



**GENERAL FISHERIES COMMISSION  
FOR THE MEDITERRANEAN  
COMMISSION GÉNÉRALE DES PÊCHES  
POUR LA MÉDITERRANÉE**



**SCIENTIFIC ADVISORY COMMITTEE (SAC)**

**Fourteenth Session**

**Sofia, Bulgaria, 20-24 February 2012**

**Report of the 13<sup>th</sup> Session of the Sub-Committee on Stock Assessment  
(SCSA)**

**FAO HQs, Rome, Italy, 23-26 January 2012**

**OPENING, ARRANGEMENT OF THE SUB-COMMITTEE MEETINGS**

1. The Sub-Committees meetings of the Scientific Advisory Committee (SAC/GFCM), including the Transversal Session, were held at FAO HQs, Rome (Italy) from 23<sup>rd</sup> to 26<sup>th</sup> January 2012.
2. Mr Abdellah Srour, Executive Secretary of the GFCM, welcomed the participants and thanked them for their attendance acknowledging the effort deployed by their institutions in these difficult times that many countries in the Mediterranean are facing. He noted the increase in number of participants, compared to previous years evidencing the interest of the scientists on the GFCM advisory processes. He further drew the attention of the participants on the two new challenges the GFCM is facing and that will significantly empower the Commission, namely the Task force and the Framework Program. He thanked the EC for the support to the two workshops on VMS and on Elasmobranchs as well as the FAO Regional Projects for their continuous support.
3. Mr Henri Farrugio, Chair Person of the SAC, also thanked the participants for attending the meeting and recalled the mandate of the SAC and its Sub-Committees. He acted as chair of the transversal session.

**TRANSVERSAL SESSION: REVIEW OF TRANSVERSAL ISSUES**

4. This session reviewed the outcome of the technical meetings held in 2011 and introduced some relevant issues such as the Small scale fisheries, Task Force and Framework Program:
  - 2<sup>nd</sup> Transversal Working Group on by-catch (in collaboration with ACCOBAMS) (by SCMEE coordinator)
  - Workshop on Red Coral (by SCMEE coordinator)
  - Follow up on Vessel Monitoring System issues (by GFCM Secretariat)
  - Specific actions for the Black Sea (by GFCM Secretariat)
  - GFCM Task Force and Framework Programme (FWP) (by GFCM Secretariat)
  - Small scale fisheries prospective (by GFCM Secretariat, FAO and FAO Regional Projects)

- Bio-economic impact assessment of scenarios: hake fishery in the gulf of Lion (by IFREMER)

5. The meeting agreed that discussions and comments of the transversal session be included in the reports of each Sub-Committee under the agenda item corresponding to the review of the above mentioned activities. The presentations are available at: <http://151.1.154.86/GfcmWebSite/SAC/SCSA/13/docs.html>

6. Mr Federico Alvarez opened the series of presentations with the two summaries of the workshop on By-catch and on Red Coral. He firstly, on behalf of all the Subcommittees Coordinators thanked the GFCM Secretariat staff for having completed an excellent job in the previous months, he acknowledged the effort put to have all the reports on time.

7. ACCOBAMS congratulated the initiative of the Black Sea strengthening through this first WG, and offered their available information on By-catch from the ACCOBAMS member countries.

8. Tunisian experts informed that an initiative has been launched to create a Network of Research Institutes by the Maghreb countries to address fishery issues in a more collaborative way. Mr Srouf stressed that in fact other areas namely the southern countries are also being considered to be supported by the GFCM within the Framework Program.

9. After the presentation of the FAO Fisheries department, on the *FAO International guidelines on securing sustainable small-scale fisheries*, the role of fishermen on the data collection systems was highlighted. Mr Camiñas informed that under the ArtFimed experiences data collected by the fishermen, are of good quality and very reliable. Other subjects related to alien species, mammals interactions and the impact of some aggressive practices of SSF on the environment seem not to be included in the list of thematic areas of the FAO Guidelines and were suggested to be included. Mr Fuentevilla, FAO representative, insisted that a consultation process to improve the guidelines is open and they are always thanking and welcoming inputs from countries and from RFMOs.

10. After the Presentation by the Regional Projects on the sustainability of small scale fisheries Mr Farrugio stressed that the countries must continue using the tools developed by the regional projects even after those projects are finished as is the case of MedFiSis. The issue of interactions between artisanal and industrial fishery was also highlighted as of great interest.

11. A model based on a case studies of hake fishery of the Gulf of Lion covering various management and methodological contexts (data availability in particular) at short and long term was introduced by Ms Angélique Jadaud. Two Scenarios were tested (one month stop for French trawlers and transition to MSY from 2012 to 2015 by reducing i) number of days at sea by vessel by fleet or ii) number of vessels by fleet (considering stochastic recruitment *lognormal*, proportional variation of other species gross revenue with effort, constant fleet structure, strategy and catchability, constant price per commercial grade). Considering the two scenarios, while biological impacts are identical whatever the adjustment variable ( i) number of vessels or ii) number of days at sea) economic impacts are different. This highlights the stakes of the choice of the adjustment variable to reach an MSY objective.

12. The meeting congratulated the authors for their excellent work and welcomed this type of initiatives in order to assess the economic impact of management measures.

## **OPENING AND ARRANGEMENT OF THE MEETING OF THE SUBCOMMITTEE ON STOCK ASSESSMENT (SCSA)**

13. The 12<sup>th</sup> meeting of the Sub-Committee on Stock Assessment (SCSA) of the SAC was held in Rome (Italy) from 23<sup>rd</sup> to 26<sup>th</sup> January 2012. It was attended by 34 experts from 11 Members (Albania, Croatia, Egypt, France, Greece, Italy, Montenegro, Morocco, Slovenia, Spain, Tunisia) as well as by representatives from the European Commission, GFCM Secretariat, FAO, FAO Regional projects (EastMed, CopeMed II, AdriaMed, MedSudMed) and RAC-MED. The list of participants is provided in Appendix B.

14. The meeting was opened by Mr Fabio Fiorentino (Chair of the SCSA) who welcomed the participants and introduced the agenda.

## **INTRODUCTION OF THE SCSA MEETING AND ADOPTION OF THE AGENDA**

15. The meeting unanimously elected Ms Pilar Hernández and Mr Francesco Colloca as Rapporteurs for the sessions.

16. With minor changes due to organization constraints, the draft agenda was reviewed and adopted. It appears as Appendix C to this report.

## **REVIEW OF NEW STOCK ASSESSMENTS OF DEMERSAL SPECIES AND RELATED SCIENTIFIC ADVICE (AS VALIDATED BY THE WORKING GROUP ON STOCK ASSESSMENT OF DEMERSAL SPECIES)**

17. The main outcomes of this working group were presented by the SCSA coordinator during the session.

18. The meeting, held in Chania (Greece) from 24 to 29 October 2011, was attended by 30 participants (including the moderator), 6 were from Italy, 4 from Spain, 3 from Tunisia, 2 from Cyprus, 2 from Romania, and 1 from each of the remaining 8 countries (Albania, Algeria, Egypt, France, Greece, Lebanon, Montenegro and Morocco), 4 representatives of FAO, FAO EastMed Project, and FAO MedSudMed Project, and Ms Pilar Hernandez from GFCM Secretariat.

19. Overall, 30 assessments were presented of which 21 referred to stocks of 9 fish species and 9 referred to stocks of 4 crustacean species. Amongst the fish species, 6 referred to *Merluccius merluccius*, 5 to *Mullus barbatus*, 3 to *Mullus surmuletus*, 2 to *Pagellus erythrinus* and the remaining 5 to: *Solea solea*, *Sphyræna sphyraena*, *Galeus melastomus*, *Spicara smarís* and *Boops boops*. From the 9 assessments on crustacean stocks 4 referred to *Parapenaeus longirostris*, 3 to *Aristaeus antennatus*, 1 to *Nephrops norvegicus* and 1 to *Aristaemorpha foliacea*. Eventually, 28 assessments out of 30 were validated by the SC.

20. With respect to assessments by GFCM subarea, 23 assessments were confined within one geographical subarea (7 assessments referred to GSA 09, 4 to GSA 25, 3 to GSA 05, 3 to GSA 06, 2 to GSA 07, 1 to GSA 01, 1 to GSA 17, 1 to GSA 18, and 1 to GSA 26) and 7 assessments spanned more than one GSA (3 for GSAs 15-16, 1 for GSAs 01-03, 1 for GSAs 12-13, 1 for GSAs 12 to 16, and 1 for GSAs 12, 13,15,16).

21. Only the assessments endorsed by the WG were examined by the SC. 26 stocks resulted overexploited, one fully exploited and one underexploited.

22. The main information, results, advice and recommendations of the stock assessments carried out by the Working Group on Stock Assessment of Demersal Species, with main comments can be

consulted in the WG report at [http://151.1.154.86/GfcmWebSite/SAC/SCSA/WG\\_Demersal\\_Species/2011/WGSA\\_Demersal-Greece-Report.pdf](http://151.1.154.86/GfcmWebSite/SAC/SCSA/WG_Demersal_Species/2011/WGSA_Demersal-Greece-Report.pdf) and have been summarised in Appendix A of the present report.

