



GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN

SCIENTIFIC ADVISORY COMMITTEE

REPORT OF THE SECOND SESSION OF THE SUB-COMMITTEE ON MARINE ENVIRONMENT AND ECOSYSTEMS

Rome, 15-18 May 2001

1. Opening of the Session

1.1. The Second Session of the GFCM/SAC Sub-Committee on Marine Environment and Ecosystems was opened by Mr Habib Ben Alaya, Secretary of the General Fisheries Commission of the Mediterranean, who welcomed the participants and wished them a successful meeting. Mr Amor El Abed, Coordinator of the Sub-Committee, summarized the conclusions of the meeting of the Working Group on Marine Environment and Ecosystems held in Palma de Mallorca (26-28 February 2001). He put emphasis on the need for the members of the Sub-Committee to fill in the forms that were designed for the collection of data on marine environment and ecosystems. Some delegates expressed concern about the difficulties that were encountered and the efforts that were required in filling these forms.

2. Adoption of the Agenda and Arrangements for the Session

2.1. The Working Group adopted the Agenda attached as Appendix A.

2.2. Mr Amor El Abed, Coordinator of the Sub-Committee, chaired the meeting. Ms Andreina Farrugia, Mr Kerim Ben Mustapha and Ms. Pilar Hernandez (from COPEMED) were elected reporters.

2.3. The meeting was attended by 22 experts, representing 8 countries. Observers from RAC/SPA, Shoreline and WWF also attended. The list of participants is attached as Appendix B.

3. Review of the Commission and SAC's recommendations for the Working Group

3.1. The Sub-Committee took note of the list of activities included in the Programme of Work of the Working Group for the last intersessional period (2000-2001) as identified by the Commission and its Scientific Advisory Committee which were as follows:

- To carry out a study on the spatial and temporal distribution on nursery areas, giving particular attention to the environmental and biotic features of such areas.
- To analyse the effects of environmental parameters on the recruitment processes for shared resources.
- To study the effect of fishing gear on non-targeted species.
- That member countries coordinate their national shark plans at the regional Mediterranean level within the framework of the FAO IPOA on sharks.

3.2. The Sub-Committee reviewed its mandate as adopted by the Second Session of SAC in 1999 which reads as follows:

- Establish links with existing regional bodies concerned with studies on the relationship/interaction between environment and marine ecosystems;
- Provide analysis of ecosystems trends and environmental conditions in relation to trends in fishery resources, biodiversity and genetic resources;
- Evaluate the impacts of human action on the marine ecosystem, including fisheries and propose measures that aim to limit the negative effect of these actions;
- Assess the relevance of international agreements on conservation and environment protection on Mediterranean fishery resources management.

4. Review of the Agenda Items

4.1 Review of the forms concerning bio-ecological considerations of the space/time distribution of the nurseries and the effect of the various environmental parameters on the recruitment process

4.1.1 As *accorded* in the last meeting in Palma de Mallorca (26-28 February) Mr Alberto Garcia presented for discussion the amended sheets (Appendix C and D), proposing a number of minor corrections and some improvements of draft forms. According to proposals by Mr Stirn, the Sub-Committee suggested that in order to assure a real value and a good use of data expected to be gathered and reported on tables concerning environmental and ecosystem conditions, the reporting parties be instructed as follows:

A) The areas for which the data are reported should be ideally determined as homogeneous oceanographic entities, or specific in-space-limited environments.

B) Compulsory, the following information should be provided along with any reported data:

- (a) Periods during which the data was gathered at sea, and the length of time-series that served as the base of means of ranges.
- (b) A brief description of analytic, measuring and observation methods applied.
- (c) The sources of reported data and the references of relevant publications and/or other data inputs
- (d) Sheets should contain the name and contact address of the responsible person that filled the forms written at the bottom of the sheet
- (e) With respect to the bio-ecological sheet, it was suggested to change its name to "Biological and Ecological Sheet". Mr. Sergi Tudela suggested to include a row on trophic level.
- (f) Certain aspects of the sheet were considered confusing and it was recommended that a glossary of terms explaining the information requested should be attached to the amended forms.

4.2 Review of the forms concerning the impact of fishing activities on marine ecosystems

4.2.1 A guide for filling the forms was elaborated by Raquel Goni. It will be revised by MS Goni and Ms Pilar Sanchez before the next SAC meeting (Appendix E). This guide would be attached later to the amended sheet. The amended sheet would include a line on Community Trophic Level as the previous sheet. It would also include the name of the responsible person for filling the sheet at the end of the page.

