ASSESSMENT AND MONITORING OF THE FISHERY RESOURCES
AND ECOSYSTEMS IN THE STRAITS OF SICILY

MiPAF

MedSudMed

GCP/RER/010/ITA

Report of the Second Meeting of the Coordination Committee

Salammbô, Tunisia 11–13 February 2004

MedSudMed Technical Documents No.6
GCP/RER/010/ITA/MSM-TD-06

Mazara del Vallo (Italy), December 2004

The conclusions and recommendations given in this and in other documents in the *Assessment and Monitoring of the Fishery Resources and Ecosystems in the Straits of Sicily* Project series are those considered appropriate at the time of preparation. They may be modified in the light of further knowledge gained in subsequent stages of the Project. The designations employed and the presentation of material in this publication do not imply the expression of any opinion on the part of FAO or MiPAF concerning the legal status of any country, territory, city or area, or concerning the determination of its frontiers or boundaries.

Preface

The Regional Project "Assessment and Monitoring of the Fishery Resources and the Ecosystems in the Straits of Sicily" (MedSudMed) is executed by the Food and Agriculture Organization of the United Nations (FAO) and funded by the Italian Ministry of Agriculture and Forestry Policies (MiPAF).

MedSudMed promotes scientific cooperation between research institutions of the four participating countries (Republics of Italy, Libya, Malta and Tunisia), for the continuous and dynamic assessment and monitoring of the status of the fisheries resources and the ecosystems in this area of the Mediterranean.

Research activities and training are supported to increase and use knowledge on fisheries ecology and ecosystems, and to create a regional network of expertise. Particular attention is given to the technical coordination of the research activities between the countries, which should contribute to the implementation of the Ecosystem Approach to Fisheries. Consideration is also given to the development of an appropriate tool for the management and processing of data related to fisheries and their ecosystems.

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GCP/RER/010/ITA Publications

The MedSudMed Project publications are issued as a series of Technical Documents (GCP/RER/010/ITA/MSM-TD-00) related to meetings, missions and research organized by or conducted within the framework of the Project.

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ABSTRACT

The Second meeting of the Coordination Committee of the MedSudMed Project (Assessment and monitoring of the fishery resources and the ecosystems in the Straits of Sicily) was attended by representatives of participating countries (Tunisia, Malta, Libya, Italy) and other interested parties. The meeting sought to present and discuss the results of the activities carried out by the Project referring to the period September 2002 - December 2003. The outcome to date on all field research activities and strengthening national capacity building was presented, relative to the main areas of Project activity: spatial distribution of demersal resources in the Project area and the influence of environmental factors and fishery characteristics, small pelagic fish: stock identification and oceanographic processes influencing their abundance and distribution, marine protected areas as a tool for fisheries management. In particular, the results of the related expert consultations were presented, as well as the regional experts recommendations on the activities to be implemented in the next future. As a result, the work plan for the coming period was commented and approved by the participants who discussed issues touching working methodology, field work to be conducted, data processing and training in the field and at laboratory. The importance of standardizing the methodologies was stressed and considered fundamental for the Project purposes. The Project was encouraged to organize cooperative field research to provide information at regional level. The meeting was also updated on the achievements related to the regional database and information system. Future developments regarding the finalization of several modules were agreed upon and considered highly relevant by the delegates. The delegates expressed their satisfaction with the work achieved to date and with the work plan adopted and encouraged the Project to make every effort to continue strengthening the scientific cooperation between the participating countries.

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Report of the Second Meeting of the Coordination Committee

Salammbô, Tunisia, 11–13 February 2004

Opening of the meeting and election of the Chair (Agenda Item 1)

1. The second Meeting of the Coordination Committee of the FAO MedSudMed Project "Assessment and Monitoring of the Fishery Resources and Ecosystems in the Straits of Sicily" was held in Salammbô, Tunisia, from 11 to 13 February 2004 and was hosted by the Institut National des Sciences et Technologies de la Mer (INSTM). The Meeting was attended by representatives from the participating countries, the Republics of Italy, Libya, Malta and Tunisia, the Representative of the FAO Sub-Regional Office for North Africa, a representative of the FAO Marine Fishery Resources Service, the Secretary of the General Fisheries Commission for the Mediterranean (GFCM), a representative of the European Commission, a representative of the FAO Regional Project CopeMed as well as staff of the FAO MedSudMed and FAO AdriaMed Projects.

2. The Meeting was declared open by the Director of the host Institute, Mr Ridha M'Rabet, who welcomed all the Coordination Committee Meeting participants on behalf of the Tunisian authorities, thanking each member country for the cooperation and the achievements in the context of MedSudMed. A brief introduction was made to the INSTM, its laboratories, facilities and research activities; emphasis was put on the fact that in the context of cooperation with the MedSudMed Project there is full support from the INSTM to the Project activities.

3. The floor was passed to the FAO Representative from the Sub-Regional Office for North Africa, Mr Mustapha Sinaceur, who extended his greetings to the Committee emphasising that the presence of all the participating countries confirms not only the ever increasing importance of scientific cooperation in the Mediterranean, but also the role of FAO as a forum for facilitating exchanges of expertise and knowledge in this crucial sector. It was further underlined that the activities of MedSudMed contribute not only to the Project area but also to the achievement of global objectives as defined in the Reykjavik declaration on responsible fisheries and the marine ecosystem. The FAO Representative remarked further that the international call to adopt the Ecosystem Approach to Fisheries has set new challenges for the Mediterranean countries. Recent developments in fisheries science recommend a more holistic approach to fisheries management taking into particular consideration the environmental factors and their role in marine productivity and hence on forecast accuracy. In this context it is hoped that MedSudMed activities will contribute to the responsible and cooperative management of the fishery resources, which is paramount to the sustainability of the area, concentrating on expanding and using the knowledge required for the responsible management of the living marine resources.

4. The MedSudMed Coordinator took the floor, expressing his gratitude to the INSTM for hosting the meeting and thanking the participants for their attendance; he then briefly introduced the points of the Agenda. The Coordinator reminded the participants that for the Project this meeting represents an important occasion in which to evaluate, discuss and give guidance on the Project activities. A brief presentation was made of the activities of the Project since its last meeting and the general areas of Project intervention. The overall objectives of the Project as well as the main aspects discussed and decisions taken

during the first Coordination Committee meeting were recalled. The methodological approaches in which the Project activities are established were presented. Reference was made to the cooperation of the Project with the other FAO Regional Projects, AdriaMed and CopeMed.

5. The Director of the host institute was proposed as Chair for the meeting with the full agreement of the Committee.

Adoption of the Agenda (Agenda item 2)

6. The Agenda was adopted with no changes.

Report on the Project's progress (Agenda item 3)

7. The Project staff presented the document "Report on the Project's Progress" (CC/02/02), the Committee was informed that the document describes the activities for the programme referring to the period September 2002 - December 2003, as approved during the previous Committee Meeting. The three main areas of activity and the related Expert Consultations (ECs) that were held in the inter-committee period were described (Spatial distribution of demersal resources in relation to environmental and fishery characteristics; small pelagic fish, stock identification and oceanographic processes influencing their abundance and distribution; marine protected areas (MPAs) and fisheries management). It was recalled that the Expert Consultations aimed, among other things, to gather the available regional scientific knowledge for each Project component, to identify gaps in the scientific knowledge and the criteria for data collection as well as the needs concerning national and regional training. The results of the standardization workshop and of the technical meetings were also given as well as the initiatives that have been launched to promote capacity building within the Project area.

8. During the inter-committee period the Project organised three Expert Consultations and two regional workshops that have seen the participation of a total of 134 experts coming from 17 different institutions, producing four Technical Documents in which 45 scientific papers presented during the consultations are included. The Committee was also informed that in order to have a wide dissemination of the Project results, the MedSudMed Publications are now issued as series of Technical Documents and are included in the monitoring list of AdriaMed (ASFA International Partner).

9. The Committee was informed that further details of the results of the Expert Consultations and workshop carried out by the Project are given in the Info documents 2-7 in the meeting folder.

10. The advances made by the Project in the inter-committee period were noted with satisfaction by the Committee; it was underlined that such regional cooperation further strengthens the common efforts being made towards resource appraisal and fisheries management

11. The Project staff also presented achievements related to the regional Database and Information System (Ref.CC2/04); this was further detailed by the FAO FIRM

Backstopping officer who presented the achievements in the context of the development of the Corporate Database and the first applications (Data Entry Module and Data Management Module). The Meeting was reminded that the aim of this system is to create an application for the management, analysis and representation of data relative to fishery resources, their environment and monitoring in the Project area. The key information would concern biological aspects of the resources, environmental parameters, fishery statistics and accessory data. The primary motivation is to standardize, aggregate and analyse the data, with the further goal of exporting them onto a Geographical Information System (GIS). The meeting was also informed that the Project is studying the possibility of including a bibliography in the Information System, under the form of papers, abstracts and lists of references. The user will be able to extract and post bibliographic information. The Committee noted that, in relation to the three main areas of Project intervention as described, the regional Information System is considered transversal.

12. All national representatives expressed their appreciation for the work being carried out through these activities. The importance of using the same methods for data collection was underlined. It was also underlined for the benefit of this Project Component that the development of the system so far has focused on the data collected for demersal resources, and that historical data needs to be gathered on small pelagic fish and MPAs.

13. There was some discussion on the type of data to be collected for the Information System and appreciation was expressed of the dynamic method developed by MedSudMed in order to aggregate readily available data. Further information is given in the meeting document CC2/info6, the report of the meeting on National Data and Information Aggregation Scheme (Rome, July 2003).

14. The relevance of data collection for the Project activities was highlighted by the participants and it was recalled that the MedSudMed Information System was conceived to receive both field data to be collected in the framework of the Project and historical data. The importance of historical data in providing background information and the basis for forecasts was underlined. Any gaps that may appear in the on-going data inventories were considered to be useful for the definition of future data collection on the field.

15. As an update regarding this component during this first period, participating institutes briefly presented the results of the on-going National Data and Information Aggregation Scheme. It was recalled that the exercise was carried out according to the terms of reference that were drawn up during the technical meeting on this issue (CC2/info6 refers).

16. In Malta, experts from five institutes and one independent expert participated in the National Data and Information Aggregation Scheme (1. Marine Ecology Research Group – University of Malta, 2. International Ocean Institute – Malta Operational Centre, 3. Meteorology office, 4. Malta Environment and Planning Authority, 5. Malta Centre for Fisheries Sciences (MCFS), 6. Insular Coastal Zone Dynamics Institute – Foundation for International Studies). The experts completed the work in January 2004, in accordance with the terms of reference laid down in the agreement made during the technical meeting in Rome (July 2003). Extracts of the resulting compilation on national data and information, which includes, *inter alia*, reports, data (in various formats), descriptions of models, software and databases, literature and study inventories, together with information on links to other relevant international databases, were presented to the

meeting. The Maltese representatives stated that the MCFS looked forward to transferring all the available data and information gathered to the MedSudMed database and information system in the near future.

17. The involvement of the MCFS in the development of the Software for the Exploratory Analysis of Trawl Information in the Mediterranean (SeaTrim) in collaboration with IRMA-CNR, Marine Living Resources Assessment (MaLiRA) Group (Italy) was also announced. The main function of SeaTrim is to act as a database and processing tool for trawl survey data with a spatial option which allows the user to select the area of study. Further development, with the possible involvement of MedSudMed, may continue towards creating facilities for the identification of fish assemblages and integrating GIS tools. The possibility of linking SeaTrim to the MedSudMed Information System was also discussed.

18. The Maltese representatives also reported that during 2003 two trawl surveys (Medits and Grund) were carried out in collaboration with IRMA-CNR using the agreed MedSudMed standards.

19. In Tunisia, the inventory forms are being completed and trawl surveys dating from 1999 were included in the inventory; this information is contained in the "Application Resources" (developed with the Copemed Project) and will be included in the National Data and Information Aggregation Scheme. The work on other types of data (echo surveys, abiotic environmental parameters) is in progress and will be continued.