23. The SCSA coordinator informed the SC of two preliminary assessments of shared stocks done within the framework of the FAO regional projects.

24. A preliminary assessment on Deep water rose shrimp in GSA 1, 2 and 3 was carried out using Moroccan and Spanish data, in the CopeMed II frame. The SC endorses the qualification of the WG as being a preliminary assessment and the related recommendations of the WG about adding Algerian data from GSA 03 to have the clear picture of this stock which is shared by three countries. The SC recommends scientist to improve the investigation on stock distribution and data collection in this area.

25. Another assessment, based on landing structure in size on hake caught by Italian, Maltese and Tunisian fleet in 2010 in GSA 12,13,15 and 16, was carried out within the framework of the MedSudMed project. The SC endorses the qualification of the WG as preliminary, and recommends to add more years of data to make more feasible the analysis.

26. The SC acknowledged the FAO Regional projects (Adriamed, Copemed II, Eastmed and Medsudmed) for the relevant support in improving the assessments of shared stock in the Mediterranean by the activities of their WG.

#### **SC GENERAL RECOMMENDATIONS ON THE ASSESSMENTS REPORTED BY THE WG:**

27. The SC recommended the WG to give advice in terms of fishing mortality, proposing a set of measures by which the variation of fishing mortality can be obtained, allowing managers to identify how and in what time the management objective could be achieved. Furthermore, to facilitate the managers activities, the SC recommends to add simulation of what would happen if no action is done. Besides, if requested by managers, simulations with different management scenarios can be further added.

28. The SC recommended to report in the Stock assessment Forms (SAFs) information on the characteristics of the gears, such as the mesh size for trawlers and other nets, what would help to know what is the size range of the species affected by each gear.

29. In case of assessment based on pseudo-cohorts analysis, the SC recommended to specify how the pseudo cohort is analysed (keeping the years separate or averaging years) and justify the compliance of steady state assumption.

30. When long time series of information on catch structure and commercial/scientific catch rates are available, the SC recommended to use XSA or VPA approaches.

31. In case of advice on fishing closure of nursery and spawning areas, the SC recommended to include maps showing the distribution of juveniles or spawners to allow a more precise identification of areas to be protected.

32. The SC discussed issues related to the spatial scale at which assessments are carried out. For example, in the case of the GSA 9, it would be important to consider the existence of two different biogeographic areas (Tyrrhenian and Ligurian seas), almost physically separated by the Elba island, in which two different stocks might co-exists. The SC recommends to explore the possibility to carry out an assessment in each area separately for sedentary species such as Norway lobster.

---

**REVIEW OF MAIN GENERAL RECOMMENDATIONS AND COMMENTS DONE BY THE WORKING GROUP ON STOCK ASSESSMENT OF DEMERSAL SPECIES**

33. Concerning the comments on suitable methods to identify biomass based reference point in absence of formal assessment the SC agreed on including analyses of SSB and recruitment time series (SSB vs recruitment plots or quartile approach) as suitable tools to give technical limit reference point to assess renewability of stocks.

34. Concerning the comments on incorporating environmental parameters in assessment models of stock clearly affected by environmental change, the SC recommended to substitute the adjective “necessary” by “advisable” in case when this type of data are available and models allow to incorporate directly the environmental parameters.

35. Concerning the Unit stock and GSA boundaries, the SC underlined that, according to the GFCM glossary, the GSA's are "*geographically defined zones used to compile data, monitor fisheries and assess fisheries resources in a georeferenced manner*". This does not mean that for a given species within the boundaries of a given GSA inhabits a single homogeneous stock. In fact the distribution of a stock can cover partially or totally a GSA, or in some cases the stock can be distributed over the boundaries of several GSA's. In order to improve the understanding of the stocks distribution, the sub-committee recommended that the assessments shall indicate, when possible, their biological boundaries, specifying the existence of more than one discrete stock. In order to improve the accuracy in relating data to stock units and specific fishing effort, the SC recommended the use of the statistical grid defined for the use of logbooks in the Recommendation GFCM 35/2011/1. Additional information could be provided by the information coming from VMS.

36. The participants discussed the WG recommendation on length based assessments of species with sex-specific growth dimorphism. The general rules recommended by the WG were endorsed as guideline to be followed to assess stocks during the WG. Anyhow, the SC also remarked the need to be flexible in the recommendations about methods and analytical approaches to be used considering that in the GFCM area the availability and quality of data can differ substantially from one stock to another.

37. Concerning to the WG comments on advice suggesting changes in current fishing effort, assuming a direct linkage between fishing mortalities and fishing effort, the SC agreed that in some cases this relationship cannot be linear and would need to be better investigated on a stock and fishery basis.

38. Regarding the advice on fishing effort, the SC agreed on the WG recommendation about the need to collect data at the most aggregated level (i.e. métier, operational unit) in order to have a better insight of the effort distribution among species. In this case again the use of VMS and logbook data is put forward as a potential solution to solve this problem. The SC reminded the recommendation GFCM35/2011/1 on logbook on the reporting fishery data on the basis of statistical grid. In this respect the SC suggested the threshold of no more 15 kg.

39. Concerning to the definition of critical stock status, the SC recommended to adopt the new definitions *Overfished (or overexploited)* and *Overfishing (or overexploitation)* adopted during the 13<sup>th</sup> Session of SAC (Marseille, 2011) and recommended to substitute the old definitions by these new ones in the GFCM e-Glossary.

**REVIEW OF NEW STOCK ASSESSMENTS OF SMALL PELAGIC SPECIES AND RELATED SCIENTIFIC ADVICE (AS VALIDATED BY THE WORKING GROUP ON STOCK ASSESSMENT OF SMALL PELAGIC SPECIES)**

40. The main outcomes of this working group were presented by the SCSA coordinator.
41. The meeting, held in Chania (Greece) from 24 to 29 October 2011, was attended by 20 participants (including the moderator), 6 were from Italy, 3 from Croatia, 2 from Spain and 1 from each of the remaining 6 countries (Albania, Algeria, France, Montenegro, Morocco and Tunisia) 2 representatives of FAO (MedSudMed-AdriaMed projects and FIRF) and Ms Pilar Hernandez from GFCM Secretariat.
42. Overall, 14 stocks analysis of *Sardina pilchardus* and *Engraulis encrasicolus* were presented of which 11 formally validated. In terms of GSA areas, 11 GSA areas were covered. In addition, results of the recently finished EU project SARDONE on the impact of a sardine juvenile – fry fishery (“Bianchetto”) in the Adriatic sardine stock were presented.
43. All formally assessed stocks were either classified as fully exploited (7) or overexploited (2), with the exception of the sardine and anchovy stocks in southern Adriatic Sea (GSA18) for which the status is considered moderately exploited, although exact situation is not fully known due to poor information on exploitation rates (see Tab.2, appendix A).
44. Some indications were done for correction of mistyping and errors in the WG report, namely: the number of Tunisian experts is wrong. Instead of 3 it should state 1. The name of authors of the sardine assessment in GSA is not correct besides Omar Kada, it should be added Hachem Idrissi.
45. The main information, results, advice and recommendations of the stock assessments carried out by the Working Group on Stock Assessment of Small Pelagic Species, with main comments of the SC can be consulted within the report of the Working group at the following link:  
[http://151.1.154.86/GfcmWebSite/SAC/SCSA/WG\\_Small\\_Pelagics/2011/WGSA\\_Small-Pelagic-Greece-Report.pdf](http://151.1.154.86/GfcmWebSite/SAC/SCSA/WG_Small_Pelagics/2011/WGSA_Small-Pelagic-Greece-Report.pdf).
- This information is summarised in table 2 of Appendix A of this report. Only the assessments endorsed by the WG were examined during the SC.
46. The SCSA Coordinator informed the SC of three preliminary assessments, one of which was of shared stocks done within the framework of the FAO regional project CopeMed II, another one presenting data from Algeria and a third one with Tunisian data.
47. A preliminary assessment on Sardine in GSA 1 and 3 was carried out using Moroccan and Spanish data, in the CopeMed II frame. The SC endorsed the qualification of the WG as being a preliminary assessment and the related recommendations of the WG. The SC recommends scientist to improve the investigation on stock distribution and data collection in this area and congratulate the Institutes involved in the analyses, as well as CopeMed II program for promoting the initiative.
48. The SCSA acknowledged the work presented by the Algerian expert on sardine and round sardinella in GSA04 as the first attempt to assess the stock and considered it as preliminary.
49. The assessment of standing stock biomass of Sardine and anchovy stocks in GSA 12, 13 and 14 since 1998 was presented. Since no information on catch and stock status was available, the assessment was considered as preliminary.
50. An acoustic stock assessment of small pelagic stocks, carried out in the framework of the FAO Project AdriaMed, indicated that dominant species in the whole Adriatic Sea (GSAs 17 and 18) during 2010 was anchovy with estimated biomass of approx. 709,439t, while estimated biomass of sardine was approx. 329,053t. The SC considered this assessment preliminary and recommended to continue

the data collection and standing stock evaluation.