4.3 Review of other items

a) Establishment of links with existing regional and national bodies and NGOs

- 4.3.1 Several contacts have already been done with a number of national and regional organizations and related NGOs. So far, the Working Group has established fruitful contacts with RAC/SPA and WWF. As a result of these contacts, these NGOs and organizations are attending this meeting and cooperating with the Working Group.

b) Review of the on-going national shark plans

- 4.3.2 Mr Fabrizio Serena presented a document on the status of the application of the International Plan of Action on Sharks to the Mediterranean and proposals for coordinated initiatives aimed at further developments.
- 4.3.3 The participants introduced similar action plans in their countries. The Representative from Malta commented that sometimes it was very difficult to identify certain species. As proposed by the Working Group in the meeting of Palma, Mr Fabrizio Serena agreed to prepare a field guide for the identification of Mediterranean shark species. It will be based on the Morocco guidelines but will also include species which are specific to the Mediterranean. The Sub-Committee suggested to present a proposal to COPEMED to finance this work.
- 4.3.4 It was also suggested to try and collect relevant information from other organizations like ICCAT, COPEMED and ADRIAMED which have information on by-catch and that an effort be made to decrease illegal fisheries and their effects on some species.
- 4.3.5 The representative of RAC/SPA informed the meeting about the recommendation formulated by the National Focal Points for SPA meeting concerning the elaboration of an Action Plan for the conservation of cartilaginous fish species. He stressed the need for harmonising the initiatives of GFCM and Barcelona Convention on the subject.

c) Glossary of ecological and fishing-gear terms

- 4.3.6 Mr Relini presented a draft specific glossary of relevance to the mandate of this Sub-Committee. The terms are mainly related to ecology, protection and environmental issues. Members agreed to go through the glossary and send any proposals for amendments to Mr Relini. The amended glossary will then be forwarded to Ms Pereda who will add it to the glossary that will be presented at the next SAC meeting.

d) Selection criteria and national lists of vulnerable species.

- 4.3.7 Ms Raquel Goni presented the list of species in need of protection of the SPA Protocol and discussed the criteria used to prepare this list as well as the criteria of the IUCN for identifying endangered and vulnerable species. A proposal to use data-poor criteria to gather information on species potentially vulnerable was presented for discussion.
- 4.3.8 The representative of RAC/SPA informed the meeting that, as provided for by the SPA protocol, his organisation will contact relevant regional bodies and organizations with the view of elaborating common conservation measures and setting up criteria for the amendment of the Annexes II and III of the SPA protocol.
- 4.3.9 It was recommended that the Sub-Committee on Marine Environment and Ecosystems maintain close contact with the Secretariat of the SPA protocol in order to avoid duplication of work and carry out a common work on this issue.
- 4.3.10 Furthermore, the Sub-Committee agreed to pursue its efforts in order to collect from scientist all over the Mediterranean, basic data aiming at helping the setting-up of a list of potentially vulnerable species in relation to human activities. The subcommittee proposed to include this

issue in the Agenda for its next Working Group meeting and to invite some experts to join the group and help in the elaboration of a more comprehensive strategy to strengthen the SPA protocol list from a GFCM point of view.

e) Review of the list of related international agreements

- 4.3.11 Mr Relini presented a list of the main international agreements related to this Working Group. The Working Group agreed that during the next meeting, the texts of the Agreements should be made available to the Working Group. The representative from RAC/SPA offered to provide the chairman with the full texts.

f) Review of the list of main existing related research projects and synthesis of terminated ones

- 4.3.12 Mr Kerim Ben Mustapha presented a list of the main existing research projects related to the field of activities of the Sub-Committee. Some countries did not provide such list and the Sub-Committee urged these countries to do so at their earliest convenience.

- 4.3.13 In order to get this important information, the following persons agreed to provide it :

Malta:	Farrugia Andreina
Tunisia:	Ben Mustapha Kerim
Spain:	Garcia Alberto/Goni Raquel
Morocco:	Hilmi Kerim
Algeria:	Hacene Farouk
Slovenia:	Stirn Joze
Albania:	Mimoza Cobaru
France:	Bahri Tarub
Libya:	Hatig Huni Atig
Italy:	Otello Giovanardi
WWF:	Sergi Tudela
RAC/SPA:	Chedly Rais
COPEMED:	Pilar Hernandez

- 4.3.14 It was suggested that the persons in charge should provide the Sub-Committee with a list of related research projects and that they should send a summary of their main results to the Chairperson of the Sub-Committee.
- 4.3.15 A Representative from WWF presented a document entitled "The ecosystem-based approach for fisheries" and provided an example about the practical application of the Trophic Level concept. It was commented that some of the new methodologies based on the study of trophic webs could be used as a source of complementary information to the methods currently applied for resources management.
- 4.3.16 A Representative of SHORELINE presented a communication entitled: "The Mediterranean Marine Gap Analysis" project which has the objective of producing an overview of marine and coastal natural features along the whole Mediterranean Basin to support effort of the WWF International Mediterranean Programme Office.
- 4.3.17 RAC/SPA made a brief presentation on the project for the preparation of a Strategic Action Plan for the conservation of biodiversity in the Mediterranean region (SAP BIO).
- 4.3.18 Mr Camiñas gave an update of the GFCM management units proposal. A final document will be presented at the next SAC meeting.

