in the point I) is sufficiently justified, under the condition that a pilot study is set up to monitor the vessels fishing under this derogation for one year. The result of the study should be submitted for further evaluation of the likely effects of the derogation.

- II. Bottom trawl fishery: by way of derogation from Council Regulation (EC) No 1967/2006, the plan requests permission to continue to use the existing mesh size because a) the shallow bottoms in the fishing grounds, b) the fact that Musky octopus (*Eledone moschata*) is one of the target species and the adoption of a larger mesh will cause a strong reduction in catches and economic losses, c) the Marine Fishery Act (Official Gazette of the Socialist Republic of Slovenia No 25/76, entered into force on 1 January 1994), does not set a minimum mesh size for bottom trawl. STECF notes that the national regulation (point c) should not be considered as justification for the requested derogation.

STECF is not in the position to provide a proper assessment of the likely impact of the proposed derogation due to insufficient data on the different level of catches and discards with the various mesh sizes concerned. STECF notes that musky octopus is the most abundant species in the bottom trawl catches in Slovenia.

## **General comments on Mediterranean Management Plans**

Based on its experience in undertaking evaluations of proposed Member States management plans for Mediterranean fisheries, STECF notes the following:

To date Member States have been unable to fulfil all the requirements of Council Regulation (EC) No 1967/2006. This is probably due to a combination of factors, which includes, among others, the following:

- a) Lack of guidance in the form of Table templates listing the essential elements required to conduct a thorough evaluation;
- b) Availability (or lack of) of data in different MS;
- c) Non-availability of stock assessment information for the most relevant species;
- d) No screening of proposed plans and derogations and whether they include the appropriate data and information required for a thorough evaluation.

STECF notes that point c) is being addressed by the STECF-SGMED Working Groups but efforts at the national level are also required to increase the availability and dissemination of appropriate data and assessments.

To help facilitate the process, STECF suggests that, in cases when a Management Plan is well structured but some data required are not available for various reasons, consideration should be given to granting permission for pilot studies that are designed to provide appropriate data and information that can be used for future Management plan evaluations.

## **10.2. Mediterranean - Deep sea fisheries and species**

### **Terms of reference**

STECF is requested:

- ✓ To advise on the depth contour(s) starting from which, the changes in environmental and biological conditions in the Mediterranean, suggest adequate to make a distinction between shallower and deep-sea species/fisheries. STECF is in particular requested to look whether the fisheries/species undertaken/living beyond the shelf-edge, from the epibathial downward, can be categorized as deep sea or if deeper depths shall be considered.
- ✓ To advice whether finfish and shellfish species may have different depth contours to distinguish between deep-sea and shallow-sea species/fisheries.
- ✓ To list deep-sea crustaceans (common and scientific name) as exploited by target or mixed deep-sea fisheries. The main associated fisheries should be listed as well.
- ✓ To list deep-sea finfish (common and scientific name) as exploited by target or mixed deep-sea fisheries. The main associated fisheries should be listed as well.
- ✓ To list deep-sea cephalopods (common and scientific name) exploited by target or mixed deep-sea fisheries. The main associated fisheries should be listed as well.

### **Classification of deepwater fisheries**

STECF considered a number of candidate metrics for the classification of deepwater fisheries including vessel size, species composition of catches, classification according to geomorphologic structures, and hydrographical features. However STECF concluded that in general, the outer limit of the continental shelf may be a good candidate natural boundary that influences species composition and community structure. It also serves as a useful boundary to distinguish between predominantly shallow and deepwater fisheries. With some exceptions, vessel characteristics, gears used and fishing strategies tend to be different on the shelf and beyond the shelf break. STECF suggests that throughout the Mediterranean, deepwater fisheries should be classified as those that predominantly take place at depths greater than the 200 m isobath and which predominantly exploit those species or life stages of those species that inhabit these depths.

### General description of deepwater fisheries in the Mediterranean

In accepting the classification that deepwater fisheries in the Mediterranean are those fisheries that occur predominantly at depths greater than 200 m, the following fisheries can be identified.

**1. Deepwater fishery for *Nephrops norvegicus*:** One of the main deep-water fisheries in the Mediterranean is the bottom trawl fishery targeting *Nephrops norvegicus*. With the exception of the fishery for *Nephrops* in the Adriatic Sea which takes place at depths between 100 m and 150 m, *Nephrops* is exploited by bottom trawlers at depths between 250 m and 500 m.

In addition to *Nephrops*, the following commercially important species are taken in the same fishery:

Finfish: *Phycis blennioides*, *Micromesistius poutassou*, *Lepidorhombus bosci*, *Helicolenus dactylopterus*, *Pagellus bogaraveo* (adults), some adults of *Merluccius merluccius*, *Conger conger*, *Lepidopus caudatus*, *Galeus melastomus*;

Decapod crustaceans: *Parapenaeus longirostris*, *Plesionika spp.*, *Pasiphaea sp.*;

Squids: *Todaropsis eblanei*, *Illex coindetti*, *Loligo forbesi*.

An example of a typical catch composition in the Italian deepwater fishery for *Nephrops* is given in Table 10.2.1.

**Table 10.2.1.**

Nephrops		
SPECIES	CODE	%
<i>Nephrops norvegicus</i>	NNO	40.0
<i>Phycis blennioides</i>	PBL	7.8
<i>Micromesistius poutassou</i>	MPO	5.3
<i>Merluccius merluccius</i>	MME	4.4
<i>Parapenaeus longirostris</i>	PLO	4.2
<i>Eledone cirrhosa</i>	ECI	4.1
<i>Lepidopus caudatus</i>	LCD	3.8
<i>Trachurus trachurus</i>	TTR	3.0
<i>Lepidorhombus bosci</i>	LBO	2.1
<i>Galeus melastomus</i>	GME	2.1
<i>Conger conger</i>	CCO	2.0
<i>Helicolenus dactylopterus</i>	HDA	1.7
<i>Centrolophus niger</i>	CNI	1.6
<i>Sepietta oweniana</i>	SOW	1.6
<i>Todaropsis eblanae</i>	TEB	1.2
Other species	OTHER	15.00

Composition of the landed fraction of the catch (in weight) in the fishery for *Nephrops* the Italian Mediterranean

**2. Deepwater fishery for pink shrimp (*Parapenaeus longirostris*):** This fishery usually takes place at depths between 150 m and 350 m, straddling the shallow and deepwater areas and overlaps with the deepwater fishery targeting *Nephrops*. The target species is the pink shrimp, *Parapenaeus longirostris* or a species complex (pink shrimp, *Zeus faber*, *Scylliorhinus canicula*, *Merluccius merluccius*, *Raja clavata*, *Trisopterus minutus capelanus*). The fishery also has a bycatch of those commercially valuable species that are taken in the deepwater fishery for *Nephrops* and additional by catch *Capros aper*, *Peristedion cataphractum*, *Macroramphosus scolopax* and *Hoplostethus mediterraneus* which have low or nil commercial value. This fishery takes place usually between 150 to 350 m, then overlapping “shallow” (platform) and deep areas.

**3. Deepwater fishery for Aristeid (red) shrimps (*Aristaeomorpha foliacea* and *Aristeus antennatus*):** The deep water trawl fishery for red shrimps operates mainly between 400 m and 800 m (seldom down to the legal limit of 1000 m) and almost exclusively targets *Aristaeomorpha foliacea* and *Aristeus antennatus*.

The main by-catch species with a commercial value are as follows:

**Finfish:** *Pagellus bogaraveo*, *Micromesistius poutassou*, *Myctophids*, *Phycis blennoides*, *Galeus melastomus*, *Dypturus oxyrinchus*, *Centrophorus granulosus* and *Etmopterus spinax*,

**Cephalopods:** *Eledone cirrhosa*, *Todaropsis eblanae*, *Loligo forbesi*, *Todarodes sagittatus*

**Crustaceans:** *Nephrops norvegicus*, *Plesionika spp.* and *Parapenaeus longirostris*.

The main bycatch with little or no commercial value are species of *Macrouridae*.

A comprehensive list of species, commercial and non-commercial is available from a precious EC study project and is provided in Annex II. An example of a typical catch composition in the Italian deepwater fishery for *aristeid* (red) shrimps is given in Table 10.2.2.

**Table 10.2.2.**

<i>Aristaeomorpha foliacea</i>	17,9
<i>Aristeus antennatus</i>	17,8
<i>Galeus melastomus</i>	9,7
<i>Hexanchus griseus</i>	9,2
<i>Nephrops norvegicus</i>	5,3
<i>Phycis blennioides</i>	5,0
Total Molluscs	4,4
<i>Etmopterus spinax</i>	4,0
<i>Merluccius merluccius</i>	3,6
<i>Lophius piscatorius</i>	3,2
<i>Conger conger</i>	3,0
<i>Micromesistius poutassou</i>	2,2
<i>Helycolenus dactylopterus</i>	1,9
<i>Chlorophthalmus agassizi</i>	1,9
<i>Parapenaeus longirostris</i>	1,7
<i>Lophius boudegassa</i>	1,6
<i>Pleisionika martia</i>	1,5
<i>Lepidopus caudatus</i>	1,3
<i>Geryon longipes</i>	1,3
<i>Todarodes sagittatus</i>	1,3
<i>Eledone cirrhosa</i>	1,2
Others	1,1

Composition of the commercial fraction of the catch ((weight) of the red shrimps fisheries in Italy (Di Natale, 1995)

**4. Deepwater longline fisheries:** In some areas of the Mediterranean, deep-water fisheries using longline are carried out. The main target is a range of finfish species, in particular adults of *Pagellus bogaraveo* and *Merluccius merluccius* (depth interval 200-500m) and *Polyprion americanus* (500-800m). Some localised fisheries targeting *Lepidopus caudatus* with bottom long-lines and *Plesionika spp.* with pots are also carried out.