51. Some participants stressed the convenience of, in the possible, maintaining the Moderator for the working groups at least three years to allow for a certain period of continuity. This would give the opportunity to test the methods and advices proposed from one year to the next ones under the guidance of the same scientist.

#### **REVIEW OF MAIN *GENERAL RECOMMENDATIONS AND COMMENTS* DONE BY THE WORKING GROUP ON STOCK ASSESSMENT OF SMALL PELAGIC SPECIES**

52. The SC discussed on how the advice for fisheries management should be formulated. The participants generally agreed that the choice between measures based on fishing effort or catch limitations is under the responsibility of the managers. It is therefore considered more appropriate to limit the scientific advice to fishing mortality or eventually catch, using expressions such as “not increase the fishing mortality” or “limit the catch” However, some opinions against this approach were raised, since in the past scientists were asked to provide indications on how to reduce the fishing mortality.

53. The SC discussed the proposal to use of 40% BMSY as limit reference point for small pelagic stocks, suggesting to test this biomass RP during the next WG of Small Pelagic. Moreover, the necessity to establish catch limits for small pelagic stocks consistent with an adequate exploitation or harvest rate has been raised during the discussion.

#### **TRANSVERSAL WORKSHOP ON THE ESTABLISHMENT OF TASK 2 DATA COLLECTION FRAMEWORK ON BIOLOGICAL INFORMATION (SCSA/SCSI)**

54. In order to give some elements to start the discussion, the SCSA Coordinator gave a summary of the type of data useful to do stock assessment, i.e.: catch and effort, size structure of the catch, indices from scientific surveys and biological information.

55. The SCSI Coordinator presented a summary of the SWOT analysis did the previous day within the transversal session SCSI/SCSI to express everyone’s views on the Task 1 current design. He noted that some countries also have developed their National Systems based on GFCM Task 1 evidencing that the design should not be considered as a blocking factor. The table with the strengths, weaknesses, threats and opportunities is shown within the report of the SCSI available at <http://151.1.154.86/GfcmWebSite/SAC/SCSI/12/docs.html>.

56. It was noted that spatial dimension had not been considered among the data requirements presented and suggest to add this consideration either by GSA or by statistical cell. The provision of these data could be addressed by using VMS data and logbooks.

57. It was proposed that a task 2 concerning the biological structure of yearly catch should be implemented instead of task 1.5. About the aggregation level, it was stressed that was an important issue to be discussed, some participants pointed out that it should be necessary to quantify the effort directed to each stock or group of species in order to make realistic stock assessments.

58. Some decisions have to be taken on the following issues: (i) defining a list of priority species (by criteria other than the current ones) for which this biological information is needed and (ii) what data are required for specific stocks, ensuring the good quality of data. (iii) The possibility of using distribution areas of the stock other, and more flexible than strict GSA boundaries and how to enable the data collection system to fulfil the different levels needed.

59. Some other comments about the definition of “group of target and main associated species” as well as the compatibility of the concepts métier and Operational Units were raised. The need of convergence of both concepts as well as the efforts already deployed by the GFCM Secretariat and the EC on this process were outlined.

60. The two Subcommittees agreed upon the idea to give the mandate to a group of experts or to a consultant with the elements arisen in this session to elaborate a design of the Task 2 module. This module should have a clear scope, be flexible enough to allow for different levels of aggregation of the information depending on the stocks selected. A selection of priority stocks should be the first step. A road map was proposed which includes a workshop with the participation of the four Subcommittees Coordinators which ToRs are drawn up in the report of the SCSI.

61. The Regional Project support was much appreciated for the assistance to the countries in facilitating the fulfilment of their obligation on data submission with the GFCM, special mention was done to the work done by finished project MedFisis which manuals have already published and available at the web site. Projects coordinators stressed that the regional projects are currently working in this direction to deal with the shared stocks. Common database of the Adriatic is already developed. The political willingness is the high point to overcome for the full availability of data, the scientists work jointly in this direction.

#### **REVIEW OF THE CONCLUSIONS OF THE WORKSHOP ON STOCK ASSESSMENT OF SELECTED SPECIES OF ELASMOBRANCHS**

62. The conclusions and recommendations of the Workshop were introduced by the SCSA Coordinator. The report of the Workshop can be consulted at the following link: [http://151.1.154.86/GfcmWebSite/SAC/SCSA/2011/Elasmobranchs/Elasmobranchs\\_Brussels-Report.pdf](http://151.1.154.86/GfcmWebSite/SAC/SCSA/2011/Elasmobranchs/Elasmobranchs_Brussels-Report.pdf).

63. After revision, the SC endorsed them and proposed to enlarge the list of species to be assessed next year, eventually within the WG of demersal species. Maltese skate and shortfin mako (*Isurus oxyrinchus*) are potential candidates given their recent inclusion in Annex III of the Barcelona Convention. The SC was informed that shortfin mako (*Isurus oxyrinchus*) is being object of a specific WG of ICCAT, and requested the GFCM Secretariat to explore this and other similar initiatives and the possibilities to participate.

64. With regard to the recommendation to produce field guides for the easy identification of animals on board, the SC was informed of the existence of FAO identification guides and plastic sheets and suggested that the Secretariat promote its dissemination. The issue of fining and identification of carcasses was also highlighted.

#### **RENEWAL OF THE STOCK ASSESSMENT FORMS**

65. Two main issues were highlighted as needed to be addressed, one is the terminology which is not clear enough for the emission of the diagnosis, and the other one is the operational procedures to fill them up in the sense that it is difficult to insert text and graphs.

66. On the basis of the conclusions and recommendations done by the WGs on Demersals and Small Pelagics and due to the descriptive objective of the current SAF, the SC suggested to substitute the existing SAF with a more descriptive tool similar to the template adopted by Sub Group on the MEDiterranean (SGMED) of the STECF based on a Word document with the data inserted as tables and graphs.

67. The presence of the full set of data in a Word format which can be easily managed for data



extraction should allow to redo the analysis for check and validation. It was also stressed that it would also be convenient to add a section to describe the settings of the models and scripts when they have been used.

## PROTOCOL FOR SURVEYS AT SEA AND INTERCALIBRATION EXPERIMENT

68. The Secretariat informed that an updated document with the progress done towards the adoption of a common protocol for surveys at sea in all the Mediterranean has been produced and is available in the web page as one of the SC meeting documents but still more work needs to be done to end up with a common protocol of surveys at sea in all the Mediterranean.

69. One contribution was presented on the MedSudMed intercalibration exercise at sea between the F/V Santanna and the R/V Hannibal (Italian and Tunisian research vessels), used for bottom trawl surveys in the Strait of Sicily in GSAs 15 and 16, and GSAs 12, 13, 14 respectively.

- **Intercalibration of bottom trawl survey vessels in the Strait of Sicily: preliminary results on catch rate differences and estimation of inter-calibration coefficients.**

*Chemmam-Abdelkader B., F. Fiorentino, G. Garofalo, S. Fazzani, S. Gancitano, W. Khoufi, P. Rizzo, S. Ezzeddine O. Jarboui, L. Ceriola and E. Arneri*

The comparison and/or joint analysis of the time series of bottom trawl survey data is a major problem in the case of stocks distributed on the area covered by more than one country. To address this problem, the MedSudMed project organised an inter-calibration experiment between the R/V “Hannibal” used for several experimental surveys by INSTM in Tunisian waters and the M/P “Santanna” used by IAMC-CNR and the MRRA for conducting MEDITS surveys in Italian (south-Sicily) and Maltese waters. The objective of the experiment was to compare the fishing power of the two vessels and estimate the conversion coefficients of abundance indices (biomass and density) of demersal species with particular focus on *Parapenaeus longirostris* and *Merluccius merluccius*. The two species were identified taking into consideration the economic value, annual catch, and information available on the biology, ecology and distribution in the area. Over a total of 40 pair tows carried out, 23 valid tows are considered for the analysis after excluding both the pair hauls showing zero catches for one of the vessels and the non-valid hauls which occurred for operational problems. A reliable estimate of the conversion coefficient between R/V “Hannibal” and M/P “Santanna” is obtained for hake, whereas, preliminary weak results are found for shrimp. For this species, the estimation is expected to be improved by applying more robust methods to analyse the data and by evaluating the effect of the different depth strata on the fishing power of the two vessels.

70. Some questions about the details of the boats and the operation were posed. Some experts also asked about the other species not considered in this experiment although it was made clear that the objective of the experiment was to look for possible coefficient of calibration only for the two most important shared stocks.

71. The experiment is welcomed by the SC as one new step towards the purpose of jointly analyzing data coming from the surveys carried out in the south-central Mediterranean for hake and deep water rose shrimp.

## **UPDATE GFCM REGIONAL DATABASE ON BIOLOGICAL PARAMETERS TO FACILITATE STOCK ASSESSMENT PROCESS**

72. The GFCM Secretariat informed that the Biological parameters database has been updated taking into consideration the inputs received at the SAC 13<sup>th</sup> on amendments and improvement of fields, and that new data available in 2011 has been included. The process to transform the excel sheets on a searchable web-based database is still to be done.

