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GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN

COMMISSION GÉNÉRALE DES PÊCHES POUR LA MÉDITERRANÉE

GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN

SCIENTIFIC ADVISORY COMMITTEE (SAC)

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DRAFT REPORT OF THE 11th SESSION OF THE SUB-COMMITTEE ON MARINE ENVIRONMENT AND ECOSYSTEMS (SCMEE)

Saint George's Bay Malta, 29 November-2 December 2010

(Draft)

*** Available only in English**

OPENING, ARRANGEMENT OF THE SUB-COMMITTEE MEETINGS

1. The Sub-Committee meetings of the Scientific Advisory Committee (SAC/GFCM), including the Transversal Session, were held at the San George's Hotel, St George´s Bay, Malta from 29th November to 2nd December 2010.

2. During the general opening, Dr Anthony Gruppeta, Director General of the Maltese Agriculture and Fisheries Regulations Department of the Ministry for Resources and Rural Affairs, welcomed the participants and thanked them for attending this series of meetings. He highlighted Malta's commitment and contribution to the functioning of the General Fisheries Commission for the Mediterranean (GFCM) which has clearly been demonstrated throughout the years, not only through the hosting of various meetings, but also through its active participation in activities of its subsidiary bodies. He added that Malta is following closely the developments in fisheries management in the Mediterranean through the GFCM and referred to important Recommendations related to management measures (*e.g.* trawl minimum mesh size, closed seasons, Fisheries Restricted Areas, reduction in fishing effort), Monitoring Control Surveillance (MCS) (*e.g.* Vessel Monitoring System (VMS), Authorised Vessels List, logbook, Port State Measures) and data collection schemes (*e.g.* Task 1, Fleet Register) which have been adopted in recent years. He underlined the importance for GFCM countries to strive together to implement a clear strategy for the management of shared resources and stressed that the deliberations and outcomes of the meetings of the Scientific Advisory Committee (SAC) Sub-Committees being held during that week were the vital seeds for the processes leading to the formulation of regional policy and management decisions.

3. Mr Abdellah Srour, the Acting Executive Secretary of the GFCM, welcomed the participants and thanked the Maltese Authorities for their kindness in hosting and organising the meeting. He further drew the attention of the participants on key issues to be addressed by the Sub-Committees.
4. Mr Henri Farrugio, Chairperson of the SAC also thanked the hosting country and the participants for attending the meeting and recalled the mandate of the SAC and its Sub-Committees.

TRANSVERSAL SESSION: REVIEW OF TRANSVERSAL ISSUES

5. This session reviewed the outcome from the following transversal meetings:

- Transversal Workshop on Red Coral (Italy, September 2010)
- First expert meeting on the status of Elasmobranches in the Mediterranean and the Black Sea (Tunisia, September 2010)
- Transversal workshop on European Eel (Tunisia, September 2010)
- Transversal workshop on Fishing Capacity (FAO HQs, September 2010)
- Workshop on data collection methods (applied to all segments of the Fleet and their coherence with the requirements of the GFCM Task 1) (FAO HQs, September 2010)
- Workshop on algal and jelly fish blooms (Turkey, October 2010)
- Workshop on monitoring of recreational fisheries in the GFCM area (Spain, October 2010)

6. The meeting agreed that discussions and comments of the transversal session be included in the reports of each Sub-Committee under the agenda item corresponding to the review of the above mentioned activities.

OPENING AND ARRANGEMENT OF THE MEETING

7. The Eleventh meeting of the Sub-Committee on Marine Environment and Ecosystems (SCMEE) of the SAC was held in Malta from 29th of November to 2nd of December 2010. It was attended by experts from 10 Members as well as by representatives from the Regional Activity Centre for Specially Protected Areas (UNEPMAP-RAC/SPA), Oceana, IWMC-World Conservation Trust and the IUCN. The list of participants is provided in Annex II. The Sub-Committee unanimously thanked the hosting country (Malta) for the hospitality and for the excellent organization of the meeting.
8. The meeting was opened by Mr. Federico Alvarez (Chair of the SCMEE) who welcomed the participants and introduced the agenda.

INTRODUCTION OF THE SCMEE MEETING AND ADOPTION OF THE AGENDA

9. The meeting unanimously elected Mr. Alberto García and Mr. Bayram Öztürk as Rapporteurs for the session.

10. The draft agenda was reviewed and adopted. It appears as Annex I to this report.

SPECIAL SESSION ON THE ALIEN SPECIES

11. This session was moderated by Mr. B. Öztürk and two contributions were presented: *Alien species are replacing the native species in the eastern Mediterranean,* by Mr. M. Goren, and *Impacts of Alien species*, by Mr. B. Öztürk. Abstracts are included in Annex III.

12. The SCMEE noted the increase of alien species, particularly in the eastern Mediterranean (EM). This is mainly attributed to the strong thermal increase of surface waters which have favoured the expansion from the Red Sea into the Mediterranean. Their impact on the EM ecosystems is very high. The discussion within the SCMEE showed that alien species have influenced changes in the biodiversity and species collapse in some regions as in Turkey. In Tunisian waters, about 40 alien species have been identified, 14 of which are of Red Sea origin and others are of Atlantic origin. However, only 3 or 4 species have been established in a permanent way.

    References were made regarding the time frame to distinguish when a particular species can be considered an alien species knowing that some species have been residing in the Mediterranean sea for a long time. Another distinguishing factor may be the way the species has been introduced into the Mediterranean and Black Sea. (ballast waters, aquaculture activities, Suez Canal, etc.).

    Concern was expressed in relation to the impact of these species on the fisheries, since some of them are noted to cause damage to the nets, decrease catch quality and, moreover, species which are toxic (pufferfishes of the genus Lagocephalus) and therefore, endangering humans. In some countries as Cyprus and Tunisia, awareness campaigns were made warning about the dangers of these species.

    Another question addressed the matter of statistical implications because some alien species are actually being commercialized. Some countries like Tunisia have statistics for some of these species (mainly crustaceans). The SCMEE considered that the collection of this data should be considered in the SCSI.

13. Finally, there were some considerations whether to set up a permanent alien working group under the framework of GFCM. The SCMEE concluded that an alien species forming part of the commercial catch can be assessed as the standard species being assessed currently. Nevertheless, the SCMEE took note that cooperative ties with RAC/SPA, as well as CIESM, will be of benefit to progress on this issue by GFCM.

REVIEW OF THE CONCLUSION OF THE TRANSVERSAL WORKING GROUP ON SELECTIVITY IMPROVEMENT, BYCATCH REDUCTION AND ALTERNATIVE GEARS

Transversal session

14. The main outcomes of this working group were presented by the SCMEE coordinator during the transversal session. There were some comments on the effects of changes in mesh sizes in the commercial aspects of catches, as well as their socio-economic implications in the fisheries. The results of the working group indicated that the square mesh codends improve notably the trawl selectivity. Nevertheless, conservation objectives (*e.g*. minimum legal size) for most of commercial species are not reached.

Remarks were made to highlight that selectivity measures could be complemented with spatial management measures, as closure areas.

15. The FAO COPEMED II coordinator informed about the pilot studies that will be carried out next year in the waters of Morocco and Algeria.

SCMEE session

16. The SCMEE noted that the priority of these experiences stemmed from the recently adopted GFCM management measures regarding mesh size. The SCMEE expressed the importance of involving fishermen in the process of undertaking pilot studies of selectivity. The coordinator mentions the spatial component of selectivity in the implementation of FRA.

17. Up to now, pilot studies have been carried out in 11 GSAs, but the SCMEE highlights the importance of extending these studies to cover the totality of the region using the standard protocols that have been established. Also, it was stressed that more pilot studies should be performed testing with higher mesh size for being able to model selectivity patterns more widely. Moreover, the effect of debris on the catches should be assessed in these pilot studies.

18. A wide concern was expressed in relation to bycatch reduction. The SCMEE expressed that through the improvement of the selectivity pattern there is a consequential by-catch reduction. It was also noted that although there is short-term income loss from the implementation of the new mesh size, it is expected to obtain in the long term a beneficial effect, even more by promoting its catch through eco-labelling of sustainable fisheries. The SCMEE considered that this last aspect should be developed by the SCSE. It was also reminded that the Task 1 form includes a window for including by-catch data.

REVIEW OF THE CONCLUSIONS OF THE TRANSVERSAL EXPERT MEETING ON ELASMOBRANCHES IN THE MEDITERRANEAN AND BLACK SEA

Transversal session

19. The main outcomes on the Transversal Expert Meeting were presented by the SCMEE coordinator during the transversal session. According to various criteria, the expert meeting proposed to select 7 species for the first stock assessment meeting and an age training course. The expert from the UE expressed his satisfaction that all these species are included in the Data Collection Project of the UE. However, much concern was expressed in relation to the species *Squalus blainvillei* which presents great doubts in its identification.

SCMEE session

20. The SCMEE expressed concerns about the taxonomic problems with some elasmobranches. It was decided that no assessments should be done on doubtful species, as *S. blainvillei*. Mention was made in regards to other species, as *Prionace glauca,* which are assessed by ICCAT. So, if GFCM is to start assessing these species it should be in collaboration with ICCAT. Likewise, it was mentioned that ICES have meetings on elasmobranches that are open to participation of experts from other areas. In this sense, the Secretariat expressed the willingness of ICES on collaborating with GFCM in the application of global and analytical models for stock assessment.

21. The SCMEE stressed on the fact that there are other vulnerable species other than elasmobranches forming part of the bycatch, as turtles and cetaceans, which have to be taken into account in data acquisition. However, it was considered necessary to provide the list from the appendix II and III from the Barcelona Convention.

22. After SCMEE discussion on the conclusions and recommendations of the Expert Meeting, two contributions on elasmobranches were presented: *Available knowledge on elasmobranches in Mediterranean and Black Sea*, by Mr. M. Bradai, and *Records on the landings of the bluntnose six-gill shark in Malta*, by Mr. N. Vella. Abstracts are included in Annex III.

23. The Ifremer representative presented briefly a first draft of a proposal for a Regional Research Project on Mediterranean Sharks. It has been prepared jointly by IRD (Mr. N. Bodin) and Ifremer (Mr. F. Poisson).

24. According to one of the recommendations of the first transversal meeting on the status of elasmobranches, the authors are willing to collaborate with other research Institutions of GFCM country members.

25. Three species have been proposed to be studied by the mentioned Ifremer-IRD Project: the common thresher shark (*Alopias vulpinus*), the blue shark (*Prionace glauca*) and the small-spotted cat sharks (*Scyliorhinus canicula*). A multi-marker approach is proposed to study biological parameters (morphometric measurements; lipids and fatty acids; stable isotopes) and chemical parameters (organic and inorganic contaminants).

26. The project is designed to improve the knowledge on their biology, ecology and population dynamics in the Mediterranean Sea, to assess the occurrence of chemical contaminants in sharks and to estimate potential effects on reproduction, to evaluate the potential risk for human via shark consumption.

REVIEW OF THE CONCLUSIONS OF THE WORKSHOP ON ALGAL AND JELLYFISH BLOOMS IN THE MEDITERRANEAN AND BLACK SEA

27. The main outcomes of this Workshop were presented by Mr. S. Piraino (Abstract is included in Annex III). It was noted that there were needs on initiating medium term integrated research programmes in the GFCM. The issue has implications in regards to the Ecosystem Approach to fisheries and very useful data on jellyfish may be obtained by fisheries surveys as the echosurveys.

28. Mention was made on the biotechnological applications that jellyfish could offer to the public in relation to human health and consumption issues. The SCMEE noted also that the log-books could provide relevant information about presence of jellyfish in fishing areas of the region.

REVIEW OF THE CONCLUSION OF THE TRANSVERSAL WORKSHOP ON THE RED CORAL (*Corallium rubrum*)

Transversal session

29. The main outcomes on the Transversal Workshop were presented by the SCMEE coordinator during the transversal session. The SCMEE took note of the sound information pointing out that shallow (above 50 m depth), red coral populations are overharvested. In addition, red coral resources in the Mediterranean are distributed in small population units with very low or no connectivity. Thus, management is done in a case by case adaptive manner. In this regard, the 30 years experience of this approach carried out in Sardinia is considered a good reference for management in other areas. To this respect, a medium term working research plan was elaborated in the WS which will apply for funding.

30. The SCMEE highlighted that the exploitation of deep water populations should be done under the precautionary approach principle due to scarce scientific knowledge available. In this sense, the introduction of new technologies, namely ROVs, should not be allowed to be used for exploitation purposes unless its impact has been assessed. Nonetheless, ROVs were considered an appropriate tool for mapping deep water red coral banks.

31. The red coral issue was considered sufficiently important to be treated in a meeting by Mediterranean FAO regional programs.

SCMEE session

32. The SCMEE agreed that red coral fisheries data should considered under the GFCM framework. It was suggested to have the Red Coral Operational Units to be included in Task 1 forms. Furthermore, the minimum size and maximum weight of catch was debated extensively because it was not possible to set referenced size and weight values for all the Mediterranean. This is due to the fact that red coral populations are highly isolated and should be managed in a case by case manner. The SCMEE agreed on considering also the Sardinian management experience as the more appropriate for other red coral exploitations. A participatory approach of all stakeholders in management was considered relevant.

PROGRESS ON THE IMPLEMENTATION OF THE ECOSYSTEM APPROACH TO FISHERIES (EAF)

A contribution was presented on this issue: Fishery ecosystem indicators and dynamics in the Mediterranean for 1970-2005, by Mrs. M.G. Pennino. Abstract is included in Annex III.

33. The SCMEE took note of the utility of trophic level studies in the context of ecosystemic analysis. Although this tool may be considered useful for EAF purposes, for an integrated EAF fisheries information on socio-economic variables and other elements of the ecosystems are needed. In this regard, the integration of these elements such as elasmobranches, jellyfish, by-catch and others are essential aiming to achieve EAF.
34. The SCMEE noted with great satisfaction the significant progress made by the GFCM in implementing the EAF. It acknowledged in particular the work done in various aspects of fisheries, including on the biology, socio-economic, ecology as well as on interactions between fisheries and various environmental factors and phenomena (alien species, jellyfish, cetaceans, etc.). The regular involvement of different stakeholders in the SAC activities is also a substantial achievement in the framework of the EAF.\

FOLLOW UP ON DEEP SEA, SENSITIVE HABITATS AND MARINE PROTECTED AREAS (MPAs)

Four contributions were presented on these issues**:** *Developing a network of Specially Protected Areas of Mediterranean Importance in the Mediterranean open seas including deep seas, having regard of fisheries conservation needs,* by Mr. C. Le Ravallec; *Post-larval research of small pelagic species in the Alborán Sea: A call for safeguarding fry concentration sites*, by Mr. A. García; *New proposal of GFCM Fisheries Restricted Area (FRA): Seamounts of the Mallorca Channel (Balearic Islands)* by Mrs. S. García (the proposal is attached to this document as Annex IV), and *Submarine canyons in the Gulf of Lions. Identification and conservation,* by Mr. F. Simard. Abstracts are included in Annex III.