### **General description of fisheries operating exclusively in shallow water in the Mediterranean**

There are many fisheries that exclusively operate in shallow waters. The criteria for defining shallow water fisheries may be based on a number of criteria other than depth. Only two broad classifications based on gear groupings is presented here.

**1. Trawl fisheries exploiting coastal demersal fish assemblages:** Such fisheries exploit a range of species with the following being the most predominant:

Finfish: *Mullus barbatus*, *M. surmulletus*, *Pagellus erithrinus*, *Squilla mantis*, *Penaeus kerathurus*, sub-adults of *Merluccius merluccius*; *Triglidae*, *Centrarchantidae*, other *Sparidae*, *Eledone moschata*. In addition, juveniles of *Pagellus bogaraveo* can be frequent in the discarded fraction of the catch of coastal hauls, together with juveniles of *Trachurus mediterraneus* and *T. trachurus*.

Cephalapods: *Sepia officinalis*, *Octopus vulgaris*,

The total list of species in shallow water trawl fishery can at times be quite large.

**2. Other shallow water fisheries:** There are also important artisanal fisheries using different gears (hooks, lines, long-line, gillnets, trammel nets, traps, surrounding nets, purse seines) targeting different coastal species (*Sepia* sp, *Mullus* spp, Sparids, small pelagics, etc.). Dredges are also used in several areas primarily for bivalve molluscs.

### **Fisheries operating in both shallow water and deepwater**

With the exception of the trawl fishery, that takes place straddling the continental shelf beak at 200 m (see deepwater fishery for pink shrimp above), the only clearly identifiable fishery that can be classified either as a deepwater fishery or a shallow water fishery is trawl fishery for *Nephrops*. In the Adriatic and in some areas around Greece, the fishery can be classified as a shallow water fishery but in all other areas of the Mediterranean it takes place exclusively at depth greater than 200 m.

### **General classification of species considered to be deepwater species:**

The following classification of species considered to be deepwater is based on the criterion that they complete the whole of their post-larval life cycle in deepwater.

Crustaceans: *Aristaeus antennatus*, *Aristaeomorpha foliacea*

Finfish: *Phycis blennoides*, *Micromesistius poutassou*, *Plesionika* spp., *Molva dipterygia*, *Todarodes saggittatus*, *Centrophorus granulosus*, *Etmopterus spinax*, *Dipturus oxyrinchus*, *Galeus melastomus*, *Lepidopus caudatus*, *Macrouridae*.

Crustaceans: *Nephrops norvegicus*

In addition, STECF considers that all fish species with photophores, usually defined as bathypelagic species, are typical deep sea species, even though Myctophidae can be found close to the sea surface at night in some areas.

### **General classification of species considered to be shallow water species:**

The following is a list of commercially valuable species that can be classified as shallow water species on the grounds that they complete all of their post-larval life cycle in shallow waters.

Finfish: *Mullus barbatus*, *Pagellus erithrinus*, *Mugilidae*, *Sparidae*, *Spicara* spp., *Epinephelus alexandrinus*, *Epinephelus marginatus*, *Muraena Helena*, *Solea solea*

Cephalopods: *Sepia officinalis*, *Octopus vulgaris*, *Loligo vulgaris*

*Mullus barbatus* and *Pagellus erithrinus* nurseries can be found in the Mediterranean very densely concentrated near the shore (0-30m) while juveniles move to deeper waters as they grow (the depth range of the adult populations may be from 0 to 200, but for both species individuals are more frequently found up to 50-60 m), *Sepia officinalis* is mainly coastal species but its distribution may extend down to 60-70 m depth). Also *Penaeus kerathurus* is essentially a coastal species that can live down to 70 m. Other important coastal species are *Solea solea* (0 -150m), *Octopus vulgaris* (0-50m), *Loligo vulgaris* (mainly 50-150m), *Mugilidae*, *Sparidae*, *Spicara* spp., *Epinephelus alexandrinus*, *Epinephelus marginatus*, *Muraena helena*, .etc.. The list can be quite long, due to the high biodiversity in Mediterranean shallow waters. Small pelagic species lives mostly in shallow waters.

### **Species whose life stages live in both deep and shallow water.**

*Merluccius merluccius* recruits of age 0 densely concentrate in the depth interval 120-200 m while sub-adults generally are found in the depth interval 30-200 m and adults are more common between 100 and 800 m.

*Pagellus bogaraveo* age 0 individuals live very close to the shore at a depth from 0 to 30-40m, sub-adults in the range 50-200 m while larger sized adults can be found between 200 to 800m.

*Mullus surmulletus* is a species with a wide range of distribution. Recruitment occurs very close to the shore with nurseries at 0-20m and successively they move to deeper waters or to rocky bottoms, as they grow (depth range 0-400)

### **Species that live in deep and shallow water irrespective of their life stage**

*Nephrops* is among those considered "deep water" species the only one that may be present in relatively lower depth (in the Central Adriatic sea and in some gulfs in Greece at about 100-150m) probably due to temperature, availability of suitable physical habitat determined by sea bed characteristics, food availability, water transparency etc.

Different life stages of *M. merluccius*, *Conger conger* and *Pagellus bogaraveo* show a very wide range of depth distribution. Juveniles of *Polyprion americanum* can be caught in surface waters. Myctophidae species can be found close to the surface at night in some areas. The pink shrip, *Parapenaeus longirostris*, also lives regularly in the deepest part of the continental shelf and in the deeper areas along the shelf slope.

### 10.3. Mediterranean - Length of bottom-set (trammel net, gillnet, combined bottom-set net) and drifting nets on the basis of the volume of stored net

#### Background

Several technical characteristics can affect the volume of a packed net such as the material, the mesh sizes, the twine thickness, the drop of the net, the number of pieces of nets hung jointly on a single headline, the diameter of headline and footrope, the dimension of the buoys and buoyancy factor, the type and dimensions number of plumbs in the lower rope and the stowage factor just to quote some.

Anyhow, Annex II (a) of Council Regulation (EC) No 1967/2006 envisages the possibility to estimate the length of the bottom-set nets and drifting nets from the weight or volume of its packed mass.

#### Terms of Reference

STECF is requested to collate technical and empirical information to estimate rough length-categories for bottom-set nets and drifting nets on the basis of the weight or of the volume of their mass once stowed on the deck or in the storage baskets.

STECF is requested in particular to provide estimates of weights and/or volume for the following combinations or any other else that STECF consider advisable.

Type of net	Twine diameter (mm)	Drop of the net (m)	Length categories (m)					
			<500	500< <1000	<1000 <2500	2500< <4000- 5000	5000< <10000	>10000
Trammel net		2						
		4						
Bottom-set gillnet	<0,5	2						
		4						
		8						
		10						
		20						
		30						

	>0,5	2							
		4							
		8							
		10							
		20							
		30							
Combined bottom-set net									
Driftnets									

### STECF response

STECF was able only to partially answer the request due to data paucity. Some information is provided on the estimated weight of drift nets for a range of mesh sizes and twine types (table 1). However, STECF notes that the relationship between net volume or weight and length is not straightforward and is dependant on a number of factors that make clear delimitation between the lengths categories proposed unclear. Both weight and volume is dependant on the state of the nets (e.g. wet/dry, old/new) and the overall construction. For example, a ‘short’ net rigged with comparatively heavy lead line and a large amount of floatation may be heavier or have a greater volume than a ‘long’ net with light floatation and weighting. In addition, commercial static nets are rigged with a wide range of hanging ratios (typically from 0.25 to 0.6). The choice of hanging ratio depends on the body form of the target species, for flatfishes this is typically low and for roundfish between 0.4 and 0.6. For a net with a low hanging ratio the individual mesh is more vertically elongated with a small horizontal opening, larger ratio values typify nets in which the individual mesh has a greater horizontal opening. Therefore, for a given section of netting difference in overall length could be almost two and a half times even though the weight and volume are the same. The type and size of both floatation and leadline used is also highly variable and fishery specific. Both of these elements will greatly affect both the weight and volume. Until such a time as data on the typical construction of the nets used in the fisheries of interest it is not possible to provide any direct linkage between length and weight/volume because of the issues identified above.

Table 10.3: Relationship between net structure and operational length for a range of drift nets used in the Mediterranean.