20. In Libya, historical data were listed and put on a CD-Rom. Publications of the Marine Biology Research Centre (MBRC) were also gathered, as well as the results of the bilateral activities conducted with Tunisia. A recent trawl survey was conducted from August to October 2003 from the Egyptian border to Misurata, covering 1500 km of coast, on board the Greek R/V "Philia" and following the Medits protocol. Data of the 2003 survey are still being processed, but they can be considered useful information that can be included in the national inventory. The meeting was informed that it has been planned to conduct a trawl survey in 2004. Regarding echo-surveys, no programme is planned yet.

21. The meeting was informed that in Italy information on trawl surveys conducted since 1985 is being gathered to be centralized in a computer devoted to the MedSudMed Information System. Data and information provided by past projects on discarded fauna will also be included in the inventory. Data related to echo-surveys are also being listed and will be gathered in the near future.

Development and guidelines for the Project's programme for the next period (Agenda item 4)

22. All participating institutes agreed that the next step of the work they have undertaken would be to identify the link with the MedSudMed Information System by collaborating directly with the Project. Agreed data of national databases should be exported in the regional data base format. To achieve this, the suggestion was made that individual meetings be organized with the Project staff in order to test the Data Base developed and study the possibility of transferring the agreed national information into the regional

system format. One year was deemed necessary for the testing of the system, making the technical modifications and producing reports. Therefore, it was decided that this work would start after 15 March and should be achieved before the Scientific Advisory Committee (SAC) Sub-committees to be held mid-May. After the individual meetings (one full month of work), a joint Working Group could be organized, at a date to be defined.

23. It was recalled that this component is composed of various on-going parallel lines of work (national Database, regional Database, web interface), based on technical development of the different elements of the Information System. One of the roles of the consultations was to discuss and define the parameters to be included in the Information System, a goal which has been partially achieved. However, the technical programming is going ahead and special effort will be made for Libya, for which the structure of the regional Database will be adapted at National level, considering that data collection has already started in Libya.

24. For the next period, the finalisation of the demersal resources component of the Information System is planned together with the development of the component regarding small pelagic fish. Because of its transversal nature, it was agreed that the MPAs component would be carefully studied after the development of the first two components.

25. The main aspects of the Project work programme for the coming period were presented by the Project staff. Reference was made to the Document CC02/03. The members were informed that the activities proposed were identified on the basis of the recommendations coming from the different MedSudMed Expert Consultations and the Workshop organized by the Project and following the indications of the first Coordination Committee meeting. For each one of the Project components (demersal resources; small pelagic fish and marine protected areas), the proposed activities include research studies, workshops and training courses. The activities should also take into account the following: the existing knowledge and expertise present in the countries; the on-going national research programmes with the inclusion of further specific matters; the extension of the on-going surveys as far as possible to some pilot areas that are not yet covered; the harmonisation and standardisation of the scientific methodologies applied (including data processing methods); the implementation of training and seminars on specific topics for each component.

26. The general outline of the activities was briefly presented in data sheets and put in a logical framework, each one showing background, objectives, methodological approach, activities to be implemented, the relation with the on-going national and regional research activities, expected outputs, Geographical Sub Areas (GSAs) covered and required research training, working groups and research activities.

27. The Committee discussed the content of the proposals, in particular the necessity of harmonizing and standardizing the methodologies used for the data collection and analysis during the field research activities was stressed, as this is considered fundamental for the Project purposes. This issue was considered relevant for the promotion of scientific cooperation among the MedSudMed countries. In this perspective, the Committee was informed that different workshops and working groups were proposed by the regional experts and considered propedeutic for the field research.

28. With particular reference to the demersal resources, the planning of a workshop on standardization of methodologies for biological parameters was agreed on, as well as on growth and age determination and determination of length at first maturity. The plan of the workshop will focus mainly on an exchange of methodology and experience between the researchers who will work together during the Project activities and will be based on the experience matured so far by MedSudMed during the "*Workshop on Standardization of trawl survey protocol in the Project Area"* (Ref. CC2/Info5).

29. The representative of the CopeMed Project informed the participants that the Project is organizing a training workshop on growth and age determination planned in April-May 2004 in Ifrane, Morocco. The training would be held in French and will involve researchers from Algeria, Morocco and Tunisia. The Committee advised the MedSudMed Project to consider the possibility of co-organisation if the scientific targets of any initiatives overlap.

30. In the perspective of implementing cooperative field research, the Committee encouraged the Project in the organisation of joint trawl surveys and echo-surveys. The 2004 calendar of the R/V "Hannibal" was presented for the surveys in the different GSAs. Despite a full timetable for the vessel, the possibility of cooperation at sea in November 2004 was offered in order to cover a pilot area to achieve MedSudMed goals. The meeting took note of this proposal and it was agreed to take advantage of this possibility to go ahead with the organization of an international collaborative trawl survey.

31. The joint trawl survey between Italian and Maltese waters is planned for summer and Autumn 2004, and the possibility to carry out these activities at precisely the same time with the other MedSudMed countries will be taken into consideration. Echo-surveys in the Italian waters are covered by the national programme and the possibility to cover a pilot area in Maltese waters could be supported by the Project. The added value of such pilot activities was underlined with the example of the echo-survey held in the context of the AdriaMed in a limited area between three participating countries, which has since led to the establishment of a proposal for a large-scale acoustic survey that will cover the whole Adriatic Sea in the framework of the EC Interreg Programme

32. Training on board was also discussed by the Committee, and it was agreed that researchers would be whenever possible supported by the MedSudMed Project for their participation in the surveys at sea on board the research vessels involved in MedSudMed cooperation. This training was judged relevant in prevision of the forthcoming national programmes for data collection to be implemented in the Project area in 2004.

33. The Libyan representative appreciated any possibility for on-the-job training, as well as joint exercises that could be conducted in common areas to all four countries. He renewed his willingness to study any possibility of cooperative surveys that can be conducted and offered a suggestion that the first trawl survey exercise conducted in the framework of MedSudMed could cover a pilot area in international waters, producing data that can be shared, discussed and developed together. This possibility will be investigated by the Project.

34. The Committee expressed its satisfaction with this type of initiative, which promotes the exchange of experience and expertise between participating institutes and gives the opportunity for researchers to conduct fieldwork together.

35. The Committee agreed that, given the suggestions made during the meeting and following the work already carried out in the Expert Consultations, feasibility studies would need to be carried out by the project in the short term to determine the best way to conduct a cooperative, pilot trawl survey activity during 2004 using the established methodology.

36. The Committee approved the programme of work presented by the Project for the next phase. The calendar of the activities will be adjusted in accordance with the indications of the Committee.

37. The Meeting was reminded that decisions on the future are drafted in the reports of the Expert Consultations and the details, although important, are for technical meetings; the present task being the approval or adjustment of the MedSudMed approach to the very complex issues in hand. The Scientific Coordinator recalled that MedSudMed is considered a springboard for cooperation, an umbrella under which mutual collaboration can take place, the Committee was therefore called upon to evaluate the Project at its current stage in order to provide sharper guidelines for the coming period and the countries should express their judgment on the role of MedSudMed in the implementation of the ecosystem approach to fisheries in a cooperative context. The Committee should also produce recommendations for the Administrations in order to stimulate support for cooperative exchange

38. The Maltese representative commented that one of the main objectives of this Project was to get the four participants around a table to discuss the conservation of fish stocks in coherence with the ecosystem-based approach. This objective has been attained and has produced very good results in this first period of existence of the Project. This quadrilateral cooperation has led, through discussion, to the identification of problems. It has led for the first time to the consultation of experts who have agreed on how to resolve these technical problems. This resulted in very detailed papers on how to reach a fully homogeneous situation while studying fish resources; these papers list all the activities suggested by the various experts on what is necessary to complete the process in the future. In this first period the Project has achieved a lot: the benefits arising out of MedSudMed appear to be considerable. Up to now it has identified the problems but it needs also to identify the way to resolve these in the next period. Keeping in mind the fact that the GFCM will become executive in the near future and that its SAC will need homogeneous results to prepare the necessary management measures for the commission, the SAC will take great advantage from the standardized systems that the Project is establishing. This also adds to the considerable achievements of the Project. All the countries agreed on this comment.

39. The Libyan representative mentioned the recent reorganization of the MBRC and the new plans that have been put in place. He expressed his satisfaction with the work plan adopted by the Committee and reiterated his willingness to collaborate with the MedSudMed Project in order to meet both national and regional requirements.

40. The Italian representative expressed his satisfaction for the work carried out by the Project so far that, at this stage, is coherent with the mandate expressed during the first Coordination Committee. Furthermore he underlined how this Project represents an opportunity for scientific and international cooperation among the countries.

41. The Tunisian representatives concurred with the positive evaluations expressed. In particular it was commented that the Project activities permit, among other things, the pooling together of experts from different countries and through this the identification of the main priorities for the research activities aiming to conserve and manage the fishery resources. The Project was encouraged to make every effort to strengthen the scientific cooperation between the participating countries.

42. The GFCM Secretary thanked the MedSudMed Project and the Tunisian authorities for their kind invitation to participate in the second Coordination Committee meeting. While reviewing the outputs for the intersessional period, he expressed great satisfaction with the amount and the quality of the work achieved. In particular he attended to the fundamental contributions of MedSudMed to the work of the SAC, especially its Sub-Committee on Marine Environments and Ecosystems (SCMEE), which will benefit significantly from the methodological experience emanating from the pilot exercise. The GFCM Secretary expressed the wish that Project results likely to guide SCMEE towards specifying ecosystem approach to fisheries management in the Mediterranean, be presented to the SAC Sub-Committee at its next session. The first results regarding the MedSudMed Information System will hopefully be presented at the Sub-Committee on Information and Statistics.
43. The Committee encouraged MedSudMed to maintain this methodological approach that is not only focused on specific target fish species, but also includes an ecosystem-based consideration in the activities, with particular attention to the biotic and abiotic components. It was recognised that this approach represents a key challenge for MedSudMed to keep it abreast with the main stream of current fisheries science.

44. The Project was invited to consider supporting the participation of regional experts in the ICES Symposium on Quantitative Ecosystem Indicators for Fisheries Management to be held in Paris 31 March – 3 April 2004. This participation would serve to raise the profile of MedSudMed internationally and to learn from experiences of other projects and experts working in the field of an ecosystem approach to fisheries.

Other matters (Agenda item 5)

45. AdriaMed and CopeMed announced and distributed the recent technical documents released by the two FAO Regional Projects.

Date and venue of the next Coordination Committee meeting (Agenda item 6)

46. Upon the kind invitation of the Libyan representatives, the next Meeting of the MedSudMed Coordination Committee will be held in Tripoli. The date will be communicated in due time. This proposal was welcomed by the Meeting participants.

47. This report was adopted on 13th February 2004.

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Agenda

1. Opening of the meeting and election of the Chair
2. Adoption of the Agenda
3. Report on the Project's progress
4. Development and guidelines for the Project's programme for the next period
5. Other matters
6. Date and venue of the next Coordination Committee meeting

List of Documents

FAO-MedSudMed: *CC2/01*	Provisional agenda
FAO-MedSudMed: *CC2/02*	Report on Project's Progress (*September 2002-December 2003)*
FAO-MedSudMed: *CC2/03*	Development of the Project's Programme: priorities identified and activities scheduled for the next period
FAO-MedSudMed: *CC2/04*	Progress report on Database and Application Components – MedSudMed Fishery and Ecosystem Information System (MSM FEIS)
FAO-MedSudMed: *CC2/Info1*	List of Participants
FAO-MedSudMed: *CC2/Info2*	MedSudMed. 2003. Report of the First Meeting of the MedSudMed Coordination Committee. FAO-MiPAF Assessment and Monitoring of the Fishery Resources and Ecosystems in the Straits of Sicily. GCP/RER/010/ITA/MSM-TD-01. *MedSudMed Technical Documents,* 1: 57 pp.
FAO-MedSudMed: *CC2/ Info3*	MedSudMed. 2003. Report of the Expert Consultation on Spatial distribution of demersal resources in the Straits of Sicily and the influence of environmental factors and fishery characteristics. GCP/RER/010/ITA/MSM-TD-02. *MedSudMed Technical Documents,* 2 *(draft copy)*
FAO-MedSudMed: *CC2/ Info4*	MedSudMed. 2003. Report of the Expert Consultation on Marine Protected Areas and Fisheries Management. GCP/RER/010/ITA/MSM-TD-03. *MedSudMed Technical Documents*, 3 *(draft copy)*
FAO-MedSudMed: *CC2/ Info5*	MedSudMed. 2003. Report of the Workshop on Standardization of trawl surveys protocol in the Project Area. GCP/RER/010/ITA/MSM-TD-04. *MedSudMed Technical Documents,* 4 *(draft copy)*
FAO-MedSudMed: *CC2/ Info6*	MedSudMed Meeting on National Data and information aggregation scheme (Rome, Italy, 28-30 July 2003) Office memorandum GCP/RER/010/ITA/OM-M/09
FAO-MedSudMed: *CC2/Info7*	MedSudMed. 2003. Report of the Expert Consultation on Small pelagic fish: stock identification and oceanographic processes influencing their abundance and distribution. GCP/RER/010/ITA/MSM-TD-05. *MedSudMed Technical Documents*, 5 *(draft copy)*
FAO-MedSudMed: *CC2/Info8*	List of Documents

Report on Project's Progress (September 2002 – December 2003)

Introduction

This paper summarises the activities carried out by the MedSudMed Project between September 2002 and December 2003. The activities originate from the work programme approved during the 1st Coordination Committee meeting held in Rome, Italy, 19-20 September 2002 (GCP/RER/010/ITA/MSM-TD-01, document CC2/info2 refers) and represent the follow-up to that meeting.