35. The SCMEE took note of the efforts to identify SPAMIs in the region and its potential utility for the conservation of resources as a spatial management tool. It encourages to follow on this initiative by strengthen collaboration between GFCM and RAC/SPA.
36. Fry concentration sites off the Bay of Málaga are considered essential to the sustainability of the Alborán Sea small pelagic resources. The inshore waters off the Bay of Málaga are a haven for advanced stages of development of larval sardine and anchovy, where these are retained during the process of ontogenic growth and development. These waters constitute the small pelagic nursery grounds that were once renowned for its fry fisheries targeting on sardine and anchovy larvae, as well on the transparent gobid *Aphia minuta*.
37. Small pelagic post-larval research undertaken during the past years in the inshore waters of the Bay of Málaga demonstrates that these fry concentration sites may be categorized as sensitive habitats. They are crucial for the well being and growth of the early life stages of small pelagics as well as other species of commercial and ecological value.
38. The SCMEE took note of the relevance of fry fishery areas in regards to the conservation and sustainability of these sensitive coastal pelagic habitats. It encourages

research actions to identify such fry fishing areas to implement research focusing on the early life stages of priority species of the Mediterranean and Black Sea.

39. The Sub-Committee reviewed a proposal by OCEANA to establish a new Fisheries Restricted Area in Mallorca Channel, Balearic Islands. The meeting acknowledged the proposal as presented in Appendix IV to this report and agreed to submit it for consideration by the SAC at its next session (France, February 2011). A summary of this proposal is reproduced in Appendix IV.

40. The proposal of a new FRA in seamounts in the Mallorca channel, Balearic Islands, is based on extensive surveys carried out by means of ROV and results were presented and published in different reports. The SCMEE noted that some trawling occurs in the proposed FRA. The SCMEE considered information provided sufficient to endorse the proposal (Annex IV).

41. The SCMEE took note of the importance of the research on canyons habitats and the interest of the IUCN in collaborating with different research institutions of the region of the Gulf of Lions. Debate rose with respect to the information needed by the SCMEE to assess the evolution of the submarine canyons located in the FRA regarding fleets operating in the area.

FOLLOW UP ON ALGAL AND JELLYFISH BLOOMS

Two contributions were presented on these issues: *Current draw-backs to sustainable fisheries in the Mediterranean: from weak fisheries monitoring and management to jellyfish blooms,* by Mrs. A. Vella, and *An innovative, citizen science-based jellyfish spotting campaign from the Maltese Islands. The Spot the Jellyfish campaign,* by Mr. A. Deidun. Abstracts are included in Annex III.

42. The SCMEE took note of the dissemination campaign and data collection of presence of jellyfish species in Malta as a good example of the way this issue should be advertised to the society. In this regard, this initiative is in accordance with the relevance that the Jellyfish and Algal Blooms workshop gave to data collection.

FOLLOW UP ON SELECTIVITY IMPROVEMENT AND BYCATCH REDUCTION INCLUDING THE OUTCOME FROM CASE STUDIES

A contribution was presented on these issues: *On bycatch mitigation measures*, by Mr. D. Cebrián. Abstract is included in Annex III.

43. SCMEE took note of the gained experience worldwide from different approaches and methodologies to reduce bycatch of commercial fisheries, mainly of endangered or critically endangered species. It was stressed that they could be implemented in the region as a way to reduce the erosion of the biodiversity.

FOLLOW UP ON ESTABLISHED FISHERIES RESTRICTED AREAS

44. The SCMEE noted with concern the absence of information and mechanisms that could allow the SAC to assess the effects of current regulations on the FRAs, particularly in the Gulf of Lions. It took this opportunity to stress the importance and urgency to set up such kind of tools.

FOLLOW UP ON CONTRIBUTION TO IMPROVING AND UPDATING THE GFCM GLOSSARY

45. The SCMEE proposed the following terms to be included in the SAC glossary:

Algal blooms: The rapid and excessive growth of algal, generally caused by high nutrients levels and favourable conditions. It can result in deoxygenation of the water mass when the algal die, leading to the death of aquatic flora and fauna. (Source: Water Resources Management Practicum, 2000).

Poaching: Illegally taken or possesion of wild fish or other wild animals for different motivations, from food to strictly monetary profit. (Source: Washington Department of Fish and Wildlife)

R.O.V.: Remote control underwater Observation Vehicle.

FOLLOW UP ON STUDIES RELATED TO THE STATUS OF ARTIFICIAL REEFS (ARs)

A contribution was presented on this issue: *The use of artificial reefs for fisheriesmanagement in the Mediterranean Sea,* by Mr. G. Scarcella. Abstract is included in Annex III.

46. Debate arose on the multipurpose aspects of ARs and that the objectives should be defined, because some of them are set as deterrent barriers for trawling while others are for enhancing production. The priority on function and target species decides the structure of an AR. The SCMEE noted that the time is considered ripe for holding a transversal ARs workshop.

FOLLOW UP ON ACTIVITIES OF TECHNOMED

47. Mr. J. Sacchi informed to SCMEE that three databases on excel format will be soon available on the GFCM website. The first one is on the collection of selectivity parameters of several species obtained in different selectivity experiments in the Mediterranean and Black sea. The second one gives the main technical characteristics of bottom trawls in the Mediterranean sea. The third one makes a review of national and regional legislation on fisheries and technical characteristics. Scientists are encouraged to use and to improve them by carrying further studies on selectivity. On the base of collected information, it was recommended to the TECHNOMED network to draw up an Atlas for the different Mediterranean trawl by countries and GSAs, with reference on main target species and available selectivity parameters.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

48. All the following recommendations were adopted by the SCMEE:

Recommendations from the Special Session on Alien species

- The SCMEE encouraged the member states to carry out and disseminate an educational set for informing the Mediterranean and Black Sea countries and its public about harmful alien species.
- The SCMEE encouraged scientific institutions of member states to do scientific research or monitoring programs for the alien species affecting fisheries in collaboration with existing initiatives in the region.
- The SCMEE encouraged member states to collect statistical data on alien species present in their fisheries.

Recommendations from the Transversal Working Group on selectivity improvement, bycatch reduction and alternative gears

- Encourage research institutions to continue to make selectivity experiments on the base of the standardized methodology adopted in GFCM-ATSELMED 1 (Sète, 2005). These experiments should be carried out in their fishing area in prior on biological and socio-economical effects of 40 mm square mesh and 50 mm diamond mesh, at least for the most important species. The aim is to get a maximum of information for all GSA areas. Other larger meshes should be tested for modeling purposes.
- Encourage research institutions to carry out experiments on most important technical parameters as twine diameters, twine thickness circumference ratio, mesh shape and

other factors as trawl design, which may affect selectivity in a trawl fishery. Fishing performance on species as well as the effects of debris on the quality of catches should be also investigated.

- Encourage research institutions to carry out experiments on alternative or complementary technical devices (*e.g.* grids, separator panels, square mesh windows,) in all GFCM areas in order to improve the overall selectivity of trawls, including effects on vulnerable species as marine mammals, turtles, elasmobranches and associated megabenthos, and to reduce their bycatch.
- The SCMEE stressed the urgency for the finalization of the pilot studies carried out by the FAO regional project COPEMED II in Morocco and Algeria. It also encourages other scientific institutions to undertake similar experiences using the same protocol, including the socio-economical analysis, as well as taking into account larger mesh size experiments.
- Suggest the TECHNOMED network to prepare a new version of the protocol as a document which could available for any Mediterranean case study, including socio-economical indicators to collect. The standardized methodology of the statistical analysis should be improved and completed (as minimum number of hauls) to make more reliable the conclusions on the catch and economical losses of the implementation of a selectivity device.
- The SCMEE forwarded the previous recommendation to be considered also under the SCSE.
- Case studies on socio-economic impacts of selectivity improvement in trawl fishery should be going on taking account both on consequences on the whole net design and on fishing strategy. The effect on the market demand and food loss for behavior of consumers should also be considered.
- The SCMEE highlighted the importance of reducing impacts of fisheries on the habitats and ecosystems on potential income for the fisheries, and encouraged assessing the likely relationship between the added value of a sustainable exploitation and its introduction into the market by eco-labelling.
- The SCMEE forwarded the previous recommendation to the SCSE and SCSA and suggests a transversal discussion on the possibility of addressing this issue.
- Considering the reduction of impacts of fisheries on the habitats and ecosystems, it has been recommended in a general way to encourage using pots and traps instead of towed gears (dredges or trawls) for the fishing of some species, such as sea snails, some demersal crustaceans and some cephalopod species. Estimation of time, economic and social effects and costs for the replacement of the new gears, should be evaluated.
- Encourage research institutions to investigate and identify the value of temporal and spatial closures as selectivity measures at the fishery level (*e.g.*, in the case of juvenile protection during recruitment or non-target species spawning season) on the base that the closures are complementary to gears selectivity, especially for multispecific fisheries in the framework of the ecosystem-based management.
- With a view to promote a participatory approach to fisheries management, it is strongly recommended to associate fishermen from the beginning in the identification of issues and studies to be conducted to studies and workshops by

involving them in the relevant stages of the research activities aiming at integrating environmental concern into fisheries management.

- The MEDSELECTIVITY database should be completed according to on-going experiences. It should be presented by GSA with references to the authors. This database should be available in the GFCM website for the scientific community and fishermen's organizations.
- The MEDLEGISLATION database should be completed by members of TECHNOMED network with all the information related to technical measures taken by each Mediterranean and Black Sea country on their fisheries legislation.
- On the basis of the material collected for the MEDTRAWL database, it is suggested to the TECHNOMED network to draw up an Atlas for the different mediterranean trawl gears by countries and GSA, including references on the main target species and available selectivity parameters.

Recommendations from the Transversal Expert meeting on Elasmobranches in the Mediterranean and the Black Sea

- Preparation of a draft Proposal of practical options for mitigating bycatch by purse seiners, pelagic longline gears and trawlers in the Mediterranean and Black Sea.
- Identifying and mapping critical areas (nurseries) at the national or regional level.
- Launch pilot studies on measures to reduce bycatch by fishing gears and fishing strategies adaptation and/or fishing areas exclusion. Some GFCM GSAs have been proposed as appropriate for development of pilot small scale implementation based on the present experts knowledge of the fisheries acting and on the species occurring in those areas. The SCMEE suggested to test the use of rigging of the gear and material and fishing strategy (*e.g.*, circle hooks, nylon snoods, etc.) in part of the longline fleets to verify the reduction of the pelagic species bycatch for the following areas:
  - GSA1 (Northern Alboran Sea)
  - GSA2 (Alboran Island)
  - GSA3 (Southern Alboran Sea)
  - GSA5 (Balearic Islands)
  - GSA 14 (Gulf of Gabès).
- The SCMEE agreed to propose applying fishing area closures of nursery grounds to trawling operation, focusing in particular on species listed in the Appendixes II and III of the Barcelona Convention (http://195.97.36.231/acrobatfiles/09IG19_8_Eng.pdf). It is considered that this measure is the one really effective against the bycatch of elasmobranches juveniles in critical areas. The proposed areas are the following:
  - GSA22 (Aegean Sea)
  - GSA14 (Gulf of Gabès)
  - GSA9 (North Tyrrhenian Sea)
  - GSA15 (Malta)
  - GSA11 (Sardinia).
- The SCMEE stressed the necessity that above mentioned initiative should consider the existing international conventions in the Mediterranean and the Black Sea. It also noted that a more specific collaboration will be needed between RAC/SPA and

GFCM in particular in the case of SPAMIs presenting a potential impact on sustainable exploitation.

- Initiate fisheries management strategies for fisheries exploiting species included in Appendix III of the Barcelona Convention. (http://195.97.36.231/acrobatfiles/09IG19_8_Eng.pdf).
- Encourage countries in developing specific legislation and national action Plans for the conservation of Elasmobranches as recommended by the IPOA Sharks, as well as other action plans, such as those of UNEP RAC/SPA.
- Include the bycatch data on the Task 1 data gathering under the standard GFCM protocol.
- The SCMEE forwards the previous recommendation to be considered also under the SCSI.
- The SCMEE stressed the need of creating a network of experts at regional scale for information exchanges in terms of scientific knowledge as well as for the research of funding sources (National entities, Regional Projects, EU Initiatives like Marie Curie, among others) on a coordinated Regional basis.
- Scientific institutions are encouraged to develop research programs on systematic, general biology, ecology and population dynamics for species of concern. The adopted GFCM mid-term program on Elasmobranches could be used as a reference for this proposed program.
- The SCMEE stressed the importance of completing the Synopsis of sharks and scheduling Synopsis of the batoids of the world, at the moment in process of edition by FAO, to allow the preparation of appropriate Field Identification Guides.
- The SCMEE recommended holding an assessment meeting on Mediterranean and Black Sea elasmobranches stocks taking into account the on-going work under the ICCAT/ICES framework, and an age reading training course in 2011. Doubtful species from the taxonomic point of view should not be considered for stock assessment purposes.
- The SCMEE forwarded the previous recommendation to be considered also under the SCSA.
- The SCMEE suggested the use of molecular genetic studies for the identification of species and its unidentifiable parts.
- The SCMEE considers the possibility of using multi-marker approach (lipids, fatty acids, stable isotopes) and organic and inorganic contaminants to improve the knowledge on the biology, ecology and population dynamics in the Mediterranean and Black Sea of the most common pelagic sharks (*e.g.*, *P. glauca* and *P. vulpinus*).

Recommendations regarding bycatch of seabirds, turtles and monk seals

- Use of de-hooking devices to release unharmed sea turtles which are incidentally caught by long-lines.
- Elaboration of GFCM guidelines such as the ones which are being developed by RAC/SPA. Such guidelines should be widely published and disseminated.
- Collection and analysis of information related to this kind of mitigation measures.
- To reduce seabird by-catch, implement the following mitigation measures:

- Night-setting for longlines;
- Bird-scaring lines and warp scarers for longlines and trolling lines respectively;
- Integrated and external line weights for longlines;
- Offal/discard management ;
- Bait conditioning for longlines;

- To reduce monk seal by-catch, restrict the setting of static nets in a belt comprising a minimum of 5 nautical miles radius around the location of monk seal caves along autumn and winter, extended to 10 miles around breeding caves. The restriction should be linked to gear adaptation support measures to artisanal fishers in need of it.

Recommendations from the workshop on Algal and Jellyfish blooms in the Mediterranean and Black Sea

- Enforce the ecosystem approach on HAB and jellyfish issues and set-up a regional network in the GFCM area.
- Establish regional and subregional databases on a single platform.
- Focus on key and priority species outlined at the Istanbul workshop, October 2010 (http://151.1.154.86/GfcmWebSite/SAC/2010/SCMEE_Algal_Jelly/Report.pdf).
- Promote institutional collections/banks of organisms/tissues/DNA.
- Promote a medium term multidisciplinary integrated research, as outlined in the Istanbul workshop, October 2010, and focused mainly on:
  - Biology, ecology, biogeography, biotechnological applications of blooming and outbreak-forming species (both indigenous and non-indigenous taxa).
  - Fish-jellyfish interactions.
  - Early warning signals, environmental conditions fostering blooms
  - Recommendations on management measures (for fisheries).
- Implement data records of gelatinous bycatches (integration of existing logbooks with jelly-targeted data sheets).
- The SCMEE forwarded the previous recommendation to be considered also under the SCSI.
- The SCMEE highlighted the importance of initiating actions destined to increase knowledge to assess the interactions between jellyfish and commercial fishing gears.
- Establish sub-regional task forces/focal points to foresee and/or rapidly address local bloom emergencies.