<sup>1</sup> Stretched mesh size (mm)	<sup>2</sup> Twine type (material)	Twine type (title)	Drop of the net (m)	Operational drop of the net (m)	<sup>3</sup> Weight (kg)	Length (m)	Length range (m)	Notes
450	PA MUL	30	36	16	100	496		
400/420	PA MUL	60	33	16	100	314		
400	PA MUL	52/48	32	16	100	368		
400	PA MUL	48	32	16	100	384	320-400	average Tyrrhenian Sea
400	PA MUL	48	32	16	100	336	320-400	average Mediterranean
400	PA MUL	42	32	16	100	416		
400/380	PA MUL	48	32/30	16/15	100	320		
400/360	PA MUL	52/48	32/29	16/15	100	334		
400/350/360	PA MUL	54	32/28	16/15	100	305		
380	PA MUL	54	30	15	100	304		
380	PA MUL	51	30	15	100	320		
380	PA MUL	54-48	30	15	100	312	280-320	average Tyrrhenian Sea
380	PA MUL	54-48	30	15	100	288	280-320	average Mediterranean
360	PA MUL	60-54-48	29	15	100	280		
360	PA MUL	48	29	15	100	340		low hanging ratio
360	PA MUL	48	29	15	100	320		

<sup>1</sup> Where more than one mesh size is given, the net is constructed with netting with a range of mesh sizes

<sup>2</sup> Polyamide multifilament

<sup>3</sup> Length measurements are based on a standardised 100kg of netting

#### 10.4. Mediterranean - Length-weight relationship(s) for the red-(blackspot)-sea bream (*Pagellus boagaraveo*)

##### Terms of Reference

STECF is requested to provide the length-weight relationship(s) with its confidence limits for the red-sea bream (*Pagellus boagaraveo*) both in the Mediterranean and in the southern part of ICES area IXa. STECF shall also provide, if advisable, a LW relationship with confidence limits common for the two areas.

##### STECF response

STECF carried out a literature review of length-weight relationships for red (blackspot) seabream (*Pagellus bogaraveo*) and unearthed a number of relationships from both published and unpublished sources. These are summarized in Table 10.4.1. Parameter estimates are available from studies conducted in the Strait of Gibraltar (IXa) (Gil, 2006), Spanish Mediterranean (unpublished MEDITS data), the Ionian Sea (Chilari et al., 2006) and the Northern Aegean (Mytilineou & Papaconstantinou, 1995).

**Table 10.4.1.** Parameters (& 95 % confidence intervals where available) of the length-weight relationship ( $TW=aLb$  in g and cm) of *Pagellus bogaraveo* by area & author. TL: total length, FL: fork length. N: sample size.

Area	N	a	b	r <sup>2</sup>	Size range (cm)	Length	Reference
Ionian Sea	465	0.017 (0.014-0.020)	2.934 (2.896-2.972)	0.98	15.4-38.2	TL	Chilari et al. (2006)
N. Aegean	694	0.021	2.926	0.85	7.0-17.5	FL	Mytilineou & Papaconstantinou(1995)
Strait of Gibraltar	1041	0.014	3.014	0.99	11.0-54.0	TL	Gil (2006) (PhD thesis)
Strait of Gibraltar	1042	0.014	3.005	0.99	11.0-54.0	TL	ICES (2000)
Spanish Mediterranean	418	0.013	2.994	0.99	10.7-46.1	TL	unpublished

Ionian Sea: Although this study provides length-weight relationships for males and females separately, the authors found no significant difference between the parameters and consequently the combined sex relationship is presented here. Sampling was carried out on commercial fishing vessels (gillnet) during March-August 2001 and the analysis was carried out on the pooled data.

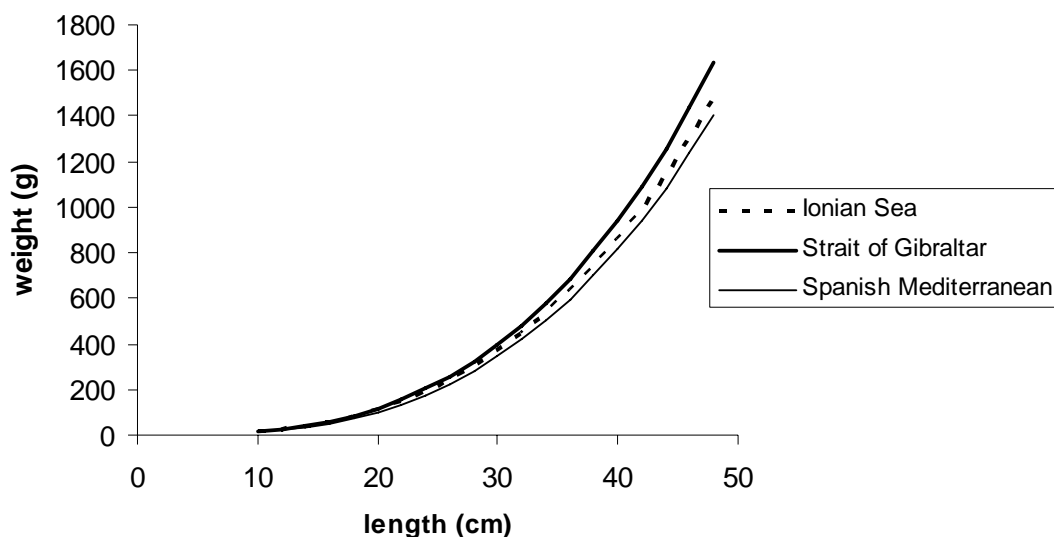
Northern Aegean: This study was conducted in inshore waters and the sample consisted mainly of juvenile individuals.

Strait of Gibraltar: The two relationships in Table 10.4.1, which have been used by ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (*Pagellus bogaraveo* in IXa) result in virtually indistinguishable weight at length over the range of sizes considered. It is assumed that these values represent annual values.

Spanish Mediterranean: An unpublished length-weight relationship obtained from MEDITS data was provided to STECF (Balgurias pers. comm.). The survey typically takes place during the spring.

A comparison of the weight at length implied by the parameters obtained from those studies which included adults is shown in Figure 10.4.1.

Figure 10.4.1. Weight-at-length comparisons obtained from the parameters listed in Table 10.4.1.



STECF has provided length-weight relationship parameters for a number of regions in the Mediterranean and southern part of ICES Division IXa. The only data available to STECF were those used in Chilari et al. (2006) and therefore STECF are unable provide confidence intervals for all of these parameters. However, STECF notes that the point estimates for the b parameter for the Spanish Mediterranean area and IXa lie outwith the 95 % confidence intervals derived for the Ionian Sea.

*Pagellus bogaraveo* from the Atlantic and the Mediterranean sides of the Strait of Gibraltar may be considered as belonging to the same population. The Spanish fishery targeting adults in this region occurs mostly on the Atlantic side extending occasionally southwards to the Moroccan coast. This is also the area where the main spawning grounds are found. Most of the larvae seem to drift into the Mediterranean where they are retained in an area close to the Strait of Gibraltar. Results from tagging experiments conducted by the “Instituto Español de Oceanografía” (IEO) during the last years show that juveniles migrate back to the Atlantic where the bulk of the recruitment takes place. Nevertheless, some tagged juvenile individuals have also been caught along the Spanish Mediterranean coast at localities as far as the limit of the Alborán Sea (Almeria) which indicates a certain eastwards migration rate.

Figure 10.4.1 indicates very similar length-weight relationships for red seabream in the Mediterranean and Division IXa. The studies on population structure suggest that individuals in these areas may in fact belong to the same population and in such a case it would be appropriate to assume a single relationship (across Mediterranean/IXa) to convert length to weight (& vice versa). However, STECF does not have access to the raw data used to estimate the length-weight relationship for the Strait of Gibraltar and Spanish Mediterranean area and are therefore unable to provide a common relationship for the Mediterranean/Division IXa.

#### References

- Chilari, A., Petrakis, G and Tsamis, E.. 2006. Aspects of the biology of blackspot seabream (*Pagellus bogaraveo*) in the Ionian Sea, Greece. Fisheries Research 77, 84-91.
- Gil, J. 2006. Biología y Pesca del voraz (*Pagellus bogaraveo* (Brünnich, 1768)) en el Estrecho de Gibraltar. PhD Thesis. Universidad de Cádiz.

ICES. 2005. Study Group on the biology and assessment of deep-sea fisheries resources. ICES CM 2000/ ACFM: 8.

Mytilineou, C. and Papaconstantinou, C. 1995. Aspects on the biology of blackspot seabream, *Pagellus bogaraveo* (Brünnich, 1768) in the Northern Aegean Sea (Greece). Rapp. Comm. Int. Mer. Médit. 34, 251.

## **10.5. Possible impact harmonising mesh size for Northern hake gillnet fisheries in Western Waters**

### **Terms of reference:**

Following a request submitted by the NWW-RAC and supported by the Commission, the STECF is requested to provide answer to the following questions:

- What would be the probable increase in fishing mortality, induced by harmonisation of the rules through a single 100 mm mesh size for gillnet for vessels targeting Northern Hake throughout the distribution area of the stock, be, given the current practices and the current fishing effort in Areas VI, VII and VIII ?
- Once this assessment is completed, which measures of control of the activity may help to compensate the reduction in mesh size in areas VI and VII?
- In particular, how such an harmonization of mesh sizes should impact capacity limits or fishing effort ceilings in Northern Hake (gillnet?) fisheries?

The current mesh sizes used, when targeting hake, for gillnets are 120 mm North of 48° N and 100 mm south of 48° N with an exception in areas VIIIc and IX where the mesh size is 80mm.

### **Background**

In April 2008 the Commission circulated a Non-Paper on Northern Hake long Term management Plan with the objective to consult stakeholders and Member States on the specifications of the future long-term management plan.

Following the Non Paper the North Western Water RAC (NWWRAC) requested the advice from STECF in relation to quantify the probable increase in F induced by the harmonisation of the rules through a single 100mm mesh size for gillnetters targeting Northern Hake throughout the distribution area of the stock given the current practices and the current fishing effort in Areas VI & VII.

A Working Document “Northern Hake Long Term Management Plan Evaluation changing mesh sizes in three fishery units and including discards.” by Dorleta Garcia, Marina Santurtún, Raul Pallezo, Ane Iriondo and Iñaki Quincoces was presented to STECF. Garcia et al. present in the WD simulations of possible effects on the size and catches of the northern hake stock of changing mesh size in some of the fisheries exploiting the stock in Sub-areas VI and VII.