5. Recommendations adopted by the Sub-Committee

5.1 Recommendations by the Sub-Committee to the Working Groups.

- Amended forms as agreed during the meeting are to be provided before the SAC meeting with a guide of terms explaining how the forms should be filled and send it as soon as conveniently possible to the coordinator of the SC.
- Contacts with some other projects, specially with MEDAR, MEDATLAS (Alberto Garcia), MEDPOL (Chedly Rais) and national meteorological services (Focal points of SAC) for providing data.
- Information presented to this Sub-Committee must be the most recent and most complete data and should be collected through direct contacts with experts in that areas.
- Regarding cartilaginous fishes, Mediterranean scientists are urged to collaborate in the implementation of a regional POA, which should take into account the POA to be adopted by the contracting parties to the Barcelona Convention and should consider socio-economic impact of such management measures

5.2 Recommendations and Conclusions by the Sub-Committee to the Scientific Advisory Committee

- Given recent and ongoing development concerning the ecosystems based management concept, the Sub Committee recommends either to create a transversal working group or to organise, jointly with RAC/SPA and CBD (Convention on Biological Diversity) Secretariat, a workshop to discuss methodological aspects and scientific initiatives for its introduction in the Mediterranean.
- Countries, through their research Institutions should agree on a one-week meeting each year devoted to the completion of the 3 forms. During this one-week meeting to be held in each country, researchers should be available and connected through Internet. This week meeting should be held at the same period every year.
- Countries should be urged to activate tools for the establishment of national POA for sharks, focused on management and conservation of cartilaginous fishes.
- To invite COPEMED to finance the edition of a field guideline for cartilaginous fishes.
- Countries should give special attention to the adoption of the GFCM recommendations related to driftnet and those still using this fishing gear should conduct scientific studies on the impact of this gear on the marine ecosystem
- In order to constitute a comprehensive database on on-going and finished relevant projects on fisheries and marine environment, countries are invited to collaborate more actively and send the required information.
- Apart from the effects of fishing on the marine ecosystems, it is recognised that fisheries may also be affected by pollution, eutrophication, biotoxicity.... The SC recommended to further discuss this issue.

6. Proposals for meetings/workshops for the next intersessional period (June 2001-June 2002) (listed by priority)

Priority	Activity	Objectives	Place	Date
1	Working Group	To review the progress of the recommendations of the SC to the Working Group	Tunisia	Feb. 2002
2	Workshop	Ecosystem-based approach	Tunisia (tentative)	Feb. 2002 (tentative)

7. Any other matters

7.1. RAC SPA proposed to submit a working document on the effect of marine reserves on fisheries and on the involvement of fishermen in the management of MPA. It was agreed that Ms Goni, who coordinated an EU project on this subject, will send to RAC SPA the conclusions of that project. The Subcommittee proposed to include the issue in the agenda of its next meeting.

7.2. COPEMED informed that, based on a common project with INSTM related to the edition of a document on marine protected areas and artificial reefs, a letter of agreement was just signed with the University of Alicante for this purpose.

8. Adoption of the report

8.1. The report was adopted on 18 May 2001. The documents presented during the sessions will be available in the Web site: <http://www.copemed.ua.es>

LIST OF APPENDIXES

- A.** Agenda
- B.** List of participants
- C.** Environmental conditions form
- D.** Biological and ecological form
- E.** Form of the impact of fishing activities on ecosystems

AGENDA

1. Opening of the meeting
2. Elaboration of the terms of reference of the sub-committee as approved by the SAC
3. Review and adoption of standards and definitions - terminology
4. Management Units and Operational Units: considerations from the environmental and ecosystem point of view
5. Status of the existing information: Inventory of existing working groups, research centres and projects related to fisheries effects on the Mediterranean ecosystems.
6. Environmental aspects related to juveniles and larvae of target species in Mediterranean fisheries.
7. Catches of non-target species and fishing gear used
8. Research recommendations
9. Work Programme for the intersessional period
10. Other matters
11. Adoption of the report

