GENERAL FISHERIES COMMISSION
FOR THE MEDITERRANEAN

COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE

SCIENTIFIC ADVISORY COMMITTEE (SAC)

Fifteenth Session

REPORT OF THE THIRTEENTH SESSION OF THE SUB-COMMITTEE ON MARINE ENVIRONMENT AND ECOSYSTEMS (SCMEE)

FAO HQs, Rome, Italy, 18–20 February 2013

*** Available only in English**

OPENING AND ARRANGEMENTS OF THE SUB-COMMITTEE MEETINGS

1. The Sub-Committees meetings of the Scientific Advisory Committee (SAC/GFCM), including the general transversal session, were held at FAO headquarters, Rome (Italy) on 18–20 February 2013.

2. Mr Henri Farrugio, Chairperson of the SAC, welcomed the participants and thanked them for attending the meeting. He then gave the floor to Mr Abdellah Srour, Executive Secretary of the GFCM.

3. Mr Srour expressed sincere gratitude to the Chairperson of the SAC and to all the coordinators of the Sub-Committees for their work. He recalled the mandate of the SAC and its Sub-Committees, insisting on the need to strengthen their role, and mentioned upcoming activities by the GFCM, including those within the first GFCM Framework Programme (FWP). Mr Srour underscored the regional interest that these activities were drawing. He stressed the extremely positive role played by the FAO regional projects within the framework of fisheries management in the Mediterranean and Black Sea, insisting on the need for enhanced integration and synergies between their activities and those implemented though the GFCM Strategic Framework Programme 2013-2018.

TRANSVERSAL SESSION: INTRODUCTION OF ONGOING ACTIVITIES UNDER THE FIRST PHASE OF THE GFCM FRAMEWORK PROGRAMME

4. Mr Miguel Bernal, from the GFCM Secretariat, presented a synthesis of the work to be done by the Sub-Committees as well as an overview of the FWP. In this respect, , he introduced the five work programmes (WP) composing the GFCM Framework Programme (i.e., WP01: Governance and Management, WP02: Data Collection, WP03: Aquaculture, WP04: Artisanal Fisheries/Recreational Fisheries and WP05: Sub-regional Cooperation), which should be implemented progressively over an allotted five-year

span, and focused on WP01 and WP02 since they had already been launched thanks to EU funding. Mr Bernal specified that activities undertaken were connected for the time being with the strengthening of data collection systems and the testing of the GFCM guidelines on multiannual management plans at a sub-regional scale.

5. Mr Marcelo Vasconcellos, from the GFCM Secretariat, provided additional insights on activities carried out in relation to the sub-regional multiannual management plans, highlighting the guiding principles underpinning the chosen methodology and presenting a list of potential case studies and a roadmap for applying the guidelines to those cases.

6. Mr Nicola Ferri, from the GFCM Secretariat, briefed the participants on the launching of the "Concerted action for Lebanon", which started with an initial meeting organized within the framework of WP05 of the FWP. He insisted in particular on the importance of pooling ongoing efforts at different levels in order to ensure a coherent strategy in support to the development of fisheries and aquaculture in Lebanon.

7. The meeting agreed that discussions and comments made during the transversal session be included in the reports of each Sub-Committee under the corresponding agenda item.

8. Mr Farrugio acknowledged the work undertaken by the GFCM Secretariat and opened the discussion on the presentations delivered (data collection, multiannual management plans, Concerted action for Lebanon).

9. The representatives from the EU also thanked the GFCM Secretariat for the valuable work done and for the excellent organization of the meeting and reiterated their will to support GFCM, in particular, with the auspices/commitments underlined by the Part III of the GFCM Guidelines for multiannual management plans. Under the FWP, the need to give priority to case studies on sub-regional multiannual management plans involving shared stocks either subject to excessive exploitation or of species that are vulnerable to overexploitation was stressed. At the same time, it was also underlined that the multiannual management plans should be seen as the normal scientific and regulatory framework to agree and implement joint management measures also for fisheries and stocks exploited in a sustainable manner.

10. Mr Majdalani, from Lebanon, thanked GFCM for launching the "Concerted action for Lebanon" meeting which, in his view, would help to put cooperation in Lebanon on the right track and paving the way for future activities. In response to comments questioning a possible overlapping with the work carried out by the FAO Regional Projects, it was explained that a participatory approach had been ensured and that the maximum level of coordination was foreseen for the follow-up phase in order to avoid any possible duplication and to optimize resources.

11. The participants expressed interest for the new Data Collection Reference Framework (DCFR), which was briefly presented by Mr Bernal and for which a broader discussion took place under SCSI. The meeting was informed that, since the performance review of the GFCM had highlighted gaps in the data collection and submission processes, the thrust of the DCRF was to ensure that the data to be gathered in the future were useful for the management of fisheries. To start this process, a series of activities aimed at strengthening the GFCM framework for data collection had already been launched. These included the assessment of data compliance and databases at the GFCM Secretariat, the assessment of national data collection systems, and the design of a data collection reference framework consistent with the GFCM objectives.

12. Some questions were raised regarding a possible support to the countries for the implementation of the sub-regional multiannual management plans as well as the

participatory approach to be used to account for the views of fishermen. The Executive Secretary confirmed that the FWP was meant to assist the GFCM members, in particular those in the South Mediterranean and the Black Sea, as corroborated by WP05. The EU stressed that sub-regional multiannual management plans were also aimed at fostering the building-up of a scientific basis for the sustainable management of fisheries in all GFCM member countries.

13. Finally, Mr Bernal briefly presented the regional workshop on sustainable artisanal fisheries for the Mediterranean and the Black Sea (planned in September–October 2013 in Malta). He underlined the importance of this event, whose main objective would be to address recurrent issues in the small-scale fisheries sector in a comprehensive way through five thematic sessions. The five thematic sessions of the workshop, were introduced, namely: i) Current situation of artisanal fisheries in the Mediterranean and Black Sea, strategy and methodologies for effective monitoring, ii) Strategies for the co-management of artisanal fisheries, iii) Integration of artisanal fisheries within marine protected areas (MPAs), iv) Enhancing the artisanal fisheries value chain and v) Providing support and education for the establishment of a regional platform for artisanal fishermen. A tentative list of potential partners interested to co-sponsor the event was also shown.

14. In the ensuing discussions, several issues were addressed, such as: the focus not only on artisanal but also on recreational fisheries, the integration and/or management of artisanal fisheries within MPAs and the importance of sharing experiences among fishermen, the importance of the environmental effects of artisanal fisheries in the coastal zones, interactions with sea turtles, cetaceans and monk seals, and the need for mitigation measures.

15. It was proposed that one potential output of this workshop could be the establishment of a first project on artisanal fisheries for the whole region. Consequently, interested organizations, participants and stakeholders were strongly encouraged to contact the GFCM Secretariat by e-mail in order to examine modalities for their involvement in the workshop.

16. It was highlighted that the organization of the workshop could build momentum from the ongoing FAO initiative on small-scale fisheries – a technical consultation to debate about the adoption of the "FAO International Guidelines on Securing Sustainable Small-Scale Fisheries" was foreseen on 20–24 May 2013. Hence, interested parties present at the meeting were invited to participate. The outcomes of this technical consultation would be submitted to the next session of the FAO Committee on Fisheries (COFI) in 2014 and could be informed by the conclusions and recommendations of the workshop.

INTRODUCTION AND ARRANGEMENTS OF THE SCMEE MEETING

17. The thirteenth meeting of the GFCM Sub-Committee on Marine Environment and Ecosystems (SCMEE) of the SAC was held in Rome (Italy) from 18 to 20 February 2013 at FAO HQs. The meeting was attended by 35 participants as well as by representatives of the GFCM (see list of participants in Appendix I).

18. The meeting was opened by Mr Federico Álvarez, Coordinator of the SCMEE, who welcomed the participants and recalled the main issues to be addressed and the main goals of GFCM SAC-SCMEE.

19. The provisional agenda was introduced by the Coordinator and by Ms Pilar Hernández, from the GFCM Secretariat. As requested by some experts, four new presentations were added to the agenda: *i*) ELASMOSTAT: a ministerial programme to analyse the historical data of the elasmobranchs collected during scientific surveys from 1980 to 2012 (by Serena F.); *ii*) Proposal of an action line on sea turtle by-catch for the GFCM SCMEE and SAC (by Claro F., presented by Poisson F.); *iii*) Vulnerable cold water corals in the deep waters of the Eastern Mediterranean Sea (by Mytilineou C.); iv) Ecosystem Approach in the Mediterranean (by Cebrián D.).

20. The agenda was consequently amended and adopted (see in Appendix II).

21. Ms Hernández thanked the experts for submitting many high-quality contributions to the SCMEE meeting (see abstracts of the presentations in Appendix III). She recalled the need to provide clear indications to the GFCM-SAC.

22. The Coordinator invited the participants to introduce themselves and elected Ms Aurora Nastasi and Ms Pilar Hernández, from the GFCM Secretariat, as rapporteurs of the meeting.

OUTCOMES OF THE MEDIUM-TERM RESEARCH PROGRAMME ON ELASMOBRANCHS

23. The Coordinator gave a brief introduction on the outcomes of the GFCM Medium-Term Research Programme on Elasmobranchs. He described the initiatives undertaken by the GFCM during the last years and informed the meeting about two technical documents issued by GFCM on this topic, namely *GFCM Studies and Reviews No. 91, Elasmobranches of the Mediterranean and Black Sea: status, ecology and biology bibliographic analysis* (Bradai *et al.*, 2012) and *GFCM Studies and Reviews No. 94, The Age determination of elasmobranchs, with special reference to Mediterranean species: A technical manual* (Campana 2012). The Coordinator also recalled the text of the Recommendation GFCM36/2012/3 on Fisheries management measures for conservation of sharks and rays in the GFCM area.

24. Mr François Poisson, from IFREMER, France, delivered a presentation on "Strategy on Ecology of the large pelagic sharks in the Mediterranean Sea: A pilot study". He introduced the project he had been working on and presented its main outcomes. This study strived to identify habitats and regions that were essential for the survival of sharks, while also determining when and where sharks were most vulnerable with a view to contributing to the conservation of the species.

25. The SCMEE discussed the possibility to continue or start a new research programme on elasmobranchs within the GFCM Framework Programme.