One of the scenarios evaluated by Garcia et al. was assuming as reduction in mesh size in the gill net fishery in Sub-area VII keeping the exploitation pattern unchanged in all other fisheries.

The starting points for the simulations were the stock size by 1 January 2008 as estimated by ICES and the agreed TAC for 2008. ICES estimate of stock size was revised to include discards. The fishing mortality by fishery required to take the TAC in 2008 were estimated allocating the TAC to fisheries using the relative share of the total landings by fishery observed in 2004 to 2006. The gill net fishery in Sub-area VII was in 2004 – 2006 responsible for 15 % of the landings.

For the following years the catches and fishing mortalities required to generate a total fishing mortality of 0.17 applying an annual constrain on F variation of 10 % were simulated.

Table 10.5: Forecasted median fishing mortalities, spawning stock biomasses and landings for the baseline scenario (no change in mesh size) and the scenario simulating a harmonisation of the mesh size in the gill net fishery in VI, VII and VIII to 100 mm.

		2008	2009	2010	2011	2012	2013	2014	2015	2016
Baseline	F	0.19	0.18	0.17	0.16	0.17	0.16	0.17	0.17	0.17
100 mm gill net	F	0.21	0.19	0.18	0.17	0.17	0.17	0.18	0.18	0.18
Baseline	SSB in t	189,209	197,510	207,697	245,700	263,366	266,184	274,995	259,464	263,731
100 mm gill net	SSB in t	189,209	196,672	205,536	244,014	263,309	267,736	275,159	260,226	264,918
Baseline	Landings in t	48,800	46,916	47,687	51,593	55,138	54,643	57,662	55,458	56,288
100 mm gill net	Landings in t	48,800	46,916	47,118	50,265	53,908	53,764	56,315	54,408	55,281

The simulations indicates that the consequence of reducing the mesh size in the gill net fishery keeping the TAC unchanged will be an increase in fishing mortality in the first year of 0.02. In the medium term the harmonisation of gill net mesh size will result in a slightly higher spawning stock size and slightly lower yield when fishing at a total fishing mortality of 0.17.

The simulations indicate that the main change will be in the relative fishing effort required to generate of fishing mortality of 0.17. The effort in the gill net fishery required to take the same share of the TAC as in recent years is predicted to be 20 to 25 % lower if the mesh size is changed compared to the baseline while the effort in the other fisheries is predicted to be around 1 to 2 % lower than with no change in gill net mesh size.

#### STECF comments and conclusions

STECF notes that the findings presented in the Working Document by Garcia et al indicates that a harmonisation of the mesh size in the gill net fishery in Sub-areas VI to VIII in 2008 with unchanged TAC will result in an increase in fishing mortality in the order of 10 %. STECF concludes that this is a reasonable indication of the likely impact on fishing mortality for Northern hake.

STECF concludes that a reduction in fishing effort is required to maintain fishing mortality at the target level of 0.17 if a harmonisation of the gill net mesh size at 100 mm is introduced. Assuming unchanged allocation of the TAC to the fisheries exploiting hake, a reduction in the deployed gill net effort of the order of 20 to 25 % would be required. The reduction in fishing effort required for other fisheries exploiting hake is estimated to be less than 2%.

STECF has no information to quantify the impact that harmonisation of gill net fisheries for hake to 100 mm is likely to have on species other than hake. However, it is likely that this will result in a reduction in the mean size of a range of species in the catches in the gillnet fishery. As a consequence STECF recommends that the impact of such a reduction in the mesh size of gill nets on the fishing mortality on other species be investigated before any decision is taken.

## **10.6. Assessment of by-catch of cetaceans**

STECF is requested to assess the national Member States reports according to Article 7 in Regulation 812/2004.

### **Background**

Regulation 812/2004 establishes the measures to be carried out by MSs, aiming for the reduction of incidental by-catch of cetaceans in European waters. According to Article 6 in this regulation, MSs have to report, each year, to the Commission on the implementation of Articles 2 to 5. The Commission, after receiving MSs second annual report, has to report to the European Parliament and the Council on the operation of this regulation (Article 7, of the regulation). The report will be based on the assessment done by ICES and STECF of the MSs reports.

Article 6 of Council Regulation 812/2004 sets out the expectations in terms of Member States' reporting on the implementation of Articles 2 to 5. Articles 2 and 3 address the requirements for deployment of acoustic deterrent devices (pingers); articles 4 and 5 address the requirements for deployment of observers on vessels over 15m overall length. Article 5 also covers the collection of data on incidental catches of cetaceans on vessels less than 15m through the conduct of scientific studies or pilot projects. Annex I of the regulation lists those fisheries where the use of pingers is mandatory by area, gear, period and starting date. The required technical specifications of the pingers are listed in Annex II. Annex III lists the fisheries to be monitored by observers and the minimum level of fishing effort to be covered in each case.

### **STECF Review**

Of interest to the Commission in the application of the Regulation is the coverage of types of vessels and areas, the quality of the data from observer programmes and the quality of pilot

projects. STECF reviewed the content of the reports provided by Member States to assess generally these issues. The Commission provided STECF with copies of reports and/or letters sent to the Commission by the following Member States: Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, the Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden, and the UK. In most cases, two reports/letters had been submitted – the first covering activities up to June 2006 and the second covering activities up to June 2007. No reports were available from Lithuania and Malta.

According to Article 6 of the Regulation, Member States' reports should include estimates of overall incidental catches in each of the fisheries concerned, based on data from observers and total fishing effort data. In addition, the reports should include an assessment of the conclusions of the observers reports, research conducted within Member States to reduce incidental mortality, and the results of scientific studies and/or pilot projects (Articles 2(4) and 4 (2) of the Regulation), including the quality standards applied in the conduct of this work.

In common with ICES, STECF found considerable variation in the format and content of the national reports. There is little evidence of cooperation between Member States, and most of the work reported has been the result of independent national efforts.

### **Observer coverage**

Regarding observer coverage, five of the twenty Member States reported that they had no activity in fisheries to which the Regulation applies. For the remainder, several reported difficulty in meeting the observer coverage requirements due to poor cooperation from the industry and/or insufficient funds. In some cases this resulted in a late start in the programme, although in many cases the situation was improving due to actions taken by the Member States concerned. Reliability of data on cetacean bycatch is therefore variable, due to patchy and low observer coverage in some fisheries. Several reports describe the procedures for selecting observers with suitable background for the task.

Eight Member States reported no observations of interactions with marine mammals, other than grey seals. Some reports covered strandings as well as interactions with fishing activity. Two reports provided detailed information on extrapolated estimates of total annual cetacean bycatches and how these had been calculated from observer data and total effort. These estimates, from UK and France, have been reported by ICES (ICES 2008a)<sup>4</sup>. Some other Member States reported that observed bycatches were low and not used to give estimates of the overall bycatches for the fleet. Others that did not include bycatch estimates stated that they had been provided in separate reports, for example to ICES and the IWC.

A few reports described the placement of observers on vessels less than 15m, either as a pilot study or as part of deployments for other purposes, such as monitoring of discarding.

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<sup>4</sup> ICES Advice 2008, Book 1, Section 1.5.1.2 Status of small cetaceans and bycatch in European waters

## Use of Acoustic deterrent devices (pingers)

About half of the national reports did not contain information on the use of pingers. In some cases this was explicitly because the Member States concerned did not participate in the fisheries requiring deployment of pingers (according to Annex I). In other cases, the reason was not clear. Several other reports described experiments undertaken to test the performance of pingers, including investigations of spacing and power output of acoustic emissions. Several reports mentioned that the results of pilot projects and/or scientific studies were presented elsewhere, e.g. to ICES.

## STECF Conclusions

STECF did not attempt to compile estimates of the bycatch of cetaceans based on Member States' reports prepared to meet the requirements of Regulation 812/2004, Article 6. ICES has already summarised these data (ICES 2008a).

STECF notes that the large variation in report quality and format made it impossible to fully review the content of the reports from Member States within the time available at the STECF meeting. While some provided comprehensive information on observer deployments, use of pingers and statistics of cetacean bycatch and interactions, others were much less detailed making the extent of conformance to the requirements of the Regulation difficult to determine.

To mitigate this problem, in its advice provided to the Commission in May 2008, ICES recommended the use of a standard format and prepared a template for use by Member States (ICES 2008b). STECF reviewed this format and agreed that its use would greatly facilitate and streamline the review and processing of information provided in Member States' reports. However, to fully meet the requirements of Article 6 of the Regulation, several components to this template should be considered more explicitly. The discussion section of the ICES template is intended to include discussion of both the performance of mitigation measures (e.g. pingers) and the sampling scheme for observers that leads to the estimates of overall bycatch. STECF considered that these two elements should be referred to specifically earlier in the report guidance to ensure they are explicitly discussed. Suggested modifications to the ICES template are given below. STECF considered that this template should be used by Member States for reporting under Regulation 812/2004, even when the bycatch of cetaceans was observed to be zero.