During the 1st Coordination Committee meeting an operative programme was agreed upon and its implementation was scheduled. It was decided that the MedSudMed Project would be organized around three main components dealing respectively with:

(i) Spatial distribution of demersal resources and the influence of environmental and fishery characteristics

(ii) Marine Protected Areas (MPAs) and fisheries management

(iii) Small pelagic fish: stock identification and oceanographic processes influencing their abundance and distribution

For each one the Project organised an Expert Consultation aiming to gather the available knowledge for each component, identifying gaps in the scientific knowledge, the criteria for data collection and the need for national and regional training.

Furthermore, a fourth component (iv), considered transversal to the previous three, focuses on the creation of a Database and on the establishment of a regional Information System able to store, analyse and represent the main parameters describing fish stocks, their environment and the fisheries depending upon them.

The intersessional period saw the Project launch a range of initiatives to promote capacity building within the Project area. As well as the activities related to the main Project components as described above, the Project organized further technical meetings and supported regional experts' travel and study in external contexts.

The Project also participated in a range of regional meetings as organized by the FAO Regional Projects AdriaMed and Copemed, GFCM, UNEP-MAP and other bodies.

Since the last meeting of the MedSudMed Coordination Committee, the first Technical Documents of the Project were drafted in order to initiate the dissemination of Project results and achievements.

Full details on all the activities are summarized in the following pages.

1. Project Components

In accordance with the expected output described in the Project Document and with the decisions made by the Coordination Committee members at their first meeting, in the intersessional period the activities of MedSudMed concentrated on the organization of one Expert Consultation for each component for which some follow-up activities were also implemented.

A total of three consultations, one workshop and one technical meeting were carried out by the Project during the inter-committee period. A total of 134 participants coming from 17 different institutions attended these encounters. During the meetings 45 technical papers were presented by the participants; these meetings were attended by regional experts from the scientific communities of the participating countries and from other relevant institutions. The meetings also took advantage of the participation and technical support of the other FAO Regional Projects, AdriaMed and Copemed.

Each component was conceived in such way as to include field research, training and data processing. However, because of the overlapping of some issues, the components are separate but cannot be totally independent, efforts have therefore been made to promote the interaction between components by taking into account the transversal issues.

In particular the Consultations aimed to:

- Provide a synthesis and overview of the existing knowledge and data for each specific component in the MedSudMed study area.
- Discuss and identify a list of target species relevant for the research activities to be implemented by the Project. The species were those with a particular economic or ecological importance and were chosen according to national needs and on-going studies, and taking into account the GFCM priority list[1].
- Identify gaps in the scientific knowledge related to the issue addressed during the Consultation.
- Identify the activities and methodology to fill the gaps: feasibility studies and/or activities to be conducted to improve knowledge on relationships between biotic and abiotic environment and distribution, abundance and life history of the fishery resources.
- Identify pilot study cases according to national needs and activities as well as on-going studies.
- Provide an overview of the regional and national expertise and identify training needs and feasibility.
- Create a regional, multidisciplinary network of experts, to be involved in the MedSudMed activities related to each Expert Consultation.

[1] Updated at the 6th GFCM-SAC meeting in Thessalonica, Greece, 30 June -3 July 2003 (FAO Fisheries Report No. 714)

1.1 Spatial distribution of demersal resources in the Project Area and the influence of environmental and fishery characteristics.

Summary of the Expert Consultation

The first Expert Consultation on Spatial Distribution of Demersal Resources was held in Malta from 10 to 12 December 2002, involving 28 experts representing 11 institutions. Eighteen technical papers were presented by the participating national and international experts, providing an overview of the available knowledge on demersal resources in the Project area, in terms of spatial distribution of the main species, available biological parameters, characteristics of biotic and abiotic environment in particular areas.

The available knowledge and data were synthesized by four working groups respectively on (i) spatial distribution of target species, (ii) biocenosis, (iii) fishing pressure in the Project Area and (iv) abiotic environment data. Each group produced a short report listing the existing data in each institution as well as the remaining gaps for each issue that is considered relevant for the spatial distribution of the demersal resources in the MedSudMed Project area, together with recommendations on how to fill them. The main gaps were found to include a) the absence of a consistent regional data set allowing spatial analysis, b) the lack of seasonal data covering relevant biological periods, c) the lack of information on feeding and reproduction grounds, d) the absence of geo-referenced data on fishing effort, e) the scarcity of information on fish communities and habitat mapping, f) the lack of high resolution data on sediments and biotopes. (Details are available in the Project Technical Document GCP/RER/010/ITA/MSM-TD02, document CC2/info3 refers).

Recommendations

The activities to be coordinated and developed by the participating institutions were discussed together with proposals for training courses and methodology standardization.

In particular it was recommended to:

- Draw single thematic maps for the identification of specific areas in which to carry out pilot studies, both using existing data and for the collection of new data/information;
- Adopt a common cartographic standard at regional level, using the same projections and interpolation methods;
- Take into account data provided by other fishing gears such as longlines, gillnets, traps and trammel-nets to overcome the lack of samples in non-trawlable areas;
- Promote data collection according to standardized protocols in order to increase knowledge on:
    - Spatial distribution of the priority species
    - Characteristics of the biocenosis in the Project area and thus produce a regional map giving the types of biocenosis according to a standardized classification (*i.e.* by the use of sonar, video, grab sampling, …)
    - Sediment types and biotypes characterizing the bottoms in the Project area (acoustic surveys to collect information on the bottom)

    - Hydrological characteristics of the area by conducting current measurements
    - The characteristics of the fleets and the spatial distribution of the fishing effort (*i.e.* Blue box, Log books, Biological indices)
- Standardize both the data sampling procedures and data processing methodologies, in particular regarding:
    - Trawl surveys data
    - Biocenosis data (which should be processed using RAC/SPA terminology)
    - Remote sensing data which should have standardized formats to allow data exchange
- Collate existing data on biocenosis, *e.g.* list available data, standardize them according to RAC/SPA classification and merge them in order to highlight zones where information is missing.
- Promote the standardization of data formats, in order to put them in a database showing a common format that would facilitate the management and exchange of the information.
- Develop indices of environmental conditions to be applied for fisheries recruitment and population dynamics.

As a first follow up to the Expert Consultation, the following was achieved:

- Workshop on standardization of trawl surveys protocols

The Workshop on "Standardization of trawl survey protocol in the MedSudMed Project Area" was held from 5-9 May 2003 at the Istituto per le Risorse Marine e l'Ambiente (IRMA-CNR) in Mazara del Vallo, Italy, with representatives of institutes from all participating countries attending. The scope of the seminar was to present existing sampling designs and data processing procedures adopted in on-going monitoring trawl surveys, compare them and agree on common methodologies based on existing ones. Each participating institute presented the status and aim of its fisheries research activities addressing the following points: planning of activities at sea and fishing gears, processing of the catches and biological samples, biological information on target species, identification and discussion of further data sampling and measurements, data management and processing. The protocol used for the different steps of bottom trawl surveys in each institute was presented in plenary session; thereafter, different working groups met in separate sessions to examine, add and agree on specific and detailed methodologies for each issue.

- Meeting on National Data and information aggregation scheme

The meeting on "National Data and Information aggregation scheme" (Rome, 28-30 July 2003) was organized to discuss the format and type of information to be inventoried and collected at national level and to organize related activities. The participants synthesized briefly the availability, format and management of the data existing in each research institute and gave an overview of the National Databases that are currently used.

The meeting provided the terms of reference for data collection, an agreement on the structure, type and format of the data to be collected and a general schedule of the activities to be carried out in each institute. An update on the MedSudMed Information System was also presented to the participants.

1.2 Marine Protected Areas and Fisheries Management

Summary of the Expert Consultation

The Expert Consultation on Marine Protected Areas and Fisheries Management was held from 14 to 16 April 2003 in Salammbô, Tunisia and was hosted by the "Institut National des Sciences et Technologies de la Mer" (INSTM). Twenty-eight experts attended the meeting, as well as experts from the FAO-Copemed Project, UNEP RAC/SPA and IUCN. The objective was to explore aspects dealing with Marine Protected Areas (MPAs) in the Project Area, in the attempt to achieve a synthesis of existing knowledge and activities dealing with MPAs, with particular attention to fisheries management, and to explore which comparative studies could be conducted in the framework of the MedSudMed Project. Fifteen scientific contributions were presented touching different issues, among which an ecological description of protected zones, proposals for future protected areas, socio-economic studies related to fishing closure and the legal framework of protected areas. Definitions of terms to be used were also discussed. (Details are available in the Project Technical Document GCP/RER/010/ITA/MSM-TD03, document CC2/info4 refers).

Recommendations

The experts underlined the existing gaps in the knowledge that need to be filled in view of implementing MPAs as a tool of fisheries management. The suggested steps to follow were discussed: 1) establish the spatio-temporal dynamic and status of the fisheries resources inside and outside the area identified, particular attention must also be given to issues dealing with abiotic environment as well as biodiversity including knowledge of biocenosis present in the area; 2) description of the fishing effort and pressure exerted inside and outside the area (in space and time); 3) on the basis of the above, identify clear objectives for fisheries management, technical measures to be adopted and the monitoring programme including biological, environmental and socio-economic aspects.

The experts underlined the lack of guidelines on the use of MPAs as a tool for fisheries management specific to the Mediterranean, and suggested MedSudMed could focus on filling this gap as one of its activities by organizing a working group on this issue, also involving RAC/SPA. One of the objectives would be to study the adequacy of existing regulations for the creation of Marine Protected Areas. It was agreed to identify zones in which to conduct pilot studies.

Further recommendations included:

- The enhancement of the knowledge on spatial distribution of fish, and the localization of spawning and reproduction grounds: this topic overlaps with issues dealt with in the Project's component on demersal resources. Therefore, it was recommended to make every possible effort to take advantage of activities implemented in the framework of the component on demersal resources.
- The enhancement of GIS technology, in particular regarding temporal components

- The evaluation of the efficiency of MPAs as a management tool by monitoring the fish biomass in recently closed areas, for example.
- The carrying out of socio-economic studies dealing with the implementation and the effect of protected areas
- Training on data collection and processing using new technologies (remote sensing, GIS and so forth)
- The activities implemented in the framework of the MedSudMed Project should be used a springboard by the institutes to submit practical proposals to improve fisheries management. It was also strongly recommended to take advantage of these activities to enhance institutional capacities, by putting an accent on the improvement of expertise through training programmes.

1.3 Small pelagic fish: stock identification and oceanographic processes influencing their abundance and distribution

Summary of the Expert Consultation

The meeting was attended by 19 experts from 5 institutions in the Project area, as well as representatives of the FAO Regional Projects AdriaMed and Copemed.