26. Mr Fabrizio Serena, from ARPAT, Italy, presented "ELASMOSTAT: a ministerial program to analyze the information on elasmobranchs collected during the scientific campaigns from 1980 to 2012". He underlined the unique feature of the ELASMOSTAT project) is unique in the Mediterranean area, offering a concrete possibility to contribute to the goals of the Mediterranean Action Plan as indicated by UNEP MAP and to those listed by the EU Plan. This study would improve the understanding of the biology and exploitation of cartilaginous fish, allowing in this way to take specific management actions. For this reason, it was mentioned that it could be important to develop a debate within the GFCM in order to analyze and discuss the final results of the ELASMOSTAT project.

27. Mr Mohamed Nejmeddine Bradai, from INSTM, Tunisia, gave a presentation on "Taxonomic problems of Elasmobranchs in the Mediterranean Sea". He highlighted in particular the fact that, in the Mediterranean Sea, several elasmobranch species were generally misidentified and many species were wrongly considered within the same statistical category. Taxonomic confusion existed because many of the morphological and meristic characters that distinguish species partially overlapped and considerable variation occurred within species. Misidentification concerned mainly commercially species such as smoothhound sharks *Mustelus* sp., guitarfish *Rhinobatos* sp., spurdog *Squalus* sp., and stingray *Dasyatis* sp.

28. Given the difficulties encountered to identify properly some critical shark species, the SC recognized that for the identification of species on board and for the subsequent reporting of landings, the existing guides were not suitable and ad hoc fact sheets should be designed to be used on board by fishermen – e.g., waterproof fact-sheets with detailed drawings and translated into different languages.

29. Ms Hernandez reminded participants that the SAC decided that the stock assessment of sharks and rays could be regularly included in the annual work plan of the SAC Working Groups on Stock Assessment. She also recalled that, according to REC. GFCM/36/2012/3, Countries had to submit information on shark catch under Task 1.

REVIEW OF PROGRESS ON SELECTIVITY ISSUES

30. Mr Juan Antonio Camiñas, from FAO CopeMed, presented in the "Conclusions of the Workshop on Mediterranean gears, fishing technology" the main outcomes of the CopeMed and the GFCM workshop on gear selectivity organized with the local support of the INRH. The aim of this workshop was to attract new scientists in the field of selectivity and gear technology in support to fisheries management.

31. Mr Jacques Sacchi, from the FAO EastMed project, delivered then a presentation on a "Proposed roadmap for strengthening the network TechnoMed".

32. The SC Coordinator and the SCMEE acknowledged the importance of maintaining the existing TechnoMed network and continuously updating its databases. In this respect, the GFCM Secretariat was invited to facilitate the hosting and dissemination of the information collected by TechnoMed if a regular assistance and support were made available.

33. Mr Francesco Colloca, from CNR, Italy, gave then an overview of the "EastMed support to the fishing trials carried out off the South Lebanese Coast".

34. The high value of the species found made the development of new coastal fisheries very attractive, although small-scale fleet should adapttheir technical capacity in order to fish in deeper waters. However, the SC expressed concern regarding the intended establishment of new fishery activities in some areas without previously assessing the impacts of these activities on habitat and resources which may not be well known.

35. Mr Sacchi the presented the "FAO EastMed Project of pilot study on Implementation of the 40 mm square mesh size GFCM Resolution to the Egyptian trawl fleet". The objectives of the study were outlined and it was explained that the study was focused on selectivity rather than on efficiency, which should be addressed in a second phase.

36. The SCMEE welcomed this type of initiative and encouraged new pilot studies aiming at comparing traditional gears with new ones, either 40 mm squared or 50 mm diamond

codend mesh.

37. Mr Poisson, on behalf of Ms Françoise Claro, from the Groupe Tortues Marines France – GTMF, introduced a **"**Proposal of an action line on sea turtle bycatch for the GFCM SCMEE and SAC". The GTMF suggested to reinforce coordination with partner organizations within the Mediterranean, under the auspices of the Barcelona Convention, and proposed that GFCM assess the present sea turtle by-catch situation and develop a workplan dedicated to research, communication, and good practices training for fishermen, as stated in Recommendation GFCM/35/2011/4

38. The SCMEE stressed that the GFCM should take momentum to work together with UNEP/MAP on common actions to address the by-catch of sea turtles, especially now that a new action plan in this respect was to be developed by UNEP/MAP.

39. The Coordinator recalled the Recommendation GFCM/35/2011/4 specifically addressing the issue of sea turtle by-catch and advocating to undertake studies and initiatives at national level, such as the French one, in order to increase the scientific knowledge about possible solutions to the by-catch problem.

40. The SCMEE underlined the need to keep a multi-specific approach when tackling the issue of by-catch of endangered species, given that some devices could be useful for sea turtles but can e detrimental for other marine groups (e.g. cetaceans).

PROPOSAL FOR A REGIONAL MANAGEMENT PLAN FOR RED CORAL

41. The Coordinator introduced the Regional Management plan for red coral. He recalled the GFCM activities undertaken, such as the two ad hoc Transversal Workshops on this topic and the recommendations adopted by the Commission in the last two years, namely: Recommendation. GFCM/35/2011/2 on the exploitation of red coral in the GFCM competence area) and Recommendation GFCM/35/2012/1 on further measures for the exploitation of red coral in the GFCM area.

42. The Coordinator also remembered that, as foreseen by both recommendations, a management plan for red coral should be operational by May 2013 and he informed the participants that the GFCM Secretariat had engaged Mr. Angelo Cau and his team from the University of Cagliari (Italy) to draft such management plan.

43. The Coordinator gave the floor to Mr Angelo Cau, Ms Rita Cannas and Ms Maria Cristina Follesa, from the University of Cagliari, Italy, who presented the "First Draft of the Regional Management Plan for Red Coral (*Corallium rubrum*) in the GFCM Competence Area".

44. The SCMEE welcomed this first draft and expressed appreciation of the comprehensiveness of the presentation. However, due to time constraints, the participants did not have the opportunity to enter into the details of the document before the meeting; still it was pointed out that socio-economic considerations were not accurately addressed and the SC stressed the need to implement a participatory approach for the development of this plan.

45. In this view, the SCMEE suggested to the GFCM Secretariat to promote a consultation phase among SCMEE participants to seek for their opinion from a scientific point of view and to invite the involved countries to organize, at a further step, consultations with red coral stakeholders at the national level.

46. Ms Hernández thanked the team of the University of Cagliari for presenting the draft

management plan for red coral and for their continuous support to improve the GFCM Red Coral Data Submission Tool.

PROTECTED AREAS IN THE MEDITERRANEAN AND BLACK SEA (SPAMI$_S$, MPA$_S$ AND FRA$_S$)

47. Ms Pilar Marín, from Oceana, presented the "Balearic Seamounts FRA Proposal Review" and informed the SCMEE about the status of the fishery restricted area (FRA) proposed in the Balearic Sea. The proposal was rejected in 2011 by the GFCM-SAC because the Spanish delegation was dissatisfied by the lack of socio-economic and quantitative analysis. Oceana through further correspondence with the Spanish Secretariat was informed that the process was still ongoing and further studies (e.g. fishing footprint) were being carried out. Results would be presented at a meeting which should take place on 19th February 2013 together with the fishing sector and NGOs. The FRA would then be presented to the GFCM-SAC again, once all the information required would be available.

48. Mr Daniel Cebrián, from RAC/SPA, introduced the **"**State of progress of the joint action with the EC to promote establishing SPAMIs in open seas, including deep seas, and forthcoming phase steps".

49. Ms Hernández noted that pursuing on the close collaboration of the GFCM with UNEP/MAP, started in 2008, discussions on the legal framework regarding the establishment of protected areas beyond national jurisdiction, are needed.. She also stressed that more collaboration was desirable to harmonize identification criteria among the different organizations (e.g. IUCN, UNEP/MAP, ACCOBAMS, GFCM) and she informed that bilateral meetings had already taken place to advance in the elaboration of an agreed text for a future resolution.

50. Mr Chedly Rais then presented the "MedPan Roadmap 2020".

51. Ms Hernández stressed the importance of the relationship between artisanal fishery activities and protected areas and informed that several actions had been launched within the framework of the MoUs signed with MedPan.

52. A contribution submitted by IUCN, which was not able to attend the meeting, was presented to the SCMEE by Ms Hernández. The IUCN undertook in 2012 a study on the characteristics of the FRAs, in particular those concerning depth of more than 1 000 m with the ban of trawling in territorial waters. This study had allowed to prepare general maps of the Mediterranean and to identify FRAs (1 000 m) in 14 countries. The objective was to propose to the countries to consider these areas, or part of them, when there was specific knowledge on their ecological importance and a need to attribute a conservation status – either as a marine protected area at the national level or as a SPAMI at the international level.

53. The SCMEE acknowledged the importance of this proposal in view of the target of 10% of marine area protection to be achieved by 2020 (within the Convention on Biological Diversity).

FOLLOW-UP ON:

- **DEEP-SEA HABITATS AND VULNERABLE MARINE ECOSYSTEMS**

54. Ms Marín on behalf of Oceana gave a presentation on the "Need for Protection of Seamounts and Submarine Canyons". The findings therein were gathered during at-sea expeditions in Mediterranean seamounts and submarine canyons. Oceana suggested that these types of features where commercial species and vulnerable ecosystems could be found were suitable for special protection and proper management. A position paper on seamounts was put at the disposal of the attendees.

55. Mr Cebrian then provided a brief summary document of **"**Quick facts on seamounts in the Mediterranean". He informed that these vulnerable features constitute 7% of the Mediterranean seafloor and underlined that only one among at least 1180 seamounts already mapped in the Mediterranean was protected from trawling and dredging thanks to a specific FRA – since fishing devices hitting the bottom can create irreparable damages to the unresilient seamount ecosystems – despite their key role for fisheries resources functionality and sustainability and the related UN General Assembly Resolution encouraging international organizations to "improve, on a scientific basis, the management of risks to marine biodiversity of seamounts [...]" (UNGA 2003).