## **GENERAL CONCLUSIONS AND RECOMMENDATIONS**

73. The conclusions and recommendations of the two WG were discussed and approved by the SC with the comments drawn up in previous pages within the WGs Sections of this report.

## **2012 SCSA WORKPLAN**

74. The SCSA agreed on the following activities for 2012:

➤ **Creation of a Mediterranean experts network in collaboration with the EIFAAC/ICES Working Group on eel (WGEEL)**

75. The SC was informed that this proposal was a follow up of the outcomes of the GFCM/SAC expert meeting on European Eel held in Tunisia in September 2010.

76. Ms Eleonora Ciccotti introduced the progress done by the existing EIFAAC/ICES WGEEL on the assessment of the Eel stock in the overall distribution area and informed about the agreement of EIFAAC and ICES to include the GFCM in this permanent working group. A proposal for a Working group with the following TORS was discussed and approved by the SC.

- Identify available data, summarize published documentation, create a data inventory, analyse gaps and identify any management plans implemented;
- Establish a methodological framework for the assessment of local stocks in the GFCM area
- Assess interactions between aquaculture and capture fisheries in the GFCM area
- Assess the anthropogenic impacts on the stock and relate that to the targets/limits of the (national) Eel Management Plans (if present) and the (international) EU Recovery Plan and the need for non-detriment findings under CITES;
- Draft and agree a report during the meeting.

77. Details on formalizing this cooperation were charged to the three Institutions Secretariats and a more defined version of the Terms of reference was agreed to be elaborated by e-mail exchanges among them and the Subcommittee Coordinator and circulated to potential participants for approval.

➤ **Proposal for a new meeting of the Permanent Working Group on Stock Assessment Methodology (PWGAM) on: *Time Series Analysis***

78. The SC suggested that this WG on Methodology Time Series should have a training orientation and the possibility of publishing the results of case studies that the participants would provide and be addressed by the WG within practical sessions. TORs for the WS will be prepared by the Secretariat and SCSA coordinator on the basis of the request contained in the WGs reports.

## ANY OTHER MATTERS

79. A presentation to inform the SC about the new EU Marine Strategy Framework Directive (2008/56/EC; MSFD) was delivered by Mr Sasa Raicevich:

- **MSFD: An introduction to the main outcomes of the ICES working group on descriptor 3 – Commercial Species** (by S. Raicevich, T. Fortibuoni, O. Giovanardi)

80. MSFD is an EU legal instrument for the protection of EU seas and represents one of the pillar of EU's Integrated Maritime Policy. This Directive have the overall objective to achieve or maintain the Good Environmental Status (GES) of the EU's marine waters by 2020. The implementation of the Directive by the countries is a staggered process in which each MS will establish a *monitoring programme* for ongoing assessment and regular updating of targets by 15 July 2014 while by 2015 they will develop of a *programme of measures* designed to achieve or maintain GES by 2020. He added that since the GES assessment should be carried out by each EU Member State with an harmonized approach in each region and sub-region, taking also into account non-EU countries perspectives that shares their national waters within each sub-region, the SCSA might contribute in providing technical assistance to this process.

81. The SC supported the GFCM initiative to participate in consultations through the process of implementation when information and requests be addressed by the ICES in the appropriate time and manner. To this purpose, the GFCM Secretariat and ICES secretariat should be in contact and participate in consultative processes on what regards fisheries issues in the Mediterranean and Black Sea.

82. One contribution was presented by the EastMed project on the stock assessment working group organized in 2011 by the project.

- **EastMed, 2011. Report of the First Permanent Working Group on Stock Assessment** (by G Scarcella)

83. The meeting had three main general objectives i) to identify candidate shared stocks and priority stocks in the region, which are in need of scientific advice from stock assessments and to prioritise these stocks at sub-regional and national level; ii) to determine the main data available for stock assessment purposes, identify the gaps in data collection and suggest actions to fill the gaps; iii) to identify the most adequate approaches for the estimation of growth parameters and suitable models to assess the stocks in the region according to the data available. the group identified a set of criteria to be used for the identification of shared stocks in the region and provided a list of candidate shared stocks. Similarly, the group identified a list of priority stocks for each country and GSAs on which to focus future stock assessments. For each identified shared and priority stock, the main data available and the methods applicable for their assessment were determined. The ToRs of the next meeting of the WG were also discussed and agreed.

84. Some comments were raised on the possibility to identify shared stock in certain area due to lack of data from different countries. It was recognized that is a difficult process and a lot of data and effort are needed. This experience is the first done for the eastern countries and is very welcomed. The support of the FAO Regional Projects to the work of the GFCM is much appreciated and acknowledged by the participants.

85. Ms Pilar Hernández informed about the progress achieved in the collaboration between GFCM and FAO/ FIRMS,( Fishery Resources Monitoring System ). Several internal meetings have been held to redefine the template for the Resources Fact Sheets on status of stock. Thanks to this collaboration these fact sheets are available and will be annually updated by the GFCM Secretariat to be published in the web pages with the corresponding links of GFCM and FIRMS.

**NOMINATION OF SCSA COORDINATOR**

86. The Secretariat thanked the SCSA Coordinator Mr Fabio Fiorentino for the work done in the last two years. Mr Jorge Baro proposed that Mr Fabio Fiorentino continue to coordinate the SCSA for the next mandate. After the approval by the SC, Mr. Fabio Fiorentino was appointed as SCSA Coordinator for one year.

**DATE AND VENUE OF THE NEXT MEETING**

87. The date and venue of the next meeting will be decided in the future.

**ADOPTION OF THE REPORT**

88. The Conclusions and Recommendations were adopted by the SC on 26<sup>th</sup> of January 2012 at 07:00 pm. The whole report was adopted the following week after revisions and amendments by electronic correspondence.

Table 1- Assessments for demersal species, validated by the WG.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 1 Northern Alboran Sea	<i>Merluccius merluccius</i>	Size composition of commercial landings tuned by MEDITS and commercial CPUE	2002-2010	VPA, XSA, Y/R	In overfishing with intermediate abundance Fc (1.33) higher than F0.1 (0.20)	To reach F0.1 a reduction of 80% of the FC is advisable; Improve the fishing pattern of the trawl fleets Especial surveillance in the use of 40mm square/50 diamond mesh size in the cod end in trawl gears.	The WG endorsed the assessment and recommendations.	The SC commented that the low contribution of long-liners and gillnetter to fishery not necessarily implies the absence of recruitment overexploitation risks. Endorsed
GSA 05 Balearic islands	<i>Merluccius merluccius</i>	Catch, effort, Lfreq catch, Trawl surveys	Size structure of commercial trawl catches and official landings (1980-2010), CPUE from the commercial fleet (2000-	Extended Survivor Analysis (XSA) & Y/R analysis.	Over-exploited; current F (1.21) higher than F0.1(0.16) and Fmax (0.24)	Reduce fishing mortality by reducing the effort activity and improving the selection pattern of the fishery. The use of the information	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 05 Balearic islands			2010) and bottom trawl surveys (2001-2010)			from the vessel monitoring system will help to improve the knowledge about the spatial distribution of the fishing effort.		
	<i>Mullus surmuletus</i>	Catch, effort, Lfreq catch, Trawl surveys	Size structure of commercial landing of trawlers and artisanal fisheries (2000-2010), CPUE from commercial trawl fleet (2000-2010) and bottom trawl surveys (2001-2010).	Extended Survivor Analysis (XSA) & Y/R analysis.	In overfishing; current F (0.55) higher than F0.1 (0.55) and lower than Fmax (1.10)	Reduce fishing mortalities by reducing the effort activity and improving the selection pattern of the fishery.	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed
	<i>Aristeus antennatus</i>	Catch, effort, Lfreq catch, Trawl surveys	Size structure of commercial landing of trawlers (1992-2010)	Extended Survivor Analysis (XSA) & Y/R analysis.	In overfishing; current F (0.59) higher than F0.1 (0.15) and lower than Fmax (0.23)	A decrease in F could be provided using complementary	The WG endorses the assessment and the related recommendations	No further comments. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
			CPUE from commercial trawlers (1978-2010)			management measures like temporal fishing time reduction for some periods like at the beginning of the reproduction or spawning period and during the recruitment period at the beginning of autumn period.		
GSA 06 Northern Spain	<i>Mullus barbatus</i>	Catch, effort, Lfreq catch, trawl surveys	Size structure of commercial landing of trawlers (1995-2010) CPUE from commercial trawlers and Medits	Extended Survivor Analysis (XSA) & Y/R analysis.	In overfishing; current F (0.72) higher than F0.1 (0.20) and Fmax (0.35)	Decrease the fishing mortality of about 70%. More effective control in shelf areas above 50 m depth to reduce the catch of small individuals under the	Co-occurrence of SSB increasing and recruitment decreasing. The WG endorses the assessment and the related recommendations.	No further comments. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 06 Northern Spain						minimum legal size. The use of the 40 mm square mesh in the cod-end should improve trawl exploitation pattern and Y/R by 24%, but a close supervision of the observance of this measure is needed.		
	<i>Aristeus antennatus</i>	Catch, effort, Lfreq catch, trawl surveys	Size structure of commercial landing of trawlers (1996-2010) CPUE from commercial trawlers and Medits	Extended Survivor Analysis (XSA) & Y/R analysis.	In overfishing; current F (1.33) higher than F <sub>0.1</sub> (0.28) and F <sub>max</sub> (0.49)	Reduce F by 72% trough a reduction in effort capacity and improving the selection pattern. Implementing areas closed to fishing in the nursery areas during the recruitment period.	Check the influence of using biological parameter in combined sex assessment. The WG endorses the assessment and the related recommendations.	No further comments. Endorsed
	<i>Parapenaeus longirostris</i>	Catch, effort, Lfreq catch,	Size structure of	VPA, Extended	In overfishing and low level of	Reduce growth overfishing:	The oscillation found for this	No further comments.



GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
		trawl surveys	commercial landing of trawlers (2001-2010) CPUE from commercial trawlers and Medits	Survivor Analysis (XSA) & Y/R analysis.	abundance; current F (1.14) higher than $F_{0.1}$ (0.30) and lower than $F_{max}$ (2.73)	<ul style="list-style-type: none"> <li>- Reduce the fishing mortality by 70%.</li> <li>- Improve the fishing pattern of the trawl.</li> </ul>	species is in agreement with other areas of the Mediterranean. It is assumed that environmental and ecological factors (e.g. water temperature, predatory release effect) can affect the stock in addition to the fishing mortality and difficult to evaluate the status of the stock. The WG endorses the assessment and the related recommendations.	Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 07 Gulf of Lion	<i>Merluccius merluccius</i>	Catch, effort, Lfreq catch, trawl surveys.	Size structure of commercial landing (French and Spanish data from trawlers, gillnetters and longliners) 1998-2010 CPUE from commercial trawlers and Medits.	Extended Survivor Analysis (XSA) & Y/R analysis.	In overfishing and low abundance; current F (1.43) higher than F0.1(0.19) and Fmax (0.29).	<p>To reduce growth overfishing:</p> <ul style="list-style-type: none"> <li>- Improve the fishing pattern of the trawl to arise the minimum length of catches equal to the minimum legal landing size</li> <li>- close nursery areas at least temporally (- Reduce the effort of trawl, from reducing time at sea, number of fishing boats, engine power, Bollard pull and/or trawl size</li> </ul> <p>To avoid recruitment overfishing:</p> <ul style="list-style-type: none"> <li>- Reduce the effort of longline and gillnets in order to increase (or at least maintain) the SSB.</li> <li>- Establish temporal closures for</li> </ul>	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
	<i>Mullus barbatus</i>	Catch & Lfreq of catch	Size structure of commercial landing (French and Spanish data from trawlers,) 2004-2010 CPUE from Medits.	VPA, Extended Survivor Analysis (XSA) & Y/R analysis for 2004-2010	In overfishing and intermediate level of abundance current F (0.85) higher than F0.1 (0.45) and lower than Fmax (1.68).	Current F has to be reduced to reach F0.1.	The SSB was found to increase, so there was some doubt about the XSA results. The MEDITS trend was the same with that of SSB. It is rather odd that with so high overexploitation the trend of SSB is increasing. The WG endorsed the assessment and recommendations.	
GSA 09 Ligurian and North Tyrrhenian Sea	<i>Merluccius merluccius</i>	Lfreq Catch Surveys data	Size structure of commercial landing 2005-2010 CPUE from commercial trawlers and Medits 1994-2010	XSA for 2004-2010 LCA – Pseudocohort analysis (VIT) Y/R ; SURBA (1994-2010)	In overfishing; current F (1.5-2) higher than F0.1 (0.22) and Fmax (0.35)	A reduction of F is recommended	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed
	<i>Mullus barbatus</i>	Catch , effort & trawl surveys	1994-2010	Non-equilibrium production model and LCA	In overfishing and overexploited; current F (0.54) higher than FMSY (0.47) B2010/Bmsy=0.60	A reduction of F is recommended	The WG endorsed the assessment and recommendations	No further comments. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 09 Ligurian and North Tyrrhenian Sea	<i>Mullus surmuletus</i>	Lfreq Catch Surveys data	Size structure of commercial landing 2009-2010	LCA – Pseudocohort analysis (VIT) Y/R ;	In overfishing; current F (056_0.71) higher than F0.1 (0.35) and lower than Fmax (1.00)	A reduction of F is recommended	The WG endorsed the assessment and recommendations	No further comments. Endorsed
	<i>Galeus melastomus</i>	Length frequency distribution of catch	2009-2010	LCA and Y/R	In overfishing current F (0.35) lower than F0.1 (0.10)	A reduction of F is recommended. Reduce the catch in areas where juveniles are concentrated	The WG endorsed the assessment and recommendations	The SC endorses the assessment and the related recommendations of the WG. The Advice to reduce the catch in areas where juveniles concentrate should be supported by a map with the spatial distribution of juveniles.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 09 Ligurian and North Tyrrhenian Sea	<i>Aristeus antennatus</i>	Length frequency distribution of catch	2009-2010	LCA and Y/R	In overfishing current F (0.62) lower than F0.1 (0.32)	A reduction of F is recommended.	The WG endorsed the assessment and recommendations	The SCSA endorsed the assessment presented at the WG. In the WG report, in the diagnosis of stock status. Exploitation rate should be substituted by “fishing mortality rate”.
	<i>Nephrops norvegicus</i>	Length frequency distribution of catch & trawl surveys	LFD of catch 2006-2010; LFD of trawl surveys 1994-2010	LCA – Pseudocohort analysis (VIT) Y/R ; SURBA	In overfishing current F =0.35 higher than F0.1 (0.21)	A reduction of F is recommended.	The WG endorsed the assessment and recommendations	The SC recommended for sedentary species to assess stock status using a spatial scale lower than that of GSA. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
	<i>Parapenaeus longirostris</i>	Length frequency distribution of catch & trawl surveys	LFD of catch 2006-2010; LFD of trawl surveys 1994-2010	XSA, LCA – Pseudocohort analysis (VIT) Y/R ; SURBA	Under-exploited current F =0.40 in 2009 and 0.29 in 2010 lower than F <sub>0.1</sub> (0.78)	The current F is considered low and appears to ensure good yields and a safe situation. In any case, it is advisable, within the precautionary framework, to keep the fishing pressure on this stock at the current level.	The WG endorses the assessment and the related recommendations.	The SC recommend to substitute in the stock status “underexploited” with “sustainable exploitation”
GSA 12/13 Northern and Eastern Tunisia	<i>Shpyraean sphyraena</i>	Length frequency distribution of catch	LFD of catch 2006-2008	LCA and Y/R	In overfishing	A reduction of F is recommended (40% in northern and 60% in eastern sector).	The WG endorsed the assessment and recommendations	The SC endorses the assessment and the related recommendations of the WG. The use of F <sub>max</sub> as RP should be however replaced by F <sub>01</sub> .

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 12/13/14/ 15/16 Strait of Sicily	<i>Parapenaeus longirostris</i>	Length frequency distribution of catch & trawl surveys	2007-2010	LCA – Pseudocohort analysis (VIT and ANALEN) & Y/R	In overfishing; current F (1.21) higher than F0.1 (0.95)	A reduction of about 20% is considered necessary in order to reach the F0.1 level. In addition the exploitation pattern of the fishery should be improved. A protection of the stable nurseries on the Adventure and Malta Banks in the Strait of Sicily is advised	Trawl survey based approach should be used in the future to make the assessment more robust. The WG endorses the assessment and the related recommendations	No further comments. Endorsed
GSA 15/16 Strait of Sicily	<i>Mullus barbatus</i>	Length Frequency Distribution of catch & SSB and Recruit indices from trawl surveys	LFD of catch 2006-2010; trawl surveys 1994-2010	LCA – Pseudocohort analysis (VIT) & Y/R ;	In overfishing current F =0.78 (mean 2006-2010) higher than F0.1 (0.45) Increasing trend of SSB and recruitment in last years was higher than that in the nineties.	A reduction of F is recommended.	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 15/16 Strait of Sicily	<i>Pagellus erythrinus</i>	Length Frequency Distribution of catch & SSB and Recruit indices from trawl surveys	LFD of catch 2006-2010; trawl surveys 1994-2010	LCA – Pseudocohort analysis (VIT) & Y/R ;	In overfishing current $F = 0.60$ (mean 2006-2010) higher than $F_{0.1}$ (0.30) No signs of decrease in SSB and recruitment in last years.	A reduction of F is recommended.	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed
GSA 15/16 Strait of Sicily	<i>Aristaeomorpha foliacea</i>	Length frequency distribution of catch & trawl surveys	LFD of catch 2006-2010; LFD of trawl surveys 1994-2010	LCA – Pseudocohort analysis (VIT) Y/R ; SURBA	In overfishing current $F = 1.00$ (2010 value) higher than $F_{0.1}$ (0.40) SSB and recruitment at low level from 2002 to 2010.	A reduction of F is recommended.	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed



GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 17 Northern Adriatic	<i>Solea solea</i>	Length frequency distribution of catch & trawl surveys	2005-2010	XSA, LCA – Pseudocohort analysis (VIT) Y/R ; SURBA	In overfishing; current F (1.34- 1.20) higher than F0.1 (0.24-0.26) and Fmax (0.38- 0.46).	A reduction of F, especially by rapido trawling, is recommended. A two-months closure for rapido trawling inside 11 km off-shore along the Italian coast, after the biological fishing ban, would be advisable to reduce the portion of juvenile in the catches.	The WG highlights the use of data from the eastern side of the basin. Moreover, the group underlines the need to extend the rapido trawl survey inside the 12 nm from the Croatian coast, as was performed in 2005 and 2006.	No further comments. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 18 Southern Adriatic Sea	<i>Merluccius merluccius</i>	Length frequency distribution of catch & trawl surveys		SURBA software, ALADYM model, VIT software and the R-routine developed at SGMED working group.	In overfishing; current F (0.87) higher than F0.1 (0.21) and Fmax (0.27). ALADYM simulations show that after a decrease of the catches in the short terms the yield trend is increasing and reach levels higher than the values in the beginning of the time series with an improvement of stock productivity SSB.	Reduce fishing mortality through fishing activity limitations and possibly fishing capacity decreasing. Most of the F is derived from the Italian bottom trawlers, that represent about 85% of the total F in the GSA, and from the Italian longliners, accounting for about 7-8% (overall 92- 93% of F). Montenegrin trawlers account for about 1% of the F and Albanian trawlers for about 6.5%.	The assessment provides a wide range of analysis useful to managers for assisting the decision process. The WG endorses the assessment and the related recommendations.	Since the fleets of three countries (Albania, Italy and Montenegro) are involved in hake fishery in GSA18, the advice for management should consider the different situations of the three countries. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 25 Cyprus island	<i>Mullus barbatus</i>	Length frequency distribution of catch	2005-2010	Separable VPA for the period 2005- 2010, VPA- pseudocohort and Y/R analysis for 2009 and 2010	In overfishing; current F (0.43- 0.46) higher than F0.1 (0.33) and lower than Fmax (0.51).	The stock is in overfishing state, considering that the current F should be reduced by 24% (based on 2010 Y/R analysis) or by 28% (based on 2009 Y/R analysis) for reaching the F0.1 reference point.	The WG endorses the assessment and the related recommendations	
GSA 25 Cyprus island	<i>Mullus surmuletus</i>	Length frequency distribution of catch	2009-2010	VPA- pseudocohort and Y/R analysis for 2009 and 2010	In overfishing; current F (0.42- 0.49) higher than F0.1 (0.22-0.23) and lower than Fmax (0.32-0.34).	Current F should be reduced by 53% (2010 results) or 48% (2009 results) for reaching the F0.1 reference point.	The WG endorses the assessment and the related recommendations	

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 25 Cyprus island	<i>Spicara smaris</i>	Length frequency distribution of catch	2005-2010	VPA- pseudocohort and Y/R analysis for 2005-2007 and 2008- 2010	Fully exploitation in 2005-2007 being $F_{cur}= 0.19$ , $F_{max}= 0.38$ and $F_{0.1}=0.19$ . In overfishing in 2008-2010 being $F_{cur}= 0.37$ , $F_{max}= 0.40$ and $F_{0.1}=0.24$ .	According to transition analysis, an approximate reduction of 15% (10- 20%) of the current F could lead to $F_{0.1}$ . This could be achieved with the reduction of licensed fishing vessels LOA 6-12m and trawlers LOA 12-24m. The increase of selectivity is also important.	The WG recommends to improve the analyses by using approach out steady state (VPA or XSA). The WG endorsed the assessment and recommendations.	The SC endorses this assessment as preliminary due to some inconsistencies in the results of the analyses on the two sets of data. It would advisable to carry out the VIT analysis for each year separately to better evaluate the consistency of the steady state assumption for the stock.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 25 Cyprus island	<i>Boops boops</i>	Length frequency distribution of catch	2005-2010	VPA- pseudocohort and Y/R analysis for 2005-2007 and 2008- 2010	In overfishing in 2005-2007 being Fcur= 0.57, Fmax= 0.38 and F0.1=0.24. In overfishing in 2008-2010 being Fcur= 0.37, Fmax= 0.39 and F0.1=0.24	F must be reduced in the case of artisanal fishery. According to transition analysis, an approximate reduction of 15% (10-20%) of the current F could lead to F0.1. This could be achieved with the reduction of licensed fishing vessels OAL 6-12m and increasing the selectivity.	The WG recommends to improve the analyses by using approach out steady state (VPA or XSA). The WG endorsed the assessment and recommendations.	

GSA	Species	Data type	Years data	Methodology used	Stock status	Management advice	WG comments	SC comments
GSA 26 South Levant	<i>Pagellus erytrinus</i>	LFD of catch & trawl surveys	2006-2007	Z by the length converted catch curve and M was estimated by the Pauly equation. Beverton and Holt Y/R model and relative Y/R analysis (knife edge selection)	In overfishing; current F (0.55-0.72) higher than F0.1 (0.27-0.30) and Fmax (0.54-0.57)	Reduce the fishing mortality by 45% (entire Egyptian coast) and 60% (Port Said area). Improve the exploitation pattern	The WG endorsed the assessment and recommendations.	The SC recommend to enhance data collection to improve the quality of the assessment. The Eastmed Project Coordinator highlighted that the present assessment has been guided by the project staff during the WG and although the data concern previous years it was tried the best use of them.

Table 2- Assessments for small pelagic species, validated by the WG.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 03 Southern Alboran sea	<i>Sardina pilchardus</i>	Catch, effort, Lfreq catch,	2003- 2010	Pseudocohort (LCA, VIT), Y/R	Exploitation rate: Moderate in East, high in west; Biomass level: lower than previous year;  Fully exploited	<ul style="list-style-type: none"> <li>- Maintain the current fishing mortality;</li> <li>- Reduce the mortality of fishing on the spawning fish</li> <li>- Introduce seasonal closure during January which coincides with the peak of the spawning;</li> <li>- Prohibit fishing during May near Short-nap close</li> <li>Kebdana to preserve the young fish.</li> </ul>	The WG endorses the assessment and the related recommendations.	No further comments. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 06 Northern Spain	<i>Engraulis encrasicolus</i>	Catch, effort, Lfreq catch, Echo-surveys	2002-2009	Extended Survivor Analysis (XSA), tuned with acoustic.	The stock abundance is considered as low, while the exploitation rate is uncertain.  Fully exploited	Not to increase the fishing effort. Despite F resulted quite stable there are fluctuations in biomass	The WG endorses the advice and recommendation for this stock. The WG encourages improving the quality of data used for the analysis in terms of the length of the time series and the biological data used (age – length keys).	The SC support the recommendation of the WG to improve the ageing problem by obtaining more reliable age-length-keys in the area. The lack of reference point to support the diagnosis of the stock status (fully exploited) was discussed.
GSA 06 Northern Spain	<i>Sardina pilchardus</i>	Catch, effort, Lfreq catch, Echo-surveys	2002-2009	Extended Survivor Analysis (XSA), tuned with acoustic.	Exploitation rate: high; Biomass level: the lowest value in time series  Overexploited	Reduce the fishing effort until the recruitment increase	The WG detected a danger of recruitment overexploitation due to the decreasing trend in recruitment and very low levels of the spawning stock. The WG also recommend that a series of test are carried out for future assessment of the assessment robustness. The	The SC noted the decreasing trend in landing, SSB and recruitment recognizing the risk of stock collapse. The advice was found not in line with the assessments results and stock diagnosis (overexploited) which clearly indicated the need to reduce the fishing mortality



GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
							WG endorsed the assessment and recommendations the related recommendations.	to the lowest value possible.
GSA 07 Gulf of Lion	<i>Engraulis encrasicolus</i>	Echosurveys and catch	1998-2010	Biomass at sea and harvest ratio Catch/Biomass	Exploitation rate: Moderate; Biomass level: low;  Fully exploited	Not to increase fishing effort	The WG endorses the assessment and the related recommendations. The WG also acknowledges that there is evidences on changes in the pelagic ecosystem of this area, and suggest that further ecological studies are conducted to clarify the ecosystem status.	The SC endorsed the assessment but proposes to change the status to “recovering” instead of fully exploited.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 07 Gulf of Lion	<i>Sardina pilchardus</i>	Echosurveys and catch	1998-2010	Biomass at sea and harvest ratio Catch/Biomass	Exploitation rate: very low; Biomass level: very low with decreasing trend. Close to collapse;  Fully exploited	Fishing effort cannot be increased until the system stabilise or show signals of recovery.	The WG endorsed the assessment and recommendations The WG also acknowledges that there is evidences on changes in the pelagic ecosystem of this area, and suggest that further ecological studies are conducted to clarify the ecosystem status..	The SC endorsed the assessment, recommending anyhow to change the stock status from “fully exploited” to “depleted” as showed by the drastic reduction of the catch and biomass and consequently of the fishing activity.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
A 16 Strait of Sicily	<i>Engraulis encrasicolus</i>	Echosurveys and catch	1998-2010	Surplus production (SPM) including environmental anomalies and harvest ratio Catch/Biomass	Exploitation rate (ratio between total landings and biomass estimates): high fishing mortality. FCur/FMSY=1.76 Stock abundance (acoustic biomass estimate): intermediate abundance BCur/BMSY = 0.85 Overexploited	- fishing effort should not be allowed to increase and consistent catches should be determined;  - prevent a possible further shift of effort back from anchovy to sardine.	The WG endorses the advice and recommendation given for this stock. No specific limit or precautionary reference point have been yet endorsed for small pelagic fish species in the framework of GFCM. The fitting of the SPM is poor.	The SC endorses the assessment and the related recommendations of the WG, and proposed to amend the last sentence that has an apparent contradiction. In the advice provided in the assessment report of the WG the term "anchovy" should be read as "sardine"