Fourteen communications were presented; they covered issues such as results of stock assessment done by echo-surveys in the Project area, spatial distribution of the main target species, results on the acoustic identification of small pelagic fish species, reproductive strategy and reproductive biology (reproductive cycle, maturity stages, age and growth), small pelagic fisheries, spatial distribution and modelling of fishing effort, influence of meteorological and hydrological parameters on small pelagic fish. The experience of the AdriaMed Project in promoting international cooperative research on shared small pelagic stocks of the Adriatic Sea was presented. Finally, the main results of the Workshop on "Environmental variability and small pelagic fisheries in the Mediterranean Sea" (organised by the Copemed Project, June 2001, in Mallorca, Spain) were summarized.

The priority list of species that future activities should concentrate on was discussed according to the GFCM priority species list, economic and ecological importance and taking into account the peculiarities of each country.

A short synthesis of gaps in the knowledge on the biotic and abiotic parameters and oceanographic processes influencing the distribution and abundance of small pelagic species was made. The main gaps identified concern: the migration of adults, transport of eggs and larvae and the effect of abiotic factors. Many data are presently collected during the echo-surveys, but they remain insufficient to conduct ecosystem-based studies. The lack of inter-disciplinary studies in the area remains one of the main gaps. A series of proposals was discussed (details are given in the Project Technical Document GCP/RER/010/ITA/MSM-TD05, document CC2/info7 refers), dealing with (i) spatial distribution and stock assessment of small pelagic fish populations, (ii) biologic and genetic studies, (iii) eggs and larvae, (iv) relationships between biotic and abiotic factors and life cycles of small pelagic species, (v) fisheries analysis and catch and effort data. No functional database managing acoustic data resulting from echo-surveys to date is available.

Recommendations

The regional experts present at the meeting recommended further studies the Project could concentrate on:

- Conduct a survey covering portions included in all the MedSudMed Geographical Sub Areas in order to have a regional biomass estimation as well as an idea of the distribution of the stock at regional level;
- Calculate common Acoustic Target Strength relationships to be used in the near future in the region.
- Organize a training course on growth and age determination which should include issues discussed during the Expert Consultation on demersal resources (Malta, December 2002).
- Conduct genetic studies focusing on sardine and anchovy for the identification of stock units.
- Standardize the methods used when studying reproduction strategy, especially the length at first sexual maturity and the partial and/or annual fecundity which will be determined jointly in order to have relevant values at regional level.
- Create a Working Group on echo-survey sampling design standardization and echo-survey planning supported by MedSudMed.
- Organise joint surveys mixing researchers from different institutions.
- Produce a protocol to identify spawning and nursery areas, and estimate recruitment by using daily egg production and mortality.
- Extend the study on spatial repartition of fishing effort conducted in Tunisia to the whole Project area.
- Study relationships between biotic and abiotic factors and life cycles of small pelagic species by taking into account temperature, salinity, fluorescence, CTD measures, wind regime and oxygen.
- Couple remote sensing data to biological data; a calibration could be performed on a specific area to have an estimate of the primary production.

2. Database and Information System

According to the Project Document, one of the objectives of the MedSudMed Project is to produce "an operational computer-based "modular package" with the capacity to store, analyze and present in tabular or graphic form, all the basic data and mathematical-models concerning the principal parameters used to describe the changing status over time of the main fish-stocks, their environment and the fisheries depending upon them". Therefore, during the preparatory phase of the Project, the conceptual design of the MedSudMed Database and Information System was finalized and presented to the Coordination Committee members at their first meeting, at which the general architecture the level of confidentiality and accessibility were discussed.

The activities regarding this issue foreseen for the intersessional period included the refining and discussion of the system's architecture with the regional experts. Discussions and

activities related to the Database and Information System started with the first Expert Consultation on demersal resources (Malta, December 2002) and were pursued during each encounter with experts organized by the Project (Expert consultations, workshops, technical meetings).

The Information System includes several modules or interfaces, which are being developed: a) a corporate data base including, b) among other things, public data, c) a GIS interface and a web interface. Details are available in the related document (CC2/04 refers) and in the Project Office memorandum GCP/RER/010/ITA/OM-M/09, document CC2/Info6 refers).

3. National capacity building

National capacity building is one of the main Project components. It focuses on the full-time involvement of scientists from the participating countries in the Project's overall research and development programme, ensuring that the output produced shall be useful to each beneficiary country individually in a national context and jointly in the whole Project Area. The Expert Consultations also represented the opportunity to identify the needs in terms of seminars, training and study tours.

The Expert Consultation on Spatial Distribution of Demersal resources highlighted the real need for data standardization among the participating countries. Experts strongly suggested organizing standardization seminars in order to harmonize existing data and sampling designs for data yet to be collected. As a result, the Project organized a regional seminar for the standardization of the trawl surveys sampling design and data processing.

The Project also supported the study tour of an expert from INSTM at Hull University (Hull, United Kingdom, 1 November 2003 to 31 January 2004). The aim of the trip was to perform data processing in the framework of a study on the spatio-temporal distribution of small pelagic species along the Tunisian coasts, using acoustic and environmental data.

Furthermore experts from the participating institutes were invited to join the Seminar on Fishing Capacity Definition, Measurement and Assessment organized by the FAO AdriaMed Project (Fano, Italy, 24-25 October 2002). The Seminar focused on the characteristics of Mediterranean fisheries, the participants were fishery biologists, economists, managers and representatives of the fishery associations.

4. Regional Cooperation

The reinforcement of regional cooperation is being encouraged by the Project through participation of regional experts in several workshops, meetings, seminars and conferences organized in the Mediterranean area. Relations were constantly maintained with the researchers and the Institutes of the Project area for the discussion of the Project's activities, planning and organization of the working groups, and comments on the documents produced by the Project. Invitation was also made to other regional Projects to participate in meetings organized by the Project in order to promote the technical cooperation between Projects and take advantage of their experience and the results already obtained.

In particular the Project:

- ✓ Supported the participation of regional experts in meetings relevant to MedSudMed activities and organised by other Regional Projects or Mediterranean bodies.
- ✓ Participated in the 11th Copemed Steering Committee (Casablanca, 20-21 February 2003), where MedSudMed activities were presented.
- ✓ Attended the 3rd Advisory Committee Meeting of the UNEP-MAP project for the preparation of a Strategic Action Plan for the Conservation of Biological Diversity in the Mediterranean Region (SAP-BIO) (Tunis, 24-25 January 2003).
- ✓ Attended the conference on Ecosystem approach to Fisheries organized by the Maltese APS Bank.
- ✓ Participated in the SAC Sub-Committee Working Groups on Marine Environment and Ecosystems held 27-28 March in Tunis, Tunisia, where the Project presented the advances on environmental databases inventory.
- ✓ Participated in the SAC Sub-Committees on Marine Environment and Ecosystems and on Stock Assessment that met in Nicosia, Cyprus, 3-6 June 2003. An update on activities of the MedSudMed Project with particular attention to the results of the Expert Consultation on Marine Protected Areas and fishery management and on Spatial Distribution on Demersal Resources were presented respectively to these two Sub-Committees.
- ✓ Participated in the SAC Sub-Committee Working Group on pelagic species held 12-14 March 2003 in Tangier, Morocco, where the MedSudMed activities were presented.
- ✓ Participated in the 28th GFCM meeting held in Tangier, 2003 in which the aims of MedSudMed were recalled and the participants were informed on the activities carried out during the intersessional period.

Furthermore AdriaMed and Copemed Projects participated in the Expert Consultations organized by the MedSudMed Project.

5. Project Communication

5.1. Technical Documents

Several technical documents are being reviewed by the Project, they are related to the encounters organized by the Project (Expert Consultations and workshop). The documents contain a report on the discussions held during the meeting, with the activities proposed by the experts and their recommendations. Written contributions of the experts are also included under the form of articles, methodological suggestions or summaries. Internal reviewing between co-authors was organized for each published article, in order to promote exchanges between authors and ensure the articles were corrected by experts of the same field.

The MedSudMed Project Publications are issued as series of Technical Documents (GCP/RER/010/ITA/MSM-TD-00) related to meetings and research organised or conducted within the framework of the Project. The MedSudMed Serial will be included in the monitoring list of AdriaMed (ASFA International Partner).

The following documents have been published or are being finalised:

MedSudMed. 2003. Report of the MedSudMed Expert Consultation on Spatial distribution of demersal resources in the Straits of Sicily and the influence of environmental factors and fishery characteristics. GCP/RER/010/ITA/MSM-TD-02. *MedSudMed Technical Documents,* 2. 102 pages.

MedSudMed. 2003. Report of the MedSudMed Expert Consultation on Marine Protected Areas and Fisheries Management. GCP/RER/010/ITA/MSM-TD-03. *MedSudMed Technical Documents*, 3. 110 pages.

MedSudMed. 2003. Report of the MedSudMed Workshop on Standardization of trawl surveys protocol in the MedSudMed Project Area. GCP/RER/010/ITA/MSM-TD-04. *MedSudMed Technical Documents,* 4. 60 pages.

MedSudMed. 2003. Report of the MedSudMed Expert Consultation on Small pelagic fish: stock identification and oceanographic processes influencing their abundance and distribution. GCP/RER/010/ITA/MSM-TD-05. *MedSudMed Technical Documents*, 5. 150 pages.

5.2. Web site (http://www.faomedsudmed.org)

The MedSudMed website was published and all counterparts were informed. The presentation of the databases available on the website was improved and all information was updated. An "events and news" area has been added, informing users on the recent or forthcoming meetings, workshops and events organised by the Project.

A MedSudMed mailing list, as well as a web monitoring system, has been realized.

The structure of the MedSudMed website includes:

- ✓ A general description of the MedSudMed Project
- ✓ Information on the recent or forthcoming meetings, workshops, organized by the Project
- ✓ Links to the Research Institutes which participate in the MedSudMed Project, to Mediterranean Regional Projects as well as some links to sites regarding GIS, databanks and Research Bodies.
- ✓ MedSudMed mailing list system.

Developments of the Project programme: priorities identified and activities scheduled

The aim of this paper is to give the Coordination Committee members some elements for the discussion of the Project work programme for the coming period and to put the Committee in a position to give advice to the Project for further activities to be carried out. The priorities and future activities were identified during the different Expert Consultations organized by the Project; they are presented in order to receive appraisal and guidance from the Coordination Committee.

The Expert Consultations have established a framework which the Project is utilising as a springboard in the organisation of its activities. Each Consultation allowed the Project: to identify the status of scientific knowledge for the different disciplines present in the Project area; to identify the research priorities and related presence of expertise; to identify the training requirements and the need for the definition of the Project activities. Furthermore the Consultations permitted the pooling together of experts from the participating institutions in the region in order to establish a multidisciplinary scientific network and reinforce the cooperation among the countries. On the basis of the results of the Consultations, the Project is initiating implementation of some research activities, workshops and training courses on specific topics.

In particular, during the coming period, the Project could concentrate on:

Increasing scientific knowledge on fisheries resources and their ecosystems in the Project area through the implementation of research activities:

a) Standardising the methodologies of relevant studies related to the relationships between fishery resources and biotic and abiotic factors.

b) Building National Capacity in terms of expertise, through *ad hoc* workshops, on the job training and also through training established in cooperation with the other FAO Regional Projects.

c) Continuing the implementation of a Regional Data Base and Information System regarding the main aspects related to fisheries resources and the biotic and abiotic environment.

d) Strengthening cooperation at Mediterranean level and between the MedSudMed Project, the GFCM and the other FAO Regional Projects.

All of the above activities are in line with the main objective of the Project that focuses on "*supporting the scientific communities of the participating countries in the development of a monitoring system for fisheries resources and marine ecosystems*".