56. Recalling the precautionary approach and the irreversibility of ongoing damages to seamounts fisheries for future generations, he suggested that a working process should be initiated to consider the possibilities of a) protecting key seamount areas not yet covered by a trawling and dredging ban below 1 000m by extending the ban to below 400 m depth on all seamounts´ surfaces; and b) assessing biodiversity information available to date for Mediterranean seamounts with peaks reaching depths shallower than 400 m, in order to grant some of them full protection or full FRA status, where appropriate.

57. Ms Hernandez recalled that the creation of a new FRA was a well-established process in which data and information on all the components of the ecosystem, including socio-economic aspects, had to be provided to the Commission through its scientific bodies. At depths between 400 and 600 m, fisheries of very important resources (hake, red shrimps) could be affected. Nevertheless, the importance of seamounts should not be neglected and specific locations could be examined on a case-by-case basis.

58. Ms Maria Teresa Spedicato, from COISPA, introduced the "Compilation and mapping of environmental and fisheries related information in the Mediterranean Sea by means or Geographical Information Systems (GIS)". She underlined in particularthe importance of MPAs/FRAs in view of the ecosystem approach to fisheries as important tools to effectively protect key sensitive habitats (e.g., *Posidonia* sea beds, nursery and spawning areas, etc.).

59. The Coordinator welcomed this presentation stressing that studies on the habitat use of fish species were very useful for the work of the Commission. Moreover, the information provided dealt with GFCM priority species which accounted for a significant proportion of landings in the region and was therefore of the highest interest for potential management measures.

60. The SCMEE asked about the possibility to access the GIS maps. The meeting was informed that the maps were the property of the EU, who funded the project but access to the maps could be facilitated upon request.

61. Mr Peter Deupmann, from FAO, presented the "International guidelines for the management of deep-sea fisheries in the high seas". These FAO guidelines describe criteria to define vulnerable marine ecosystems as well as the path to be followed in order to create new protected areas in high/deep sea within the framework of existing regional fisheries management organizations (RFMOs).

62. Ms Hernández welcomed this presentation and reminded the participants that all proposals regarding high/deep sea areas protection in the GFCM competence area should, if possible, follow these Guidelines.

63. Ms Chryssi Mytilinaeou, from HCMR, Greece, and on behalf of the FAO EastMed Project, presented "EastMed Report on deep sea fisheries in Eastern Mediterranean". The paper highlighted the importance of the occurrence of shared stocks in deep waters exploited by several countries in the Eastern Mediterranean. A lack of information on basic data such as catch and effort from the fleets exploiting the demersal resources and/or misreporting had been detected. In this respect, EastMed had devised a standard questionnaire which should be used to interview the fishermen on their fishing activity in deep waters and their respective catches.

64. It was envisaged by the GFCM as well as the FAO Regional Projects continue coordinating the modalities through which information was requested to the countries.

65. Ms Mytilinaeou then gave an overview of "Vulnerable cold water corals in the deep waters of the Eastern Mediterranean Sea". The study demonstrated that fish abundance/biomass around deep-sea coral structures was almost twice that in neighboring areas and that some rare fish species could also be found in such areas. The role and the importance of these fragile ecosystems would need to be further investigated in order to make proposals for their protection. The vulnerability of these habitats was also due to the slow growth rate of corals, while fisheries activities could be responsible for high mortality.

66. The SCMEE acknowledged the high vulnerability of these fragile ecosystems and encouraged to make further progress for their protection.

- **ALIEN SPECIES**

67. Ms Hernandez announced the upcoming publication of a GFCM Studies and Review Series on Alien Species and the draft cover was presented to the participants.

68. Mr Chadi El Khoury El Indary, from the University of Balamand, Lebanon, delivered a presentation on **"**The Puffer Fish *Lagocephalus sceleratus* (Gmelin, 1789) in the Eastern Mediterranean". The study highlighted that, in the Mediterranean region, the fisheries sector had been suffering from the impacts of the migration of aquatic organisms through the Suez Canal. Among the most devastating species to both fisheries and habitats, the aggressive predatory puffer fish *Lagocephalus sceleratus* was mentionned. This fish bio-concentrates Tetrodotoxin (TTX), a very powerful poison which maks the fish unmarketable and represents a great risk for human health if consumed.

69. The SCMEE underlined that the ecology of this species was not very well known and recommended to promote research on this fish commonly found in Eastern Mediterranean fisheries. Also, potential commercial uses of this species (e.g. aquarists, pharmacology, etc.) should be investigated.

70. The SCMEE stressed that even if the sale of this species was already prohibited, it was

important of raise awareness among fishermen about the toxicity of *L. sceleratus* in order to prevent accidental human deaths due to its consumption.

71. The SCMEE also remarked the importance of reporting the volume of landings of alien species.

- **CETACEANS-FISHERY INTERACTIONS**

72. Mr Sacchi presented a "Project proposal on cetacean by-catch and depredation reduction in the Mediterranean and Black Seas fisheries".

73. The GFCM Secretariat evoked the close cooperation with ACCOBAMS and the joint organization of an upcoming meeting in Tanger (Morocco) this year. This meeting should help define case studies to be potentially funded under the GFCM Framework Programme. The project would represent a step forward to test the feasibility of potential mitigation measures as stated in Recommendation GFCM/36/2012/2.

- **PROTOCOL AND SAMPLING DESIGN TO CARRY OUT STUDIES ON MONK SEALS TO REDUCE CLOSE-TO-0 RISK OF INCIDENTAL TAKING ACCORDING TO RECOMMENDATION GFCM/35/2011/5**

74. Mr Panagiotis Dendrinos, from the MOm/Hellenic Society for the Study and Protection of the Monk Seal, presented the "Mediterranean monk seal and fisheries: Tackling the conflict in Greek seas". It showed that Mediterranean monk seals *Monachus monachus* were classified as Critically Endangered on the IUCN Red List, with <600 individuals worldwide. Recent published scientific data, and numerous reports indicated that fisheries related mortality was one of the most significant threats for the survival of the species in the Greek Seas. The constantly increasing pressure of fisheries, the unprecedented decline of fish stocks, illegal and destructive fishing practices, as well as perceived and actual damage caused by monk seal depredation, have resulted in an ongoing conflict between Mediterranean monk seals and the artisanal fisheries sector.

75. Mr Cebrián the introduced an analysis of "The monk seal in the Mediterranean Sea: recall on measures needed for reducing by-catch". Proven methodological approaches on the monitoring of the Mediterranean monk seal – fisheries interactions have been tested aiming at the implementation of concrete and feasible measures for the mitigation of the negative consequences of this interaction.

76. The author suggested formulating a specific and feasible strategy for mitigation through the partial restriction of static nets use considering spatial, seasonal or both approaches.

77. The SCMEE proposed to promote networks of experts on monk seal in the Mediterranean countries similar to the one already existing in Greece.

78. The Coordinator recalled Recommendation GFCM/35/2011/5 on Fisheries measures for the conservation of the Mediterranean monk seal (*Monachus monachus*) in the GFCM competence area adopted by the Commission and mentioned that countries were called to indicate the exact localities where monk seals live and to adopt management measures to achieve a close to 0 risk of incidental taking, as stipulated by the above mentioned recommendation.

79. The SCMEE proposed to launch a consultancy to end up with the organization of a restricted experts workshop in order to gather all the information available in the

different countries and to propose possible measures and monitoring programmes to decrease the effects of fisheries on monk seals.

- **ARTIFICIAL REEFS**

80. Ms Aurora Nastasi, from the GFCM Secretariat, presented "Artificial Reefs in the Framework of FAO/GFCM" and gave an overview of of GFCM's interests related to in artificial reefs topic and actions undertaken over the last years. The GFCM–EastMed Workshop on Artificial Reefs in the Mediterranean and Black Sea, due to be held in September 2013 at the 10th International Conference on Artificial Reefs and Related Aquatic Habitats (23–27 September 2013, Izmir, Turkey), was announced.
81. Mr Mostapha Djellali, from CNRDPA, Algeria, presented "Les récifs artificiels comme outil d'appui à la gestion intégré des zones côtières".

RISING ISSUES TO BE ADDRESSED BY THE SCMEE

- **INCORPORATION OF ECOSYSTEM VARIABLES/INDEXES WITHIN AN ECOSYSTEM APPROACH TO FISHERIES FRAMEWORK: INCORPORATION OF ECOSYSTEM VARIABLES IN THE STOCK ASSESSMENT FORMS**

82. The Coordinator introduced this transversal topic with a brief presentation highlighting the importance of improving knowledge on the stock assessed also in consideration of environmental parameters such as, for example, chlorophyll which reveled to be very useful in assessing small pelagic stock dynamics.
83. Mr Sasa Raicevich, from ISPRA, introduced "The Marine Strategy Framework Directive and its potential contribution to the enforcement of an ecosystem approach to fisheries management". The presentation outlined the Marine Strategy Framework Directive (MSFD, CE/2008/56) as a legislative process enforced by EU requiring each Member State to achieve the good environmental status (GES) in their national marine waters by 2020. The collaboration with third non-EU countries sharing marine waters within the same region or sub-region is also fostered by the Directive.
84. Mr Cebrián then presented the "Ecosystem Approach to Fisheries in the Mediterranean and Black Sea". This process undertaken by UNEP/MAP has similar goals at the Mediterranean level to those pursued by the European Marine Strategy Framework Directive and aimed to an harmonization of efforts in that sense, notably at the level of EU Mediterranean country members.
85. Ms Hernández informed the SCMEE that the GFCM was already participating in consultation actions for both processes (MSFD 2008/56/EC and UNEP/MAP EAF) within the framework of the two existing MoUs with UNEP and ICES.

- **ACTIONS TO TACKLE CLIMATE CHANGE EFFECTS IN FISHERIES AND ECOSYSTEMS**

86. Ms Cassandra De Young, from FAO, took the floor to present "Building resilience for adaptation to climate change in the fisheries and aquaculture sector: A global perspective and FAO roadmap".

87. The SCMEE underlined the importance of climate change and its effects on fisheries and welcomed the idea to address this issue in future SCMEE agendas.

88. Ms Marie-Christine Grillo, from ACCOBAMS, informed participants about a joint ACCOBAMS-RAC/SPA meeting to be organized on the issue of climate change in relation to sea turtles/cetaceans and welcomed the participation of GFCM.