Recommendations from the Transversal workshop on the red coral

- Set up a minimum size of 10 mm of basal diameter with 20% tolerance. Stricter measures already in place should be maintained and adaptive approach should be considered in the case that valid scientific evidence demonstrates the need for a higher limit size.

- Prohibit the harvesting of the shallow water populations in the depth less than 50 meters. Stricter measures already in place should be maintained and adaptive approach should be considered.
- As a precautionary approach, to carry out regional pilot studies to assess the potential biological, ecological, economical and environmental impact by using new technologies to harvest red coral, namely, among others, ROVs.
- Establish a daily and/or seasonal quota system based on number of licenses issued to control fishing effort. This quota system shall include a reporting system for harvesters with the standard GFCM Logbook adapted to coral harvesting and an appropriate monitoring system for landings.
- The SCMEE forwarded the previous recommendation to be considered also under the SCSI.
- Set up a system of permanent or temporary (in a rotational fashion) fisheries closure areas for red coral according to the status of the resource.
- Promote a participatory approach of all the stakeholders in the management processes as actions for planning future management plans.
- Collect annual data on red coral harvest at the national level and submit them in a timely manner to FAO and to GFCM by GSAs according to GFCM Task 1 defined as an Operational Unit of Red Coral. The applicability of the above statistical matrix to coral harvesting should be checked. To cross-check data from different sources (*e.g.* trade data).
- The SCMEE forwarded the previous recommendation to be considered also under the SCSI.
- The SCMEE recommended to carry out a regional medium term research program, according to the proposal presented at the first workshop, (http://151.1.154.86/GfcmWebSite/SAC/2010/Red_Coral/Report.pdf), Alghero, Sardinia, September 2010.
- The SCMEE recommended to hold a workshop on deep red coral banks for 2011-2013 with the following terms of reference:
  - Review of the distribution (past and actual) and present status of deep red coral banks across the Mediterranean region.
  - Inventory on the existing and new data of deep red coral banks on biology, ecology, oceanography, genetics and fisheries.
  - Evaluation of measures and strategies for planning local and regional management and conservation plans.

Recommendations on established fisheries restrictions areas

- The SCMEE endorsed the proposal of a new FRA in the seamounts of the Balearic islands for its consideration by the SAC.

Recommendations on deep sea, sensitive habitats and MAPs

- The SCMEE recommended the inclusion of fry fishery areas in the category of sensitive habitats and encourages research actions to identify them and analyze their potential links with recruitment in the Mediterranean and Black Sea.

- The SCMEE recommended the inclusion of terms for denominating open seas under the SPAMI framework in the GFCM glossary. The Secretariat was invited to provide proposals of definitions to be considered in SAC.
- The SCMEE welcomed the work done by IUCN and the French Agency of Marine Protected Areas on the ecosystem functioning, biodiversity and conservation of submarine canyons in the Mediterranean, and recommended to collaborate in the organization of the workshop that they are planning to hold on this issue in 2011.

Recommendations on status of artificial reefs

- The SCMEE recommended to hold a transversal workshop on ARs in the Mediterranean and Black Sea in 2011, possibly back to back with the next SCMEE meeting. The following terms of reference have been proposed:
  - Gather information on ARs, *e.g.* structures and activities, for the inclusion in a common database to be incorporated in the general information provided by the GFCM.
  - Evidences of increased productivity and/or gathering of biomass in ARs of the Mediterranean and Black Sea.
  - Monitoring strategies and statistical approaches to study ARs in the Mediterranean and Black Sea.
  - Legal aspects linked to the ARs management in each member state of the GFCM.

2011 SCMEE WORKPLAN

49. The SCMEE agreed on the following activities for 2011:

- Continue on the implementation of the medium term program on elasmobranches taking in consideration the suggestions from the first expert meeting (http://151.1.154.86/GfcmWebSite/SAC/2010/Elasmobranches/Report.pdf2010), Sfax, Tunisia, September 2010. The revised version of this program should be elaborated and submitted for consideration by the next SAC session. The Secretariat was invited to coordinate this action.
- Prepare and disseminate educational material (posters, leaflets, brochures, etc.) for informing the public in the Mediterranean and Black Sea countries about harmful alien species and jellyfish.
- Prepare a new version of the TECHNOMED selectivity protocol as a standard document which could be made available for any Mediterranean case study as standard, including the collection of socio-economical data. The methodology of the statistical analysis should be improved and completed.
- Carry out assessments on selected Mediterranean and Black Sea elasmobranches stocks, possibly during the SCSA Working Groups.
- Organize an age reading training course in 2011 on selected Mediterranean and Black Sea elasmobranches under the framework of Permanent Working Group on Assessment Methodology (PWGAM).
- Organize a workshop on Deep Red Coral Banks for 2011-2013 according to the terms of references outlined in the Recommendations of this report.

- Organize a transversal workshop on Artificial Reefs in the Mediterranean and Black Sea in 2011, possibly back to back with the next SCMEE meeting, according to the terms of references outlined in the Recommendations of this report.
- Organize a Bycatch Working Group meeting in the period 2011-2012.

Moreover, the SCMEE was invited to envisage the possibility to co-organize with the IUCN and the French Agency for marine Protected areas a workshop / conference on the Mediterranean submarine canyons with in Monaco scheduled for spring 2011

ANY OTHER MATTERS

50. The SCMEE was informed of the interest of CIESM to collaborate with SAC on the role of exotic species in the food web, on gelatinous phenomena and new approaches to the communication between scientists and fishing sector.
51. The SCMEE was informed on the progress regarding the collaboration with RAC/SPA, notably in the field of bycatch, elasmobranches, European eel and protected areas.
52. The representative of Oceana expressed the interest to collaborate with GFCM/SCMEE in issues of marine resources conservation.
53. The SCMEE acknowledges and highly appreciates the work done by TECHNOMED for its valuable contribution to the knowledge of technical aspects related with management measures.
54. The SCMEE has given his thanks to Malta authorities for hosting the meeting.
55. The SCMEE has given his thanks to the rapporteurs A. Garcia and B. Öztürk.

DATE AND VENUE OF THE NEXT MEETING

56. Date of the meeting will be defined at a later stage and the SCMEE suggested holding the next meeting at GFCM headquarters.

ADOPTION OF THE REPORT

57. The report was unanimously adopted on Thursday, 2 December 2010, at 11:00 am.

Appendix I

AGENDA

1. **Opening and arrangement of the Subcommittees meeting**
2. **Transversal session: review of transversal issues**
    - Transversal Working Group on selectivity improvement, bycatch reduction and alternative gears
    - Transversal Expert meeting on Elasmobranches in the Mediterranean and Black Sea
    - Workshop on algal and jellyfish blooms
    - Transversal Workshop on reef coral
3. **Introduction to the meeting and adoption of the agenda**
4. **Special session on the alien species**
5. **Review of the conclusion of the Transversal Working Group on Selectivity improvement and bycatch reduction and alternative gears**
6. **Review of the conclusion of the Transversal Expert meeting on Elasmobranches in the Mediterranean and black sea**
7. **Review of the conclusion of the Workshop on Algal and Jellyfish blooms in the Mediterranean and Black Sea** (Report presented by Piraino S.)
8. **Review of the conclusion of the Transversal Workshop on the Red Coral**
9. **Progress on the implementation of the Ecosystem Approach to Fisheries (EAF)**
10. **Follow up on:**
    - Deep sea, sensitive habitat and Marine Protected Areas (MPAs)
    - Algal and jellyfish blooms
    - Selectivity improvement and bycatch reduction including the outcome from case studies
    - Established fisheries restricted areas
    - Contribution to improving and updating the GFCM glossary
    - Studies related to the status of artificial reefs
    - Activities of TechnoMed
11. **General conclusions and recommendations**
12. **2011 SCMEE workplan**
13. **Any other matters**
14. **Date and venue of the next meeting**
15. **Adoption of the report and closure of the meeting**

Appendix II

LIST OF PARTICIPANTS

Federico **ALVAREZ**
SCMEE Coordinator
Instituto Español de Oceanografía
Centro Oceanográfico Baleares
Muelle Poniente s/n
Palma, Spain
Fax: +34 97 14 04 945
E-mail: federico.alvarez@ba.ieo.es

Matthieu **BERNARDON**
FAO, CopeMed II & ArtFiMed
Fisheries and Aquaculture Resources
Use and Conservation Division
Marine & Inland Fisheries Service (FIRF);
Subdelegación del Gobierno, Paseo de
Sancha 64, Oficina 307,
29071 Málaga, Spain
Tel: +34 952989245
Fax: +34 952989252
E-mail: matthieu.bernardon@fao.org

Mohamed N. **BRADAI**
Institut National des Sciences et
Technologies de la Mer (INSTM)
B.P 1035 Sfax 3018, Tunisia
Tel: +216 74497117
Fax: +216 74497989
E-mail:
mednejmeddine.bradai@instm.rnrt.tn

Juan A **CAMIÑAS**
CopeMed II and **ArtFiMed** Project
Coordinator
Fisheries and Aquaculture Resources Use
and Conservation Division (FIR)
Fisheries and Aquaculture Department (FI)
Food and Agriculture Organization of the
United Nations (FAO)
Office: Subdelegación del Gobierno en
Málaga, Paseo de Sancha 64, Despacho
306
Málaga, Spain
Tf. +34 952989299; Fax: +34 952989252;
Movil: +34695797666
Web: www.faocopemed.org;
www.faoartfimed.org
E-mail: juanantonio.caminas@fao.org

Rita **CANNAS**
University of Cagliari,
Dipartimento di
Biologia Animale ed Ecologia
via T. Fiorelli 1
Cagliari, Italy
Tel: +39 070 6758004
E-mail: rcannas@unica.it

Raymond Caruana
Aquaculture Officer
Agriculture and Fisheries Regulation
Department
Ministry for Resources and Rural Affairs
Fort San Lucian
Marsaxlokk, Malta
Tel: +356 22293310
E-mail: raymond.caruana@gov.mt

Alessandro **CAU**
University of Cagliari,
Dipartimento di
Biologia Animale ed Ecologia
via T. Fiorelli 1
Cagliari, Italy
E-mail: kitedrodo@yahoo.it

Daniel **CEBRIÁN**
UNEP MAP RAC/SPA
Yasser Arafat Blvd. B.P.337.
1080 Tunis, Tunisia
Tel: +216 71947162
Fax: +216 71947173
E-mail:daniel.cebrian@rac-spa.org

Luca **CERIOLA**
FAO MedSudMed project,
Viale delle Terme di Caracalla1
00153 Rome, Italy
Tel: +39 06 57054492
Fax: +39 06 57055188
E-mail: luca.ceriola@fao.org

Simona **CLÓ**
Medsharks
via di Casalotti 318
00166 Rome, Italy
Mobile: +39 347 5464104
E-mail: simona@medsharks.org

Alan **DEIDUN**
IOI-MOC,
University of Malta
Room 315, Chemistry Building 3rd Floor,
Msida MSD 2080, Malta
Fax: + 356 21440972
Tel: +356 23402843
E-mail: alan.deidun@um.edu.mt

Mark **DIMECH**
FAO EASTMED Project
c/o Androu 1,
11257 Athens, Greece
Tel: +30 210 8847960
Fax: +30 210 8837600
E-mail: eastmed@fao.org

Maria Cristina **FOLLESA**
University of Cagliari,
Dipartimento di
Biologia Animale ed Ecologia
via T. Fiorelli 1
Cagliari, Italy
Tel: +39 070 6758014
E-mail: follesac@unica.it

Alberto **GARCÍA**
Instituto Español de Oceanografía
(Centro Oceanográficos de Málaga)
Puerto Pesquero de Fuengirola s/n
29640 Fuengirola,
Málaga Spain
Tel: +34 952197123
Fax: +34 952463808
E-mail: agarcia@ma.ieo.es

Silvia **GARCÍA PÉREZ**
OCEANA Foundation
C/ Leganitos 47, 6ª
28013 Madrid, Spain
Tel: +34 911440880
Fax: +34 911440 890
E-mail: sgarcia@oceana.org

Otello **GIOVANARDI**
ISPRA (Istituto Superiore per
la Protezione e Ricerca Ambientale)
Loc. Brondolo, 30015 Chioggia,
Venice, Italy
Mobile: +39 3351816517
Fax: +39 0415547897
E-mail: otello.giovanardi@isprambiente.it

Francesca **GRAVINO**
Capture Fisheries Section,
Agriculture and Fisheries
Regulation Department,
Fort San Lucjan,
Marsaxlokk, Malta
Tel: +356 22293326
Fax: +356 21659380
E-mail: francesca.gravino@gov.mt

Menachem **GOREN**
Tel Aviv University,
Department of Zoology
Tel Aviv, 69978, Israel
Tel: +972 3 6409389
Fax: +972 3 6409403
E-mail: gorenm@post.tau.ac.il

Célia **LE RAVALLEC**
UNEP MAP RAC/SPA
Yasser Arafat Blvd. B.P.337.
1080 Tunis, Tunisia
Tel: +216 71 206 490
Fax: +216 71 206 649
E-mail: celia.leravallec@rac-spa.org

Mohammed **MARHRAOUI**
Institut National de
Recherche Halieutique (INRH),
Station du Réseau
de Surveillance de la
Salubrité du Milieu Marin Tanger,
Port Maritime de M'diq
BP 31 93200
M'diq, Morocco
Tel: +21 39975763
Fax: +21 239663845
E-mail: m.marhraoui@gmail.com

Carmen **MIFSUD**
Malta Environment
and Planning Authority
St. Francis Ravelin,
Floriana, Malta
Tel: +356 22907103
Fax: +356 21228438
E-mail: carmen.mifsud@mepa.org.mt

Bayram **ÖZTÜRK**
Istanbul University,
Faculty of Fisheries
Ordu Cad. N: 200,
Laleli, Istanbul, Turkey
Tel: +90 212 5140388
Fax: +90 212 5140388
E-mail: ozturkb@istanbul.edu.tr

Marco **PANI**
IWMC-World Conservation Trust
Piazza dei Mercanti 2,
00153 Rome, Italy
Mobile: +39 347 3741260
Fax: + 39 06 97254793
E-mail: pani.marco@gmail.com

Claudia **PEDONI**
University of Cagliari,
Dipartimento di
Biologia Animale ed Ecologia
via T. Fiorelli 1
Cagliari, Italy
Tel: +39 070 6758085
E-mail: pedoni@unica.it

Maria Grazia **PENNINO**
Centro Oceanográfico de Murcia Instituto
Español de Oceanografía (IEO)
C/ Varadero 1, Apdo 22
San Pedro del Pinatar
30740 Murcia Spain
Tel: +34 968 180500
Fax: +34 968 184441
E-mail: grazia.pennino@mu.ieo.es

Stefano **PIRAINO**
Laboratory of Evolutionary and
Developmental Biology of Marine
Invertebrates,
Universitá del Salento,
Ecotekne, DISTEBA,
Via per Monteroni
73100 Lecce, Italy
Fax: +39 0832 298616
Email: stefano.piraino@unisalento.it