A number of medium-term to long-term activities that could be implemented by MedSudMed are indicated in Annex 1, in which the general outline of research and training programmes identified by the Consultations are listed.

a) Increasing scientific knowledge

The Consultations highlighted the relevant expertise and existing knowledge in the Project area related to the main components of the Project (Spatial distribution of demersal fishery resources, small pelagic fishery resources, Marine Protected Areas for Fishery Management). On this basis the regional experts formulated a series of research priorities and training courses, which aim at filling the gaps identified. Taking into account the national expertise and national research programmes, the activities implemented by the MedSudMed Project will take advantage of the existing national research programmes with the inclusion of some specific original research activities considered relevant for the study of the fisheries resources and their ecosystems. In particular an evident aspect the national research programmes highlighted is that, in order to have information at regional level, it is necessary to extend the on-going surveys as much as possible to areas that are not covered at the moment by the different, existing scientific surveys.

The research activities and training courses to be implemented in the context of the MedSudMed Project are listed in Annex 1. The proposals are briefly presented in tables showing the background, objectives, methodological approach and a tentative timetable. The proposals include studies, research and training on: the spatial distribution of pelagic and demersal resources in relation to environmental parameters, collection and processing of biological data at regional level, enhancement of knowledge on stock units, analysis of fisheries sector and spatial distribution of fishing effort, studies on Marine Protected Areas as fisheries management tool.

The Project, in accordance with budget availability and priorities, will follow up with the research and work programmes identified by the Consultations. The research could be carried out by the institutions which form the MedSudMed scientific network; in some cases experts will be involved on the basis of their individual capacity. The research and work programmes proposed could start gradually from March 2003.

The results obtained will be issued in the MedSudMed publication series. Dissemination of the results will be guaranteed by the Project in the counterpart countries, the regional scientific institutions and the scientific and technical committees of the GFCM. The information will be disseminated as hardcopies and as documents available on the website; all documents will also be entered into ASFA. Whenever possible, the results will be presented at relevant technical meetings and national and international symposia.

b) Methodology standardization

In implementing the foreseen activities, all experts consulted agreed on the importance of harmonizing the methodologies used and standardizing the existing data when the case applies. Therefore, particular attention could be paid to the standardisation of the sampling designs, in order to be able to extend the prospected areas. Moreover, in line with the GFCM-SAC general recommendations, accent could be put on the harmonization of data and data processing methods in order to obtain valid results at regional level. As a result, several working groups are proposed for the coming period:

- Age and growth determination
- Methodology and calculation of length at first maturity of small pelagic fish and demersal fishery resources
- Standardization of echo-surveys sampling design
- Determination of small pelagic fish Target Strength/length relationship

c) <u>Building National Capacity in terms of expertise</u>

The full involvement of scientists from the Participating Countries in the Project activities in some cases will require seminars and training. These will be considered both for the implementation of research activities and in the efforts to standardise scientific methodology. Consequently, for all the scheduled activities considered by the Project (Annex 1), the enhancement of national capacity will also be carried out through seminars and training as indicated.

In particular, the following could be implemented:

- An on-the-job training course during the echo-survey and an eggs and larvae campaign for the small pelagic fisheries resources (including data processing and analysis)
- An on-the-job training course during the trawl survey campaign for the assessment of demersal fisheries resources (including data processing and analysis)
- Seminars on age and growth parameters determination
- Seminars on genetic studies on the fish stock units.

The Workshops scheduled for the standardisation of methodologies will be conducted using as a model the one already carried out on trawl survey protocols. Furthermore, other *ad hoc* training focusing on specific requirements from the Institutes could be considered; some training could also be arranged in cooperation with the other FAO Regional Projects. The organisation of such meetings and training sessions will be considered in accordance with availability of equipment, tools and laboratories.

d) <u>Regional Data Base and Information System</u>

The Project component that concerns the establishment of a Regional Information System could continue towards:

- The development of the corporate database: the results of the data and information inventory conducted by each institute will be taken as a basis, as well as the requests of the experts. Therefore, following the decisions taken during the technical meeting on National Data and Information aggregation scheme (Details are available in the Project Technical Document GCP/RER/010/ITA/OM-M/09, document CC2/Info6 refers), pending Letters of Agreement should be finalised, and signed, so that computers centralizing the information can be purchased and installed in each institute. This would also allow the Project to test the prototype of the corporate database during the coming period.

- The development of the data analysis application: existing applications could be adapted according to the experts' requests and when the case applies, new modules will be developed, in particular regarding the interface with Geographic Information Systems.
- The finalization of the web interface: output to be put online (maps, processed data, documents, and so on) will be discussed with the participating institutes. Their level of accessibility will be set according to the confidentiality of the information contained.

e) Strengthening cooperation at Mediterranean level and between the MedSudMed Project, the GFCM and the other FAO Regional Projects.

Supporting cooperation at regional and sub regional level is one of the relevant tasks on which the activities of the Project are concentrating. MedSudMed will continue its close cooperation with the other two FAO Regional Projects. In particular MedSudMed could cooperate with AdriaMed and Copemed in the organisation of Workshops such as the one on the "Determination of length at first maturity" and the one on "Growth and age determination", thus taking advantage of the experience gained by the other two FAO Regional Projects.

In the context of cooperation with the GFCM, MedSudMed will participate in the SAC activities. All the relevant output and results of the Project will be presented to the Working Groups and Sub-Committee meetings at which the participation of the Regional experts will be supported. In particular, cooperation will be promoted with the Sub-Committee on Marine Environment and Ecosystems, to which during the Sixth Session of the SAC held in Thessalonica it was recommended to take into account the information provided by MedSudMed in the implementation of research activities coherent with the Ecosystem approach to Fisheries.

Annex 1: General outline of research, Workshops and training programme identified by the MedSudMed Consultations.

Programme	**Spatial distribution of demersal resources in the Project area and the influence of environmental factors and fishery characteristics**

Overall Objective	To describe the spatial distribution of demersal resources in the Project area and the factors explaining it, including biotic and abiotic environmental parameters and fisheries characteristics.
Background Rationale	Despite the management frameworks adopted, very little information is available on the distribution of demersal resources in the Project area. In this context, trawl surveys have been regularly conducted in the Project area by the different institutes since 1985, in order to enhance knowledge on the spatial distribution of demersal populations at various stages of their life cycle. However, sampling designs and protocols used to date differ and do not allow a homogeneous spatio-temporal analysis of the data, due to the absence of a coherent regional data set. As a result, experts of the region highlighted the importance of standardizing the methodologies to fill the remaining gaps in knowledge on spatio-temporal variability of fish distribution at regional level, in particular regarding fish communities, feeding grounds and habitat mapping. Besides, in the absence of seasonal data covering relevant biological periods, key knowledge on reproduction grounds of the main target species is still missing in the Project area, as well as the description of the main physical processes influencing the abundance and distribution of early life stages. Finally, for many areas a relevant gap remains on the quantification and spatial distribution of fishing effort, considering the absence of geo-referenced data on this issue. A common approach as well as standardized methodologies and protocols are needed to fill the gaps highlighted and obtain valid results and information at regional level.
Methodological approach	Combined trawl surveys with environmental measurements. Extension of the on-going trawl surveys to include new areas and addition of sediment sampling. Different life stages of the agreed priority species will be considered (recruits, juveniles, adults), and a component will focus on the identification of the stock units. All the relevant socio-economic information related to the fishery activities and fishing pressure in the area studied will be gathered. Whenever necessary, the organisation of working groups involving representatives of all participating institutes, to discuss, standardize, prepare activities to be implemented,
Activities	- Discuss, prepare and agree upon regional standardized methodologies and protocols to be used in the data inventory, collection and processing - Create an inventory and collect existing data and information available in the participating institutes in order to extract background information to be used as preliminary basis for further studies - Execute joint trawl surveys in pilot areas in order to cover representative portions of the Geographical Sub Areas included in the Project Area - Prepare common data sets including biological, environmental and sediment data following the standardized protocols prepared and agreed upon by all institutes involved - Carry out data compilation and processing to produce validated results at regional level, using already existing data and data provided by standardized trawl surveys: o Identification and description of the spatial distribution of the target species agreed upon by the participating institutes by calculating and mapping the density index for each species *(Merluccius merluccius, Mullus barbatus, Mullus surmuletus, Trachurus trachurus, Pagellus erythrinus, Helicolenus dactylopterus, Parapenaeus longirostris, Aristaeomorpha foliacea, Nephrops norvegicus, Eledone cirrhosa, Sepia officinalis, Octopus vulgaris, Raja clavata)* o Processing of sediments and biological samples to identify and classify the main biocenosis in the Project area possibly using the standard terminology of RAC/SPA o Description of the fish assemblages of demersal resources according to bathymetry, biocenosis and substratum
	o Analysis of the stock unit based on biological parameters and genetic markers: data elaboration in order to provide information on the genetic structure of selected populations

	○ Growth and age determination of selected species based on standardized methodology using otolith reading ○ Calculation of the length at sexual maturity of selected species - Analysis of the fisheries sector and of the spatial distribution of fishing effort in the Project area, where possible on the basis of the available information.
Relations with the on-going national and regional research activities	National surveys are conducted annually and geo-referenced data are processed routinely for the mapping of the resources and for age reading. Local information exists on relationships between biomass concentration and oceanographic processes, as well as on the spatial distribution of fishing effort
Expected Outputs	- Standardized sampling and data processing protocols to be used at regional level - Full inventory of existing data and information regarding relevant issues and mentioning the availability of the information - Regional biomass estimation and distribution of the stocks at regional level - Single thematic maps for each target species and relevant environmental factors - Mapping of benthic ecosystems/habitats in the Project area - Localization of spawning and nursery areas and relationships with physical processes - Characteristics of the main fish assemblages and relationships with habitats and physical processes - Definition/Calculation of standard parameters relevant for biological knowledge and for fisheries management - Delineation of the main stock units and identification of the shared stocks in the Project area
GSA Covered	As far as possible, the pilot activities mentioned above will be conducted in representative portions of the Geographical Sub Areas covered by the Project
Research Institutions involved	INSTM, IRMA-CNR, MBRC, MCFS and other relevant institutions that could be invited to give scientific support on specific matters
Required training, working groups research activities and timing	- Workshop on standardization of trawl survey protocols - Workshop on standardisation methodologies - Workshop on growth and age determination based on otolith reading - Working Group on determination of length at sexual maturity for selected demersal species: definition of standard protocol for the collection of representative samples and the statistical processing of the data - Seminar on common cartography and mapping of demersal resources density index, and description of fish assemblages - Seminar on stock unit identification - Cooperative trawl surveys

Programme	**Small pelagic fish: stock identification and oceanographic processes influencing their abundance and distribution**

Overall Objective	To estimate abundance and spatial distribution of small pelagic fish at regional level, considering also early life stages distribution pattern in relation to environmental parameters and fishery characteristics.
Background Rationale	Small pelagic fish populations are generally characterized by significant fluctuations in their abundance, and this probably affects the spatial distribution of the stocks. This variability has also an economic incidence on fisheries depending on these resources. The lack of information on regional assessment of small pelagic fish biomass was underlined on repeated occasions. Moreover, important gaps in knowledge on the possible migration of the species, stock units and relationships with environmental conditions still need to be filled. To date, several studies have been conducted on these issues in the Project area, using different sampling designs and software, and data have been collected regularly since 1998. Yet, enhancing knowledge on these issues at regional level implies the use of standardized protocols for any data collection and processing. This appears a pre-requisite for the obtaining of any useful result for management purposes. A common approach as well as standardized methodologies and protocols are needed to fill the gaps highlighted and obtain valid results and information at regional level.
Methodological approach	Joint acoustic and ichtyoplankton surveys combined with pelagic trawling. Both surveys will be combined with biotic and abiotic environmental measurements and parallel collection of remote sensing data. Organisation of working groups
Activities	- Discuss, prepare and agree upon regional standardized methodologies and protocols to be used in the data inventory, collection and processing - Create an inventory and collect existing data and information in the participating institutes in order to extract background information to be used as preliminary basis for further studies - Prepare survey design in the Project area and standardization of sampling design, equipment and soft wares used on board, both for ichtyoplankton and echo-surveys. - Execute a joint echo-survey and ichtyoplankton survey extending the prospected zones to representative portions of all GSA covered by the Project - Prepare of common data sets including biological and environmental data following the standardized protocols prepared and agreed upon by all institutes involved - Carry out data compilation and processing to produce validated results at regional level, using already existing data and data provided by standardized sampling surveys: o Assessment and mapping of the small pelagic fish biomass at regional level by using direct methods (echo-integration and experimental trawling) o Analysis of environmental factors at regional scale, in particular temperature, phytoplankton, currents o Joint data analysis coupling eggs and larvae distribution and abundance to biotic and abiotic measurements, by using direct maps comparison and/or spatial statistics methods o Determination of the acoustic Target Strength for sardine and anchovy, and calculation of the TS-length relationship o Analysis of the stock unit based on biological parameters and genetic markers: data elaboration in order to provide information on the genetic structure of selected populations o Growth and age determination of selected species based on standardized methodology using otolith reading o Standardisation of basic parameters (length at sexual maturity, age-length and TS-length relationship) - Analysis of the fisheries sector and of the spatial distribution of fishing effort in the Project area and when possible on the basis of available information.
Relation with on-going national and regional research activities	Annual/seasonal surveys are presently organized in the area, by INSTM (Tunisia), and IRMA-CNR (Italy), for the assessment of the biomass and the coupling of biological data to oceanographic variables. The spatial distribution of several species is drawn up, as well as the bathymetric distribution of the different age and size classes. Eggs and