- **IMPACT OF MARINE LITTER**

89. Ms Aikaterini Anastasopoulou, from the Hellenic Centre for Marine Research Institute of Marine Biological Resources, introduced "Anthropogenic litter on the sea bottom and ingested by fish in the deep waters of the Eastern Ionian Sea". She mentioned that marine litter had been documented to occur in the deep waters of the Eastern Ionian, mainly in elasmobranchs species and one bony fish caught during experimental fishing. Ingested litter included primarily plastics.

90. The SCMEE welcomed the inclusion of this new topic of marine litter and underlined the need to focus on ghost fishing gears that could be considered as the type of pollution GFCM should be interested in.

91. ACCOBAMS suggested the SCMEE to start tackling the potential impacts on marine resources and life of underwater noise since it could be considered as a form of marine pollution.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

92. All the following recommendations were adopted by the SCMEE 2013:

RECOMMENDATIONS ON ELASMOBRANCHS

- Given the interest of the GFCM in issues related to the by-catch of species of conservation concern, as reflected in Recommendations GFCM/35/2011/4, GFCM/35/2011/5, GFCM/36/2012/2, GFCM/36/2012/3, and given that most of large pelagic shark species and some rays species are in decline in the Mediterranean and Black Sea, it is recommended to the GFCM SAC/Commission to extend the programme on elasmobranchs for another three years. A proposal of topics to be addressed is presented in the SCMEE Workplan 2013 (see below).

RECOMMENDATIONS ON SELECTIVITY ISSUES, TECHNOMED NETWORK AND BY-CATCH

- Taking into consideration the outcomes of the Workshop on Mediterranean gears, fishing technology and selectivity as well as the progress made by the TechnoMed network (in collaboration with CopeMed II) and the importance of the role of such network in assisting GFCM/SAC in the field of fishery technology, the SCMEE recommended the SAC/Commission to give mandate to the Secretariat for one or several consultancies in order to maintain and update this network. A proposal for a roadmap is presented in the SCMEE Workplan 2013 (see below).

- The SCMEE recommended to hire a consultant to prepare for publication and dissemination the material on procedures to release alive sea turtles (see details in SCMEE Workplan 2013).

RECOMMENDATIONS ON THE ELEMENTS FOR THE REGIONAL MANAGEMENT PLAN FOR RED CORAL

- The SCMEE welcomed and expressed its appreciation of the presentation of the first draft of the regional management plan for red coral. The SCMEE underlined that socio-economic aspects had not been considered in this plan and recommended a second consultation phase based on a participatory approach with all potential stakeholders.

- In this respect, the SCMEE recommended the GFCM Secretariat to open a first consultation phase by electronic mail with SCMEE participants and recommended the SAC to advise countries involved in red coral harvesting to continue the consultation phase at the national level with all possible stakeholders, in order to gather feedback before the 37th Commission Session in May 2013.

RECOMMENDATIONS ON PROTECTED AREAS IN THE MEDITERRANEAN AND BLACK SEA (SPAMIs, MPAs AND FRAs), DEEP-SEA HABITATS AND VULNERABLE MARINE ECOSYSTEMS

- The information presented during the SCMEE by UNEP-MAP RAC/SPA, Oceana, HCMR, provided good evidences of conservation needs of special habitats such as seamounts and vulnerable deep coral habitats.

- The SCMEE recommended the SAC/Commission to consider the development of mid-term research programmes with the aim of identifying conservation measures and sustainable use of deep-sea habitats (seamounts and deep corals) and fishing stocks. This process is well framed within the current collaboration of the GFCM with other relevant Mediterranean organizations (UNEP-MAP, ACCOBAMS, MedPAN, IUCN) and could be considered as a new step forward in order to implement the ecosystem-based approach to fisheries.

- The SCMEE also recommended to work in close collaboration with partner organizations for the identification of SPAMIs in high seas and to promote conservation and management measures to regulate the fishing activities within their limits, trying to follow the FAO International Guidelines for the management of deep-sea fisheries in high seas.

RECOMMENDATIONS ON ALIEN SPECIES

- The SCMEE recommended to raise awareness about the toxicity of some alien species in order to prevent accidental human diseases/death due to their consumption.

- The SCMEE also remarked the importance of exploring alternative markets for the toxic alien species (pharmacology, aquarists, cosmetics, etc.) and of reporting the volume of landings of all alien species, also through the current submission protocols (GFCM Task 1) to assess their impact on fisheries in the Mediterranean and Black Sea.

RECOMMENDATIONS ON PROTOCOL AND SAMPLING DESIGN TO CARRY OUT STUDIES ON MONK SEALS TO REDUCE CLOSE-TO-0 RISK OF INCIDENTAL TAKING ACCORDING TO RECOMMENDATION GFCM/35/2011/5

- The SCMEE acknowledged that remarkable progress had been achieved in gathering information about Mediterranean monk seal and fisheries interactions in Greece, where 90% of the Mediterranean population was estimated to occur.

- On the basis of information provided by the MOm/Hellenic Society for the Study and Protection of the Monk Seal and RAC/SPA, the SCMEE recommended to undertake a consultancy(ies) that would conclude with a one-day meeting with selected regional experts in monk seal, the terms of reference of which are provided in the SCMEE Workplan 2013 (see below).

- The above initiatives will facilitate CPCs to adopt, no later than 2015, fisheries management measures based on the result of those scientific studies, as requested by

the Recommendation GFCM/35/2011/5 on Fisheries measures for the conservation of the Mediterranean monk seal (*Monachus monachus*) in the GFCM competence area.

RECOMMENDATIONS ON RISING ISSUES TO BE ADDRESSED BY THE SCMEE

- The SCMEE noted the interest of participants on the following three issues discussed in the agenda: climate change, marine litter and inclusion of environmental variables within the stock assessment forms, and recommended that actions be taken in the future to support research/initiatives on these subjects.

- The SCMEE recommended to address the issue of underwater-noise and its impact on marine life in the Mediterranean and Black Sea.

SCMEE WORKPLAN 2013

93. The following activities are proposed for the SCMEE Workplan 2013:

ON ELASMOBRANCHS

- Develop a three-year extension of the GFCM medium-term elasmobranchs Programme.

  The terms of reference of the programme should include:

  - Preparation of a draft proposal on practical options for mitigating by-catch for the most impacting gears in the Mediterranean and Black Sea.

  - Production and dissemination of guidelines on good practices to reduce the mortality of sharks and rays caught incidentally by artisanal fisheries.

  - Carrying out studies on growth, reproduction, population genetic structure and post-released mortality and identification of critical areas (nurseries) at national or regional level. A list of priority species should be selected.

  - Preparation of factsheets and executive summaries for some commercial species presenting identification problems.

  - Assessment of the impact of anthropogenic activities other than fisheries on the observed decline of certain sharks and rays populations.

  - Carrying out of a pilot tagging programme for pelagic sharks.

ON SELECTIVITY ISSUES

- Update TECHNOMED databases and website and facilitate the hosting and the dissemination of the information collected also through the GFCM web page.

  Provisional terms of reference for a roadmap to update the TECHNOMED network:

  - Activate the link to the TECHNOMED page in the GFCM web site to assure the presentation of information, documentation and reports among Mediterranean scientists. This page will be also for scientific community a window of the actions carried out by GFCM in fishing technology.

  - Create a dedicate Share point to facilitate exchange of information among scientists.

  - Update databases on trawl selectivity, trawl characteristics and national legislation, currently in Excel format and make the information easily accessible through the web page.

- Organize training courses on fishing technology and prepare a guide of good practices on sustainable techniques for fishers and stakeholders in collaboration with FAO Regional Projects, NGOs and partners organizations.

- Keep track on permanent technology progress by collecting information and relevant documents to be provided to the experts through the TECHNOMED webpage.

- Create multilingual catalogue(s) of Mediterranean and Black Sea fishing gears.

- Provide advice to SCMEE and SAC on the design and coordination of selected pilot studies on the impact and benefits on the use of different fishing techniques.

- The actions and works of TECHNOMED should be regularly reported in the annual meeting of SCMEE.

- In order to comply with Recommendation GFCM/35/2011/4 which requires the SAC to provide useful information to fishermen on the procedure to identify comatose sea turtles and release them alive and to Member Countries to support studies on the implementation of technical measures to reduce by-catch including its socio-economic aspects, a consultant should be hired (in collaboration with partner organizations).

  The terms of reference for the consultancy are as follows:

  - Gather updated information on the characteristics of devices, fishing gears and fishing operations or other approaches to mitigate/eliminate sea turtles by-catch and to release them alive.

  - Produce waterproof factsheets with practical information to mitigate/eliminate sea turtles by-catch and to release them alive to be distributed through the fisheries considered most impacting on sea turtles.

  - Carry out a practical course with fishermen to inform them about:
    a. *the importance of sea turtles for the marine ecosystems*
    b. *the effects of by-catch on sea turtle populations*
    c. *the existing devices to mitigate/eliminate sea turtle by-catch*
    d. *any other relevant matter for the mentioned purposes*

    and train them to:
    e. *correctly identify and report sea turtle specimens by-catch in the logbook (also from a taxonomic point of view)*
    f. *correctly use existing kits for de-hooking turtles*

  - In the implementation of the above activities the *FAO Guidelines to reduce sea turtle mortality in fishing operations (FAO Fisheries and Aquaculture Department. Rome, FAO. 2010. 128pp.)* should be taken into consideration and its contents should be adapted to the Mediterranean and Black Sea region (if necessary).

ON MONK SEAL

- Study the feasibility of management measures to have very low and close-to-0-risk of monk seals incidental taking and mortality in fishing activities/operations, to comply with the Recommendation GFCM/35/2011/2.

  The terms of reference for the consultancy(ies)/meeting are as follows:

  - Produce a comprehensive cartography of the current spatial distribution of monk seal populations in the Mediterranean.

  - Draft a comprehensive document with all relevant data available and different experiences from all involved countries.

  - Analyze and define practical measures which could be implemented to mitigate the negative consequences of monk seal/fisheries interactions.

  - Design scientifically sound monitoring schemes to successfully examine mitigation measures effectiveness in the areas where they are implemented.