In addition, STECF endorsed the advice of ICES regarding observer coverage under Regulation 812/2004, as follows:

*The observer programmes conducted by the Baltic countries under Regulation 812/2004 in 2006 covered 0.1% to 9% of the national fleets concerned, but no harbour porpoise bycatch was recorded. Bycatch of harbour porpoise is still an*

*important issue in the Baltic, but the introduction of Regulation 812/2004 has caused resentment within the fishing industry and has not addressed the principal fisheries where porpoise bycatch is a problem. The best conservation efforts are likely to include stakeholder involvement. ICES advises that porpoise bycatches in small vessel fisheries in the Baltic need to be assessed, with observer coverage needed most in Danish, Swedish, Polish, and German waters.*

**STECF suggestions (underlined text) for modifications to the ICES template for reporting Member States activities in accordance with Regulation 812/2004, Article 6.**

## **2. Bycatch mitigation measures**

*[This section should include information on the use of bycatch mitigation measures, especially the use of acoustic deterrent devices (pingers) as required for certain fisheries by the Regulation. Any difficulties in the implementation of article 2 and 3 of the regulation should be reported here. Information on the type and technical specification of pingers and other mitigation used, and the performance of the mitigation should be included. For this section, Table 2 should be completed for the relevant fisheries.]*

## **4. At-sea observer schemes**

### ***Observer effort***

*[This section should contain a short description of observer schemes, including the number of observers used and any training supplied; include a description of the sampling strategy used to meet the required maximum coefficient of variation or other target result; further details can be put in the Annex. Any integration with EU Council regulations 1543/2000, 1639/2001, and/or 92/43 should be mentioned. Any difficulties in the implementation of article 4 and 5 of the Regulation 812/2004 should be reported. For this section of the report Tables 3a and 3b should be completed; note that the effort of the fleet segments is split by ICES Subarea.]*

## **References**

ICES 2008a. ICES Advice 2008, Book 1, Section 1.5.1.2 Status of small cetaceans and bycatch in European waters

ICES 2008b. ICES Advice 2008, Book 1 Section 1.5.1.4 Format for National Reports made under EU Regulation 812/2004

## **10.7. Review of the status of the Celtic Sea cod stock**

### **Background**

The Commission has undertaken to review the TAC for cod in Divisions VIIb-k, VIII, IX and X; EC waters of COPACE 34.1.1 according to new scientific advice during 2008.

ICES will present a new advice concerning this stock on 27th. June 2008 including a new assessment and forecast for 2009.

The Commission would like to be informed of the consequences of the new assessment concerning fishing opportunities in 2008.

## Terms of Reference

With the background of the latest ICES advice, STECF is requested to advise the Commission of the fishing possibilities concerning this stock in 2008 according to the usual precautionary criteria.

In addition, and with reference to the Commission's "Policy Statement" Communication concerning the setting of TACs for 2008<sup>5</sup>, STECF is requested to advise

- (a) which "Policy Statement" category is applicable to this stock;
- (c) what TAC results from the application of the relevant "Policy Statement" rule.

## STECF conclusions and recommendations

1. STECF concludes that with the background of latest ICES advice and based on the usual precautionary criteria adopted by ICES (aim to achieve Bpa by 2009), the advice on fishing possibilities for 2008 would have been 4150 t. STECF notes that the advice according the precautionary criteria adopted by ICES in 2007 was for a zero catch in 2008.

a) STECF further concludes that with the background of latest ICES advice and based on the Policy Statement Communication, for 2008 COM(2007) 295 final, the stock of cod in Divisions VII e-k would have been classified in 2008 as "outside safe biological limits".

b) STECF notes that COM (2007) 295 final, prescribes that the TAC for 2008 should be set at least 15% lower than that for 2007. STECF advises that this implies that the 2008 TAC (EU share) for cod in Divisions VIIb-k, VIII, IX, X CECAF 34.1.1 should have been no greater than 4,032 t.

### 10.8. Large pelagic sharks in the Mediterranean

The recent scientific paper published on Conservation Biology titled "**Loss of Large Predatory Sharks from the Mediterranean Sea**" addresses the status of large sharks and links the decline of *large predatory fishes to intense fishing in the region*.

STECF is requested to review the paper, to evaluate the findings and to make any appropriate comments and recommendations.

#### STECF review of the paper:

The paper published by Ferretti et al. in June 2008 aims to analyse long-term population trends of large pelagic sharks in the north-western part of the Mediterranean Sea. Four species or species groups are considered: the hammerhead sharks (*Sphyrna spp.*), the blue shark (*Prionace glauca*), the mackerel sharks (Lamnids, mainly *Lamna nasus*) and the thresher shark (*Alopias vulpinus*).

#### Data

Due to the lack of reliable data on catches or the results of scientific surveys, the analysis is based on a bibliographic search for data in the scientific literature and private archives. Nine time series of abundance, referring to various areas of the Mediterranean Sea, have been compiled:

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<sup>5</sup> Communication from the Commission to the Council - Fishing Opportunities for 2008 : Policy Statement from the European Commission. COM/2007/0295 final.

- One time series is based on a published compilation of sighting records on the eastern coast of the Adriatic Sea. The data comprised 76 records and cover a long period of 174 years, from 1827 to 2000. Records refer to specimens in museum collections; trawl, purse seine and longline catches; and occasional sightings.
- Two time series came from fishers' logbooks regarding 2 fish or tuna traps located on the north-western coast of Italy. In the fish trap at Baratti, located on the coast, shark by-catches were recorded on a monthly basis from 1898 to 1922 (250 months, 25 years). The tuna trap of Camogli is a floating gear placed 'not too far from the coast'; the data set counted 4,099 daily landings from 1950 to 1974, and about 454 from 2003 to 2006 (26+4 years). The authors state that these two traps did not change significantly over the studied time period.
- Four time series were based on the commercial data from swordfish longline fisheries, published in the scientific literature. They refer to various regions and time periods: the northern part of the Ionian Sea from 1978 to 1999 (22 years, data from the Porto Cesareo fishing fleet); the 'Spanish Mediterranean waters' from 1979 to 2004 (in fact the aggregation of 3 heterogeneous datasets, published by 6 distinct authors, and covering 5+1+10 years); the southern part of the Adriatic Sea from 1984 to 1999 (16 years' data from the port of Monopoli) and the northern part of the Ligurian Sea from 1990 to 1998 (9 years' data from the port of San Remo). Catch and effort data (number of hooks) are available on a yearly base.
- One time series was derived from the official statistics from Valetta market in Malta, and corresponds mainly to landings of the small-scale pelagic longline fishery from this port. It covers the period 1979-2001 (23 years); effort of the whole fishery is expressed in gross tonnage.
- The last time series was based on landings records compiled by two sport-fishing clubs located in the northern part of the Adriatic Sea (in the towns of Albarella and Barricata). Data ranged from 1995 to 2006 (12 years) and refer to the number of thresher sharks landed each year, relative to the number of club members.

Not all of the time series include the four species groups and they refer to catches expressed either in numbers and/or in weight. Overall, the analysis therefore takes into account 39 time series (18 for abundance and 21 for biomass), ranging from 9 to 174 years in length. The number of time series per species group varies from 9 to 11 (including biomass and abundance).

### *Methods*

Using GLM techniques, an exponential curve was fitted to each time series, leading to estimates of mean yearly rate of change in abundance or biomass. Covariates other than year, notably a stratum effect, were included in the model when statistically justified. Based on these local estimates of population change (weighted by the inverse of their variance), a meta-analysis is performed, in order to extract a general rate of decline across different regions, for each species groups. This meta-analysis takes into account random-effects affecting the yearly rate of change, between and within the regions and time periods.

### *Results*

38 time series (among 39) exhibit a decreasing trend over the considered period, and this decrease is statistically significant at 95% level for 27 time series. Mean annual rates of decrease in abundance, estimated from the meta-analysis, are as follows: 17 % for the hammerhead sharks, 6 % for the blue sharks, 12 % for the mackerel sharks, and 11 % for the thresher sharks. This results in a 96 to 99.9 % decline, relatively to their former abundance. Decreases in biomass are found to be even more severe. The authors conclude that such decreases may have ecosystem effects and imply that these species

should be considered as 'critically endangered', according to the World Conservation Union (IUCN) criteria.

### **STECF comments**

Analysing long-term trends in abundance is clearly a useful task for many species and especially for elasmobranchs, whose biology implies a well-known vulnerability to human impacts and especially to fishing activities. Because of a paucity of data, this task is especially difficult in the Mediterranean Sea and the analysis conducted by Ferratti et al. represents a very difficult challenge. Their approach, based on historic records and bibliographic searches, and using various types of observations, is currently the only way to proceed and should be considered as a first attempt. STECF considers that such kind of analyses should be encouraged in the future and should focus on reducing uncertainty. STECF notes that additional time series are available, and should be analysed in the future.

The dataset compiled for the present study is extremely heterogeneous in terms of methods used for observations of catches and effort, or in terms of areas, species and time periods covered by each survey. This is probably not a significant problem, since each dataset represents an independent indicator of shark abundance. Bias within each dataset arising from a variety of factors (heterogeneous sources, changes in the fishing or recording practices, etc) may be more problematic, but STECF has no justifiable reason to suspect a systematic bias in the data. However, STECF notes that the low resolution in the data used means that the results should be interpreted with caution.

The GLM approach used and the meta-analysis performed appear appropriate for this kind of data. Nevertheless, two aspects are worth noting. First, the choice of an exponential function when modelling the abundance trends may not be the most appropriate; other models could be equally appropriate and sensitivity analyses should have been undertaken at least for some series. Second, although meta-analysis is a powerful tool, the common estimate of the mean rate of decline from observations with such a high degree of heterogeneity may be imprecise. Associated with these estimates, the authors themselves provide confidence intervals that must be noted. For instance, the rate of decline for hammerhead shark is estimated between 0.3 % and 34.0 % per year, and between 0.3 % and 13.0% for blue shark.