APPENDIX B

LIST OF PARTICIPANTS

Name	Institute/Country	Tel/Fax/Email
Mimoza COBARU	Fishery Directorate Minsitry of Agriculture and Food Tirana Albania	Tel: +355 42 22 882
Farouk HACENE	Ministère de la pêche Algérie	Tel: +213 21 43 31 64/73/74/75 Email: mprh@wisal.dz
Tarub BAHRI	IFREMER, Nantes (à partir de juin 2001) MEDSUDMED (à partir de Sept. 2001) France	Email: tarubb@yahoo.com
Fernando DINI	Dipartimento di Etologia, Ecologia, Evoluzione Università di Pisa Italy	Tel: +39 050 24252 Fax: +39 050 24252 Email: t.dini@deee.unipi.it
Franco ANDALORO	ICRAM-STP-PD Via Omerico Amari 124 Palermo Italy	Tel: +39 091 611 4044 Fax: +39 091 611 4060 Email: androlorf@tin.it
Stefano CATAUDELLA	Università degli Studi de Roma "Tor Vergata" Italy	Email: cataudel@uniroma2.it
Giovanardi OTELLO	ICRAM-Chioggia Loc. Brondolo 30015 Chioggia Italy	Email: otgivan@tin.it
Fabrizio SERENA	ARPAT- Livorno Via Marradi 114 57100 Livorno Italy	Email: f.serena@arpato.toscana.it
Patrizia JEREB	ICRAM- Roma Via di Casalotti 300 00166 Roma Italy	Email: pajereb@tin.it
Gianna FABI	IRPEM-CNR Largo Fiera della Pesca 60125 Ancona Italy	Tel: +39 071 20 78 825 Email: fabi@irpem.an.cnr.it
Saul CIRIACO	Shoreline Area Science Park Padriciano 99 Trieste Italy	Tel: +39 04 022 43 96 Email: saul@shoreline.it

Giulio RELINI	Universita di Genova Italy	Tel/Fax: +39 01 024 77537 Email: biolmar@unige.it
Andreina FARRUGIA	Department of Fisheries and Aquaculture Malta	Tel: +356 65 09 33 Fax: +356 65 93 80 Email: andreina.farrugia@magnet.mt
Joze STIRN	Ministry of Agriculture Ljubljana Slovenia	Tel/Fax: +386 5 674 54 28
Pilar HERNANDEZ	Project FAO-COPEMED University of Alicante C/ Ramón y Cajal 2 03001 Alicante Spain	Tel: +34 96 514 59 79 Email: pilar.hernandez@ua.es
Raquel GONI	Centro Oceanografico de Balears Aptdo. 291 07080 Palma de Mallorca Spain	Tel: +34 971 40 15 61 Email: raquel.goni@ba.ieo.es
Alberto GARCIA	Centro Oceanografico de Malaga Apdo. 285 29640 Fuengirola Malaga Spain	Tel: +34 952 47 69 55 Fax: +34 952 46 38 08 Email: agarcia@ma.ieo.es
Sergi TUDELA	WWF/MedPo Pere Verges, 1 08020 Barcelona Spain	Tel: +34 93 305 62 52 Email: studela@atw-wwf.org
Karim BEN MUSTAPHA	INSTM 2025 Salammbô Tunisia	Tel: +216 1 730 420 Fax: +216 1 732 622 Email: karim.benmustapha@instm.rnrt.tn
Chedly RAIS	UNEP Mediterranean Action Plan Regional Activity Centre for Specially Protected Areas Tunis Tunisia	Tel: +216 1 79 57 60 Fax: +216 1 79 73 49 Email: car-asp@rac-spa.org.tn
Amor EL ABED	INSTM 28 Rue 2 Mars 1934 Salamambo 2025 Tunisia	Tel: +216 1 73 05 48 Fax: +216 1 73 26 22 Email: amor.elabed@instm.rnrt.tn
Habib BEN ALAYA	FAO Rome	Tel: (+39 06) 57056435 Fax: (+39 06) 57056500 Email: habib.benalaya@fao.org

TROPIC LEVEL CONCEPT

The trophic level concept refers to a given ontogenetic stage of a species and is defined as follows:

$$TL_j = 1 + \sum_{i=1}^n P_{ij} \cdot TL_i \quad (\text{the } TL \text{ value for phytoplankton and detritus is set to } 1)$$

TL_j : Trophic level of the species j

TL_i : Trophic level of the prey species i

P_{ij} : is the relative presence of species i in the diet of the species j (on a weight basis)

Specific TLs could also be estimated through the analysis of stable N isotope ratios

The weighted average of specific TLs referring to catches or communities (TL) are valuable ecological indices useful to monitor processes.