ON ARTIFICIAL REEFS (ARs)

- Organize the Special Session on artificial reefs (ARs) in the Mediterranean and Black Sea within the framework of the 10th International Conference on Artificial Reefs and Related Aquatic Habitats (23-27 September 2013 Izmir, Turkey). A consultant should act as a moderator of this special session and should produce a) a background document to update the existing knowledge of ARs in the GFCM area, and b) draft guidelines for the use of ARs to be discussed during the workshop.

Provisional terms of reference for the workshop are:

1) **Review the status of Artificial Reefs in the Mediterranean and Black Sea.** Contributions (posters/presentations) are expected to deal with:
   - Objectives of the ARs
   - Evidences of increased productivity and functional diversity
   - Evidences of effectiveness of ARs in enhancing fisheries and reducing conflicts in coastal areas
   - Monitoring strategies and statistical approaches

2) Round Table to discuss the **Draft Guidelines for AR applications in the context of an Integrated Maritime Approach in the Mediterranean and Black Sea.**
   The Guidelines should address the following topics:
   - Objectives of the ARs: habitat protection, habitat restoration, ARs as potential network of MPAs (understanding the connectivity and the recruitment subsidy), enhancement of professional and recreational fisheries, management of activities in coastal areas, aquaculture
   - Dimensions and scales appropriate for the different objectives
   - Methodologies to assess effectiveness of ARs and standardized monitoring procedures
   - Plans for the creation and management of new ARs

ANY OTHER MATTER

94. The SCMEE did not come up with any other matter to be discussed.

NOMINATION OF SCMEE COORDINATOR

95. The GFCM Secretariat thanked the SCMEE Coordinator, Mr Federico Alvarez, for the work done in the last two years and unanimously elected him to continue to coordinate the SCMEE for another mandate. After approval by the Sub-Committee, Mr Alvarez was appointed SCMEE Coordinator for the next two years.

DATE AND VENUE OF THE NEXT MEETING

96. To be decided.

ADOPTION OF THE REPORT

97. The conclusions and recommendations were adopted by the Sub-Committee on 20th February 2013 at 16.00. The whole report was adopted after revisions and amendments by electronic correspondence within a week.

Appendix I

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Appendix II

Agenda

MONDAY, 18th FEBRUARY

9.00 - 11.00 (Transversal session: RED ROOM – Building A, 1st floor)

1. General transversal session

1.3. Opening and arrangement of the meetings

1.4. Introduction of on-going activities under the 1st phase of the GFCM Framework Programme (FWP), including on:

- Strengthening data collection and submission frameworks
- Implementation of the GFCM guidelines on management plans
- Concerted action to assist Lebanon for the implementation of FWP activities

1.5. General discussion

Coffee break

11.30 - 13.00

2. **Introduction to the SCMEE meeting** (RED ROOM – Building A, 1st floor)

- Introduction of participants
- Designation of the rapporteur(s)
- Adoption of the agenda

3. **Outcomes of the Medium-term research programme on Elasmobranchs** (brief introduction by SCMEE Coordinator)

- *Ecology of the large pelagic sharks in the Mediterranean Sea: a pilot study* (by Poisson F., Banegue A. and Groul J.M.)
- *Elasmostat: ELASMOSTAT: a ministerial program to analyse the historical data of the elasmobranchs collected during scientific surveys from 1980 to 2012* (by Serena F.)
- *Taxonomic problems of Elasmobranchs in the Mediterranean Sea* (by Saidi B., Bradai M.N., Saadaoui A., Enajjar S. and Marouani S.)

4. Review of progress on selectivity issues

4.1. Review of the conclusions of the Workshop on Mediterranean gears, fishing technology and selectivity and progress made by the TechnoMed network (in collaboration with CopeMed II)

- *Conclusions of the GFCM-CopeMed Workshop on Mediterranean gears, fishing technology and selectivity* (by Camiñas J.A. and Sacchi J.)
- *Proposed roadmap for strengthening the network TechnoMed* (by Sacchi J.)

Lunch break

14.30 - 17.30

4.2. Progress on Eastern Mediterranean studies on selectivity (EastMed)

- *EastMed support to the fishing trials carried out off the South Lebanese Coast* (by Colloca F. And Lelli S.)
- *FAO Eastmed Project of pilot study on Implementation of the 40 mm square mesh size GFCM Resolution to the Egyptian trawl fleet* (by Sacchi J.)
- *Proposal of an action line on sea turtle bycatch for the GFCM SCEE and SAC 2013 working program* (by Claro F., presented by Poisson F.)

5. Elements for a Regional Management plan for red coral (brief introduction by SCMEE Coordinator)

- *Adaptive Management Plan for Red Coral* (Corallium rubrum) *in the GFCM Competence Area* (by Cau A., Follesa M.C. and Cannas R.)

6. Protected areas in the Mediterranean and Black Sea (SPAMIs, MPAs and FRAs)

6.1. Information on the progress of previous proposals of FRAs not validated by SAC

- *Balearic Seamounts FRA Proposal Review* (by Marín P.)
- *State of progress of the joint action with the EC to promote establishing SPAMIs in open seas, including deep seas, and forthcoming phase steps* (by Cebrián D.)
- *Towards a comprehensive, ecologically representative, effectively connected and efficiently managed Network of Mediterranean Marine Protected Areas* (*MPAs*) *by 2020* (by Rais C.)

TUESDAY, 19th FEBRUARY

9.00 - 13.00

7. Follow-up on:

7.1. Deep-sea habitats and Vulnerable Marine Ecosystems

- *Need for Protection of Seamounts and Submarine Canyons* (by Marín P.)
- *Quick facts view on seamounts in the Mediterranean* (by Cebrián D.)
- *Compilation and mapping of environmental and fisheries related information in the Mediterranean Sea by means or Geographical Information Systems* (*GIS*) (by Spedicato M.T.)
- *FAO International Guidelines for the management of deep-sea fisheries in the high seas* (by Deupmann P., FAO)
- *Vulnerable cold water corals in the deep waters of the Eastern Ionian Sea* (by Mytilineou C., Smith C.J. and Anastasopoulou A.)

- *EastMed report of the sub-regional working group on deep-water biological resources in the eastern Mediterranean* (EastMed, presented by Mytilineou C.)

7.2. Alien species

- *The Puffer Fish* Lagocephalus sceleratus (*Gmelin, 1789*) *in the Eastern Mediterranean* (by Nader M.R., El Indary S. and Boustany L.E.)

7.3. Cetaceans-fishery interactions

- *Project proposal on cetaceans by-catch and depredation reduction in the Mediterranean and Black Seas fisheries* (by Sacchi J.)

7.4. Protocol and sampling design to carry out studies on Monk Seals to reduce close-to-0 risk of incidental taking according to Recommendation GFCM/35/2011/5

- *Mediterranean monk seal and fisheries: Tackling the conflict in Greek seas* (by Dendrinos P., Paravas V., Karamanlidis A.A., Tounta E., Psaradellis M. and Adamantopoulou S.)
- *The monk seal in the Mediterranean Sea: recall on measures needed for reducing by-catch* (by Cebrián D.)

Lunch break

14.30 - 17.30

7.5. Artificial reefs

- *Artificial Reefs in the Framework of FAO-GFCM* (by Nastasi A., GFCM Secretariat)
- *Les récifs artificiels comme outil d'appui à la gestion intégré des zones côtières* (by Djellali M.)

8. Rising issues to be addressed by the SCMEE

8.1. Incorporation of ecosystem variables/indexes within an Ecosystem Approach to Fisheries framework: incorporation of ecosystem variables in the Stock Assessment Forms (brief introduction by SCMEE Coordinator)

- *The Marine Strategy Framework Directive and its potential contribution to the enforcement of an ecosystem approach to fisheries management* (by Raicevich S., Battaglia P., Romeo T., Fortibuoni T., Giovanardi O. and Andaloro F.)
- *Ecosystem Approach in the Mediterranean* (by Cebrián D.)

8.2. Actions to tackle climate change effects in fisheries and ecosystems

- *Building resilience for adaptation to climate change in the fisheries and aquaculture sector: A global perspective and FAO roadmap* (by De Young C., FAO)

8.3. Impact of marine litter

- *Anthropogenic litter on the sea bottom and ingested by fish in the deep waters of the Eastern Ionian Sea* (by Anastasopoulou A.)

WEDNESDAY, 20th FEBRUARY

9.00 - 11.00

9. Any other matter

10. Nomination of SCMEE Coordinator

11. Date and venue of the next meeting

Lunch break

15.30 - 17.30

12. Conclusions and Recommendations

13. 2013 SCMEE Workplan

14. Adoption of the Report and closure of the meeting

Appendix III

Abstracts

Anthropogenic litter on the sea bottom and ingested by fish in the deep waters of the Eastern Ionian Sea

Anastasopoulou A., Smith C.J, Mytilineou C. and Papadopoulou K.N.

Marine litter has been documented in the deep waters of the Eastern Ionian, through the EU CoralFISH project. Litter of anthropogenic sources (plastic, metals, wood) was found in the gastrointestinal tracts of four Elasmobranchs species and one bony fish caught during experimental fishing. Ingested litter included primarily plastics (86.5%). Additionally, video obtained from ROV detected the incidence of plastics (the most frequently found), terracotta, ceramics, glass, metal and wood on the sea bottom.

Conclusions of the GFCM-CopeMed Workshop on Mediterranean gears, fishing technology and selectivity

Camiñas J.A. and Sacchi J.

CopeMed and the GFCM organised and supported a workshop on gear selectivity with local support by the INRH. The aim was to attract new scientist in to the field of selectivity and gear technology in support of fisheries management. Total 21 experts from around the Mediterranean region were supported by the FAO-regional Mediterranean projects AdriaMed, EastMed and CopeMed. The GFCM Secretariat and the fifth CopeMed Coordination Committee adopted the proposal of the SCMEE to Co-organize the Workshop on Selectivity and fishing technology to incorporate new young experts from the western and central Mediterranean, as a first step to improve TECHNOMED network. Main questions reviewed during the training were: The TECNOMED WG and the ATSELMED workshop on selectivity; the status of fisheries exploitation in Mediterranean Sea; typology of the main Mediterranean fleets and overview of various fishing gear used in Mediterranean Sea. The theoretical part was completed with practical sessions on gears components and measures, equipments to control mesh size and calculus of different situation and combination of gears and horsepower.

Adaptive Management Plan for Red Coral (*Corallium rubrum*) in the GFCM Competence Area
Cau A., Follesa M.T. and Cannas R.