STECF concludes that the results presented by Ferratti et al. indicate that the overall trends in abundance and biomass for large pelagic sharks in the western Mediterranean Sea show a dramatic decline over the time period of observations. This finding is not surprising. The specific reported rates of decline for the different species groups may be questioned on the grounds that the estimated rates are imprecise but even the most conservative estimate arising from the analyses imply a rapid and significant decline both in abundance and biomass.

No evidence, other than discussion, is provided in the paper to indicate that the declining trend results directly from fisheries impacts. Nevertheless, STECF agrees that fisheries are likely to be a major factor impacting shark populations.

STECF recommends an EU action plan for sharks be agreed and implemented as soon as possible.

STECF notes that the proposed shark action plan includes the possibility to establish by-catch reduction programmes for elasmobranch species considered Critically Endangered or Endangered by IUCN. STECF reiterates its advice given in its report of April 2008 (PLEN 08-01) that by-catch reduction programmes for elasmobranchs are desirable, where a zero TAC or prohibited status is not in force for these species.

### **10.9. Request related to the British proposal for a revision of the methodology used to calculate the TAC for North Sea cod**

Following the request submitted to the Commission by the UK authorities for a STECF opinion on their memo which underlines a possible strategy to reduce discards in fisheries located in the North Sea, the Commission would like to analyse the British proposal for a revision of the methodology used to calculate the TAC of North Sea Cod.

To reach such an analyse, the Commission requests the STECF plenary

- to evaluate fishing possibilities expressed as both limits of catches and limits of fishing effort which could be suggested for 2009 in application of the current Cod Recovery Plan R(CE) No 423/2004.
- to calculate those fishing possibilities if the Commission proposal for a review of the Cod recovery plan was adopted, mainly by taking into account both the new provision defined in Articles 6 & 6a of the draft proposal for setting TACs and data submitted by the UK authorities in their memo.

Due to the short schedule and to the current heavy agenda the STECF plenary has already to deal with during its summer plenary meeting, answer to this question may possibly be delayed. In such a case, the STECF would have to suggest which procedure should be used to answer the Commission question by specifying a possible schedule as well.

#### **STECF comments and advice**

The limits of catches for 2009 applying the current cod recovery plan and the revised recovery plan proposed by the Commission are:

- 45,700 t applying the current cod recovery plan
- 57,400 t applying the revised recovery plan proposed by the Commission

The predicted catch limit under the current recovery plan is taken from the forecast table given by ICES and is based on a 15 % increase in the TAC.

Applying the revised recovery plan proposed by the Commission the fishing mortality rate shall be reduced by 25% in 2009 as compared with the fishing mortality rate in 2008 if the stock in 2008 is below Blim. This is the case for the North Sea cod and the resulting catch limit for 2009 is 57,400 t (landings: 36,400 t, discards: 21,000 t).

STECF notes that these catches would contain fish below the minimum landing size (MLS) for cod and so the fishing possibilities would be less than the figures given. STECF was not able to comment on the estimates of the proportions above and below the MLS provided in the submission from UK authorities but suggests that observer data gathered during 2008 could provide up to date estimates.

STECF was not in a position to address the requests concerning fishing effort at the summer plenary meeting but considers that the outputs from the effort management working group SGRST-08-03 (due to meet in September) will provide material for such an analysis. Given the likelihood of the additional information described above, STECF expects to be able to provide a more complete answer at the plenary meeting in November 2008.

## **11. OTHER MATTERS**

### **11.1. Blue ling closed areas**

#### **Background**

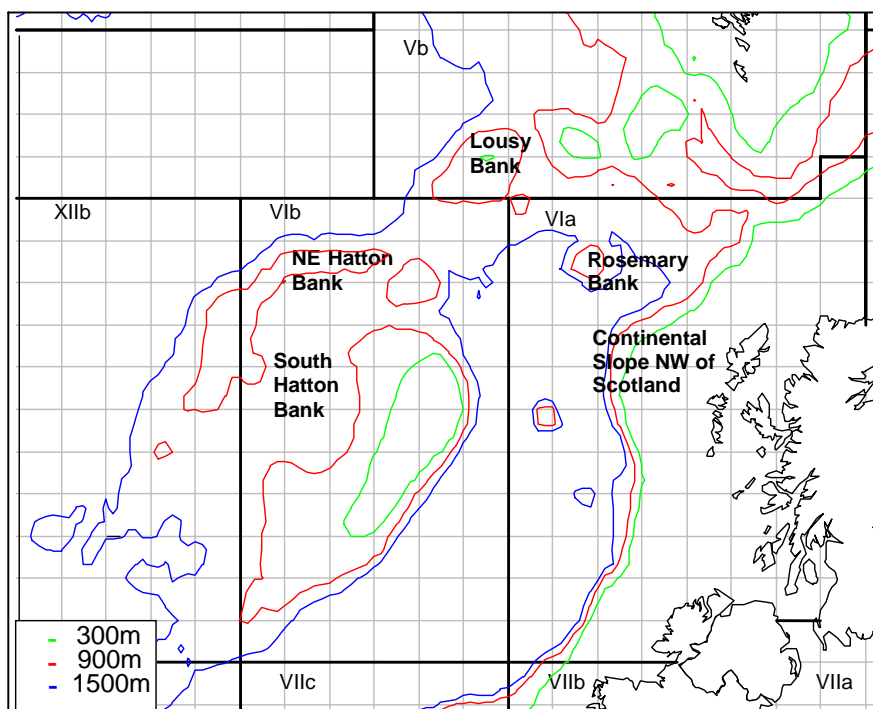
Current ICES advice for blue ling in Vb, VI and VII is that cpue information suggests that the abundance of blue ling remains at a low level. There should be no directed fisheries for blue ling in Subdivisions Vb, VI and VII and measures should be implemented to minimise catches in mixed fisheries. Blue ling is susceptible to sequential depletion of spawning aggregations and closed areas to protect spawning aggregations should therefore be maintained and expanded where appropriate.

In addition to provide advice on fishing possibilities ICES was requested by NEAFC to compile data on documented historical or present spawning/aggregation areas of blue ling in the NEAFC Convention area.

ICES gave a preliminary answer in May 2007 and provided additional information in late autumn 2007. Based on the available information STECF in November 2007 suggested “that at least that part of the fishing area is closed where the majority of fishing effort has been observed. This closure should be applied for all bottom trawl activities directed at blue ling and mixed fisheries with by-catches of blue ling. Judging from the few data available on spawning activities of blue ling in the area concerned, a seasonal closure from March-June would be appropriate.”

New information has been presented to ICES and based on these as well as the information available last year ICES has provided a new response to the request from NEAFC (ICES advice 2008, book 9, section 9.3.2.7). ICES identify five main areas of spawning for blue ling in Areas Vb, VI, and XII (Figure 11.1.1):

1. along the continental slope to the NW of Scotland in VIa (EU waters).
2. on, and around, and to the NW of Rosemary Bank mainly in VIa (EU waters).
3. on the southern and SW margins of Lousy Bank in VIb and Vb (NEAFC Regulatory Area/EU waters/Faroese waters).
4. on the NE margins of Hatton Bank (NEAFC Regulatory Area).
5. eastern and southern margins of the Hatton Bank in VIb and XIIb (NEAFC Regulatory Area).



**Figure 11.1.1:** Location of geographical features referred to in text.

ICES, however, concluded that the information was not available at sufficient spatial resolution to identify specific spawning aggregation locations of blue ling within these areas.

### **STECF comments and recommendations**

STECF is of the view that given this stock has been seriously depleted for many years and shows no sign of recovery, there is an urgent need to introduce precautionary measures to protect spawning aggregations.

STECF agrees with ICES advice on main spawning areas but is of the opinion that there is sufficient information from the UK (E+W) VMS data (Figure 11.1.2) to identify and delineate relatively small closed areas within spawning area 2 (On and around and to the NW of Rosemary Bank (EU waters)) and 5 (On the NE, eastern and southern margins of Hatton Bank (NEAFC Regulatory Area)).

STECF is also of the view that there is sufficient information from Russian investigations (Figure 11.1.3) to close a small area on the SW margins of Lousy Bank within spawning area 3 (The southern and SW margins of Lousy Bank in VIb and Vb (NEAFC Regulatory Area/EU waters/Faroese waters)). STECF notes that the area proposed to be closed (Figure x. 3) is within the closed area established by NEAFC for conservation of cold-water corals.