	larvae samples are also collected on a regular basis.
Expected Outputs	- Regional estimate of the small pelagic fish biomass - Spatial distribution of small pelagic fish biomass and relative abundance pattern in the Project area, in relation with environmental factors and fishing activities - Eggs and larvae distribution and relative abundance pattern - Regional map of the main spawning areas of small pelagic fish species - Identification of the main environmental factors explaining the distribution and transport pattern of eggs and larvae - Validated Target Strength-length relationship at regional level for sardine and anchovy - Improved knowledge of stock unit of selected species through the analysis of genetic structure of the studied populations
GSA Covered	Studies will be conducted in representative portions of the Project area
Research Institutions involved	INSTM, IRMA-CNR, MBRC, MCFS and other relevant institutions that could be invited to give scientific support on specific matters
Required training, working groups research activities and timing	- Preparation of surveys at sea and standardisation of working methodologies (sampling period and sampling design, type of data, software, storage of data) - Working group on Target Strength calculation based on historical data - Joint echo-survey in a Pilot area - Presentation of the sampling surveys results

Programme	Assessment of Marine Protected Areas as a tool for Fisheries management

Overall Objective	To assess the feasibility of MPA implementation for fisheries management purposes, and to produce guidelines on the use of MPAs as a tool for fisheries management specific to Mediterranean areas. The overall objective is to provide proposals on the design, localization and use of such tools and/or further studies, taking into account the existing experience and peculiarities of Mediterranean fisheries.
Background Rationale	During the Project's Expert Consultation organized on this issue, the role of MPAs in the reduction of the fishing mortality, protection of key portions of the stocks and of fish feeding grounds was highlighted. Critical points were indicated as: (i) the dimension of the area to be protected; (ii) legal aspects of the access of the different users to the protected areas; (iii) the assessment of the socio-economic benefits of the implementation of MPAs; (iv) monitoring, control and surveillance to be implemented with particular attention to fishing exploitation. The experts highlighted the existing experience and scientific expertise on these issues in the Project area. However, they underlined the lack of guidelines providing methodological framework and strategic criteria for the implementation of MPAs in a management perspective and taking into account the characteristics of the Mediterranean. Moreover, the experts underlined the relevance of finding common ground between usual considerations on MPAs for biodiversity conservation and fisheries management, for instance in the use of homogeneous terminology. The preparation of specific guidelines on the use of MPAs as a tool for fisheries management in the Mediterranean could also help with this aspect
Methodological approach	1) Establish the spatio-temporal dynamic and status of the fisheries resources inside and outside the identified area using mapping tools (GIS), particular attention must also be given to the issues dealing with the abiotic environment as well as biodiversity including knowledge of biocenosis present in the area. This assessment should be based on background information touching biological, ecological and socio-economical issues. 2) description of the fishing effort and pressure exerted inside and outside the area (in space and time) 3) on the basis of the above, identify clear objectives of fisheries management, technical measures to be adopted and the monitoring programme including biological, environmental and socio-economic aspects
Activities	- Definition of pilot study zones - Collection and compilation of relevant data on fisheries resources and their ecosystems (habitat, environment, fisheries activity, socio-economy, fishing effort) related to the pilot study zones - Definition of a monitoring programme to assess the effect of fishing closure
Relation with the on-going national and regional research activities	Activities implemented in the framework of this programme will take advantage of on-going research dealing with demersal resources, habitat identification and mapping, assessment of fishing effort. The activities will be conducted in close collaboration with the programme identified by the Consultation on demersal resources, due to the overlap of several topics.

Expected Outputs	- In the Pilot study zones, description of:
	  - dynamics and status of fisheries resources
	  - relevant environmental processes influencing the resources
	  - critical/key habitats
	  - fisheries activity depending on the key resources (fishing effort inside and outside the zone)
	  - relevant socio-economic aspects
	- Assessment of the effect of fishing closure on biomass, mean size of fish, spillover and socio-economic relationships
	- Guidelines for the implementation and assessment of MPAs for management purposes adapted to Mediterranean case studies

GSA Covered	Pilot study zones will be either included or straddling the GSA included in the Project area
Research Institutions involved	INSTM, IRMA-CNR, MBRC, MCFS and other relevant institutions that could be invited to give scientific support on specific matters
Required training, working groups research activities and timing	Working group on data collection and data processing An *ad hoc* Working Group will be organised for the implementation of pilot studies. The Working Group will focus on the preparation of the scientific protocol including data collection and processing.

Progress report on Database and Application Components
MedSudMed Fishery and Ecosystem Information System (MSM FEIS)

1. Introduction

The creation of Regional Database and the establishment of a MedSudMed Fishery and Ecosystem Information System (called FEIS) is one of the main tasks of the Project.

The FEIS is designed to be a system allowing the organization and standardization of the data collected in the MedSudMed Project area. The aim of this system is to create an application for the management, analysis and representation of data relative to fishery resources, their environment and monitoring. The key information would concern biological aspects of the resources, environmental parameters, fishery statistics and accessory data. The primary motivation is to standardize, aggregate and analyze the data, and give further possibility of exporting them on a Geographical Information System (GIS). The users and beneficiaries would be the partner countries of MedSudMed, as well as the scientific bodies of the General Fisheries Commission for the Mediterranean (GFCM) and FAO.

The system structure is constituted by:

- **Corporate Database,** which should contain all agreed data coming from both the participating Institutes and public sources.
- **Applications** including several modules:
    - Data Entry Module assisting the user in the input of data into the corporate Database.
    - Data Management Module for the management of the database structure and the content of the reference tables (list of species, gears, countries, etc.).
    - Data Analysis Module for the data queries, analysis and data export.
- **Web Interface**: it allows the visibility and accessibility on the web of agreed information contained in the system.

This system will be developed by the MedSudMed Project both at regional and at national level. The regional version will be distributed to all the participating Countries. On the contrary, the national version will be distributed only to those countries requesting it. The Regional version has all National functionalities except for the data entry functions.

All the components of this system belong to a conceptual design presented in the *"MedSudMed DataBase and Information System Preliminary Conceptual Design"* document (Details are available in the Project Technical Document GCP/RER/010/ITA/MSM-TD01, document CC1/03, refers).

This document presents the progress achieved in the development of the Corporate Database and the first applications (Data Entry Module, Data Management Module and Web Interface).

2. Corporate Database

This is destined to host the common pool of data of all countries necessary for the fulfilment of the objectives of the Project's components. The development of this corporate database is being conducted by the Project staff. The Consultations were the occasion at which the regional experts were updated on the progress of the corporate database development (demersal resources, marine protected areas, small pelagic fish). The database centralises information that institutes wish to share; its aim and structure were discussed and defined during the Standardization Workshop organized by the Project (Mazara del Vallo, 5-9 May 2003). Different levels of accessibility are foreseen, according to the confidentiality of the data.

Some institutes have already developed their own databases or software for the display and management of their data. In this case, an interface is being developed in order to extract and store relevant data in the corporate database.

A technical meeting was organized (FAO-HQ, 28-30 July 2003) in order to establish the terms of reference for the aggregation of data and information at national level, as well as the technical organisation of this data and information collection. The general framework of the data aggregation and the setting up of details regarding the data inventory for the Demersal Resources were discussed in plenary session.

An inventory form listing the relevant variables, with a preliminary table describing the characteristics of the data source/survey, followed by tables corresponding to 5 topics: haul characteristics, biological data on target species, biotic environment, abiotic environment, fishing pressure. The forms will be used to provide a general description of the spatio-temporal resolution, unit, format and availability of the data for the regional database. Data listed in the forms are being collected with the participation of the Project Research Institute. The data collection started from 2003 with backward retrieval of available historical data.

During the three Expert Consultations and the Workshop on the Standardization of trawl surveys protocol, information to start the analysis of the database requirements was collected from the regional experts. Subsequently, on occasion of the Technical meeting on National Data and Data Aggregation Scheme, in agreement with the participating experts, standard data inventory forms were drawn up. It was decided that each participating institute would use these forms to conduct an inventory giving information on existing data and information at national level, and, when the case arises, mentioning the systems currently used by the institutes.

2.1 Phases of the development

The development of the Corporate Database was achieved according to the following steps (Figure 1):

- The feasibility study for the definition of the priorities
- The collection and analysis of the requirements concern the study of the system's properties.
- The planning of the data organization/model and functioning .
- The realization of the technical development.

- The validation and test to control the functioning of the Corporate Database.
- Final release of the Corporate Database which becomes operative.

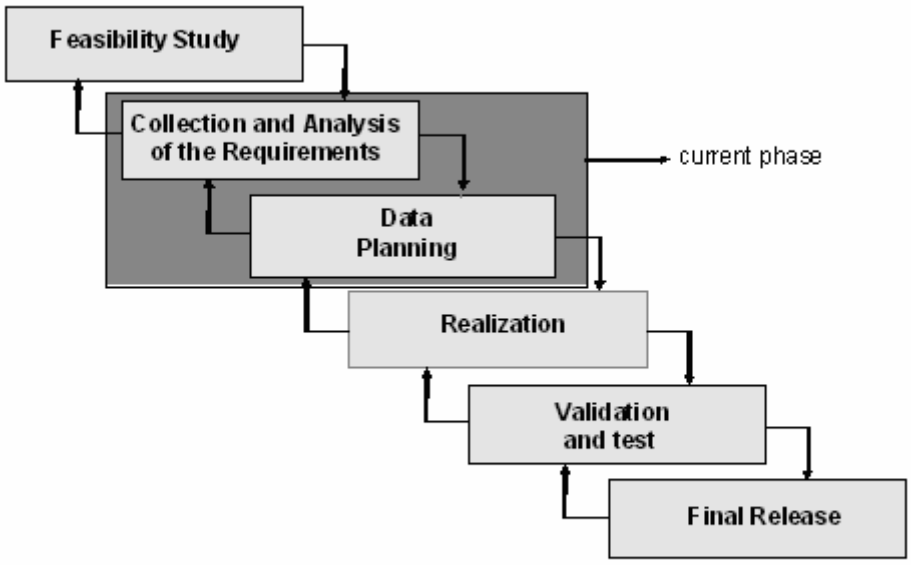


Figure 1. Phases of development of the corporate data base

The development phases totally or partially reached to date are highlighted on the Figure 1: i) the collection and analysis of the requirements and ii) the planning phase. It is worth noting that activities are connected among them in a cyclic manner to demonstrate that the whole process does not proceed in a rigid manner, step by step, but there can be a return to the previous phase.

2.2 Corporate Data Model

FEIS database is based on a relational data model, including:

a) Entities containing the main information, *e.g.* the tables of data,
b) Relations which describe the connections between the different entities and reference tables,
c) Reference tables containing the support information (list of species, gears, countries, units, etc.) which appears for example in the list boxes.

The figure below (Figure 2) represents the Entity-Relationship (E-R) conceptual scheme of the FEIS database showing the connections between the different elements of the data model. The Entities are the Tables of Data and the Relationships represent the associations between the tables.