(not provided)

State of progress of the joint action with the EC to promote establishing SPAMIs in open seas, including deep seas, and forthcoming phase steps
Cebrián D.

On the basis of the lessons learned from the implementation of the action's second phase, and upon consultation with the project Steering Committee at its third meeting (December 16, 2011. Tunis, Tunisia), the next phase of this joint action with the EC aims to contributing to build a framework with the countries and competent organizations to facilitate the joint establishment of SPAMIs in open seas, including the deep seas.
These activities will add up to CBD target on marine protected areas, UNEP/MAP SAP BIO regional priorities and EU biodiversity strategy, Natura 2000 and other EU legal instruments as appropriate, through the improvement of the representativeness of the Mediterranean network of marine protected areas (which is currently mainly made of coastal MPAs).
They contribute to build a framework with countries neighbour to the EU and key competent organizations in the region to facilitate the joint establishment of SPAMIs in open seas, including the deep seas, through:

- National and sub-regional consultation processes facilitation to countries showing interest, both on-going (Alboran Sea) and starting (Adriatic Sea, Strait of Sicily), in order to support the preparation of joint SPAMI proposal in areas embracing open seas and engaging countries neighbour to EU in the process
- Identification of good practices for elaborating, adopting and implementing management plans in the case of those joint SPAMIs in the open seas. This activity will be done through a study on best practices and case studies related to the management of wide trans-boundary areas, straddle marine resources as well as marine protected areas comprising notably large extensions of ocean. This study will support the Contracting Parties to get clearer ideas on the kind of existing structures and governance bodies of trans-boundary managed areas, and on their functioning related to the elaboration, adoption and implementation of their management plan.
- Support to the development of a joint strategy with ACCOBAMS, IUCN and GFCM in coordination with MedPAN, on how to address the issues of common interest in Alboran Sea, Adriatic Sea and Strait of Sicily. Initial conversations are being undertaken in order to better coordinate further actions on the proposal of new SPAMIs in open seas.

Future establishing of SPAMIs in open seas, including deep seas, will be done following ad-hoc operational criteria. The common criteria for selecting Protected Marine and Coastal Areas that could be put on the SPAMI List appear in Annex 1 to the SPA/BD Protocol. In terms of operational prospects, RAC/SPA enriched the criteria to adapt them to the open seas, including the deep sea, taking into account other pertinent ecological criteria such as: - those adopted in 2008 by the Convention on Biological Diversity (CBD) to identify Ecologically or Biologically Significant Areas (EBSA) that should be protected in open sea waters and the habitats of the ocean depths (UNEP(DEPI)/MED WG.348/Ref.5 and UNEP(DEPI)/MED WG.348/Ref.6) - a set of criteria to identify habitats of importance for Mediterranean fishing, taking into account the ongoing promotion within the framework of the General Fisheries Commission for the Mediterranean (GFCM) for establishing regulated-access fishing areas, including in the high sea.

These operational criteria, as validated by the Open Seas Project's Steering Committee and the SPA Focal Points are classed in four main categories:
i.- General criteria
ii.- Criteria concerning the area's regional value
iii.- Criteria concerning scientific, educational or aesthetic interest
iv.- Other features and factors that are seen as favourable: these criteria are subdivided into sustainable use criteria and feasibility criteria

Quick facts on seamounts in the Mediterranean
Cebrián D. and Kuehl A.

Along with a growing body of knowledge of seamount ecology has come the recognition of the high vulnerability of this valuable deep-sea ecosystem. Attracted by high levels of productivity, fisheries have targeted seamounts for centuries. The impact of fishing methods which come into direct contact with the seamount, especially trawling, are considered to be particularly detrimental. Since sustainable harvesting of seamount species is challenging primarily due to the slow life history of species present, more and more stocks have collapsed and continue to be exploited at ever increasing depth. In the Mediterranean there is an urgent need both for the protection of individual seamounts, as well as a depth-defined restriction on fisheries on them well-above the current 1000m limit as a precautionary measure. The current paper summarises the current knowledge on seamount biodiversity, vulnerability and conservation needs with emphasis on the Mediterranean.

The monk seal in the Mediterranean Sea: recall on measures needed for reducing by-catch
Cebrián D.

Scientific experience and expertise has been acquired on the monitoring of the Mediterranean monk seal – fisheries interactions, and proven methodological approaches have been tested aiming at the implementation of concrete and feasible measures for the mitigation of the negative consequences of this interaction. Interaction of monk seals with trammel nets is related to the distance of the net setting to the caves where the seals rest. Research results suggest that damage becomes very low at distances along the coast higher than 5 nm from the caves, and insignificant for distances higher than 10 nm. Seasonality plays also a role on the conspicuity of interactions, being higher in certain periods of the year. It might be possible to strongly reduce the level of this interaction, the main drive to the species extinction, by management of coastal fisheries based on these results. Taking into account the significance of fisheries-related threats and pressures that may prove critical for the survival of the species in its stronghold areas throughout the Eastern Mediterranean Sea, the data and the conservation proposals stemming from the research activities implemented and compiled outputs should be strongly attended and taken under urgent consideration. The formulation of a specific and tailored strategy for mitigation considering either spatial, seasonal or both approaches is feasible.

Ecosystem Approach in the Mediterranean
Cebrián D.

The Contracting Parties to the Barcelona Convention have decided to pursue a Good Environmental Status for the Mediterranean Seas through the adoption of the following 11 Ecological Objectives:

1. Biological diversity is maintained or enhanced
2. Non-indigenous species introduced by human activities are at levels that do not adversely affect the ecosystem
3. Population of selected commercially exploited fish and shellfish are within biologically safe limits
4. Alterations to the components of marine food webs do not have a long-term adverse effects
5. Human-induced eutrophication is prevented
6. Sea-floor integrity is maintained, especially in priority benthic habitats
7. Alteration of hydrographic conditions does not affect coastal and marine ecosystems
8. The natural dynamics of coastal areas are maintained and coastal ecosystems and landscapes are preserved
9. Contaminants cause no significant impact on coastal and marine ecosystems and human health
10. Marine and coastal litter do not adversely affect coastal and marine environment
11. Noise from human activities cause no significant impact on marine and coastal ecosystems

To advance on it, they will pursue on determining good environmental status and target for each of the 11 agreed Ecological Objectives and will implement a pilot case which successfully tests indicators. They will further prepare an integrated monitoring system based on the indicators and targets

Proposal of an action line on sea turtle bycatch for the GFCM SCEE and SAC 2013 working program

Claro F.

According to Casale (2011), at least 132,000 sea turtles are by-caught each year during fishing activities in the Mediterranean, representing probably more than 44,000 deaths each year; in order to mitigate the impact of bycatch on these endangered migratory species, several resolutions and recommendations have been taken by GFCM (recommendation 35/2011/4) and CMS (convention for the conservation of migratory species)(resolutions/recommendations 6.2, 8.14 and 9.18 on bycatch); an action plan for the conservation of Sea turtles including priority action lines on bycatch was built in the framework of Barcelona convention/ Specially Protected Areas protocol. In order to facilitate the implementation of these recommendations and measures, the GTMF would like to propose to GFCM to reinforce coordination and harmonization of actions and organizations within Mediterranean, under the auspices of GFCM and Barcelona Convention, and to suggest to GFCM to organize a joint GFCM/ RAC SPA workshop with seaturtle scientists in order to assess the situation and to identify measures (such as develop a 3 years workplan with research, communication, self sampling, good practices training).

EastMed support to the fishing trials carried out off the South Lebanese Coast
Colloca F. and Lelli S.

(not provided)

Mediterranean monk seal and fisheries: Tackling the conflict in Greek seas

Dendrinos P., Paravas V., Karamanlidis A.A., Tounta E., Psaradellis M. and Adamantopoulou S.

Mediterranean monk seals *Monachus monachus* are classified as Critically Endangered on the IUCN Red List, with <600 individuals worldwide. Recent published scientific data, and numerous reports indicate that fisheries related mortality poses as one of the most significant threats for the survival of the species in Greek Seas. The constantly increasing pressures of fisheries, unprecedented decline of fish-stocks, illegal and destructive fishing practices, as well as perceived and actual damage caused by monk seal depredation, have resulted in an on-going conflict between Mediterranean monk seals and the fisheries sector. MOm, the Hellenic Society for the Study and Protection of the Monk Seal, a Greek environmental NGO has dedicated its efforts in preserving the Critically Endangered *Monachus monachus* and its habitats for more than 25 years. The activities of the organization are focusing on issues covering the conservation, ecology, biology, behaviour, treatment and rehabilitation of this charismatic, alas threatened with extinction species. MOm has recently formulated, in close collaboration with renowned experts, Research Institutes and other NGOs the "National Strategy and Action Plan for the Conservation of the Mediterranean Monk Seal in Greece, 2009-2015". This document has been published in the context of the EU-funded LIFE Nature project, implemented by MOm, entitled MOFI: Monk seals and Fisheries. Mitigating the Conflict in Greek Seas 2005-2009. In the context of the above project, MOm has also elaborated an Action Plan that includes specific and pragmatic proposals and measures aiming at the reduction of monk seal-fisheries interactions in Greek Seas. The Action Plan includes specific proposals and measures that will minimize human-induced mortality related to fisheries and will conserve the key prey species of monk seals, while proposing at the same time, measures that could support artisanal coastal fisheries through compensation for damaged gear and conservation of key fish-stocks, thus significantly improving their livelihoods. The Action Plan has been elaborated in close consultation with coastal fisheries and aquaculture associations, relevant academic and research institutes, competent state authorities and environmental NGOs.

FAO International Guidelines for the management of deep-sea fisheries in the high seas
Deupmann P.

FAO International Guidelines for the Management of Deep-sea fisheries in the High Seas are introduced. Implementation issues and ways in which RFMOs address these as well as FAO's activities to support RFMO/As in implementing the Guidelines are also discussed.

Building resilience for adaptation to climate change in the fisheries and aquaculture sector: A global perspective and FAO roadmap
De Young C.

(not provided)

Les récifs artificiels comme outil d'appui à la gestion intégré des zones côtières
Djellali M.