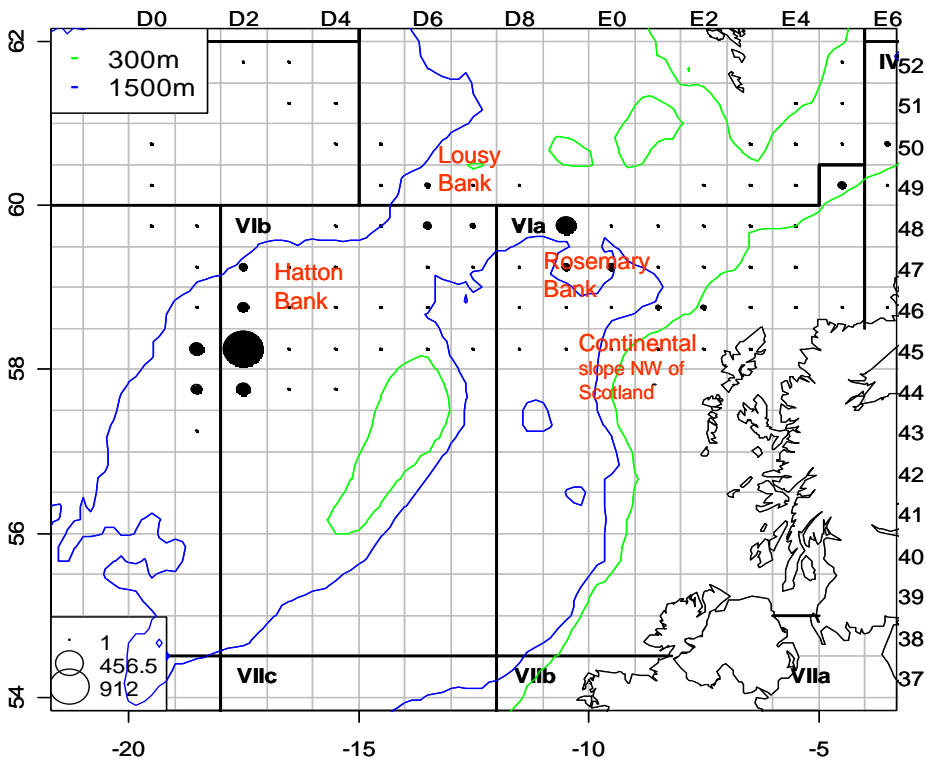
Regarding spawning area 4 (On the NE margins of Hatton Bank (NEAFC Regulatory Area)) it should be scrutinised for overlap with existing closed areas to protect cold-water corals

Regarding spawning area 1 (The continental slope to the NW of Scotland), no VMS data was available for the principal fleets fishing in this area (France and UK (Scotland)) and STECF is not in the position to advise on specific spawning aggregation within the area.

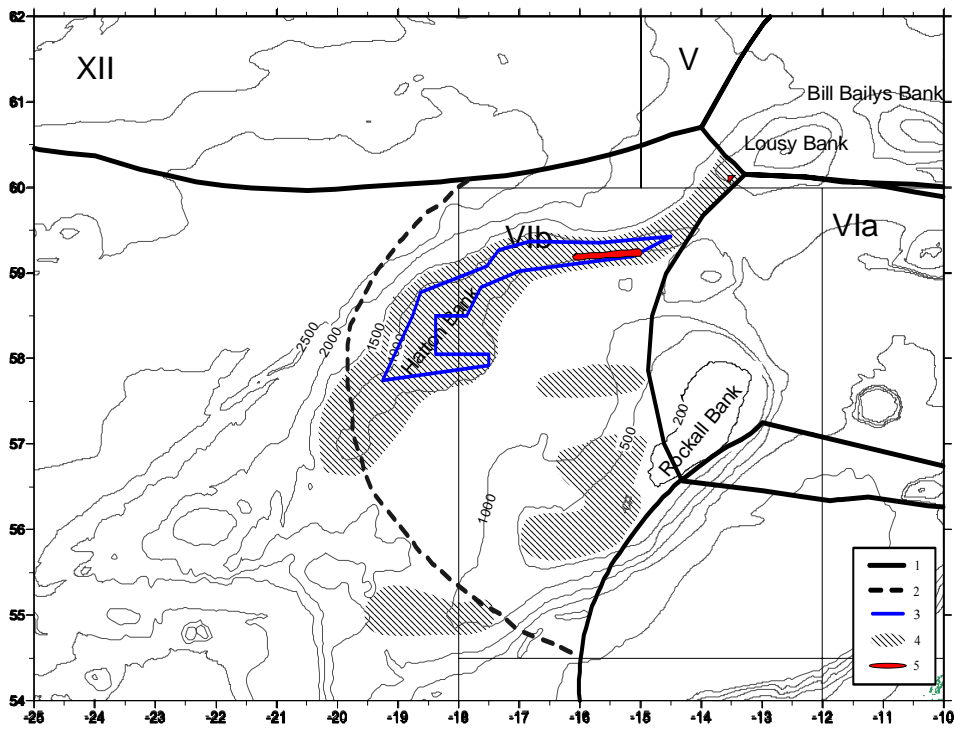
The information presented by ICES suggests that the maximum temporal bounds of spawning are from February to June and that spawning may be slightly later in VIa than in VIb. However, to reduce the impact of closed areas on other fisheries, STECF recommends that minimum candidate closure periods could be March to May for the areas in VIa (Rosemary Bank and continental slope) and Vb (Lousy Bank) and March to April for areas in VIb (Hatton Bank).

STECF furthermore recommends that closed areas should apply to all demersal gears, with the exception of traps fishing for deep-water red crab (*Chaceon affinis*) as these do not to catch blue ling.

STECF emphasises that any closed areas introduced should be viewed as precautionary measures. Dedicated scientific surveys may be necessary to fine-tune area and temporal boundaries. The effects of likely re-distribution of fishing effort due to the closures should be evaluated.



**Figure 11.1.2:** Number of VMS records by ICES rectangle for UK (England and Wales) trawlers, for trips where landings of blue ling exceeded 10 t (2000–2001) (all trips took place from February to May).



**Figure 11.1.3:** Distribution of the main spawning grounds of blue ling in international waters west of the British Isles according to the data from Russian investigations and fishery (Vinnichenko, 2008). 1 – boundary of 200-mile zones; 2 – boundary of 200-mile zones from the Rockall; 3 – boundary of the closed area established by NEAFC for conservation of cold-water corals; 4 – area of the general distribution of blue ling according to the data from Russian investigations and fishery; 5 – spawning grounds of blue ling according to the data from Russian investigations and fishery.

## 12. ANNEX II FOR ITEM 2: CONTACT DETAILS OF PARTICIPANTS

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**13. ANNEX I FOR ITEM 10.2: LIST OF SPECIES CAUGHT BY THE DEEP RED SHRIMP FISHERY IN THE ITALIAN WATERS**

List of species caught by the deep red shrimp fishery in the Italian waters (Di Natale A., Addis P., Agnesi S., Labanchi G., Leonardi E., Mangano A., Maurizi A., Montaldo L., Navarra E., Pederzoli A., Pianese C., Pinca S., Placenti V., Rizzo G., Sabatini A., Salerno G., Valastro, M., 1995 - Survey of red shrimp fishing in the Western Italian Basins. Report to D.G. XIV, European Commission, Brussels: 773 p. + 700 all.).

<b>COMMERCIAL AND TARGET SPECIES</b>	<b>% total catch (weight)</b>	<b>% commercial catch (weight)</b>
<b>FISHES:</b>		
<i>Alepocephalus rostratus</i>	0	0
<i>Anguilla anguilla</i>	0	0
<i>Argentina sphyraena</i>	0.17	0.21
<i>Brama brama</i>	0	0
<i>Centrolophus niger</i>	0.36	0.47
<i>Centrophorus granulosus</i>	0.49	0.63
<i>Chlorophtalmus agassizi</i>	1.37	1.76
<i>Citharus linguatula</i>	0.04	0.06
<i>Conger conger</i>	2.18	2.81
<i>Dalatias licha</i>	0.71	0.92
<i>Epigonus denticulatus</i>	0.04	0.05
<i>Epigonus telescopus</i>	0.07	0.09
<i>Etmopterus spinax</i>	2.93	3.77
<i>Galeus melastomus</i>	7.01	9.03
<i>Glossanodon leioglossus</i>	0	0
<i>Helycolenus dactylopterus</i>	1.41	1.81
<i>Hexanchus griseus</i>	6.66	8.57
<i>Hoplostethus mediterraneus</i>	0.37	0.48
<i>Lepidopus caudatus</i>	0.96	1.24
<i>Lepidorhombus boscii</i>	0.4	0.51

<i>Lepidorhombus whiffiagonis</i>	0	0
<i>Lepidotrigla cavillone</i>	0.01	0.02
<i>Lophius boudegassa</i>	1.17	1.51
<i>Lophius piscatorius</i>	2.33	2.99
<i>Merluccius merluccius</i>	2.65	3.41
<i>Micromesistius poutassou</i>	1.63	2.1
<i>Molva dipterygia macrophtalma</i>	0.15	0.19
<i>Mora moro</i>	0.04	0.06
<i>Mullus surmuletus</i>	0.1	0.13
<i>Myliobatis aquila</i>	0.16	0.2
<i>Ophidion barbatum</i>	0	0
<i>Pagellus bogaraveo</i>	0.12	0.16
<i>Peristedion cataphractum</i>	0.27	0.35
<i>Phycis blennioides</i>	3.65	4.7
<i>Phycis phycis</i>	0.01	0.01
<i>Polyprion americanus</i>	0.02	0.02
<i>Raja batis</i>	0.06	0.08
<i>Raja circularis</i>	0	0
<i>Raja oxyrhincus</i>	0.15	0.19
<i>Schedophilus ovalis</i>	0.05	0.06
<i>Scomber japonicus</i>	0	0
<i>Scorpaena elongata</i>	0	0
<i>Scorpaena scrofa</i>	0.02	0.03
<i>Scyliorhinus canicula</i>	0.77	0.99
<i>Scyliorhinus stellaris</i>	0.05	0.06
<i>Spicara flexuosa</i>	0.01	0.01
<i>Spicara smaris</i>	0	0
<i>Squalus blainvillei</i>	0.52	0.67
<i>Synodus saurus</i>	0	0