Giuseppe **SCARCELLA**
ISMAR CNR
L.go Fiera della Pesca
60125 Ancona, Italy
Tel: +39 071 2078846
Fax: +39 071 55313
E-mail: g.scarcella@ismar.cnr.it

François **SIMARD**
IUCN (International Union for Conservation of Nature)
28 Rue Mauverney,
1196 Gland, Switzerland
Tel: +41 22 999 0298
Fax: +41 22 999 0025
E-mail: francois.simard@iucn.org

Abdellah **SROUR**
Executive Secretary *ad interim*
Service Fisheries and Aquaculture Economics and Policy Division
Fisheries and Aquaculture Department
Viale delle Terme di Caracalla, 1
00153 Rome Italy
Tel: + 39 06 57055730
Fax: + 39 06 57056500
E-mail: abdellah.srour@fao.org

Adriana **VELLA**
Conservation Biology Research Group,
Department of Biology,
University of Malta
Taq-Qroqq, Msida,
MSD 2080, Malta
Tel: +356 99429592
Fax: + 356 23403049
E-mail: adriana.vella@um.edu.mt
adrianajvella@gmail.com

Noel **VELLA**
Conservation Biology Research Group,
Department of Biology,
University of Malta
Taq-Qroqq, Msida,
MSD 2080, Malta
Tel: +356 79263587
E-mail: noel.vella@um.edu.mt

Appendix III

Abstracts of contributions presented at the meeting

Available knowledge on elasmobranches in Mediterranean and Black Sea

Bradai M. N., Saidi B. and Enajjar S. *Institut National des Sciences et Technologies de la Mer (INSTM).Tunisia*

The authors compiled information on taxonomy, distribution, status, statistics, fisheries, bycatch, biologic and ecologic parameters on age and growth, food and feeding habits reproductive biology and stock assessment and conservation measures. This bibliographic analysis, through about 600 papers and documents, highlighted mainly the following points:

- Works were concentrated mainly in the western Mediterranean. Few works concerned endangered species and those of the GFCM priority list.
- Much systematic confusion persists for some species and some others are doubtful.
- The IUCN red list shows clearly the vulnerability of elasmobranchs and the lack of data

- A decline in cartilaginous fish species landings has been observed while fishing effort has generally increased.
- The Bycatch has become one of the issues to be considered in any development of fisheries. Elasmobranchs, considered mainly as bycatch, are very sensitive given their particular biological characteristics.
- A standardisation of methods and expression of results on the biology should be generalised in the whole Mediterranean.
- Papers on biologic parameters concern few species primarily in the occidental and central Mediterranean areas.

On bycatch mitigation measures

Cebrián D. *UNEP MAP RAC/SPA, 1080 Tunis, Tunisia*

A summary of our contributions to GFCM workshops, SCMEEs and committees along the last three years, which have driven in the past to scientific recommendations regarding bycatch mitigation measures for threatened species, including marine birds, seals and elasmobranches will be presented. Since their transmission to the GFCM Commission sessions is in the cue, their compilation together with the related recommendations of the current year may facilitate a more consistent reflection of the work done by the contributors to the GFCM scientific for a, for an adequate follow up of scientific recommendations on bycatch mitigation.

An innovative, citizen science-based jellyfish spotting campaign from the Maltese Islands - the Spot the Jellyfish campaign

Deidun A. and Drago A. *IOI-MOC, University of Malta, Msida MSD 2080, Malta*

In recent years, there has been a proliferation of gelatinous plankton recording programmes recruiting the public's participation. Very few such programmes have been adopted over the years in Maltese coastal waters (most dating to the 1980's), and these do not constitute a continuous time-series in view of their staggered nature. In fact, most local reports of gelatinous plankton have been carried in media portals, most notably newspapers. A citizen science jellyfish-spotting initiative was launched in the summer of 2010 by the IOI-Malta Operational Centre as part of the IOI-KIDs programme, with the support of local tourism authorities, pursuant to geo-referencing and quantifying jellyfish sightings in Maltese coastal waters. The initiative formed part of an incentive to raise awareness amongst the younger generations, but it targeted contributions from the public in general. Different reporting avenues were made available, including an ad hoc website where reports could be submitted and which featured a constantly updated map of jellyfish in Maltese waters, instructive leaflets, and short-messaging and email services. A simple jellyfish species identification guide was designed and posters with such a guide were affixed in key coastal locations around the islands. A total of 360 reports were received – only those which were substantiated through specimen collection or through photos, videos or detailed descriptions were considered. Validated reports referred to 11 species of cnidaria, ctenophores and pelagic tunicates (pyrosomes and salps), whilst the total number of unidentified gelatinous plankton species was 3. *Porpita porpita* and *Aequorea* sp. (both hydromedusae) and *Leucothea* sp. (a ctenophoran) were recorded for the first time for Maltese waters through the initiative. With the exception of *Pelagia noctiluca* and *Cotylorhiza tuberculata*, for which the reported modal abundance category was 5-10 individuals, all other species of gelatinous plankton were reported as individuals.

The use of artificial reefs for fisheries management in the Mediterranean Sea

Fabi G., Grati F., Spagnolo A. and Scarcella G. *CNR – Institute of Marine Sciences (ISMAR) Ancona, Italy*

The Mediterranean Sea can be considered as a typical example of the use of artificial reefs for fish stock and fishery management, even though this technology is still at a lower level in respect to Japan. Artificial reefs have been used over 40 years especially to impede illegal trawling in coastal areas and other sensitive habitats, which represent important spawning and nursery areas for many commercial species, and to reduce conflicts between different fishing activities, mainly illegal trawling and small-scale fisheries operating with set gears. The final goals are to enhance overexploited fish stocks and improve small-scale fisheries which are one of the most important activities for the coastal communities. Italy and France were the first countries to realize artificial reefs for fishery management along their coasts between the end of 1960s and the beginning of 1970s. They were followed by Spain and Israel in the early 1980s. In spite of this, Spain is by far the country where the artificial reefs are more numerous and are officially considered as a tool for fisheries management both at national and regional level. A similar policy has been also adopted in Turkey in the recent years. The research on scientific, engineering, legal and socio-economic aspects has strongly contributed to this success, providing a basis of information and experience which have been very useful for a better understanding of the many challenges offered by artificial reefs for the conservation and sustainable use of the marine environment and exploitable resources, as well as for fishery management. In this context, the European Artificial Reef Research Network (1995-1998) has played an important role (Jensen, 1998). The best management approach to reduce stock and congestion effects would be the spatial segregation of different user groups by creating separate sites for each of them. Nevertheless, creating and maintaining multiple artificial reefs in a same area are much more expensive than the other control options. However, no single management control can be optimal for all situations and the choice of one or more options must be based on the nature of the conflicts and the effectiveness of the management options adopted. Also in this case the cooperation among researchers, administrators, stakeholders and official institutions concerned with policy management issues would be essential in order to develop adequate measures which combine the relevant research findings with the users' needs and the sustainable exploitation of the reef resources.

Post-larval research of small pelagic species in the Alborán Sea: A call for safeguarding fry concentration sites

García A. *Instituto Español de Oceanografía (Centro Oceanográfico de Málaga) 29640 Fuengirola, Málaga, Spain*

Fry concentration sites off the Bay of Málaga are considered essential to the sustainability of the Alborán Sea small pelagic resources. Off the Bay of Málaga, its inshore waters are a haven for advanced stages of development of larval sardine and anchovy where these are retained during the process of ontogenic growth and development. These waters constitute the small pelagic nursery grounds that were once renowned for its fry fisheries (García et al., 1981; Reina-Hervás and Serrano, 1987) targeting on sardine and anchovy larvae, as well, the transparent gobid, *Aphia minuta*.

Small pelagic post-larval research undertaken during the past years in the inshore waters of the Bay of Málaga demonstrate that these fry concentration sites may be categorized as sensitive habitats as they are crucial for the well being and growth of the early life stages of small pelagics as well as other species of commercial and ecological value. A synthetic review highlighting research advances focusing on different aspects of small pelagics post-larval studies undertaken during past years intends to show the importance of fry concentration sites to the recruitment and ultimately to sustainability of the resource. These inshore nurseries widely spread in different parts of the Mediterranean Sea are prone to the impact of a wide suite of human activities that may span from the use of beaches for leisure and tourism to the discharge of sewage and industrial waste. The actual state of affairs call for a need of carrying out a revision of the conditions of acknowledged fry concentration sites to proceed towards a more sustainable use of these waters by the implementation of measures and regulations by local and national administrations.

New proposal of GFCM Fisheries Restricted Area (FRA): Seamounts of the Mallorca Channel (Balearic Islands).

García S. *OCEANA Foundation, 28013 Madrid, Spain*

Oceana is presenting the proposal for a new Fisheries Restricted Area (FRA) covering the main seamounts of the Mallorca Channel (Balearic Islands): Emile Baudot, Ausias March and Ses Olives (>800, 300 and 500-600 meters high respectively). Oceana has studied these seamounts since 2006 with the use of an ROV (Remotely Operated Vehicle), and we have identified more than 200 taxa, 25 of which have been listed by various international conventions and national and international laws, and up to 25 habitats classified according to the EUNIS code. Moreover, at least six identified species are listed as priority species by the General Fisheries Commission for the Mediterranean (GFCM), including *Lophius piscatorius*, *Merluccius merluccius*, *Mullus barbatus*, *Palinurus elephas*, *Scomber scombrus* and *Trachurus trachurus*. New information collected during the summer of 2010 is being analyzed by Oceana, and new discoveries include, among others, a vast field of cnidarian *Isidella elongata* in apparently healthy condition. The unique topographic and hydrographic conditions of the Balearic Promontory, factor greatly in the concentration of both demersal and pelagic commercial species in the area. The Mallorca Channel is also very important to high priced commercial species, especially crustaceans, demersal fish and large pelagics. Little is known on the true extent of fishing activity in the seamounts area, though numerous oceanographic expeditions carried out under the TUNIBAL project have described the importance of the area for the reproduction of tuna and tuna related species, as these areas are known spawning grounds for these species. Additionally, recreational fishing competitions for large pelagic species are known to take place over the Emile Baudot seamount, trab setters often fish for *Plesionika* spp. on Ses Olives, and VMS data is available on bottom trawling fleet fishing for red shrimp (*Aristeus antennatus*) on the slopes of Ausias March. Oceana has also documented a lot of discarded fishing gear, especially fishing line and nets, as well as different types of garbage on the three seamounts and in their surrounding areas. A new FRA encompassing these seamounts would enable the establishment of a proper management plan for fisheries in the area that would promote the preservation of important marine resources and communities, and benefit recreational, artisanal and commercial fisheries in the Balearic area.

Alien species are replacing the native species in the eastern Mediterranean

Goren M. *Department of Zoology, Tel Aviv University, Israel, Tel Aviv, 69978*

The combined impact of the continuous invasion of biota into the Mediterranean through the Suez Canal and the recent increase in sea water temperature, together with the fishery industry, have accelerated the expansion of Indo-Pacific fishes into the eastern Mediterranean. A study of the soft-bottom shallow-water fish fauna (to 40m depth) conducted in the south-eastern Levantine Sea (Ashdod, Israel) compared the status of the alien fish at three depths. The results of the first year and preliminary analysis of the second year, reveal that the fish communities are undergoing rapid change, with alien species replacing the native ones. The first year of the study revealed that in shallow water (9-20 m) alien species comprised ca. 80% of the catch; at a depth of 20 m they species comprised over 50% of the catch; while at a depth of 40 m only ca. one-third of the catch comprised alien species. However, in the second year of the study (2009-2010), it was found that at the latter depth (40m) the proportion of alien species had increased to over 50%. The most abundant alien species in the catch were *Plotosus lineatus Decapterus russelli*, *Nemipterus randalli, Callionymus filamentosus* and *Saurida macrolepis*.

Developing a network of Specially Protected Areas of Mediterranean Importance in the Mediterranean open seas including deep seas, having regard of fisheries conservation needs

Le Ravallec C. *UNEP MAP RAC/SPA, 1080 Tunis, Tunisia*

A Joint Management Action of the European Community with the United Nations Environment Programme/Mediterranean Action Plan (UNEP MAP) aims to promote through the SPAMI system the establishment of a representative network of marine protected areas in the Mediterranean open seas, including the deep seas. The action is implemented by the UNEP MAP Regional Activity Centre for Specially Protected Areas (RAC/SPA) and envisages a process developed in two phases. The first phase of the initiative concluded on 2009, and includes an assessment to identify, on the basis of available scientific knowledge, priority conservation areas in the Mediterranean open seas, including the deep seas. The assessment was aided by the elaboration of a tailored GIS, and by a document on fisheries management/conservation and step-relief areas in the Mediterranean open seas, including deep seas. It includes a chapter on sensitive habitats and essential fish habitats existing in those marine areas. A list of areas qualifying to contain sites that could be candidates for the SPAMI List was elaborated, steered by a committee which comprises International and Regional institutions including FAO and GFCM. It further revised at a meeting of Barcelona Convention Parties to the SPA/BD Protocol (Extraordinary SPA Focal Points meeting; Istanbul, 1st June 2010), which retained 12 of those areas. Several of these priority conservation areas were considered having regard of the concurrent known existence of valuable marine resources deserving protection from damages related to unsustainable fishing activities, and include within their areas most of the presently existing FRAs.

Fishery ecosystem indicators and dynamics in the Mediterranean for 1970-2005

Pennino M. G. *Instituto Español de Oceanografía. Centro Oceanográfico de Murcia. San Pedro del Pinatar 30740. Spain*

Though concerns about sustainability has been raised globally and ecosystem-based approaches have been proposed to manage fisheries, concepts such as "ecosystem health" and "ecosystem sustainability" are difficult to translate into operational objectives. The Ecosystem Approach to Fisheries (EAF) can bring some light to this purpose. The present study aims to implement the EAF in the Mediterranean Sea, which is one of the 64 Large Marine Ecosystems already identified by the National Oceanic and Atmospheric Administration (NOAA). The EAF is particulary suitable to study LME, where the approach needs to be holistic and integrative. Trophic indicators are appropiate tools to aborder this holistic view as well to facilitate the understanding of the dynamic of the ecosystem. The "Marine Trophic Index" (MTI), the "Fishing in Balance" index (FiB), "^{cut}Marine Trophic Index" (^{cut}MTI) and the Pelagic/Demersal index (P/D) are some of such indicators. These indicators can be used to assess the effects of fishing activities at a ecosystem level. These indices were utilised to examine the dynamics and changes in ecosystems of the Mediterranean Large Marine Ecosystem by analyzing the FAO database of fisheries landings, comprising up to 195 species from 1970 to 2005. Ours analysis confirmed that there has been a significant decline in the MTI of Mediterranean landings, that jointly at the rising P/D index, may be interpreted as a result of a decrease in abundance of high trophic level species in the ecosystem. This is also supported by the decreasing trend observed in FiB and $^{3.25}$MTI index which suggests that the functioning of the foodweb that underlies fisheries is probably impaired.