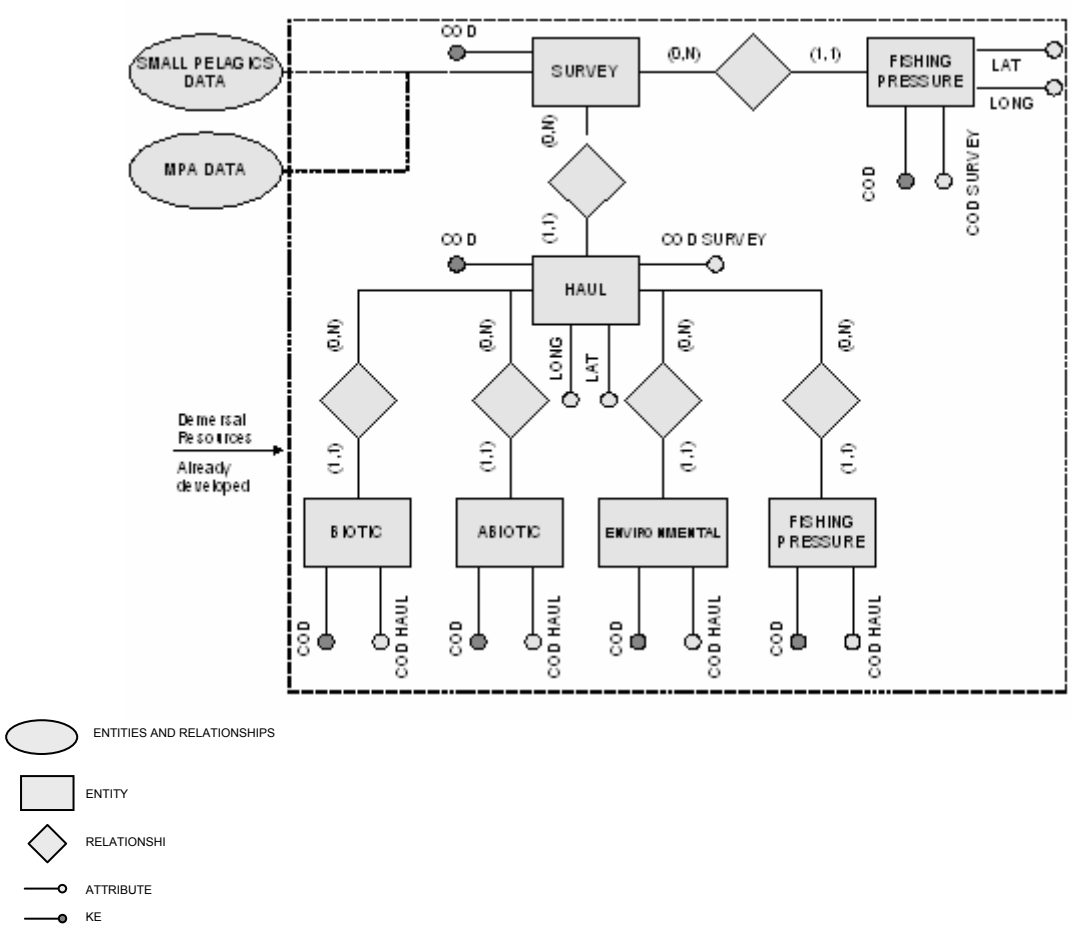


Figure 2. Entity-Relationship (E-R) conceptual scheme of the FEIS database

This scheme under development since the phases of collecting and analysis of the requirements are not concluded, yet. It represents the data scheme on demersal resources in detail. All the entities are represented but not all the attributes of each entity, in fact there are only the identifying attributes. This model regards exclusively georeferenced relational data. Non georeferenced data can not be input in the system.

3. Applications

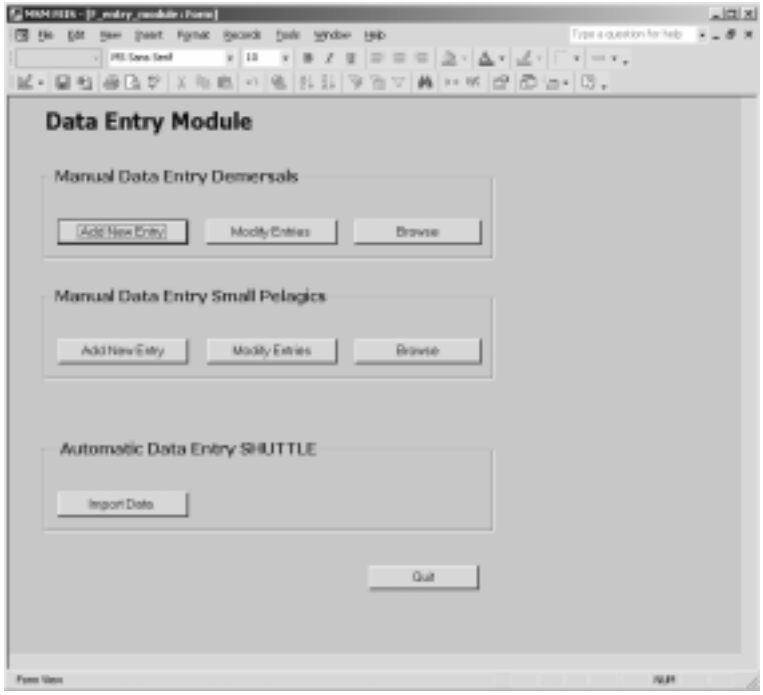
In parallel to the designing of the database the applications for data analysis and data process are being developed; they will include the following modules:

- Data Entry Module
- Data Management Module
- Data Analysis Module

The applications are now being developed only for the Demersal Resources component, but similar applications are being implemented for the other MedSudMed Project Components.
All the applications are compatible with the existing National Databases for which an exchange file system is improved (named Shuttle system)

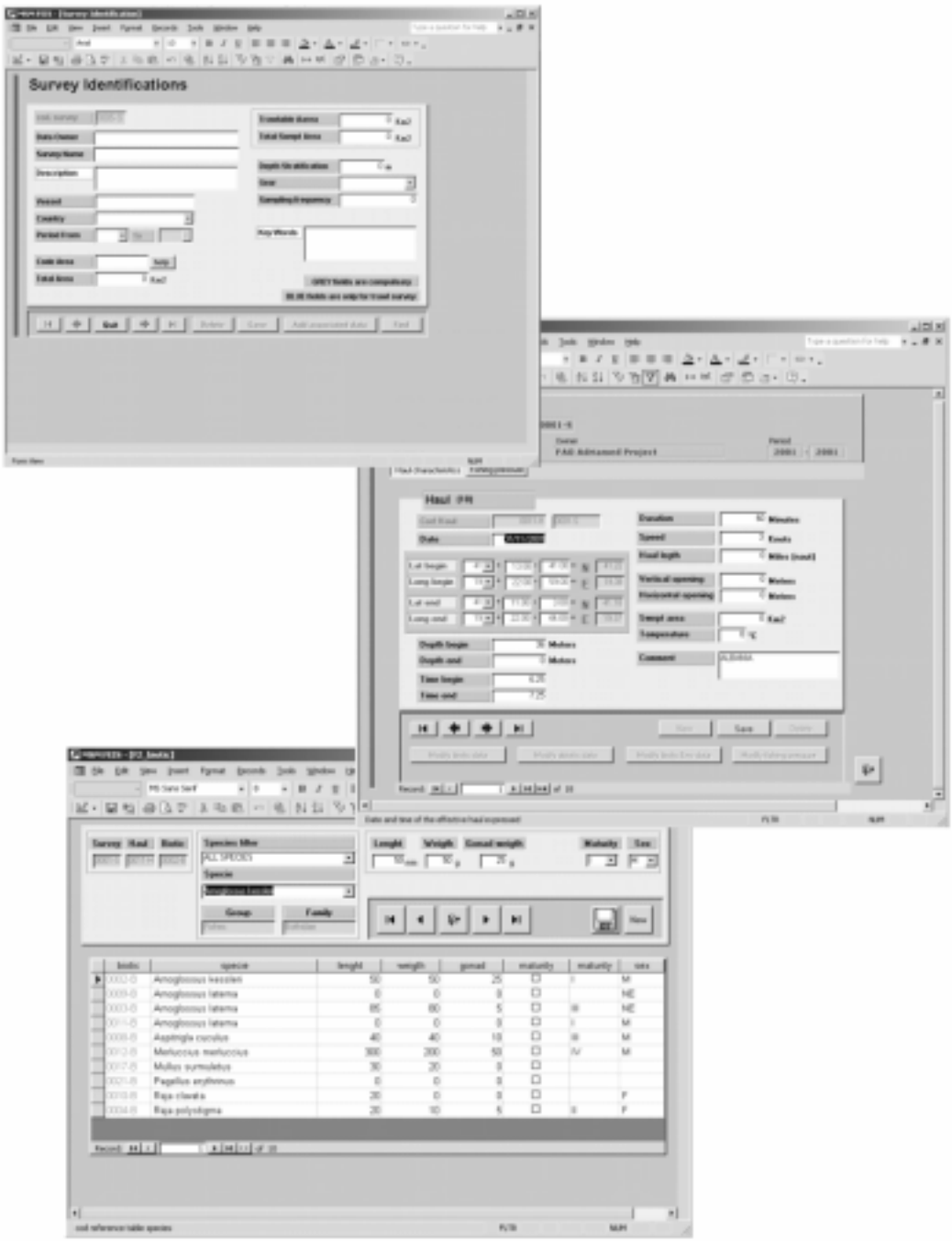
3.1 Data Entry Module

This module allows the manual data input (through keyboard) and change by means of prearranged forms which test the consistency and validity of the inserted data and minimizes the error.

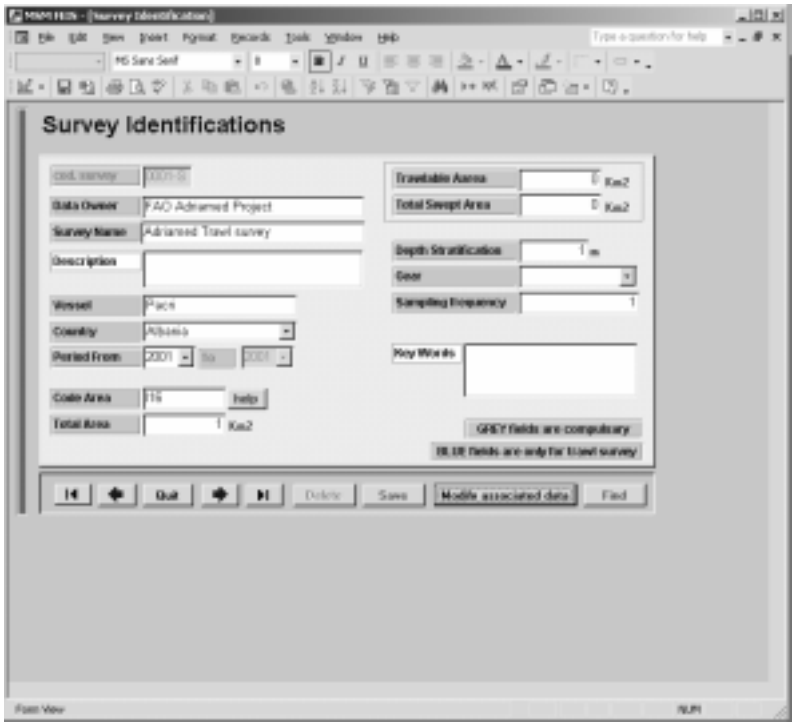


Furthermore a part of this module allows the direct data importation through Microsoft Excel © transfer files (Shuttle files). The data importation foresees the exportation of data from their original systems, databases and systems already used by the countries, following the "Shuttle exchange scheme".

Both the manual and automatic data input are developed for all types of data. Besides, the data entry module is different according to the type of data to be input, the user can chose a different form according to the type of data to be input (trawl surveys, echo-surveys, etc.). Examples of data entry forms for the Demersal Resources, based on trawl survey hauls, are shown hereafter.