<i>Torpedo marmorata</i>	0.01	0.01
<i>Trachurus mediterraneus</i>	0.06	0.07
<i>Trachurus picturatus</i>	0	0
<i>Trachurus trachurus</i>	0.23	0.29
<i>Trigla lyra</i>	0.23	0.29
<i>Trisopterus minutus capelanus</i>	0.2	0.26
<i>Zeus faber</i>	0.11	0.14
Total Fishes	39.93	51.42

CRUSTACEANS:

<b><i>Aristaeomorpha foliacea</i></b>	12.97	16.71
<b><i>Aristeus antennatus</i></b>	12.9	16.62
<i>Geryon longipes</i>	0.93	1.2
<i>Liocarcinus depurator</i>	0	0
<i>Macropipus tuberculatus</i>	0.07	0.09
<i>Maja squinado</i>	0	0
<i>Nephrops norvegicus</i>	3.82	4.92
<i>Palinurus mauritanicus</i>	0.05	0.07
<i>Parapenaeus longirostris</i>	1.24	1.6
<i>Paromola cuvieri</i>	0.33	0.42
<i>Pasiphaea multidentata</i>	0.18	0.23
<i>Pasiphaea sivado</i>	0.38	0.49
<i>Pleisionika acanthonotus</i>	0.06	0.08
<i>Pleisionika antigai</i>	0.01	0.01
<i>Pleisionika edwardsii</i>	0.2	0.25
<i>Pleisionika heterocarpus</i>	0	0
<i>Pleisionika gigliolii</i>	0.01	0.01
<i>Pleisionika martia</i>	1.07	1.37
<i>Pleisionika sp.</i>	0.28	0.36

<i>Sergestes robustus</i>	0.02	0.03
<i>Solenocera membranacea</i>	0.01	0.02
<i>Squilla mantis</i>	0	0
Total Crustaceans	34.52	44.46

MOLLUSCS:

<i>Alloteuthis sp.</i>	0	0
<i>Eledone cirrhosa</i>	0.86	1.1
<i>Eledone moschata</i>	0.13	0.16
<i>Heteroteuthis dispar</i>	0	0
<i>Illex coindetii</i>	0.11	0.15
<i>Loliginidae</i>	0.05	0.07
<i>Loligo forbesi</i>	0	0
<i>Loligo vulgaris</i>	0.22	0.28
<i>Neorossia carolii</i>	0.06	0.08
<i>Octopus macropus</i>	0.01	0.01
<i>Octopus salutii</i>	0.08	0.1
<i>Octopus vulgaris</i>	0.04	0.05
<i>Onychoteuthis banksi</i>	0	0
<i>Pteroctopus tetracirrhus</i>	0.19	0.25
<i>Rondeletiola minor</i>	0.01	0.01
<i>Rossia macrosoma</i>	0.07	0.09
<i>Scaergus unicolor</i>	0.05	0.07
<i>Sepia elegans</i>	0	0
<i>Sepia orbignyana</i>	0.01	0.01
<i>Sepietta oweniana</i>	0	0
<i>Sepietta sp.</i>	0.08	0.11
<i>Sepiola sp.</i>	0.13	0.17
<i>Todarodes sagittatus</i>	0.93	1.2

<i>Todaropsis eblanae</i>	0.17	0.21
Total Molluscs	3.2	4.12

**TOTAL**

<b>COMMERCIAL CATCH</b>	77.65	100
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**NON COMMERCIAL SPECIES**

FISHES:

*Aeteoprora metopoclampa*

*Argyropelecus hemigymnus*

*Batophilus nigerrimus*

*Bathypterois mediterraneus*

*Benthocometes robustus*

*Benthoosema glaciale*

*Callyonimus phoeton*

*Capros aper*

*Carapus acus*

*Cataetyx alleni*

*Ceratoscopelus maderensis*

*Chauliodus sloanei*

*Chimaera monstrosa*

*Chloropsis bicolor*

*Coelorincus coelorincus*

*Coryphaenoides mediterranea*

*Cyclotone pygmaea*

*Diaphus metopoclampus*

*Dysomma brevirostre*

*Echelus myrus*

*Electrona rissoi*

*Evermanella balbo*  
*Gadella maraldi*  
*Gadiculus argenteus*  
*Gaidropsarus mediterraneus*  
*Gaidropsarus megalokynodon*  
*Gaidropsarus vulgaris*  
*Gonostoma denudatum*  
*Gymnothorax unicolor*  
*Hymenocephalus italicus*  
*Lampanyctus crocodilus*  
*Lampanyctus pusillus*  
*Lampanyctus sp.*  
*Lobianchia gemellari*  
*Macroramphosus scolopax*  
*Molva molva*  
*Myctophidae n.i.*  
*Myctophum punctatum*  
*Nansenia oblita*  
*Nemichthys scolopaceus*  
*Nettastoma melanurum*  
*Nezumia aequalis*  
*Nezumia sclerorhynchus*  
*Notacanthus bonapartei*  
*Notolepis rissoi*  
*Ophisurus serpens*  
*Paralepididae n.i.*  
*Pleuronectes sp.*  
*Polyacanthonotus rissoanus*  
*Raja sp.*

*Stomias boa*  
*Sudis hyalina*  
*Symbolophorus veranyi*  
*Symphurus ligulatus*  
*Synchiropus phaeton*  
*Torpedo nobiliana*  
*Trachyrincus scabrus*  
Other fishes n.i.

Total Fishes

CRUSTACEANS:

*AcanthePHYRA purpurea*  
*Alpheidae n.i.*  
*Alpheus glaber*  
*Calappa granulata*  
*Calocaris macandreae*  
*Chlorotocus crassicornis*  
*Euphasiacea n.i.*  
*Gennadas elegans*  
*Goneplax rhomboides*  
*Liocarcinus sp.*  
*Medorippe lanata*  
*Monodaeus couchii*  
*Munida intermedia*  
*Munida sp.*  
*Munida tenuimana*  
*Pandalidae n.i.*  
*Parapandalus narval*  
*Parasquilla ferrussaci*

*Philocheras echinulatus*

*Polycheles typhlops*

*Pontocaris lacazei*

*Pontophilus spinosus*

*Portunidae n.i.*

*Processa acutirostris*

*Processa canaliculata*

*Processa sp.*

*Pseudosquilla sp.*

*Rissoides desmaresti*

*Rissoides pallidus*

*Sergestes articus*

*Sergestes sp.*

Total Crustaceans

#### MOLLUSCHI:

*Abralia veranyi*

*Aequipecten opercularis*

*Ancistroteuthis lichtensteini*

*Aporrhais pespelecani*

*Bathypolypus sponsalis*

*Cassidaria echinophora*

*Cassidaria tyrrhena*

*Chiroteuthis veranyi*

*Histioteuthis bonellii*

*Histioteuthis reversa*

*Histioteuthis sp.*

*Lunatia fusca*

*Murex brandaris*

*Onychoteuthidae n.i.*

Total Mollusca

**TOTAL NON COMMERCIAL**

**CATCH**

**DISCARDS**

**TUNICATES:**

*Phallusia mamillata*

*Pyrosoma atlanticum*

*Thaliacea n.i.*

Total Tunicates

**ECHINODERMS:**

*Antedon mediterranea*

*Astropecten auranciacus*

*Astropecten irregularis*

*Astropecten sp.*

*Cidaridae n.i.*

*Coscinasterias tenuispina*

*Echinides n.i.*

*Echinus acutus*

*Echinus melo*

*Holothuria sp.*

*Molpadia musculus*

*Ophiura texturata*

*Styichopus regalis*

Total Echinoderms

BRIOZOAS:

*Hornera lichenoides*

Total Briozoas

CRUSTACEANS

*Anamathia rissoana*

*Bathynectes maravigna*

*Funchalia woodwardi*

*Macropodia longipes*

*Pagurus alatus*

*Pagurus arrosor*

*Pagurus prideauxi*

*Pagurus sp.*

*Pagurus variabilis*

*Parthenope agulifrons*

*Parthenope macrochelos*

*Rissoides pallidus*

*Xanto poressa*

*Xantidae n.i.*

Total Crustaceans

ANELLIDS:

*Aphrodite aculeata*

*Aphrodite sp.*

*Harmotoe spinifera*

Total Anellids

MOLLUSCS

| *Aequipecten opercularis*

*Aporrhais serresianus*  
*Argobuccinum olearium*  
*Argonauta argo*  
*Calliostoma granulatum*  
*Cavolinia sp.*  
*Ceritium sp.*  
*Cuspidaria cuspidata*

*Cymbulia peroni*  
*Dentalium sp.*  
*Fusinus rostratus*  
*Fusinus sp.*  
*Hinia costulata*  
*Hinia limata*  
*Hinia sp.*  
*Naticidae n.i.*  
*Nucula sp.*  
*Scaphander lignarius*  
*Thracia papiracea*

Egg masses of cephalopods

Total Molluscs:

CNIDARIANS:

*Actinauge richardi*  
*Adamsia palliata*  
*Alcyonium acaule*  
*Alcyonium palmatum*  
*Anthozoaires n.i.*  
*Dendrophyllia sp.*  
*Funiculina quadrangularis*

*Isidella elongata*

*Pteroeides sp.*

Total Cnidarians

SPONGES:

*Axinella damicornis*

n.i. species

Total Sponges:

BRACHIOPODS:

*Gryphus vitreus*

Total Brachiopods

ALGAE & OTHER MARINE VEGETABLES

Red algae (n.i.)

Other vegetables discards

Total Vegetables