Review of the Conclusions and Recommendations of the Workshop on Algal and Jellyfish Blooms in the Mediterranean and Black Sea

Piraino S. *DISTEBA, Università del Salento, 73100 Lecce, Italy*

This talk reports on final conclusions and recommendations stemming from the GFCM workshop on Algal and Jellyfish Blooms held in Istanbul, 6-8 October 2010. GFCM recognized the importance of both algal blooms and jellyfish outbreaks in determining deviations from the "normal" ecosystem functioning that sustain fisheries and therefore promoted a joint workshop towards a better integrative understanding of these phenomena by an ecosystem-based approach. Both microalgal and jellyfish blooms must be considered as alternative pathways in ecosystem functions, deriving from the disruption of the regular sequence of seasonal or long-term pulses. The workshop has been attended by experts reporting on the algal and jellyfish proliferations in Mediterranean and Black Sea, the impacts of blooms and outbreaks on human health and marine recreational and industrial human activities, and the methodological approaches to integrated investigations at regional scale. The workshop agreed that fisheries science must incorporate the rest of the ecosystem, and that microalgal and gelatinous plankton blooms are important drivers of ecosystem functioning requiring specific measures in terms of performed research and management policy and procedures. A combination of traditional methodologies, innovative technologies and multisciplinary approaches (from "citizen science" campaigns and natural history observations to video-acoustic behavioural and distributional records, from ecophysiological investigations to molecular taxonomy and phylogeography) has been suggested to be adopted in medium-term research programmes to a) understand the ecological roles of potential outbreaking species in the health of our seas, b) analyse causes and consequences of outbreaks, c) foresee environmental characteristics of hot spots of jellyfish and algal proliferations, and d) eventually developing mitigation countermeasures against their negative impacts.

Current draw-backs to sustainable fisheries in the Mediterranean: from weak fisheries monitoring and management to jellyfish blooms

Vella A. *Conservation Biology Research Group, Department of Biology, University of Malta*

Long-term fisheries and wild-life research in the central Mediterranean around the Maltese Islands has been on going since 1997 to allow for better understanding of how human exploitation and wild life distribution relate and affect each other. The 100,000km2 research area covered by both marine and aerial surveys have allowed complementary research platforms to produce detailed and wide spread considerations of the changes in this part of the Mediterranean. Field research has been compared to fisheries statistics and fishermen questionnaires to better understand the developing impacts of various types of fisheries on various marine communities, species and habitats. The use of molecular genetics to sample and study various marine species populations impacted by fisheries directly or indirectly is also furnishing added information toward assessing the status of regional marine species in need of conservation as part of sustainable fisheries management. The changes in marine biodiversity composition and species abundance need long-term data which is often lacking at Mediterranean-wide level, the increasing reports of jellyfish blooms is one such case in point for which the important questions of why and how to solve potential problems to fisheries depend on dedicated and long-term research efforts too.

Records on the landings of the bluntnose six-gill shark in Malta

Vella N. and Vella A. *Conservation Biology Research Group, Department of Biology, University of Malta*

The bluntnose sixgill shark, *Hexanchus griseus* (Family Hexanchidae), is a locally caught shark species that has been enlisted as Nearly Threatened by global and regional IUCN assessments, while local legislation had included it in Schedule VI of the Maltese Environment Protection Act. Moreover records of *Hexanchus griseus* landings in Malta show that there has been a constant increase in the fishing effort between the mid-1980s and the mid-1990s followed by a sharp decline in its landings. Thus data collection on this species was a must as to allow for a future plan towards the long-term conservation management plan for this species and for its sustainable fisheries to be set.

A total of 436 *Hexanchus griseus* specimens were recorded between 2004 and 2008, with bottom longlines accounting for 97.6% of the catches, 80% of which were caught either as primary or secondary target species. 74.8% were caught between January and April, with a peak in the landings between February and March (55.9%). The seasonality in catches is directly linked to the fishing strategies adopted by Maltese fishermen, who change their gear types to target more commercially important fish. Demographic data on this species has shown that the proportion of females caught is significantly larger than that of males. Moreover based on the total body length data (mean length: females 270cm ±63.5cm; males 246cm ±39.1cm), it is evident that the majority of individuals caught were either juveniles or adolescents. This indicates that either the fishing methods are targeting immature individuals or else that mature individuals rarely occur in Central Mediterranean possibly due to over-exploitation. This is part of a larger ongoing research project that considers the status of this species and fisheries affecting it throughout the Mediterranean and is also looking into the genetics of the stocks being exploited or affected by various fisheries.

Submarine canyons in the Gulf of Lions. Identification and conservation

Simard, F. *IUCN, Global Marine and Polar Programme / IUCN Center for Mediterranean Cooperation*

IUCN is working on the improvement of the governance of the Mediterranean for several years. In the framework of this program, during several meetings organized by IUCN in 2010 (with the collaboration of GFCM and RAC-SPA, as well as the French Agency for Marine Protected Areas), the conservation submarine canyons has been raised as a priority issue. Submarine canyons are unique features, linked to the geological formation of the Mediterranean. They play a very important role at several levels. They are key for the circulation of the water in the whole Mediterranean; due to their shape they link the coastal waters with deeper areas; they harbor unique fauna and flora; they are the habitats of several fisheries species, either for the whole or a part of their vital cycle; they are supporting fisheries stocks such as hake and red shrimps.

The French Agency for marine protected areas as well as the Spanish CSIC is conducting surveys and research on several canyons in the Gulf of Lions, and already a lot of data are available. These data will be processed in 2011.

The canyons of the Gulf of Lions are located in one of the open sea SPAMIs proposed by the RAC-SPA.

In order to proceed toward the conservation of these important submarine features, not only in the Gulf of Lion but in all the Mediterranean Sea, the next steps are to:

- Improve the knowledge and recognize the importance of submarine canyons for the functioning of the Mediterranean ecosystem;
- Recommend to the Mediterranean States to adopt a precautionary approach in the management of these areas which are threatened by some fishing activities and the flow of trashes from the land;
- Integrate canyon protection and management in national, regional and international priorities;
- Recommend an inter-sectorial approach to take into consideration the socioeconomic aspects;
- Include submarine canyons in discussions of the GFCM, which already adopted some fisheries closure for seabed feature protection, including a limited area in the Gulf of Lion covering one canyon; and
- Use all available tools for the identification and creation of MPAs, such as the World Natural Heritage, the CBD EBSA criteria, the European Habitat Directive, the SPAMI system of the Barcelona Convention, as well as the tools used by fishery bodies (Fisheries Restriction Zones and Vulnerable Marine Areas) and Maritime organisations (PSSA).

As activity for 2011, IUCN and the French Agency for marine protected areas are organizing a workshop / conference on “submarine canyons: knowledge and conservation” in Monaco. IUCN would strongly welcome the collaboration of GFCM for this event and offers SCMEE to add this activity in its work plan for 2011.

Finally, IUCN addresses the necessity to put in place mechanism for following up the GFCM resolutions. In particular for the FRA of the Gulf of Lions, IUCN regrets the lack of information that would allow insuring that the resolution is implemented and that the fisheries pressure is not increasing in the limits of this FRA.

Impacts of Alien species

B. Öztürk *Istanbul University, Faculty of Fisheries*

Abstract to be delivered by the author

Appendix IV

Date of endorsement by the SCMEE

02/12/2010

STANDARD FORMAT FOR THE SUBMISSION OF PROPOSALS FOR GFCM FISHERIES RESTRICTED AREAS (FRA) IN THE MEDITERRANEAN

Name of the FRA:

Seamounts of the Mallorca Channel, Balearic Islands.

Submitted by (Institution, Scientists, GFCM Members…):

OCEANA

Plaza de España - Leganitos, 47
28013 Madrid (España)
Tel.: + 34 911 440 880
Fax: + 34 911 440 890
europe@oceana.org
www.oceana.org

Date of submission:

November 2010

1 EXECUTIVE SUMMARY (maximum 500 words)

Supply a summary of the information contained in sections 2 to 8, including the expected results.

Oceana is presenting the proposal for a new Fisheries Restricted Area (FRA) covering the main seamounts of the Mallorca Channel (Balearic Islands): Emile Baudot, Ausias March and Ses Olives (>800, 300 and 500-600 meters high respectively). Oceana has studied these seamounts since 2006 with the use of an ROV (Remotely Operated Vehicle), and we have identified more than 200 taxa, 25 of which have been listed by various international conventions and national and international laws, and up to 25 habitats classified according to the EUNIS code. Moreover, at least twelve identified species are listed as priority species by the General Fisheries Commission for the Mediterranean (GFCM), including *Eledone cirrhosa, Lophius piscatorius, Merlangius merlangus, Merlucccius merluccius, Mullus barbatus, Mullus surmuletus, Nephrops norvegicus, Octopus vulgaris, Palinurus mauritanicus, Palinurus elephas, Scomber scombrus and Trachurus trachurus*. New information collected during the summer of 2010 is being analysed by Oceana, and new discoveries include, among others, a vast field of cnidarian *Isidella elongata* in apparently healthy condition.

The unique topographic and hydrographic conditions of the Balearic Promontory, factor greatly in the concentration of both demersal and pelagic commercial species in the area. The Mallorca Channel is also very important to high priced commercial species, especially crustaceans, demersal fish and large pelagics.

Little is known on the true extent of fishing activity in the seamounts area, though numerous oceanographic expeditions carried out under the TUNIBAL project have described the importance of the area for the reproduction of tuna and tuna related species, as these areas are known spawning grounds for these species. Additionally, recreational fishing competitions for large pelagic species are known to take place over the Emile Baudot seamount, trab setters often fish for *Plesionika* spp. on Ses Olives, and VMS data is available on bottom trawling fleet fishing for red shrimp (*Aristeus antennatus*) on the slopes of Ausias March. Oceana has also documented a lot of discarded fishing gear, especially fishing line and nets, as well as different types of garbage on the three seamounts and in their surrounding areas. A new FRA encompassing these seamounts would enable the establishment of a proper management plan for fisheries in the area that would promote the preservation of important marine resources and communities, and benefit recreational, artisanal and commercial fisheries in the Balearic area.

2 AREA IDENTIFICATION

2.1 GFCM GEOGRAPHICAL SUBAREA

http://www.icm.csic.es/rec/projectes/scsa/SAC_Geographical_SubAreas_2007.pdf

GSA5 Balearic Islands

2.2 NAME OF THE FRA

Seamounts of the Mallorca Channel, Balearic Islands.

2.3 GEOGRAPHIC LOCATION

2.3.1 General location

Mallorca Channel, Balearic Islands, NW Mediterranean Sea.

2.3.2. Precise location of the proposed core area: provide geographical coordinates(latitude and longitude in degrees, minutes and seconds) for the vertex of a polygonal area.

The proposed area in two subareas:

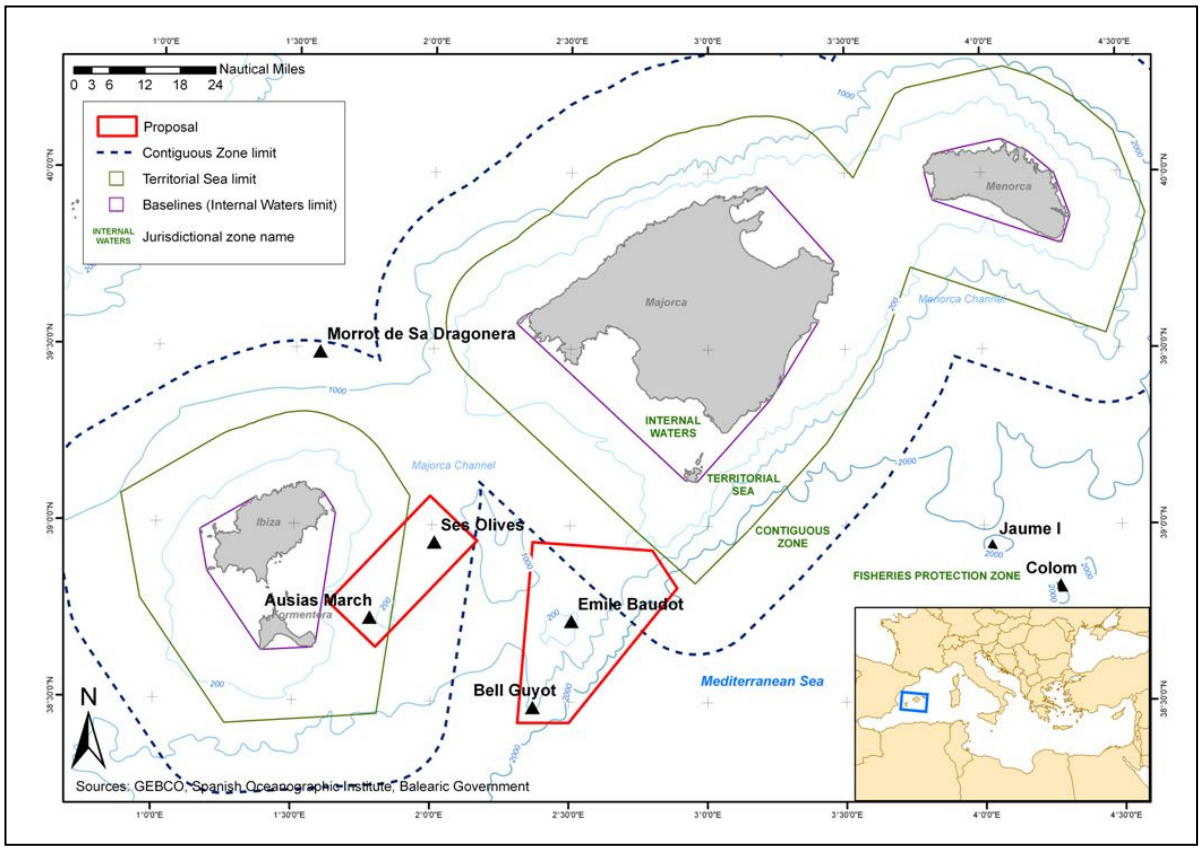
Subarea 1. Ausias March and Ses Olives
- 38º39'12"N 1º47'58"E
- 38º46'44"N 1º37'41"E
- 39º04'57"N 1º59'03"E
- 38º57'23"N 2º09'49"E

Subarea 2. Emile Baudot:
- 38º26'26"N 2º18'51"E
- 38º57'13"N 2º21'54"E
- 38º55'52"N 2º47'56"E
- 38º49'29"N 2º53'20"E
- 38º26'29"N 2º29'56"E

2.3.3. Buffer area (if applicable); provide geographical coordinates (latitude and longitude in degrees, minutes and seconds) for the vertex of a polygonal area.

Not applicable

2.3.4. Location Map: include geographical coordinates of the core and buffer areas, bathymetry, and the boundary of international waters. Add a global reference map of the Mediterranean with the location of the site.



2.3.5. Depth range (in m; specify core and buffer area, if applicable)

Subarea 1. Ausias March and Ses Olives: - 90 m to -1000 Subarea 2. Emile Baudot: - 80 m to 2750 m Total depth range: - 80 m to 2750m

2.4 SURFACE AREA (in ha and km^2; specify core and buffer area, if applicable)

Subarea 1. Ausias March and Ses Olives: 187900 ha, 1879 km^2. Subarea 2. Emile Baudot: 94200 ha, 942 km^2. Total surface area: 282000 ha, 2820 km^2

3 SITE DESCRIPTION

3.1 MAIN PHYSICAL FEATURES

3.1.1. Geology/Geomorphology

Give a brief description of the geological aspects; processes of sedimentation and erosion observable in the area and other geomorphologic features or geological risks. Indicate bibliographical sources.