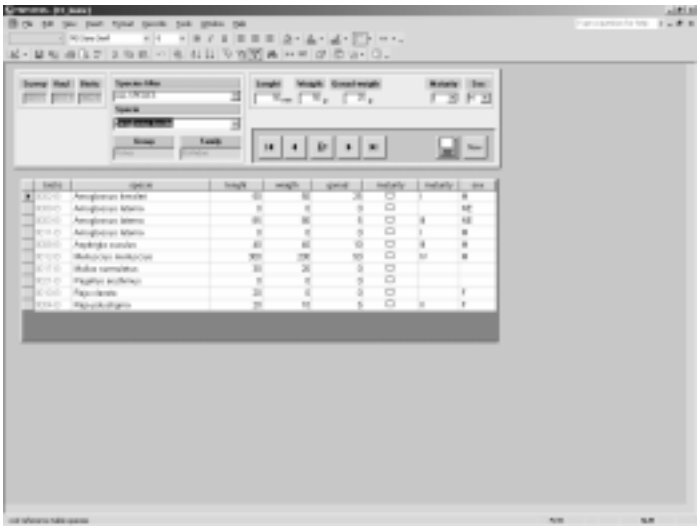
Data input is performed step by step and follows the E-R scheme shown on Figure 2. It starts with the identification of a survey, then the input of data regarding the hauls and subsequently data connected to hauls.



The survey identification is done through the input of information such as Data Owner, Survey Name, Vessel, period, country. Many controls are performed during the filling of this first form; only once the compulsory fields have been filled, it is possible to move on the following form to insert information on another entity. Therefore, saving incomplete surveys is impossible.

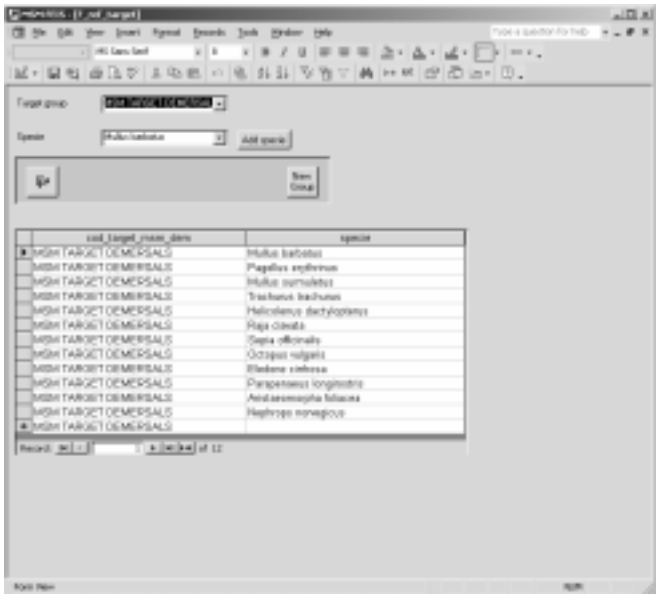
A form allows identifying all hauls of a survey with the respective beginning-end coordinates and characteristics. The upper part of the screen shows the information relative to the current survey. The lower part of the screen displays buttons allowing the insertion of data associated to the current haul.

The image below shows an example of biotic data associated to a haul. In the upper part there is the data input, in the lower part the visualization and editing of data already inserted.



3.2 Data Management Module

This module allows the organization of the reference tables, which contain the support information of the data entry (tables on species, gear, equipment and on groups of species), and gives the possibility to insert new variables and/or values. The example displayed below shows the creation of groups of species in order to have, for instance, the target species of a study.



3.3 Data Analysis Module

This module will allow performing different types of analysis on selected data, according to spatial or temporal criteria. In order to facilitate the selection of data that subsequently could be exported on Microsoft Excel © or displayed on a GIS software to perform spatial analysis. The whole Project area has been entered in a GIS module, using bathymetric maps provided by GEBCO 97 (General Bathymetric Chart of the Oceans). Available environmental data were also put into the same GIS maps Figure 3.

An Example obtained with ArcGis 8.2. is shown on Figure 3.

Figure 3. Examples of Sea Surface Temperature COADS DATABASE

The part regarding some calculations of trawl survey (length distribution, maturity stage, Index of abundance) is developed in collaboration with the experts of the Adriamed project. Adriamed Project has already created a tool for the calculation of these indexes denominated Adriamed Trawl Bank[1]

4. Web Interface

The web interface will contain original data, processed information, routines and analysis applications. It is being developed in cooperation with the Malta Environment and Planning Authority (MEPA).

The MedSudMed Prototype has been developed as of a series of 'Portlets'. Each portlet is visible to the user as a Tab whose contents provide different tools and functions. The user interacts with the Web Portal by selecting and making active the Tab containing the tools desired. The web portal environment can be viewed via a regular web browsers. Through the MedSudMed Web site dialog could be established with the Corporate Database to obtain data and information.

The structure of portlets, functionalities and tools are outlined as follows:

[1] *Milone, N., Zeuli, V., Mannini, P. (2003) AdriaMed Trawl Survey Databank: User Manual. FAO MIPAF Scientific Cooperation to Support Responsible Fisheries in the Adriatic Sea. GCP/RER/010/ITA/OP-12 AdriaMed Occasional Papers,12: 18 pp*

4.1 The Portal Homepage

This is the default portlet that is viewed on accessing the site. It contains a login module, allowing users to register with the MedSudMed portal, and areas for news and events relating to the MedSudMed project.

4.2 The Administration Portlet

The Administration page provides the tools and functions for administrating the MedSudMed portal environment. Broadly these functions allow site administrators to:

- Create new user groups (security roles) and add users to these groups
- Create new users
- Add new portlets (tabs) to the portal, and configure these portlets.

4.3 The Data Upload Portlet

This portlet allows users to upload data files to a common area on the MedSudMed server. The upload process prompts the user to enter metadata related to the document being uploaded. Both the data files and the metadata can then be accessed by the moderator for review and subsequent incorporation into the MedSudMed portal. The information is then available to authorised MedSudMed users.

4.4 The Data Download Portlet

This portal provides the interface for downloading data files and documents from the MedSudMed server. The information will only be available once they have passed through the moderator process. Users are presented with a list of available documents and data, the contents of which depend on user access permissions.

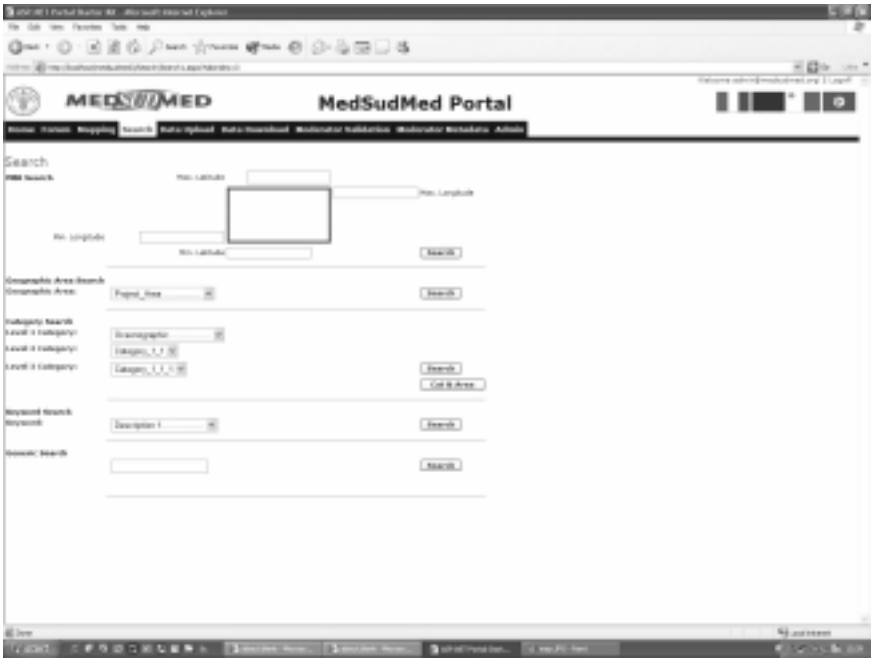
4.5 The Public Download Data

A portlet with information about Public Data is already available for the web.

About 50 data bases on environmental data of all the world were found but only about 10 contained relevant data on the Mediterranean Sea. The information, metadata, on these data bases were collected and listed according to different features, such as sources, variables, periods, coverage, sampling depth, resolution, format and copyright and a brief comparison of the different databases was made. Some data contained in these data base were downloaded and observed in GIS and maps were made. Advantages and limits of these data were discussed with the regional experts and the information was replaced in the general context of the MedSudMed Information System. Requests for information regarding the copyright of several databases were sent or are being sent. Moreover, given the volume of the data collected, it was deemed relevant to extract first those required for the activities of the Project.

4.6 The Search Portlet

This portlet provides the interface for searching various aspects of MedSudMed metadata. Search parametres provided include free text searches, geographic area and keywords used. The results of the search are presented to the user in a separate search results page.



4.7 The Mapping Portlet

The Mapping portlet provides the user web based map viewer. Users are provided with the tools to view and interrogate any spatial mapping data associated with the MedSudMed project. They are able to zoom and pan around the data, and also to switch individual layers of data on and off as required.

4.8 The Forum Portlet

This portlet provided the environment in which the MedSudMed users can interact and exchange knowledge on an informal and un-moderated manner. In the forum users can participate in discussion threads and submit of documents for download by other users. This portlet provide the tools to add project-related news, commentary and announcements.

4.9 The Moderator Portlet

This portlet provides the site's moderator functionality. The moderators can validate and publish uploaded metadata and data files. Validated metadata is migrated to tables that are accessible to authorised MedSudMed users. This interface provides tools for XML data validation and upload provided to the MedSudMed site.

4.10 Outline of Use Cases of Web Interface

The MedSudMed project identifies a number of different groups of users that are described below. The prototype design addresses these needs by allowing different user groups access to the relevant portals.

General Public / Researcher

The general public will have access to web based information on published documents, project information, meta data on documents held by project participants or third parties, a spatial interface to public project datasets.

Project Member

In addition to the above, project members can have access to a protected area of the system that will allow them to interact with 'focal points' or system moderators who can facilitate the necessary retrieval and submission of information.

Moderator / Custodian

Moderators are 'gatekeepers' of a logical area of the system, interacting with users and project members to consolidate content and value of the overall system. Data technicians will be required to prepare and validate the format and description of data submitted to the project.

System Administrator

The system administrator is responsible for the ongoing operation of the system. This role will be required from the time the live system is deployed on-line. The system will be designed to require minimum maintenance.

5. Used commercial softwares

- **Software used for Database and Applications**

  ESRI ArcGis 8.2 ©: for the extraction and exportation of data on GIS software (Geographical Information System)

  Microsoft ACCESS 2000 ©: DBMS (Data Base Management System) used for data management.

  Microsoft EXCEL ©: for the import and export of data tables and graphs.

- **Software used for Web Interface**

  Microsoft DotNet framework ©: The DotNet (.Net) environment provides programming support of Web Services – presenting the ability to use the Web to provide data and services.

  Microsoft SQL Server ©: Microsoft SQL Server provides a relational database management system that provides data warehousing solutions.

  Microsoft IIS ©: Microsoft Internet Information Server (IIS) provides the programs for building and administering web sites, a search engine and support for writing web-based applications that access databases.

  OpenGIS WebMapServer ©: OpenGIS Web Map Service (WMS) Specification is an industry consensus specification that enables organizations to share and visualize geospatial data. The specification provides GIS services to web browsers and applications.

  XML ©: Extensible Markup Language (XML) provides the tools for the creation of standard information formats (schemas). Data can be validated against its associated schema instance. XML is becoming the Internet data standard since the data format is text based and therefore interoperable.

6. Conclusions

In cooperation with the Institute of the Project Countries we wish further developments of this application concern data management module and data analysis module, both still in course of planning and realization. Particular attention will be paid to the development of the application that allows the selection and exportation of data on GIS, aspect poorly or never developed in the systems currently used in the participating institutes.

Potentialities of the GIS applications will be exploited to perform spatial analysis.

Other analysis modules can be developed or inserted in the future in collaboration with the experts. Besides, it will be possible to add new import/export procedures.

This system could support not only the participating institutes of the Project area but can be extended to other areas in the Mediterranean.