Face aux pressions constantes exercées par les activités humaines sur le littoral et aux dégradations de l'environnement marin et de ses ressources, les récifs artificiels représentent un des outils de gestion intégrée de la bande côtière et des ressources littorales les plus performants, avec la mise en place d'aires marines protégées. Les récifs représentent un bon outil pour la gestion et le management des ressources et peuvent contribuer au maintien des pêcheries et des pêcheurs et constituent une réponse possible aux nombreux problèmes concernant les ressources vivantes côtières, comme la surpêche et la dégradation des écosystèmes et des habitats.

Report of the Sub-regional Working Group on Deep Water Biological Resources in the Eastern Mediterranean.
EastMed

The Sub-regional Working Group on Deep Water Biological Resources in the Eastern Mediterranean was held in Athens Greece, from 12 to 15 June 2012. The meeting was attended by scientists from Egypt, Greece, Italy, and Turkey. The meeting started with presentations on the descriptions of the fishing fleets (e.g. trawlers, vessels using shrimp traps) which target deep water demersal resources on the continental slope (500 – 800 m) in the Eastern Mediterranean, including the management actions currently in force. Studies on the available information on the distribution and biology of the main species, targeted by the fisheries (e.g. *Aristaeomorpha foliacea*, *Aristeus antennatus*, *Plesionika* spp., *Helicolenus dactylopterus*, etc.), in the Eastern Mediterranean were also presented. An interesting study was also presented on the Italian distant deep water fisheries in the Central – Eastern Mediterranean. The participants recognised the importance of the occurrence of shared stocks in deep waters, which are exploited by several countries. However the group highlighted the problem that there is a lack of information on basic data such as catch and effort, from the fleets exploiting the demersal resources. In this respect the group agreed to firstly start collecting some basic data in the region, and devised a standard questionnaire which will be used to interview the fishers on their fishing activity in deep waters and the respective catches. This will give the basic data on which further scientific analysis and advice for management of the deep water demersal resources could be given.

Balearic Seamounts FRA Proposal Review
Marín P.

During the 11th Session of the SCMEE in 2011, Oceana proposed the Balearic Seamounts (Emile Baudot, Ausias March and Ses Olives) for protection as Fishery Restricted Area (FRA) in the GSA05. At that time, the proposal was rejected by the GFCM-SAC given the lack of socio-economic and quantitative analysis according to the Spanish delegate. Nevertheless, the Spanish Secretariat for Fisheries indicated its will to continue studying the provided data. According to the correspondence maintained between Secretariat for Fisheries and Oceana throughout 2012, the Spanish position is only to protect those areas where coralligenous and maërl beds have been found (summits of Ausias March and Emile Baudot). This position would strictly comply with the Spanish Legislation (Orden APA/79/2006) and the European Council Regulation (EC) Nr. 1967/2006.

However, designing a comprehensive proposal also requires following the principles of "Ecosystem approach to fisheries management" and considering sensitive habitats (*Isidella ellongata*, *Leptometra phallangium* or *Funiculina quadrangularis*) in deeper areas which normally conform special commercial species assemblages. On the other hand, Oceana also believes that fragile species protected by International Conventions and national legislation to conserve biological diversity should be taken into account. The process is still ongoing since further studies are being carried out using the best available cartography to determine the fishing footprint within the area proposed. Results will be presented in a meeting which will take place on February 19th together with the fishing sector and NGOs.

Need for protection of seamounts and submarine canyons
Marín P.

At a first glance at the chart of the Mediterranean sea-bottom relief, the geological relevance of seamounts and submarine canyons at basin level is obvious. However, their importance is also valued from a biological perspective since they are listed as examples of features which require protection under CBD EBSA criteria (UNEP/CBD/EWS.MPA/1/2). Ecological aspects (special hydrodynamic, high biodiversity and productive ecosystems, occurrence of top-predators and marine mammals, etc.) should not be the only ones taken into account when considering these features, but also economic characteristics because of their relationship with fisheries. Additionally, seamounts and submarine canyons commonly host Vulnerable Marine Ecosystems (VMEs), fragile features that should be properly managed through protection figures. Looking for evidences to demonstrate their importance, Oceana has gathered *in situ* information from several seamounts (Balearic seamounts, Chella bank, Seco de Palos, Enareta seamount, Cabliers bank) and submarine canyons (Cabrera, Minorca, Columbretes, Clot de San Salvador, Guadalmina) using ROV techniques.

Oceana footage revealed the presence of important deep sea habitats formed by cold water corals (*Lophelia pertusa*, *Madrepora oculata*), gorgonian gardens (*Isidella ellongata*, *Eunicella verrrucosa*, *Viminella flagellum*, *Callogorgia verticillata*), soft corals (*Paralcyonium spinulosum*, *Alcyonium palmatum*), black corals (*Antipathes dichotoma*, *Leiopathes glaberrima*), sponge aggregations (*Asconema setubalense*, *Pheronema carpenteri*, *Phakellia* spp., *Axinella* spp.), coralligenous and maërl beds, crinoids facies (*Leptometra phalangium*), ophiuroids facies and even potential spawning areas for elasmobranches among others essential fish habitats. Most of them are potentially considered as VMEs. On the other hand, in the same locations GFCM priority species such as hake (*Merluccius merluccius*), angler (*Lophius piscatorius*), blue whiting (*Micromesistius poutassou*), red mullet (*Mullus barbatus*), common spiny lobster (*Palinurus elephas*), Norway lobster (*Nephrops norvegicus*), horned octopus (*Eledone cirrhosa*) or common octopus (*Octopus vulgaris*) have been documented. Many other species listed under different international conventions or agreements (Bern Convention, CITES, Barcelona Convention, Convention on Migratory Species, UNCLOS) were also documented including loggerhead sea turtle (*Caretta caretta*), sperm whale (*Physeter macrocephalus*), common bottlenose dolphin (*Tursiops truncatus*), short-beaked common dolphin (*Delphinus delphis*), long-finned pilot whale (*Globicephala melas*), bluntnose sixgill shark (*Hexanchus griseus*), thornback ray (*Raja clavata*), basking shark (*Cethorhinus maximus*), angular rough shark (*Oxynotus centrina*) and the carnivorous sponge *Asbestopluma hypogea*, among others. These findingsendorse the need to protect for Mediterranean seamounts and submarine canyons, or at least implement a precautionary approach.

Either from a purely biological perspective or from fisheries point of view, currently exist figures to implement protection (e.g. FRAs, SPAMIs, N2000). Despite this, and being continuously exposed to several threatens (marine debris, pollution, abandoned gears, destructive fishing gears, etc.) which jeopardize their existence, none of those documented places have been protected so far.

In order to fill the open-sea and deep-sea protection gap in the Mediterranean basin and additionally to collaborate in reaching the 10% CBD target, the Oceana MedNet proposal was launched in 2011. It embraces 100 sites defining a representative and comprehensive MPA network which considers a wide variety of features including seamounts and submarine canyons among others (mud volcanoes, escarpments, eddies, cold seeps and others). Furthermore, in order to guarantee the connectivity, the proposal was designed taking into account the ocean circulation patterns. The proposal has been welcomed by noteworthy institutions and organizations involved in Mediterranean conservation (UNEP-MAP RAC/SPA, IUCN, MedPAN). By overlapping the MedNet layer with Mediterranean EBSAs, a clear roadmap for MPAs is obtained, particularly if addressing to seamounts and submarine canyons. Taking into account proven cost-effectiveness of MPAs and benefits for fisheries, Oceana considers that new measures are urgently needed to be implemented. For all those reason above, Plans of Action for the conservation and management of seamounts and submarine canyons are suggested.

Vulnerable cold water corals in the deep waters of Eastern Ionian Sea
Mytilineou C., Smith C.J. and Anastasopoulou A.

In the framework of CoralFISH project, a medium density cold water coral area was found off southwestern Cefalonia Island coasts. Antipatharians (*Antipathes dichotoma*, *Parantipathes larix* and *Leiopathes glaberrima*), Alcyonaceans (*Swiftia pallida*, *Villogorgia* sp., *Isidella elongata*), Scleractinians (*Desmophyllum dianthus*) and Pennatulacea (*Pennatula* sp. and *Funiculina quadrangularis*) corals were identified. Some of these corals are very slow growing organisms and they are rarely found in the Mediterranean waters nowadays. The co-occurring fish assemblage in the area presented high abundance and biomass values, which let us suppose a close relation of the fish assemblage with the coral habitat. Further investigation is needed in order to detect the necessity to protect this area and the existing cold water corals.

The Puffer Fish *Lagocephalus sceleratus* (Gmelin, 1789) in the Eastern Mediterranean

Nader M.R., El Indary S. and Boustany L.E.

In the Mediterranean region, the fisheries sector has been suffering from the impacts of migration of aquatic organisms through the Suez Canal. Among the most devastating species to both fisheries and habitats is the aggressive predatory puffer fish *Lagocephalus sceleratus*. The fish bio-concentrates Tetrodotoxin (TTX), a very potent poison making the fish unmarketable and poses a great risk to human health if consumed. In addition, *L. sceleratus* has been recorded to destroy fishing nets and lines leading to economic losses for fishers. The objective of this review is to describe the status of *L. sceleratus* and its commercial applications, if any, around the world with emphasis on the Mediterranean Sea. Given the lethal TTX toxicity of *L. sceleratus*, and the strict regulations passed around the world preventing its fishing and consumption, coupled with the little knowledge available about its biology and its bio-concentration of TTX, it is not recommended at this stage to consider marketing the fish to consumers. Even-though the aquarium and capture-based aquaculture industries may provide partial solutions, the best option lies in creating, and in association with pharmaceutical companies, multidisciplinary laboratories in Mediterranean countries with the main objective of isolating TTX from puffer fishes including *L. sceleratus* and investigating the toxin's potential use in the pharmaceutical industry. Such an option would create many employment opportunities in the region, but more importantly, it will create a fishery that will yield economic benefits to the fishers and control wild populations through increased fishing pressure. However, such an initiative requires many investigative activities about the biology of the fish as well as very strict permitting and regulatory processes in the countries where such a fishery might be established.

Artificial Reefs in the Framework of FAO-GFCM
Nastasi A.