With an extension of over 50,000km², the Balearic promontory divides the northeastern Mediterranean in two, leaving the Valencia trough on the NW and the Algerian basin on the South (Acosta *et al.*, 2004). The Emile Baudot, Ausias March and Ses Olives seamounts are located in the heart of the Mallorca channel, one of three channels along with the Menorca and Ibiza channels, that cross the Balearic promontory, reaching depths of over 1,000m. Thus, the proposed area is located between the islands of Ibiza, Formentera and Mallorca and includes the most important seamounts of this channel: Ausias March, Ses Olives y Emile Baudot. Ausias March, located 9 nm NE of Formentera which covers an area of 600 km²; and Ses Olives, located 18 nm E of Ibiza, covering an area between 90 and 100 km². Both seamounts are continental in origin and constitute part of the eastern half of the Balearic continental shelf (Acosta *et al*, 2002a). On the other hand, Emile Baudot, which covers roughly 100 km², is volcanic in origin and is surrounded by a field of 118 volcanic peaks with an extension of 513 km² (Acosta *et al.*, 2002b). Emile Baudot is located on the crest of the escarpment bearing the same name, which descends from its base towards the SE, almost vertically, to over 2,000 meters depth.

3.1.2. Other interesting physical or chemical features: Such as hydrodynamics, frontal areas, upwelling, etc than support the proposal.

The Balearic promontory can be considered individual region within the western Mediterranean (Pinot *et al.*, 1994; Galarza *et al*., 2009) since it is located within the transition area between the two main sub-basins in the western Mediterranean: the Algerian Basin and the Ligurian-Provencal Basin. As such, there is significant exchange of waters with different densities and temperatures in the channels that cross the promontory between islands. On one hand, the Modified Atlantic Waters (MAW) travel north through the Straits of Gibraltar and on the other, the colder and more saline Surface Mediterranean Waters (SMW) come from the Gulf of Lyons.

As a consequence of these unique conditions, the area presents important formations of eddies, fronts and currents (Pascual *et al.*, 2002). These currents were recorded in the promontory channels moving both North and South (Astraldi *et al.,* 1992) although they move more intensely North in the Mallorca channel because the inflow of eddies that form in the southern Balearic Sea, the Algerian Basin, push the warmer waters towards the inside of the channel (Pinot *et al.*, 2002).

Despite its distinct oligotrophic environment and low concentration of plankton, the area's complex oceanography makes the southern Balearic Sea an ideal spawning area for various tuna species including bluefin tuna (*Thunnus thynnus*), bullet tuna (*Auxis rochei*) and albacore (*Thunnus alalunga*), among others (García *et al.*, 2005), as well as for a variety of decapod crustaceans. In addition, up to 5 important fishing grounds have been identified around the seamounts (Carbonell, 2005).

3.2 BIOLOGICAL FEATURES

3.2.1. Habitats: A brief description of the dominant marine habitats including pelagic ones if applicable

The only information available about the communities present in the area around the seamounts is the result of the samplings completed by Oceana. Other studies have focused more on the seamounts' geological aspects (see 3.1.1.).

The Ausias March and Emile Baudot peaks are located at depths (-90 m and -80 m, respectively) which allow the development of calcareous red algal communities, constituting coralligenous biocenosis and maerl facies. Sponge fields can also be found here. In deeper waters, the seabeds vary from hard to sandy, sandy-detritic and sandy-muddy bottoms in which a variety of facies have been identified including brachipods, echinoderms, cnidarians, crustaceans, molluscs and poriferans, as well as vertebrates like flat fish, triglids and elasmobranchs, among others. Facies of gorgonians, with particular presence of *Paramuricea clavata* and *Eunicella verrucosa*, among others, have been identified on the rocks of the three seamounts. The rocky edges of the peak of Ses Olives (-220 m) also harbour specimens of the black coral *Leiopathes glaberrima*.

As far as the water column is concerned, the area's unique oceanographic characteristics, given the bottom topography and the channel's hydrodynamic qualities, convert this into an important pelagic environment for species of economic and/or ecological interest like various tuna and tuna-like species, cetaceans, marine reptiles and sharks.

3.2.2. List of regionally important species

List here those marine species protected by international agreements (specify the agreement) and/or included in the GFCM priority list. If applicable, give the IUCN category. Any other species may be listed if it is clearly considered of regional importance given its high representation in the area. For each species state:

a) its relative abundance as Common (C), Uncommon (U) or Occasional (O),
b) Its regional status as rare (r), endemic (e) and/or threatened (t), and
c) its status as an important resident population (R), or important for its breeding (B), feeding (F), wintering (W) or migratory passage (M)

SPECIES	Rel. Abundance (C) (U) (O)	Regional STATUS (r) (e) (t)	Local STATUS (R) (B) (F) (W) (M)
Artropodos			
Nephrops norvegicus (7)	**C**		**R**
Palinurus elephas (7)	**C**		**R**
Palinurus mauritanicus (7)	**C**		**R**
Cnidarios			
Antipathes dichotoma (2,3,5)		**t**	**R**
Caryophyllia cyathus (5)		**t**	**R**
Eunicella verrucosa (6/VU)		**t**	**R**
Leiopathes glaberrima (3,5)		**t**	**R**
Savalia savaglia (2,3)		**t**	**R**
Cordados			
Caretta caretta (1,2,3,4,6/EN)	**C**	**t**	**M**
Epinephelus caninus (6/DD)	**C**	**t**	**R**
Lophius piscatorius (7)			**R**
Merlangius merlangius (7)	**C**		**R**
Merluccius merluccius (7)			**R**
Mullus barbatus (7)	**C**		**R**
Mullus surmuletus (7)			**R**
Physeter macrocephalus (1,2,3,4,5,6/VU)	**C**	**t**	**F**
Polyprion americanus (6/DD)		**t**	**R**
Raja montagui (6/LC)	**C**	**t**	**R**
Scomber scombrus (7)	**C**		**R**
Stenella coeruleoalba (1,2,3,4,6/LC)	**C**	**t**	**F**
Trachurus trachurus (7)	**C**		**R**
Tursiops truncatus (1,2,3,4,5)	**C**	**t**	**F**
Moluscos			
Charonia lampas (2,3)		**t**	**R**
Eledone cirrhosa (7)			**R**
Erosaria spurca (2,3)		**t**	**R**
Octopus vulgaris (7)	**C**		**R**
Ranella olearium (2,3)		**t**	**R**
Poríferos			
Asbestopluma hypogea (2,3)	**C**	**t**	**R**
Aplysina cavernicola (2,3)	**C**	**t**	**R**
Axinella polypoides (3)	**C**	**t**	**R**
Spongia agaricina (2,3)	**C**	**t**	**R**
Tethya sp. (3)	**C**	**t**	**R**

The listed protected species have been documented and identified by Oceana on the seamounts of the Mallorca channel. Currently, new information is being analysed, so the number of protected species observed in the area is expected to increase. The treaty is indicated in parentheses (1) Habitats Directive./ (2) Berne Convention./ (3) Barcelona Convention./ (4) Bonn Convention./ (5) CITES./ (5) IUCN Red List./ (7) GFCM priority species.

Various experts have proposed protection for other species observed in the area that are not currently listed in any international convention (Fautin, Daphne G. 2009; Boudoresque, 1991): red algae *Mesophyllum alternans* and *Neogoniolithon mamillosum* and cnidarians *Adamsia carciniopados*, *Paramuricea clavata, Paramuricea macrospina* and *Swiftia pallida*.

3.2.3. Occurrence of biological and ecological processes relevant to fish resources (essential fish habitats)

According to Oceana samplings, including the latest data obtained during the 2010 campaign currently being analysed, we can highlight the presence of various habitats that are important for fishery resources, including vulnerable or essential fish habitats:

- *Isidella elongata* bed between Ausias March and Ses Olives, with large specimens in good state of health, on a muddy bottom at roughly 500 m depth.
- High concentration of the crinoid *Leptometra phallangium* documented on the eastern slope of Ausias March seamount, as well as some individuals in Emile Baudot.
- Large braquiopods bed (*Gryphus* sp.) in Emile Baudot.
- Some specimens of the sea pen *Funiculina quadrangularisha* were identified during a transect between Ausias March and Ses Olives; more specimens are expected to be found in adjacent areas.

As mentioned above, one of the most important areas is the south of the Balearic Islands, including the entire area proposed for protection, because tuna and other species like albacore (*Thunnus alalunga*), bluefin tuna (*Thunnus thynnus*), bullet tuna (*Auxis rochei*) and swordfish (*Xiphias gladius*) use it as a spawning ground, among others. The Spanish Oceanographic Institute, within the framework of the TUNIBAL project to survey bluefin tuna larvae in the Mediterranean, detected elevated concentrations of these larvae around the Mallorca channel seamounts. Recently (Juan and Lleonart, in press), the south of the Balearic Islands was identified as a pelagic essential fish habitat due to its ecological richness and the need to protect it to conserve species like bluefin tuna, sperm whales and even the white shark.

Many other species targeted by industrial and recreational fisheries –from the Lophiidae, Mullidae, Gadidae, Trachinidae, Serranidae, Triglidae, Scorpaenidae, Pandalidae and Octopodidae families- have been documented and identified on those seabeds or in the overlying water column.

The social and economic importance of the different fishing activities around the Mallorca channel seamounts cannot be estimated due to a lack of data.

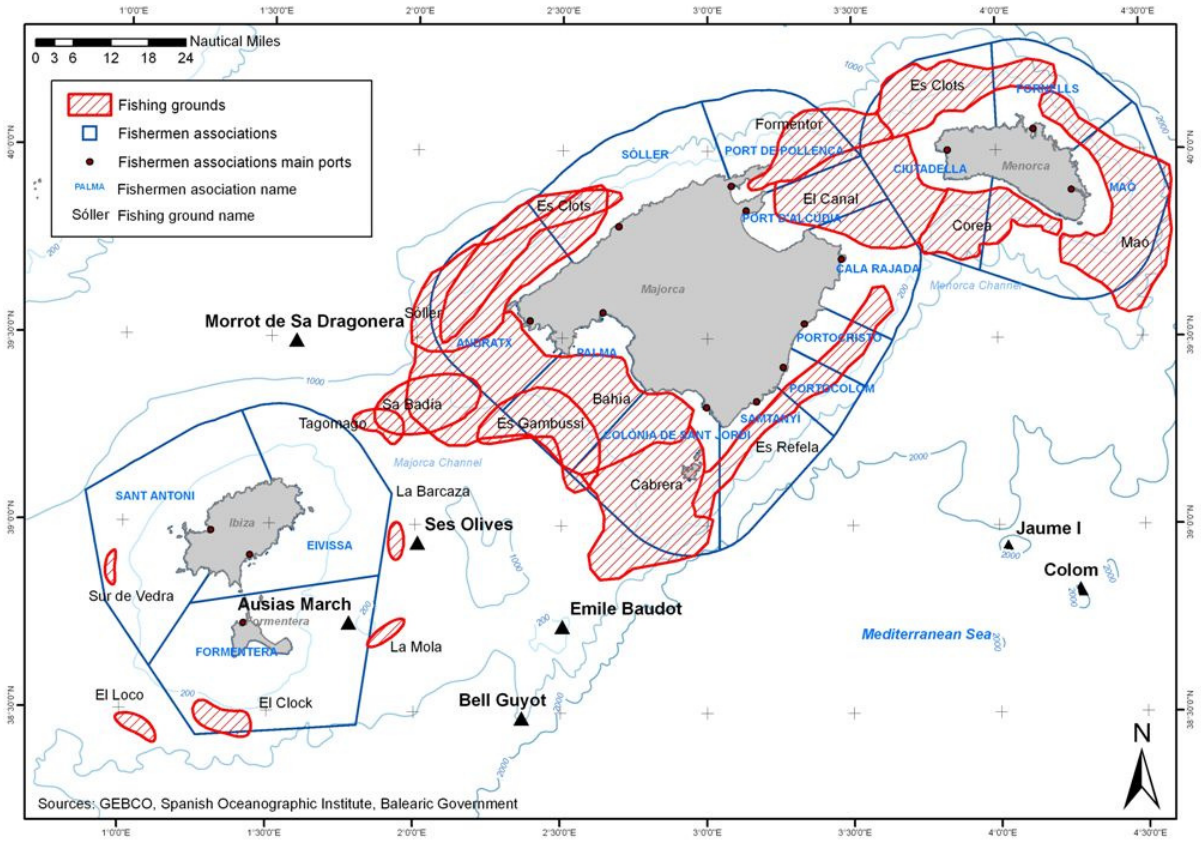
3.3 USE OF NATURAL RESOURCES

3.3.1. Current human use and development of fisheries

a) Briefly describe the current use of the area by artisanal, industrial and recreational fishing.

As mentioned above, the southern area of the Balearic Sea, the proposed area included, is the fishing ground for the summer surface longlining fleet and seining fleet targeting *Thunnus thynnus* and other species of high commercial value including swordfish (*Xiphias gladius*), albacore (*Thunnus alalunga*) and bullet tuna (*Auxis rochei*).

In addition, two other fishing grounds within the proposed area, La Mola and La Barcaza (García, 2004), close to Ausias March and Ses Olives respectively, are used by the trawling fleet targeting red shrimp (*Aristeus antennatus*). Trawling marks have been documented at different depths in this area and on these two seamounts. Emile Baudot, however, is inaccessible for the industrial fleet, taking into account the limited fishing hours and price of fuel, because this seamount is located far from the coast, roughly 30 nm SW of Cabrera.



Although there is a lack of information available about fishing activities of any kind carried out in the proposed area, it should be mentioned that Oceana identified remnants of fishing gear, lines and nets, as well as cans, bottles, plastics and textile waste in practically all the areas sampled. In addition, recreational fishing boats were observed around the three seamounts. Therefore, we can affirm that the three seamounts are being affected, to some degree, by some type of fishing activity for which no management measures have been implemented to guarantee the conservation of the species and habitats present in the area.

b) Enter how many of the users depend on these resources, seasonality, and assessment of the social and economic importance of their use and of the perceived impact on the conservation of the area, in a score of 0-1-2-3 (meaning null, low, medium, high).

ACTIVITY AND CATEGORY	ASSESS IMPORTANCE OF		ESTIMATED No. of USERS	SEASONALITY
	SOCIO-ECONOMIC	CONSERV. IMPACT		
FISHING				
Artisanal	0 1 2 3	0 1 2 3		
Industrial	0 1 2 3	0 1 2 3		
Other:				
- Acuiculture				
-				

The limited data available for the specific area do not allow to estimate the social and economic importance of the various modes of fishing on the Mallorca Channel´s underwater elevations..

3.3.2. Current human use and development (except for fisheries)

a) Briefly describe the current use of the area for other economic sectors.

b) Enter how many of the users depend on these resources, seasonality, and assessment of the social and economic importance of their use and of the perceived impact on the conservation of the area, in a score of 0-1-2-3 (meaning null, low, medium, high).