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 16 Strait of Sicily	<i>Sardina pilchardus</i>	Echosurveys and catch	1998-2010	Surplus production model including environmental anomalies and harvest ratio Catch/Biomass	Exploitation rate (ratio between total landings and biomass estimates): moderate fishing mortality. Fc/FMSY(2010)=0.22  Stock abundance (acoustic biomass estimate): low/intermediate abundance.  Bc/BMSY(2010)=0.48  Fully exploited.	- fishing effort should not be allowed to increase and consistent catches should be determined;  - prevent a possible further shift of effort back from anchovy to sardine.	The WG endorses the advice and recommendation. The WG appreciated the use of surplus production model with the inclusion of the environmental factor improves the fitting of the production model. The WG also recommend trying to estimate a B-Lim reference point, as it will facilitate taking advise in relation to the current stock status.	The SC endorsed the assessment and the related recommendations. The SC also discussed the use of 40% Bmsy as technical limit reference point for small pelagic stocks, recommending to test this biomass RP during the next WG of Small Pelagic.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 17 Northern Adriatic	<i>Sardina pilchardus</i>	Catch, effort, LFD, ALK, echo- surveys	1975- 2010 (Catch data) 2004- 2010 (echo- survey)	VPA with Laurec- Shepherd tuning; Integrated Catch Analysys (ICA)	Exploitation rate (ratio between total landings and biomass estimates): moderate.  Stock abundance (VPA and acoustic biomass estimate): low abundance.  Fully exploited.	- Not increase the fishing effort.  - Consider the interactions with anchovy fisheries.	The WG endorses the advice and recommendation. The WG suggests that future assessments take into account combined data from 17 and 18 GSAs. The WG also suggests continuing to explore the relationships between recruitment and environment	The SC endorses the assessment and the related recommendations of the WG. Advice should be related to fishing mortality and not directly to fishing effort, or eventually both fishing effort and catches should be mentioned. Endorsed

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
	<i>Engraulis encrasicolus</i>	Catch, effort, LFD, ALK, echo-surveys	1975-2010 (Catch data) 2004-2010 (echo-survey)	VPA with Laurec-Shepherd tuning; Integrated Catch Analysis (ICA)	Exploitation rate (ratio between total landings and biomass estimates): moderate  Stock abundance (VPA and acoustic biomass estimate): intermediate abundance.  Fully exploited	- Not increase the fishing effort.  - Consider the interactions with sardine fisheries.	The WG endorses the advice and recommendation. The WG suggests that future assessments take into account combined data from 17 and 18 GSAs. The WG also suggests continuing to explore the relationships between recruitment and environment.	The SC endorses the assessment and the related recommendations of the WG. Advice should be related to fishing mortality and not directly to fishing effort, or eventually both fishing effort and catches should be mentioned. Endorsed.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 18 Southern Adriatic Sea	<i>Sardina pilchardus</i>	Echo-surveys and DEPM	Western part 1987-2010 (catch data) 1987-2010 (echo-surveys)  Eastern part 2002-2011 (echo-surveys)	Biomass & Catch estimates	Exploitation rate (ratio between total landings and biomass estimates): moderate  Stock abundance (acoustic biomass estimate): low abundance.  Moderately exploited with uncertain in exploitation rate	- Not increase the fishing effort in the western part	The WG endorses the conclusions and recommendations for this stock. Nevertheless, the assessment is considered uncertain, as it is difficult to assess the relation between current stock levels and catches in the area. An effort should be made to improve the quality and availability of landings data. Exploitation rate should be calculated each year on the base of survey and landings data. The WG suggests that future assessments take into account combined data from 17 and 18 GSAs	The SC found not clear the stock identification in the GSA 18. The participants agreed on the need to provide SSB estimates on a stock basis and not at the country level. The SC evidenced the uncertainty of the evaluation and the poor knowledge of the status of the stock and considered the assessment as preliminary. Anyway on the base of the precautionary approach the advice should be: not increase the fishing mortality. The need to merge the GSA 17 and 18 was also stressed by the SC.

GSA	Species	Data type	Years data	Methodology used	Stock status	Management opinion	WG comments	SC comments
GSA 18 Southern Adriatic Sea	<i>Engraulis encrasicolus</i>	Echo-surveys and DEPM	Western part 1987-2010 (catch data) 1987-2010 (echo-surveys)  Eastern part 2002, 2004, 2005, 2008, 2010 (echo-surveys)  DEPM (2005, 2008, 2010)	Biomass & Catch estimates	Exploitation rate (ratio between total landings and biomass estimates): moderate  Stock abundance (DEPM and acoustic biomass estimate): low abundance.  Moderately exploited with uncertain in exploitation rate	- Not increase the fishing effort in the western part	The WG endorses the conclusions and recommendations. It is necessary to improve data collection of catches. The WG recommends to continue with the two direct assessments of anchovy biomass, checking the reliability of spawning frequency for anchovy obtained through eggs and larvae surveys and cross-comparing the final estimates from the two methods. Also the WG recommends obtaining yearly estimates of the harvest rate.	The SC found not clear the stock identification in the GSA 18. The participants agreed on the need to provide SSB estimates on a stock basis and not at the country level. The SC evidenced the uncertainty of the evaluation and the poor knowledge of the status of the stock and considered the assessment as preliminary. Anyway on the base of the precautionary approach the advice should be: not increase the fishing mortality. The need to merge the GSA 17 and 18 was also stressed by the SC.



## Appendix B

## List of Participants

Alvaro **ABELLA**

ARPAT

Via Marradi 114

57100 Livorno, Italy

Tel: +390586263456

Fax: +390586263477

Email: [aa00477@arpat.toscana.it](mailto:aa00477@arpat.toscana.it)

[a.abella@arpat.toscana.it](mailto:a.abella@arpat.toscana.it)

Enrico **ARNERI**

FAO AdriaMed and MedSudMed

Project Coordinator

Viale delle Terme di Caracalla,1

00153 Rome

Tel: + 390657056092

Fax : +390657053020

Email: [enrico.arneri@fao.org](mailto:enrico.arneri@fao.org)

Jorge **BARO**

IEO

Puerto Pesquero s/n 29640

Fuengirola, Spain

Phone: +3934952197124

Email: [jorgebaro@ma.ieo.es](mailto:jorgebaro@ma.ieo.es)

Sadok **BEN MERIEM**

National Institute of Marine Sciences and  
Technologies

Port des pêches

2060 La Goulette Tunisia

Phone: +216 98416564

Email: [sadokbm@yahoo.fr](mailto:sadokbm@yahoo.fr)

Franco **BIAGI**

European Commission

Rue Joseph II, 99

Bruxelles European Union

Phone: +3222994104

Email: [Franco.Biagi@ec.europa.eu](mailto:Franco.Biagi@ec.europa.eu)

Rosa **CAGGIANO**

RAC MED

Via Torino 146

00184 Rome, Italy

Phone: +393318254047

Email: [r.caggiano@racmed.eu](mailto:r.caggiano@racmed.eu)

Juan A **CAMIÑAS**

FAO CopeMed II Project Coordinator

Food and Agriculture Organization of the  
United Nations (FAO)

Fisheries and Aquaculture Resources Use and  
Conservation Division (FIR)

Offices: Paseo de Sancha 64. Subdelegación  
del Gobierno

despacho 305

290171 Malaga (Spain)

Tel: +34952989299; mobil: 34695797666

Fax: +34952989252

Email: [juanantonio.caminas@fao.org](mailto:juanantonio.caminas@fao.org)

Luca **CERIOLA**

FAO MedSudMed

Fishery Monitoring Expert

Marine and Inland Fisheries Service

Fisheries and Aquaculture Resources Use and  
Conservation Division

Fisheries and Aquaculture Department

Phone: + 390657054492

Fax: + 390657053020

E-mail: [luca.ceriola@fao.org](mailto:luca.ceriola@fao.org)

Paolo **CARPENTIERI**

University of Rome "La Sapienza"