In 2009 the first recommendations to the GFCM SAC/Commission with regards to Artificial Reefs in the Mediterranean and Black Sea were discussed in the 10th meeting of the Sub-Committee devoted to Marine Environment and Ecosystems (SCMEE). Since then, The GFCM and the SCMEE in particular have always kept Artificial Reefs in the work- plans and agendas. The main steps undertaken so far by the GFCM are summarized with emphasis on the results obtained during the first Workshop on Artificial Reefs in the Mediterranean and Black Sea and on the future. The 10th International Conference on Artificial Reefs and Related Aquatic Habitat (http://www.10thcarahturkey.org) will be held in Izmir (Turkey) from 23 to 27 September 2013 and the GFCM together with FAO EastMed Project are organizing a special one-day Workshop dedicated to the artificial reefs in the GFCM area only.

Ecology of the large pelagic sharks in the Mediterranean Sea: a pilot study

Poisson F., Banegue A. and Groul J.M.

The lack of reliable fishery-dependent data and fundamental understanding of the biology of most shark species causes concern for the Sustainable management of shark populations in the Mediterranean Sea. The study aims at investigating on habitat occupancy, residency times and migratory pathways as well as providing behavioural data on temperature experience and swimming depth of the large pelagic shark mainly the blue shark (*Prionace glauca*). This study strives to identify habitats and regions that are essential for the survival of sharks, while also determining when and where sharks are most vulnerable and will assist in the conservation of the species. The use of satellite tag is proposed to investigate on the ecology of the large pelagic sharks. The preliminary results of the first SPOT (Smart position or temperature transmitting) tag deployed of a female blue shark are presented.

The Marine Strategy Framework Directive and its potential contribution to the enforcement of an ecosystem approach to fisheries management

Raicevich S., Battaglia P., Romeo T., Fortibuoni T., Giovanardi O. and Andaloro F.

The Marine Strategy Framework Directive (MSFD, CE/2008/56) is a legislative process enforced by EU that requires each Member State to achieve the Good Environmental Status (GES) in their national marine waters by 2020. The Directive also fosters the collaboration with third non-EU countries that share marine waters within the same region or sub-region. In the context of the Mediterranean Sea region, four different sub-regions are identified, namely the Western Mediterranean, the Ionian Sea and central Mediterranean, the Adriatic Sea and the Aegean- Levantine Sea. The MSFD recalls the need of establishing a coherence between the Directive itself and other European Directives aimed at the protection of endangered species and habitats (i.e. Habitat Directive, Birds Directive), or to the achievement of good ecological status (Water Framework Directive) in the context of an ecosystem approach. GES, that does not represent a pristine state but the status were human pressures are considered sustainable since they do not irreversibility hamper biodiversity and the recoverability potential of ecosystem components, needs to be assessed according to a set of indicators and criteria established under the Commission Decision 2010/477/EU (based on the outcomes of several Experts Task Groups established by JRC and ICES). The complexity of the MSFD implementation is reflected in the number and range of descriptors to be taken into account that includes, among others, "Commercial fish and shellfish" (Descriptor 3) and fishery-related descriptors such as "Biodiversity" (Descriptor 1), "Seabed integrity" (Descriptor 6), "Marine Food webs" (Descriptor 4), and the number of indicators to be possibly used to this purpose. Indeed, a suite of more than 100 indicators or family of indicators is proposed for the GES assessment, for the Initial Assessment of the status of marine waters. This approach is mirrored by the need of defining environmental targets that should allow MS to reach or progress toward the GES by 2020, along with monitoring programmes and a programme of measures to be defined before 2015 according to the target set by MS. The ongoing activities related to the MSFD in Italy allow to highlight the several challenges related to this Directive and in particular the need of an international coordination between UE and third countries. These issues pertain the approach for a common evaluation of GES, the set of indicators and, most likely, a common strategy to reach the targets (where GFCM should play a fundamental coordination role for the Mediterranean and the Black Sea marine waters), as well as info gap and scientific approach that needs to be further investigated and tested.

Among others, we recall:

- the needs of shifting from single species to multi-specific stock assessment also incorporating environmental drivers, in particular primary production and climatic shifts;
- the integration and test of indicators, in particular those related to fishery impact on commercial stocks as well as ecosystem indicators able to trace ecosystem status and possible regime shifts;
-the need of objective processes to define the best spatial allocation of marine protected areas or NTZ in the light of benthic communities protection and essential fish habitats of commercial species;
- the need of assessing the impact of demersal fishing on the benthic communities at spatial scales consistent with ecosystems as well as the definition of thresholds values of the maximum acceptable disturbance, in the light of supporting ecosystem services and resilience;
- the need of incorporating uncertainties into prediction and establish the historical range of variability in marine resources and ecosystems;
- the need to define and assess significant adverse impact of fisheries on marine ecosystem components (especially those most vulnerable, such as by-catch of species of conservation concerns) and to establish a framework for their mitigation;
- the need for understanding the cumulative and synergistic effects of multiple human pressures as well as to foster a process to identify optimum ecological and socio-economical set of pressures that allow GES to be reached and maintained while not excluding human activities, such as fisheries, in the ecosystems;
- the role and process for defining multiannual management plans in the context of the definition of programme of measures that are aligned with the achievement of maintenance of GES in an ecosystem perspective.

To our view all these challenges should benefit from a coordinated approach at regional level (i.e. Mediterranean and Black Sea) where GFCM is playing, and should play in the future, a major coordination role along with international initiatives like the Barcelona Convention. Thus, the MSFD, by requiring MS to evaluate the status of their waters according to several items (virtually very much is known about marine environment and human pressures), represents a valuable step for assessing the known and unknown on marine ecosystems, and for contributing toward the implementation of an EAFM that goes beyond GES assessment and the definition of environmental targets and programme of measures. In particular, the latter, due to the inherent regional specificities of the Mediterranean fisheries (e.g. small-scale fisheries, multi-specific fishing gears, the presence of shared stocks), should be defined according to a regional coordination and the support of FAO programmes, such as AdriaMed and MedSudMed.

Towards a comprehensive, ecologically representative, effectively connected and efficiently managed Network of Mediterranean Marine Protected Areas (MPAs) by 2020
Rais C.

(not provided)

FAO EastMed Project of pilot study on Implementation of the 40 mm square mesh size GFCM Resolution to the Egyptian trawl fleet
Sacchi J.

(not provided)

Proposed roadmap for strengthening the network TechnoMed
Sacchi J.

(not provided)

Project proposal on cetaceans by-catch and depredation reduction in the Mediterranean and Black Seas fisheries
Sacchi J.

(not provided)

Taxonomic problems of elasmobranchs in the Mediterranean Sea

Saidi B., Bradai M.N., Saadaoui A., Enajjar S. and Marouani S.

In the Mediterranean Sea, various elasmobranch species are generally misidentified, and many species are wrongly considered in the same statistic category. Taxonomic confusion exists because many of the morphological and meristic characters that distinguish species partially overlap and considerable variation occurs within species. Misidentification concern mainly commercially species such as smoothhound sharks *Mustelus* sp. guitarfish *Rhinobatos* sp. spurdog *Squalus* sp. and stingray *Dasyatis* sp. In addition, polychromatism in many skates increase also misidentifications. Investigation conducted in the Gulf of Gabès showed that besides the longnose spurdog *Squalus blainvillei*, a short snout spurdog of the *Squalus megalops-cubensis* group occurred. Morphometric and meristic studies as well as genetic analyses support the assignation of this short snout spurdog to *Squalus megalops*. It seems also that *S. megalops* is more common than *S. blainvillei* but these commercial species were confused now and considered in the same statistic category. Investigation also confirmed that *D. tortonesei* should be considered as a valid species. In addition, smooth hound sharks species guitarfish species were generally confused in statistics landings. In the other hand, the polychromatism in *Raja clavata* amplify misidentifications with the close relative species. These findings concern all the Mediterranean. In order to improve species-specific catch and landings data and monitoring of shark catches, the elaboration of field practical guides including new morphometric characters for identification of the species is required.

ELASMOSTAT: a ministerial program to analyse the historical data of the elasmobranchs collected during scientific campaigns from 1980 to 2012
Serena F.

Italy has been involved for over 30 years in the assessment of the demersal resources, using national and international research programs (e.g. GRUND, MEDITS, etc.). With ELASMOSTAT program, the Italian Ministry of Fishery (MiPAAF), by means of all the available information from these surveys, aims to assess the state of exploitation of the elasmobranchs in the Italian seas.

Compilation and mapping of environmental and fisheries related information in the Mediterranean Sea by means or Geographical Information Systems (GIS) – MEDISEH
Spedicato M.T.

The project 'Compilation and mapping of environmental and fisheries related information in the Mediterranean Sea by means or Geographical Information Systems (GIS)' - MEDISEH (Mediterranean Sensitive Habitats) has been launched in 2011 within the MAREA framework. MEDISEH aims at integrating knowledge and mapping of the spatial information on sensitive habitats: a) habitats protected under the Mediterranean regulation, b) nursery areas and spawning aggregations of demersal and small pelagic fish and c) areas under any form of protection within national and international legislation. Thus, distribution maps based on the revised information on phanerogams, coralligenous and maerl have been produced. Habitat suitability maps of Posidonia oceanica, coralligenous and maerl from habitat modelling techniques, using environmental variables, were also identified throughout the Mediterranean Sea, while information on the spatial definition of MPAs and FRAs was updated. Existing information on historical and recent data of nurseries and spawning grounds of small pelagic species was revised and maps produced and placed in the GIS environment. Acoustic surveys, ichthyoplankton surveys and MEDITS bottom trawl surveys were used for spatial analysis. Persistent habitat maps, occasional habitat areas and rare habitat areas were identified throughout the Mediterranean basin. Similarly, for demersal species existing information on historical and recent data of nurseries and spawning grounds was revised and maps were obtained. MEDITS bottom trawl surveys were used to identify density hot spots locations for nurseries and spawning grounds. Persistent density hot spots were located throughout the Mediterranean basin. A GIS database was developed for these purposes with Open Geospatial Consortium (OGC) compliance. Project coordinator: Marianna Giannoulaki (Hellenic Centre of Marine Research). Partners of the project: HCMR (Greece); CIBM, CNR, COISPA, CoNISMa (Italy); IEO (Spain); MRRA-FCD (Malta). Acknowledgement: The project has been funded by the European Commission, EU contract MARE/2009/05-Lot 1.