ACTIVITY AND CATEGORY	ASSESS IMPORTANCE OF		ESTIMATED No. of USERS	SEASONALITY
	SOCIO-ECONOMIC	CONSERV. IMPACT		
OTHER ACTIVITES				
Tourism	0 1 2 3	0 1 2 3		
Transport	0 1 2 3	0 1 2 3		
Mining				
-				
-				

4 REGIONAL IMPORTANCE OF THE SITE

This Section aims at stressing the importance of the site for conservation at the regional scale.

4.1 PRESENCE OF ECOSYSTEMS/HABITATS OF PARTICULAR IMPORTANCE IN THE MEDITERRANEAN

The importance of protecting seamount to conserve and regenerate marine life is globally acknowledged at present time and proof of it is the continuously increasing research efforts and creation of protected marine areas including seamounts around the world.

Of the 59 identified seamounts over 1,000 m in height in the Mediterranean Sea (Kitchingman *et al.*, 2007), only one, Eratosthenes, is protected, precisely as the deep sea fisheries restricted area "The Eratosthenes Seamount" (GFCM/2006/3, on the establishment of fisheries restricted areas in order to protect the deep sea sensitive habitats), given the deep sea habitats present on the seamount and their vulnerability to certain types of fishing techniques and other aggressive human activities. On the other hand, various international conventions and legislations concerning these marine ecosystems applicable to the region require the adoption of adequate management and protection measures.

Southern Balearic area has been recently identify as one of the 10 priority conservation areas int he Mediterranean, as it contains important crititcal habitas and seamounts. (UNEP-MAP-RAC/SPA, 2010, Notarbartolo and Agardy, 2009).

Coralligenous and maerl beds, as those present in these seamounts, are considered as one of the main important habitats in the Mediterranean, and their conservations has been strongly reccommended by experts (Ballesteros, 2008; UNEP-MAP-RAC/SPA, 2008) and the international legislation is protecting these habitats from agresive fishing activities (Concil Regulation Nº 1967/2006, of 21 December 2006).

4.2 PRESENCE OF HABITATS THAT ARE CRITICAL TO ENDANGERED, THREATENED OR ENDEMIC SPECIES

Name the habitat types and the species linked to it. Give information about its status (IUCN classification, etc.).

The entire Balearic Sea has been identified as an ecologically and biologically significant marine area (EBSA) in need of protection (Nortarbartolo and Agardi, 2009), after the application of scientific criteria (see 4.1.) for the selection of future marine protected areas within the framework of the Barcelona Convention and the Convention on Biodiversity, among others.

The area around the Mallorca channel seamounts is a critical habitat for bluefin tuna reproduction, a feeding ground for the loggerhead turtle and an important habitat for sperm whales and other toothed whales (UNEP-MAP-RAC/SPA, 2010).

At least 9 species listed in the Barcelona Convention annexes are present in the area, including cnidarians *Antipathes dichotoma*, *Leiopathes glaberrima* and *Savaglia savaglia,* the loggerhead turtle *Caretta caretta,* cetaceans *Physeter macrocephalus, Stenella coeruleoalba* and *Tursiops truncates,* molluscs *Charonia lampas, Erosaria spurca* and *Ranella olearia* and the sponges *Asbestopluma hypogea, Aplysia cavernicola, Axinella polypoides, Spongia agaricina* and *Tethya* sp.

Some of these species are also strictly endemic to the Mediterranean, like the carnivorous sponge *Asbestopluma hypogea* or the poriferan *Spongia agaricina.* The red sea pen *Paramuricea clavata* is also endemic and frequently occurs on these seamounts, although it is more widely distributed.

Last, it should be mentioned that coralligenous and maerl concretions are extremely vulnerable to aggressive fishing activities, particularly bottom trawling. These formations are very important for a variety of marine species, It is therefore neccesary to implement an efective and actual ban of this activity on these seabeds.

4.3 OTHER RELEVANT FEATURES

4.3.1. Educational Interest

E.g. particular values for activities of environmental education or awareness

The dissemination of the results of Oceana's campaigns focused on the Mallorca channel seamounts during recent years, especially during campaign months, has been welcomed by the media, offering many people extensive information about Mediterranean marine diversity, Mediterranean seamounts, their threats and the importance of conserving and correctly managing them. Sectors directly or indirectly related to the oceans and seas, like tourism, industrial and recreational fishing or maritime transport, could also be provided with this information in order to directly implicate them and improve the marine environment and its resources by transmitting the value of the different marine ecosystems and the need to protect and recover them.

Outside the fishery, political or environmental scopes, it can be said that marine protected areas and FRAs are a mystery to the general public, as is the importance of these sites in the Mediterranean. Initiatives like this proposal, its implementation, management and benefits should be widely disseminated in all fields and scopes in order to reinforce its value.

4.3.2. Scientific Interest

Explain if the site represents a particular value for research.

As already explained, there is important lack of information about deep sea Mediterranean habitats. Thus, seamounts are also widely unknown, especially if we refer to the communities they support, their state of conservation, threats and possibilities of recovery. Hardly any studies have been completed in the Mediterranean that provide data about the biology of seamounts, except the studies on Eratosthenes Seamount, Santa María di Leuca or a few studies on the seamounts in the Alboran Sea that were completed by the Spanish Oceanography Institute within the framework of the DEEPER project. The information available about the ecology of the benthic communities that live on the seamounts of the Mallorca channel is generated exclusively by studies completed by Oceana.

5 IMPACTS AND ACTIVITIES AFFECTING THE AREA

5.1 IMPACTS AND ACTIVITIES WITHIN THE SITE

5.1.1. Exploitation of natural resources

Assess if the current rates of exploitation of natural resources within the area (e.g. fishing, sand and mineral exploitation) are deemed unsustainable in quality or quantity, and try to quantify these threats, e.g. the percentage of the area under threat, or any known increase in extraction rates.

The state of the exploited fishery resources in the area proposed for protection, or adjacent areas, like crustaceans and other deep sea species, has not been evaluated. Thus, it is impossible to know whether they are overexploited or threatened.

5.1.2. Threats to habitats and species

Mention any serious threats to the habitat (e.g. modification, disturbance, pollution) or to species (e.g. disturbance, poaching, introduced alien species...) within the area.

- Fishing. Deep sea trawling involves the destruction of the seabed and all the benthic ecosystems with which this gear comes into contact, as well as the continuous lifting of sediments that makes the environment turbid and buries its inhabitants, while also negatively affecting adjacent areas and ecosystems.
- Waste. As already mentioned, Oceana samplings showed significant amounts of waste, garbage and remnants of lost or abandoned fishing gear in the proposed area, even though this area is not heavily frequented.
- Expansion of the port of Ibiza. At this time, dredged material from the construction work to expand the port of Ibiza is being dumped, with authorisation from the Spanish government, in the proposed FRA. No information is available about the deep sea habitats being affected by the dumping in this exact point or in the area affected by the dispersion of sediments via channel currents.

5.2 IMPACTS AND ACTIVITIES AROUND THE SITE

5.2.1. Pollution

Name and describe sources of pollution.

- Contamination, not only in this particular area, but in the entire Mediterranean, identified by MARPOL as "special area" due to its extreme vulnerability to hydrocarbon contamination. This is, however, one of the most contaminated seas in the world due to the maritime traffic it supports and the coastal activities that produce waste dumped via rivers, streams and runoff, or directly dumped into the sea.
- Waste. The source and scope of the waste has not been estimated for Mediterranean seabeds, but we can say that during Oceana's expeditions in this and other areas of the Balearic, Mediterranean and Cantabrian Seas and Atlantic area, the presence of waste, garbage and abandoned or lost fishing gear is constant.

5.2.2. Other external threats, natural and/or anthropogenic

Briefly describe any other external threat to the ecological, biological, aesthetic or cultural values of the area (such as unregulated exploitation of natural resources, serious threats on habitats or species, pollution problems) likely to influence the area in question.

- Invasive species. The presence of invasive species including algal species *Lophocladia lallemandii, Caulerpa racemosa, Asparagopsis* spp. and *Oculina patagonic*a, among others, has been documented in the entire Mediterranean and in the Balearic Sea. *C. racemosa* and *L. Lallemandii* have been documented in the Mallorca channel at depths over 70 m (Oceana, . Allochthonous species have yet to be identified in the area of the seamounts.
- Acidification. This may become one of the most serious problems for biodiversity, with serious effects on marine fauna present in the proposed area, particularly on crustaceans, pteropods, corals and gorgonians.
- Climate change. Increased temperature and salinity in the Mediterranean and Balearic Sea is a fact, and a variety of research projects have been implemented to monitor these changes, as is the case of the Mediterranean Group on Climate Change of the Spanish Oceanographic Institute. In addition, FAO has warned about the negative effects of these changes on vulnerable marine ecosystems (Bench *et al.*, 2008).
- Maritime traffic. The waters of the Mallorca channel support heavy traffic from industrial, artisanal and recreational fishing vessels and, in particular, from cruise ships, charter vessels and private yachts. Various threats are related to this maritime traffic including acoustic contamination, risk of collisions and hydrocarbon contamination, all of which seriously affect the marine fauna present in the channel, especially in the pelagic environment.
- Coastal construction. The expansion of ports, like the work being completed in the port of Ibiza that is the source of the dumping of dredged material into a specific area in the Mallorca channel close to the seamounts, and other coastal construction work is threatening the health of seagrass beds and other coastal ecosystems of the Balearic Islands.
-

5.2.3. Sustainable development measures

Comment whether the area is covered by a management plan, or bordering upon a zone under such a plan.

The proposed area is located within the range of application of certain regional, European, national and autonomous management tools that limit the extraction of natural resources:

- GFCM recommendation to prohibit certain aggressive fishing techniques to protect deep sea vulnerable ecosystems at depths over 1,000m. The area SE of the Emile Baudot sub-area includes part of the Emile Baudot escarpment, which descends to 2,750 m, making it an area of application for the above recommendation.
- CE Regulation concerning management measures for sustainable exploitation of fishery resources in the Mediterranean (Council Regulation Nº 1967/2006). The regulation prohibits certain fishing methods at depths over 1,000 m, as well as over coralligenous and maerl concretions.
- Declaration of Fishery Protected Area by the Spanish Government (Royal Decree 1315/1997, of 1 August, modified by Royal Decree 431/2000, of 31 March). The proposed area is mostly located within the limits of the fishery protected area established by the Spanish government (see 2.3.4.).
- Comprehensive Management Plan for the conservation of fishery resources in the Mediterranean (Order ARM/143/2010, of 25 January). The Spanish Fishery Protected Zone is, along with the Spanish territorial sea, within the scope of application of this Spanish regulation prohibiting certain fishing gear over coralligenous and maerl concretions and at depths over 1,000m. Unfortunately, this regulation is not being applied correctly because trawling marks and remnants of fishing gear have been identified on the coralligenous and maerl bottoms around these seamounts.
- Autonomous and national legislation regulating professional fisheries. Emile Baudot seamount is outside the reach of the trawling fleet after the implementation of some management measures, such as the establishment of fishery restricted hours. However, nets, lines, garbage (recreational and sports fishing is carried out in the area), and even some trawling marks have been identified here.

We should also mention the international environmental conventions and legislations that are applicable in the proposed area, such as CBD, ACCOBAMS, Berne Convention, MSFD, Habitats Directive, Birds Directive and Barcelona Conventions, as well as UNCLOS and CITES.

6 EXPECTED DEVELOPMENT AND TRENDS[1]

This is not always easy to assess and thus, it is not obligatory to fill in this Section.

6.1 EXPECTED DEVELOPMENT AND TRENDS OF THREATS TO AND PRESSURES UPON THE AREA

Deal briefly with the development of economic activities within the area

Although new projects are not currently affecting the area, we should add the development of the oil industry around the world and its capacity to exploit deeper areas far from the coast, even though this industry is incapable of responding to the environmental risks involved in its activities. The existence of pockmarks in the area (Acosta, 2001) can be indicative of the presence of gas seeps, which could make it a future target for this industry. The same occurs with fishing vessels, which are more powerful and better equipped, targeting resources in deeper waters because most stocks are overexploited. This overexploitation, far from being reversed, is increasing. Proof of this is the drastic decrease in catch rates of large pelagics, as well as in the size of the specimens, leading to serious effects throughout the trophic chain and, as a consequence, in the output of fisheries.

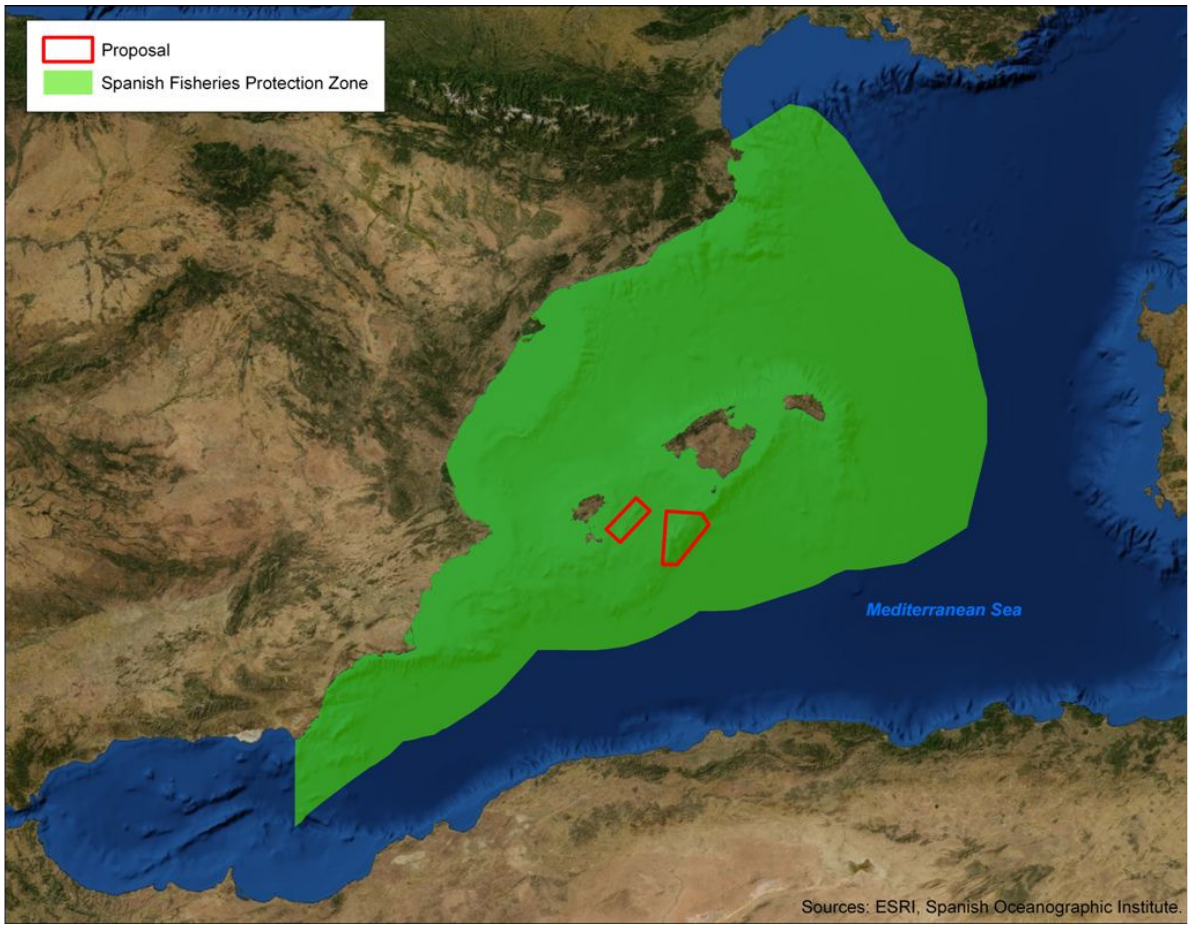
[1] By expected development and trends are meant the development, which is thought most likely to occur in the absence of any deliberate intervention to protect and manage the site.