Viale dell'Università 32

Rome, Italy

Phone: +393288731537

Email: [paolo.carpentieri@uniroma1.it](mailto:paolo.carpentieri@uniroma1.it)

Piera **CARPI**

CNR-ISMAR

Largo Fiera della Pesca, 2

60125, Ancona, Italy

Phone: +393402705573

Email: [piera.carpi@an.ismar.cnr.it](mailto:piera.carpi@an.ismar.cnr.it)

Bachra **CHEMMAM-ABDELKADER**

Institut National des Sciences et Technologies  
de la Mer (INSTM)

28 Rue du 2 mars

1934 Salammbô, Tunisia

Phone: +21671735848

Email: [bachra\\_chem@yahoo.fr](mailto:bachra_chem@yahoo.fr)

Eleonora **CICCOTTI**  
Departamento di Biologia  
Università Tor Vergata, Rome, Italy  
Email: [ciccotti@uniroma2.it](mailto:ciccotti@uniroma2.it)

Francesco **COLLOCA**  
Università di Roma "La Sapienza"  
Viale dell'Università, 32  
00185, Rome, Italy  
Phone : +39649914763  
Fax +393288876125  
Email: [francesco.colloca@uniroma1.it](mailto:francesco.colloca@uniroma1.it)  
[francesco.colloca@fao.org](mailto:francesco.colloca@fao.org)

Alaa **EL HAWET**  
Fisheries Technology Institute Arab Academy  
for Science and Technology  
Alexandria Egypt  
Email: [el\\_hawet@yahoo.com](mailto:el_hawet@yahoo.com)

Henri **FARRUGIO**  
Chairman of the Scientific Advisory  
Committee of the GFCM  
IFREMER  
BP 171 Av. Jean Monnet  
34203 Sete Cedex, France  
Phone: +33(0)499573237  
Fax: +33(0)499573295  
E-mail: [henri.farrugio@ifremer.fr](mailto:henri.farrugio@ifremer.fr)

Antigoni **FOUTSI**  
FAO EastMed Project  
1 Androu str., 112  
57 Athens, Greece  
Phone: +302108847960  
Email: [Antigoni.Foutsis@fao.org](mailto:Antigoni.Foutsis@fao.org)

Deniz **FRLJUCKIC**  
Ministry of Agriculture and Rural  
Development  
Rimski trg br.46  
810000 Pogodolica  
Montenegro  
Phone: +38220482292  
Email: [deniz.frljuckic@mpr.gov.me](mailto:deniz.frljuckic@mpr.gov.me)

Alberto **GARCÍA**  
Instituto Español de Oceanografía  
(Centro Oceanográficos de Málaga)  
Puerto Pesquero de Fuengirola s/n  
29640 Fuengirola, Málaga, Spain  
Phone: +34952197123  
Email: [agarcia@ma.ieo.es](mailto:agarcia@ma.ieo.es)

Angélique **JADAUD**  
IFREMER  
BP 171 Av. Jean Monnet  
34203 Sete Cedex, France  
Email: [ajadaud@ifremer.fr](mailto:ajadaud@ifremer.fr)

Othman **JARBOUI**  
First Vice President of the SAC  
Institut National des Sciences et Technologies  
de la Mer (INSTM)  
Centre de Sfax BP 1035, 3018  
Sfax, Tunisia  
Phone: +21674497117  
Email: [othman.jarboui@instm.rnrt.tn](mailto:othman.jarboui@instm.rnrt.tn)

Aleksandar **JOKSIMOVIC**  
Institute of Marine Biology  
Dobrota bb, PBox 69  
85 330 Kotor, Montenegro  
Phone: +38232334569  
Email: [acojo@ac.me](mailto:acojo@ac.me)

Omar **KADA**  
Institute National de Recherche Halieutique  
(INRH)  
Centre Régional de Nador  
Phone : +212 536331251  
Email: [inrhomarkada@yahoo.fr](mailto:inrhomarkada@yahoo.fr)

Konstantina **KARLOU-RIGA**  
FAO EastMed Project  
1 Androu str., 112  
57 Athens, Greece  
Phone: +302108847960  
Email: [konstantina.riga@fao.org](mailto:konstantina.riga@fao.org)

Jerina **KOLITARI**  
Agricultural University Tirana  
Kamez, Tirana, Albania  
Phone: +355686076121  
Email: [jerina\\_juka@yahoo.com](mailto:jerina_juka@yahoo.com)

Bojan **MARCETA**  
Fisheries Research Institute of Slovenia  
Sp. Gameljne 61a  
Slovenia  
Phone: +38612443411  
Email: [bojan.marceta@zzrs.si](mailto:bojan.marceta@zzrs.si)

Srdjan **MUGOSA**  
Ministry of Agriculture and Rural  
Development  
Rimski trg br.46  
810000 Pogodorica  
Montenegro  
Phone: +38220482292  
Email: [rasadnik@t-com.me](mailto:rasadnik@t-com.me)

Sasa **RAICEVICH**  
ISPRA - Istituto Superiore per la Ricerca e la  
Protezione Ambientale  
Loc. Brondolo, 30015 Chioggia  
Phone: +393486113600  
Email: [sasa.raicevich@isprambiente.it](mailto:sasa.raicevich@isprambiente.it)

Ahmed **SALEM**  
General Authority for Fish Resources and  
Development, GAFRD, Egypt  
Tayaram Street, 4, Nasr City, Cairo  
Email: [ahmed.Salem.gafrd@gmail.com](mailto:ahmed.Salem.gafrd@gmail.com)

Alberto **SANTOJANNI**  
CNR-ISMAR-Ancona  
Largo Fiera della Pesca,  
60123 Ancona, Italy  
Phone: 3384751919  
Email: [a.santojanni@ismar.cnr.it](mailto:a.santojanni@ismar.cnr.it)

Giuseppe **SCARCELLA**  
CNR - ISMAR  
L.go Fiera della Pesca 2  
60125 Ancona, Italy  
Phone: +393387043071  
Email: [g.scarcella@ismar.cnr.it](mailto:g.scarcella@ismar.cnr.it)

Mohamed Ahmed **SHABAAN**  
General Authority for Fish Resources and  
Development, GAFRD, Egypt  
Tayaram Street, 4, Nasr City, Cairo  
Email: [GAFRD\\_Eg@hotmail.com](mailto:GAFRD_Eg@hotmail.com)

Vjekoslav **TIČINA**  
Institute of Oceanography and Fisheries  
Šet. I. Meštrovića 63, 21000  
Split 60125 Croatia  
Phone: +38521408037  
Email: [ticina@izor.hr](mailto:ticina@izor.hr)

Nedo **VRGOC**  
Institute of Oceanography and Fisheries  
Šetalište I. Meštrovića, 63  
21000 Split, Croatia  
Phone: +38521408051  
Email: [vrgoc@izor.hr](mailto:vrgoc@izor.hr)

#### Coordinator

Fabio **FIORENTINO**  
IAMC CNR  
Via L. Vaccara, 61  
91026 Mazara del Vallo (TP), Italy  
Phone: +393346555182  
Email: [fabio.fiorentino@iamc.cnr.it](mailto:fabio.fiorentino@iamc.cnr.it)

#### GFCM Secretariat

Abdellah **SROUR**  
GFCM Executive Secretary  
International Institutions  
and Liaison Service  
Fisheries and Aquaculture Economics  
and Policy Division  
Fisheries and Aquaculture Department  
Palazzo Blumenstihl,  
Via Vittoria Colonna 1,  
00193 Rome, Italy  
Ph: +39 06 570 55730  
Email: [abdellah.sroure@fao.org](mailto:abdellah.sroure@fao.org)

Pilar **HERNANDEZ**  
Information Management Officer  
General Fisheries Commission for the  
Mediterranean (GFCM)  
FAO of the United Nations  
Fisheries and Aquaculture Department  
Palazzo Blumenstihl,  
Via Vittoria Colonna, 1  
00193, Rome, Italy  
Tel.: +39 06 57054617  
Email: [pilar.hernandez@fao.org](mailto:pilar.hernandez@fao.org)

### Agenda

1. **Opening and arrangement of the Sub-Committee meetings**
2. **Transversal session: review of transversal issues**
3. **Introduction to the SCSA meeting and adoption of the agenda**
4. **Review of new stock assessments of demersal species and related scientific advice**  
(as validated by the Working Group on stock assessment)
5. **Review of new stock assessments of small pelagic species and related scientific advice**  
(as validated by the Working Group on Stock Assessment)
6. **Transversal workshop on the establishment of Task 2 data collection framework on biological information (SCSI/SCSA)**
7. **Review of the conclusions of the workshop on stock assessment of selected species of Elasmobranchs**
8. **Follow-up on**
  - 8.1 Renewal of the Stock Assessment Forms
  - 8.2 Protocol for surveys at sea
  - 8.3 Update GFCM Regional Database on biological parameters to facilitate stock assessment process
9. **General conclusions and scientific advices**
10. **2012 SCSA workplan**
11. **Any other matters**
12. **Nomination of SCSA Coordinator**
13. **Date and venue of the next meeting**
14. **Adoption of the report and closure of the meeting**