7 MANAGEMENT AND PROTECTION REGIME

7.1 LEGAL STATUS (if applicable)

7.1.1. Historical background of the management related to the area

The area is practically entirely located within the limits of the Spanish Fishery Protected Zone. Specifically, the area is both within the territorial sea (Ausias March), in the contiguous area (Ses Olives) and in the fishery protected zone (Ses Olives and Emile Baudot). These waters, which are under Spanish jurisdiction and as a consequence under EU jurisdiction, are fully within the scope of application of national and European conventions and legislations.



7.1.2. Regulatory measures currently ruling the mangement on the site
Mention if the area, or part of it, has been designated and on what date, with an international conservation category.

Not applicable

7.1.3. Objectives
Name in order of importance the objectives of the area as stated in its legal declaration.

Not applicable

7.2 LEGAL BACKGROUND

Briefly mention if the area or part of it is subject to any legal claim, or to any file open in that connection within the framework of an international body.

The area proposed here for protection as FRA lies in different jurisdictional zones. The western patch lies partially in the Spanish Territorial Sea and the rest of the proposal is on the 'Fisheries Protection Zone', declared by the Spanish government in 1997(see 7.1.1.). This last zone is likely to be claimed as Spanish Mediterranean Economic Exclusive Zone during the next years. Also, part of the FRA proposal is in the Contiguous Zone.

7.3 LEGAL PROVISIONS FOR MANAGEMENT

7.3.1. Zoning regulating the area

Briefly state if the legal text protecting the area provides for different zones to allocate different management objectives of the area (e.g. core and scientific zones, fishing zones, etc) and in this case the surface area of these zones. Include a map as an annex.

Not applicable

7.3.3. Legal competencies

Legal competence and responsibility with regard to administration and implementation measures

As already mentioned, the Spanish government has declared these waters under its jurisdiction, within the limits of the Spanish Fishery Protected Zone. As such, the area is both within the territorial sea (Ausias March), in the contiguous area (Ses Olives) and in the fishery protected zone (Ses Olives and Emile Baudot).

7.3.4. Other legal provisions

Describe any other relevant legal provisions, such as those requiring a management plan or any other significant measures concerning the protection and management of the area.

Not applicable

8 OBJECTIVES OF THE FRA AND PROPOSED MANAGEMENT MEASURES

8.1 OBJECTIVES OF THE FRA

State the reasons that justify the designation of the FRA

he seamounts of the Mallorca channel, according to data currently available, support a variety of marine habitats and communities that are important for the Mediterranean region, both on its hard and rocky bottoms as well as on its soft and sandy beds. Vulnerable habitats present here include coralligenous bio-concretions, maerl beds, *Leptometra phalangium* beds, *Gryphus* sp. beds and facies of *Isidella elongata*, whose protection against aggressive human activities is now urgent. Over 200 taxa and at least 32 protected species described to date, as well as other species, have been proposed for inclusion in protection lists due to their importance for the marine ecosystem. This area also harbours ecosystems that are vital for both pelagic and benthic species including bluefin tuna *Thunnus thynnus* and similar species, cetaceans, sea turtles and sharks, and species endemic to the Mediterranean such as the carnivorous sponge *Asbestopluma hypogea* which has been documented on these seamounts, as well as a variety of species of high commercial value.

All of the habitats and species described are exposed to the negative effects of human activities if they remain unprotected. These ecosystems must be included in a protection treaty that lays down the guidelines for the management of these communities and their use, if they are to be conserved. Protecting these seamounts and their ecosystems as an FRA could increase the marine richness in the area, conserving what may be the last healthy *Isidella elongata* beds in the Mediterranean, a sanctuary for a multitude of protected species and a recovery area for a variety of species of commercial value.

8.2 PROPOSED PROTECTION MANAGEMENT MEASURES FOR THE FRA

8.2.1. Management measures

Suggest management measures to be implemented in the FRA

- A closure of bottom trawling fishing activities in the described area
- Preparation of a detailed census of the number of vessels that fish in the area and the fishing gear used, in order to assess its impact on the area and implement appropriate actions to minimize it.
- Identify critical habitats for priority species in the proposed area and protect these habitats through the statement of additional fishing restrictions, according to the state of stocks.

8.2.2. Monitoring, Control and Surveillance measures

Suggest measures to effectively enforce the FRA

- Evaluate and monitor the status of available resources.
- Control and monitor human activities to avoid potential infractions and negative impacts on the proposed area. The monitoring and control systems currently in place at European Community (Council Regulation No. 1224/2009 of 20 November 2009) and Spain (Law 3 / 2001 of March 26) include sufficient capacity to ensure its implementation.
- Control and monitoring the fishing activities through a census of vessels authorized to fish in the area, through the VMS system.

8.2.3 Socioeconomic impact(s) of the FRA

Prevision of the socioeconomic impact(s) of the proposed measures

- Conserve and restore threatened ecosystems of importance for the Mediterranean.
- Increase catches for the entire fleet that operates in the Mallorca channel and beyond, thanks to the conservation of critical habitats present in the area that allows the regeneration of the species.
- Spread the importance of deep marine ecosystems protection, and the threats that endanger the Mediterranean marine biodiversity.

8.2.3.1. Economic evaluation of the ecosystems services (not only marketable)

Economic value of the goods and services that the ecosystem supports

The conservation of submerged elevations, as important areas for many pelagic and benthic species, provides benefits for fisheries, within and outside the protected area, for tourism, especially important in the Balearic Islands, or for recreational activities like diving or whale watching..

9 OTHER RELEVANT INFORMATION

Bibliography

Acosta, J., Muñoz, A., Herranz, P., Palomo, C., Ballesteros, M., Vaquero, M., Uchupi, E., 2001b. Pockmarks in the Ibiza Channel and western end of the Balearic Promontory (western Mediterra nean) revealed by multibeam mapping. Geo-Mar. Lett. 21, 123– 130.

Acosta, J., Munoz, A., Herranz, P., Palomo, C., Ballesteros, M., Vaquero, M. & E. Uchupi (2002a) Geodynamics of the Emile Baudot Escarpment and the Balearic Promontory, western Mediterranean, Mar Petrol Geol, 18 (3):349-369.

Acosta, J., Canals, M., López-Martínez, J., Muñoz, A., Herranz, P., Urgeles, R., Palomo, C., Casamor, J.L., (2002b). The Balearic Promontory geomorphology (western Mediterranean): morphostructure and active processes. Geomorphology 49, 177– 204.

Acosta, J., Ancochea, E., Canals, M., Huertas, M.J. & E. Uchupi (2004). Early Pleistocene volcanism in the Emile Baudot Seamount, Balearic Promontory (western Mediterranean Sea). Marine Geology. Volume 207, Issues 1-4, 30 June 2004, Pages 247-257.

Alemany, F., L. Quintanilla, P. Velez-Belchi, A. Garcia, D. Cortés, J.M. Rodriguez, M.L. Fernadez de Puelles, C. Gonzáles-Pola and J.L. López-Jurado. 2010. Characterization of the spawning habitat of Atlantic bluefin tuna and related species in the Baleric Sea (western Mediterranean). Progress in Oceanography 86:21-38.

Astraldi, M., Beckers, J.M., Chabert, d'Hières G., Crépon, M., Font J., Lehucher, P.M., Millot, C., Neves, R. & J. Tintoré. (1992). The Hydrodynamics of the Western Mediterranean Sea. The EUROMODEL Group. 2nd Workshop of the Mediterranean Targeted Project. Informe Final MAST-0043-C, 37 pp.

Ballesteros, E. (2003). The coralligenous in the Mediterranean Sea: Definition of the coralligenous assemblage in the Mediterranean, its main builders, its richness and key role in benthic ecology as well as its threats. Project for the preparation of a Strategic Action Plan for the Conservation of the Biodiversity in the Mediterranean Region (SAP BIO). UNEP-MAP-RAC/SPA: 87pp.

Bensch A., Gianni M., Gréboval D., Sanders J. S. & A. Hjort (2008). Worldwide review of bottom fisheries in the high seas. FAO Fisheries and Aquaculture Technical Paper. No. 522. Rome, AO. 2008. 145p.

Boudouresqeu C. F., Balles teros E., Ben Maiz N., Boisset F., Boulaidier E., Cinelli F., Cirik S., Comarci M., Jeudy de Grissac A., Laborel J., Lanfranco E., Lundberg B., Mayhoub H., Meinesz A., Panayotidis P., Semroud R., Sinnassamy J. M., Span A., Vuignier G. (1991) - Livre rouge "Gérard Vuignier" des végétaux, peuplements et paysages marins menacés de Méditerranée : IUCN et RAC/SPA Salammbô, G.I.S.-Posidonie, Marseille, Fr. : 1-250. http://www.com.univ-mrs.fr/gisposidonie/spip.php?rubrique26

Carbonell, A. (2005). Evaluación de la gamba rosada, Aristeus antennatus (Risso, 1816), en el Mar. Balear. PhD Dissertation, Universitat de les Illes Balears. 212 pp.

Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94

Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006

De Juan S, Lleonart J. A conceptual framework for the protection of vulnerable habitats impacted by fishing activities in the Mediterranean high seas. Ocean & Coastal Management (2010), doi:10.1016/j.ocecoaman.2010.10.005

Fautin, Daphne G. 2009. Hexacorallians of the World. http://geoportal.kgs.ku.edu/hexacoral/anemone2/index.cfm

Galarza, J. A., Carreras-Carbonell, J., Macpherson, E., Pascual, M., Roques, S., Turner, G. F. & Ciro Rico (2009). The influence of oceanographic fronts and early-life-history traits on connectivity among littoral fish species. PNAS, 106 (5): 1473–1478

García Rodríguez, Mariano (2004) La gamba roja "Aristeus antennatus" (Risso, 1816) (Crustacea, Decapoda): distribución, demografía, crecimiento, reproducción y explotación en el Golfo de Alicante, Canal de Ibiza y Golfo de Vera. Tesis Doctoral

García, A., Alemany, F., Velez-Belchí P., López Jurado, J.L., Cortés, D., de la Serna, J.M., González Pola, C., Rodríguez, J.M., Jansá, J. & T. Ramírez (2004). Characterization of the bluefin tuna spawning habitat off the Balearic archipelago in relation to key hydrographic features and associated environmental conditions. CGPM/ICCAT 7th Joint Ad-hoc meeting, May, Málaga, 2004.

Kitchingman, A., Lai, S., Morato, T. & D. Pauly (2007). How many seamounts are there and where are they located? Chapter 2 in Seamounts: Ecology, Conservation and Management, T. J. Pitcher, T. Morato, P. J. B. Hart, M. R. Clark, N. Haggan, and R. S. Santos, eds, Fish and Aquatic Resources Series, Blackwell, Oxford, UK.

LEY 3/2001, de 26 de marzo, de Pesca Marítima del Estado. Capitulo VI (del Título I) Control e inspección de la actividad de pesca mar.

Notarbartolo di Sciara, G., Agardy, T. 2009. Identification of potential SPAMIs in Mediterranean Areas Beyond National Jurisdiction. Contract N° 01/2008_RAC/SPA, High Seas. 70 p.

Orden ARM/2023/2010, de 14 de julio, por la que se modifica la Orden ARM/143/2010, de 25 de enero, por la que se establece un Plan Integral de Gestión para la conservación de los recursos pesqueros en el Mediterráneo. BOE nº 180 de 26 de julio de 2010.

Pinot, J. M., Tintore, J. & D. Gomis (1994) Quasi-synoptic mesoscale variability in the Balearic Sea. Deep-Sea Res Part I Oceanogr Res Pap 41:897–914.

Pinot, J.M., López-Jurado, J.L. & M. Riera (2002). The Canales experiment (1996-1998). Interannual, seasonal and mesoscale variability of the circulation in the Balearic Channels. Progress in Oceanography, 55, 335-370.

UNEP-MAP-RAC/SPA. 2008. Action Plan for the conservation of the coralligenous and other calcareous bioconcretions in the Mediterranean Sea. Ed. RAC/SPA, Tunis. 21 pp.

UNEP-MAP-RAC/SPA. 2010. Overview of scientific findings and criteria relevant to identifying SPAMIs in the Mediterranean open seas, including the deep sea. By Notarbartolo di Sciara, G. and Agardy, T. Ed. RAC/SPA, Tunis: 71pp.

Oceana´s related reports

Aguilar, R., Pastor, X. & M. Hernandez (2006). Tortugas. Migraciones y preferencias de hábitat de la tortuga boba en el Mediterráneo. Oceana-Fundación Biodiversidad. 44pp.

Aguilar, R. & X. Pastor (2007). The corals of the Mediterranean. Oceana-Fondazione Zegna. 85pp.

Aguilar R., de Pablo M. J. & M. J. Cornax (2007). Illes Balears. Propuesta para la gestión de hábitats amenazados y la pesca. Oceana - Obra Social Fundación La Caixa. 200 pp.

Aguilar R., Torriente A. & S. García (2008). Propuesta de Áreas Marinas de Importancia Ecológica. Atlántico sur y Mediterráneo español. Oceana - Fundación Biodiversidad. 132 pp;

Aguilar R. & A. Torriente (2009). Identification of areas of ecological importance in the Mediterranean Sea and proposals for their conservation (preliminary study). Oceana-MarViva Mediterranean Sea Project 2008. 50pp.

Aguilar, R. & E. Pardo (2009). Threatened species. Proposal for their protection in Europe and Spain. Oceana-Obra Social La Caixa. 120pp.

Aguilar, R. & Lastra, P. (2009). Bluefin tuna larval survey. Oceana-MarViva Mediterranean Project. 74pp.

Aguilar R., Pastor X., Torriente A. & S. García (2009). Deep-sea Coralligenous Beds observed with ROV on four Seamounts in the Western Mediterranean. In Oceana, The First Mediterranean Symposium on the Coralligenous and other Calcaereous Bioconcretions. Tabarka, Tunisia January 2009. UNEP RAC/SPA.

Aguilar R., Pardo, E., Cornax, M. J., García, S. & Ubero, Jorge (available from 2011). Seamounts 2010. Marine protected area proposal. Seamounts of the Mallorca Channel, Balearic Islands. Oceana.

10 RELEVANT ADDRESSES

(stakeholders (if applicable) and name(s), position(s) and contact address(es) of the person(s) that compiled the report and/or can provide further information).

Ricardo Aguilar
Research Directo – Europe
raguilar@oceana.org
Leganitos 47 6ª
28013 Madrid. Spain

Silvia García
sgarcia@oceana.org
Leganitos 47 6ª
28013 Madrid. Spain

T +34.911.440.880
F +34.911.890
www.oceana.org